

**ISSUE: 5**

A HUMANE EDUCATION RESOURCE

ISSN: 117-3804



**ANIMALS&US**



# **ANIMALS IN FACTORY FARMS**

THINKING CRITICALLY ABOUT OUR TREATMENT OF ANIMALS





**ANIMALS&US**

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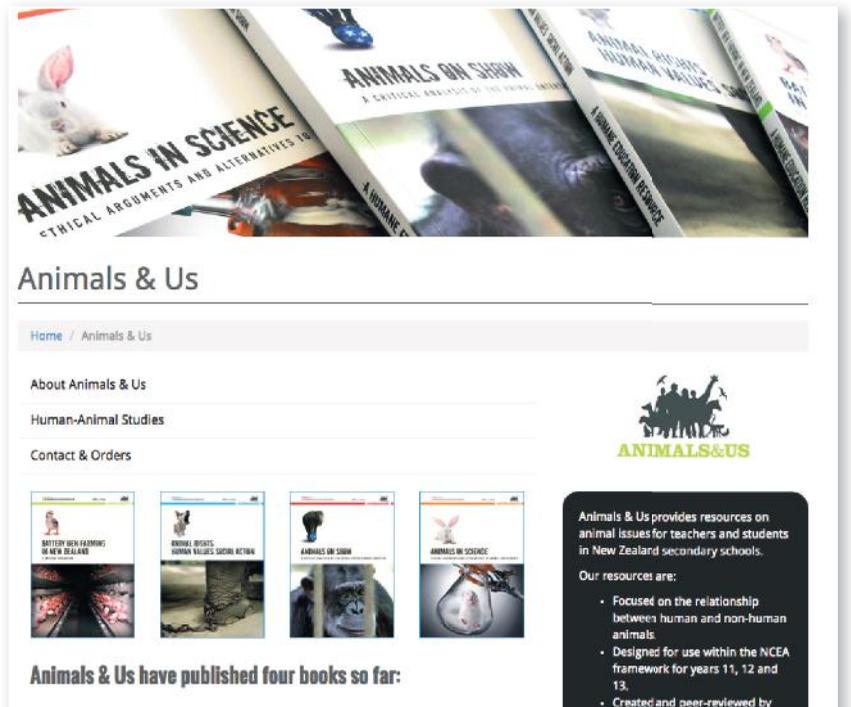
Issue 1 | *Battery Hen Farming in New Zealand* – A Critical Evaluation

Issue 2 | *Animal Rights, Human Values, Social Action*

Issue 3 | *Animals on Show* – A Critical Analysis of the Animal Entertainment Industry

Issue 4 | *Animals in Science* – Ethical Arguments and Alternatives to Animal Experiments

Issue 5 | *Animals in Factory Farms* – Thinking Critically About our Treatment of Animals.





# ANIMALS IN FACTORY FARMS

**THINKING CRITICALLY ABOUT OUR TREATMENT OF ANIMALS**

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RESOURCE MATERIALS for Years 9–13 in **Social Studies**, **Science**, **Biology** & **English**

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# ANIMALS IN FACTORY FARMS

THINKING CRITICALLY ABOUT OUR TREATMENT OF ANIMALS

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- **Close Up**  
*Pork Industry Plunges into Panic*  
18 May 2009,  
9 min 57 sec
- **Breakfast**  
*Pork Industry Under Fire*  
18 May 2009,  
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Current Affairs  
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## Behavioural Footage

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Behavioural footage,  
2015, 27 min 44 sec
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- **Outdoor pig**  
Behavioural footage,  
2015, 27 min 30 sec
- **Farrowing crate pigs**  
Examples of stereotypies  
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## Advertisements/Promotions

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2008, 30 sec
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2009, Featuring Mike King, 45 sec
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2 min 35 sec

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- **Factory Farmed Pigs in New Zealand – The Price of Pork**  
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April 2016,  
1 min 31 sec

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6 min 2 sec
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December 2012,  
1 min 50 sec



Farmwatch

# FOREWORD

In Aotearoa New Zealand we are extremely fortunate to have SAFE's groundbreaking and inspirational series *Animals & Us* available as a teaching resource for secondary schools. I am honoured to write the foreword for the latest release in this series, *Animals in Factory Farms*. This is an urgent subject for young people to engage with critically, given what we know about other species' sentient lives (as well as the devastating role of intensive farming in climate change).

In my own research and teaching at the New Zealand Centre for Human-Animal Studies I aim to shed light on the ways that birds, mammals and fish are selectively bred, intensively farmed, slaughtered and consumed en masse in New Zealand and elsewhere; I also study how such exploitation impacts on the physical, emotional and social well-being of animals used in agriculture. When we understand other species to be sentient, the subjects of their own lives, and not as objects for human use, we are compelled to respond in ways that respect their unique experiences of the world, as well as their capacities for pain and suffering – and also joy and pleasure.

Pigs, cows, chickens and sheep have all been shown to form strong memories and to learn complicated tasks readily. These animals can remember dozens of faces (human and conspecific), even after long absences; and chickens and sheep will express their dislike of those who have mistreated them by turning away from them. Studies also show pigs understand and respond to vocal communications as rapidly and as well as dogs, and have the ability to understand what another pig sees; while cattle and chickens show empathy and behave altruistically towards members of their own herds or flocks. The fallacy of the 'dim-witted birdbrain' has been thoroughly debunked through studies confirming that chickens demonstrate *object permanence* (the ability to remember an object exists even when it is not visible), exercise *delayed gratification* (the decision to defer a food reward if it is known that a better reward will result if more time passes/more work occurs), and can count and perform basic geometry. In their communications with each other about predators, food and other concerns, chickens employ syntax and semantics, qualities once thought to be exclusive hallmarks of human language. Chickens, ducks and turkeys are referential learners, capable of remembering the past, anticipating the future, and therefore (like humans) experiencing frustration, anxiety and fear. This last fact is chilling, given the severe deprivation and other brutalities billions of intensively farmed birds endure each day.

Thanks to organisations like SAFE, most consumers are now aware of the miserable lives of caged hens in the egg industry; fewer people are likely to realise that layer hens are different birds from broiler chickens bred for their meat. Even when they are confronted with images of broiler chicks it is a harder task to convince consumers that these birds suffer – this is partly because they are kept in sheds (not cages), and partly because they are huge, fully feathered birds, more likely to be stereotyped as greedy. Education is essential to correct this assumption and teach how these birds have been bred so that their bodies rapidly grow too enormous for their skeletons to support, and they are in fact still chicks with baby feathers, yet unable to walk, when taken to slaughter around six weeks of age. In all factory farming situations, birds, mammals and fish endure conditions where their fundamental natural inclinations and joys of life are cruelly curtailed. Instead they are subjected to extreme confinement, deprivation and suffering. To see such misery is shocking; therefore, intensive farming practices are deliberately concealed. It is a rare occasion when members of the public or media are permitted to freely view inside large-scale farming operations.



**DR ANNIE POTTS** | Associate Professor. Head of Cultural Studies and Co-Director of the New Zealand Centre for Human-Animal Studies. University of Canterbury.

**ANNIE POTTS** is one of New Zealand's leading authorities in human-animal studies and has based a great deal of her research on the treatment of non-human animals in culture, society and history.

Author of *Chicken* (Reaktion Books – Animal series) and co-author of *New Zealand Book of Beasts: Animals in our Culture, History and Everyday Life* and *Animals in Emergencies: Learning from the Christchurch Earthquakes*.

NZCHAS website: [www.nzchas.canterbury.ac.nz/](http://www.nzchas.canterbury.ac.nz/)



When we examine the ways in which an animal is made 'edible', and learn about what has been hidden, disguised or trivialised in the production of meat, we are freer to make informed choices about what and how we consume. *Animals in Factory Farms* is a timely and crucial teaching resource for younger people who care about animals and where their food comes from. Most importantly, as is the case with all other modules in the *Animals & Us* series, this resource encourages students to critique and rethink anthropocentric assumptions and norms.

As a tertiary educator specialising in human-animal studies (HAS) I find it exciting to know that students coming from secondary schools to our 100-level courses in HAS at the University of Canterbury may already have engaged in compassionate learning if they have studied this resource or any of the others in the *Animals & Us* series.

**ANNIE POTTS** | Associate Professor, University of Canterbury

# About SAFE and *Animals & Us*



## SAFE – FOR ANIMALS

Founded in 1932, SAFE (Save Animals From Exploitation) is a leading and unique voice for animals in New Zealand. SAFE is New Zealand's largest and most respected animal rights organisation and is regularly contacted for advice and comment on animal issues.

SAFE undertakes high-profile campaigns, public stalls, displays, demonstrations, meetings, education visits, research, and promotional and publicity events to foster a more informed and compassionate understanding of human-animal relations in contemporary Aotearoa New Zealand.

SAFE's vision is of a society in which all animals are understood and respected in such a way that they are no longer exploited, abused or made to suffer. Our purpose is to achieve this vision through educating and advocating to:

- change attitudes
- create awareness
- foster compassion
- challenge cruel and exploitative practices.

SAFE has a long history of advocating for animals. Some of our more recognised achievements include:

- **Layer hens in cages:** SAFE has been campaigning to free layer hens from cages for decades. Standard battery cages will be banned in 2022 only to be replaced by another cage system (called colony cages). SAFE continues the battle against the use of cages for layer hens.
- **Cosmetic testing banned:** In 2015 New Zealand banned the testing of cosmetics on animals. This followed three years of extensive campaigning on the issue.

- **Sow stalls banned:** The intensive farming of pigs often involves the housing of pregnant sows in metal stalls so small they cannot even turn around. SAFE has campaigned heavily on this issue and succeeded in a ban on the use of sow stalls from 2016.

These campaigns have not only changed public attitudes and behaviours regarding how we as a society view and treat animals, they have more significantly resulted in tangible improvements in the lives of the animals themselves. SAFE brings hope for a future where animals are no longer mistreated, abused or disregarded.

## ANIMALS & US

*Animals & Us* is an education initiative created by SAFE in 2006. One of the key areas of SAFE's work is education, and SAFE endeavours to provide schools, teachers and students with relevant and factual information on the human-animal relationship.

## Vision

That *Animals & Us* will advance knowledge and critical thinking about the relationship between human and non-human animals while fostering attitudes and values of compassion, respect and empathy.

## Mission Statement

*Animals & Us* is a SAFE education initiative that:

- provides professional resources specifically designed for the New Zealand education framework
- advances knowledge and critical thinking about the social, economic, political, environmental and scientific relationship between human and non-human animals.

The quality of the *Animals & Us* programme is guaranteed by SAFE's ability to draw upon the knowledge of the most experienced animal advocates, and to combine this with the expertise of researchers, academics and teachers working in the area of human-animal studies.

Five *Animals & Us* textbooks have been published since 2007:

Issue 1 | **Battery Hen Farming in New Zealand** – A Critical Evaluation

Issue 2 | **Animal Rights, Human Values, Social Action**

Issue 3 | **Animals on Show** – A Critical Analysis of the Animal Entertainment Industry

Issue 4 | **Animals in Science** – Ethical Arguments and Alternatives to Animal Experiments

Issue 5 | **Animals in Factory Farms** – Thinking Critically About our Treatment of Animals.



*Animals & Us* textbooks: *Battery Hen Farming in New Zealand* ✳ *Animal Rights, Human Values, Social Action* ✳ *Animals on Show* ✳ *Animals in Science*

# Acknowledgements



*Animals in Factory Farms* is the fifth issue in the *SAFE Animals & Us* series. *Animals in Factory Farms* explores the treatment of animals in modern-day factory farms where animals are reduced to products, and profit margins take priority over animal welfare.

Producing each *Animals & Us* textbook is a huge undertaking. Months of research, sourcing materials, writing, editing, proofreading and design go into each issue. There is always a long list of people to thank for their time, generosity and expertise.

The most challenging aspect of creating a textbook is the editing process. This topic had so many materials and resources to choose from that it was extremely difficult to decide which to include. Our thanks to Alex Woodham and Lynne Robertson for assisting with this laborious task.

Proofing a school textbook is probably a proofreader's worst nightmare – every source needs to be checked, and accuracy and consistency throughout the textbook are an absolute necessity. Vicki Andrews has an incredibly keen eye for detail – even to the point of recognising when a comma had been accidentally italicised!

Creating the look and feel of each textbook takes a talented and artistic individual. Any textbook aimed at young people needs to be engaging, attractive, inspiring and educational. Amber Wilkinson,

our designer, has done a beautiful job in bringing to life the very drab Word documents and scans we sent her. Thanks to illustrators Ali Teo and Tom Williamson for their contributions. Many of the images used in this textbook were taken by an amazing group of Kiwi animal activists, Farmwatch, who fearlessly obtained the pictures and footage of animals on factory farms. Without them we would never know what happens in these dark sheds hidden away from view.

This is likely to be the last issue of the *Animals & Us* textbooks to include a DVD. DVDs are fast becoming obsolete. In the meantime, we would like to thank Debbie Matthews, Tandem and InfoTech for the DVD editing, production and replication.

Unit 2 of the textbook compares the lives of animals in factory farms to animals living outdoors. Sourcing the footage necessary to make this comparison was no small feat. Special thanks to Fair Projects and The Animal Sanctuary, who allowed us to film Jose and Blue. Extra special thanks again to the brave activists from Farmwatch for obtaining the colony cage footage and to Aussie Farms for the farrowing crate footage.

We are very privileged and extremely grateful to have the foreword written by Dr Annie Potts (Associate Professor, Head of Cultural Studies and Co-Director of the New Zealand Centre for Human-

Animal Studies at the University of Canterbury).

No one has campaigned longer and harder against the factory farming of animals in New Zealand than SAFE Executive Director Hans Kriek. Our thanks for his tireless dedication to animals and for writing the introduction to this textbook.

Before committing the lessons to print we naturally have them peer reviewed by teachers, and our gratitude goes out to Samantha Farmiloe (Rangitoto College) and Paula Devery (The Correspondence School) who graciously took the time out of their busy schedules to look over our materials.

Extra special thanks to all those who have supported our programme financially (see donors listed on page ii).

*Animals in Factory Farms* is dedicated to the animals confined in factory farms. It is only with growing awareness and compassionate action that we can make meaningful change for these animals. This textbook is a window into the world of factory farming. With knowledge and understanding, and by taking social action, we can close the door on this chapter of our treatment of animals for good.

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# INTRODUCTION

THINKING CRITICALLY ABOUT OUR TREATMENT OF ANIMALS

Farmwatch



# ANIMALS IN FACTORY FARMS

**I grew up in Holland in a high-rise building.** Like many kids, I was fond of animals and loved watching nature films on television. Growing up in an apartment, a setting devoid of nature and animals, my only way to interact with animals was to bring them indoors. I had a large number of 'pets' and also looked after many injured and orphaned birds. My teachers made me sit at the back of the class so I would not disturb the other pupils when feeding the chirping baby birds I brought to school.

My connection to animals was an important part of my young life but I was also connected to animals in a different manner. I ate them with abandon. I remember once walking for nearly an hour to buy a rotisserie chicken, simply because I felt like eating chicken.

This all changed when my biology teacher showed our class a video of chickens and pigs on factory farms. I was shocked by the conditions shown and realised how unaware I was of the plight of animals farmed for food. I decided to stop eating meat. I simply did not want to financially support industries that are cruel to animals.

This newfound awareness of factory farmed animals set me on a path to help as many as I could. In my years working for animals I have spoken to hundreds of children with a similar passion for animals. I believe that this latest edition of the *Animals & Us* series *Animals in Factory Farms* will help them and thousands of other children learn about this important issue and inspire them to become advocates for the millions of animals suffering on factory farms.



**HANS KRIEK** was Executive Director of SAFE (Save Animals From Exploitation), New Zealand's leading animal rights organisation, until November 2016. Hans was born in Leiden, The Netherlands. From childhood he had a fascination and empathy with animals. At age 16, after learning about factory farming at school, Hans decided to become a vegetarian and later turned vegan. This pivotal event in his life propelled him towards a life of animal activism. In 1985 Hans emigrated to New Zealand and found work as an inspector for the SPCA. He also volunteered for SAFE and opened one of New Zealand's first cruelty-free shops. In 1993 Hans appeared on *60 Minutes* and exposed previously unseen factory farming practices on national television. This shocking exposé launched Hans's career as a professional animal activist and cemented his reputation as the New Zealand media's most outspoken critic of animal exploitation.



Farmwatch

## WHAT IS FACTORY FARMING?

Factory farming is the industrialised farming of animals for human consumption. It favours productivity and efficiency over the well-being of the animals and the environment.

After World War II demand for cheap food increased sharply, particularly for meat, dairy and eggs. Conventional farming practices (where a combination of different types of animal were kept in small numbers in mainly outdoor settings) could not meet that demand.

A number of industries focused on keeping only one species in large numbers sprang up. By bringing the animals (mainly pigs and chickens) indoors, farmers could better manage food intake and environmental conditions such as light and temperature. Farms were transformed into factories with thousands or even tens of thousands of animals confined in overcrowded conditions. Higher stocking densities led to higher mortality, but this was offset by increased production and lower overheads as fewer workers and less land were required.

Factory farms soon became the norm. Consumers were happy with the wide range of cheap animal products and did not question how these products got to their plate. The connection to animals as feeling beings was rapidly lost. For industry and consumers alike the focus became the product, not the animals, who were simply forgotten.

## FACTORY FARMING IN NEW ZEALAND

Despite having lots of available land and being blessed with a moderate climate, New Zealand fully embraced the concept of factory farming. As overseas, the production of plentiful and cheap animal protein trumped any other concern.

As a result, New Zealand now factory farms well over a hundred million animals per year.

Over three million layer hens are kept in battery and colony cages. Each hen has a living space about the size of an A4 sheet of paper. These hens live a mere 18 months before they are slaughtered. Their normal lifespan is up to 12 years.

The 100 million chickens raised for meat live even shorter lives. They are killed at only six weeks of age when they are literally chicks in adult bodies. Their growth is so fast that many experience severe leg weakness and other health problems. Over 8,000 chickens die each day from disease in New Zealand.

Hundreds of thousands of young pigs are fattened up in dark, barren concrete pens, while their mothers languish in farrowing crates so narrow they can't even turn around. Their oppressive environment causes these highly intelligent animals to show abnormal (stereotypic) behaviour which indicates they do not cope with the conditions in which they are kept.

Only in recent years has factory farming become a contentious issue. Studies by animal welfare and behaviour experts show that the extreme confinement of intensively farmed animals causes major suffering.



**As a result, New Zealand now factory farms well over a hundred million animals per year.**

## ANIMALS ARE SENTIENT

New Zealand law considers animals as sentient (able to feel and perceive) and yet permits animals to be factory farmed. Public awareness about the oppressive conditions has led to an upsurge in concern about the plight of factory farmed animals.

Many people now recognise pigs and chickens as the sociable, intelligent and feeling beings they are. These animals are like us in that they share many of our senses – sight, hearing, taste, smell, touch – and the ability to feel pain both physically and emotionally.

There is a growing awareness that factory farming animals is wrong as it denies the animals the opportunity to express their normal behaviour. Less is known about the fact that many of these animals also suffer from foot, leg and joint injuries, lameness, feather loss, skin lesions, muscle atrophy, contact dermatitis, lung and heart problems, depression and stress.

## OPPOSITION TO FACTORY FARMING

Society is now questioning whether it is ethical to dismiss the suffering of other sentient beings simply because of the human desire to consume cheap meat and eggs. This concern has seen thousands of people switching to free-range products or giving up eating animal products altogether.

This public opposition to factory farming has seen a reluctant and slow response from industry and government. A large number of free-range farms have sprung up to meet demand for non-factory farmed products, and some of the worst confinement systems are now either banned (sow stalls) or being phased out (conventional battery hen cages).

While this progress sees some reduction in the suffering, it does not address the broader issue of farming animals on factory farms. The reality is that animals will continue to suffer as long as our appetite for cheap meat and eggs continues. This resource will provide students with a better understanding of the detrimental effects factory farming has on animals. Armed with this knowledge they can decide their response. If they are like me, having this material brought to their attention can be life-changing, not only for them but also for the animals.

**HANS KRIEK** | Former Executive Director of SAFE





(clockwise) A rescued battery hen is checked by a vet ✳ An animal activist films the conditions in a colony cage ✳ A sow in a farrowing crate nurses her piglets ✳ Chickens reared for meat on a New Zealand farm

Farmwatch



SECTION 1

# UNITS OF STUDY

Social Studies | Science | Biology | English

Farmwatch



## In the Classroom

*Animals in Factory Farms* enables young people to learn about an issue that combines critical thinking with social justice, and engages them in real-life decisions where they can (as compassionate consumers and citizens) actively make a difference to our society, laws, practices, habits, ethics and philosophies in regard to the treatment of animals in factory farms.

Exposing this issue isn't easy. The animals concerned are carefully hidden from sight, locked inside innocuous looking sheds. Thousands of pigs, three million layer hens and over 100 million meat chickens exist for one purpose – as meat or eggs for human consumption. Their lives are short and pitiful, and lack many of the basic necessities that make life worth living.

Pork producers keep female pigs (sows) in a perpetual state of pregnancy and 'farrowing' (the birth of piglets). This is in order to turn out an endless supply of piglets for fattening.

Egg producers hatch over six million layer chicks per year. The females are destined for colony or battery cages where they will lay 300 eggs per year until they are literally 'spent hens'. Their wild counterparts only lay 12 eggs per year. Male chicks are killed on their first day of life as 'hatchery waste' simply because they don't lay eggs.

Meat chicken producers hatch over 100 million meat chickens per year. These chicks are 'farmed' in dimly lit windowless barns and grow at an alarming rate. In six weeks they transform from 0.2kg to 2.2kg – that's an increase of 1,000%. These chickens have been selectively bred to convert their feed into muscle and grow much faster than regular domestic chickens.

The four lessons in *Animals in Factory Farms* enable learners to think critically about the complex social, economic, biological, political, legal and ethical issues involved with factory farming.



- **TAKING A STAND AGAINST FACTORY FARMING (Year 13) Social Studies**

In this Social Studies unit students will explore factory farming and social action. Campaigns against factory farming have resulted in a ban on sow stalls in New Zealand from 3 December 2015. This unit provides an opportunity for students to examine how animal advocacy organisations have managed to influence social and legislative change on behalf of animals.

- **'NORMAL BEHAVIOUR' IN FACTORY FARMS (Year 11) Science**

In this Science unit students will investigate two life processes – support and movement (behavioural needs of animals) and sensitivity (in particular, the suppression of biological needs resulting in abnormal behaviours in animals). Students will create ethograms and record behavioural data from animals housed in cages, crates and outdoors in order to compare, explain and diagnose how and whether physical environmental constraints manifest in abnormal biological and psychological behaviours.

- **MEAT CHICKENS – GROW FAST, DIE YOUNG (Year 13) Biology**

In this Biology unit students will demonstrate an understanding of how selective breeding and modification of the expression of existing genes have resulted in meat chickens whose bodies grow significantly faster than normal. Students will consider the biological implications that breeding specifically for increased production has had on the birds' genetic viability, health and well-being, and the ethical considerations and ramifications (pain and suffering, sentience, physical disorders and problems inherent with mass production).

- **UNLOCKING FACTORY FARMS (Year 12) English**

In this English unit students will read and research texts relating to factory farming and form developed, convincing and perceptive conclusions from these texts. Students will explore the issue from a range of perspectives and literary genres in order to explore some of the key concerns, develop new insights and challenge preconceived ideas.

Michael Cullen

## SOCIAL STUDIES | UNIT OF STUDY 1

✳ Year 13 ✳ NCEA AS91600 ✳ Level 3.5 ✳ Credits 4 ✳ Duration 2 Weeks

- THIS UNIT**
- Supports internal assessment for Achievement Standard 91600
  - Examines a campaign of social action(s) to influence policy change(s)

# Taking a Stand Against Factory Farming

How people power has made a difference for factory farmed animals



### TEACHER GUIDELINES

The following guidelines are supplied to enable teachers to carry out valid and consistent assessment using this internal assessment resource.

Teachers need to be very familiar with the outcome being assessed by Achievement Standard Social Studies 91600. The achievement criteria and the explanatory notes contain information, definitions and requirements that are crucial when interpreting the standard and assessing students against it.

### BACKGROUND

On 3 December 2015 the use of dry sow stalls to house pregnant pigs was banned in New Zealand, after a five-year phase-out.

The campaign to ban sow stalls took many years to achieve a result. Animal advocates and other concerned individuals worked tirelessly to free the pigs from this cruel farming system.

The use of sow stalls has been reduced to the first four weeks of pregnancy in the European Union and banned in the United Kingdom, Sweden and some parts of the United States and Australia.

The success of this social action campaign relied on a series of key elements:

- A clear end goal
- Extensive knowledge of the issue
- Continual efforts to raise public awareness
- Strategic direct action
- Investigation and exposure of the conditions of the pigs on farms
- Comprehensive education materials
- A clear call for action from the public
- Resourceful use of the media
- Passionate and sincere 'champions'
- Well-organised and effective promotion and advertising
- Cooperation between organisations and supportive community and political groups
- Sustained fundraising efforts.

## CONTEXT/SETTING

This activity requires students to write a report to describe a campaign of social action(s) undertaken by New Zealand animal advocacy organisations.

The campaign students will focus on for this assessment is **the opposition to the use of the dry sow stall on factory farms**.

Students will also explain how animal advocacy groups managed to influence changes to New Zealand’s animal welfare legislation.

Before beginning this activity, provide opportunities for the students to explore:

- animal advocacy groups in New Zealand
- factory farming practices
- a range of social action components: media (media releases, interviews, blogs), promotion (advertising, billboards, posters, bumper stickers, social media, etc), exposure (gathering of evidence, investigation, undercover footage), education (stalls, leaflets, public talks, website), call for action (petitions, pledges, online polls, submissions), direct action (protests, vigils, street theatre), mobilisation (enlisting supporters)
- how campaigns against factory farming have achieved legislative change, societal change and changes for animals
- how animal advocacy campaigns relate to the Social Studies concepts (e.g. values, perspectives, rights, responsibilities and identity).



## CONDITIONS

It is suggested that students have two weeks of class time to complete this assessment.

## RESOURCE REQUIREMENTS

Internet access.

## ACHIEVEMENT CRITERIA

Achievement	Achievement with Merit	Achievement with Excellence
Examine a campaign of social action(s) to influence policy change(s).	Examine, <b>in depth</b> , a campaign of social action(s) to influence policy change(s).	Examine, <b>comprehensively</b> , a campaign of social action(s) to influence policy change(s).

## SOCIAL STUDIES | UNIT OF STUDY 1

\* Year 13 \* NCEA AS91600 \* Level 3.5 \* Credits 4 \* Duration 2 Weeks

- THIS UNIT**
- Supports internal assessment for Achievement Standard 91600
  - Examines a campaign of social action(s) to influence policy change(s)

# Taking a Stand Against Factory Farming

How people power has made a difference for factory farmed animals



### INTRODUCTION

Industrialised agriculture emerged after World War II. A number of circumstances converged: mechanisation, the use of assembly lines, and the desire for cheap meat and eggs. Animals were taken out of the paddocks and crammed together in cages and crates in dark sheds. Automated systems for feeding, lighting and egg collecting were introduced and the animals essentially became 'cogs' in the machine.

As the animals on factory farms are hidden away in inconspicuous sheds on remote farms, the public remains blissfully unaware of the conditions in which they are kept. In a further alignment of circumstances, the age of technology, media saturation and determined animal activists with digital cameras have exposed the cruel conditions on factory farms.

Animal advocacy groups are now actively campaigning to reveal this carefully guarded industry and help the animals on factory farms.

This assessment activity requires you to write a report examining a campaign of social action(s) undertaken by New Zealand animal advocacy organisations in response to factory farming practices.

You will also explain how these organisations have managed to influence changes to New Zealand's animal welfare legislation.

You will be given two weeks of class time to complete this assessment. During this time you will be required to research your topic and present your findings as a written report.

You will be assessed on the depth and comprehensiveness of your examination of the selected campaign.

### TEACHER NOTE

*You can adjust the time frame of this task to meet the needs of your students.*



## TASK

**Write a report examining a campaign against factory farming and how it has influenced change.**

You need to apply your understanding of Social Studies concepts (e.g. policy, change, responsibility, rights, perspectives, values) and provide specific evidence in your analysis of the campaign.

Include in your report:

- a description of factory farming from a range of different points of view (animal advocates, industry, consumers, politicians and farmers)
- a description of the animal advocacy groups' plan and aims for the campaign (SAFE and Open Rescue/Farmwatch)
- an explanation of the differing reasons for animal advocacy groups being involved in this campaign
- an explanation for the animal advocacy groups' reasons for selecting the actions within the campaign
- an exploration of the real and potential consequences of the animal advocacy groups' campaign
- a critical evaluation of the effectiveness of the campaign, including possible modifications which could have been made to improve the campaign's influence on policy.

See pages 15-17 for a list of suggested resources to inform your report.

You may use relevant images, statistics, graphs, points of view, quotes or captions to support your ideas in your report. You may use your class notes relating to this topic to assist you.

You may work individually, in pairs or in groups to collect the required information, but your report will be completed individually.

## TEACHER NOTE

*Although the research component of this task is not assessed, you may encourage the students to hand in their rough notes or to keep a research log and bibliography to ensure the authenticity of their work.*

## TASK CONTINUED

## FOCUS TOPIC FOR FACTORY FARMING REPORT

## Love Pigs Not Pork campaign

## Legislative change achieved – sow stalls banned at the end of 2015.

In 2007 SAFE decided to embark on a single-issue campaign with the goal to ban the use of sow stalls (crates used to house pregnant female pigs) in New Zealand. Animal rights and welfare groups had been campaigning against the factory farming of pigs in crates for many years prior to the launch of the Love Pigs Not Pork campaign and public awareness was slowly growing. As an animal rights group SAFE tended to campaign on a number of issues without focusing on one in particular.

SAFE took the strategic decision in 2007 to work purposefully towards a sow stall ban. After three years of intensive campaigning, in December 2010 the government announced a ban on the use of sow stalls, effective from December 2015. A five-year phase-out period allowed farmers to prepare for the ban.



With regard to a social action campaign how was this legislative change achieved?

Consider the following questions when preparing your report.

## The Issue: Sow Stalls

1. Why were animal advocacy groups concerned about factory pig farming?
2. What was the situation for factory farmed pigs in New Zealand during the time of the Love Pigs campaign?
3. What did the animal advocates want to achieve for pigs?

## Collection of Evidence/Exposure

4. How was evidence regarding the inhumane treatment of pigs on factory farms gathered? What risks were involved and were they justified?
5. What kinds of evidence relating to animal cruelty did the animal advocates collect? Which pieces of evidence had the most impact and why?
6. What factors do you think contributed to Mike King's involvement in the exposé of factory pig farming on the *Sunday* show in 2009 having such an impact?

## Media

7. How did the animal advocacy groups engage with the media?
8. What was the media's response to the *Sunday* show item in 2009?
9. Do you think the animal advocacy spokesperson(s) had a strategy when interviewed by the media? What was the core message they were trying to communicate?
10. Research the elements of a successful interview. Did the animal advocates succeed in promoting their social action?

## Promotion/Advertisements

11. In what ways did the animal advocates promote their social action?
12. Which of the promotion materials do you think were the most effective and engaging, and why (e.g. use of celebrities, strong imagery, identification with one animal)?

## TASK CONTINUED

### FOCUS TOPIC FOR FACTORY FARMING REPORT CONTINUED

#### Education

13. What kinds of educational material did the animal advocacy groups produce and why?
14. Who was the main audience (consumers, women, men, school students, elderly people, ethnic groups, those with sympathetic values)? Was any effort made to target the key audience?
15. How was the information packaged in order to quickly engage the audience?

#### Call For Action

16. In what ways did the animal advocacy groups ask the public to take action?
17. What kind of language and visual strategies did the animal advocates use to attract the public to their cause?
18. How effective do you think the various calls for action implemented by the animal advocates were?

#### Direct Action (Demonstrations/ Public Protest)

19. What different kinds of direct action did the animal advocates employ?
20. Why do you think the animal advocates chose the types of direct action they carried out?

#### Mobilisation

21. In what ways did the animal advocates enlist supporters to the campaign?
22. Who were the animal advocates directing their actions towards in order to create change for animals?



## RESOURCES

## SHORT WRITTEN TEXTS

## Media Releases

- p. 139 **SAFE.**  
**'Mike King latest celebrity kingpin to condemn New Zealand pig cruelty'**. May 2009.  
Media release announcing the shocking exposé of a NZ factory pig farm by Mike King and the Sunday show. Pigs were found to be living in squalid conditions with open sores and injuries. One pig was dead in her stall.
- p. 140 **SAFE.**  
**'Welfare laws fail pigs miserably'**. July 2009.  
Media release criticising the MAF report that cleared the pig farm featured in the Sunday exposé despite public outrage and even Prime Minister John Key declaring that he found the programme "very, very disturbing".
- p. 141 **SAFE.**  
**'Consumer ad campaign challenges pig industry'**. July 2010.  
Media release about the launch of SAFE's new 'Don't be fooled' consumer campaign which exposed the '100% New Zealand Welfare Approved Pork' label as a fraud.
- p. 142 **SAFE.**  
**'Disturbing new pig cruelty footage reveals no change to pig welfare'**. April 2010.  
Media release following up on the 2009 pig farm exposé. Activists visit Waikato pig farms and reveal appalling conditions and pig suffering on the farms.
- p. 143 **SAFE.**  
**'Govt fails to ban factory-farmed animals'**. November 2010.  
Media release condemning the government for deliberately voting against the Animal Welfare (Treatment of Animals) Amendment Bill that would have seen sow crates and battery cages banned within five years.
- p. 144 **SAFE.**  
**'Sow stall ban first important step'**. December 2010.  
Media release celebrating the announcement that the NZ Government has banned sow stalls from 2016. SAFE vows to continue campaigning in order to ban farrowing crates as well.

## Newspapers/Magazines

- p. 145 **NZPA.**  
**'Comedian does U-turn on pork'**. 17 May 2009.  
Comedian Mike King, who used to front the campaign promoting pork products, says the "callous and evil" practice of crate farming pigs should be outlawed immediately.
- p. 146 **NZPA.**  
**'Key finds pig probe "disturbing"'**. 18 May 2009.  
Prime Minister John Key says he found television footage of intensive pig farming "very, very disturbing".
- p. 147 **Manawatu Standard.**  
**'Piggery practice legal but not acceptable'**. Editorial. Cummings, Michael. 20 May 2009.



The power of publicity may have just saved tens of thousands of pigs in this country from a tormented life that was only ever made possible by the indifference of the pork industry, and the ignorance of everybody else.

- p. 148 **The Dominion Post.**  
**'To save your bacon, just add celebrity'**. Televue. Clifton, Jane. 21 May 2009.



It can be hard to credit the brute power of the television-created celebrity – greater, it turns out, than the power of television itself. As TV3's Campbell Live reminded viewers on Tuesday, the now infamous footage of suffering pigs that TV One's Sunday programme made so much of this week is absolutely nothing new.

- p. 149 **The Press.**  
**'Let the light shine in'**. Mainlander. Matthews, Philip. 23 May 2009.



It's been a fantastic week for animal rights campaigners, who have finally got the public interested in the welfare of farmed pigs.

- p. 151 **The New Zealand Herald.**  
**'Writing on the wall for sow stalls'**. Editorial. 25 May 2009.  
The Agriculture Minister, David Carter, wants to issue a new welfare code for pigs by the end of the year. This, indeed, may be necessary to prevent a sizeable drop in the purchase of Christmas hams this December.
- p. 152 **Rodney Times.**  
**'Pig farming rules a legal cruelty'**. Opinion. Booth, Pat. 26 May 2009.  
Just about everyone's a loser in the great pork controversy. Particularly the pigs. A few influential humans look and sound unthinking/irresponsible/inhumane in varying degrees.
- p. 153 **The New Zealand Herald.**  
**'Carter gives industry hurry-up on sow crates'**. Politics. 21 July 2009.  
Minister says mood of public is for change before 2015 deadline. The pork industry should address consumer concerns about animal welfare and reductions to the length of time sows can be kept in dry stalls need to kick in sooner, Agriculture Minister David Carter says.

**NOTE: Page numbers refer to Animals in Factory Farms**

## RESOURCES CONTINUED

## WRITTEN AND VISUAL TEXTS

## Advertisements

- p. 186 **SAFE.**  
*'Your Say Matters!'* 2010.  
Newspaper advertisement and submission form asking Prime Minister John Key and NAWAC to ban sow stalls and farrowing crates.

- p. 187 **SAFE.**  
*'Saving Lucy'*. October 2008.



Competition designed to promote the 'Saving Lucy' television advertisement.

- p. 188 **SAFE.**  
*'Finally, this pig has enough room to turn around.'* May 2009.  
SAFE satirical advertisement featured in the NZ Listener food section showing that the only time a mother pig is able to turn around is when her life is over and she is reduced to a piece of bacon in a frying pan.

## Banners

- p. 189 **SAFE.**  
*'Ban the Sow Crate.'* 2006.  
Protest banners.

## Cartoon

- p. 190 **Manawatu Standard.**  
*'Sure, it's an inhumane practice, but the farm would be uneconomic without it!'*  
20 May 2009.  
Cartoon published in the wake of the Sunday exposé of inhumane pig farming practices. The pig farm in question was based in the Manawatu district.

## Leaflet

- p. 194 **SAFE.**  
*'For the love of pigs...'* 2007.  
SAFE campaign leaflet.



## Mail-Out/Campaign Report

- p. 195 **SAFE.**  
*'Meet Lucy - Give Pigs a Chance.'* 2010.  
Mail-out to SAFE supporters asking them to support the Love Pigs campaign.

- p. 196 **SAFE.**  
*'Campaign Report 2008.'* 2008.  
SAFE campaign report showcasing SAFE activities, victories and campaign updates (eight pages).

## Merchandise

- p. 197 **SAFE.**



Range of 'Love Pigs' merchandise. 2007.

## Pledge

- p. 198 **SAFE.**  
*'Take the Pledge Against Pig Cruelty.'* 2009.



Pledge form designed to enable compassionate customers to give feedback to supermarkets that sold factory farmed pig meat.

## Postcards

- p. 199 **SAFE.**  
*'Lobbying for Lucy.'* 2006.  
Postcard to Parliament – asking the Minister to uphold the Animal Welfare Act.
- p. 200 **SAFE.**  
*'Are Your Customers Fed Up With Pig Cruelty?'* 2006.  
Postcard designed for compassionate customers to give to café managers who sold factory farmed pork, bacon or ham.

## Posters

- p. 201 **SAFE.**  
*'Hi! I'm...'* 2008.  
SAFE Love Pigs laminated A4 posters to be worn with a pig costume during direct actions (these were worn on buses, during public events or anywhere a volunteer thought they could make an impact).
- p. 202 **SAFE.**  
*'"Welfare Approved" Pork - Don't be Fooled!'* 2010.  
Poster alerting the public to the deception involved in the pork industry's 'welfare approved' labelling scheme.
- p. 203 **SAFE.**  
*'Freedom for Pigs Campaign.'* 2008.  
SAFE's 'For the love of pigs...' poster series. Four posters named: *For the love of pigs...; No life for any Mum; Sow stall cruelty; and Ways you can help.*

## Rescue Pack

- p. 204 **SAFE.**  
*'"King of Pork" Turns Pig Defender.'* Love Pigs Rescue Pack. 2009.  
SAFE special campaign rescue pack booklet focusing on the Love Pigs campaign. Featuring Mike King; pig farming Q&A; the true cost of Kiwi pork; and make a difference – take action!

**NOTE:** Page numbers refer to *Animals in Factory Farms*

## RESOURCES CONTINUED

## VISUAL AND ORAL TEXTS ON DVD

## Current Affairs (Pigs)

- **Sunday, TV1** (17 May 2009)  
*If Pigs Could Talk (Part 1)*  
(10 min 59 sec)  
*If Pigs Could Talk (Part 2)*  
(7 min 8 sec)  
*If Pigs Could Talk (Part 3)*  
(8 min 36 sec)  
Mike King – stand-up comic, TV frontman and previously the face of the New Zealand pork industry – accuses the industry he once represented of legalised cruelty to pigs.
- **Close Up, TV1** (18 May 2009)  
*Pork Industry Plunges into Panic*  
(9 min 57 sec)  
Chris Trengrove (Chairman of the New Zealand Pork Board), Hans Kriek (Campaigns Director of SAFE) and Mike King discuss the horrifying conditions the pigs were farmed in, exposed in the 'If Pigs Could Talk' item that aired on the Sunday show the night before.
- **Breakfast, TV1** (18 May 2009)  
*Pork Industry Under Fire*  
(6 min 16 sec)  
SAFE campaigns director Hans Kriek and Mike King discuss the shocking footage of pig cruelty screened on the Sunday programme the night before.

## Advertisements/Promotions

- **Aired on New Zealand national television 2008–9**  
*Saving Lucy* (30 sec)  
SAFE produced this advert to highlight the plight of sows in stalls in New Zealand. The footage was shot on a New Zealand factory farm by animal activists. The extreme close-up of Lucy shows the despair in her eyes, illustrating the fact that animals not only suffer physically in sow stalls but emotionally as well. Soundtrack: 'Where's the door' from the album Cage for a Song by Flip Grater.
- **Aired on New Zealand national television 2009**  
*Love Pigs supermarket advert with Mike King* (45 sec)  
In support of the Love Pigs campaign against sow crates, SAFE reproduced and aired this advert on New Zealand television in 2009.



- **SAFE Inc 2015**  
*Victory! Sow stalls ban* (2 min 35 sec)  
Sow stalls banned! 3 December 2015 is a date for the history books. Following an exposé in 2009 the public took action and 3 December marked the final day of sow stalls in New Zealand – a cruel crate where mother pigs were confined for months on end, unable to even turn around.

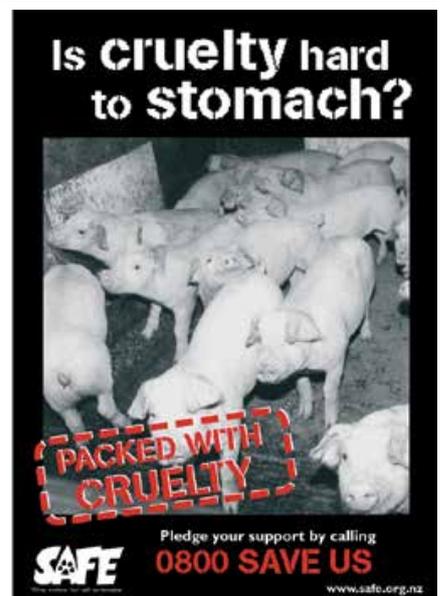
## Educational Videos

- **SAFE Inc Love Pigs Campaign 2009**  
*Factory Farmed Pigs in New Zealand – The Price of Pork*  
(9 min 46 sec)  
Narrated by award-winning actor Robyn Malcolm, the 10-minute documentary-styled presentation makes compelling arguments against factory farming. Robyn takes us through how pregnant sows are cruelly treated inside sow stalls and farrowing crates, and just what happens to the young piglets destined to become pork.  
This film was produced in 2008 as part of SAFE's campaign against factory pig farming. In 2010 the New Zealand Government introduced a phase-out of sow stalls after SAFE's campaign attracted widespread public support. Sow stalls could be used for the first four weeks of the sow's pregnancy and were completely banned in December 2015. Sows continue to suffer in farrowing crates, and fattening pigs can still be kept in barren overcrowded pens.





SAFE volunteers and activists protest against the use of sow crates prior to the 2010 government announcement to ban sow crates in New Zealand



## SCIENCE | UNIT OF STUDY 2

✳ Year 11 ✳ NCEA AS90949 ✳ Level 1.10 ✳ Credits 4 ✳ Duration 2 Weeks

- THIS UNIT**
- Supports internal assessment for Achievement Standard 90949
  - Investigates life processes and environmental factors that affect them

# ‘Normal Behaviour’ in Factory Farms

Investigate what constitutes ‘normal behaviour’ in pigs and chickens and how the confined living environment in factory farms affects these behaviours

### TEACHER GUIDELINES

The following guidelines are supplied to enable teachers to carry out valid and consistent assessment using this internal assessment resource.

Teachers need to be very familiar with the outcome being assessed by Achievement Standard Science 90949. The achievement criteria and the explanatory notes contain information, definitions and requirements that are crucial when interpreting the standard and assessing students against it.



### CONTEXT/SETTING

This activity requires students to investigate two life processes relating to whether (and how) the restrictive physical environment of a factory farm manifests in physical, behavioural and psychological issues for animals confined in cages or crates. The processes that will be investigated are:

- Support and movement (physical biological behavioural needs – in particular, the inability to exercise) in mammals and birds. What happens to the muscles, bones, skin and feathers of mammals and birds when they are unable to exercise adequately?
- Sensitivity (psychological biological needs – the suppression of which can lead to chronic situational depression or adjustment disorder and stereotypical behaviours) in mammals and birds. What happens psychologically to mammals and birds when they are not stimulated socially and emotionally by their living environment?

The task involves practical investigation, interpretation, producing and labelling biological drawings, and the relating of biological ideas to the observations and findings.

The animals most typically kept on factory farms are pigs and chickens. Students may base their findings on these animals or they may undertake a more generic study of the physical biological behavioural and psychological biological needs of mammals and/or birds.

Annotated diagrams and drawings can provide some evidence in this assessment. Note that ‘annotation’ of a diagram or drawing includes not only labels to identify component parts but also descriptions of colour, textures and so on, and explanations of ‘basic behavioural needs’, both individually and together. Hence, annotated diagrams can provide evidence towards Achieved and Merit. Effective annotation is a skill that needs to be overtly taught and practised by students during the learning stage.

## CONDITIONS

Allocate four to five hours to complete the task.

Investigation of the exercise/social/behavioural requirements of mammals and birds will take approximately one hour:

- Comparative ethograms that show the physical differences between long-term confinement and free-roaming situations.
- Diagrams that show the physical effects of long-term inactivity (muscle atrophy, lameness, weight gain or loss, pressure sores, feather loss, cannibalism, etc).
- Charts that describe depressive behaviour (fatigue, lack of energy, agitation, slow movements, lack of responsiveness, stereotypic behaviours).

Students are required to record observations (from photos and video footage) and write about how confinement in cages and crates impacts, physically and psychologically, on the behaviour of mammals and birds.

Students then use their observations, ethograms and other resources to write about each of the life processes and an environmental factor that affects each (EN 3, 4 and 5).

Students could use their observations and findings from a fair test investigation carried out for Achievement Standard Biology 90925 *Carry out a practical investigation in a biological context*, with direction to provide evidence for either task, as long as it is in the context of the life processes being investigated for Achievement Standard 90949.

The practical investigations can be carried out in pairs, but the written part is an individual task. The resource-based activities are also to be carried out individually. It is expected that students would have covered the key ideas about support and movement and sensitivity in mammals and birds as part of their teaching and learning programme.

Life processes may be selected from: support and movement, reproduction, sensitivity, growth, excretion, nutrition and gas exchange. At least two of these processes must be selected (EN 6).

Environmental factors that affect life processes may be internal or external and may include: temperature, pH, light intensity, photoperiod, moisture levels, concentration of gases, hormone levels and nutrient supply (EN 7).



Biological ideas relating to a life process include the following (EN 8):

- structural features of the organism, such as its organ system or tissues as appropriate to the organism
- functioning of the components of any organ system or tissues
- identifying the biological processes carried out by the organ system or tissues
- environmental factors that affect the life processes.

## RESOURCE REQUIREMENTS

Students will need access to the following resources in order to complete the activity:

- Internet access
- Video footage and photographs of pigs and chickens confined in crates and cages
- Video footage and photographs of pigs and chickens living in free-roaming situations
- Books and articles that describe the social and behavioural needs of mammals and birds
- Ethograms that depict normal behaviour in mammals and birds.

**NOTE: Some resource materials showing animals in cages and crates may be upsetting to the more sensitive members of your class.**

## ACHIEVEMENT CRITERIA

Achievement	Achievement with Merit	Achievement with Excellence
Investigate life processes and environmental factors that affect them.	Investigate, <b>in depth</b> , life processes and environmental factors that affect them.	Investigate, <b>comprehensively</b> , life processes and environmental factors that affect them.

## SCIENCE | UNIT OF STUDY 2

\* Year 11 \* NCEA AS90949 \* Level 1.10 \* Credits 4 \* Duration 2 Weeks

- THIS UNIT**
- Supports internal assessment for Achievement Standard 90949
  - Investigates life processes and environmental factors that affect them

# ‘Normal Behaviour’ in Factory Farms

Investigate what constitutes ‘normal behaviour’ in pigs and chickens and how the confined living environment in factory farms affects these behaviours



### NOTE

The New Zealand Animal Welfare Act 1999 specifies that, when responsible for an animal, people must provide for their physical, health and behavioural needs by ensuring the animal has the ‘opportunity to display normal patterns of behaviour’.

Source: Animal Welfare Act 1999, section 4

[www.legislation.govt.nz/act/public/1999/0142/latest/DLM50286.html](http://www.legislation.govt.nz/act/public/1999/0142/latest/DLM50286.html)

Retrieved 20 March 2015

As a result of this debate PIANZ (Poultry Industry Association of New Zealand) has introduced a new ‘enriched’ cage for layer hens called a colony cage.

### INTRODUCTION

The debate surrounding the welfare of animals in factory farms has hinged on whether or not the animals have the opportunity to display normal patterns of behaviour (see note at left).

### WHAT ARE THE LIVING CONDITIONS OF CHICKENS AND PIGS IN FACTORY FARMS?

#### Colony cage stocking densities

- Must be a minimum of 750cm<sup>2</sup> per hen or 13 hens per m<sup>2</sup>.

Source: Animal Welfare (Layer Hens) Code of Welfare 2012 p. 16

#### Colony cage dimensions (see diagram p. 23)

- 300cm length
- 150cm width
- 45cm height

#### Farrowing crate dimensions (see diagram p. 24)

- 210-235cm length
- 70-90cm width
- 90cm height

**Sow crates** were banned from 2016 but farrowing crates remain legal.

**NOTE: This is the space allocated for the sow only, not sow and piglets.**

Source: PigCare Farrowing Assessment May 2011, [www.freshporkfarmers.co.nz/audit/3\\_farrowing.pdf](http://www.freshporkfarmers.co.nz/audit/3_farrowing.pdf) (retrieved 23 November 2015)

## INTRODUCTION CONTINUED

Colony cages and farrowing crates are legal despite the Animal Welfare Act specifying that animals need to have the opportunity to display 'normal patterns of behaviour'.

Scientists are regularly asked to weigh into this debate in order to prove whether or not animal welfare is compromised in these situations. This task asks you to investigate whether these two farming systems (colony cages and farrowing crates) allow hens and pigs to behave 'normally'.

### TEACHER NOTE

*Insert time allowances for each task. Specify the resources being provided (e.g. ethograms, video footage and reading texts).*

### QUESTIONS TO ANSWER

- What is 'normal' behaviour for pigs and chickens?
- How much and what kind of physical exercise do pigs and chickens require to remain healthy?
- What kind of temperament does the animal have (in relation to visual, auditory and sensory stimuli)?
- What are the normal 'home ranges' of pigs and chickens?
- How important (psychologically) are nest building, dust or mud bathing and social relationships to pigs and chickens?
- What evidence is there that animals placed in extreme confinement suffer from depression and anxiety?

This task requires you to investigate two life processes in an animal context and the environmental factors that affect them.

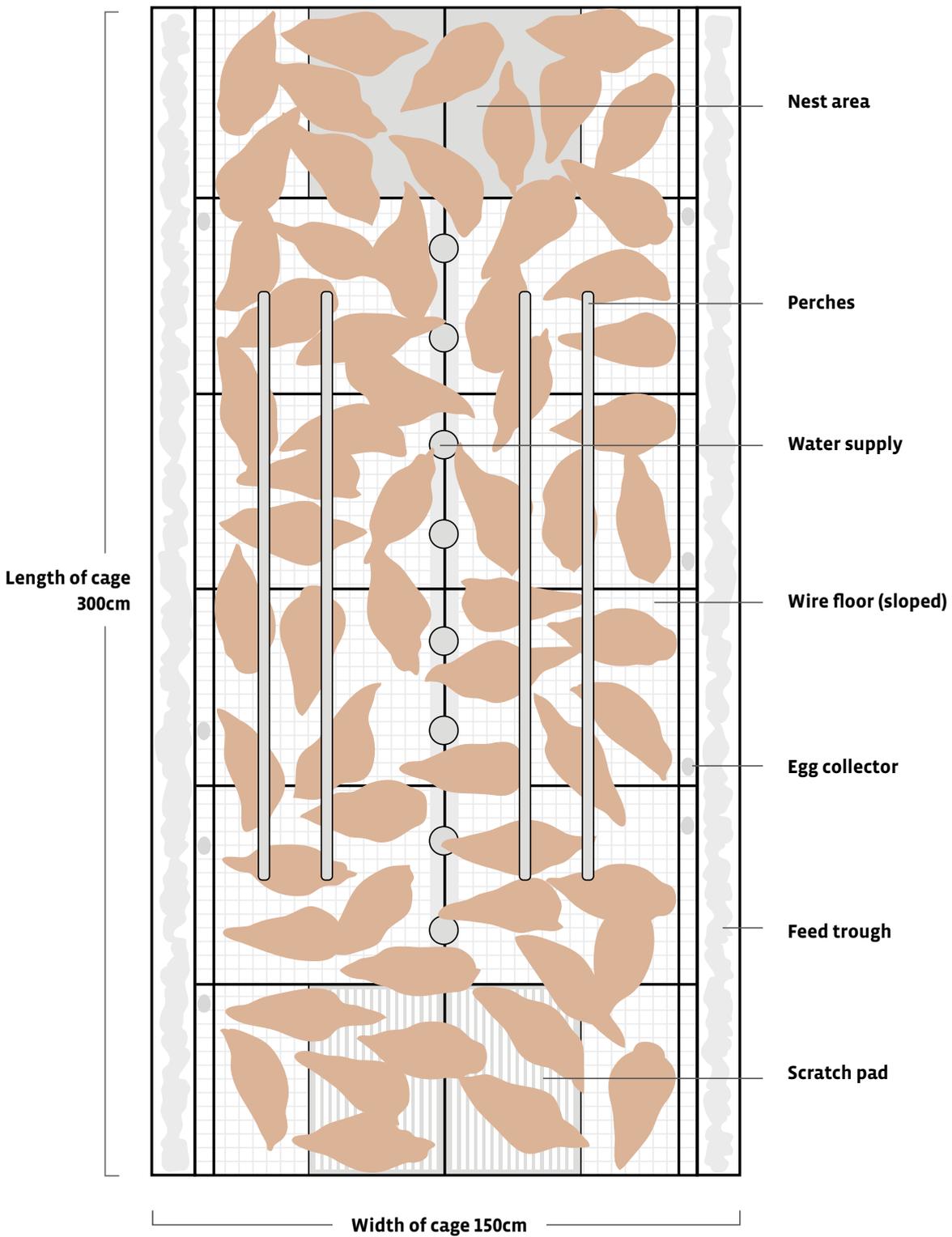
These are 'support and movement' and 'sensitivity'. The environmental factor is 'restraint of movement'.

- **Support and movement** (physical biological behavioural needs – in particular, the inability to exercise) in mammals and birds. What happens to the physiology of mammals and birds when they are unable to exercise or move around adequately?
- **Sensitivity** (psychological biological needs – the suppression of which can lead to chronic situational depression or adjustment disorder and stereotypical behaviours) in mammals and birds. What happens psychologically to mammals and birds when they are not stimulated socially and emotionally by their living environment?

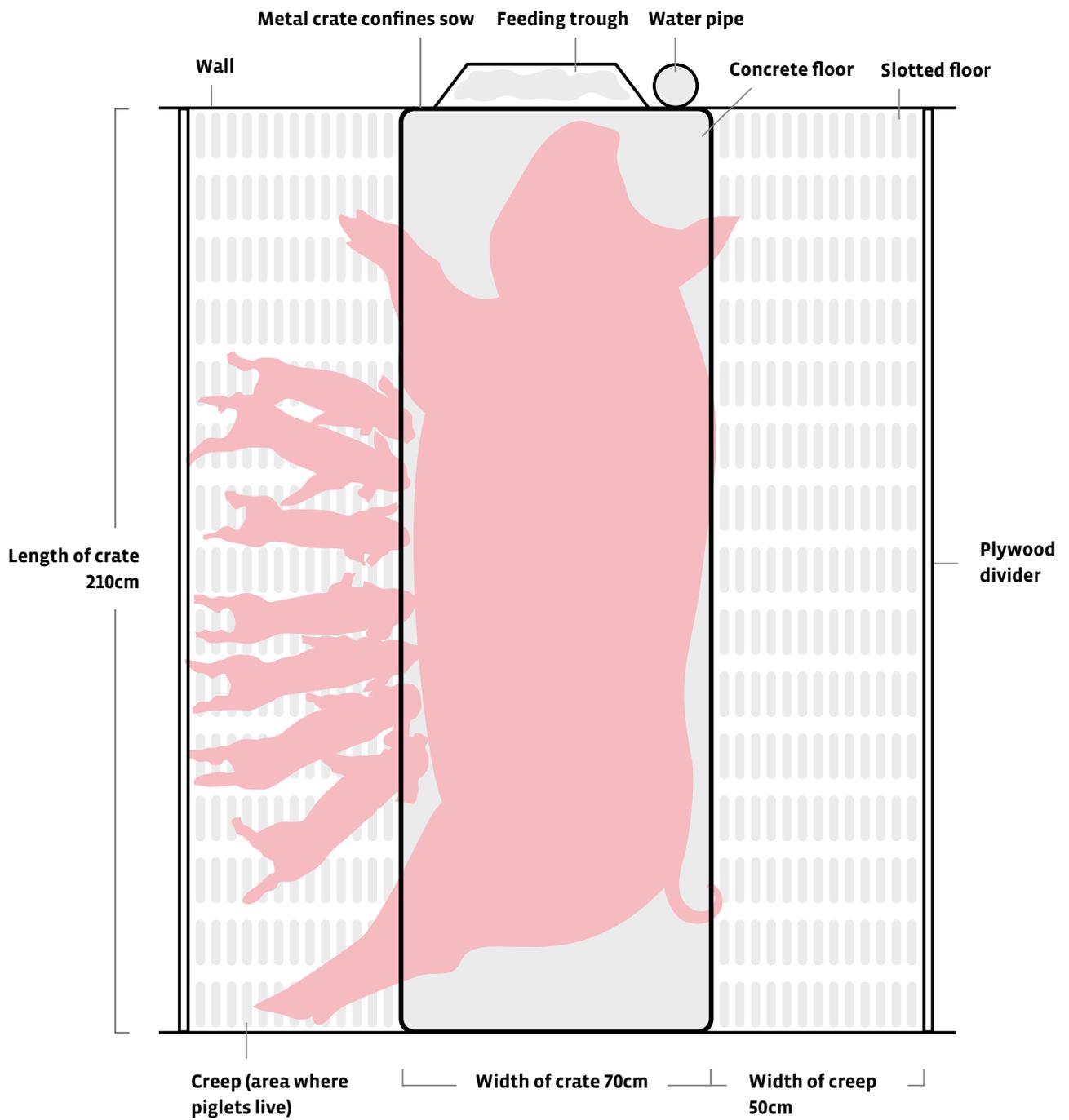
The practical investigations can be carried out in pairs but all other work, including the annotation of drawings and diagrams, is individual.



**Colony Layer Hen Cage Illustration (750cm<sup>2</sup> per bird = 150cm x 300cm)**



**Farrowing Crate Illustration (210cm length, 70cm width, 90cm height)**



## TASK

There are several parts to this task. Complete all parts.

### INVESTIGATION OF 'NORMAL BEHAVIOUR'

Use the ethograms provided to collect, record and graph data on normal behaviours in pigs and chickens. You can use the observational footage provided on the *Animals in Factory Farms* DVD.

#### Behaviour Sampling

Behaviour can be observed in two main ways: physical, relating to movement; and emotional, in relation to responses and interactions with others and/or the environment. A physical movement can be restricted or modified due to environment; an emotional reaction may also occur due to stress or distress caused by physical or social environments.

All animals have a behavioural 'repertoire': a set of behaviours that are common to that animal. These could be grooming, dust bathing, foraging, pecking or digging. Some behaviours (sleeping) are continuous; others are repeated sequences (pecking). A series of ethograms has been created for you to use that contains some of the most common behaviours for hens and pigs. These have been applied to the two different circumstances for each set of animals (living outdoors or living inside a factory farm). When collating your data you will be looking for 'action patterns'. These are series of behaviours that the animal makes during the observation period. You will be comparing behaviours and action patterns from the animals living in factory farms with the animals living outdoors in a more natural setting.

Things to consider are:

- the presence or absence of a particular action/activity
- how frequently an action/activity occurs
- how long an action/activity occurs
- whether there are any factors that affect the timing of the action/activity
- how intense or apathetic the action/activity is.



#### PART 1: COLLATE YOUR DATA

There are a number of ways you can collate your data. Examples have been provided of how you can collate your results. It is possible to do this in a variety of ways:

**Behaviour sampling** (conspicuous behaviour recording) = looking for only one or two kinds of behaviour. This is useful when looking for rare behaviours.

**Point sampling** (instantaneous sampling) = recording behaviours that happen at regular, predetermined points in time (e.g. every 15 seconds). This method can allow a number of activities to be recorded if numerous individuals are being observed, but can miss some behaviours.

**Period occurrence** (one-zero sampling) = recording behaviours that occur within a set period of time (e.g. during a ten-minute time period). This method can also allow a number of activities and individuals to be observed and can capture rare behaviours. Depending on the period of time some behaviours may be missed.



## TASK CONTINUED

## PART 2: DATA ANALYSIS

Use the chi-square test to identify significant differences between the behaviours of the animals in factory farms and those living outdoors.

$$\chi^2 = \sum \frac{(o-e)^2}{e}$$

where

$\chi^2$  is Chi-squared,  
 $\sum$  stands for summation,  
 o is the observed values, and  
 e is the expected values.

## Observation Footage on DVD



- **Non-Caged Hen**  
**Hen at The Animal Sanctuary at Matakana**  
 (Raw footage filmed on 11 June 2015)  
*Footage of a hen called Blue who lives at The Animal Sanctuary. This footage was filmed over one day and has been edited into 110 15-second fragments.*  
 (Duration 27 min 44 sec)

## Observation Footage on DVD



- **Caged Hens**  
**Hens in a New Zealand colony cage system**  
 (Raw footage filmed on 28 June 2015)  
*Footage of layer hens in a colony cage on a New Zealand factory farm. This footage was filmed over one day and has been edited into 84 15-second fragments.*  
 (Duration 24 min 14 sec)

## Observation Footage on DVD



- **Non-Crated Pig**  
**Pig at The Animal Sanctuary at Matakana**  
 (Raw footage filmed on 11 June 2015)  
*Footage of a pig called Jose who lives at The Animal Sanctuary. This footage was filmed over one day and has been edited into 110 15-second fragments.*  
 (Duration 27 min 30 sec)

## Observation Footage on DVD



- **Crated Pigs**  
**Pigs in farrowing crates on Blantyre Farms, NSW, Australia**  
 (Raw footage filmed in April 2013)  
*Footage of sows and piglets in farrowing crates on an Australian factory farm.*  
 (Duration 22 min 56 sec)

## TEACHER NOTE

Students could use their observations and findings from a fair test investigation carried out for Achievement Standard Biology 90925 'Carry out a practical investigation in a biological context, with direction'.

## Descriptive Ethogram of the Domestic Hen

**Table 1. Behaviours that are possible in both cages and outdoors**

Behaviour	Description
Displace (DP)	The bird pushes past another hen and takes her place.
Head flick (HF)	The bird remains immobile except for the head moving to the side or up and down; the neck remains relatively still.
Mounting (MT)	The bird climbs onto the back of another bird.
Resting (RT)	An apparent sleepy state with eyes closed. Usually performed while sitting but sometimes while standing.
Ruffling feathers (RF)	Action of ruffling or shaking all feathers.
Sitting (SG)	The bird remains in a sitting position for at least five seconds.
Standing (ST)	The bird remains immobile and erect for at least five seconds.

**Table 2. Behaviours that are limited but possible in cages**

Behaviour	Description
Avoidance (AV)	The bird changes direction in order to avoid another bird.
Lying down (LD)	The bird sits or lies down on the ground.
Opening wings (OW)	The bird flaps both wings.
Perching (PC)	The bird sits or stands on a perch.
Preening (PN)	The bird grooms her feathers with her beak.
Stretching (SH)	The bird stretches one wing and one leg from the same side.
Walking (WK)	The bird walks from one point to another.

**Table 3. Behaviours that can be difficult or impossible to carry out in a cage**

Behaviour	Description
Bob (BB)	The bird repetitively moves the head and neck backwards and forwards (usually while walking or prior to laying an egg).
Chasing (CH)	One bird chases after another in an aggressive manner.
1. Dust bathing (DB) or 2. Sham dust bathing (SDB)	1. The bird lowers her body into the soil and scratches with her feet to release dust up into her feathers. She ruffles her feathers and wings at the same time. 2. The bird lowers her body and mimics the movements consistent with dust bathing (scratching feet and ruffling feathers).
1. Foraging (FG) or 2. Sham foraging (SFG)	1. Movement of scratching the ground backwards with her feet in search of food. 2. The bird extends her head towards the floor of the cage while standing or sitting so the head cannot be seen. (Note: This could be some kind of 'sham' foraging behaviour.)
Nesting (NT)	The bird retreats to a nesting area to lay an egg.
Running (RN)	Movement of the bird between two points at high speed.
Sun bathing (SB)	The bird lies on the ground and fans out one of her wings.
Threatening (TH)	The bird targets another bird and chases her.

**Table 4. Behaviours that can become excessive in cage environments**

Behaviour	Description
Drinking (DK)	The bird drinks.
Eating (ET)	The bird eats.
1. Object peck (OP) or 2. Cage peck (CP)	1. The bird pecks at an object in her environment repeatedly that is not food, water, the ground or another bird. 2. The bird pecks at any object in the cage other than food, water, floor or another bird (often performed in a repetitive stereotyped manner).
Pecking (PK)	The bird aggressively pecks at any body part of another bird.

## Descriptive Ethogram of the Pig

**Table 5. Behaviours that are possible in both crates and outdoors**

Behaviour	Description
Chewing (CW)	The pig chews on food.
Drinking (DK)	The pig drinks.
Eating (ET)	The pig eats.
Nursing (NG)	The sow lies with piglets at her udders.
Resting (RT)	The pig lies still with eyes closed for at least five seconds.
Shakes (SK)	The pig shakes her body.
Sitting (SG)	The pig remains in a sitting position for at least five seconds.
Standing (ST)	The pig remains immobile and erect for at least five seconds.
Stretch (SH)	The pig stretches.
Yawns (YN)	The pig yawns.

**Table 6. Behaviours that are limited but possible in crates**

Behaviour	Description	
1. Exploring (EP) or 2. Sham exploring (SEP)	1. The pig smells and touches her surroundings with her nose.	2. The pig smells and touches her crate with her nose.
Greeting (GR)	Gentle touching of snouts or grunt of greeting.	
Itching (IT)	The pig scratches against an object.	

**Table 7. Behaviours that can be difficult or impossible to carry out in a crate**

Behaviour	Description
Chase (CH)	One pig chases after another.
Communal nesting (CN)	Pigs sleep on top of each other.
Fighting (FT)	One pig fights with another pig (aggressive biting, jumping on).
Foraging (FG)	The pig searches for food, sniffing the ground and upturning leaves and soil with her snout.
Mud bathing (MB)	The pig wallows in mud.
Nest building (NB)	The pregnant sow seeks out a secluded location and builds a nest from twigs and grass.

Behaviour	Description
Nosing (NS)	The pig smells a newcomer to the group.
Playing (PY)	The pig plays with other pigs (non-aggressive ramming with head, lifting with snout).
Rooting (RO)	The pig uses her snout to upturn soil in search of food.
Running (RN)	Movement of the pig between two points at high speed.
Threatening (TH)	Dominant pig barks at subordinate pig.
Walking (WK)	The pig walks from one point to another.

**Table 8. Behaviours only seen in crate environments**

Behaviour	Description
Abnormal behaviour (AB)	Persistent biting of the ear or tail of another pig and bar biting.
Backing up (BU)	The pig backs up into the rear of the crate.
Difficult ascent (DA)	The pig moves awkwardly from lying to standing in an effort to avoid trampling on her piglets or due to leg weakness.
Difficult descent (DD)	The pig slowly moves awkwardly from standing to lying in an effort to avoid lying on top of her piglets.
Dog sitting (DS)	The pig lies in an abnormal position with her front legs low and extended and her rump elevated.

Behaviour	Description
Food seeking (FS)	The pig places her head into empty feeder.
Head weaving (HW)	The pig repetitively rolls her head in circles.
Phantom rooting (PRT)	The pig repetitively makes an upward movement of her snout (mimicking the rooting up of soil in search of food).
Sham chewing (SC)	The pig chews on imaginary food source.
Unresponsive (UN)	The pig is unresponsive to direct stimuli.

### Ethogram Results

**Table 9. EXAMPLE of results table for domestic hen behaviour (caged or unconfined)**

Time (min/sec)	Behaviour																TOTAL										
	AV	BB	CH	CP	DB	DK	DP	ET	FG	HF	LD	W	PC	PK	PN	RF		RN	RT	SB	SDB	SFG	SG	SH	ST	TH	WK
0	x																										
0.15					x															x							
0.30	x																									x	
0.45							x																				x
1											x																x
1.15																											
1.30																		x									
1.45																											
2																											
2.15																											
2.30																											x
2.45																											
TOTAL	2				1	2	1				1																3

Place an 'x' at the time the hen displays the coded behaviour.

**NOTE**

Select up to four behaviours for each animal.

Expand these results tables to include more time as necessary.

Indicate whether the results are from caged, crated or unconfined animals.

**Table 10. EXAMPLE of results table for domestic pig behaviour (crated or unconfined)**

Time (min/sec)	Behaviour																								TOTAL												
	AB	BU	CH	CN	CW	DA	DD	DK	DS	EP	ET	FG	FS	FT	GR	HW	IT	MB	RT	PY	RN	RO	RT	SC		SEP	SG	SH	SK	ST	TH	WK	UN	YN			
0																																					
0.15																						x													x		
0.30																x																					
0.45																																					
1																																					
1.15																																					
1.30																																					
1.45																																					
2																																					
2.15																																					
2.30																																					
2.45																																					
TOTAL	2																																				

Place an 'x' at the time the pig displays the coded behaviour.



### PART 3: INVESTIGATION OF ANIMAL BEHAVIOUR

Tabulate your results and draw a graph of behaviour types for crated/caged and non-crated/caged animals.

Use your graphed data to interpret trends in behaviour.

Explain which behaviours are most prevalent in each situation, and how these behaviours contribute to the life processes of support and movement and sensitivity for the animals concerned.

### PART 4: HEALTH AND WELL-BEING

Read the information about the physical and social needs of pigs and chickens (see recommended reading list on pages 31-32).

Describe the types of behaviour pigs and chickens need on a daily basis to remain physically and socially healthy.

Explain how the environmental constraint of crates or cages physically and psychologically impacts on the biological behavioural needs of pigs and chickens.

### PART 5: NORMAL VS ABNORMAL BEHAVIOUR

Use your findings to discuss which behaviours are normal and which are abnormal (maladaptive or malfunctional). Explain the influence of environment in contributing to these behaviours.

### PART 6: WELFARE AND THE LAW

Imagine you have been asked by the National Animal Welfare Advisory Committee (NAWAC) to provide scientific evidence on whether farrowing crates or colony cages meet the requirements of the Animal Welfare Act 1999 in regard to the opportunity for animals farmed in farrowing crates and colony cages to display normal patterns of behaviour.

Try to be impartial in regard to the species of animal (coming to the same conclusion regardless of whether the animal concerned is a pig or a dog, or a chicken or a kiwi) placed in this environment.

What would your conclusion be in regard to whether farrowing crates and colony cages meet the requirements of the Animal Welfare Act 1999 in regard to the animals' ability to display normal patterns of behaviour?

### EXTENSION EXERCISE

**Write a 750-word essay for NAWAC describing how intensive farming systems (farrowing crates and colony cages) impact physiologically and psychologically on hens and pigs. Use sources from the reading materials provided in this textbook to back up your arguments. Provide an ethical comment on the morality of intensive farming practices.**

## RESOURCES

## EXTENDED WRITTEN TEXTS

## Non-Fiction (extracts from)

- p. 64 Appleby, Michael C., Mench, Joy A. and Hughes, Barry O. (2004). *Poultry Behaviour and Welfare*.
- p. 67 Broom, D.M. and Fraser, A.F. (2007). *Domestic Animal Behaviour and Welfare*.
- p. 81 Marchant-Forde, Jeremy N. (ed) (2009). *The Welfare of Pigs*.

## SHORT WRITTEN TEXTS

## Government Publications

- p. 112 National Animal Welfare Advisory Committee (NAWAC). *Code of Welfare – Layer Hens* (2012). NZ Government.
- p. 114 National Animal Welfare Advisory Committee (NAWAC). *Code of Welfare – Pigs* (2010). NZ Government.

## Journals

- p. 121 Webster, A.B. and Hurnik, J.F. (1990). 'An Ethogram of White Leghorn-Type Hens in Battery Cages'. *Canadian Journal of Animal Science*, Vol 70, Issue 3.
- p. 124 Vieuille-Thomas, C., Le Pape, G. and Signoret, J.P. (1995). 'Stereotypies in pregnant sows: indications of influence of the housing system on the patterns expressed by the animals'. *Applied Animal Behaviour Science*, Vol 44, Issue 1.

- p. 128 Weaver, S.A. and Morris, M.C. (2004). 'Science, Pigs, and Politics: A New Zealand Perspective on the Phase-Out of Sow Stalls'. *Journal of Agricultural & Environmental Ethics*, Vol 17, Issue 1.

## Report

- p. 179 Von Borell, E., Broom, D.M., Csermely, D., Dijkhuizen, A.A., Hylkema, S., Edwards, S.A., Jensen, P., Madec, F. and Stamataris, C. (1997). *The Welfare of Intensively Kept Pigs*. Report of the Scientific Veterinary Committee.

## VISUAL AND ORAL TEXTS ON DVD

## Behavioural Footage

- **Colony caged hens** (2015) (24 min 14 sec)
- **Crated sows** (2013) (22 min 56 sec)
- **Outdoor hen** (June 2015) (27 min 44 sec)
- **Outdoor pig** (June 2015) (27 min 30 sec)

## Activist Footage

- **Farmwatch. 'Farrowing Crates: A Life of Torment for Pigs'** (4 min 31 sec) (September 2014).
- **SAFE Inc. 'Footage of an NZ Colony Cage System'** (1 min 33 sec). Mainland Poultry, Waikouaiti (2012).

## VISUAL AND ORAL TEXTS ONLINE

## Current Affairs (Layer Hens)

- **Campbell Live. Caged colony or free range eggs – do you know what you're buying?**, 7 August 2014, 15 min 40 sec, accessed 15 September 2016. [www.3news.co.nz/tvshows/campbelllive/caged-colony-or-free-range-eggs-do-you-know-what-youre-buying-2014080719](http://www.3news.co.nz/tvshows/campbelllive/caged-colony-or-free-range-eggs-do-you-know-what-youre-buying-2014080719)
- **Campbell Live. Chickens, eggs, colony systems: What's the big secret?**, 25 July 2011, 7 min 32 sec, accessed 15 September 2016. [www.3news.co.nz/tvshows/campbelllive/chickens-eggs-colony-systems-whats-the-big-secret-2011072520](http://www.3news.co.nz/tvshows/campbelllive/chickens-eggs-colony-systems-whats-the-big-secret-2011072520)
- **Campbell Live. Video reveals replacement for battery hen cages in NZ**, 19 March 2012, 9 min 3 sec, accessed 15 September 2016. [www.3news.co.nz/tvshows/campbelllive/video-reveals-replacement-for-battery-hen-cages-in-nz-2012031916](http://www.3news.co.nz/tvshows/campbelllive/video-reveals-replacement-for-battery-hen-cages-in-nz-2012031916)



## OTHER RESOURCES (not in textbook)

## SHORT WRITTEN TEXTS

## Articles

- Grillo, Robert.  
'Chicken Behaviour: An Overview of Recent Science'.  
[www.freefromharm.org/chicken-behavior-an-overview-of-recent-science/](http://www.freefromharm.org/chicken-behavior-an-overview-of-recent-science/)  
Retrieved 24 March 2015
- McCormick Donaldson, Tammy.  
'Is Boredom Driving Pigs Crazy?'  
[www.webpages.uidaho.edu/range556/app1\\_behave/projects/pigs\\_ster.html](http://www.webpages.uidaho.edu/range556/app1_behave/projects/pigs_ster.html)  
Retrieved 25 March 2015

## Conference Paper

- Gaston, W., Armstrong, J.B., Arjo, W. and Stribling, H.L. (2008).  
'Home Range and Habitat Use of Feral Hogs (*Sus scrofa*) on Lowndes County WMA, Alabama'. National Conference on Feral Hogs.  
[www.digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1003&context=feralhog](http://www.digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1003&context=feralhog)

## Journal

- Arshad, Muhammad Irshad and Zakaria, Mohamed (2011).  
'Variation in Home Range Size Exhibited by Red Junglefowl (*Gallus gallus spadiceus*) in Oil Palm Plantation Habitat, Malaysia'.  
*Pakistan Journal of Zoology*, Vol 43(5)  
[www.djurenstt.se/sites/default/files/lund/science.pdf](http://www.djurenstt.se/sites/default/files/lund/science.pdf)



## Reports

- Humane Society Veterinary Medical Association (HSVMA). *HSVMA Report on Gestation Crates* (2013).  
[www.hsvma.org/assets/pdfs/hsvma\\_veterinary\\_report\\_gestation\\_crates.pdf](http://www.hsvma.org/assets/pdfs/hsvma_veterinary_report_gestation_crates.pdf)  
Retrieved 20 March 2015
- Broom, D.M. *Statement of Witness Professor DM Broom – Sows in Farrowing Crates* (2014).  
[www.aussiepigs.com/documents/Pig%20slaughter%20video%20Broom.pdf](http://www.aussiepigs.com/documents/Pig%20slaughter%20video%20Broom.pdf)

## Websites

- Compassion in World Farming (CIWF) *'Farm Animals'*.  
[www.ciwf.org.uk/farm-animals/](http://www.ciwf.org.uk/farm-animals/)  
Retrieved 26 August 2015
- 'Research' *'Species: Laying hens'*.  
[www.ciwf.org.uk/research/species-laying-hens/](http://www.ciwf.org.uk/research/species-laying-hens/)  
Retrieved 26 August 2015

- 'Research' *'Species: Pigs'*.  
[www.ciwf.org.uk/research/species-pigs/](http://www.ciwf.org.uk/research/species-pigs/)  
Retrieved 26 August 2015
- United Poultry Concerns *'Providing a good home for chickens'*.  
[www.upc-online.org/home.html](http://www.upc-online.org/home.html)  
Retrieved 24 March 2015

## VISUAL AND ORAL TEXTS

## Documentaries

- Real Stories BBC Scotland (July 2010). *The Private Life of Chickens*. (59 min 2 sec)  
[www.youtube.com/watch?v=1c06xOF4uQ8](http://www.youtube.com/watch?v=1c06xOF4uQ8)  
Retrieved 27 March 2015
- Real Stories BBC Scotland (May 2015). *The Private Life of Pigs*. (58 min 37 sec)  
[www.youtube.com/watch?v=ixlXruwWOY](http://www.youtube.com/watch?v=ixlXruwWOY)  
Retrieved 2 February 2016





(clockwise) Young pigs in a fattening pen ✳ Layer hens in conventional battery cages (to be phased out in 2022) ✳ A sow in a farrowing crate nurses her piglets ✳ Cage eggs for sale



**BIOLOGY | UNIT OF STUDY 3**

\* Year 13 \* NCEA AS91607 \* Level 3.7 \* Credits 3 \* Duration 3 Weeks

- THIS UNIT**
- Supports internal assessment for Achievement Standard 91607
  - Demonstrates understanding of human manipulations of genetic transfer and its biological implications

# Meat Chickens – Grow Fast, Die Young

**Demonstrate an understanding of how selective breeding and modification of the expression of existing genes impact on the biological fitness of meat chickens and the ethical considerations involved**

**TEACHER GUIDELINES**

*The following guidelines are supplied to enable teachers to carry out valid and consistent assessment using this internal assessment resource.*

*Teachers need to be very familiar with the outcome being assessed by Achievement Standard Biology 91607. The achievement criteria and the explanatory notes contain information, definitions and requirements that are crucial when interpreting the standard and assessing students against it.*

**CONTEXT/SETTING**

This activity requires students to produce a presentation/report (with accompanying visual aids as appropriate) discussing the human manipulation of genetic transfer – i.e. selective breeding and modification of the expression of existing genes of chickens raised for meat (which could include embryo selection, animal breeding, compromised physiological function, resource allocation theory, phenotypes and single-nucleotide polymorphism).

Students need to cover both the human manipulations (selective breeding and modification of the expression of existing genes) and two of the biological implications (genetic biodiversity, health or survival of individuals, survival of populations, evolution of populations and metabolic diseases) in order to demonstrate sufficient understanding at this level.

Suitable assessment formats include a report, a PowerPoint presentation or a speech to an appropriate audience. In these formats, students may need to submit more supporting evidence on the human manipulation of meat chickens and resulting biological implications to meet the requirements of the achievement criteria.

**CONDITIONS**

It is suggested that this assessment will take approximately three weeks of in-class and out-of-class time. Adjust this to suit your students. Students must be allowed sufficient time to demonstrate their understanding at this level since the manipulations and implications are in a state of continual development.

Students work independently and are assessed individually.

## RESOURCE REQUIREMENTS

The information students use to complete this activity can be obtained from a variety of sources (e.g. the internet, teaching notes, practical investigations, guest speakers, field trips, reference resource material supplied).

## ADDITIONAL INFORMATION

Conditions of assessment related to this achievement standard can be found at:

[www.tki.org.nz/e/community/ncea/conditions-assessment.php](http://www.tki.org.nz/e/community/ncea/conditions-assessment.php)

Students will need to have background knowledge of:

- the basic principles of gene expression, gene technology, genetic engineering and genetic modification
- techniques used in gene technology (e.g. restriction enzymes, ligation, polymerase chain reaction, electrophoresis, tissue culture, DNA sequencing)
- an understanding of the ethics relating to gene technology.

A selection of resources on selective breeding and modification of the expression of existing genes of meat chickens accompanies this lesson. Students may also choose to discuss ethical considerations associated with selective breeding and its biological implications.



Farmwatch

## ACHIEVEMENT CRITERIA

Achievement	Achievement with Merit	Achievement with Excellence
Demonstrate understanding of human manipulations of genetic transfer and its biological implications.	Demonstrate <b>in-depth</b> understanding of human manipulations of genetic transfer and its biological implications.	Demonstrate <b>comprehensive</b> understanding of human manipulations of genetic transfer and its biological implications.

## BIOLOGY | UNIT OF STUDY 3

✳ Year 13 ✳ NCEA AS91607 ✳ Level 3.7 ✳ Credits 3 ✳ Duration 3 Weeks

- THIS UNIT**
- Supports internal assessment for Achievement Standard 91607
  - Demonstrates understanding of human manipulations of genetic transfer and its biological implications

# Meat Chickens – Grow Fast, Die Young

Demonstrate an understanding of how selective breeding and modification of the expression of existing genes impact on the biological fitness of meat chickens and the ethical considerations involved



### INTRODUCTION

There is one animal that far outweighs any other in regard to human consumption – the chicken. In New Zealand alone we factory farm three million layer hens and 100 million meat chickens per year. Globally over 70 billion poultry are slaughtered annually for meat and egg production (chickens make up more than 90% of all land animals slaughtered).<sup>1</sup>

Chickens have been selectively bred since the 1950s to meet the growing pressures from a society that demands cheap meat and eggs. Producers push the chickens' bodies harder and harder each year to create a 'profitable' chicken that lays more, weighs more, grows faster and consumes less. The biological implications of this intensity of selective breeding and modification of the expression of existing genes are immense, and most dramatically evident in meat chickens. Poultry expert Professor John Webster describes our selective breeding of meat chickens as "the single most severe, systematic example of man's inhumanity to another sentient animal".<sup>2</sup>

This assessment activity requires you to produce a presentation/report that discusses the human manipulation of genetic transfer in meat chickens, the **biological implications** of selective breeding and modification of the expression of existing genes for these birds, and the **ethical considerations** associated with this practice.

You will be assessed on the comprehensiveness of your report and the extent to which you link the biological ideas about selective breeding and modification of the expression of existing genes of meat chickens with the **biological implications** and **ethical considerations**.

Working individually, you have approximately three weeks of in-class and out-of-class time to write your presentation/report.

A selection of resources on selective breeding and modification of the expression of existing genes of meat chickens accompanies this lesson. You can also discuss ethical considerations associated with selective breeding and its biological implications.

1. United Poultry Concerns [www.upc-online.org/slaughter/92704stats.htm](http://www.upc-online.org/slaughter/92704stats.htm) (retrieved 7 April 2015)

2. Webster, J. 'Animal Welfare: Limping towards Eden' (2005)

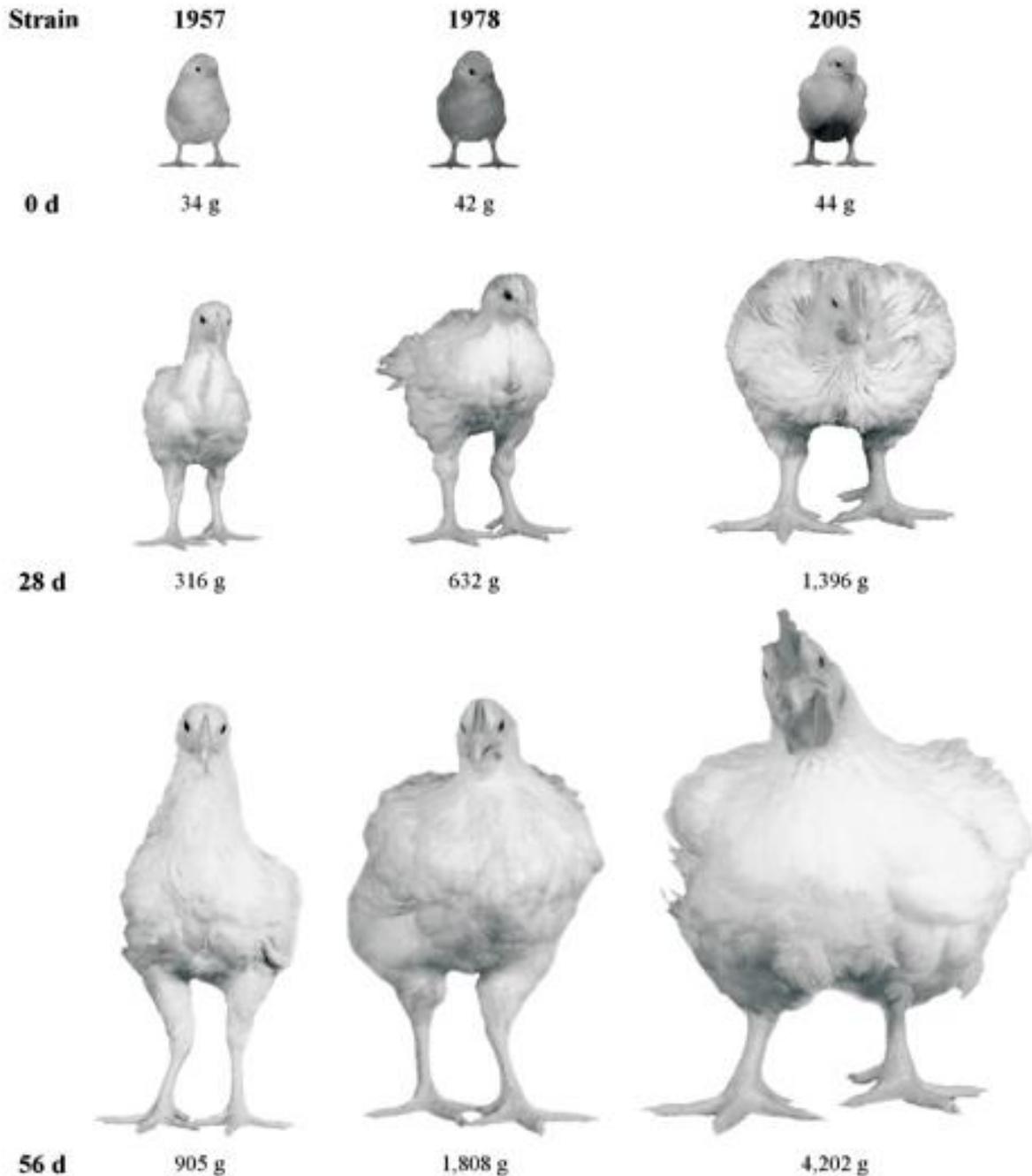
### TEACHER NOTE

Select a time frame that ensures students have enough time to complete the assessment. Specify a due date and milestone points to monitor progress.

For example: **You have [insert length of time] in which to complete drafts and a final version of your presentation/report. Your research material, including annotations and notes, will be available for you to use when writing the presentation/report. At the end of each period you will be required to hand in all researched material and all versions of the project.**

You may allow your students to conduct the preliminary research in groups prior to individually writing their final presentation.

## Age-related changes in size of University of Alberta Meat Control strains unselected since 1957 and 1978 and Ross 308 broilers (2005). Within each strain, images are of same bird at 0, 28 and 56 days of age



Source: Zuidhof et al., University of Alberta.

© Zuidhof, M.J., Schneider, B.L., Carney, V.L., Korver, D.R. and Robinson, F.E. 'Growth, efficiency, and yield of commercial broilers from 1957, 1978, and 2005'. *Poultry Science* 93:1-13 (2014). Reproduced with permission of Oxford University Press.

**TASK**



Farmwatch Farmwatch

Follow the steps outlined below to prepare a presentation/report.

Research the way that humans manipulate genetic transfer, the **biological implications** of these manipulations and the **ethical considerations** in regard to meat chickens.

The following headings will help you frame your research. Within these headings consider the following subjects:

**1. Selective breeding of meat chickens**

- Embryo selection
- Animal breeding
- Phenotypic traits (e.g. breast weight)
- Inbreeding.

(Some traits chicken producers are manipulating include growth rate, muscle yield, skeletal conformation and feed efficiency)

**2. Modification of the expression of existing genes**

- SNP (single-nucleotide polymorphism)
- Homozygotes vs heterozygotes & heterosis
- Genotypes
- Genetic markers.

**3. Biological implications**

- Genetic biodiversity
- Health or survival of individuals
  - Skeletal disorders
  - Lameness
  - Hunger
  - Pain and suffering
  - Contact dermatitis (foot burn through contact with ammonia soaked litter)
- Survival of populations
- Evolution of populations
- Metabolic diseases
  - Sudden death syndrome
  - Ascites.

**4. Ethical considerations**

- Pain and suffering
- Sentience.

**NOTE: The following aspects of meat chicken production could impact on both biological implications and ethical considerations**

- Behavioural deprivation (lack of enrichment)
- Litter quality
- Stocking density
- Air quality
- Transport and collection techniques.

## WRITE THE PRESENTATION/REPORT

Produce a written presentation/report that discusses selective breeding, modification of the expression of existing genes and the biological implications associated with each human manipulation for meat chickens.

Include a section outlining the ethical considerations associated with selective breeding and modification of the expression of existing genes of the commercial farming of meat chickens.

In your presentation/report:

- **Outline the *biological ideas* to explain how humans manipulate *genetic transfer* in selective breeding and modification of the expression of existing genes of meat chickens:**

### 1. Selective breeding

- Embryo selection
- Animal breeding
- Phenotypic traits (e.g. breast weight)
- Inbreeding.

(Some traits chicken producers are manipulating include growth rate, muscle yield, skeletal conformation and feed efficiency)

### 2. Modification of the expression of existing genes

- SNP (single-nucleotide polymorphism)
- Homozygotes vs heterozygotes & heterosis
- Genotypes
- Genetic markers.

- **Explain the *biological implications* of each manipulation, such as the impact on:**

- Genetic biodiversity
- Health or survival of individuals (mortality rates) (lameness) (hunger) (pain and suffering) (contact dermatitis) (skeletal disorders)
- Survival of populations
- Evolution of populations
- Metabolic diseases (sudden death syndrome) (ascites).

- **Discuss the *ethical considerations* of manipulating meat chickens in this way:**

- Pain and suffering
- Sentience
- Behavioural deprivation (lack of enrichment).

- **Link the *biological ideas* about *each* manipulation to at least *two* biological implications and ethical considerations of selective breeding and modification of the expression of existing genes. The linking of ideas will involve comparing and contrasting aspects of the manipulations.**

Support your researched information with diagrams or models to illustrate concepts or other visual representations as appropriate.

A written copy of your assignment with visual aids and supporting information must be handed in for assessment.



Farmwatch



RESOURCES



Farmwatch

SHORT WRITTEN TEXTS

Conference Paper

p. 111 Sneddon, L.U. and Gentle, M.J. **'Pain in Farm Animals'**. Research Consortium Sustainable Production (2001).

Industry Publication

p. 118 Hardiman, John. **'Route to greater speed and accuracy in breed progress'**. Cobb Focus (2006).

Journals

p. 132 Zuidhof, M.J., Schneider, B.L., Carney, V.L., Korver, D.R. and Robinson, F.E.



**'Growth, efficiency, and yield of commercial broilers from 1957, 1978, and 2005'**. *Poultry Science* (2014).

p. 134 Morris, M.C. **'The Ethics and Politics of Animal Welfare in New Zealand: Broiler Chicken Production as a Case Study'**. *Journal of Agricultural & Environmental Ethics* 22(1):15-30 (2009).

p. 138 Siegel, P.B., Dodgson, J.B. and Andersson, L. **'Progress from Chicken Genetics to the Chicken Genome'**. *Poultry Science* 85(12):2050-2060 (2006).

Newspapers/Magazines

p. 154 Bekoff, Marc.

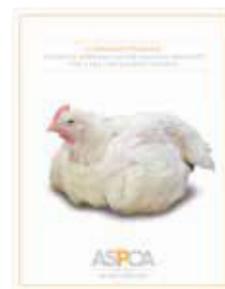


**'Animals are conscious and should be treated as such'**. *New Scientist*, Issue 2883, Comment (22 September 2012).

p. 156 MacKenzie, Debora. **'Chicken genome plucked bare by inbreeding'**. *New Scientist*, Daily News (4 November 2008).

Reports

p. 157 American Society for the Prevention of Cruelty to Animals (ASPCA).



**A Growing Problem – Selective Breeding in the Chicken Industry: The Case for Slower Growth** (2015).

p. 162 University of Nevada-Reno: Department of Animal Biotechnology. Rauw, Wendy (ed). **Resource Allocation Theory Applied to Farm Animal Production**. CABI (2008).

p. 164 Turner, Jacky, Garcés, Leah and Smith, Wendy. **The Welfare of Broiler Chickens in the European Union**. Compassion in World Farming Trust (2005).

p. 169 Webster, Jim, Cameron, Catherine and Rogers, Andrea. **Survey of Lameness in New Zealand Meat Chickens**. Ministry for Primary Industries (2013).

p. 174 Hiemstra, Sipke and Napel, Jan. **Study of the Impact of Genetic Selection on the Welfare of Chickens Bred and Kept for Meat Production**. IBF International Consulting (2013).

## RESOURCES CONTINUED

VISUAL AND ORAL TEXTS  
ON DVD

## Educational Video

- **Compassion in World Farming (CIWF)**  
*'Live Fast Die Young – The Story of the Broiler Chicken'*  
(7 min 58 sec) (May 2007)

## Activist Footage

- **Farmwatch**  
*'Chicken growth'*  
(25 sec) (Aug 2013)  
(Chicken growth over 1-5 weeks on a farm in New Zealand)
- **Farmwatch**  
*'Vigil for chickens raised for meat'*  
(6 min 2 sec) (Aug 2013)
- **SAFE**  
*'Meat chickens on New Zealand farm'* (1 min 50 sec) (Dec 2012)

## ONLINE RESOURCES

## Articles

- Day, Cheryl  
*'Yielding more chicken without growth enhancers'*  
Feedstuffs Foodlink (Oct 2014)  
[www.feedstuffsfoodlink.com/story-yielding-more-chicken-without-growth-enhancers-0-119150](http://www.feedstuffsfoodlink.com/story-yielding-more-chicken-without-growth-enhancers-0-119150)  
Retrieved 31 August 2016
- Zhai, Wei and Wells, Jessica  
*'Why the Rapid Growth Rate in Today's Chickens?'*  
Mississippi State University (2012)  
[www.thepoultrysite.com/articles/2699/why-the-rapid-growth-rate-in-todays-chickens/](http://www.thepoultrysite.com/articles/2699/why-the-rapid-growth-rate-in-todays-chickens/)  
Retrieved 31 August 2016

## Journal

- Broom, D.M.  
*'Considering animals' feelings: Précis of Sentience and animal welfare'*  
*Animal Sentience* 2016005. (2016)  
[www.animalstudiesrepository.org/animsent/vol1/iss5/1/](http://www.animalstudiesrepository.org/animsent/vol1/iss5/1/)  
Retrieved 5 April 2016

## Report

- **Compassion in World Farming Trust (CIWF)**  
*The Life of: Broiler chickens* (2013)  
[www.ciwf.org.uk/media/5235306/The-life-of-Broiler-chickens.pdf](http://www.ciwf.org.uk/media/5235306/The-life-of-Broiler-chickens.pdf)  
Retrieved 8 April 2015

## Websites

- **CBC News**  
*'Chickens are 4 times bigger today than in 1950s'* (2014)  
[www.cbc.ca/news/canada/calgary/chickens-are-4-times-bigger-today-than-in-1950s-1.2792628](http://www.cbc.ca/news/canada/calgary/chickens-are-4-times-bigger-today-than-in-1950s-1.2792628)  
Retrieved 5 April 2016
- Charles, Dan  
*'Why Whole Foods Wants A Slower-Growing Chicken'*  
The salt: What's on Your Plate (30 Mar 2016)  
[www.npr.org/sections/thesalt/2016/03/30/472167748/why-whole-foods-wants-a-slower-growing-chicken#](http://www.npr.org/sections/thesalt/2016/03/30/472167748/why-whole-foods-wants-a-slower-growing-chicken#)  
Retrieved 31 April 2016
- **SAFE**  
*'Factory Farming: "Meat" Chickens'*  
SAFE Inc  
[www.safe.org.nz/issue/factory-farming-meat-chickens](http://www.safe.org.nz/issue/factory-farming-meat-chickens)  
Retrieved 8 April 2015

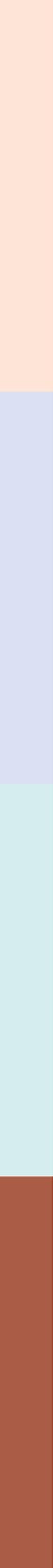


Farmwatch



(clockwise) Baby chicks facing an unhappy future  
✳ A lame chicken on a meat production farm in New Zealand  
✳ Heavily crowded conditions in a New Zealand meat chicken shed





## ENGLISH | UNIT OF STUDY 4

\* Year 12 \* NCEA AS91105 \* Level 2.8 \* Credits 4 \* Duration 3 Weeks

- THIS UNIT**
- Supports internal assessment for Achievement Standard 91105
  - Uses information literacy skills to form developed conclusion(s) about a factory farming topic

# Unlocking Factory Farms

Use information literacy skills to complete an inquiry and form developed conclusions on the factory farming of animals

### TEACHER GUIDELINES

*The following guidelines are supplied to enable teachers to carry out valid and consistent assessment using this internal assessment resource.*

*Teachers need to be very familiar with the outcome being assessed by Achievement Standard English 91105. The achievement criteria and the explanatory notes contain information, definitions and requirements that are crucial when interpreting the standard and assessing students against it.*

### CONTEXT/SETTING

This activity requires students to complete an inquiry into a topic linked to a written, visual or oral text relating to the factory farming of animals.

The purpose of the inquiry is to give students a context through which to demonstrate their information literacy skills and the formation of developed, convincing and perceptive conclusions from their investigation.

For this assessment the context for the inquiry is factory farming of animals. Factory farming is a topic which crosses multiple subject areas that can be investigated individually or in regard to how they interrelate:

- Biological – relating to the animals on factory farms (physical and psychological deprivation).
- Economic – relating to the economic justifications for factory farming (affordable for the public, profitable for the producer).
- Legal – relating to the legislation that protects or (in the case of factory farming) fails animals.
- Political – relating to the differing political opinions on factory farming.
- Cultural – relating to the differing opinions within society (farmers, producers, media, politicians, activists, the general public, academics, artists).
- Linguistic – relating to the jargon/language used by farmers and producers, the general public and animal activists.

Underpinning all of these social issues is the question of ethics (which is elaborated on in the Student Instructions).

Over the past 20 years the opposition to factory farming in New Zealand and overseas has gained momentum. This is likely to be due to a range of factors: a better scientific understanding of the psychological and physical needs of animals; the rise of the animal rights movement; exposure of what happens on factory farms (as a result of technological advances such as the internet and YouTube); and political pressure internationally to improve animal welfare conditions and legislation.

A wide range of texts is available on this topic and a selection has been provided with this lesson.

**NOTE: Students are not limited to this selection, but self-chosen texts may need to be approved.**



### CONDITIONS

**This is an individual activity.** As part of your class programme, you will model key parts of the inquiry process with students to ensure they are aware of the need to focus on the process. You will also model the process of integrating existing knowledge with new learning to create new ideas and knowledge and to form developed conclusions from this knowledge.

You will guide students through the inquiry on a factory farming related issue. Acceptable guidance would be teaching interventions focused on revisiting the development of information literacy skills at critical points in the process.

Students are expected to form questions independently and then to seek, locate, select, record and evaluate information themselves. It is also essential that students express new understandings independently. In other words, the understandings expressed in the final product must be the students' own work. See the *Conditions of Assessment* guidelines for comments on developing and practising the skills required, use of modelling and scaffolded practice, assembling evidence, and independent student work.

Ensure that students lead the process of their individual inquiry. Students may collect information in and out of class time. Students can reframe their inquiry questions, if required, as part of the process. You will need to oversee the process, including implementing checkpoint procedures, to ensure authenticity of students' work. Research notes, including the data evaluation and self-evaluation charts, could be checked during the process.

Students can present their findings in written, oral or visual form.

### RESOURCE REQUIREMENTS

Students will select their own texts relating to the issue of factory farming as part of their inquiry. These texts may be written, oral and/or visual. A range of texts on factory farming is available in this textbook.

Access to opinion writing (columnists and editorials), recording equipment, computers, the library and information technologies is required.

### ADDITIONAL INFORMATION

The mode in which students present their conclusions may be assessed against other standards such as writing and oral presentation standards. Wherever such integration between different parts of the programme occurs, teachers must ensure that the work presented for each assessment is developed sufficiently in order to meet the criteria for each standard. In all such cases, teachers should refer closely to each relevant standard including the explanatory notes and the *Conditions of Assessment* guidelines.

The assessment activity is based around the concept of 'guided inquiry': [www.cissl.rutgers.edu/guided\\_inquiry/introduction.html](http://www.cissl.rutgers.edu/guided_inquiry/introduction.html)

Useful websites to use with students to scaffold the teaching of information literacy skills include:

- [www.lib.colostate.edu/tutorials/share/](http://www.lib.colostate.edu/tutorials/share/)
- [www.readwritethink.org](http://www.readwritethink.org)
- EPIC: [www.tki.org.nz/r/epic](http://www.tki.org.nz/r/epic) [school user name and password needed]
- INNZ: [www.tki.org.nz/e/tki/innz](http://www.tki.org.nz/e/tki/innz) [school user name and password needed].

### ACHIEVEMENT CRITERIA

Achievement	Achievement with Merit	Achievement with Excellence
<p>The student uses information literacy skills to form developed conclusion(s) about a factory farming topic by:</p> <ul style="list-style-type: none"> <li>• framing the inquiry around an issue discussed in a published piece of writing</li> <li>• selecting and using appropriate strategies for locating and processing information</li> <li>• evaluating the reliability and usefulness of the selected information in relation to the inquiry</li> <li>• creating and building conclusions based on information gathered in the inquiry. Conclusion(s) may include the expression of an opinion or judgement, reaching a decision or suggesting a solution. All conclusions must be linked to the purpose of the inquiry.</li> </ul>	<p>The student uses information literacy skills to form <b>convincing</b> developed conclusion(s) about a factory farming topic by:</p> <ul style="list-style-type: none"> <li>• framing the inquiry around an issue discussed in a published piece of writing</li> <li>• selecting and using appropriate strategies for locating and processing information</li> <li>• evaluating the reliability and usefulness of the selected information in relation to the inquiry</li> <li>• creating and building <b>reasoned and clear</b> conclusions based on information gathered in the inquiry. <b>Convincing</b> conclusion(s) may include the expression of an opinion or judgement, reaching a decision or suggesting a solution. All conclusions must be linked to the purpose of the inquiry.</li> </ul>	<p>The student uses information literacy skills to form <b>perceptive</b> developed conclusion(s) about a factory farming topic by:</p> <ul style="list-style-type: none"> <li>• framing the inquiry around an issue discussed in a published piece of writing</li> <li>• selecting and using appropriate strategies for locating and processing information</li> <li>• evaluating the reliability and usefulness of the selected information in relation to the inquiry</li> <li>• creating and building <b>insightful and/or original</b> conclusions based on information gathered in the inquiry. <b>Perceptive</b> conclusion(s) may include the expression of an opinion or judgement, reaching a decision or suggesting a solution. All conclusions must be linked to the purpose of the inquiry.</li> </ul>

**ENGLISH | UNIT OF STUDY 4**

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# Unlocking Factory Farms

Use information literacy skills to complete an inquiry and form developed conclusions on the factory farming of animals

## INTRODUCTION

This assessment activity requires you to carry out an independent inquiry into the ideas behind an article relating to the factory farming of animals. You will gather information and ideas from a range of sources in order to draw and present developed conclusions.

You are going to be assessed on how you use information literacy skills to form perceptive conclusions about the topic of your selected article. Your conclusion(s) need to be based on the information you have gathered and must be clearly connected to the purpose of the inquiry. You can express your conclusion(s) as opinions, judgements or possible decisions.

The following instructions provide you with a way to structure your work to demonstrate what you have learnt and allow you to achieve success in this standard.

Factory farming is a term used to describe the industrialised commercial farming of animals.

## TEACHER NOTE

Read the student instructions and modify them if necessary to suit your students.



## FACTORY FARMING OVERVIEW

Factory farms first appeared in the 1950s. Pig and chicken producers borrowed ideas and systems developed during the industrial revolution. The assembly line, which was first developed in the early 1900s to mass-produce cars (then adapted by the slaughterhouse to kill and disassemble animals), was applied to factory farming. Animals already part of the slaughterhouse assembly line were taken indoors and 'mechanised' into units of production.

Chickens and pigs were treated to a new style of farming inside large, windowless sheds. There is not a speck of grass or ray of sunlight to be seen. This reality is far removed from storybook ideas of farming and no doubt inspired the dystopian movie *The Matrix* in which humans are farmed as energy units.

The factory 'farmer' is an expert in automated lighting and feeding, and genetic manipulation and egg collection systems. Animal welfare is a secondary concern. Thousands of layer hens and hundreds of pigs are typically confined in cages or crates, while millions of meat chickens live out their short lives in densely packed broiler sheds. This mass production system is focused on maximising egg and meat production at minimum cost and maximum profit to the corporation.

The animals most commonly factory farmed are chickens and pigs. Globally over 70 billion poultry are farmed and killed each year for their meat and eggs<sup>1</sup> (broken down, that's 192 million chickens per day – eight million per hour) and over 900 million pigs.<sup>2</sup>

New Zealand factory farms around 100 million meat chickens, three million layer hens and 30,000 sows in farrowing crates each year.

For decades the public were not aware of the conditions animals on factory farms lived in – but in the 1970s, with the rise of the animal rights movement, questions started to be asked and the treatment of animals exposed. In New Zealand, animal advocacy groups started to actively campaign on the issue of factory farming in the 1990s and continue to do so today.

1. United Poultry Concerns [www.upc-online.org/slaughter/92704stats.htm](http://www.upc-online.org/slaughter/92704stats.htm) (retrieved 7 April 2015)

2. 'Livestock production: recent trends, future prospects'. The Royal Society Publishing 2010 [www.rstb.royalsocietypublishing.org/content/365/1554/2853](http://www.rstb.royalsocietypublishing.org/content/365/1554/2853) (retrieved 14 April 2015)

## TASK



You need to meet the checkpoints set by your teacher during your study.

### PART 1: CHOOSE A FACTORY FARMING TOPIC

Read through a range of articles, editorials, columns and/or feature articles about the factory farming of animals.

See the suggested resources on pages 54-56.

The topic of factory farming touches on a range of social issues that can be investigated in this assessment:

- Biological – relating to the animals on factory farms (physical and psychological deprivation).
  - Economic – relating to the economic justifications for factory farming (affordable for the public, profitable for the producer).
  - Legal – relating to the legislation that protects or (in the case of factory farming) fails animals.
  - Political – relating to the differing political opinions on factory farming.
  - Cultural – relating to the differing opinions within society (farmers, producers, media, politicians, activists, the general public, academics, artists).
  - Linguistic – relating to the jargon/language used by farmers and producers, the general public and animal activists.
- Underpinning all of these social issues is the question of ethics:
- Is it ethical to farm animals in conditions that deprive them of some of the most basic physical and psychological requirements for a fulfilling and meaningful life (and that contravene the protections afforded to them by law)?
  - Should economic considerations (for producers and consumers) take precedence over the suffering of animals in factory farms?
  - Is our legal system capable of, or willing to, protect the most vulnerable and heavily exploited species in our society?
  - How do politicians prioritise animal welfare against the societal, legal, economic and commercial elements of factory farming?
  - What kinds of opinion do different sectors of society have about factory farming (consumers, producers, animal activists, politicians)?
  - In what ways does the use of language influence our attitude towards animals? For example, producers on factory farms refer to animals as ‘products’ while animal activists refer to them as ‘beings’.

## TASK CONTINUED

### PART 2: FRAME YOUR INQUIRY

Identify and record the facts and opinions expressed in the example you have selected.

Draw on your own knowledge, as well as the knowledge of others, to build your background understanding of the issue.

Formulate effective key questions to help you explore and draw conclusions about the focus of your inquiry.

### PART 3: SELECT AND USE APPROPRIATE STRATEGIES TO LOCATE AND PROCESS INFORMATION

Skim and scan a range of other texts/sources for relevant material about your key questions.

Make notes of key information and evaluate the information you have gathered (i.e. how useful and/or accurate it is). Make sure you reference your sources.

#### TEACHER NOTE

See page 50 for an example of a data chart for students to use when gathering and evaluating their information.

Support students to choose a suitable format for their final presentation so they can work within their areas of strength.

### PART 4: DEVELOP YOUR CONCLUSIONS

Using the information you have gathered, form perceptive, developed conclusions related to the purpose of your inquiry and the original source article. To do this, you need to create new ideas/knowledge/understandings based on the information you have found.

You could do this by: expressing an opinion, questioning or challenging ideas, making a judgement after weighing the value of evidence from different sources or different points of view, reaching a decision, suggesting a solution and/or making recommendations for the future.

### PART 5: PRESENT THE RESULTS OF YOUR INQUIRY

Present your findings in written, oral or visual form, or use a combination of these methods. You can use presentation software to create illustrations, diagrams or video to support your work. Ensure that your final presentation includes:

- detailed evidence that you have used key information literacy skills
- references for all gathered information
- evidence that your conclusions are based on gathered information
- developed, perceptive conclusions for all your key questions.

See pages 51-53 'Guidelines about your process' for some ideas about how you might carry out these steps.



**EXAMPLE OF A DATA CHART (from *Animals & Us: Battery Hen Farming in New Zealand* p.46)**

		Key questions		
Date	Sources	What words and terms are used in reference to battery hen farming?	What effects do these words have on attitudes to the birds in battery farms?	How are these ways of using language challenged by opponents of battery hen farming?
	Peter Singer, <i>Animal Liberation</i> , 2nd edn, Thorsons, 1991	Hen described by poultry industry leader as an 'egg production machine'	Industrial farming views animals as resources rather than as living beings	
	Jeffrey Masson, <i>The Pig Who Sang to the Moon</i> , Ballantine, 2003	People 'seem to feel uncomfortable using "he" or "she" to refer to a chicken'		Argue that referring to chickens as 'he' or 'she' rather than 'it' would remind us that these are birds with individual sensations and feelings
	Jeffrey Masson, <i>The Pig Who Sang to the Moon</i> , Ballantine, 2003			Gives example of the 'all purpose insult - birdbrain' - implies chickens are too unintelligent to be worthy of concern
	Jeffrey Masson, <i>The Pig Who Sang to the Moon</i> , Ballantine, 2003	'End-of-lay' and 'spent hen' as the terms for chickens that are no longer regular egg producers	Neutral-sounding term functions as a euphemism: obscures the fact that these birds are slaughtered although they are still relatively young	
	Animal Welfare Act 1999; Karen Peterson and Anthony Terry, <i>SAFE Submission on Draft 10 of the Animal Welfare (Layer Hens) Code of Welfare 2002</i>	Key terms: 'normal patterns of behaviour', 'good practice', 'scientific knowledge'	Examples of terms that can be understood in different ways: poultry industry and animal advocates will argue about their meaning	
	Michael Morris, 'Life in a Cage: Science Say Chooks Should Run Free', <i>Organic NZ</i> , January/February 2005	Public concerns about battery hen farming dismissed as 'unscientific'	Debate about what the term 'scientific' actually means in the context of battery hen debates	
	Hans Kriek, media release: 'Minister Challenged over Abusive Battery Hen and Pig Codes'	'a life of hell and continued abuse'		Such phrases are used to counter the euphemistic jargon of battery hen industry
	'Behind Bars', <i>60 Minutes</i> , 1993; TV current affairs item	Phrases used on packaging of eggs: 'Happy Hens', 'Country Fresh', 'Farm Fresh'	Obscures the treatment of the birds that produced the eggs	Challenge to label eggs in ways that make clear whether they are from free-range or battery hens

A data chart is a useful way of organising material you have selected as you prepare to write your report.

## EVALUATION

Look back at the information you have assembled.

- Have you kept to your topic?
- Have you answered your key questions?
- Should you adapt any key questions, given the nature of the information you have found?
- Have some resources been more useful than others?
- Have any issues or questions arisen from your investigation which you should mention in your report?

## GUIDELINES ABOUT YOUR PROCESS

### INFORMATION LITERACY SKILLS

Information literacy skills include:

- framing your inquiry, identifying the area for investigation and posing questions
- understanding and using keyword strategies
- finding information from a range of sources
- using scanning and skimming to select relevant resources and information, and making notes
- evaluating the reliability of your sources and information.

### CHOOSING YOUR TOPIC

The *Animals in Factory Farms* textbook provides a range of material about the factory farming of animals. Other useful sources include newspapers, magazines, databases, online articles and libraries.

The issue on which you finally decide to base your inquiry needs to have enough scope to allow you to find a range of information or viewpoints about it. By choosing an issue that is controversial and supports several viewpoints, you will have a richer source of material from which to form your perceptive developed conclusions.

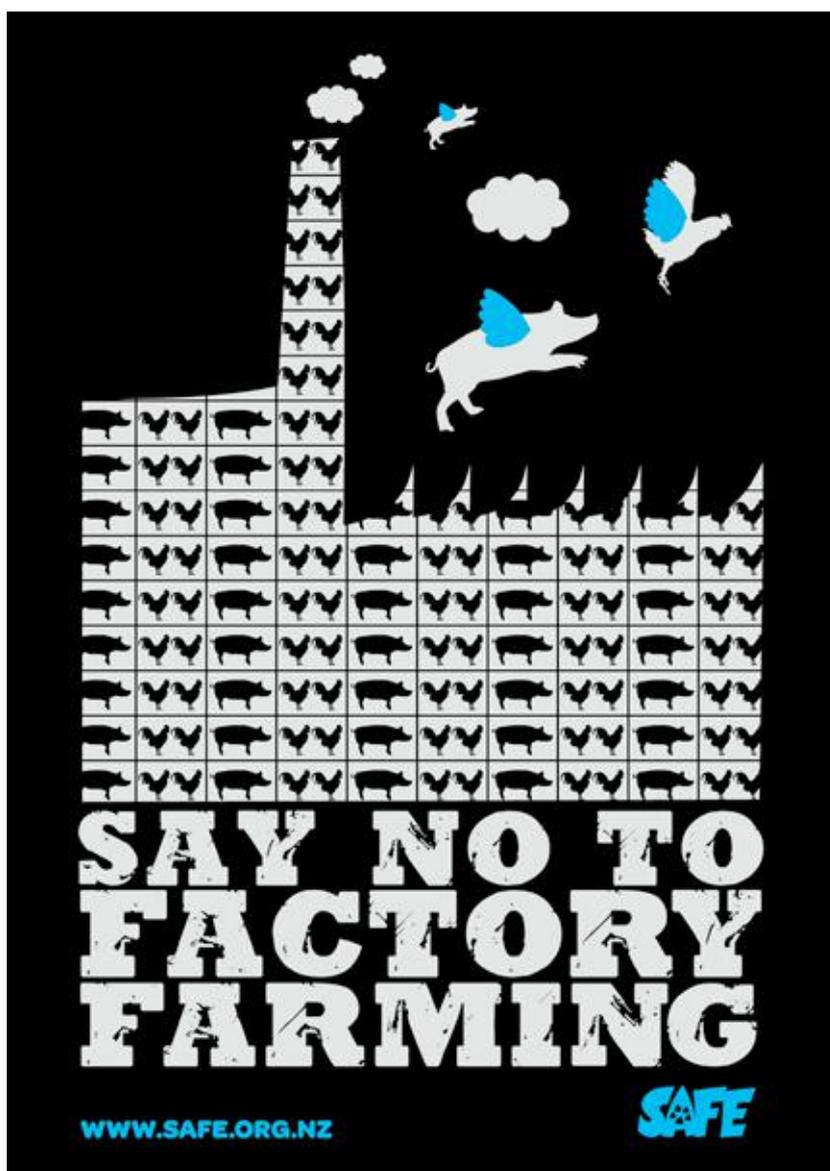
Examples of possible factory farming topics include:

- **Text:** *Bleating Hearts: The Hidden World of Animal Suffering* by Mark Hawthorne  
**Topic:** Exploring animal sentience and the ethics of farming animals for food
- **Text:** *Chicken* by Annie Potts  
**Topic:** Considering the evolution of factory farming and the pain and suffering of animals in factory farms
- **Text:** *Animal Law in Australasia* edited by Peter Sankoff, Steven White and Celeste Black  
**Topic:** Considering animal welfare law and factory farming
- **Text:** *Dominion: The Power of Man, the Suffering of Animals, and the Call to Mercy* by Matthew Scully  
**Topic:** The balance of power between human and non-human animals
- **Text:** *In Defense of Animals: The Second Wave* edited by Peter Singer  
**Topic:** Exploring the treatment of animals as 'living machines'.

Examples of other current topics which could be the subject of an investigation include:

- economics vs animal welfare
- political attitudes towards factory farming
- public opinions of factory farming.

Once you have selected an article and decided on the issue for your investigation, you can embark on the inquiry process.



## GUIDELINES ABOUT YOUR PROCESS CONTINUED

### FRAMING YOUR INQUIRY

You may already have some information from your text that is relevant.

Build background knowledge by skimming and scanning a few sources that may be used in your research.

Discuss your chosen topic with friends and family to see what views they have.

Write out the points of view you have collated.

Be careful to identify the difference between a statement and a question while researching your topic and framing your inquiry.

Examples of a statement and a question using the 'An activist's experience of social action – animal activism against factory farming' topic:

*'Activism on behalf of animals kept in factory farms is needed if our society is to make positive and effective change for animals in the future.'* (statement)

*'How does animal activism help animals in factory farms?'* (question)

### SELECTING AND USING APPROPRIATE STRATEGIES TO LOCATE AND PROCESS INFORMATION

Your key questions need to show evidence that you understand effective questions. For example, questions should be open and unbiased, and invite interpretation rather than recall.

Examples of questions that look at the *how* and *why* of an issue or that consider the extent of something, based on the proposition (such as 'Activism on behalf of animals kept in factory farms is needed if our society is to make positive and effective change for animals in the future'), could include:

- How does animal activism help animals in factory farms?
- What conditions on factory farms cause the most pain and suffering for animals?
- Why do animal activists need to campaign to help animals in factory farms?
- In what ways is our society failing animals in factory farms?

You may need to change your questions later or modify them in some way. Think of the order of your questions too. Some naturally come before others.

Investigate **keyword refining strategies**. For example, list six combinations of keywords or search items that you could use to search for information to answer your key questions.

Search for information using your key questions in at least **six different sources**.

You must select the sources and they may be selected from written, oral and/or visual texts. You should use at least two different types of source. Possible sources could include:

- books in the school library
- articles in databases accessible through the school library, such as EPIC and INNZ
- material on the internet
- current or archived reviews
- archived magazines, which may be available in the school's information file
- DVDs of documentaries or film adaptations of the text
- an interview with someone who has knowledge of your topic or an opinion relevant to your topic.



## GUIDELINES ABOUT YOUR PROCESS CONTINUED

**Skimming and scanning** means that you:

- choose other texts which are also likely to have useful information to answer at least one of your questions
- highlight or make notes about relevant ideas, words and phrases as you scan.

You could draw up an information organiser to record the results of your inquiry.

Assess how useful and/or accurate your information is. You could draw up a chart and record evidence of the evaluation of your sources and the information you have found. Your teacher may provide an example to guide you.

### SELF-EVALUATION – CHECKING YOUR STEPS

Use a check method to confirm that you have provided evidence to your teacher of all the steps in the inquiry process.

Your teacher may provide some examples to guide you. Your teacher will check your self-evaluation.

### PRESENTING THE RESULTS OF YOUR INQUIRY

You can present your findings in written, oral or visual form. Ask your teacher for guidance.

Make sure that the steps of your inquiry process and your developed conclusions are evident. Whichever method you choose, you must show that you have:

- framed your inquiry
- developed questions to explore your focus area
- used information literacy skills effectively
- presented developed conclusions.

Examples of how you might present your developed conclusions include:

- **Written form:** research report, letter to the author/director, blog, wiki.
- **Oral form:** speech to your class supported with computer-aided display, seminar presentation, podcast, radio programme.
- **Visual form:** poster combining visual and written text, use of computer program such as Prezi, film, multimedia text.



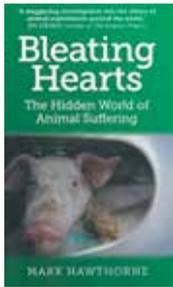
## RESOURCES

Students may use texts from other units of Animals & Us Issue 5: Animals in Factory Farms

## EXTENDED WRITTEN TEXTS

## Non-Fiction (extracts from)

p. 77 Hawthorne, Mark.



**Bleating Hearts: The Hidden World of Animal Suffering.** Changemaker Books (2013)

p. 85 Potts, Annie.  
**Chicken.**

Reaktion Books (2012)

p. 88 Sankoff, Peter, White, Steven and Black, Celeste (eds).

**Animal Law in Australasia.** The Federation Press (2013)

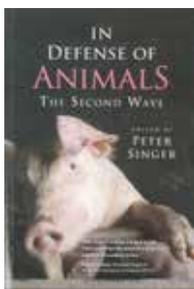
p. 99 Scully, Matthew.

**Dominion: The Power of Man, the Suffering of Animals, and the Call to Mercy.** St Martin's Press (2002)

p. 101 Simmons, Laurence and Armstrong, Philip (eds).

**Knowing Animals.** Brill (2007)

p. 104 Singer, Peter (ed).



**In Defense of Animals: The Second Wave.** Wiley Publishing (2006)

## SHORT WRITTEN TEXTS

## Blog

p. 110 SAFE.  
**'Colony Cage Con'** (2014)

## Journal

p. 120 Loveridge, Alison.  
**'Changes in Animal Welfare Views in New Zealand: Responding to Global Change'.** Society & Animals (2013)

## Newspapers (texts from Unit 1)

p. 147 **Manawatu Standard**  
**'Piggery practice legal but not acceptable'.** Editorial. Cummings, Michael. 20 May 2009. *The power of publicity may have just saved tens of thousands of pigs in this country from a tormented life that was only ever made possible by the indifference of the pork industry, and the ignorance of everybody else.*

p. 151 **The New Zealand Herald**  
**'Writing on the wall for sow stalls'.** Editorial. 25 May 2009. *The Agriculture Minister, David Carter, wants to issue a new welfare code for pigs by the end of the year. This, indeed, may be necessary to prevent a sizeable drop in the purchase of Christmas hams this December.*

p. 152 **Rodney Times**  
**'Pig farming rules a legal cruelty'.** Opinion. Booth, Pat. 26 May 2009. *Just about everyone's a loser in the great pork controversy. Particularly the pigs. A few influential humans look and sound unthinking/irresponsible/inhumane in varying degrees.*

## WRITTEN AND VISUAL TEXTS

## Cartoons

p. 191 Williamson, Tom.  
**'Secret Origin. Holy Cow! No. 3'.** SAFE (2005)

p. 192 Williamson, Tom.  
**'The Price of Cheap Pork. Holy Cow! No. 1'.** SAFE (2005)

p. 193 Williamson, Tom.  
**'Beyond the Egg. Holy Cow! No. 2'.** SAFE (2005)

## VISUAL AND ORAL TEXTS ON DVD

## Educational Videos

- **SAFE Inc Love Pigs Campaign (19 Nov 2009)**  
**Factory Farmed Pigs in New Zealand – The Price of Pork** (9 min 46 sec)  
Narrated by award-winning actor Robyn Malcolm, the 10-minute documentary-styled presentation makes compelling arguments against factory farming. Robyn takes us through how pregnant sows are cruelly treated inside sow stalls and farrowing crates, and just what happens to the young piglets destined to become pork.  
*This film was produced in 2008 as part of SAFE's campaign against factory pig farming. In 2010 the New Zealand Government introduced a phase-out of sow stalls after SAFE's campaign attracted widespread public support. Sow stalls could be used for the first four weeks of the sow's pregnancy and were completely banned in December 2015. Sows continue to suffer in farrowing crates, and fattening pigs can still be kept in barren overcrowded pens.*
- **SAFE Inc (19 Nov 2012)**  
**Stop Factory Farming** (8 min 41 sec)
- **SAFE Inc (6 Apr 2016)**  
**Colony** (1 min 31 sec)

## Current Affairs (Pigs)

- **Sunday, TV1 (17 May 2009)**  
**If Pigs Could Talk (Part 1)** (10 min 59 sec)  
**If Pigs Could Talk (Part 2)** (7 min 8 sec)  
**If Pigs Could Talk (Part 3)** (8 min 36 sec)  
Mike King – stand-up comic, TV frontman and previously the face of the New Zealand pork industry – accuses the industry he once represented of legalised cruelty to pigs.

**OTHER RESOURCES (not in textbook)**

**EXTENDED WRITTEN TEXTS**

**Non-Fiction**

- Singer, Peter.  
**Animal Liberation.**  
Harper Collins Publishing (2002)
- Mason, Jim and Singer, Peter.  
**Animal Factories.**  
Crown Publishers (1980)
- Safran Foer, Jonathan.  
**Eating Animals.**  
Little, Brown and Company (2009)
- Amey, Catherine.  
**Clean, Green and Cruelty Free?**  
Rebel Press (2008)
- Patterson, Charles.  
**Eternal Treblinka.**  
Lantern Books (2002)
- Wadiwel, Dinesh.  
**The War against Animals.**  
Brill (2015)

**Fiction**

- Levandoski, Rob.  
**Fresh Eggs.**  
The Permanent Press (2015, e-book)  
[www.amazon.com/Fresh-Eggs-Rob-Levandoski-ebook/dp/B00WFNRN82/ref=sr\\_1\\_2?s=digital-text&ie=UTF8&qid=1452733299&sr=1-2&keywords=levandoski](http://www.amazon.com/Fresh-Eggs-Rob-Levandoski-ebook/dp/B00WFNRN82/ref=sr_1_2?s=digital-text&ie=UTF8&qid=1452733299&sr=1-2&keywords=levandoski)
- Pardoe, Vicki.  
**Cooped Up: A Factory Farm Novel.**  
(2014, e-book)  
[www.amazon.com/COOPED-UP-Factory-Farm-Novel-ebook/dp/B00K1J4084](http://www.amazon.com/COOPED-UP-Factory-Farm-Novel-ebook/dp/B00K1J4084)

**SHORT WRITTEN TEXTS**

**Blogs**

- ‘Five caged hen facts the industry doesn’t want you to know’**  
(4 April 2015)  
[www.safenewzealand.org/2015/04/04/five-caged-hen-facts/](http://www.safenewzealand.org/2015/04/04/five-caged-hen-facts/)  
Retrieved 13 April 2015
- ‘Ban the Ham’**  
(11 December 2014)  
[www.safenewzealand.org/2014/12/11/ban-the-ham/](http://www.safenewzealand.org/2014/12/11/ban-the-ham/)  
Retrieved 13 April 2015
- ‘Nine things they don’t want you to know about factory farming’**  
(20 May 2014)  
[www.safenewzealand.org/2014/05/20/nine-things-they-dont-want-you-to-know-about-factory-farming/](http://www.safenewzealand.org/2014/05/20/nine-things-they-dont-want-you-to-know-about-factory-farming/)  
Retrieved 13 April 2015

**Graphic Novels**

- Coe, Sue and Cockburn, Alexander.  
**Dead Meat.**  
Four Walls Eight Windows (1996)
- Coe, Sue.  
**Cruel: Bearing witness to animal exploitation.**  
OR Books (2012)

**Journal**

- Thornton, Philip.  
**Livestock production: recent trends, future prospects.**  
The Royal Society Publishing (2010)  
[www.rstb.royalsocietypublishing.org/content/365/1554/2853](http://www.rstb.royalsocietypublishing.org/content/365/1554/2853)  
Retrieved 14 April 2015

**WRITTEN AND VISUAL TEXTS**

**Infographics**

- SAFE Inc  
**The Real Cost of Factory Farmed Chicken**  
[www.safe.org.nz/sites/default/files/SFFCostofChicken\\_0.pdf](http://www.safe.org.nz/sites/default/files/SFFCostofChicken_0.pdf)
- SAFE Inc  
**Pork Factory Farmed Production Horror**  
[www.safe.org.nz/sites/default/files/PIGS%20infographic\\_0.pdf](http://www.safe.org.nz/sites/default/files/PIGS%20infographic_0.pdf)
- SAFE Inc  
**Caged Hen Cruelty**  
[www.safe.org.nz/sites/default/files/SFFCagedHenINFOG.pdf](http://www.safe.org.nz/sites/default/files/SFFCagedHenINFOG.pdf)  
Retrieved 17 April 2015

**Websites**

- SAFE (Layer hens)**  
[www.safe.org.nz/issue/factory-farming-layer-hens](http://www.safe.org.nz/issue/factory-farming-layer-hens)  
Retrieved 13 April 2015
- SAFE (Pigs)**  
[www.safe.org.nz/issue/factory-farming-pigs](http://www.safe.org.nz/issue/factory-farming-pigs)  
Retrieved 13 April 2015
- SAFE (Meat chickens)**  
[www.safe.org.nz/issue/factory-farming-meat-chickens](http://www.safe.org.nz/issue/factory-farming-meat-chickens)  
Retrieved 13 April 2015
- United Poultry Concerns (Battery hens)**  
[www.upc-online.org/battery\\_hens/](http://www.upc-online.org/battery_hens/)  
Retrieved 13 April 2015
- United Poultry Concerns (Broiler chickens)**  
[www.upc-online.org/broiler/](http://www.upc-online.org/broiler/)  
Retrieved 13 April 2015

**15,000**  
NUMBER OF FEMALE PIGS CONFINED TO SOW STALLS. SOW STALLS ARE BARREN METAL BARRED CAGES SO SMALL THEY CAN'T EVEN TURN AROUND. CAGES ARE ONLY 60 CM WIDE x 2 M LONG BARELY LARGER THAN THE ANIMALS OWN BODIES.

**1** A sow is moved to a farrowing crate when she is about to give birth. She is not able to build a nest or mother her piglets properly.

**2** SHELL STAY THERE UNTIL HER BABIES ARE TAKEN AWAY AT 4 WEEKS. Then she is returned to the sow stall.

**3** The cycle of abuse begins again.

SAFE's campaign to end the use of sow crates for pregnant sows led the government to phase out this practice. **HOWEVER SOW STALLS WILL STILL BE IN USE UNTIL 2016**

EVEN AFTER THIS DATE FARROWING CRATES WILL STILL BE LEGAL, MEANING SOWS WILL STILL BE CRUELLY CONFINED FOR AROUND **10 WEEKS PER YEAR**

**67%** of farmers use farrowing crates

**2.5 LITERS PER YEAR**

**5 YEARS** AGE AT WHICH A SOW IS CONSIDERED USELESS. HER LIFE SPENT CONFINED TO PRODUCE PIGLETS, SHE'S THEN SENT OFF TO SLAUGHTER

**PIGLETS - FARMED FOR PORK**

**4 weeks old** Age at which piglets are removed from their mother. In the wild they'd wean at 17 weeks and females would spend their lives with their social group.

**800,000 PIGLETS KILLED EACH YEAR IN NZ**  
Many of them fattened up in dark, concrete, barren pens; so stressed and bored in their overcrowded conditions they bite each others' tails. Farmers cut piglets' tails off instead of giving the animals more space.

**16 WEEKS** Age piglets are sent to slaughter. Naturally they would live up to 15 years.

**PIGS ARE CLEVERER THAN A 3 YEAR OLD CHILD**  
Life on a factory farm, for these highly intelligent and curious animals is torture. They suffer boredom, stress and depression living in such cramped and barren environments.

**75%** OF THEIR DAY FORAGING  
For factory farmed pigs kept in concrete pens, life is miserable - deprived of their most basic needs: fresh air, sunlight, mud baths and soft bedding.

**42%** OF PIG PRODUCTS SOLD IN NZ IS IMPORTED FROM OTHER COUNTRIES WHERE PIGS ARE KEPT IN SIMILAR INTENSIVE FARMING CONDITIONS

## OTHER RESOURCES (not in textbook) CONTINUED

## VISUAL AND ORAL TEXTS

## Documentary Films

## • A Tribe of Heart

*Peaceable Kingdom* (2004) 1 h 18 min



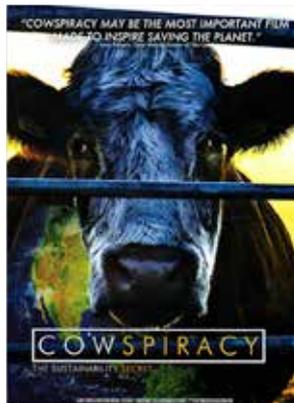
A riveting story of transformation and healing, PEACEABLE KINGDOM: THE JOURNEY HOME explores the awakening conscience of several people who grew up in traditional farming culture and who have now come to question the basic assumptions of their way of life.

[www.peaceablekingdomfilm.org/home.htm](http://www.peaceablekingdomfilm.org/home.htm)  
Retrieved 13 April 2015



## • Kip Andersen and Keegan Kuhn

*Cowspiracy* (2014) 1 h 25 min



*Cowspiracy: The Sustainability Secret* is a groundbreaking feature-length environmental documentary following intrepid filmmaker Kip Andersen as he uncovers the most destructive industry facing the planet today – and investigates why the world's leading environmental organisations are too afraid to talk about it.

[www.cowspiracy.com/about/](http://www.cowspiracy.com/about/)  
Retrieved 13 April 2015

## • Shaun Monson

*Earthlings* (2005) 1 h 35 min

*Earthlings* is a 2005 American documentary film about humankind's total dependence on animals for economic purposes. Presented in five chapters (pets, food, clothing, entertainment and scientific research), the film is narrated by Joaquin Phoenix, featuring music by Moby, and was written, produced and directed by Shaun Monson.

[www.earthlings.com/](http://www.earthlings.com/)  
Retrieved 13 April 2015

## • Mark Devries

*Speciesism* 2013 (1 h 34 min)

*Modern farms are struggling to keep a secret. Most of the animals used for food in the United States are raised in giant, bizarre 'factory farms', hidden deep in remote areas of the countryside.* *Speciesism: The Movie* director Mark Devries set out to investigate. The documentary takes viewers on a sometimes funny, sometimes frightening adventure, crawling through the bushes that hide these factories, flying in airplanes above their toxic 'manure lagoons', and coming face-to-face with their owners.

[www.speciesismthemovie.com/](http://www.speciesismthemovie.com/)  
Retrieved 13 April 2015

## • Robert Kenner

*Food, Inc* 2008 (1 h 34 min)

*Food, Inc* exposes America's industrialised food system and its effect on our environment, health, economy and workers' rights.

[www.takepart.com/foodinc](http://www.takepart.com/foodinc)  
Retrieved 13 April 2015

## Activist Videos

## • PETA

*Meet your meat* (2002) 11 min 34 sec

*In a moving narration, actor and activist Alec Baldwin exposes the truth behind humanity's cruellest invention – the factory farm.*

[www.peta.org/videos/meet-your-meat/](http://www.peta.org/videos/meet-your-meat/)  
Retrieved 13 April 2015

## • Media That Matters

*The Meatrix* 2003 (3 min 58 sec)



When *The Meatrix*® launched in November 2003, the viral film broke new ground in online grassroots advocacy, creating a unique vehicle by which to educate, entertain and motivate people to create change. The *Meatrix* movies, now a series, have been translated into more than 30 languages and are one of the most successful online advocacy campaigns ever – with well

over 30 million viewers worldwide.

[www.youtube.com/watch?v=IMOAaciER6o](http://www.youtube.com/watch?v=IMOAaciER6o)  
Retrieved 13 April 2015





(clockwise) In 2011 activist Carl Scott confined himself in a cage for a month to highlight the plight of battery hens ✳ Social activism during the Christchurch Marathon ✳ Protest against the killing of three million male chicks considered 'hatchery waste' during egg production





SECTION 2

# RESOURCES

TEXTS FOR UNITS OF STUDY



## LIST OF TEXTS

### EXTENDED WRITTEN TEXTS

#### Non-Fiction (extracts from)

- p. 64 **Poultry Behaviour and Welfare.**  
Appleby, Michael, Mench, Joy and Hughes, Barry. 2004.
- p. 67 **Domestic Animal Behaviour and Welfare.**  
Broom, D.M. and Fraser, A.F. 2007.
- p. 77 **Bleating Hearts: The Hidden World of Animal Suffering.**  
Hawthorne, Mark. 2013.
- p. 81 **The Welfare of Pigs.**  
Marchant-Forde, Jeremy (ed). 2009.
- p. 85 **Chicken.**  
Potts, Annie. 2012.
- p. 88 **Animal Law in Australasia.**  
Sankoff, Peter, White, Steven and Black, Celeste (eds). 2013.
- p. 99 **Dominion: The Power of Man, the Suffering of Animals, and the Call to Mercy.**  
Scully, Matthew. 2002.
- p. 101 **Knowing Animals.**  
Simmons, Laurence and Armstrong, Philip (eds). 2007.
- p. 104 **In Defense of Animals: The Second Wave.**  
Singer, Peter (ed). 2006.

### SHORT WRITTEN TEXTS

#### Blog

- p. 110 **SAFE.**  
*'Colony Cage Con'*. 2014.

#### Conference Paper

- p. 111 **Research Consortium Sustainable Production.**  
Sneddon, L.U. and Gentle, M.J.  
*'Pain in Farm Animals'*. 2001.

#### Government/Industry Publications

- p. 112 **National Animal Welfare Advisory Committee (NAWAC).**  
*Code of Welfare – Layer Hens.* 2012.
- p. 114 **National Animal Welfare Advisory Committee (NAWAC).**  
*Code of Welfare – Pigs.* 2010.
- p. 118 **Cobb Focus.**  
Hardiman, John.  
*'Route to greater speed and accuracy in breed progress'*. 2006.

### Journals

- p. 120 **Society & Animals.**  
Loveridge, Alison.  
*'Changes in Animal Welfare Views in New Zealand: Responding to Global Change'*. 2013.
- p. 121 **Canadian Journal of Animal Science.**  
Webster, A.B. and Hurnik, J.F.  
*'An Ethogram of White Leghorn-Type Hens in Battery Cages'*. 1990.
- p. 124 **Applied Animal Behaviour Science.**  
Vieuille-Thomas, C., Le Pape, G. and Signoret, J.P.  
*'Stereotypies in pregnant sows: indications of influence of the housing system on the patterns expressed by the animals'*. 1995.
- p. 128 **Journal of Agricultural & Environmental Ethics.**  
Weaver, S.A. and Morris, M.C.  
*'Science, Pigs, and Politics: A New Zealand Perspective on the Phase-Out of Sow Stalls'*. 2004.
- p. 132 **Poultry Science.**  
Zuidhof, M.J., Schneider, B.L., Carney, V.L., Korver, D.R. and Robinson, F.E.  
*'Growth, efficiency, and yield of commercial broilers from 1957, 1978, and 2005'*. 2014.
- p. 134 **Journal of Agricultural & Environmental Ethics.**  
Morris, M.C.  
*'The Ethics and Politics of Animal Welfare in New Zealand: Broiler Chicken Production as a Case Study'*. 2009.
- p. 138 **Poultry Science.**  
Siegel, P.B., Dodgson, J.B. and Andersson, L.  
*'Progress from Chicken Genetics to the Chicken Genome'*. 2006.

### Media Releases

- p. 139 **SAFE.**  
*'Mike King latest celebrity kingpin to condemn New Zealand pig cruelty'*. 2009.
- p. 140 **SAFE.**  
*'Welfare laws fail pigs miserably'*. 2009.
- p. 141 **SAFE.**  
*'Consumer ad campaign challenges pig industry'*. 2010.
- p. 142 **SAFE.**  
*'Disturbing new pig cruelty footage reveals no change to pig welfare'*. 2010.

- p. 143 **SAFE.**  
*'Govt fails to ban factory-farmed animals'*. 2010.
- p. 144 **SAFE.**  
*'Sow stall ban first important step'*. 2010.

### Newspapers/Magazines

- p. 145 **NZPA.**  
*'Comedian does U-turn on pork'*. 2009.
- p. 146 **NZPA.**  
*'Key finds pig probe "disturbing"'*. 2009.
- p. 147 **Manawatu Standard.**  
*'Piggery practice legal but not acceptable'*.  
Editorial. Cummings, Michael. 2009.
- p. 148 **The Dominion Post.**  
*'To save your bacon, just add celebrity'*.  
Television. Clifton, Jane. 2009.
- p. 149 **The Press.**  
*'Let the light shine in'*.  
Mainlander. Matthews, Philip. 2009.
- p. 151 **The New Zealand Herald.**  
*'Writing on the wall for sow stalls'*.  
Editorial. 2009.
- p. 152 **Rodney Times.**  
*'Pig farming rules a legal cruelty'*.  
Opinion. Booth, Pat. 2009.
- p. 153 **The New Zealand Herald.**  
*'Carter gives industry hurry-up on sow crates'*. Politics. 2009.
- p. 154 **New Scientist.**  
*'Animals are conscious and should be treated as such'*.  
Comment. Bekoff, Marc. 2012.
- p. 156 **New Scientist.**  
*'Chicken genome plucked bare by inbreeding'*.  
Daily News. MacKenzie, Debora. 2008.

### Reports

- p. 157 **American Society for the Prevention of Cruelty to Animals (ASPCA).**  
*A Growing Problem – Selective Breeding in the Chicken Industry: The Case for Slower Growth.* 2015.

## LIST OF TEXTS CONTINUED

- p. 162 **University of Nevada-Reno: Department of Animal Biotechnology.** Rauw, Wendy (ed). *Resource Allocation Theory Applied to Farm Animal Production*. 2008.
- p. 164 **Compassion in World Farming Trust (CIWF).** Turner, Jacky, Garcés, Leah and Smith, Wendy. *The Welfare of Broiler Chickens in the European Union*. 2005.
- p. 169 **Ministry for Primary Industries (MPI).** Webster, Jim, Cameron, Catherine and Rogers, Andrea. *Survey of Lameness in New Zealand Meat Chickens*. 2013.
- p. 174 **IBF International Consulting.** Hiemstra, Sipke and Napel, Jan. *Study of the Impact of Genetic Selection on the Welfare of Chickens Bred and Kept for Meat Production*. 2013.
- p. 179 **Scientific Veterinary Committee.** Von Borell, E., Broom, D.M., Csermely, D., Dijkhuizen, A.A., Hylkema, S., Edwards, S.A., Jensen, P., Madec, F. and Stamataris, C. *The Welfare of Intensively Kept Pigs*. 1997.

### WRITTEN AND VISUAL TEXTS

#### Advertisements

- p. 186 **SAFE.** *'Your Say Matters!'* 2010.
- p. 187 **SAFE.** *'Saving Lucy'*. 2008.
- p. 188 **SAFE.** *'Finally, this pig has enough room to turn around'*. 2009.

#### Banners

- p. 189 **SAFE.** *'Ban the Sow Crate'*. 2006.

#### Cartoons

- p. 190 **Manawatu Standard.** *'Sure, it's an inhumane practice, but the farm would be uneconomic without it!'* 2009.
- p. 191 **SAFE.** *'Secret Origin. Holy Cow! No. 3'*. 2005.
- p. 192 **SAFE.** *'The Price of Cheap Pork. Holy Cow! No. 1'*. 2005.
- p. 193 **SAFE.** *'Beyond the Egg. Holy Cow! No. 2'*. 2005.

#### Leaflet

- p. 194 **SAFE.** *'For the love of pigs...'*. 2007.

#### Mail-Out/Campaign Report

- p. 195 **SAFE.** *'Meet Lucy – Give Pigs a Chance'*. 2010.
- p. 196 **SAFE.** *'Campaign Report 2008'*. 2008.

#### Merchandise

- p. 197 **SAFE.** *'Love Pigs'* merchandise. 2007.

#### Pledge

- p. 198 **SAFE.** *'Take the Pledge Against Pig Cruelty'*. 2009.

#### Postcards

- p. 199 **SAFE.** *'Lobbying for Lucy'*. 2006.
- p. 200 **SAFE.** *'Are Your Customers Fed Up With Pig Cruelty?'* 2006.

#### Posters

- p. 201 **SAFE.** *'Hi! I'm...'*. 2008.
- p. 202 **SAFE.** *'"Welfare Approved" Pork – Don't be Fooled!'* 2010.
- p. 203 **SAFE.** *'Freedom for Pigs Campaign'*. 2008.

#### Rescue Pack

- p. 204 **SAFE.** *'"King of Pork" Turns Pig Defender'*. Love Pigs Rescue Pack. 2009.

### VISUAL AND ORAL TEXTS ON DVD

#### Current Affairs (Pigs)

- **Sunday** *If Pigs Could Talk (3 parts)*, 17 May 2009, 26 min 3 sec
- **Close Up** *Pork Industry Plunges into Panic*, 18 May 2009, 9 min 57 sec
- **Breakfast** *Pork Industry Under Fire*, 18 May 2009, 6 min 16 sec

#### Current Affairs (Layer Hens)

- **Sunday** *Bad Eggs*, November 2011, 15 min 22 sec

#### Behavioural Footage

- **Outdoor hen** Behavioural footage, 2015, 27 min 44 sec
- **Colony caged hens** Behavioural footage, 2015, 24 min 14 sec
- **Outdoor pig** Behavioural footage, 2015, 27 min 30 sec
- **Farrowing crate pigs** Examples of stereotypies – Blantyre Farms NSW, 2013, 22 min 56 sec

#### Advertisements/Promotions

- *Saving Lucy* 2008, 30 sec
- *Love Pigs supermarket advert* 2009, Featuring Mike King, 45 sec
- *Victory! Sow stalls ban* December 2015, 2 min 35 sec

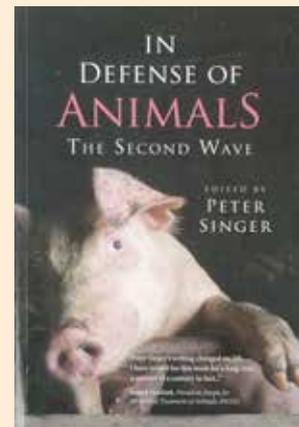
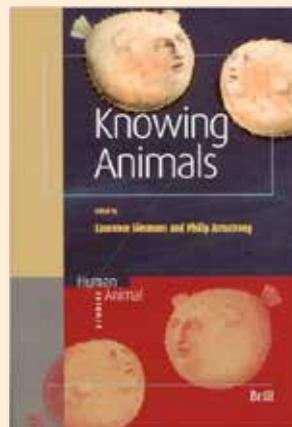
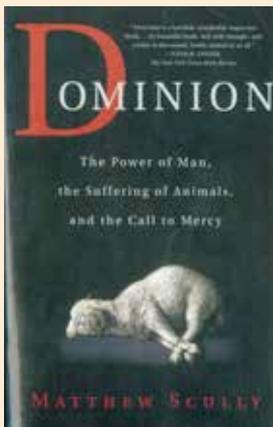
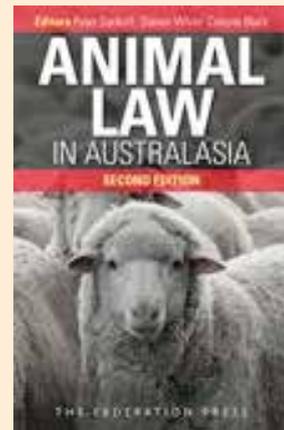
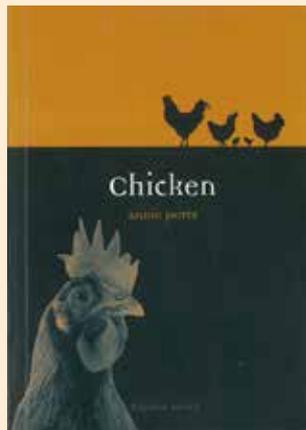
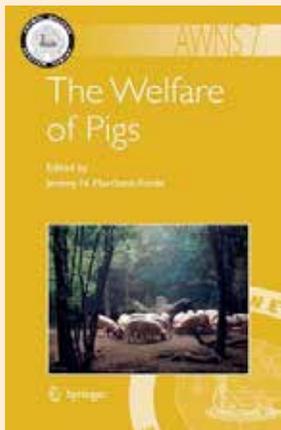
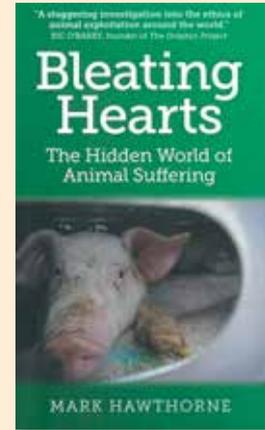
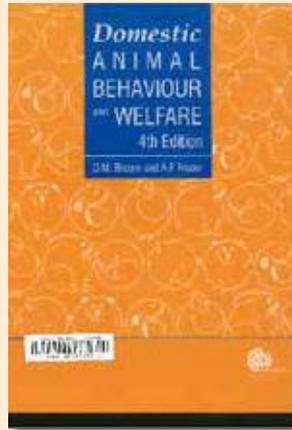
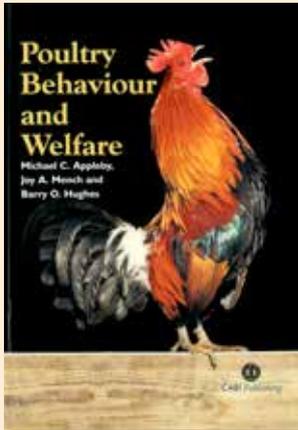
#### Educational Videos

- *Factory Farmed Pigs in New Zealand – The Price of Pork* Compelling arguments against factory farming, 2009, 9 min 46 sec
- *Live Fast Die Young – The Story of the Broiler Chicken* May 2007, 7 min 58 sec
- *Stop Factory Farming* November 2012, 8 min 41 sec
- *Colony* April 2016, 1 min 31 sec

#### Activist Footage

- *Footage of an NZ Colony Cage System* May 2012, 1 min 33 sec
- *Farrowing Crates: A Life of Torment for Pigs* September 2014, 4 min 31 sec
- *Chicken growth* August 2013, 25 sec
- *Vigil for chickens raised for meat* August 2013, 6 min 2 sec
- *Meat chickens on New Zealand farm* December 2012, 1 min 50 sec

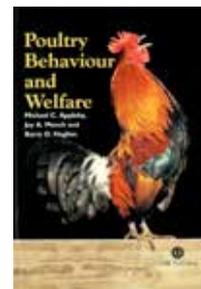




## SCIENCE TEXTS

### Extended Written Texts (Non-Fiction)

Appleby, M.C., Mench, J.A. & Hughes, B.O. *Poultry Behaviour and Welfare*. CAB International (2004).  
Extracts from chapter 4 (pp. 47, 50, 60 & 61).



## 4 Maintenance

### 4.3 Development of Feeding and Drinking Behaviour

Chicks under commercial conditions have some difficulty in learning to peck at nipple drinkers; this movement has to be learnt. For this reason, the pressure in the system is often increased for the first few days, so that water drips slowly from the drinkers, thus encouraging the chicks to peck at the shiny drops.

### 4.4 Foraging Behaviour

Whether or not birds are highly motivated to obtain loose material, the absence of varied or manipulable substrates in systems leads to other problems. Perhaps most importantly, it probably contributes to the development of feather pecking and cannibalism (Section 5.10) in cages or wire floor systems: in one experiment, pullets in pens that were deprived of such substrates showed an increased frequency of redirected pecking (Blokhus, 1989).

### 4.9 Movement

No other poultry production system is so restrictive of movement as battery cages. For laying hens, even provision of the 750 cm<sup>2</sup> per bird that will be required in the EU by 2012 would allow 13.3 birds/m<sup>2</sup>. There is no single-tier floor system in which it is recommended that birds are stocked as densely as this, and in fact the new EU standards require that hens in non-cage systems be given more than 1100 cm<sup>2</sup> of space each (Chapter 12). Freedom of movement is reflected in the actual number of movements made by birds. One study comparing different systems (Knowles and Broom, 1990) found that hens took an average of 72 steps/h in cages and 208 in a perchery. Wing movements occurred twice per hour and flying 0.4 times/h in the perchery, whereas the latter was completely absent in cages. Another study found similar differences in wing flapping between hens housed in deep litter systems and those in cages (Norgaard-Nielsen, 1990). These differences affect bone strength. Tibia strength is increased by up to 41% and humerus strength by up to 85% in percheries and deep litter systems compared with cages (McLean *et al.*, 1986; Knowles and Broom, 1990; Norgaard-Nielsen, 1990). Bone strength and structure may also be improved in cages simply by adding a perch, although not as much as in alternative systems (Hughes and Appleby, 1989). Weak bones are more likely to be broken both within the system and when birds are removed for slaughter (Knowles and Wilkins, 1999). Up to 30% of caged birds suffer broken bones during catching and transportation, and more during processing, but there are around half as many breakages in birds from free range or percheries as in caged birds (Gregory and Wilkins, 1989; Gregory *et al.*, 1990).

Restriction of movement will also result in the prevention of specific behaviour patterns, because these need more space than standing (Fig. 4.8; see Table 8.1). Such prevention may cause frustration, as discussed later in the chapter, and restriction of movement can also have physiological consequences. Birds use postural changes such as erecting their feathers or elevating their wings to dissipate heat, so their ability to thermoregulate by behavioural means will be decreased under crowded conditions.

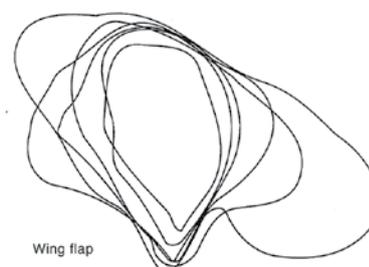
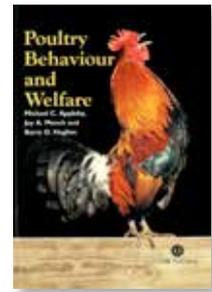


Fig. 4.8. The space used for wing flapping by an unrestricted hen. Successive outlines of the bird were drawn from an overhead video picture, starting with the smallest outline when the bird was standing still (Dawkins and Nicol, 1989). On average, wing flapping used 1876 cm<sup>2</sup> of space.

## SCIENCE TEXTS

### Extended Written Texts (Non-Fiction)

Appleby, M.C., Mench, J.A. & Hughes, B.O. *Poultry Behaviour and Welfare*. CAB International (2004).  
Extracts from chapter 4 (pp. 63, 64 & 65).



#### 4.11 Comfort Behaviours

Preening and other comfort behaviours, such as wing flapping, feather ruffling and stretching, are important for keeping the plumage well groomed in both natural and from the uropygial gland (Fig. 4.11), which helps to maintain good feather condition, and birds will also dislodge and consume parasites living on their skin, such as ticks, while preening (Ostfeld and Lewis, 1999). These behaviours vary between systems in frequency, form, synchrony and, to some extent, also function. This variation is primarily associated with stocking density, because comfort behaviours require a large area for performance (Fig. 4.8; Table 8.1). In hens, they are therefore less frequent in battery cages than in more spacious systems and less frequent in small cages than large ones (Nicol, 1987a,b; Tanaka and Hurnik, 1992). To a lesser extent, they are also constrained by cage height (Nicol, 1987a) and in fact the cage height of 35–40 cm currently required by the EU restricts quite a lot of behaviour. Hence the new EU requirement for enriched cages is that at least 600 cm<sup>2</sup> of space per hen be 45 cm high. With unrestricted height, nearly 25% of hens' head movements occur above 40 cm. When hens are moved out of small cages, they perform comfort behaviours at an increased frequency, which suggests that constraints on comfort behaviours cause frustration (Nicol, 1987b).

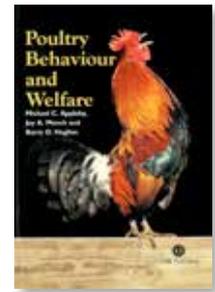
#### 4.12 Dust Bathing and Water Bathing

A dust bathing bout begins with the bird pulling loose substrate close to its body. Fluttering movements work this material up into the feathers, where it helps to distribute or remove oily secretions (Fig. 4.12). Although dust bathing thus occurs most often in housing systems with loose material, it can also occur in other housing systems in a 'vacuum' form, in which the bird carries out similar actions on slats or wire, although in longer bouts (Vestergaard *et al.*, 1990). This is sometimes interpreted as indicating high motivation, in which case birds deprived of loose material might suffer frustration. That birds are strongly motivated to dust bathe is suggested by an experiment demonstrating that chicks compensate for an interrupted dust bathing bout by dust bathing more than is typical the next time a substrate is available (Vestergaard *et al.*, 1999). Preference experiments, though, have failed to demonstrate consistent evidence for such strong motivation (e.g. Dawkins and Beardsley, 1986). However, hens deprived of dusting material after having been exposed to it for more than 2 years respond with increased corticosterone levels, suggesting that there is stress associated with dust deprivation for experienced birds (Vestergaard *et al.*, 1997). Experienced hens are also willing to work to gain access to a dusty substrate, even if they have not been deprived of the opportunity to dust bathe (Widowski and Duncan, 2000), indicating that the substrate itself has reinforcing properties for them.

## SCIENCE TEXTS

### Extended Written Texts (Non-Fiction)

Appleby, M.C., Mench, J.A. & Hughes, B.O. *Poultry Behaviour and Welfare*. CAB International (2004).  
Extracts from chapter 5 (pp. 81, 83, 84 & 87).



## CHAPTER 5 LIVING IN GROUPS

### 5.8 Stocking Density, Group Size and Spacing Behaviour

Stocking density and group size can affect both production and behaviour. In conventional cages, higher stocking densities and larger group sizes are associated with decreased egg production, higher mortality, more feather pecking and cannibalism and increased fearfulness (Adams and Craig, 1985; Mench and Keeling, 2001). In general, small group size is advantageous. For example, in cages for laying hens, small groups show higher production levels compared with larger unit sizes (Hughes, 1975b). There is also some evidence that in cages, stress decreases linearly with decreasing group size (Mashaly *et al.*, 1984; Roush *et al.*, 1984). Furnished cages that retain small group sizes may have similar advantages (Appleby, 1998). However, hens do not necessarily prefer small group sizes unless adequate space is also provided (Lindberg and Nicol, 1996).

It is not known whether birds become used to these continual encounters with unfamiliar individuals but, in small groups of chickens, contact with strangers results in increased heart rate (Candland *et al.*, 1969), increased aggression (Craig *et al.*, 1969) and growth of the adrenal glands (Siegel and Siegel, 1961), which are indicators of stress.

### 5.9 Feather Pecking

There are two kinds of feather pecking: gentle pecking that results in little damage (sometimes called allopecking or allopeening), and severe feather pecking that results in feather damage or loss. Feather pecking is different from aggressive pecking, both in character and in effect. The movements involved are not rapid and violent, as in aggression, but instead deliberate and similar to feeding movements (Wennrich, 1975). In more severe forms, the feathers are grasped and then pulled. Pecking is often directed at feathers that are damaged or distinctive, or which are out of line (McAdie and Keeling, 2000).

There are also major environmental influences on the behaviour. Predisposing factors identified in a recent survey of alternative housing systems in the UK were dietary changes, low temperature, high lighting levels during inspection, the use of bell drinkers, lack of use of the outdoor area and absence of loose litter at the end of lay (Green *et al.*, 2000). As the last two factors suggest, feather pecking is worse in barren conditions, presumably because the availability of other, varied stimuli for pecking is then reduced (Blokhuys, 1989). It is therefore often a major problem in cages, reflected in the fact that worse feather loss has often been recorded in cages than in other systems (McLean *et al.*, 1986; Appleby *et al.*, 1988b).

### 5.10 Cannibalism

The same factors that result in higher levels of feather pecking also result in higher levels of cloacal cannibalism, but flocks do not necessarily experience both problems at the same time.

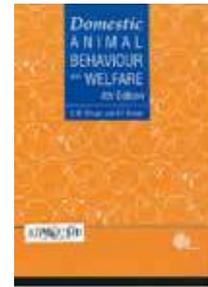


Fig. 5.6. An extreme case of feather loss. While some feather loss is caused by abrasion, most is due to feather pecking.

## SCIENCE TEXTS

### Extended Written Texts (Non-Fiction)

Broom, D.M. and Fraser, A.F. *Domestic Animal Behaviour and Welfare* (4th edition). CAB International (2007). Extracts from chapter 2 (p. 17).



# 2 Describing, Recording and Measuring Behaviour

## Levels of Description of Behaviour

The words used to describe behaviour are a consequence of how people think about what they see or hear. Those words in their turn, however, may change the way of thinking of the person who uses them or of the person who hears or reads them. This occurs especially when the word used to describe the behaviour implies something about the emotional state or the intentions of the animal whose behaviour is described. Hence it is important to be accurate and cautious when describing. As an example of the problem, suppose that a hen is seen to move rapidly, flapping her wings, over a distance of 3 m starting at the edge of one group of birds and finishing next to a wall where a single bird standing there moves away. An observer might describe this sequence of behaviour by saying that the hen is frightened, angry or aggressive. This may be true, but does not inform others about what has been observed. In order to communicate effectively with the listener or reader when describing behaviour, it is best to state what is seen in the manner of the descriptive sentence above.

In selecting measures for a particular study it is useful to know the array of behaviours the animal is capable of showing. A largely complete description of such an array is called an ethogram, and papers have been published which present an ethogram for a species. These papers are necessarily based on an extensive study of that species and they can be very useful if the behaviour description is precise enough. It is still necessary, however, for the observer to spend some time becoming familiar with the behavioural repertoire of the animal. It is likely that any detailed behavioural study will add to our knowledge of the repertoire and organization of that animal's behaviour, so no ethogram is ever complete. The actual selection of measures should take account whether or not the measures are independent of one another; for example, one activity may necessarily be preceded by another or may prevent the occurrence of another.

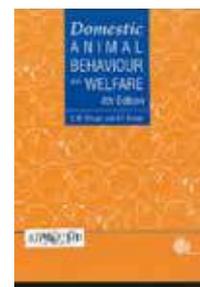
When considering the level of detail of description it becomes apparent that some behaviours like sleep are continuous, while others like walking are a series of repeated movement sequences and others like displays or grooming are made up of sets of recognizable units. Rowell (1961) distinguished between acts, such as a finch bill-wiping: 'bending forward, wiping the bill on the perch and resuming an upright posture' or a step during walking, and bouts such as a sequence of walking with a gap before the next sequence. The question of how to decide, for activities such as walking, preening, eating or displaying, when a bout ends is discussed by Broom (1981).

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## SCIENCE TEXTS

### Extended Written Texts (Non-Fiction)

Broom, D.M. and Fraser, A.F. *Domestic Animal Behaviour and Welfare* (4th edition). CAB International (2007). Extracts from chapter 2 (pp. 19, 20 & 21).



#### Design of Experiments and Observation Procedures

Before commencing a behaviour study it is important to consider whether the design of the procedures to be used is adequate to allow reliable conclusions to be drawn from the results of the work. The first precaution concerns the effects of the presence of the observer on the behaviour of the animals. As mentioned above, an animal that is being examined may behave in different ways in the presence and absence of an observer. Small animals like chickens, unless handled frequently and gently from an early age, treat man as a dangerous predator. Hence, their behaviour can be affected very substantially by the proximity of a person watching them. Other animals are also affected by human presence so it is advisable, when watching any of these animals, either to observe from a hide or to carry out checks to ascertain how much behaviour is changed by the observer.

Behaviour observation can be accurately replicable if the definitions of measures and precision of recording are sufficiently clear. It is desirable, if more than one observer is involved, however, for studies of inter-observer reliability to be carried out. The possibility of bias, deliberate or unintentional, should also be considered when designing observation procedures. If two treatments are being compared, wherever possible the observer should be 'blind' in the sense that the treatment category to which each animal belongs is not known at the time of observation.

Wherever experiments are carried out, one or more control situations should also be studied. For example, in a study of the effect of a hormone treatment on behaviour, a control group whose conditions are exactly the same as the experimental group, but with an inert substance given to the animal in the same way as the hormone, should be used. Studies of behaviour often require replication, since unknown variables can sometimes lead to spurious results. An illustration of such necessity is the study of orders of movement of a group of animals from one place to another. The order of animals on one occasion, or in one situation, will be affected by chance and may be substantially changed by local conditions, so orders should be recorded on several occasions and in several different situations before any conclusion about social relationships can be reached.

Whenever sets of observations are replicated, the experimenter must be aware of any possible effects of learning on the results. No animal that has been exposed to experimental conditions can be assumed to be unaffected by them, so its behaviour may be different during any repetition of these conditions. In some studies these very changes are under investigation or, as in the case of regular movement orders, the situation is a very frequent one in the animals' lives so behaviour is not likely to change rapidly, because of previous experience of that situation. In other studies, however, an unusual stimulus is presented to the animal and a subsequent response to the same stimulus may be either much less, due to habituation, or much greater, due to sensitization. The design of experiments is explained in more detail by Lehner (1996) and Hawkins (2005).

#### Sampling and Measuring

Several decisions have to be taken when behaviour is to be measured and these are interrelated in that they are limited by the capabilities of the observer, and greater detail in one aspect means potentially less detail in another. The first decision concerns which animals to observe. If much detail from direct observation is required, then it will be possible to observe only one animal at a time. This may be an individual in its own pen or home or it may be a focal animal that can move around within a group. With appropriate sampling methods, data on several or many animals at once can be collected by scanning them, but information about each individual is lost by sampling.

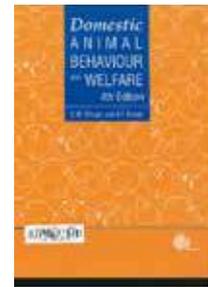
The information about one kind of behaviour that can be obtained from observation and recording might include:

- The presence or absence of the particular activity.
- The frequency of occurrence of each activity during the observation period.
- The duration of each bout of each activity.
- The intensity of the activity at each occurrence.
- The latency of occurrence of the activity.
- The timing and nature of subsequent activities.
- The timing and nature of behaviour changes in relation to physiological changes.

# SCIENCE TEXTS

## Extended Written Texts (Non-Fiction)

Broom, D.M. and Fraser, A.F. *Domestic Animal Behaviour and Welfare* (4th edition). CAB International (2007). *Extracts from chapter 2 (p. 22).*



### Continuous recording of behaviour

This technique can be difficult if many measures are used, and recording aids (see below) are often needed, but it offers opportunities for all the different methods of analysis. Sampling behaviour makes possible the collection of data on more than one individual and it allows an estimate of the duration of activities in situations where continuous recording is not possible, but some information is lost. There are three sorts of sampling that can be used: two types of time sampling and behaviour sampling (see Fig. 2.4).

### Behaviour sampling

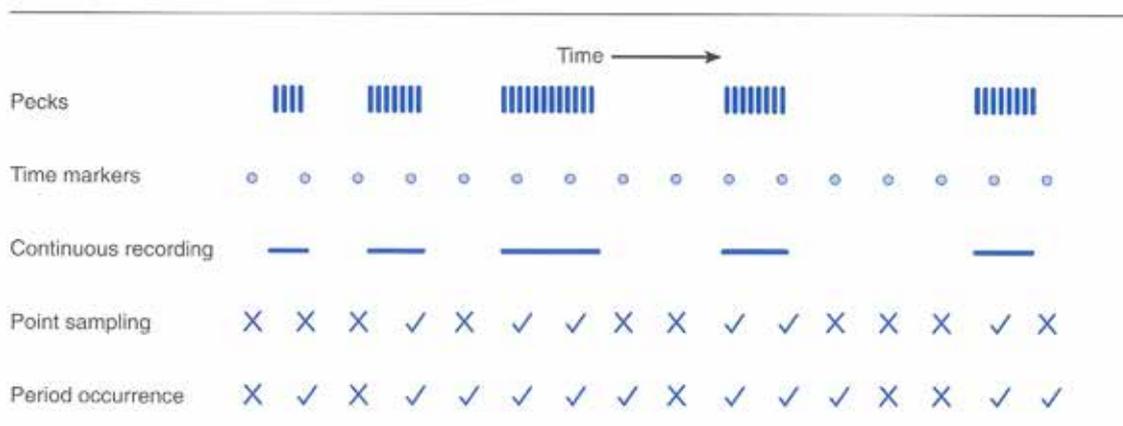
Also known as ‘conspicuous behaviour recording’, this involves continuous observation of animals but recording only certain kinds of behaviour. For example, a group of dogs may be watched and all occasions where one animal sniffs another recorded in detail. Behaviour sampling may also occur automatically in that a single action, such as pecking a key by a chicken, may be automatically recorded but all other actions are ignored. This method is particularly useful for rare behaviour patterns that might otherwise be missed.

### Point sampling

Also known as ‘instantaneous sampling’, this involves observing animals at regular, predetermined points in time and recording whether or not each of a range of behaviours is being shown at that instant. As shown in Fig. 2.3, a useful estimate of duration of the more common activities is obtained if the observation period lasts long enough and if the interval between the samples is not too long. Rare activities might be missed altogether, however. It is a problem of the method that observers tend to try to include activities that do not actually occur at the moment of sampling. A further problem is that some activities take some time to recognize. For example, when a cow is ruminating it takes a few seconds to be sure of this since the characteristic jaw movement takes time to identify and the animal might be swallowing just at the moment of sampling. The major advantage of this method is that it can be used when many individuals are scanned, so one person can collect much information.

### Period occurrence

This type of recording (Broom, 1968b), often rather confusingly called ‘one-zero sampling’, is another form of time sampling in which the events which have occurred during a predetermined time period are recorded at the end of the period. Several animals can be observed simultaneously because the data do not have to be recorded continuously. As

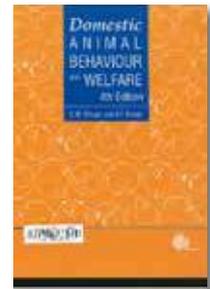


**Fig. 2.4.** Comparison of behaviour recording methods. A series of pecks by a chick are shown as if produced by an event-recorder moving at a constant speed. If Continuous Recording was used, lines like those shown – or precise times of stopping and starting each bout of pecking – would be produced. Point Sampling and Period Occurrence would produce Yes or No answers at each time mark, as shown.

## SCIENCE TEXTS

### Extended Written Texts (Non-Fiction)

Broom, D.M. and Fraser, A.F. *Domestic Animal Behaviour and Welfare* (4th edition). CAB International (2007). Extracts from chapter 23 (pp. 226, 227 & 228).



# 23

## Abnormal Behaviour 1: Stereotypies

### What is Abnormality?

In order to recognize that behaviour is abnormal, the person observing must be familiar with the range of normal behaviour of that species. For some abnormalities, indeed, recognition depends upon a knowledge of the behaviour of that particular individual.

The most obvious kind of abnormality is a distinct pattern of movements, but even this will usually have components which are shown as components of some normal behaviour. The most common abnormalities are those where the frequency of the movements, the intensity of the actions or the context in which the behaviour occurs is different from the norm. The animal may show the behaviour in an attempt to cope with some aspect of its environment. In some cases, that abnormal behaviour may help the individual to cope but, in other cases, it may confer no beneficial effect. Abnormal behaviour is behaviour that differs in pattern, frequency or context from that which is shown by most members of a species in conditions that allow a full range of behaviour.

Some abnormal behaviour has an obvious detrimental effect on either the animal showing it – for example, horses eating wood – or on other animals – for example, pigs tail-biting.

### Stereotypies

It has long been known that some caged animals in zoos and some human prisoners in isolation cells will pace out the same route over and over again. Similarly, birds in small cages will fly or hop from perch to perch, following a route, and both monkeys in cages and autistic children will rock backwards and forwards for long periods. Hediger (1934, 1950) and Meyer-Holzappel (1968) gave many examples of such behaviour in zoo animals, and Levy (1944) described examples of head-shaking in battery hens and various movement patterns in children. Brion (1964) described crib-biting and -sucking by horses, and Fraser (1975c) described bar-biting by pigs. A stereotypy is a repeated, relatively invariable sequence of movements that has no obvious purpose. Its occurrence and causation are described in detail by Broom (1981, 1983b).

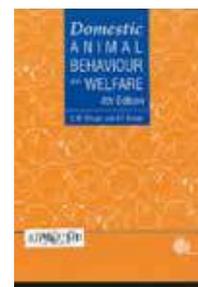
A stereotypy is usually recognized because a sequence of movements is repeated several times with little or no variation. However, the behavioural repertoires of animals include many examples of repeated action patterns – for example, walking, flapping flight and various displays that would not be called stereotypies (Broom, 1983b).

Stereotypies occur in situations where the individual lacks control of its environment. In some cases, the animal is obviously frustrated and in other cases the future events are rather unpredictable. Frustration about food inadequacy is one factor leading to increased likelihood of stereotypies (Lawrence *et al.*, 1991; Mason, 1993; Vinke *et al.*, 2002).

## SCIENCE TEXTS

### Extended Written Texts (Non-Fiction)

Broom, D.M. and Fraser, A.F. *Domestic Animal Behaviour and Welfare* (4th edition). CAB International (2007). Extracts from chapter 23 (pp. 228, 229 & 230).



#### Pacing or route-tracing

The repeated action patterns during pacing or route-tracing are those used in walking or other locomotion, but the animal follows a path that returns to its point of origin and which is often repeated with only minor modifications. The route-tracing of zoo animals in cages, of some confined domestic animals and of confined or disturbed people has often been described. Some obvious frustration is normally evident, most frequently that the animal cannot escape from confinement in a cage or pen, but occasionally that access to a social partner, a sexual partner, food or some other resource is impossible.

#### Circling and tail-chasing

Animals of various species may sometimes turn in tight circles and dogs may do so, apparently trying to catch their own tails. Occasionally, this is a result of a neurological disorder. Tail-chasing is most likely to occur when a dog is excited and frustrated, for example, because there is a possibility that it will be taken for a walk, but it cannot control when or whether or not this happens. The behaviour usually stops when the frustrating situation is resolved.

#### Rocking, swaying and weaving

The individual remains in one place when carrying out this stereotypy, but the body is moved backwards and forwards or from side to side, with or without head-swinging. Monkeys in captivity, especially those deprived of their mother or of companions for some time, show rocking behaviour; so too do autistic children and other children in very disturbing circumstances. Horses, calves and adult cattle that are tethered or in small pens will sometimes rock and sway.

Weaving in horses involves swinging the head and neck and anterior parts of the body from side to side, so that the weight rests alternately on each forelimb. In most cases the forefeet remain on the stable floor during the behaviour but, in extreme cases, each foot is raised as the weight passes on to the other foot.

**Table 23.1.** Conditions leading to stereotyped pacing by hens (frp, Duncan and Wood Gush, 1972).

	Mean number of stereotyped pacing routines in 30 min
Deprived, fed	13.3
Not deprived, not fed	18.7
Deprived, frustrated (food under perspex cover)	161.0

#### Rubbing

Some part of the body is moved back and forwards against a solid object and the movement is repeated so many times that it could not function merely to alleviate a local irritation.

Cattle confined to stalls for extended periods, such as in winter, may rub their heads repeatedly against some part of the stall. This behaviour is more noticeable in horned breeds and more in bulls than in other stock. Head-rubbing in pigs is sometimes observed in animals subject to chronic restriction within narrow, single stalls. In this behaviour, the upper snout region of the sow is rubbed repetitively and vigorously along the underside of a bar across the front of the stall.

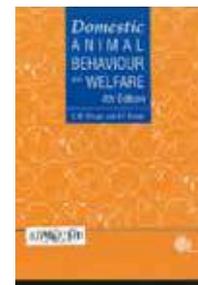
#### Pawing and stall-kicking

Although pawing is a normal behaviour of four-legged animals, it can be shown in abnormal form when it is performed with vigour in a persistent, stereotyped fashion. Dogs may show pawing in certain frustrating situations, and pawing may occur when horses are frustrated in obtaining food. The anomalous condition is shown in pawing that is so frequent and vigorous that holes may be dug in the stall floor and the hoof worn down severely. Continual pawing on a hard floor can result in various forms of leg strain and injury. Attempts to control this problem through negative conditioning have not been successful. It occurs most frequently in confined and isolated horses, so may be alleviated by turning the affected animal out to pasture in the company of other horses.

## SCIENCE TEXTS

### Extended Written Texts (Non-Fiction)

Broom, D.M. and Fraser, A.F. *Domestic Animal Behaviour and Welfare* (4th edition). CAB International (2007). *Extracts from chapter 23 (pp. 230 & 231).*



#### Eye-rolling

The eyes are moved around in the orbit at a time when no visible object is present, and moving in such a way as to lead to such movement. Young calves confined in crates sometimes stand immobile for extended periods and do not show the normal variations between lying and upright positions. During some of these episodes, the head is held motionless and the animal rolls its eyes within the orbits so that only the white sclera is shown, such eye-rolling being frequently repeated.

#### Sham-chewing

Jaw movements like those shown when chewing food are shown at a time when the animal has no food in its mouth. This condition is typically seen in sows that are tethered or kept singly in stalls in which no litter is provided. The animal chews vigorously at a time when all food available has been eaten and, since pigs are not ruminants, there can be no oral content except saliva. Constant features involve periodic chewing and mouth-gaping, while the chewing motion causes frothing and foaming of saliva. This foam collects on the outer edges of the lips (see Fig. 23.2) and the corners of the mouth and drops to the ground, where such material can remain in portions, for some time, as evidence of this activity. Sham-chewing occurs most often while the sow is lying in a prone position or on its haunches in a dog-sitting position. It can be maintained as a prominent activity enduring throughout consecutive days. Broom and Potter (1984) reported that sows spent up to 90 min sham-chewing (median 26 min) during the 8 h of daylight, and Sambraus (1985) describes sows that were sham-chewing for many hours, day after day.

#### Head-shaking or head-nodding

The head is moved vertically, laterally or with a rotary movement of the neck. Head-shaking occurs in the domestic fowl and takes the form of a rotary movement of the head, with a series of rapid side-to-side turns ending with a slight downward movement (Levy, 1944). These spasms of movement last only for a second or so but may be repeated in succession for several minutes. They are also shown by jungle fowl (Kruijt, 1964).

Increased head-shaking sometimes results from the close presence of an observer from which the bird cannot escape. For example, it has been found that, in certain strains of birds, the incidence of head-shaking increases fivefold in the presence of an observer in an obvious position (Hughes, 1980). There appears to be more head-shaking in caged birds than in floor-housed hens, and it is affected by breed, space allocation, group size, transfer to novel conditions and social rank (Hughes, 1981; Bessei, 1982). These results and those of Kruijt (1964) and Forrester (1980) suggest that head-shaking is linked to attentional mechanisms and the preparation for making a response. Hence, the behaviour may have a function when shown occasionally but should be regarded as abnormal and a stereotypy when shown often.

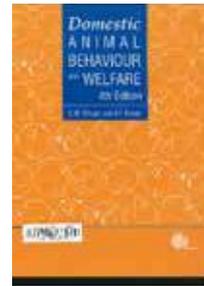


**Fig. 23.2.** Sham-chewing stereotypy in a sow (photograph courtesy of H.H. Sambraus).

## SCIENCE TEXTS

### Extended Written Texts (Non-Fiction)

Broom, D.M. and Fraser, A.F. *Domestic Animal Behaviour and Welfare* (4th edition). CAB International (2007). Extracts from chapter 23 (pp. 232, 233 & 234).



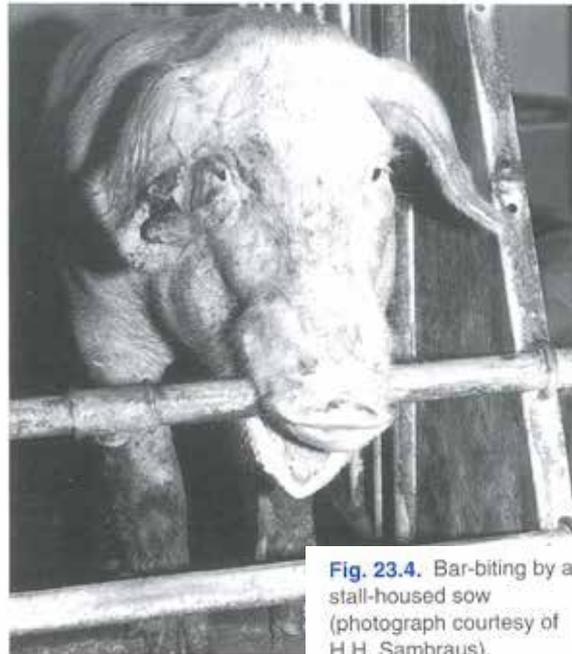
#### Licking or crib-whetting

In stereotyped licking, the tongue is applied repeatedly to an area of the animal's own body or to an object in the surroundings, with the same pattern of movement. This action may result in injury to the tongue, a wearing away of the area licked or ingestion of substantial quantities of hair or other materials (see Chapter 24). Stereotyped licking occurs in situations where animals have inadequate quantities of food, no teat from which to suck or insufficient total sensory input.

#### Bar-biting, tether-biting or crib-biting

The animal opens and closes its mouth around a bar, tether or stable door, engaging the tongue and teeth with the surface and performing chewing movements. Bar-biting has been described for pregnant sows housed in stalls or tethers that are very restrictive and do not allow the animal to turn around. The crate front and sides are made of metal piping. Tethers are commonly metal chains that the sow can bite and move up and down. Floors may be solid concrete or slats.

When engaged in bar-biting (see Fig. 23.4), the sow takes into its mouth one of the cross-bars at the front of the crate and bites it, rubs it with the body of the tongue or slides the mouth across the bar in rhythmic side-to-side motions (whetting). While biting the bar, the sow may take a firm grip on it with its jaws or may press the body of the tongue against the bar. In some instances the sow disengages from bar-biting and rubs its nose, above the snout, underneath the bar in side-to-side motions. Tether-biting occurs in much the same way but movements after the tether chain is taken into the mouth are more variable, as the tether can be moved more than can a bar. The sequences of movements include series of elements that are repeated exactly and others that are more variable. Breaks in these activities occur so that they are produced in episodes of activity. Trauma to the sow is not usually observed as a result of this condition.



**Fig. 23.4.** Bar-biting by a stall-housed sow (photograph courtesy of H.H. Sambras).

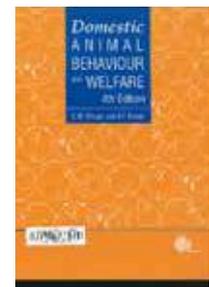
#### Drinker-pressing

This stereotypy (see Fig. 6.4), pressing an automatic drinker repeatedly without ingesting the water, is shown by pregnant sows kept in stalls or tethers and provided with a nipple drinker. The drinker is one of the most interesting items in the animal's surroundings, and some individuals spend long periods manipulating it (see above). In a study by Broom and Potter (1984), sows spent from 2 to 74 min pressing their drinkers during 8 hours of daylight. The median time spent was 10 min, which is considerably longer than necessary for drinking.

## SCIENCE TEXTS

### Extended Written Texts (Non-Fiction)

Broom, D.M. and Fraser, A.F. *Domestic Animal Behaviour and Welfare* (4th edition). CAB International (2007). Extracts from chapter 25 (pp. 239, 240 & 241).



# 25

## Abnormal Behaviour 3: Addressed to Another Animal

### Feather-pecking, body-pecking and eating pecked matter

Feather-pecking is a form of anomalous behaviour common in poultry. Under conditions of intensive management it can occur in all ages and many species, including chicks, adult hens, turkeys, ducks, quail, partridge and pheasants. The normal exploration and food investigation behaviour of such birds involves pecking, so it is not surprising that in a barren environment they investigate the feathers of other birds in this way. Hens crowded together on wire floors have few objects at which to peck. In these conditions birds peck on the backs, tail, ventral region and cloaca of associate birds. Mutual pecking, in which chicks in close parallel and opposite positions peck at each other, is common. In other cases, several birds may be involved so that chains of peckers may form. Young birds have been observed to show no resistance or other response when their feathers are pecked, but adult birds try to avoid being pecked.

Birds that feather-peck may subsequently start to peck and remove blood, skin and flesh from other birds (Brantas, 1975; Blokhuis and Arkes, 1984). Body-pecking and consequent cannibalism can begin when wounds arise when blood-filled new quills from the wings or tail are pecked and start to bleed (Sambraus, 1985). The outlet of the uropygial gland, which protrudes slightly, and the protruded cloaca after egg-laying elicit body-pecking. The most severe effects often ensue after the cloaca has been pecked. Wounds in the cloacal region can rapidly become severe, and the intestines can extrude through a cloacal wound. These are likely to be the subject of more pecking and, in due course, be pulled out and ingested. Mortality is therefore frequent once a wound has been produced.

### Egg-eating

Egg-eating is a habit found in chickens kept in pens and cages. It appears to occur more on wire mesh floors than among flocks on litter. The behaviour begins with a bird pecking at an egg until it is broken. The contents of the egg are then partially ingested. When a bird acquires this habit it is likely to increase the practice, and other birds may also acquire the habit through mimicry. In some cases, significant amounts of eggshell are eaten and this leads to the suspicion that the diet of affected birds may be deficient in grit.

Control of this condition involves the elimination of affected birds, but this may be difficult in a large flock as the perpetrators are difficult to identify. It is sometimes found possible to inject strong food dye into the substance of an egg and have this egg left lying on the ground. An egg-eating bird choosing this egg will be marked by coloration about the head. It is advisable to provide a supply of grit or oyster shell chips in dealing with problems of this nature. It is important to lay out the grit in long troughs so that all birds can have occasional access to it. In cages, the problem is reduced if eggs can roll away out of reach of the birds. The provision of nest boxes in larger cages reduces egg-eating, as floor-level eggs are eaten most frequently.

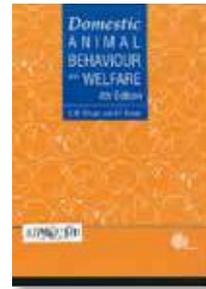
### Animals Treated as Objects

The behaviour preceding activities described in this section is often indistinguishable from that which precedes activities reported in Chapter 20. The animal approaches another individual, or more often a particular part of that individual, as if it were exploring its environment or looking for food. In circumstances where the animal approached is unable to move away because of lack of space or the close proximity of other animals, an action may be completed that is damaging to that animal. If the animal that is showing the behaviour can readily obtain the resource that it seeks, such behaviour is less likely; for example, provision of straw and other enrichment for pigs results in less behaviour directed at pen-mates (Beattie *et al.*, 2000).

## SCIENCE TEXTS

### Extended Written Texts (Non-Fiction)

Broom, D.M. and Fraser, A.F. *Domestic Animal Behaviour and Welfare* (4th edition). CAB International (2007). Extracts from chapter 26 (pp. 252 & 253).



# 26

## Abnormal Behaviour 4: Failure of Function

### Abnormalities of Basic Movements

Some types of animal housing prevent certain movements from occurring or make normal sequences of movement difficult to carry out. Movements that are prevented include wing-flapping and flying by hens in battery cages, walking by calves in crates, sows in stalls or tethered animals and running by many housed farm animals. Abnormalities in grooming by calves in crates or confined sows, which cannot reach the back of the body, have been described in Chapter 24. Hens in battery cages have insufficient room for normal preening with associated stretching (see Chapter 30).

### Abnormal lying and standing

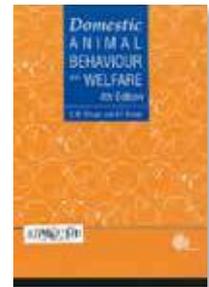
Hooved animals kept on slippery slatted floors have especial difficulty in lying down and standing up again.

This very unusual way of lying may be less hazardous for the animals in these difficult circumstances. The lying behaviour of sows in stalls and in farrowing crates is different from that of sows in a larger area, because lateral movements are not possible. The sow normally moves her body to the side in the course of lowering her body to the ground but, if bars prevent this from happening, she is forced to drop down from a greater height. Such movements are more likely to result in sow injuries and much more likely to lead to piglets being squashed by the sow. Another factor contributing to this abnormal lying behaviour is weakness of leg and other muscles consequent upon lack of exercise (Marchant and Broom, 1996). Sows that have been in stalls or tethers for a long time may be unable to lie down slowly and carefully because of their inactivity during the non-farrowing period. Other abnormalities of lying behaviour are a consequence of lameness or other localized body pain.

## SCIENCE TEXTS

### Extended Written Texts (Non-Fiction)

Broom, D.M. and Fraser, A.F. *Domestic Animal Behaviour and Welfare* (4th edition). CAB International (2007). Extracts from chapter 27 (pp. 255, 256 & 257).



# 27

## Abnormal Behaviour 5: Anomalous Reactivity

Very low or very high levels of activity and responsiveness are also abnormalities of behaviour. Just as in certain circumstances people can become very lethargic or hyperactive, so too can domestic animals. The causes are occasionally specific neurological disorders but, most frequently, they are an inadequacy in rearing or housing conditions, including especially lack of social contact.

Prolonged inactivity has been reported for sows in stalls and tethers; for example, Jensen (1980, 1981b) recorded that tethered animals were lying for 68% of the daytime period, while the pigs in an area of woodland and field studied by Wood-Gush and Stolba spent 50% of the daytime rooting and only a short period lying (Wood-Gush, 1988). Various factors must affect the level of activity, but it is frequently found that confined animals are less active. Prolonged lying in sows can lead to urinary tract disorders (Tillon and Madec, 1984), and this is discussed further in Chapter 29.

### Hysteria

The occurrence of the extensive alarm reaction in poultry is often termed hysteria. Flightiness in the domestic chicken appears in different types of nervous and hysterical behaviour occurring in differing environments and age groups. Hysteria in the caged laying hen is characterized by sudden flying about, squawking and trying to hide. The incidence of hysteria in penned poultry is higher at greater flock density. Flocks of 40 have been found to have 90% incidence of hysteria while flocks of 20 had an incidence of 22%. Claw removal in birds has been found to reduce hysteria, although some strains are resistant. Even in cages hysteria can occur, but it is less of a problem in multiple-hen cages containing three to five rather than the larger numbers of birds.

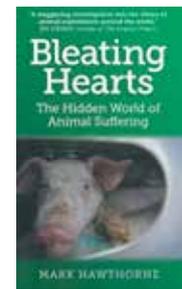
### Unresponsiveness

Measures of activity level can be obtained accurately, but it is difficult to know whether reduced activity means poor welfare. In descriptions of abnormal behaviour, Wiepkema *et al.* (1983) emphasized that confined sows may be unresponsive to events in the world around them, in addition to being inactive. Such behaviour is sometimes called apathetic. In studies of sows in stalls, Broom (1986d, e, 1987a) measured their responsiveness to three different stimuli. All animals video recorded were responsive to stimuli associated with the advent of food, but they showed little response to a stranger standing in front of them or to 200 ml of water at room temperature tipped onto their backs whilst they were lying awake. Group-housed sows, in contrast, were much more likely to take notice of strangers and to sit or stand and carry out other activities when the stimulus was presented. This work shows that stall-housed sows are abnormally unresponsive to such stimuli (see Table 27.1). The results of such work are likely to depend upon the precise nature of the stimulus presented, for a very frightening stimulus might elicit a maximal response in all sows. The behaviour of head-pressing (see Fig. 22.2) is shown by animals that may be in pain and are unresponsive to most stimuli. Studies of this kind indicate parallels with the behaviour of human depressives (Broom and Johnson, 2000; Goodyer, 2001).

## ENGLISH TEXTS

### Extended Written Texts (Non-Fiction)

Hawthorne, Mark. *Bleating Hearts: The Hidden World of Animal Suffering*. Changemaker Books (2013).  
Extracts from pp. 6 & 7.



Like other compassionate consumers, I've learned a great deal about animal agriculture from reading bestselling books such as *Eating Animals* by Jonathan Safran Foer, *Animal Liberation* by Peter Singer, and *Fast Food Nation* by Eric Schlosser, as well as watching documentaries like *Food Inc.* and *Forks Over Knives*. Perhaps you have, too. Now the effects of humanity's hunger for animal products are becoming part of our social consciousness: that factory farming is a leading contributor to global warming,<sup>4</sup> that consuming animal flesh has a detrimental effect on human health, that most meat, egg, and dairy products come from facilities containing thousands of animals (often hundreds of thousands, in the case of the egg industry) who are made to endure such privations as restrictive indoor confinement and the denial of many of their natural behaviors.

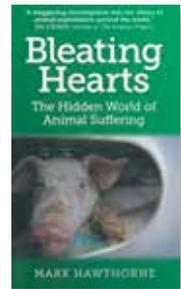
What I did not know until I looked deeper into the animal-to-edible transformation is how horrifying some of the least-known practices can be. I expected death—I did *not* anticipate the extreme disregard for sentient life. As an animal activist explains in *Eating Animals*, "These factory farmers calculate how close to death they can keep the animals without killing them. That's the business model. How quickly can they be made to grow, how tightly can they be packed, how much or little can they eat, how sick can they get without dying."<sup>5</sup> In his book *Farm Sanctuary: Changing Hearts and Minds About Animals and Food*, longtime animal advocate Gene Baur gives readers a heartbreaking account of how the US egg industry disposes of hundreds of millions of unwanted male chicks every year, even grinding them up alive:

I have watched unwanted chicks dumped onto an auger, a large screwlike device that is customarily used for processing grain or sand, then dropped through an opening in the side of a building into a manure spreader outside. I could hear faint chirping as live chicks, many of them horribly injured, were ground up and their feathers, flesh, and blood deposited on cropland as fertilizer. I later walked the field looking for survivors but found only mangled, lifeless bodies among the corn stubble. What stays with me most is the terrible irony of these newly hatched chicks, symbols of spring and rebirth, who'd been driven to fight their way out of their shell by the instinct to live that we all share, only to be ground up alive and turned into manure. And all because, in the industry's eyes, they have no value.<sup>6</sup>

## ENGLISH TEXTS

### Extended Written Texts (Non-Fiction)

Hawthorne, Mark. *Bleating Hearts: The Hidden World of Animal Suffering*. Changemaker Books (2013). Extracts from pp. 7 & 8.



While it's natural for people who learn of these abuses to ask how such things can happen, the reality is most of the cruelties perpetrated against animals raised for food are completely legal. In the United States, so-called Common Farming Exemptions state that as long as a corporation is treating their animals as other corporations do, their actions are generally considered standard within the industry and anti-cruelty laws do not apply. Practices such as confining animals in tiny cages or crates in which they can barely move, cutting off body parts without pain relief, and even dropping them fully conscious into a machine to be pulverized are all as lawful as they are merciless. But that doesn't mean animal exploiters want you to know about it. Indeed, the business of turning sentient beings into consumable products is the world's biggest covert operation, veiled behind walls of corporate greed and protected by special-interest resources. In praise of transparency, the late Supreme Court Justice Louis Brandeis observed that sunshine is the best disinfectant. Let's bring to light a few of animal agriculture's darkest secrets.

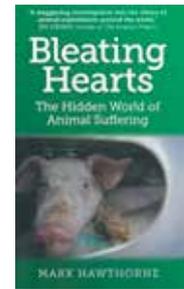
#### Live Fast, Die Young

Looking at the numbers, it's clear that chickens represent by far the most-abused species in the world. Of the estimated 65 billion animals killed in the world each year for food,<sup>7</sup> an astounding 73 percent—47 billion—are chickens.<sup>8</sup> If you find it difficult to wrap your head around that figure, consider it this way: In the time it takes you to read this sentence, more than 16,000 chickens have been slaughtered for food.<sup>9</sup> The percentage is even higher in the United States, where chickens represent about 8.5 billion of the 9 billion land animals slaughtered annually,<sup>10</sup> and not a single one of them is protected by the federal Humane Methods of Slaughter Act, which says that animals killed for food must be rendered insensible to pain, yet excludes poultry. At such high rates—thousands of animals per minute—agribusiness has devised a stunningly abusive system that emphasizes efficiency and speed, pushing cruelty to ever higher extremes. After being transported to a slaughterhouse on an overcrowded truck, chickens are hung upside down by their feet in metal shackles and then given a jolt of electricity so their heads will dangle long enough for a mechanical blade to slice their throats. The birds are likely still conscious as they bleed to death.

## ENGLISH TEXTS

### Extended Written Texts (Non-Fiction)

Hawthorne, Mark. *Bleating Hearts: The Hidden World of Animal Suffering*. Changemaker Books (2013).  
Extracts from pp. 9, 18 & 19.



The industry has also developed a vertically integrated system in which everything involved in the farm-to-fork trade—raising animals, producing feed, transportation, and slaughter—is owned and operated by a single company. In addition to controlling costs, such integration has further removed chickens and other farmed animals from the public consciousness and reduced them to mere commodities. Animals who at one time were at least allowed to graze in a pasture, root in the dirt, or peck in a barnyard are today typically concentrated in small areas and often never feel the sunshine.

#### No Sunny Side to Egg Production

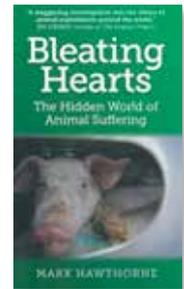
Hold this book open wide. At roughly 93 square inches (600 square centimeters), the area you see spread before you is 26 square inches (167 square centimeters) more space than the average hen has to live on in any battery cage in the United States egg industry.<sup>51</sup> The European Union, which finally increased minimum-space allotments for battery-caged hens in 2012 to 116 square inches (750 square centimeters) per bird, currently offers the world's least-restrictive standard. Space allowances in Brazil, India, and Ukraine are among the worst, with each hen granted from 46.5 to 62 square inches (300 to 400 square centimeters).<sup>52</sup>

Whatever the allotted area, the floor that hens stand on is made of wire, and the birds are crammed wing-to-wing with six or seven others in an effort to keep industrial-scale egg production as profitable as inhumanly possible. Contrary to the bucolic images found on some retail egg cartons, no sunshine greets these animals in the morning, and they have no chance to enjoy many of their most important natural behaviors, such as nesting, perching, or dust bathing. They are confined 24/7 to cages, stacked one atop another in huge, gloomy sheds and are left unseen by any veterinarian should they become sick.

## ENGLISH TEXTS

### Extended Written Texts (Non-Fiction)

Hawthorne, Mark. *Bleating Hearts: The Hidden World of Animal Suffering*. Changemaker Books (2013). Extracts from pp. 475, 476 & 477.



ME: I believe that most people care deeply about the suffering of animals. When I show my students documentary films that reveal the cruel, inhumane animal husbandry techniques commonplace in today's factory farms, virtually all of them are shocked and horrified at witnessing such inhumane treatment and the terrible suffering that it causes innocent, helpless animals. Many of these students are so upset by the animal suffering they are witnessing that they are actually brought to tears. If people didn't care deeply about animal suffering, they wouldn't be so upset by it. In their reaction papers, nearly all students find the inhumane treatment of animals in factory farms disgusting and morally reprehensible. Moreover, most insist that such treatment of factory-farmed animals ought to be illegal, even if they are personally unwilling to give up eating animal flesh.

If people are naturally empathetic and compassionate where animal suffering is concerned, as I have suggested, then why are some people able to work in factory farms and slaughterhouses and capable of treating animals so inhumanely? The answer, I think, lies in two well-documented psychological phenomena: 1. Desensitization. People tend to become desensitized to what would normally be psychologically distressing experiences through repeated exposure to those experiences. This desensitization process is a defense mechanism that allows us to cope psychologically with such traumatic experiences and events. 2. Deference to authority. People also have a natural tendency to defer to authority figures, even when those authority figures are instructing them to do something that they themselves would ordinarily think wrong, as was demonstrated by Stanley Milgram in his famous experiments on obedience. In one of these experiments, the test subjects were instructed to administer shocks of increasing strength to another human being whenever that other human being answered a multiple choice question incorrectly. Milgram found that 65 percent of the test subjects were willing to administer what they thought were lethal 450-volt shocks to these other human beings, as long as they were instructed to do so by the scientist conducting the experiment. Based on these experiments, Milgram concluded: "Ordinary people, simply doing their jobs, and without any particular hostility on their part, can become agents in a terrible destructive process. Moreover, even when the destructive effects of their work become patently clear, and they are asked to carry out actions incompatible with fundamental standards of morality, relatively few people have the resources needed to resist authority."

# SCIENCE TEXTS

## Extended Written Texts (Non-Fiction)

Marchant-Forde, J.N. (ed). *The Welfare of Pigs*. Springer, Netherlands (2009).  
Extracts from chapter 4 (pp. 96, 97 & 120).



## Chapter 4 Welfare of Dry Sows

Jeremy N. Marchant-Forde

### 4.2 Natural Behaviour

In terms of social behavior, feral sows typically form small herds or 'sounders' of between 2 and 4 related adult females and their most recent litters. Group size will be influenced by habitat type and the availability of resources, most importantly food (Mauget, 1981; Graves, 1984; Gabor et al., 1999). Their home range again depends on resource availability and population density, but can be as large as 6000 hectares (Janeau and Spitz, 1984), although within any given 24 h period, the group may only utilize perhaps 1% of this area. Different sounders may have overlapping ranges, but sounders tend to actively avoid open confrontation with each other (Gabor et al., 1999).

In terms of daily behavior patterns, there are typical peaks in activity in the morning and in the late afternoon/evening, with a rest period in the middle of the day. Activity is usually separated into long periods of activity separated by long periods of sleep. However, typical activity levels during daylight are much higher than those seen in housed pigs. In a study conducted in the Edinburgh Pig Park, it was found that during 75% of daytime observations, sows were engaged in foraging-related activities (Stolba and Wood-Gush, 1989). In housed pigs, this figure is typically between 19 and 24% (Gonyou et al., 1992; Broom et al., 1995; Day et al., 2002).

#### 4.5.2.1 Space Restriction and Behavior

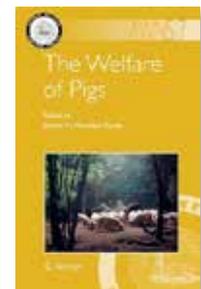
The Brambell report of 1965 into the welfare of animals kept in intensive farming systems proposed a number of 'freedoms' against which animal welfare could be benchmarked in the various systems examined. These have undergone some modification subsequently, but are now commonly known as the Five Freedoms:

1. **Freedom from Hunger and Thirst** – by ready access to fresh water and a diet to maintain full health and vigor.
2. **Freedom from Discomfort** – by providing an appropriate environment including shelter and a comfortable resting area.

## SCIENCE TEXTS

### Extended Written Texts (Non-Fiction)

Marchant-Forde, J.N. (ed). *The Welfare of Pigs*. Springer, Netherlands (2009).  
Extracts from chapter 4 (pp. 121 & 122).



3. **Freedom from Pain, Injury or Disease** – by prevention or rapid diagnosis and treatment.
4. **Freedom to Express Most Normal Behaviour**– by providing sufficient space, proper facilities and company of the animal’s own kind.
5. **Freedom from Fear and Distress** – by ensuring conditions and treatment which avoid mental suffering.

From a behavioral perspective, the gestation crate should in particular be examined relative to Freedoms 2 (does the crate provides an appropriate environment in which to rest and be free from discomfort?), 4 (it is obvious that the gestation crate compromises the sow’s ability to express her normal behavior) and, 5 (as a consequence of 4, mental suffering may occur). The extent to which her normal behavior is compromised depends on what benchmark of ‘normal’ is used, her behavior in a loose housing system or her behavior in a semi-natural environment? The original conceptual framework of the Five Freedoms was based on natural behavior and thus the housing system in relation to how the sow would behave without environmental limitations should be examined. For sows there is information on free-ranging domestic sows in semi-natural enclosures against which to compare (Stolba and Wood-Gush, 1989). Under natural conditions, the sow’s daily behavioral routine would be as seen in Table 4.3 (Stolba and Wood-Gush, 1989).

As shown below, the daily routine involves considerable foraging-related activity, with multiple changes in location and relatively little time spent resting.

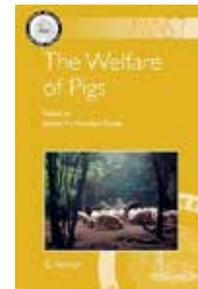
**Table 4.3** Behavioural routine of free-ranging domestic sows in a semi-natural environment

Early morning	<ul style="list-style-type: none"> <li>▶ Leave communal nests</li> <li>▶ Eliminative behavior</li> <li>▶ Positive social behavior</li> </ul>
Morning	<ul style="list-style-type: none"> <li>▶ Change location</li> <li>▶ Forage by rooting</li> <li>▶ Change location</li> <li>▶ Forage by browsing</li> </ul>
Forenoon	<ul style="list-style-type: none"> <li>▶ Change location</li> <li>▶ Drinking</li> <li>▶ Change location</li> <li>▶ Continue foraging</li> </ul>
Non	<ul style="list-style-type: none"> <li>▶ Siesta</li> <li>▶ Marking and positive social behavior</li> <li>▶ Change location</li> <li>▶ Wallowing</li> </ul>
Afternoon	<ul style="list-style-type: none"> <li>▶ Change Location</li> <li>▶ Foraging by rooting</li> <li>▶ Foraging by browsing</li> </ul>
Evening	<ul style="list-style-type: none"> <li>▶ Change location</li> <li>▶ Marking</li> <li>▶ Occupy communal nests</li> </ul>

## SCIENCE TEXTS

### Extended Written Texts (Non-Fiction)

Marchant-Forde, J.N. (ed). *The Welfare of Pigs*. Springer, Netherlands (2009).  
Extracts from chapter 4 (pp. 122 & 124).



Indeed, considered as a percentage of daylight hours, sows in semi-natural conditions spent 31% of time grazing, 21% rooting, 14% walking and 11% engaged in social behavior – the vast majority of which is positive social contact rather than agonistic (Stolba and Wood-Gush, 1989). Only 6% of daylight time was spent lying inactive.

In a gestation stall, a sow can stand up and lie down. She can have some contact with her neighbors so can engage in limited social behavior. She is likely to have limited ability to forage as she will be on part- or fully-slatted concrete floor. She will have ad libitum access to a drinker and feed will be present for typically about 20 minutes once per day. She can rub herself against the metal-work in lieu of scratching, so can carry out limited comfort behavior. She will urinate and defecate where she stands. In terms of a daily routine, the main events in the sow's behavior primarily occur around the timing of the feeding event. This is usually in the early morning and the sow will show a peak in activity before and after feeding. However, this is fairly short-lived and it has been reported that over 24 h, sows in gestation stalls spend between 70 and 81% of time lying inactive (Holt et al., 2006). Even allowing for sows spending 100% of night-time inactive, this would still equate to spending 50–60% of day-time inactive, which more or less corresponds with the 66–72% figure of inactivity from another study which just looked at day-time behavior (Harris et al. 2006). However, Broom et al. (1995) reported that gilts housed on concrete in stalls spent 79% of daytime observation periods lying inactive.

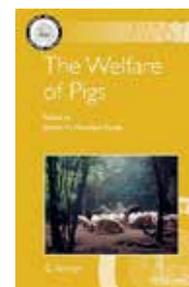
The disparities between the amounts and types of sow activity in stalls and sow activity in a semi-natural environment is quite evident, and there is sufficient evidence that sow stalls do not give the sow the freedom to express her normal behavior.

Perhaps the most basic behavioral need of the sow is to change posture without difficulty. This can be described in terms of the sow's ability to stand up, turn around, lie down and roll over. Without needing to carry out a scientific study, it can immediately be seen that a gestation stall does not allow the sow to turn around or to roll over. The gestation stall encloses the sow's static space requirement (Baxter and Schwaller, 1983). However as a sow stands up or lies down, she moves backwards and forwards, and from side to side. The area encompassing these movements is her dynamic space requirement. The average sow stall currently in use on commercial farms does not come even close to meeting the dynamic space requirements, and with the increasing size of the commercial sow (Whittemore, 1994), many now are coming close to the static space requirements (McGlone et al., 2004). As the sow becomes larger in relation to the stall in which she is kept, she has increasing difficulty in standing up and lying down (Marchant and Broom, 1996, Anil et al., 2002a) and she becomes more prone to injury (Anil et al., 2002b, 2005).

## SCIENCE TEXTS

### Extended Written Texts (Non-Fiction)

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Extracts from chapter 4 (pp. 126, 127, 128 & 129).



#### 4.5.2.3 Space Restriction and Health

The studies carried out looking at the effects of gestation housing on health can be roughly divided into three groups; (1) leg strength and lameness, (2) immune status and disease, and (3) skin lesions. Whereas the first two categories can have a direct effect on survivability of the sow, skin lesions, which are often extremely obvious even to the untrained eye, may have less serious implications for the sow's future.

As aggression-related skin lesions lessen, longer term injuries, ulcers and calluses are mostly recorded. The incidence is higher in confined sows (Gloor, 1988; Stamer and Ernst, 1992; Gjein and Larsson, 1995a; Cleveland-Nielsen et al., 2004). Sows with poor body condition score (Boyle et al. 1999) and large, heavy sows (Anil et al., 2003) are more likely to have increased injury scores in confinement systems, due to decreased fat cushioning over pressure points such as the shoulder and hip and perhaps being forced to lean against parts of the stall. The total injury score of stalled sows would appear to increase over gestation (Anil et al., 2006) as body mass increases.

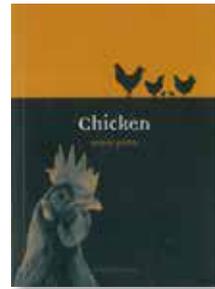
Examining the musculo-skeletal system within the limbs, Marchant and Broom (1996) found that the femur and humerus of sows housed long-term (7 parities) in stalls were significantly weaker than those of group-housed sows. The muscles associated with locomotion were also reduced in size. Over the shorter term – one parity – taking gilts out of their stalls for short daily exercise also increases bone mineral density and breaking strength (Schenck, 2007).

In comparative studies, sows in stalls have been shown to have more traumatic injuries caused by flooring and metalwork (Bäckström, 1973), have more claw lesions with increasing incidence over parity (Gjein and Larssen, 1995a,b) and have higher incidence of lameness compared with hoop-housed sows (Karlen et al., 2007). Conversely, sows in groups have been found to have more hoof lesions (Backus et al., 1997), higher lameness incidence (Anil et al., 2005), higher lameness scores (Estienne et al., 2006) and worse gait scores (Harris et al., 2006). Studies that showed groups to be better had straw bedding (Gjein and Larssen, 1995a; Karlen et al., 2007) perhaps emphasizing that the quality of flooring is a major factor that effects incidence of lameness.

## ENGLISH TEXTS

### Extended Written Texts (Non-Fiction)

Potts, Annie. *Chicken*. Reaktion Books Animal Series (2012).  
Extracts from chapter 6 (pp. 139, 140, 141, 142, 143, 144, 145 & 153).



## 6 Meat Chicks and Egg Machines

Worldwide, more than 50 billion chickens are killed for meat each year. In the time required to read this page 16,000 will be killed in the USA alone. America kills around 23 million broiler (or meat) chickens per day, 8–10 billion per year.<sup>1</sup> In the UK over 860 million broiler chickens and 30 million ‘end-of-lay’ hens are killed annually. Australia kills 500 million broiler chickens each year for meat, having raised 96 per cent of them in intensive systems, while 11 million battery hens produce 93 per cent of the nation’s eggs.<sup>2</sup> Australians refer to the modern poultry industry as ‘technology’s child’; this chapter shows why.<sup>3</sup>

The modern enslavement of chickens is a very Western and capitalist tale. Its origins are in America, specifically the East Coast region of Delmarva, where the broiler industry arose, and Petaluma in California, where battery farming for eggs began. Breakthroughs in animal husbandry converged with technological and commercial developments around the beginning of the twentieth century radically to alter the role and status of the chicken. At each stage of research and development the chicken’s natural proclivities were subordinated or exploited to produce the industrial ‘utility bird’ of today.

The development of new farming technologies and practices removed the seasonal limitations on the poultry business. The first major inventions were the incubator, designed by a resident of Petaluma, California, Lyman Byce, in 1879, and the colony brooder. The former offered automatic ventilation, controlled temperature and mechanized turning of eggs, permitting the artificial incubation of vast numbers of eggs at once, while the latter allowed 300–1,000 hatched chicks to be raised together under stoves heated by kerosene or coal until their feathers grew.<sup>4</sup> Both apparatuses separated chicks from their mother and the natural environment.

The cessation of laying by hens when daylight hours shortened – a behaviour considered most inconvenient and uneconomical by farmers – was foiled through the introduction of artificial lighting in henhouses.

Specialized breeding programmes also accelerated in the early twentieth century. The ‘artificial evolution’ of chickens through selective breeding had already begun during the late nineteenth-century ‘hen craze’, when chickens of different varieties were all the rage. The careful monitoring by poultry associations of the criteria for fancy breeds produced a more portentous outcome because it demonstrated that certain chickens were superior layers, while others were better to eat. This resulted in the separation of egg farming from the farming of chickens for meat.

The most profound change, however, was the confinement of thousands of chickens indoors for the purposes of management and control.

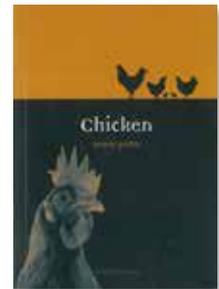
### MEAT BABIES

Broiler chicks are conceived at specialized breeding facilities. Hens ‘parent’ chicks only until laying. Fertilized eggs are incubated mechanically and hatched chicks are transported to windowless broiler sheds or ‘grow-out’ houses, typically 400–500 by 40–46 feet (120–150 by 12–14 metres) where they live for six weeks in crowds of 10,000 to 30,000. Females may be killed as early as three weeks as ‘Cornish game hens’, while males may live three months if raised to be ‘roasters’. Typically, broiler chicks are exposed to 23 hours of dim lighting for every one hour of darkness, in order to minimize activity while increasing appetite, and they stand or lie on litter that remains unchanged for the

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Extracts from chapter 6 (pp. 154, 155, 156 & 157).



Life inside a modern-day broiler shed.



Due to their genetic propensity to 'bulk up', chicks raised for meat are crippled within a few weeks of life. These birds, rescued by Chocowinity Chicken Sanctuary, did not survive long after this photo was taken.

duration of their lives. At slaughter age they are still juveniles, with the soft feathers and chirp-like vocalizations of chicks.

The European Union Science Committee stipulates a stocking density for meat chicks of no more than twelve birds per square metre, but in practice they tend to be housed more 'economically'. The UK, where 98 per cent of chicken meat production is intensive, allows up to nineteen birds per square metre; New Zealand and Australia permit twenty. On average, each broiler chick has a personal space smaller than an A4 sheet of paper. The mortality rate prior to slaughter is around 5 per cent in Britain, which means 45 million chicks die annually in 'grow out' houses before reaching 'market weight'.<sup>33</sup>

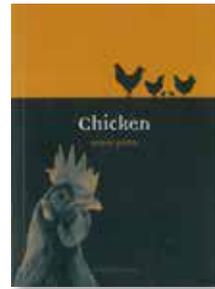
Broiler chicks have been selectively bred to grow fatter faster, which places intense pressure on their bodies; muscles and fat outgrow skeletons. Like other birds, chickens have delicate bones adapted to flight and quick movement, but the bones of broiler chicks are loaded with massively disproportionate breast weights. Consequently, their legs are often twisted and malformed. Up to 30 per cent suffer severe lameness and swelling, and at least that many suffer chronic pain. Veterinary scientists at Bristol University have shown that broiler chicks will self-medicate with food containing an unpleasant flavoured painkiller called Carprofen, and that the amount of the drug ingested increases with the severity of lameness.<sup>36</sup> This clearly demonstrates that broiler chicks routinely suffer pain and seek relief from it, despite the bitter taste of the analgesic. Currently, pain relief is not administered to broiler chicks or battery hens because chicken meat sold for consumption must derive from birds that have been free of drugs for at least 28 days. Unfortunately, this is the exact period when leg injuries are most prevalent.

By the time that their six weeks are up, broiler chicks find it hard to walk at all, and most spend 90 per cent of the time lying down in soiled litter. Many collapse for good: farmers refer to this condition as 'off their legs'. Being stranded on their own waste causes breast blisters and foot-pad dermatitis, and hock burns in chicks, effects sometimes observable in the bruising seen on their carcasses in the supermarket. Broiler chicks also succumb to heart failure, liver disease and fluid build-up in the abdomen due to organ system failures. The larger males are particularly prone to Flip-Over Syndrome: sudden death by heart failure preceded by frantic wing flapping, convulsions and collapse.

# ENGLISH TEXTS

## Extended Written Texts (Non-Fiction)

Potts, Annie. *Chicken*. Reaktion Books Animal Series (2012).  
Extracts from chapter 6 (pp. 158, 159 & 160).



### 'NATURAL' LAYERS?

In 2007, in the United States, more than 77.3 billion eggs were produced by 280 million hens (an average of 275 eggs per hen).<sup>39</sup> The lives of battery hens – intensively farmed egg-layers – are no less unhappy than those of broilers, but are much more visible to consumers due to decades of activism and open rescues. Although layer hens will not be baby chicks when dispatched to the slaughterhouse, they will have endured up to two years incarceration in tiny cages, subject to persistent noise, toxic smells and almost constant lighting. Seventy years ago a battery farm housing 100,000 hens would have been considered immense; today, it is not unusual for egg farms to keep 10 million birds at a time.



There are no cockerels here. Male chicks, extraneous to the egg industry (except as breeders), are destroyed within twenty-four hours of hatching. Each year in the US alone more than 272 million male chicks are disposed of by gassing, microwaving, smothering or maceration (also termed 'instantaneous fragmentation'), their collective remains used as pet food.<sup>40</sup> Industry



experts claim that fragmentation by fast rotating knives is the most humane method of extermination because it is the quickest,<sup>41</sup> yet the process is seldom highlighted by egg producers since it seems unlikely to win favour with a public for whom baby chicks are synonymous with cuteness, Easter, springtime and new life.

Layer pullets (young female chickens) are reared on deep litter or in cages until they are transferred to battery farms at about four months, when they begin laying. The remainder of their lives is spent inside cramped cages along with between four and nine cage mates. Thousands of identical cages are lined up



in rows and stacked in vertical tiers. Water is supplied through nipple drinkers and food from a trough through the cage wires in front. Excrement drops through the floor of the cage for collection later. Eggs roll along a gradient into collection troughs. The birds experience unnatural lighting for around seventeen hours of the day, although those on lower tiers live in constant gloom.<sup>42</sup>

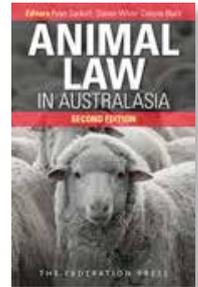
The advantages of battery operations for farmers are that thousands of birds can be controlled efficiently and economically, while eggs are easier to collect and less likely to be damaged during the laying process. For the birds, however, the constrained conditions do not allow even minimal normal behaviours. The area required to preen, scratch or merely turn round in is about three times greater than the space provided. Sometimes the height of the cage is not even enough to permit hens to stand properly.

## ENGLISH TEXTS

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The Federation Press (2013). Extracts from chapter 1 – *The Protection Paradigm: Making the World a Better Place for Animals?* (pp. 1 & 2). Sankoff, Peter.



### Chapter 1

## The Protection Paradigm: Making the World a Better Place for Animals?

*Peter Sankoff\**

In Australia, and New Zealand, as in most of the common law world, the commission of an intentional act of cruelty by a person against an animal has long been regarded as a penal offence, punishable in the criminal courts.<sup>1</sup> For well over a century, both jurisdictions have accepted that the power and privilege of using animals to our own ends is not unrestrained,<sup>2</sup> and that humans owe certain duties towards animals living within our sphere of influence. Defined most commonly by the term ‘animal protection’,<sup>3</sup> this concept prohibits humans from causing unnecessary pain, suffering or distress to the animals that they come into contact with or care for.

It has not always been this way. If time machines existed and it were possible to journey back to the 17th century, a traveller visiting that era would bear witness to a world founded on a mad form of ‘Descartian’ logic; a world where animals were treated as ‘automatons’,<sup>4</sup> whose squeals, squeaks and cries in response to various stimuli were regarded as nothing more than the sounds of improperly functioning machines. In this world there was no functional concept of animal protection.<sup>5</sup> If an animal feels no pain, it is virtually impossible from a moral standpoint to distinguish any meaningful difference between such a thing and the rocks on the ground, the trees in the forest, or the air we breathe. A Descartian animal is one to whom humans can do what they please, without fear of moral or legal repercussion.

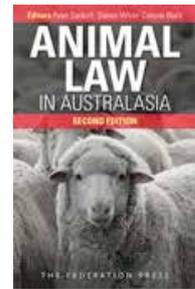
The end of this dark periods for animals was prompted by a host of different factors,<sup>6</sup> not the least of which was a better scientific understanding about the capacities of animals and, in particular, their ability to feel pain. Over time, a greater concern for the well-being of these creatures gradually developed, framed on the premise that humans have a responsibility to care for animals and be sensitive to their interests whenever possible. Propounded most famously by English lawyer and philosopher Jeremy Bentham, this new ethos built on the emerging concept of utilitarianism, which suggested that the goal of all morals and legislation was to promote pleasure and avoid pain for the greatest possible number. Bentham argued that animals should not be left out of this equation merely because they were not as sophisticated as human beings. As he famously suggested, ‘the question is not, Can they reason?, nor, Can they talk?, but, Can they suffer?’<sup>7</sup>

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#### The Basics: What is Animal Protection?

The legal protection extended to animals, which still exists today, arose by virtue of an animal's status as property, and the rights such status provides for the animal's owner.<sup>15</sup> Being treated as property may limit an animal – or anyone acting on the animal's behalf – from asserting claims against the person that owns it,<sup>16</sup> but this status does bestow powerful rights on the animal's owner, guaranteeing legal recourse to remedy any interference inflicted by another party. Thus, at least in an indirect sense, the common law 'protected' animals from being harmed by third parties who might wish to abuse them. To the extent any such harm affected an animal's value as a piece of property, it was capable of being remedied through the courts in the form of an order for damages in favour of the owner. In this limited way, it can be said that the laws governing property protected domestic animals from some types of harm by deterring outsiders from gratuitously harming animals owned by another.<sup>17</sup>

Useful as these protections are, they remain limited in significant ways. In the first place, the animal's property status provides no protection whatsoever from harms caused by the owner, which is, unfortunately, where most suffering tends to occur. Similarly, the practical benefits of keeping animals healthy extend only to animals that create value for the owner. Additionally, this motivation does not stop owners from causing harms of a more transient – but still painful – nature when the harm imposed has no impact on the animal's worth. Although it was clear that many people wanted to reduce animal suffering of the sort described above, it was impossible to ignore the fact that English society required the death and suffering of animals, as their use was viewed as essential for human progress and survival. The difficulty lay in fashioning a legal compromise that could distinguish between acceptable and insalubrious harms. What was needed was a system that permitted a person to whip an animal in order to prompt it to work faster, while simultaneously prohibiting the whipping of the very same animal for the sake of pure, sadistic pleasure.

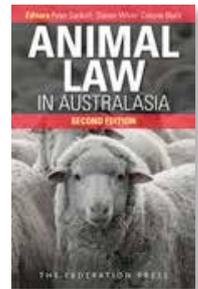
The solution came from Bentham and his multifunctional utilitarian calculus, which seemed an ideal means of resolving the problem. Rather than punishing a person who merely caused harm to animals, which would encompass both forms of whipping described above, the law would attempt to deter *unnecessary* harms – those inflicted for reasons that brought no wider social benefit.

The nature of this approach can be seen even in modern legislation, which is structured on a similar paradigm. In New Zealand, the provision at the very core of the *Animal Welfare Act 1999* is s 29(a), which makes it an offence to 'ill-treat' an animal.<sup>23</sup> The term is defined in s 2 of the Act to mean 'causing the animal to suffer, by any act or omission, pain or distress that in its kind or degree, or in its object, or in the circumstances in which it is inflicted, is unreasonable or unnecessary'.

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Even more problematic are concerns arising from the commercial use of animals. Any number of examples could be utilised here, but one of the easiest to understand is the battery cage, used in the storage of layer hens. Despite the fact that chickens are social animals who enjoy moving around and interacting, current methods of egg production require most chickens to be kept in tiny battery cages for their entire lives. It is generally conceded that this method of storage results in serious health problems for the hen, as well as depriving them of any reasonable quality of life.<sup>42</sup> Nonetheless, this practice does not constitute ill-treatment and remains legal in every Australian and New Zealand jurisdiction.

Why is such a cruel method of keeping hens permitted to exist, notwithstanding the pain and distress it imposes on the animals? The suffering is said to be justified by a pressing human concern: the need for a sizeable amount of affordable eggs.<sup>43</sup> As New Zealand's National Animal Welfare Advisory Committee (NAWAC) stated in concluding that the battery cage complied with the country's welfare requirements:

Welfare must be considered holistically. NAWAC is unable to recommend replacement of current cage systems with alternative systems until such time as it can be shown that, in comparison to current cage systems, alternative systems, in the context of supplying New Zealand's ongoing egg consumption needs, would consistently provide better welfare outcomes for birds and be economically viable.<sup>44</sup>

Both examples raise serious questions about the definition of 'ill-treatment' and how it protects – or fails to protect – animals from harm. To understand why dog tail docking and the battery cage remain legal methods of treating animals in spite of the suffering they inflict, it is necessary to look in more detail at how the balancing exercise at the heart of the animal protection construct actually operates.

#### 'Unreasonable' or 'Unnecessary' Suffering

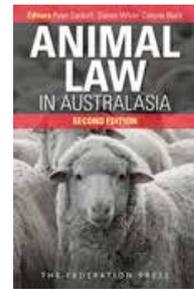
While animal protection laws have existed for almost 200 years, there remain surprisingly few cases that actually set out, in detail, how the balancing test between necessity and animal harm should operate. There are a number of reasons for this. First, the enforcement of animal welfare statutes remains alarmingly inadequate.<sup>45</sup> In New Zealand, for example, it would be unusual to see more than 100 prosecutions taken in a calendar year.<sup>46</sup> Second, very few cases result in defended hearings, and almost none is appealed, except perhaps in regard to the adequacy of the sentence imposed. Because prosecuting agencies tend to take their strongest cases forward, the result is a flurry of guilty pleas, with the consequence that very little case law is generated to assist in future interpretation of the statute. Finally, where defended hearings do occur, they are still mostly focused on cruel treatment of the type discussed earlier, where the balance of interests is so obviously tilted in favour of the animals that judges do not need to work very hard to resolve the details of how the balance operates. The issues tend to be factual rather than legal.<sup>47</sup>

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#### *Harm is not absolute, but relative*

The terms 'unreasonable' and 'unnecessary', so important to our understanding of modern protection legislation, are very familiar to lawyers. These words, or others like them, can be found sprinkled throughout statutes of every sort. Rather than setting out a defined set of proscriptions whereby only particular acts can be performed, qualifying terms of this type leave the question of legality to be resolved by judges and juries, who determine on a case-by-case basis, in consideration of the facts with which they are confronted, whether the act was proper.

Terminology of this sort has advantages and disadvantages. On the plus side, it provides a great deal of flexibility and allows solutions to be tailored to individual cases through a balancing of relevant factors.<sup>33</sup> At the same time, an oft-stated concern with this kind of legislative wording is that it provides little guidance. Until such terms are imbued with some form of structure by the judiciary, stating that 'unreasonable' or 'unnecessary' actions are forbidden provides little idea of what actually constitutes permissible conduct.

#### *Human demands predominate*

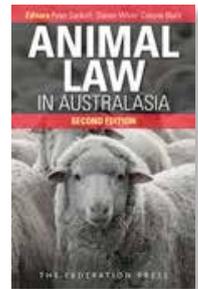
As stated, human need weighs more than animal suffering, in that it is valued in a much more significant way. Humans sit in a privileged position, and thus the starting point is not a presumption that harm is generally wrong, and must be justified, but that it is humanity's *privilege* to inflict it.

One could begin by asking why the actor inflicting the harm is not tasked with justifying it, especially since protection legislation is designed to protect against, and not permit, harmful conduct. Nonetheless, this is not the interpretation taken here. Instead, 'necessity' means something much closer to 'reasonable desire'. Humans are allowed to inflict pain not because they must – in that they have no other option but to do so, certainly one interpretation of the term 'necessity' – but because they choose to. As we shall see, this has grave implications for the effectiveness of the calculus as a means of safeguarding animal interests.

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#### The Difficulty: What Does 'Animal Welfare' Mean?

The truth is that the list of 'legitimate' uses is virtually endless. The term encompasses core uses like those described above but extends even further, to harm caused for public enjoyment – through entertainment – and even to harm inflicted as a means of satisfying human aesthetic preferences, as shown by the example of dog tail docking. As Francione has suggested:

Courts generally hold that any treatment that facilitates our use of animals for an accepted purpose is considered necessary under the laws. We do not balance interests in order to determine the legality of the allegedly cruel act or the legality of the animal use to which the cruelty is a part. Rather, we look to whether the activity the defendant seeks to engage in is an accepted institutionalized use of animals. If it is, we then look to whether the allegedly cruel act is considered a normal part of that use by those involved in the institution, or is intended to enable that use. Such a framework will accept the standard of 'necessity' defined by animal property owners, and explains why the anticruelty laws have not been able to touch certain activities, such as animal agriculture or hunting.<sup>59</sup>

Since the purpose is not balanced by whether it is useful to the animal, but rather by whether it is an accepted part of human 'privilege' that advances society's interests, it will only be those purposes that do not conform to accepted *human values* that will run afoul of this test. An examination of the case law suggests that only three purposes seem to fall clearly outside the pale of legitimacy. The first was discussed above: cruelty engaged in for sadistic purposes, or no reason at all. This cannot be a legitimate purpose, for sadism is not a value that is regarded positively in human society. Aside from its inherent barbarism, conduct of this type demonstrates a lack of compassion and risks encouraging aggressive, and even dangerous, character traits.<sup>60</sup>

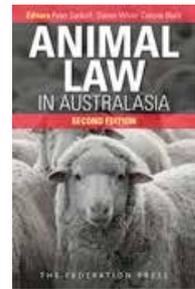
Similarly, a waste of economic capital will not be considered legitimate. Thus, if a particular practice damages an animal's worth without providing a corresponding gain, it cannot be accepted.<sup>61</sup> If, for example, it could be demonstrated that layer hen cages did not produce any economic benefit, and it could equally be shown that providing the hens with more space to roam would be more productive, it could not be said that keeping the hens in a situation that caused them distress was for a legitimate purpose. Our society does not reward economically wasteful activity and, thus, such a purpose cannot be legitimate.

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Sankoff, Peter, White, Steven and Black, Celeste (eds). *Animal Law in Australasia (2nd edition)*. The Federation Press (2013). *Extracts from chapter 1 – The Protection Paradigm: Making the World a Better Place for Animals?* (p. 19). Sankoff, Peter.



Finally, a third illegitimate purpose for inflicting harm on animals, and one of the most common scenarios resulting in prosecution, is laziness or poor management exercised by animal owners. A good example of this arose in *R v Collins*,<sup>62</sup> where the defendant allowed two horses in his care simply to waste away over a prolonged period. The defendant stopped providing his horses with sufficient feed and refused to comply with requests by investigators to do anything about the animals' care.

Not surprisingly, the court was unwilling to recognise any of the suffering as legitimately imposed. It was the product of sloth, ignorance and poor management, values that no court will ever be willing to endorse. As such, any harm suffered by animals under these circumstances, no matter how small, outweighs the purpose for which it was imposed, and constitutes ill-treatment.

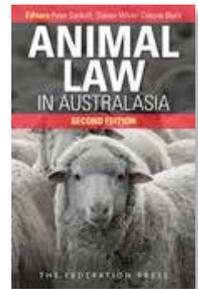
Without question, these three illegitimate purposes will capture some forms of ill-treatment, and punishing them is better than having no protection for animals at all. Still, it is worth re-emphasising that these types of actions represent only a tiny fraction of the harms that humans impose on animals.

Unfortunately, the purpose test is unlikely to encourage much restraint so long as we regard as 'legitimate' matters that would not satisfy a more stringent interpretation of the term 'necessary'.

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### The Real Meaning of the Protection Construct

What does all this mean for animals? In summary, the test for ill-treatment begins by dividing all harms against animals into two broad categories. First, actions undertaken for an illegitimate purpose automatically constitute ill-treatment. Unfortunately for the animals, very few human purposes fall under this designation. Human privilege allows us to use animals for a wide variety of objectives that the animal protection construct will not question. Illegitimate purposes are confined to those that have no value in society, including the infliction of harm owing to laziness or the satisfaction of a sadistic tendency.

The purpose test does not stand alone, however. To avoid being labelled ill-treatment, an action must also be necessary within the context of a particular purpose. In other words, the means taken must be appropriate considering the purpose in question. While this sounds much more useful, questioning the means taken is very difficult to do once the purpose for which the harm was inflicted is accepted as legitimate.

Perhaps the most significant concern is the consistent focus on economic efficiency, which tends to enshrine harmful practices and render them immune from scrutiny. In a farmed animal context, once we accept that producing food at an economic price is necessary, the whole question of animal welfare ends up being mostly redundant, as just about any profit-maximising initiative that imposes pain tends to be accepted. The onus lies on those seeking change to provide an alternative that is at the very least (a) a welfare improvement for the animals and (b) economically effective.

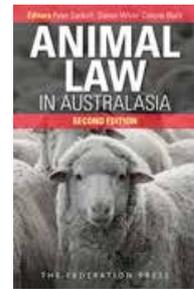
It is the combination of the purpose and means test that is most damaging to animals. Consider the fate of 'broiler' chickens, which represent over 95% of the more than 500 million birds raised for meat in Australia and New Zealand alone each year.<sup>67</sup> Welfare advocates have long complained about various procedures engaged in by the chicken meat industry, but perhaps the biggest welfare concern is the way in which the birds themselves are raised. The very breeding of these birds, it is suggested, is inherently cruel for they cannot be grown in the manner desired without imposing significant health costs. In a 2008 report, the Humane Society of the United States described broilers as follows:

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Broiler chickens have been selectively bred for rapid growth to market weight. In 1920, a chicken reached 1 kg (2.2 lb) in 16 weeks, but today's broiler chicken strains may now reach 2.27 kg (5 lb) in only 7 weeks. Daily growth rates have increased from 25 g (0.88 oz) to 100 g (3.52 oz) in the past 50 years – an increase of more than 300%. Genetic selection is so intense that the age by which broiler chickens reach market weight and are slaughtered has decreased by as much as one day every year. Ongoing selection for rapid growth is a severe welfare problem as it has resulted in leg disorders, including deformities, lameness, tibial dyschondroplasia (TD), and ruptured tendons, and has been correlated with metabolic disorders such as ascites and sudden death syndrome. Broiler chickens selected for faster growth also suffer from weakened immune systems, making them more susceptible to a variety of additional diseases.<sup>68</sup>

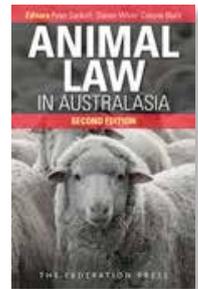
Assuming these allegations are accurate, they raise significant questions for the existing paradigm, as they challenge not a particular practice, but the very manner in which the industry currently runs its business. Nonetheless, the animal protection construct is completely ill-equipped to address this type of complaint. The legitimacy of the purpose would be considered and immediately approved. Broiler chickens are bred in this way because it represents the most cost efficient way of raising them. The animals that die are more than compensated for by the quick growth of the others who can be shipped to market in a fraction of the time required for conventional birds. From there, the inquiry would move on to the means chosen, but here even animal advocates would have to accept that in terms of achieving the desired purpose the means taken are extremely reasonable, as they result in considerable cost savings. Thus, if one's goal is to produce the most economically efficient chicken possible, it is difficult to argue with the broiler chicken.

Imposing welfare standards for broiler chickens would have to begin by radically altering the way in which these birds are raised. Unfortunately, the protection construct is not designed to achieve this objective. So long as the means taken are reasonably related to a legitimate purpose, they will not be questioned. It is not surprising that a growing number of critics believe that the animal protection construct is designed not to reform but, in many cases, simply to legitimise current practice. As Hughes and Meyer have suggested, 'the notion of protecting animals because they have inherent value and rights to lead their natural lives is not even open for discussion. The morality of the list of current "uses" of animals will also not be questioned'.<sup>69</sup>

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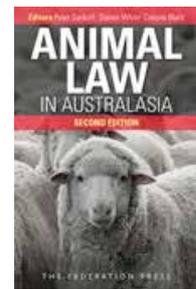


Together, these factors demonstrate why the definition of ill-treatment, as currently constituted, fails to provide any meaningful protection for the majority of animals subjected to harm. Of course, we are hardly bound to this approach. The biggest advantage of the common law is its flexibility and willingness to reassess formerly established propositions. Still, a radical revamp of the existing paradigm is unlikely to occur in the near future. The problem is that we *cannot* impose a more stringent test, as it would be impossible to enforce. A vibrant justificatory regime would challenge practices that are enshrined and widespread. Even food use would have difficulty being defended, as many people live without animal products, and it cannot be said that their consumption is needed in any real sense. In the absence of any political or popular momentum to engage in this type of reform however, 'necessary' will continue to mean 'legitimate', a term understood through the prism of our privilege to dominate animals. Not surprisingly, a term interpreted in this manner stops very little suffering at all.

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### Conclusion

For almost 200 years the animal protection paradigm has been the dominant model for regulating the treatment of animals in the common law world. When first proposed, it was a remarkable step forward for the law and made the very public statement that the indiscriminate imposition of animal suffering would no longer be permitted. From that moment forward, owners of animals could be charged for undertaking acts intended to harm the animals under their care. It was a sensible way of proceeding initially, and arguably worked well under a framework in which most humans lived with their animals and where there was no real justification for wasting commercial property, at a time when animals were relatively scarce and essential to a small farm's survival.

What this chapter has attempted to demonstrate is that the benefits provided by this construct today are somewhat questionable, as the protection model is inhibited by the realities of human society and the pursuit of economic productivity, which find their way into a balancing test that is not nearly as neutral or beneficial to animals as it initially appears. The law may prevent 'ill-treatment', but it does so by stripping away the meaning of this word through its acceptance that human privilege to use animals to our ends takes priority over suffering, and that human needs like efficiency, higher economic productivity, more desirable aesthetics and even entertainment count as legitimate ends.

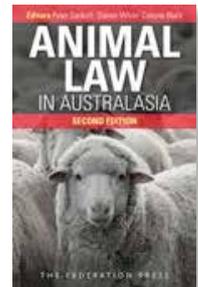
In the agricultural context, where the vast majority of animal suffering occurs, the result is that most modern uses of animals have been accepted and are not considered to be ill-treatment. For a new welfare initiative to succeed, it has both to ameliorate the animal's position *and* be at least as efficient as the existing practice. Perhaps over time a court might be willing to tilt the balance where animal suffering is reduced and only a minimal cost increase is required, but significant expense – which is likely for most meaningful welfare initiatives – is unlikely to be imposed.

None of this should be particularly surprising, as it is thoroughly unreasonable to expect the law to take a position that goes far beyond what the majority of people actually want. We have, in effect, the legal system we deserve. It allows us to condemn and look down on sadistic practices we abhor, while simultaneously permitting battery cages, sow stalls and other morally questionable, yet economically efficient, storage methods to continue.

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In time, new legal models to address the suffering of animals may well be developed, but our current construct may actually be impeding the quest for real change by cloaking dubious practices in a veneer of legality, and by using soothing and misleading words to describe the conduct in question. A perusal of legislation from across the region shows that it is now common to describe harms against animals in wording that connotes a strong imagery of concern. The focus is on the 'welfare' of animals, the 'prevention of cruelty' and the end of 'inhumane' use. In contrast to earlier times, where most animal suffering was simply ignored, it is now exceptionally common for politicians of all stripes and those working in the primary animal industries to rely on this terminology as a means of demonstrating how much they care about their animals, most likely as a way of assuaging public concern. For example, the New Zealand government consistently reiterates the importance of good animal welfare, pointing out that any human use of animals 'must be carried out without unreasonable or unnecessary suffering'.<sup>84</sup> Australia deems itself a 'world leader in animal welfare'.<sup>85</sup> It takes a degree of inquiry well beyond the average citizen to uncover what this truly means, however.

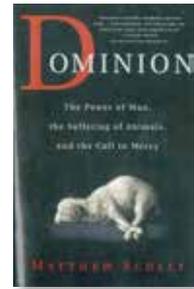
Equally troubling is that the practices that wind up being permitted are deemed to be 'humane', 'not cruel' and 'legal', in accord with our 'tough' animal welfare standards. In effect, this manipulation of language allows the animal industries to engage in practices that might well shock the average observer if considered on their own merits,<sup>86</sup> and at the same time state with confidence that they are complying in full with the legal standards required by the governing legislation.<sup>87</sup>

Neither the politicians nor the animal owners are lying. As a society, we have rejected 'cruelty' against animals, but on the argument presented here this has been accomplished primarily by altering what this term means beyond all feasible recognition. So long as we define ill-treatment and cruelty in terms of the balancing exercise discussed, we will continue to mask harmful treatment of animals in a sophisticated web of legal terminology that consigns an ever growing numbers of animals to a lifetime of 'necessary' and 'reasonable' pain and distress.

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### Extended Written Texts (Non-Fiction)

Scully, Matthew. *Dominion: The Power of Man, the Suffering of Animals, and the Call to Mercy*. St Martin's Press (2002). Extracts from chapter 7 – Nature and Nature's God (pp. 294, 295 & 296).



The idea that animals do not experience physical pain comparable to our pain, as Stephen R. L. Clark observes, “has never satisfied anyone without something to gain.”<sup>12</sup> That assumption may now once and for all be discarded as rubbish. Animal life will always retain much of its mystery, but on the matter of suffering their feelings are not “unknowable territory.” Modern science has confirmed what mankind suspected all along with a prima facie case that of course animals suffer, of course they have emotions, and of course they are conscious beings

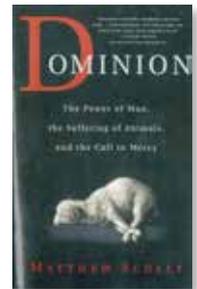
That is not an expression of sentiment. It is not a statement of ideology. It is neither an avowal nor a denial of any tenet of religion or philosophy. It is a statement of fact, objective reality as best we can discern it. And it is a big fact. Three centuries after Descartes likened the crying of animals to “broken machinery,” no serious person can say that anymore. Wherever people argue or act on the assumption of “mere pain,” they are arguing and acting on a falsehood.

Usually, then, what we're debating is not so much value as comparative value, the moral claims of animals weighed against our own claims upon them. We do the same in moral questions concerning human welfare, with the difference that at the end of the day we are prepared, in countries with advanced systems of law, to assert the value of innocent human life as non-negotiable. For all of our differences in faith, history, and culture, this, in theory at least, is held universally as a first principle of society, and we use a common vocabulary in defending it. When we call something unfair or indecent or unconscionable or evil, when we speak of mercy and pity and compassion, those words have meaning, regardless of our particular faith or moral philosophy. They appeal to common standards we all are expected to understand and accept, standards without which we could not live any common life at all. One is permitted to invoke them without having to explain all of life's ultimate mysteries. They compel our assent, if only because the alternative, moral chaos, is intolerable.

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With animals we accept no such claims of absolute value, and so are left without any common and consistent standards. Ultimately, in the weighing of goods and interests, there's nothing on their side of the scale to counterbalance our demands upon them. Anyone with the right license can come along and deposit on our human side of the scale the slightest velleity: a “rack,” a money-saver at the farm, a bowl of whale soup, tasty nibbles in the Churchill Room, a new shampoo to be poured into the eyes of laboratory rabbits, even the “free expression” of a crush video. And, just like that, all of the creatures' humble little claims are scattered as the scale plops down, without fail, resoundingly in our favor. Whatever high-minded motives we profess, in practice we recognize no intrinsic evils, acts that are wrong no matter who commits them or what the motive. Our laws concerning animals are a system of inconsistencies, special privileges, and arbitrary dispensations best described as codified caprice. Faced with the worst enormities a man might contemplate, where the creatures are concerned there are no inviolable prohibitions, no Thou Shalt Nots to make him draw back.

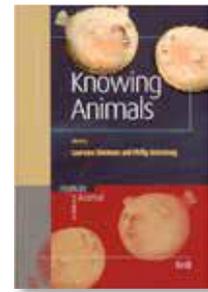
Having granted some protections to some animals, we are constantly confronted with the logic of our own laws, troubled by perfectly rational connections between the random or “wanton” acts of cruelty the law forbids and the systematic, institutional cruelties it still permits: If this animal is to be protected, why not that identical one, too? If it is cruelty to confine or mistreat a dog, a cat, or even a pet lamb or pig, why is it not cruelty to confine and mistreat millions of equally sensitive animals at Smithfield, IBP, ConAgra, and other such places? When we speak of the unavoidable severity of livestock production or laboratory experiments or trapping, and so on, just how rigorously are we defining “unavoidable”? By what standard of reason do we judge our own demands upon the creatures, the goods we place on our side of the moral scale?

Even as we debate whether animals have rights of their own against the cruelty of man, in effect, then, we have already admitted as much through laws forbidding cruelty. If a man beats, neglects, starves, or abandons a dog, and the dog belongs to him, there are no grounds to punish that man except by recognizing some independent moral claim of the dog. The dog, in fact, occupies two conflicting legal categories—that of property, as if he or she were just a thing, and that of a legal subject who may be the victim of a crime or even, in thirty-six of the fifty states, a felony. The same is true of our farm animals. They are protected, but only as property, like a tractor or a thresher.

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Simmons, Laurence and Armstrong, Philip (eds). *Knowing Animals*. Brill (2007). Extracts from chapter 5 – *Farming Images: Animal Rights and Agribusiness in the Field of Vision* (pp. 121 & 122). Armstrong, Philip.



The website and marketing of KFC worldwide, for example, invariably excludes images of live chickens, showing instead the familiar, kindly face of Colonel Harper Sanders amongst his pots and pans. Indeed, KFC posts a disclaimer, repeated on various pages on the site, that seeks to distance its brand from the live animal altogether:

KFC does not own or operate any poultry farms or processing facilities. Instead, it purchases chickens from, at any given time, approximately 16 different suppliers who collectively operate up to 52 facilities around the country. (KFC, “About KFC”)

In place of these distant and invisible animals, KFC’s website offers welfare-related assurances that display the generous latitude characteristic of such codes of practice, with all the weight placed on terms amply open to subjective interpretation: “Birds... must be treated in a humane manner... Suppliers must provide adequate space... [and] should formulate feed in order to deliver proper nutrition” (KFC, “About KFC”).

Such tactics again evoke the banishment of the animal to a non-visual realm far distant from the viewing consumer. Even while displaying the industry’s apparent response to (a selection of) animal advocates’ demands, welfare-friendly branding reifies animals as products more completely than ever before. Each reassurance of partial good practice rhetorically contributes to the animal’s representation as no more than a series of cuts and processes, reducing it—even prior to slaughter—into a collection of body parts and husbandry practices. Just as in scientific writing, where “the living animal becomes coded as an assemblage of parts” (Birke 1994, 7), KFC’s Poultry Welfare Guidelines are described under headings such as “Breeding,” “Raising,” “Comfort and Shelter,” “Catching,” “Handling,” “Transport,” “Stunning,” “Humane Slaughter” (KFC, “About KFC”). The animal is no longer even “what meat was before it was meat” (Berger 1971, 1042); rather, it is always already meat.

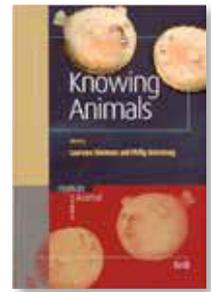
#### *A Taste of History*

Actually, there is a name for what these birds were before they were meat. The ubiquitous but unseen animals frying around the globe in the outlets of Colonel Sanders’s franchisers are usually termed ‘broiler chickens’, or even less euphemistically, ‘meat chicks’. These are also the birds whose bodies fill the frozen chicken sections of supermarket iceboxes. They thus have the dubious honor of being at the same time the rarest of beasts to be seen live on camera, and yet the most prolifically visible in death.

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Even in the absence of visual images, the plight of the battery hen is easily conveyed by other strategies familiar to animal advocates, for example that of theriomorphism: asking the human viewer to imagine themselves in the animal's place (Baker 2001, 232). A classic instance of this tactic is provided by a recent cinema advertisement shown in New Zealand cinemas in 2002. The advertisement asked viewers if they were "sitting comfortably" before inviting them to "imagine that the area you are sitting in is a wire cage," and so on (SAFE 2002). This commentary was accompanied by a visual sequence showing only abstract representations of wire, eggs, and feathers: indeed, the condition for acceptance of this advertisement by cinemas was that it should not contain any actual footage of animals *at all*. This, then, is the obvious advantage of theriomorphism: it offers a way of visualizing the invisible.

The situation of the broiler chicken, however, is hard to visualize either by means of the emotive snapshot image, or via the imaginative effects of theriomorphism. A photograph taken from inside a broiler chicken shed simply does not look that bad. Broilers are usually well-feathered; they are by definition plump; they are not kept in cages but in huge flocks; they are amply provided with food and are housed under dim lighting and in warm conditions. To the uninformed eye—that is, that of the average consumer, systematically screened from detailed information about meat production methods—they look both comfortable and healthy (especially by comparison with their scrawny, featherless, mad-eyed, imprisoned relatives in battery sheds).

Establishment of a theriomorphic identification between human and broiler chicken proves equally problematic. As Franklin puts it, in animal rights and welfare literature,

the language used to describe the broilers is, unintentionally no doubt, less humanized. . . . [T]he sympathy of the readers for such animals is blurred by the language of human deviance imputed to the birds: "Selective breeding for 'greedy' birds, and the addition of growth-promoters to the feed, have ensured an end-product twice as heavy at seven weeks as *chickens should be*—and were, before the poultry and *drug* industries *moved* in. The result? PROFITS for producers and SUFFERING for the *sick* and *deformed* birds" . . . Drug-crazed and greedy, deformed and unnatural in genetic make-up, practice and body, this highly manufactured animal accrues the aberrant qualities that derive from its origins in the wicked manipulation of nature. So far removed from true nature, humans can react to it with

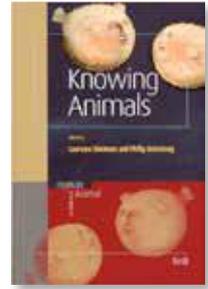
the same moral indifference as other manufactured "products." (Franklin 1999, 139, his emphasis)

Unable to rely on immediacy—the instant shock or sympathy generated by a snapshot or theriomorphic image—animal advocates have to find other strategies in their attempt to bring the issue of the broiler chicken into public view. Most importantly, they must attempt the return to visibility of that most easily obscured and unpalatable of knowledges—that of history.

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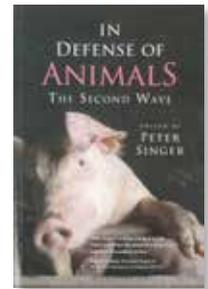
the British RSPCA uses the internet's unprecedented reach and versatility to intervene in the global visual archive in a different but compatible way. The webpage on factory farmed chickens centers upon a striking GIF image, which shows a sequence of snapshots in the growth of a meat chick, compared with that of an egg-layer: both are shown at three days of age, eleven days, three weeks, four weeks, and finally six weeks—slaughter age for the meat chick. The impact here is diachronic rather than synchronic: a single-image comparison would merely reveal a big bird next to a smaller one, neither showing evident signs of ill-health or distress, but the time-lapse comparison conveys both the gross acceleration of the meat chick's metabolism, and the drastic foreshortening of its lifespan (RSPCA, "Campaigns: Chicken Farming").

The global panic about avian influenza suggests that opening this kind of production history to public view may be as urgent as it is difficult. So far, the visual representation of the scare in the mainstream news media has concentrated on health inspectors in white suits decontaminating sheds, footage of birds consigned to bonfires, dead or alive, and lines of airline travelers wearing face masks. Meanwhile, health and food authorities in many places have begun to administer the removal indoors of free-range flocks. But a very different picture—and along with it, different preventive strategies—would appear if authorities and media were to undertake a rigorous and publicly-visible examination of the history of intensive poultry farming practices, and in particular the ways in which they produce the perfect conditions for rapid evolution of new bacterial and viral agents: extreme overcrowding, low standards of hygiene and care, severe physiological and metabolic stress, careless use of antibiotics (Greger 2006).

## ENGLISH TEXTS

### Extended Written Texts (Non-Fiction)

Singer, Peter (ed). *In Defense of Animals: The Second Wave*. Wiley Publishing (2006).  
Extracts from chapter 7 – *Brave New Farm?* (pp. 104 & 105). Mason, Jim and Finelli, Mary.



## Brave New Farm?

Jim Mason and Mary Finelli

In our mind's eye the farm is a peaceful place where calves nuzzle their mothers in a shady meadow, pigs loaf in the mudhole, and chickens scratch about the barnyard. These comforting images are implanted in us by calendars, coloring books, theme parks, petting zoos, and the countrified labeling and advertising of animal products.

The reality of modern farmed animal production, however, is starkly different from these scenes. Now, virtually all poultry products and most milk and meat in the U.S. come from animals mass-produced in huge factory-like systems. In some of the more intensive confinement operations, animals are crowded in pens and in cages stacked up like so many shipping crates. In these animal factories there are no pastures, no streams, no seasons, not even day and night. Growth and productivity come not from frolics in sunny meadows but from test-tube genetics and drug-laced feed.

Animal factories allow producers to maintain a larger number of animals in a given space, but they have created serious problems for consumers, farmers, and the environment, and they raise disturbing questions about the degree of animal exploitation that our society permits.

### Factories Come . . . Farms Go

Right under our noses agribusiness has wrought a sweeping revolution in the ways in which animals are kept to produce meat, milk, and eggs. It began in the years before World War II, when farmers near large cities began to specialize in the production of chickens to meet the constant demand for eggs and meat. By supplementing the birds' diet with vitamin D, they made it possible for them to be raised indoors without sunlight. The first mass-producers were able to turn out large flocks all the year round. Large-scale, indoor production caught on fast around the urban market centers, but the new methods created a host of problems. Nightmarish scenes began to occur in the crowded, poorly ventilated sheds. Birds pecked others to death and ate their remains. Contagious diseases were rampant, and losses multiplied throughout the budding industry.

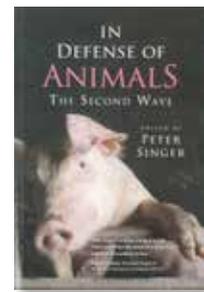
Chickens themselves were not entirely ready for mass-production, and the poultry industry set about looking for a better commercial bird. In 1946, the Great Atlantic and Pacific Tea Company (now A&P) launched the "Chicken of Tomorrow" contest to find a strain of chicken that could produce a broad-breasted body at low feed cost. Within a few years poultry breeders had developed the prototype for today's "broiler" – a chicken raised for meat who grows to a market weight of about five pounds in seven weeks or less. The pre-war ancestor of this bird took twice as long to grow to a market weight of about three pounds.

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The egg industry went to work on engineering their own specialized chicken – the “layer” hen, who would turn out eggs and more eggs. Today’s model lays twice as many eggs per year as did the “all-purpose” backyard chickens of the 1940s. Egg producers also tried to follow the “broiler” industry’s factory ways, but they were faced with a major problem: confined hens produce loads of manure each week. “Broiler” producers had the manure problem with their large flocks too, but the birds were in and out within twelve weeks, and accumulations could be cleaned out after every few flocks. (Today, it can be years between complete litter changes.) Egg producers, however, kept their birds indoors for a year or more, so they needed a means of manure removal that would not disturb the hens or interfere with egg production. Unfortunately for the hens, they found it: producers discovered they could confine their chickens in wire-mesh cages suspended over a trench to collect droppings. At first they placed hens one to each cage, but when they found that birds were cheaper than wire and buildings, crowded cages became the rule. Although crowding caused the deaths of more hens, this cost was considered “acceptable” given the increased total egg output.

Having reduced chickens to the equivalent of living machinery, entrepreneurs and government scientists began looking about for ways to extend factory technology to other farmed animal species. In the 1960s they began developing systems for pigs, cattle, and sheep that incorporated the principles of confinement, mass-production, and automated feeding, watering, ventilation, and waste removal.

About a week before her piglets are due, she is moved to a narrow “farrowing crate.” This device permits her to lie and stand, but she cannot walk or turn around; its purpose is to keep her in position only to eat, drink, and keep her teats exposed to the baby pigs. Soon after birth, the piglets’ teeth are clipped; their tails are cut off, their ears are notched for identification, and males are castrated – all without any anesthetic. In a few weeks, the sow goes back to the breeding area, and the piglets are moved to pens in the “finishing” buildings, where they spend about sixteen weeks until they reach a slaughter weight of about 250 pounds.

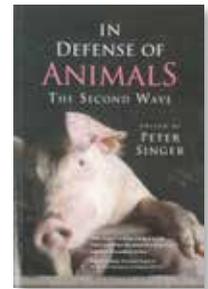
In “beef cattle” feedlots, stress from crowding, exposure, and an unnatural diet adversely affect the animals’ health. Liver abscesses are common in these animals because their digestive tracts are geared more to roughage than to the steady diet of high-energy grain and growth promotants that they receive. Cattle may be dehorned and branded, and males are castrated, all without anesthesia.

## ENGLISH TEXTS

### Extended Written Texts (Non-Fiction)

Singer, Peter (ed). *In Defense of Animals: The Second Wave*. Wiley Publishing (2006).

Extracts from chapter 7 – *Brave New Farm?* (pp. 110, 111 & 112). Mason, Jim and Finelli, Mary.



Ducks are raised both for meat and to produce foie gras (“fatty liver”), which involves a most brutal practice. Total confinement housing is the most common method of raising ducks, with thousands of birds kept in a single, dark building. Being aquatic animals, they need to submerge their head in water in order to keep their eyes healthy. But the only water they are provided with is for drinking, from nipple-like devices. The tip of their sensitive bill is burned off with a hot knife, often resulting in chronic pain and debilitation. At about four months of age, ducks used for foie gras are put in small pens or are kept virtually immobilized in individual cages. For two to three weeks, up to two pounds of a corn/fat mixture are forced down their throat through a 12- to 16-inch pipe attached to a motorized pump. The massive quantities of food cause the bird’s liver to swell to up to ten times its normal size, a clinical disease state called “hepatic steatosis.” Many of the birds also suffer blindness, lameness, throat injuries, and ruptured livers.

Increasingly, fish are being raised in cages floating in the ocean. Sea lice proliferate in these crowded confines, boring holes in the skin of fish and feasting on their flesh. Schools of fish inevitably escape through torn nets, flooding, or accidental release during transport. Once free, they spread disease and compete with wild native fish. Genetically engineered fish, made to grow at much faster rates, pose an even greater potential threat.

Many farmed fish species spend most of their lives in steel buildings, crowded into shallow, cement troughs. According to the 2002 Compassion in World Farming report “In Too Deep,” twenty-seven one-foot-long trout share the equivalent of a bathtub of water. At high densities, fish exhibit abnormal behaviors, such as increased aggression; suffer widespread injuries, deformities, and disease; and have high parasitic infestations. Scientific research has shown that fish are capable of experiencing pain and distress. Veterinary medicine for fish is very limited, and pre-slaughter mortality rates are high.

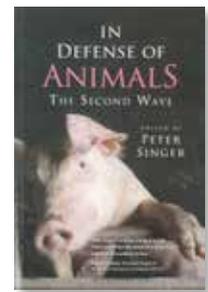
Fish are commonly starved for seven days or more prior to slaughter. To increase shelf life, many are left to suffocate on bins of ice. Others are rendered immobile rather than insensible at slaughter, resulting in their being processed while still alive and fully capable of immense suffering. Stunning methods include clubbing and gassing. Slaughter methods include bleeding and electrocution. Less inhumane methods are being researched.

In confinement, animals are subjected to a variety of stressors. In addition to acute stresses such as early weaning, debeaking, dehorning, tail docking, and castration, other causes of stress in the factory farm are constant. The animals have no relief from crowding and monotony. In a less restrictive environment they would relieve boredom by moving; confined animals cannot. Nor have they relief from social disturbances caused by factory conditions. When animals are crowded and agitated, they are more likely to fight. In the restricted space of confinement pens, less aggressive animals cannot get away to make the instinctive show of submission. With caged birds, for example, each cage contains a small “flock,” with one member at the bottom of the social ladder. This unfortunate bird cannot escape her tormentors. When growing pigs are moved to larger pens and mixed with unfamiliar pigs, fighting can occur, leaving pigs injured or dead.

## ENGLISH TEXTS

### Extended Written Texts (Non-Fiction)

Singer, Peter (ed). *In Defense of Animals: The Second Wave*. Wiley Publishing (2006).  
Extracts from chapter 7 – Brave New Farm? (pp. 112 & 119). Mason, Jim and Finelli, Mary.

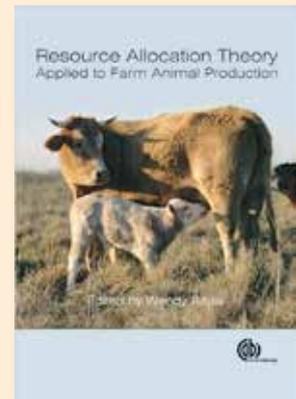
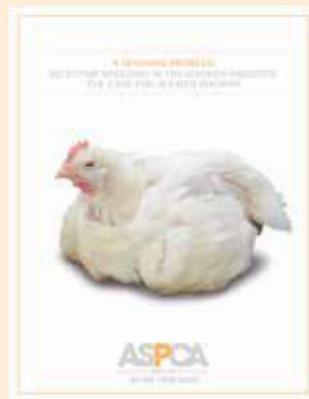
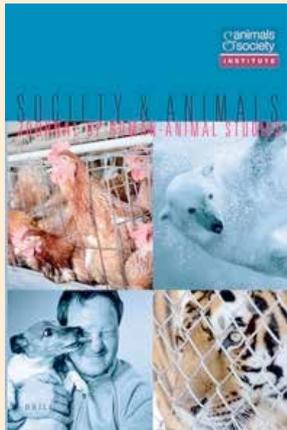
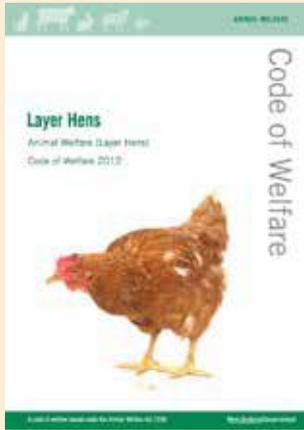


In pigs, stress-induced aggression or “cannibalism” takes the form of tail biting, best described by a swine expert for Hog Farm Management back in 1976, when such practices had not yet raised controversy and farming publications were more plainspoken than they are today: “Acute tail biting is often called cannibalism and frequently results in crippling, mutilation and death. . . . Many times the tail is bitten first and then the attacking pig or pigs continue to eat further into the back. If the situation is not attended to, the pig will die and be eaten.”

There are many, many costs in the new factory methods and systems for raising animals, although agribusiness experts would have us hear only their talk of benefits. They are fond of using cost/benefit analyses to justify crowding animals, the use of antibiotics in feed, and converting farming communities to factory towns. They assert that the benefits to consumers from these practices outweigh the risks involved. But if this sort of test is to have any validity in agricultural affairs it must take into account all the costs of factory methods, which harm:

- farmed animals, who are restricted, mutilated, manipulated, and ultimately killed;
- the health of consumers, who are put at much greater risk for both acute and chronic disease;
- the land, much of which is used to grow animal feed or is degraded by overgrazing;
- wildlife, whose habitat is destroyed and who are killed by agricultural predator control programs;
- the environment, polluted by pesticides and toxic animal wastes;
- our limited supply of fossil fuels, their procurement causing environmental destruction and escalating international strife;
- the atmosphere, polluted by fossil fuel use and methane gas, generated by the immense numbers of ruminant farmed animals, adding to global warming;
- prospects for alleviating world hunger, by the depletion of fresh water and other natural resources;
- farm families and rural communities, whose livelihood is stolen by high-tech factory systems;
- citizens, who pay for subsidies that prop up costly systems, and farmers – and ultimately all residents – in other countries who are unable to compete with the “cheap” imports;
- human dignity and self-respect, as a result of carrying on all of the above and on such a massive scale.





## ENGLISH TEXTS

### Short Written Texts (Blogs)

Kriek, Hans. 'Colony Cage Con'. SAFE Talk Blog (2014).



#### Colony Cage Con

SAFE OCTOBER 7, 2014 6 COMMENTS

Having campaigned for the abolition of cruel battery hen cages for nearly 30 years you would think I would be pleased about the Government's decision to phase out battery hen cages. Well I am not, because it's all spin, a lie, a con job, and you – someone who cares about the welfare of animals, is the one being conned.

Despite their promises the Government has no intention to get rid of battery cages but they know you don't like these cruel cages and want them banned. The fact is that instead of banning battery cages the Government is simply changing one cruel cage for another. The new cages are larger (but house more birds) and contain some token 'enrichments.' These new cages may appear better but the hens still have not enough space and still can't express their normal behavior. These cages will become mandatory for cage egg producers by 2022.

By moving away from current cages the Government hopes that you will believe that hens will have a better life. So, in cahoots with the egg industry they have devised a plan to fool you. First, they do not refer to these cages as cages. Instead they call them colony systems, or furnished colony systems. Then they pretend that the hens' lives will be vastly improved in these cages. They even claim that the animals can express their normal behavior as required by our animal welfare legislation. It is a cruel deception as no hen can ever express her normal behavior in a space barely larger than an A4 sheet of paper. Eggs from hens confined to these cages are sold as 'Colony Laid' or 'Colony Eggs' in the supermarkets, deliberately leaving consumers in the dark that these are in fact cage-produced eggs.

I feel angry for every single hen who will be made to suffer in a colony battery cage. I understand that many people find it difficult to relate to the suffering of three million battery hens. The number is just too large to get your head around, and a sense of helplessness results. If this applies to you, then please do me a favour – think about one hen only. Imagine one hen confined in a crowded wire cage; sore feet from standing on a wire floor; feathers missing due to being pecked by her cage mates and rubbing against the sides of the cage. She

#### SPOT THE DIFFERENCE?



Still a cruel cage.



will have brittle bones from calcium loss, will be unable to flap her wings, let alone walk around or do anything nature intended for her. Join me in my anger just for her, and then put that anger into action.

The New Zealand egg industry is set to spend over 150 million on installing colony cages, yet these cages are not wanted by the New Zealand public. A large number of political parties, including Labour and all animal welfare groups in New Zealand have condemned colony cages. Internationally there is also strong opposition to colony cages. They are illegal in Switzerland; Austria has banned all colony cages by 2020; Belgium by 2024. Supermarkets in Germany and the Netherlands refuse to sell colony cage produced eggs.

In New Zealand we must stop colony cages before they become entrenched. There is a real chance that a future New Zealand Government will ban colony cages, but SAFE believes it is time for our current Government to put a stop to any new layer hen cages being introduced and legislate for alternative, cage-free, high welfare systems. SAFE will make this issue one of its top priorities and we will be calling on you to help our new campaign to free all New Zealand's battery hens. Watch this space!

Hans Kriek, Executive Director

## BIOLOGY TEXTS

### Short Written Texts (Conference Papers)

Sneddon, L.U. and Gentle, M.J. '*Pain in Farm Animals*'. Research Consortium Sustainable Production (2001).

Lameness also affects broiler or meat chickens and turkeys. Meat birds are selected for rapid growth and become too heavy for their legs to carry their bodies and their skeleton becomes distorted. This increased weight places unnatural stresses on their joints and results in abnormal gait; impairs the ability to walk and the affected individuals spend less time standing (Duncan et al. 1991; McGeown et al. 1999). Studies have shown that a normal chicken takes an average 11 seconds to walk a set distance whereas a lame chicken takes 34 seconds. This time can be reduced to 18 seconds if the drug carprofen, an analgesic, is administered which presumably reduces pain associated with lameness.

Lameness is particularly prevalent in broiler chickens and turkeys and it has been shown that 90% of broilers at 7 weeks of age had detectable gait abnormalities (Kestin et al. 1992). These fast growing birds have more breast muscle and shorter wider legs with immature bones. This leads to a gait which is typified by short steps, feet positioned wide apart and the feet turned out resulting in abnormally large mediolateral forces required to move the bird's centre of gravity over the stance leg (Corr 1999). Affected chickens take shorter steps, walk more slowly and have greater stresses placed upon the musculoskeletal system resulting in an inefficient walking system. Broiler chickens, as a consequence, spend much less time walking and standing (Duncan et al. 1991; McGeown et al. 1999). The possible pain resulting from skeletal disease has been investigated using analgesics with some evidence of pain associated with lameness (McGeown et al. 1999; Danbury et al. 2000).

#### **Minimising Pain and Suffering in Farm Animals**

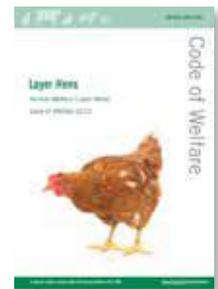
We have reviewed the various potentially painful practices and conditions that farm animals endure. Both behavioural and physiological measurements have demonstrated that these painful experiences have a detrimental effect on animal welfare and consequently decrease financial gain. It is perhaps impossible to totally eliminate pain in production animals but suffering should be minimised since it is in the farmer's best interest to ensure his animals' wellbeing. Any measures should take into account the profitability and practical nature of any proposed

changes but also should seek to reduce pain and distress. This means prompt diagnosis and effective treatment of damage or disease but in the situation where the problem is a result of selective breeding, the solution will be more complex. For example, broiler chickens, where skeletal disease is prevalent, can be fed a reduced diet thus slowing down their rapid muscle growth. To control pain we must know what pain is and how it arises during farming. Therefore we must invest in sound scientific research to assess pain and find methods of reducing it by using the least painful method available and also the promotion of the use of local anaesthesia and analgesia where appropriate. It is clear that the farmer's support is essential to any changes in practice and therefore, awareness of welfare issues should be promoted by a positive interaction between scientists, veterinarians, and farmers. Any changes, of course, have to be economically viable but there is increasing public demand for more welfare and environmentally friendly products and the public must be informed if the products go up in price that this is to pay for the reduction of pain and suffering in farm animals.

# SCIENCE TEXTS

## Short Written Texts (Government Publications)

National Animal Welfare Advisory Committee (NAWAC). *Animal Welfare (Layer Hens) Code of Welfare 2012*. NZ Government (2012). Extract from section 6 – Behaviour (p. 23).



## 6. Behaviour

### Introduction

The ability for layer hens to be able to show normal behaviour in the farm environment is an important welfare consideration. Layer hens show much of the natural behaviour exhibited by their wild ancestors, the jungle fowl. While selective breeding has reduced their drive to perform some behaviours (e.g. sexual behaviour) they have retained a strong need to perform many of their ancestral behaviours including:

- Laying their eggs in a protected nesting area;
- Perching (or roosting);
- Scratching and foraging;
- Dustbathing; and
- Extending and flapping their wings, flying onto roosts, preening, and vigilance for predators.

Current housing systems may constrain these behaviours to some extent. Indoor systems are more constraining than outdoor systems and colony cages provide reduced opportunities for foraging and dustbathing behaviours to be expressed. There is also evidence that certain behaviours are more important to hens than others at different times. For example, as hens approach the time to lay their eggs they place a high value on a nest site, and rank nesting behaviour a higher priority than feeding.

Where the ability of hens to escape is constricted, fear and panic can lead to smothering.

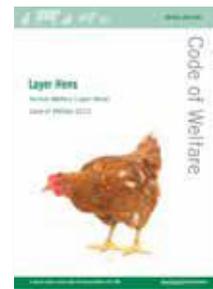
### Minimum Standard No. 12 – Behaviour

- (a) Hens must have the opportunity to express a range of normal behaviours. These include, but are not limited to nesting, perching, scratching, ground pecking, and dustbathing.
- (b) Any cage installed prior to 31 December 1999 must be replaced with a housing system that meets the requirements of Minimum Standard 12(a) by 31 December 2016.
- (c) Any cage installed prior to 31 December 2001 must be replaced with a housing system that meets the requirements of Minimum Standard 12(a) by 31 December 2018.
- (d) Any cage installed on or prior to 31 December 2003 must be replaced with a housing system that meets the requirements of Minimum Standard 12(a) by 31 December 2020.
- (e) Any cage installed between 1 January 2004 and the date of issue of this code must be replaced with a housing system that meets minimum standard 12(a) by 31 December 2022.
- (f) Any housing systems installed after the date of issue of this code must meet the requirements of Minimum Standard 12(a).

## SCIENCE TEXTS

### Short Written Texts (Government Publications)

National Animal Welfare Advisory Committee (NAWAC). *Animal Welfare (Layer Hens) Code of Welfare 2012*. NZ Government (2012). Extract from section 6 – Behaviour (p. 24).



#### **Note:**

Section 73(3) of the Animal Welfare Act 1999 provides that the National Animal Welfare Advisory Committee (NAWAC) may, in exceptional circumstances, recommend minimum standards that do not fully meet the obligations to ensure that the physical, health and behavioural needs of the animal are met. In making this recommendation NAWAC must have regard to, among other things, the feasibility and practicality of effecting a transition from current practices and any adverse effects that may result from such a transition, and the economic effects of any transition from current practices to new practices.

NAWAC considers that the use of layer hen cages providing less than 750 sq cm per hen and no perches, discrete nesting areas or scratching surfaces, does not fully meet the obligations of the Act. Minimum Standards 12 (b), (c), (d) and (e) provide for a transition from these cages to alternative ways of housing and managing layer hens – i.e. colony cages and barns.

#### **Example indicators for Minimum Standard No. 12 – Behaviour**

- Layer hens are active and alert, calm, confident and inquisitive
- Layer hen behaviour is monitored and timely remedial action is taken when appropriate, including managing the effects of injurious pecking
- Layer hens show types and frequencies of activities that are normal for their age

#### **Recommended Best Practice**

- (a) Pullets reared for barn systems should be reared with access to litter and perches from 6-18 weeks of age, to aid familiarisation with the laying system.
- (b) Pullets reared for multi-tier barn systems should be reared with access to feed and water on multiple levels from 6-18 weeks of age, to aid familiarisation with the laying system.
- (c) Layer hens should be provided with litter for dustbathing.
- (d) Resources should be located in a way that minimises competition between birds and encourages them to perform a range of normal behaviours.
- (e) All hens should be provided with several resources to promote foraging behaviour.

#### **General Information**

The minimum standards and suggested indicators outlined elsewhere throughout this code are also intended to ensure that housing and management allows the behavioural needs of layer hens to be met, and provide advice on how these needs can be met.

Injurious pecking (damaging feather pecking, vent pecking and cannibalism) is often associated with poor foraging opportunities, overcrowding and dietary imbalance. The problem is more difficult to manage in large group-housed systems and it is particularly important that pullets are given access to litter and range before placement in the layer barn. In large flocks there may also be competition or avoidance of negative social interactions by some hens. For example some hens may be unwilling to leave a barn for the outdoors for fear of encountering unfamiliar or dominant individuals.

Consideration of group dynamics and the abundance and positioning of resources in the design and management of large flocks should be made in order to ensure that as many individuals as possible have sufficient space and access to resources to perform a full behavioural repertoire.

# SCIENCE TEXTS

## Short Written Texts (Government Publications)

National Animal Welfare Advisory Committee (NAWAC). *Animal Welfare (Pigs) Code of Welfare 2010*. NZ Government (2010). Extract from section 5 – Behaviour (p. 17).



## 5. Behaviour

### Introduction

Meeting a pig's behavioural needs is important for its welfare. Pigs are social animals and prefer to live in groups. At all ages they are very vocal and when given the opportunity will display behaviours such as rooting, nest building, chewing and other forms of oral and nasal stimulation. It is important that pigs are given social contact as well as freedom and choice of movement, so they can express behaviours that are important to them.

While domestication has made pigs easier to handle, some undesirable behavioural traits persist that may need to be managed to ensure pig welfare. These problems occur in all production systems but may require additional attention indoors where there are higher stocking densities. Pigs are hierarchical animals and will seek to establish a social structure which may result in aggression, particularly when mixing unfamiliar pigs. Where pigs of all ages are kept in groups, aggression can create welfare problems, which may be severe if they are not well managed. Aggression can also occur at feeding times and is manifested by bullying, fighting and vices such as vulva, tail or ear biting. It is essential to be alert for these behaviours both to manage them and to identify and minimise the factors that cause them. Aggression can be mitigated by a variety of practices, and a high standard of stockmanship is essential.

Dry sow stalls are employed to manage aggressive behaviour of sows but, in doing so they limit sows' ability to express some other behaviours. One of the purposes of this section of the code is to establish a clear direction towards housing systems which provide pigs with the opportunity to engage in a greater range of behaviours while maintaining physical and health needs.

The minimum standards and associated indicators outlined elsewhere in this code also address the behavioural needs of pigs and provide advice on how these needs can be met.

### Minimum Standard No. 9 – Behaviour

- (a) Pigs must be managed in a manner that provides them sufficient opportunities to express and satisfy their normal behaviours. These include, but are not limited to, feeding, drinking, sleeping, dunging and urination, vocalisation, thermoregulation, and social contact.

### Example indicators for Minimum Standard No. 9 – Behaviour

- Pigs are alert and attentive
- Pigs are monitored for signs of stereotypic behaviour and vocalisation, and remedial action is taken as necessary
- Pigs are monitored for aggression, tail, ear and vulva biting, and remedial action is taken as necessary
- Less than 15% of pigs have skin lesions, bites and scratches from fighting at any one time

# SCIENCE TEXTS

## Short Written Texts (Government Publications)

National Animal Welfare Advisory Committee (NAWAC). *Animal Welfare (Pigs) Code of Welfare 2010*. NZ Government (2010). Extract from section 5 – Behaviour (p. 18).



### **Recommended Best Practice**

- (a) Rooting material such as straw, or other material that can be manipulated, should be provided for all pigs.
- (b) Pigs with serious ear, vulva or tail bite wounds should be immediately separated from pen mates, where practicable, and treated if necessary. If the pig responsible for biting can be identified, it should be moved to an individual pen.
- (c) Genetic selection methods should be encouraged as a means to promote behavioural traits that minimise welfare problems in pigs.
- (d) Where undesirable behaviours are detected, management, housing and equipment design, and environmental conditions should be reviewed to identify and reduce or remove the cause.
- (e) Facilities in which pigs are group housed but are individually fed, i.e. either at individual feeding stations or via a computerised feeding system, should be monitored to reduce aggression at feeding times.
- (f) Every effort should be made to minimise mixing of unfamiliar pigs. When pigs are destined for slaughter and mixing is inevitable, they should be mixed at the time of loading onto the vehicle rather than before.
- (g) Environmental enrichment should be provided for housed pigs. Such practices may include:
  - the provision of “toys” such as a length of hanging chain, rock, tyre, buoy or “football”
  - positive human contact (such as pats, rubs and talking)
  - the use of a radio in growing sheds to accustom pigs to a range of noises and voices

### **General Information**

Social contact is provided for pigs by physical contact in groups or between pigs housed next to each other, and by keeping pigs within hearing and sight of each other. When pigs are kept in groups, aggression can be mitigated through a variety of practices such as attention to group size and composition, adequate space, feeding method, diet and the satisfaction of appetite, selection for temperament, running a boar with pregnant sows, provision of straw or other bedding to encourage foraging behaviour, individual feeding stalls, individual pens or using baffles such as bales of straw to create escape areas where pigs can withdraw.

Techniques used to minimise aggression when mixing unfamiliar pigs include introducing pigs into a pen that has feed on the floor, introducing all of the pigs into a new pen at the same time, using group sizes of more than 50 pigs and using a pen with room for the pigs to move away, or with baffles such as bales of straw that pigs can hide behind.

## **5.1 Managing Interactions between Sows and Piglets**

### **Introduction**

Sows' behaviour during and after farrowing can be a hazard for their piglets. They can crush the piglets as they lie down and may also kill and eat piglets.

The purpose of any farrowing facility is to provide the piglets with an area where they have ready access to the sow, where they can maintain body temperature and where they can avoid being crushed by the sow. The facility needs to also provide for the welfare needs of the sow. Meeting the needs of piglets can conflict with the needs of the sow, so systems used to manage farrowing sows and suckling piglets have to balance their differing requirements.

## SCIENCE TEXTS

### Short Written Texts (Government Publications)

National Animal Welfare Advisory Committee (NAWAC). *Animal Welfare (Pigs) Code of Welfare 2010*. NZ Government (2010). Extract from section 5 – Behaviour (p. 19).



In outdoor production, an ark is the farrowing facility. The most common indoor facility is the farrowing crate. Both have the objective of ensuring the highest practicable survival of piglets. Farrowing crates also aid with fostering piglets between sows, a process which protects the welfare of smaller piglets or excess piglets from large litters where there are more piglets than the sow can feed adequately. Crates also provide the advantages of enabling individual feeding and health care. The disadvantages of farrowing crates for the sow include the restriction of movement and a reduced ability to carry out nest building behaviours.

As stated in the 2005 code of welfare, NAWAC wants to see indoor housing systems shift progressively to those in which the lactating sow and piglets have the benefits conferred by farrowing crates while giving the sow increased opportunity to move and express a greater range of behaviours, including nest building. NAWAC strongly encourages the industry to identify and adopt such systems as soon as possible.

#### Minimum Standard No. 10 – Managing Interactions between Sows and Piglets

- (a) Accommodation for farrowing and lactating sows must be of suitable design and sufficient size to allow the sow to lie down at full length and without leg restriction.
- (b) Support, such as barriers or sloping walls to lean against, must be provided for the sow as she lies down, and she must be able to rise and stand comfortably without undue risk of injury to her litter.
- (c) When standing in a farrowing crate the sow must not touch both sides of the crate simultaneously, and her back must not touch any bars along the top.
- (d) The farrowing system must provide an area to which the piglets can retreat when the sow moves.
- (e) If sows are to be confined in farrowing crates before farrowing, it must be for no more than five days.
- (f) If sows are to be confined in farrowing crates for lactation, it must be for no more than four weeks after farrowing.
- (g) Notwithstanding (f), nurse sows may be retained in a farrowing crate for a further week for fostering purposes. This is conditional on no more than 5% of sows in any herd at any one time being retained as nurse sows.
- (h) Sows, in any farrowing system constructed after 3 December 2010, must be provided with material that can be manipulated until farrowing.

#### Note:

*Section 73(3) of the Animal Welfare Act 1999 provides that the National Animal Welfare Advisory Committee (NAWAC) may, in exceptional circumstances, recommend minimum standards that do not fully meet the obligations to ensure that the physical, health and behavioural needs of the animal are met. In making this recommendation NAWAC must have regard to, among other things, the feasibility and practicality of effecting a transition from current practices and any adverse effects that may result from such a transition, and the economic effects of any transition from current practices to new practices.*

*NAWAC considers that the confining of sows in farrowing crates for extended periods does not fully meet the obligations of the Act. Minimum Standards 10 (e) and (f) restrict the time sows are confined in farrowing crates to a maximum of five weeks in any reproductive cycle.*

# SCIENCE TEXTS

## Short Written Texts (Government Publications)

National Animal Welfare Advisory Committee (NAWAC). *Animal Welfare (Pigs) Code of Welfare 2010*. NZ Government (2010). *Extract from section 5 – Behaviour (pp. 20 & 21)*.



### Example indicators for Minimum Standard No. 10 – Managing Interactions between Sows and Piglets

- There is an unobstructed area behind the sow when farrowing
- All piglet mortality and causes are monitored, recorded and remedial action taken as necessary
- Piglets are able to move to an area where they are safe from being crushed
- Sows can lie down at full length and without leg restriction, and rise and stand comfortably
- The configuration of the sides of the farrowing crate or ark provide support for the sow as she lies down
- There is space for the sow to suckle all piglets together at the same time and space is available on the narrowest side of the crate to allow piglets to escape
- The floor in the piglet area has a solid surface or is covered with a mat, or is littered with straw or another suitable material
- Hygiene standards ensure adequate dung and urine removal so the nest area is kept clean
- Manipulable material, e.g. straw, is provided to sows from the time they enter the farrowing system until the time of farrowing, in all farrowing systems constructed after 3 December 2010

### Recommended Best Practice

- (a) Sows should be introduced to clean farrowing quarters three to five days before the piglets are due to be born.
- (b) Sows should be provided with nest building material e.g. straw from at least 48 hours before farrowing.
- (c) Sows should not be kept in farrowing crates for more than 10 days after farrowing.
- (d) Sows in farrowing pens should have free access to separate feeding, dunging and lying/nesting areas.
- (e) New-born piglets, born in outdoor systems, should be confined to the farrowing ark for the first week after birth.

### General Information

Most piglet mortality occurs within the first four days after farrowing. After that time the piglets become more active and are better able to get out of the sow's way.

There are many farrowing crate designs in use. The most common have bowed or finger rails and slatted flooring. Adjustable crates are encouraged. Some older farrowing crate designs are no longer suitable for larger modern sows and do not meet the minimum standards in this code.

Alternative systems to farrowing crates include outdoor huts, deep-litter group lactation and farrowing pens. There are a large variety of farrowing pen designs in use and being further developed, internationally. These often have separate sow and piglet areas, and there is a growing interest in designs that allow the piglets to stay in a nest area where nursing occurs and allow the sow to leave for other activities.

## BIOLOGY TEXTS

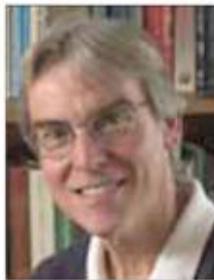
Short Written Texts (Industry Publications)

Hardiman, John. 'Route to greater speed and accuracy in breed progress'. *Cobb Focus* (2006) (p. 6).



# Route to greater speed and accuracy in breed progress

The word 'genomics' has become part of the language of animal and plant breeders. But what does it mean for the poultry industry? The leading UK journal *Poultry World* asked Cobb to explain the word to its readers. **JOHN HARDIMAN** (right), vice president of research and development, compiled the answers to the magazine's questions with the help of **ALBERT PASZEK**, director of biotechnology, and **RON OKIMOTO**, molecular geneticist.



This identification of specific genes and/or DNA markers provides new and unique information for poultry breeders. Breeders can determine the genetic make-up of single birds with particular gene/marker genotypes and include this information in existing selection methods based on assessing genetic potential with conventional quantitative tools and predicting breeding values by BLUP (best linear unbiased prediction) methods. This enables selections to be made directly on genetic factors controlling variation of traits, achieving a greater accuracy and certainty.

**Q** What is genomics?

**A** It is a science of the genome, the genetic make-up of all living beings. The overall aim of genomics is to discover more about the structure and organization of the genome, and how this relates to differences we see in birds, animals and plants - the phenotypic traits.

**Q** The mapping of the chicken genome is hailed as a major advance. What does this mean for you as a poultry breeder?

**A** The mapping of the chicken genome aims to identify specific elements of the genome that control individual phenotypic traits. Mapping projects identify specific sequences of DNA (genes) or DNA markers linked to individual genes or regions of genes that control aspects of phenotype.

Genetic mapping enables associations to be found between specific parts of the genome structure and how the bird or animal functions - and how gene variants lead to phenotypic differences. Knowledge of the chicken genome structure enables individual genes to be identified and associations with DNA markers discovered. Effective use of DNA markers in breeding depends on that knowledge.

**Q** Which parts of the genome are your particular targets at this time?

**A** Cobb is focused on improving quantitative traits with economic value for broiler producers and processors. Improvement targets include growth and conformation, performance traits and poultry health. Birds with superior growth rate, muscle yield, skeletal conformation, feed efficiency and health are selected as breeders for subsequent generations. We fund multiple projects aimed at discovering specific genes and genomic regions that control these phenotypic differences. The Biotech Program at Cobb is developing applied selection tools for chicken lines using SNP (Single Nucleotide Polymorphism) markers linked to selection traits. Biotech-based tools and methods are evaluated by us for improving genetic components of disease resistance.

# BIOLOGY TEXTS

## Short Written Texts (Industry Publications)

Hardiman, John. 'Route to greater speed and accuracy in breed progress'.  
*Cobb Focus* (2006) (pp. 6 & 7).



**Q** How much emphasis do you place on welfare as well as performance traits?

**A** In short, equal. Only birds with adequate body conformation and physiology for healthy movement and life functions can achieve sustainable production performance. We are also studying environmental and nutritional factors affecting bird well-being and performance; this is essential with Cobb products increasingly used in countries with different nutrient sources and environmental conditions from those in North America. Full alignment of chicken genetics with production management and environment is the only guarantor of chicken well-being and sustainable production performance.

**Q** How much easier is it now to make significant advances?

**A** The work is in progress and therefore, precise assessment of reaching significant advances with genomic methods is still to be done. We currently collect more phenotypic measurements for our lines than ever before. The data for new conformation traits is, for example, collected with help of x-ray scanning technology and used in BLUP-based selection system. Phenotypic data and DNA samples are collected for tailoring genomic tests to specific genetic lines. Application of genomic tests is expected to provide significant help with genetic improvement for traits difficult and costly to measure.

Sequencing of the chicken genome provides new tools for poultry breeders. Before the chicken genome was sequenced, there were about 2000 DNA markers on the chicken linkage map. The current map for the chicken genome includes about three million DNA markers and accelerates discovery.

**Q** How soon will these advances be seen in parent stock and at the commercial level?

**A** We expect to see new advances in Cobb parent stock within five years, with an additional two years to allow assessment at the commercial level.

**How do new selection methods compare with traditional breeding methods?**

Traditional breeding methods rely entirely on quantitative tools dominated by BLUP-based computation of data collected for phenotypic traits and predicting breeding values of birds in pedigreed populations as the basis for selection. Genetic improvement of pedigreed chicken lines produced by selection decisions is transferred via selected animals into non-pedigreed grandparent and parent populations and ultimately to the broilers.

Some limitations of traditional breeding methods include the following:

- Quality of selection decisions depends on quality of collected trait data.
- Routine and objective collection of data for some bird traits is not possible and/or it requires sacrificing of birds, eliminating them from the genetic improvement program.
- It is difficult or impossible to separate selection effects for tightly correlated traits, such as feed conversion and correct fat content.
- Predicting breeding values is limited to birds in pedigreed populations.
- Breeding values predict make-up of chicken genetic potential - but do not provide definitive and repeatable evidence of such make-up.

By contrast, genomic tools provide just this evidence from routine laboratory DNA analysis of a single drop of blood. In addition these tools:

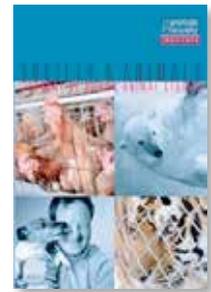
- Permit selection for specific components of the chicken genome with greater accuracy, speed and uniformity.
- Provide ability to separate closely related traits.
- Achieve greater uniformity of non-pedigreed generations with objective measures based on actual bird genotypes.

A further significant benefit is in providing objective assessment of genetic make-up and potential for individual birds from multiple generations of the breeding and production - so enabling full traceability of all chicken generations.

## ENGLISH TEXTS

### Short Written Texts (Journals)

Loveridge, Alison. 'Changes in Animal Welfare Views in New Zealand: Responding to Global Change'. *Society & Animals*, Volume 21, Issue 4 (2013). Extracts from pp. 325-340.



In 2008, participants were asked "Using a scale of 1-5... how much do you agree or disagree with the following statements":

- In general farmed animals that live outside are healthier and have a better life
- Most farmers treat their animals well
- Most farmers put caring for animals ahead of making money

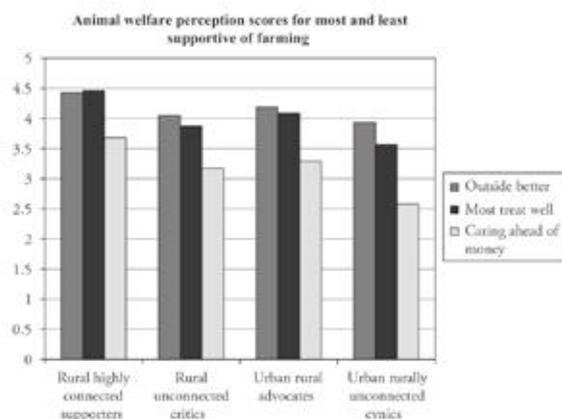
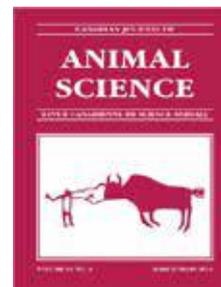


Figure 1. General public and farmers compared in *Beliefs and Values*. Compiled from Supplementary Tables (Ministry of Agriculture and Forestry & UMR Research, 2008b, pp. 50–52 and of Agriculture and Forestry & UMR Research, 2008c, pp. 48–50)

Aggregate scores of people in the most and least connected categories did show differences in their views on farmers' relationship with their animals when the mean scores were calculated (See Figure 1). On a scale of 1 to 5 (where 5 = strongly agreed to the statement), most agreed. Differences in opinion on animals living outside were smallest, with urban people with least rural connection having only an average score 0.5 lower than that of the highly connected rural subgroup. The difference on whether most farmers treat their animals well was slightly larger at 0.89, and the largest difference was on putting caring for animals ahead of money at 1.1. All groups were less likely to accept that farmers put caring for animals ahead of money than that most farmers treat their animals well. Rural people's views were less diverse than those of urban people (Ministry of Agriculture and Forestry & UMR Research, 2008a).

In general views have changed over time, but urban-rural differences have not disappeared; in several areas they have increased. All groups expressed high rates of concern over self-selected normal farming practices, but these are now of more concern to the rural rather than the public sample. The results can only be indicative because of differences in the questions and samples. With pig farming, while relative concern has increased, the urban-rural gap has narrowed. Responses regarding insufficient food and water and inhumane transport show less concern over time but a slightly greater rural shift. Freedom to move around was given higher value, and if the low baseline for pigs is taken into account, the gap between farm and rural views appears to be closing on this issue.



### AN ETHOGRAM OF WHITE LEGHORN-TYPE HENS IN BATTERY CAGES

A. B. WEBSTER<sup>1,2</sup> and J. F. HURNIK

The purpose of this study was to record the ethogram of White Leghorn-type hens in cages and to note changes in behavior over the course of the laying period. Three hundred and eighty-four hens derived from two male parental stocks were randomly assigned as pairs to the cages of two three-tiered, semi-stairstep batteries. Hens within pairs were of the same stock, and the batteries were in the same room. The laying phase comprised 13 28-d periods and on the first 4 d of periods 1, 3, 5, 7, 9 and 11 video recordings were made of eight cages per day. Each cage was observed on 1 d only. The levels of occurrence of a variety of behavioral states were estimated from 60 records of the behavior of each hen obtained over an 8-h interval. Head flicking was the most prevalent of its group of mutually exclusive behavioral states, followed by eating and preening. Cage pecking appeared stereotyped in many hens, but, at a frequency of 5% of observations, was not unusually prevalent. Bobbing was primarily a prelaying behavior indicative of the restlessness prior to oviposition typical of White Leghorn hens in cages. Hens were on their feet for more than 75% of the time of observation. Physical displacement of a hen by its cagemate was commonplace. Eating was negatively correlated with head flicking and preening. Walking and bobbing were positively correlated with physical displacement. Hens became less active with time in cages, possibly due to an age effect or to behavioral adaptation to the cage environment. A second trend in behavior over time may be related to changes in levels of egg production or feed consumption.

The behavioral states (Hurnik et al. 1985) were defined as follows:

**Rest:** An apparent state of somnolence with eyes closed, generally performed in a sitting position but also sometimes when standing;

**Still:** No apparent movement of the body, but with eyes open;

**Head Flick (Hflik):** Body immobile except for quick movements consisting of small displacements of the head in any direction, or rotations of the head around its vertical or horizontal axis;

**Eat:** Head extended down into the feeder and apparently manipulating or ingesting feed;

**Drink:** Dipping the beak into the watering cup and apparently ingesting water;

**Preen:** Self-manipulation of feathers of the body using the beak;

**Cage Peck (Peck):** Pecking at any feature of the cage other than feed, water or another bird, often performed in a repetitive, stereotyped manner;

**Head Down (Hdwn):** Head and neck extended toward the floor of the cage while either standing or sitting such that the action of the head could not be discerned;

**Walk:** Taking one or more steps;

**Bob:** Repetitive raising and lowering of the head and neck, and frequently of the thorax as well;

**Sit:** Sitting or recumbent on the floor;

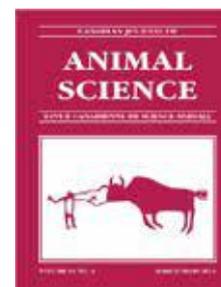
**Stand:** Standing on the feet with extended legs;

**Displace (Displ):** An event in which a hen supplants its cagemate;

## SCIENCE TEXTS

### Short Written Texts (Journals)

Webster, A.B. and Hurnik, J.F. 'An Ethogram of White Leghorn-Type Hens in Battery Cages'. *Canadian Journal of Animal Science*, Vol 70, Issue 3 (1990). Extracts from pp. 755, 757 & 758.



### DISCUSSION

#### Ethogram

While ethograms add to our understanding of how animals respond to their circumstances, it is difficult to compare between studies. Behavioral studies of chickens in production environments have not used the same circumstances or genetic stocks. Researchers have also employed different behavioral definitions and methodologies.

Head flicking appeared to involve visual surveillance of the surroundings, each flick of the head exposing a different field of view. Various authors have observed head shaking, or head flicking, in chickens (Levy 1944; Hogan 1965; Bareham 1972; Black and Hughes 1974; Clayton and Andrew 1979; Dunnington et al. 1984), and a number have thought that the action is associated with motivational conflict (Hogan 1965), frustration (Levy 1944; Siegel et al. 1978), or inadequate sensory stimulation (Bareham 1972). It is not clear that head flicking in the present study was the same behavioral pattern as the actions considered in the above investigations. The head movements categorized as head flicking in the present case appear to have been more varied and perhaps less stereotyped than those in other studies, judging from the descriptions of several authors (Bareham 1972; Clayton and Andrew 1979; Hughes 1982; Dunnington et al. 1984). Nonetheless, the behavioral patterns probably are not entirely unrelated. Head shaking may be associated with general arousal (Hughes 1983; Dunnington et al. 1984; Savory and Hughes 1988). Pullets in an open field performed head flicking for about 90% of the 5-min observation period (Webster and Hurnik, in press, a), and in laying cages, head flicking was performed 53% of the time when the observer was in view of the hens (unpublished data).

Head shaking often is higher in battery cages than in other environments such as floor pens (Levy 1944; Bareham 1972; Black and Hughes 1974). Genetic stock influences head shaking (Dunnington et al. 1984; Dunnington and Siegel 1986) and head flicking (Webster and Hurnik, in press, b).

Eating, drinking, preening and resting are within the ranges reported in the literature (Bareham 1972, 1976; Black and Hughes 1974; Eskeland 1977; Mench et al. 1986). As the studies indicate, these behavioral states are influenced by housing type, social rank and stocking rate, contributing to the wide range of values reported for each trait. Preening is a displacement behavior in some situations (Duncan and Wood-Gush 1972). It is not known if preening was performed as such in the current investigation. It was observed empirically that birds often would manifest Still prior to Rest, although the strength of this relationship was not measured. Rest is comparable to sleeping and, in part, dozing as defined by Blokhuis (1984), while Still corresponds to a portion of his dozing category. Hens, therefore, probably spent almost 10% of the time in a somnolent or semi-somnolent state.

Cage pecking appeared stereotyped in some hens, but its frequency was much lower than has been observed in other circumstances (e.g. Eskeland 1977). Norgaard-Nielsen (1984) proposed that stereotyped cage pecking develops from redirected exploratory pecking. Stereotypic behavior may be an attempt to adapt to restraint, frustration or stress (Broom 1983; Cronin et al. 1986; Ödberg 1987).

## SCIENCE TEXTS

### Short Written Texts (Journals)

Webster, A.B. and Hurnik, J.F. 'An Ethogram of White Leghorn-Type Hens in Battery Cages'. *Canadian Journal of Animal Science*, Vol 70, Issue 3 (1990). Extracts from pp. 758 & 759.



The values for walking, or locomotion, are toward the lower end of the range reported in the literature, but are similar to those of Mench et al. (1986) in comparable housing density. Type of housing (pen vs. cage) (Black and Hughes 1974; Mench et al. 1986) and social rank (Eskeland 1977) influence the behavior. Housing density also affects locomotion, but independently of distance moved in regard to recognizable goals (Lewis and Hurnik, in press). Walking may have a disturbing influence on hens in cages since it was associated with physical displacement.

Bobbing was especially frequent in the hour before oviposition. White Leghorn hens in cages are particularly susceptible to arousal and frustration before laying eggs (Wood-Gush 1972; Mills et al. 1985b). Frustration in light hybrid hens, as indicated by aggression, declines rapidly after oviposition (Hughes 1979). This corresponds to the reduction in frequency of bobbing that occurred after oviposition. Vigorous prelaying behavior creates an energy demand (van Kampen 1976) that could negatively affect production efficiency. Pacing was amenable to selection (Mills et al. 1985a) and conceivably could be reduced. However, no significant heritabilities were found for bobbing (Webster and Hurnik, in press, c). Prelaying behavior is influenced by breed (Wood-Gush 1972; Mills and Wood-Gush 1985) and housing type (Bareham 1976), and floor type can modify pacing behavior (Wood-Gush 1975). Genetic stock and cage type did not influence bobbing (Webster and Hurnik, in press, b). The expression of prelaying restlessness appears to be suppressed in high density, multiple-bird cages (Ramos and Craig 1988).

### CONCLUSION

Head flicking was the most prevalent action in its group of mutually exclusive states. Cage pecking, in particular, appeared to be a stereotyped action in some hens, but did not occur as much as has been observed in other circumstances. Bobbing was manifested as a form of prelaying behavior, although not exclusively so. Hens spent most of their time on their feet. Physical displacement of a hen by its cagemate was commonplace. Hens became less active with time in laying cages. It is not known whether this is due to an age effect or to behavioral adaptation to the cage environment.

Vieuille-Thomas, C., Le Pape, G. and Signoret, J.P. 'Stereotypies in pregnant sows: indications of influence of the housing system on the patterns expressed by the animals'. *Applied Animal Behaviour Science*, Volume 44, Issue 1 (1995).  
Extracts from pp. 19 & 20.



## Stereotypies in pregnant sows: indications of influence of the housing system on the patterns expressed by the animals

### Abstract

Patterns of stereotypy were observed in pregnant sows maintained in different housing systems in commercial farms. Comparisons were made among females of the same genotype: stalls vs. tethers for Large White (respectively 124 and 68 sows) and stalls vs. group-housed for Large White/Landrace crosses (respectively 81 and 71 sows) for two farms in each case. The patterns of stereotypy were observed for 1 h after food distribution.

The proportion of sows developing stereotypies did not differ between stall-housed and tethered females (89.5 vs. 94.1%), but was lower in group-housed compared with stall-housed sows (66.2 vs. 92.6%). The stereotypies presented by tethered sows were predominantly licking and rubbing, whereas in stalls or group-housed, they were most frequently biting and vacuum oral activities.

The function of stereotypies, the effect of the environment and the origin of the heterogeneity of the patterns displayed are discussed

### 1. Introduction

Stereotypies have been described as fixed and repetitive sequences of motor acts that have no apparent function (Wood-Gush et al., 1975; Kiley-Worthington, 1977; Dawkins, 1980). Sows housed indoors in modern intensive pig production systems exhibit a large range of such behavioural patterns (Stolba et al., 1983; Rushen, 1984; Appleby and Lawrence, 1987) that mainly occur just before and after feeding. Before food distribution, the most frequent stereotypies are rooting and licking (Staddon, 1977). During several hours following food distribution they take a variety of forms depending on the housing condition. Stereotypies have been especially studied in tethered sows, but they are not specific to this housing system and have been observed in stalled as well as in grouped sows (Vestergaard and Hansen, 1984; Barnett et al., 1984; Schouten and Rushen, 1992).

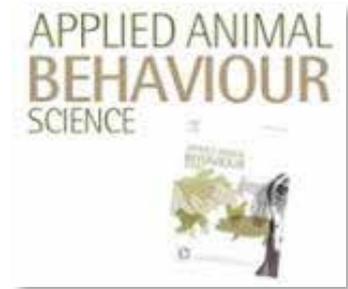
Stereotypies in sows are essentially oral activities that can be easily identified and described. They involve: vacuum chewing; head waving; chewing of bars; licking, chewing or nosing of various available objects (Fraser, 1975; Stolba et al., 1983; Terlouw et al., 1991a). They are less frequent in gilts and increase in frequency with parity (Cariolet and Dantzer, 1984; Rushen, 1985). When performed at high frequency, they are strongly resistant to environmental changes (Schouten and Rushen, 1992).

Stereotypies have been observed to develop in situations where some kind of frustration was present. For instance, hungry pigs could develop stereotypic pulling and chewing a chain placed in their stall (Dantzer and Mormède, 1981). Furthermore, this reaction has been used as an automatic measure of the frequency of stereotypies by Dantzer and Mormède (1983), Cronin and Wiepkema (1984), Rushen et al. (1990) and Terlouw et al. (1991b). The fact that they are more apparent in confinement has been used as an argument to suggest that such housing systems may be detrimental to the welfare of animals, with the hypothesis that welfare could be assessed by their presence and/or frequency (Ödberg, 1978; Dawkins, 1980; Duncan, 1980; Broom, 1983; Fraser and Broom, 1990; Wiepkema, 1993).

## SCIENCE TEXTS

### Short Written Texts (Journals)

Vieuille-Thomas, C., Le Pape, G. and Signoret, J.P. 'Stereotypies in pregnant sows: indications of influence of the housing system on the patterns expressed by the animals'. *Applied Animal Behaviour Science*, Volume 44, Issue 1 (1995).  
Extracts from pp. 21 & 22.



In the present study we have observed the different types of stereotypies displayed after feeding by sows kept in commercial farms, with the aim of comparing the expression of stereotypies, as a contribution to the evaluation of animal welfare and adaptation in different housing systems where the females were tethered, stalled or group-housed.

#### 2.1. Observations

Sows were continuously observed for 1 h starting from the beginning of morning food distribution (between 07:00 and 08:30 h), for the presence and the types of stereotypies.

Two observers entered the sow building when the stockman started to distribute the food. Each observer watched from 10 to 25 females, according to the size of the female herd. Behavioural observations started when the first sow from each observer's sample got food. Each observer walked quietly along the rows of sows or pens and noted at 2 min intervals the position of the female (standing, sitting or lying) and the occurrence of stereotypies. Stereotypies have been first described as repetitive motor acts, fixed in form and pattern. With the time sampling technique adapted to a large scale field investigation, we have not attempted to assess the repetitiveness of the pattern, but its presence on successive observations at 2 min intervals. We thus considered repeated movements, oral activities without obvious finality, rooting and nosing, as stereotypies (Rushen, 1984).

Motor activities were identified as stereotypies when done in a repetitive way at a constant speed (about one act  $s^{-1}$ ), the female's snout returning at the initial position at the end of each act or series of acts. The type of activity was recorded together with the substrate on which the activity was performed (bar, trough, floor, etc.), if any.

The observations were done once in each group of females, as previous studies have shown a good repeatability within herd of such observations (Vieuille-Thomas et al., 1994).

Table 1  
Frequency of items produced by LW sows (items with a frequency of less than 7 have been omitted from the analysis)

Item	Frequency
Vacuum chewing	374
Floor licking	131
Trough licking	91
Bar-biting	87
Trough snout rubbing	57
Vacuum suckling	31
Floor snout rubbing	29
Bar snout rubbing	27
Head waving	26
Series of four vacuum chewing	24
No stereotypy observed	17
Bar licking	15
Series of five vacuum chewing	11
Yawning	10
Trough biting	9
Vacuum chewing and yawning	8
Edge biting	8
Series of eight vacuum chewing	7

## SCIENCE TEXTS

### Short Written Texts (Journals)

Vieuille-Thomas, C., Le Pape, G. and Signoret, J.P. 'Stereotypies in pregnant sows: indications of influence of the housing system on the patterns expressed by the animals'. *Applied Animal Behaviour Science*, Volume 44, Issue 1 (1995).

Extract from p. 23.



Table 2  
Frequency of items produced by LW × LD sows

Vacuum chewing	188
Floor licking	61
Trough licking	54
Vacuum chewing and slobbering	38
No stereotypy observed	30
Bar biting	28
Trough biting	28
Floor snout rubbing	25
Tongue movements	22
Vacuum chewing and yawning	21
Yawning	19
Vacuum suckling	15
Bar licking	14
Trough snout rubbing	13
Series of four vacuum chewing	10
Vacuum chewing and tongue rolling	9
Series of six vacuum chewing	7
Bar snout rubbing	7
Wall licking	7

### 3. Results

Large White and LW × LD sows displayed a similar number of different items during the first hour after morning food distribution (63 and 65), but many items were rare. Tables 1 and 2 give the list of the items whose frequencies were over 6 for the two breeds (19 for LW, 20 for LW × LD).

Tables 3 and 4 present the typical items for each modality of housing, their frequency per modality sample, their total frequency (two samples) and the significance of the associated probability.

The proportion of sows developing stereotypies did not differ between stall-housed and tethered females (LW sows; Table 5).

Tethered females mainly exhibited licking/rubbing activities on two types of substrate (bar and trough). Stall-housed sows also exhibited activities on the same substrates (bar and trough), but the motor form was biting instead of licking. Furthermore, they were characterised by 'vacuum' stereotyped movements such as head waving and jaw movements (sucking, chewing with stretching).

A smaller proportion of group-housed sows presented stereotypies ( $\chi^2 = 6.63$ ,  $P < 0.01$ ) compared with stall-housed females (LW × LD; Table 5).

For stall-housed sows, biting of bar and trough substrates, as well as vacuum activities (tongue movements and chewing) were characteristic, as for LW females.

The lower occurrence of stereotypies in group-housed sows resulted in the prevalence of the item 'no stereotypy observed'. However, stereotypies were observed in 66.2% of the sows. The most frequent forms of stereotypy observed were licking of concrete walls and repeated vacuum chewing.

## SCIENCE TEXTS

### Short Written Texts (Journals)

Vieuille-Thomas, C., Le Pape, G. and Signoret, J.P. 'Stereotypies in pregnant sows: indications of influence of the housing system on the patterns expressed by the animals'. *Applied Animal Behaviour Science*, Volume 44, Issue 1 (1995).

Extract from p. 25.



#### 4. Discussion

As described in the previous findings, most of the typical stereotypic activities were oral movements (Barnett et al., 1985), whether directed to a physical substrate or a vacuum activity.

Specific characteristics of the movements appeared to depend on the housing system. Bar-biting was a typical item of the stall-housing system, for the two genotypes. This activity holds a particular place in previous observations: Barnett et al. (1985) observed that it was the predominant stereotyped behaviour of stall-housed gilts, its frequency being higher than that of gilts housed in groups. In a previous comparison between other treatments (tether, pairs, group, yard, paddock), Barnett et al. (1984) found in a long-term study (12 months) that sows' oral behaviour and biting were expressed with similar frequencies.

However, bar-biting seemed to have specific determinants: its frequency was not influenced by providing straw, whereas other stereotypic activities could be reduced and replaced by chewing of straw in sows (Fraser, 1975). The expression of bar-biting seemed to be mainly related to the stall-housing system.

In tethered females, 'licking', the absence of 'biting' and the use of a substrate were characteristic. In a comparative approach of housing systems, tethering limits the movements of the sows to a similar range as in stall-housing, but this limitation generates different motor forms of repetitive activities.

Such a difference in the forms of stereotyped activity is surprising: the width of the stalls was identical to that of the tether, and the possibility for movement to and from the trough similar. This suggests that the animals' perception of space limitation might be changed by contact with the tether and when space is restricted by metal bars.

The proportion of group-housed sows presenting stereotypies was the lowest observed. However, it is far from a minor event in group-housed sows, since it was observed in 66% of them. In this situation, the physical environment of food distribution—trough and separating bars—is similar to the other housing systems. However, stereotypic movements are not oriented to such substrates. Although having the same function, trough and bars are available but no longer appear to be a centre of interest. If the origin of some stereotypies is hypothesised as a displacement activity in hunger frustrated animals, we would have expected a similar result in restrained and loose sows. In fact, the stereotypies observed are different. Such an unexpected result suggests that other factors could be involved in the development of stereotypies in group-housed sows, a situation where a variety of movements and social interactions are possible.

## SCIENCE TEXTS

### Short Written Texts (Journals)

Weaver, S.A. and Morris, M.C. 'Science, Pigs, and Politics: A New Zealand Perspective on the Phase-Out of Sow Stalls'. *Journal of Agricultural & Environmental Ethics*, Volume 17, Issue 1 (2004). Extracts from pp. 54 & 55.



### SCIENCE, PIGS, AND POLITICS: A NEW ZEALAND PERSPECTIVE ON THE PHASE-OUT OF SOW STALLS

#### BEHAVIOR AND SUFFERING

The presence of higher psychological states in animals is more controversial than the presence of physical pain. However, as our awareness of animal behavior increases it has become apparent that mammals and birds, and possibly other animals are capable of advanced thought processes (Dawkins, 1998; Varner, 1999; Griffin, 2001). If this is the case, then it is reasonable to assume that these animals can suffer from emotional disorders such as boredom, stress, and frustration if they cannot meet their behavioral needs, and that this suffering is detrimental to their welfare.

Observations of animal behavior when they are kept under barren conditions bear this out. Animals in a barren environment show repetitive and often destructive behavior, which is also associated with mentally disturbed humans (Webster, 1995). Spedding (2000) from the Farm Animal Welfare Council in the United Kingdom gave the opinion that the presence of stereotypies can mean that an animal is being driven insane.

In sows, repetitive behavior such as chewing the bars of their cages (oral stereotypies) has been associated with a lack of oral satisfaction (Lawrence and Terlouw, 1993), and with keeping pigs in barren environments (Whittaker et al., 1998). Commercially reared sows are often given restricted diets that fail to satisfy them. They are also unable to forage as a means of satisfying their feeding motivation (Lawrence and Terlouw, 1993).

#### NORMAL PATTERNS OF BEHAVIOUR

A study of domestic pigs reared in a wild environment has shown that their behavior did not differ markedly from that of wild pigs. One aspect of this behavior was a preference for separate feeding and dunging areas. Pigs did not defecate closer than 5 m from their nesting area (Stolba and Wood-Gush, 1989). Evidence suggests that the rooting instinct in pigs is distinct from the feeding instinct. Even pigs who were well fed on commercial rations liked to spend about 20% of daylight hours searching for food when kept in a semi-natural enclosure (Wood-Gush et al., 1990). The provision of rooting material such as straw has been observed to reduce stereotypical behavior (Spooler et al., 1995; Whittaker et al., 1998; Kelly et al., 2000), and can reduce aggressive actions such as tail biting (Schröder-Petersen and Simonsen, 2001). Preference tests have also shown that pigs prefer pens with straw or other bedding material to concrete pens, for thermal and physical comfort (SVC, 1997) and for rooting and foraging (Burne et al., 2001).

## SCIENCE TEXTS

### Short Written Texts (Journals)

Weaver, S.A. and Morris, M.C. 'Science, Pigs, and Politics: A New Zealand Perspective on the Phase-Out of Sow Stalls'. *Journal of Agricultural & Environmental Ethics*, Volume 17, Issue 1 (2004). Extracts from pp. 55 & 56.



The amount of space needed for pigs to lie down comfortably has been calculated to be proportional to their length and width, which is proportional to the two thirds root of their body weight, sometimes referred to as the "Spoodler formula" (see Spoodler et al., 2000). The space available in sow stalls is lower than this minimum. Crowding and limiting space has shown to have adverse effects on agonistic interactions (Ewbank and Bryant, 1972), although pigs housed individually have shown better growth rates than pigs kept in group housing (Gehlbach et al., 1966; Patterson, 1985; Petherick et al., 1989). Sow performance has been shown to improve steadily as the space allocation for pigs (at an initial weight of 55.5 kg) was increased to 1.20 m<sup>2</sup> (Brumm, 1996). The growth rate of adult pigs improved when space allowance increased to 1.80 m<sup>2</sup> (*ibid.*). Weng et al. (1998), monitored injury, aggression, and time spent foraging when 6 sows were kept in a pen with a space allocation of 2.0, 2.4, 3.6, and 4.8 m<sup>2</sup> per adult pig. Based on results from the study, the authors recommended a space requirement of between 2.4, and 3.6 m<sup>2</sup> per sow.

Sows have a strong instinct to make a nest before birth. The ability of pigs to express this is inhibited if bedding material is not available. The strength of this instinct can be measured by the amount of work sows are prepared to do to gain access to bedding material (Matthews and Ladewig, 1994). If the ability to make a nest is thwarted by confining sows in crates (where they cannot turn round) with no bedding, the results include acute stress, (Jarvis et al., 2001), increased frequencies of stereotyped movements (Cronin et al., 1996; Lammers and De Lange, 1986), and increased restlessness (Marchant and Broom 1993; Jarvis et al., 2001). Sows prefer crates in which they can turn around (SVC, 1997), and pseudopregnant sows show a preference for straw pens, where they manipulate the straw in a way suggesting nest building is taking place (Burne et al., 2001). Sows kept in pens where they had room to turn around but no straw, showed increased restlessness while farrowing when compared with sows given straw (Thodberg et al., 1999). Sows in crates have adapted themselves to some extent to their environment by their second pregnancy, but stress levels, as measured by plasma cortisol are still higher than in sows in pens with enough room to turn around, and with provision of straw for nest building (Jarvis et al., 2001).<sup>1</sup>

## SCIENCE TEXTS

### Short Written Texts (Journals)

Weaver, S.A. and Morris, M.C. 'Science, Pigs, and Politics: A New Zealand Perspective on the Phase-Out of Sow Stalls'. *Journal of Agricultural & Environmental Ethics*, Volume 17, Issue 1 (2004). Extracts from pp. 56, 57 & 58.



### SOW STALLS

Pigs prefer social interaction, and choice experiments have confirmed that they find sow stalls “aversive” (SVC, 1997), where behavior that has been prevented (in stalls) is expressed to a high degree once they are free of such confinement. Phillips et al. (1992), showed that sows preferred wider than narrower stalls when given the choice. Sows in stalls cannot exercise, which results in weak bone structure and joint damage. Sows in stalls have also been shown to have a higher basal heart rate, indicating a lack of physical fitness (Marchant et al., 1997), with all the accompanying health problems that can result.<sup>2</sup>

In pigs confined in stalls, stereotypical behavior can take the form of continuous chewing, bar-biting, head weaving, and tongue rolling. The SVC (1997) report that in “every detailed study” of sows in stalls, a “substantial level” of stereotypies have been found. In contrast, stereotypies are rare or absent where sows are reared in complex environments.

In their review, Barnett et al. (2001), explored what is known about stereotypies and concluded that they are indicators of poor long term welfare. Webster (1995) and Spedding (2000) are much stronger in their argument that stereotypies are an indication of suffering. It has often been stated that sow stalls are beneficial to pig welfare as they reduce bullying and aggression. Barnett et al. (2001), cite some cases where welfare was improved by housing pigs in stalls. The welfare comparisons described by Barnett et al. (op. cit.) however, are between pigs in group housing and pigs in individual confinement. The issue in this instance (and this is pivotal to the debate), therefore, is one of *confinement*. This need for occasional confinement in no way specifies that this confinement needs to be so extreme that the sow is unable to turn around.

The causes of aggressive behavior in pigs are multifactorial, but the following have been found to increase aggression, including tail and vulva biting.

- Mixing of unfamiliar pigs (Weary et al., 1999; Turner et al., 2001).
- Overcrowding (SVC, 1997; Weng et al., 1998; Schröder-Peterson and Simonson, 2001).
- Lack of straw or other bedding material (Barnett et al., 2001; Schröder-Peterson and Simonson, 2001).
- Lack of other environmental enrichment (Schröder-Peterson and Simonson, 2001).
- Temperatures that are too hot or too cold (Schröder-Peterson and Simonson, 2001).
- Inadequate ventilation (Schröder-Peterson and Simonson, 2001).
- Hunger or inadequate nutrition (SVC, 1997; Whittaker et al., 1999; Schröder-Peterson and Simonson, 2001).
- Stress (Schröder-Peterson and Simonson, 2001).

## SCIENCE TEXTS

### Short Written Texts (Journals)

Weaver, S.A. and Morris, M.C. 'Science, Pigs, and Politics: A New Zealand Perspective on the Phase-Out of Sow Stalls'. *Journal of Agricultural & Environmental Ethics*, Volume 17, Issue 1 (2004).  
Extract from p. 63.



### CONCLUSIONS

Often the same principles are argued but in a different language. We have shown that the phase-out of dry sow stalls in the pork industry in New Zealand (and no doubt in other countries where sow stalls are still used) can be supported scientifically. We have also provided evidence that it is economically feasible and reasonable. As for the moral justification – this argument will no doubt continue, but ultimately it must focus on whether society will allow intelligent social animals to be kept in such extreme confinement that they cannot turn around, and whether this moral price for cheap pork is something their conscience can afford.

## BIOLOGY TEXTS

### Short Written Texts (Journals)

Zuidhof, M.J., Schneider, B.L., Carney, V.L., Korver, D.R. and Robinson, F.E. 'Growth, efficiency, and yield of commercial broilers from 1957, 1978, and 2005'. *Poultry Science* 93:1-13 (August 19, 2014). Extracts from p. 1.



From 1957 to 2005, broiler growth increased by over 400%, with a concurrent 50% reduction in feed conversion ratio, corresponding to a compound annual rate of increase in 42 d live BW of 3.30%. Forty-two-day FCR decreased by 2.55% each year over the same 48-yr period. Pectoralis major growth potential increased, whereas abdominal fat decreased due to genetic selection pressure over the same time period. From 1957 to 2005, pectoralis minor yield at 42 d of age was 30% higher in males and 37% higher in females; pectoralis major yield increased by 79% in males and 85% in females.

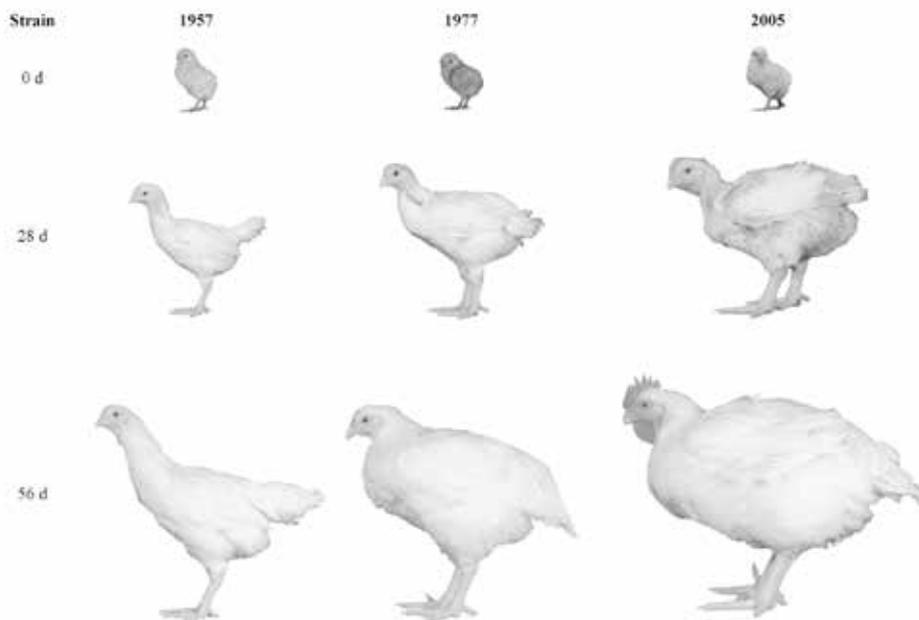
### INTRODUCTION

A profound change in the productivity of the broiler chicken industry has been achieved via intentional genetic selection through traditional quantitative techniques (Hunton, 2006). Between 1960 and 2004, the US consumer price index for poultry products increased at half the rate of all other products (USDA, Economic Research Service, 2004), due to improvements in growth and efficiency. This has likely been a major factor contributing to higher per capita consumption of chicken meat between 1950 (9.4 kg) and 2005 (39.2 kg; USDA, Economic Research Service, 2014). Early on, limited statistical capabilities forced geneticists to focus on economically important parameters that were easily measured and highly heritable, such as BW, feed consumption, feed conversion ratio (**FCR**), and yield (Hunton, 2006). In response to changing consumer demands, product development has driven genetic selection, with concomitant unintended effects, including increased skeletal defects (Lilburn, 1994; Rath et al., 2000), metabolic disorders (Scheele, 1997; Olkowski, 2007), and altered immune function (Cheema et al., 2003). In 1962, 83% of broilers were marketed as whole birds, 15% as cut-up or parts, and 2% as further processed products (National Chicken Council, 2011). In 2005 only 11% of broilers were marketed as whole birds, 43% as cut-up or parts, and 46% as further processed products (National Chicken Council, 2011). As statistical capabilities expanded, more balanced selection programs became achievable (Emmerson, 1997).

## BIOLOGY TEXTS

### Short Written Texts (Journals)

Zuidhof, M.J., Schneider, B.L., Carney, V.L., Korver, D.R. and Robinson, F.E. 'Growth, efficiency, and yield of commercial broilers from 1957, 1978, and 2005'. *Poultry Science* 93:1-13 (August 19, 2014). Extracts from pp. 1, 2 & 5.



**Figure 3.** Age-related changes in size of University of Alberta Meat Control strains unselected since 1957 and 1978, and Ross 308 broilers (2005). Within each strain, side profile images are of the same bird at 0, 28, and 56 d of age. Color version available in the online PDF.

Growth rate and efficiency (Sherwood, 1977; Marks, 1979; Chambers et al., 1981; Havenstein et al., 1994a, 2003b), and changes in the yield of specific, economically important portions (Chambers et al., 1981; Havenstein et al., 1994b, 2003a) have increased dramatically since the 1940s. Although some of these changes are due to environmental factors, 85 to 90% has been attributed to genetics (Sherwood, 1977; Havenstein et al., 1994a,b, 2003a,b).

## BIOLOGY TEXTS

### Short Written Texts (Journals)

Morris, M.C. 'The Ethics and Politics of Animal Welfare in New Zealand: Broiler Chicken Production as a Case Study'. *Journal of Agricultural & Environmental Ethics*, Volume 22, Issue 1 (2009). Extracts from pp. 15-30.



#### THE ETHICS AND POLITICS OF ANIMAL WELFARE IN NEW ZEALAND: Broiler Chicken Production as a Case Study

##### Abstract

The cause of poor welfare in broilers is multifactorial, but genotype is a major contributor. Modern broilers have been bred for rapid growth, and this leads to increases in lameness and ascites as the legs and hearts of the heavier birds find it difficult to cope with the extra demands placed on them. Visible lameness indicative of pain is more common in New Zealand than in Europe. The government, however, insists that New Zealand welfare standards are higher than Europe. The government also appears to have a strong antipathy to those demanding better welfare for broilers. Reasons for this antipathy and disparities between government statements and research results are discussed. Government publications reveal that animal welfare is seen as a question of image for market access and that there is little concern with animal welfare as an ethical imperative for its own sake. The Animal Welfare Act in theory makes it an offence to ill-treat an animal, but in practice allows exemptions for industrial agriculture. The interests of animals may be better protected by an independent animal welfare advisory service.

This study aims to summarize welfare issues relevant to broiler chicken production, and relate these to the process of code development in New Zealand.

In particular, I wish to explore whether the process followed the stipulations of the Animal Welfare Act, and whether government regulators took into consideration the welfare needs of the animals, the concerns of the members of public and all interest groups who they are governing. It recognizes the descriptive ethic, held by most westerners, that animals are sentient beings, and should not be subjected to unnecessary suffering, even when being farmed for the table (Rollin 1981). It recognizes a prescriptive ethic for leaders in a democracy to provide a fair hearing for all stakeholders. It also concerns the duty of government agents to tell the truth and evaluate scientific evidence impartially, even when the evidence points to conclusions that they do not want to hear.

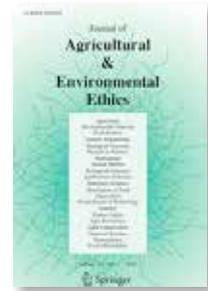
##### Welfare in broiler chickens

Until very recently, welfare issues concerning broiler chickens have been underreported and not considered to be at the front of consumers' minds. Duncan (2004) points out that whereas welfare of other farm animals has improved considerably, the welfare of broiler chickens may actually be worse than 40 years ago. A 2005 survey revealed that most participants did not know much about broiler welfare and confused broiler and layer production (Hall and Sandilands 2007).

## BIOLOGY TEXTS

### Short Written Texts (Journals)

Morris, M.C. 'The Ethics and Politics of Animal Welfare in New Zealand: Broiler Chicken Production as a Case Study'. *Journal of Agricultural & Environmental Ethics*, Volume 22, Issue 1 (2009). Extracts from pp. 15-30.



#### THE ETHICS AND POLITICS OF ANIMAL WELFARE IN NEW ZEALAND: Broiler Chicken Production as a Case Study (*continued*)

Leg weakness shows up as lameness in broiler houses, including breeders (Mench 2004). The measurement of lameness in Europe and in other countries has been quantified using a gait scoring system that has consistently given the same result when used by different observers (Kestin et al. 1992; Butterworth et al. 2007). This means that the degree of lameness and the associated suffering can be directly compared in different flocks and countries. Kestin et al. (1992) divided walking ability into 6 categories, with a score of 0 indicating no detectable walking abnormality, and 5 indicating the bird "was incapable of sustained walking on its feet." A gait score of 3 was described as a state whereby the bird had "an obvious gait defect."

Kestin et al. (1992) argued that birds with a gait score of 3 or more were in pain. The basis for this was the argument from analogy. The authors compared the condition of the birds with a dairy cow suffering in a similar way. Such a cow, the authors argue, would require veterinary attention, and if it could not be cured, would be euthanized.

Two later experiments provided more direct evidence that a lameness score of 3 or more is painful. McGeown et al. (1999) found that lame birds with a gait score of 3 were slower at negotiating obstacles than healthy birds, but this difference decreased when the lame birds were given analgesics. Danbury et al. (2000) found that lame birds with a gait score of 3 self selected food treated with analgesics, and that birds given analgesics improved their gait score.

The proportion of birds with severe enough lameness to be in continuous pain is likely to be high. A survey of UK broiler flocks found that 3% had a lameness score of 3 or above (SCAHAW 2000). However, other figures in the literature for Europe report visible lameness ranging between 14 and

30% (Kestin et al. 1992; Sanotra et al. 2003). Dawkins et al. (2004) did not use the Kestin et al (1992) scoring criteria, but in their survey of British and Danish broiler houses they record a mean visible lameness of 26.4%.

The pain associated with lameness, its high incidence in broiler houses, and the sheer numbers of broiler chickens when compared with other intensively farmed animals, mean that lameness in broilers is arguably the most important welfare consideration in modern farming. In his comparative study of animal welfare in different farming systems, Webster (1994) states how the issue of lameness in poultry must be "in both magnitude and severity, the single most severe, systematic example of man's inhumanity to another sentient animal."

Haslam and Kestin (2004) list mortality as a major indicator of poor welfare. Mortality can be indicative of Sudden Death Syndrome (SDS) or of death from ascites. SDS is not considered a welfare concern as loss of consciousness is quick (Julian 2004).<sup>5</sup>

Ascites are however a welfare issue, as it is a painful condition. It is caused by fluid build up as a result of the heart overworking to pump blood into heavier birds. High mortality rates can indicate high levels of ascites (Haslam and Kestin 2004).

## BIOLOGY TEXTS

### Short Written Texts (Journals)

Morris, M.C. 'The Ethics and Politics of Animal Welfare in New Zealand: Broiler Chicken Production as a Case Study'. *Journal of Agricultural & Environmental Ethics*, Volume 22, Issue 1 (2009). Extracts from pp. 15-30.



#### THE ETHICS AND POLITICS OF ANIMAL WELFARE IN NEW ZEALAND: Broiler Chicken Production as a Case Study (*continued*).

##### Indicators for poor welfare

Most expert reviews emphasize the role of genotype in welfare problems (Bessei 2006, Duncan 2004, Mench 2004). Kestin et al. (1992) monitored lameness in commercial chicken breeds and in a strain that had been allowed to breed with no selection pressure for 11 generations. This wild type bird had no lameness, compared with scores of 2-27% in the commercial lines.

Ascites and other metabolic disorders are also associated with the faster growing genotypes, as the heart has to pump harder in the heavier strains (Maxwell and Robertson 1997, Julian 2004). The SCAHAW (2000) compared the mortality of standard commercial broilers with the slower growing "label rouge" strain, which has a lower mortality. An increase in stocking density from 34 to 40 kg per sq. m was found to affect mortality in an experimental set up within a single commercial operation (Hall 2001). However, when compared across different companies other husbandry factors within the company had a far greater effect (Dawkins et al. 2004).

Keeping commercial breeds under free range conditions reduced, but did not eliminate lameness, though selective breeding for slower growth reduced lameness almost to zero (Kestin et al. 1992).

This demonstrates the importance of genotype as a predictor for lameness. Slow growing strains reared in the same conditions as conventional breeds also showed more active behavior, fewer heart abnormalities, less tendon degeneration (Bokkers 2003), lower mortality, lower culling rate and fewer ascites (Castellini et al 2002). Substituting commercial breeds for slower growing strains should therefore be a priority for any legislature that is seriously committed to improving broiler welfare.

##### The process of Code formulation in New Zealand

While many of the conclusions reached by Bagshaw and Matthews (2001, unpublished) mirror those of the SCAHAW (2000) report in agreeing that genotype is the main causal factor for poor welfare, the style of writing and the language used reflects a lower sensitivity to the pain of non-human animals and a reluctance to even acknowledge that animals feel pain. So for example, Bagshaw and Matthews (2001) discuss previous experiments showing that lame chickens and turkeys perform better when given or offered feed containing analgesics (McGeown et al. 1999; Hocking et al. 1999; Danbury et al. 2000). Bagshaw and Matthews (2001, unpublished) then conclude that these studies show "some indirect" evidence that poultry feel pain or discomfort when lame.

# BIOLOGY TEXTS

## Short Written Texts (Journals)

Morris, M.C. 'The Ethics and Politics of Animal Welfare in New Zealand: Broiler Chicken Production as a Case Study'. *Journal of Agricultural & Environmental Ethics*, Volume 22, Issue 1 (2009). Extracts from pp. 15-30.



### THE ETHICS AND POLITICS OF ANIMAL WELFARE IN NEW ZEALAND: Broiler Chicken Production as a Case Study (*continued*).

Bagshaw and Matthews (2001, unpublished) agree with the PIANZ (2001, unpublished) that lameness would likely be rarer in New Zealand because some notifiable infectious diseases like Infectious Bursal Disease are not present. In this, they are likely to have exaggerated the importance of infectious agents. For example, the SCAHAW (2000) lists dyschondroplasia as the most common lesion seen in broilers, accounting for most lameness, and provides evidence for a strong genetic link. Butterworth (1999) describes how infectious agents can cause small numbers of birds to become profoundly lame, and this can be contrasted with skeletal abnormalities that cause larger number of birds to be moderately disabled (Pattison 1992). As discussed earlier, even moderate lameness (a score of 3 or more on the Kestin et al. (1992) scale) can cause pain, so it is unlikely that an absence of infectious agents would have much effect on painful lameness.

A survey of broiler operations in New Zealand commissioned by MAF policy (Bagshaw et al. 2006, unpublished) is therefore an important development, and it is instructive to determine the results and the way these were interpreted.

The study involved flying in experts from Bristol University to train observers in the Kestin et al. (1992) gait scoring system. After training, observers showed good consistency with each other and with a reference standard, validating the technique (Butterworth et al. 2007). The gait scoring system was then used on birds in New Zealand, and clearly showed that more than 40% of older birds had a lameness score of 3 or more. This is higher than the scores of 3-30% for European birds (SCAHAW 2000; Sanotra et al. 2003; Dawkins et al. 2004), and contradicts earlier assumptions by Bagshaw and Matthews (2001, unpublished) that New Zealand's disease free status would result in fewer lame birds.

Table 1. A summary of welfare issues, causal factors and indicators for poor welfare in commercially reared broiler chickens

Welfare issue	Causal factors	Indicator	References
Pain from leg weakness	Genotype – fast growing strains  Stocking density (Direct and indirect effects)	Lameness	Kestin et al. 1992; McGeown et al. 1999; Danbury et al. 2000; SCAHAW 2000; Mench et al. 2001; Sanotra et al. 2001; Sanotra et al. 2003; Dawkins et al. 2004; Jones et al. 2005
Pain from ascites	Genotype – fast growing strains	Mortality	Maxwell and Robertson 1997; SCAHAW 2000; Castellini et al. 2002; Julian 2004; Haslam and Kestin 2004
Pain from contact dermatitis, footburn and hockburn	Litter management  Stocking density  Temperature and humidity	Visible lesions	SCAHAW 2000; Berg 2004; Jones et al. 2005; Bessei 2006
Lack of enrichment	Stocking density  Substrate	Activity Aggression Leg strength	Mench et al 2001; Shields et al. 2004; Bessei 2006

## BIOLOGY TEXTS

### Short Written Texts (Journals)

Siegel, P.B., Dodgson, J.B. and Andersson, L. 'Progress from Chicken Genetics to the Chicken Genome'. *Poultry Science* 85(12):2050-2060 (2006). Extracts from pp. 2051, 2052, 2057 & 2058.



Earlier, we wrote of the long, publicly supported research foundation that enhanced the sophistication of chicken genetics and breeding. One example is the chicken gene mapping reviewed later in this paper, as well as development of experimental lines and mutant stocks (<http://animalscience.ucdavis.edu/AvianResources/>). At present, chicken breeders estimate genotypes for quantitative traits from information on phenotypes. Although we can now map and assay the genotype with great precision, the path to the phenotype can be distant and complex, with interacting networks of pleiotropic genes facilitating dynamic genotypic and phenotypic plasticity. The map, which remains a work in progress, means an exciting future for studies that combine quantitative and molecular techniques.

There are concerns that intense selection for egg production or meat production may exhaust genetic variation for these traits. This concern for plateaus is not new, and proactive papers on genetic reasons for such plateaus for egg production are in the literature (Dickerson, 1955; Clayton, 1972). Although these early concerns of plateaus in egg production became moot with procedures for identifying leucosis shedders from breeding populations (Spencer et al., 1979), physiological and genetic limits should not be lightly regarded. Today, human intervention is necessary to control feed intake of meat stocks. Skeletal and metabolic issues exist for meat and egg stocks. Yet, genetic variation exists for the primary economic traits. Why? Small molecular changes in genes may introduce variability in populations (Hill, 2005) as well as selection-induced genetic variation (Eitan and Soller, 2004; Carlborg et al., 2006). In the case of the latter, the hypothesis is that as selection proceeds to change the genetic background, new sets of genes come into play as sources of variation.

### Applications in the Breeding Industry

The industry is already using MAS, to some extent, in their breeding programs. This can be used to increase the frequency of favorable alleles or to eliminate unfavorable alleles. For instance, breeders can now use a DNA test for dominant white if they would like to ensure that their line breeds true for color. An emerging opportunity is to use genomic selection as a method to predict the total genetic value of an animal based on data from genome-wide dense marker maps (Meuwissen et al., 2001). This is becoming feasible due to the huge collection of SNP available in the chicken and the reduced cost of high-throughput SNP typing. With this approach, breeders can estimate the effect of QTL haplotypes without any need to understand the underlying molecular nature of the QTL. They may also be able to estimate modes of action and possibly interactions for each haplotype and use this to improve their breeding program.

In a long-term perspective, the ability to improve the genetic constitution of chicken lines by transgenic technology may eventually become the most important practical application of molecular genetics. Not only is such technology critical to the use of the chicken as a model organism (Dodgson, 2003), it may be essential to verify candidate QTL alleles and to sort out the interactions between QTL and the genetic background. Furthermore, the wealth of knowledge in biology that is currently accumulating, not only from research on chickens but with all organisms, will lead to new opportunities to genetically modify chickens in ways that are of value to agriculture. Most important, the benefits obtainable must be sufficient to outweigh consumer resistance, as they have been, in at least some countries, for crop plants. It appears that disease resistance provides an excellent example of an area in which this technology can have great benefit. For instance, if we could learn more about the biology of influenza infection in birds, it may be possible to genetically engineer chickens to be highly resistant to this disease, a very important achievement that should reduce a major animal welfare problem and a risk to human health.

#### Notes:

MAS = Marker assisted selection. Where morphological genetic or biochemical markers are used for indirect selection of determinants of traits such as growth or disease resistance.

QTL = quantitative Trait Locus. A section of DNA that correlates with phenotype variation.

Haplotype = A set of DNA variation that tends to be inherited together.

## SOCIAL STUDIES TEXTS

### Short Written Texts (Media Releases)

'Mike King latest celebrity kingpin to condemn New Zealand pig cruelty'.

SAFE Media Release (May 2009).



18 May 2009

#### MEDIA RELEASE

### MIKE KING LATEST CELEBRITY KINGPIN TO CONDEMN NEW ZEALAND PIG CRUELTY

The New Zealand Pork Industry has been dealt a shameful public relations slap-in-the-face after its former celebrity kingpin, Mike King, ousted their farming practices as "brutal," "callous" and "evil" on last night's *Sunday* programme.

The award-winning comedy icon has become the latest high-profile celebrity to publicly condemn the appalling treatment of factory farmed pigs. Mike King decided to see first hand the horrific conditions inside a New Zealand piggery. During his 45-minute ordeal he observed:

- a dead female pig inside a sow stall
- lame, crippled pigs and others that could barely stand
- pigs either extremely depressed or highly distressed
- bar biting, scars and injuries
- pigs excessively frothing at the mouth
- a lack of clean drinking water and food

"Sow crate farming should be illegal and we should outlaw it right now. It is absolutely disgusting and I am sorry that I was part of it," says Mr King.

National animal advocacy organisation SAFE is delighted to have the weight of Mike King behind them. King has vowed to back SAFE's LovePigs campaign until sow stalls are banned.

"I didn't know it [sow stalls] was going on. The New Zealand public didn't know it was going on. I honestly believed our clean green image and the way we love animals would never, never, ever allow that crap to go on," says King. "I am deeply ashamed that I was blinded by, and took part in, promoting this style of farming."

SAFE campaign director Hans Kriek says "SAFE applauds Mike King for his courage to speak out against cruel pig farming practices. After spending seven years urging kiwis to eat New Zealand pork Mike King has vowed to never again eat factory farmed pork because he is so horrified by what he saw. We expect a wave of protests and consumer boycotts from outraged consumers."

"A consumer boycott of cruelly produced pig products is the only way to force the pork industry to change from cruel confinement systems. A review of the pig welfare code later this year is unlikely to recommend any significant changes, meaning consumers need to use their supermarket trolleys as a form of protest. Mike King and SAFE are urging consumers to not buy factory farmed pig products."

#### PROTEST TODAY:

A protest in Christchurch today kicks off activities around the country. The protest will be held at 4.30pm outside the electorate office of the Minister of Agriculture, David Carter.

## SOCIAL STUDIES TEXTS

### Short Written Texts (Media Releases)

'Welfare laws fail pigs miserably'. SAFE Media Release (July 2009).



#### **MEDIA RELEASE**

3 July 2009

### **WELFARE LAWS FAIL PIGS MISERABLY**

An official MAF report reveals current pig welfare legislation is strongly at odds with the views of the Prime Minister, the Minister of Agriculture and the majority of the New Zealand public on pig welfare.

The MAF investigative report has cleared an intensive piggery, which was exposed on the *Sunday* programme last month, of any breach of the law.

Pig welfare campaigners say the 23-page report states the Levin pig farm, owned by a leading New Zealand pig farmer and former director of the New Zealand Pork Industry Board, provides "very high" animal care and husbandry standards and that no offences were observed.

MAF's findings come as no surprise to SAFE, the group behind the exposé of the farm.

"The report merely emphasises how much our animal welfare law is out of touch with the thinking of most New Zealanders," says SAFE campaign director Hans Kriek.

"The entire nation was shocked at the appalling conditions pigs are being farmed in. The exposé prompted Prime Minister John Key to say that he found the images of crated pigs "very, very disturbing." The Minister of Agriculture, David Carter, said he was 'equally disturbed by the images shown and found them unacceptable.'"

In the report the Minister's own officials have now told him that in fact these terrible conditions are perfectly legal.

"SAFE believes that the Minister has little choice but to change the law to ensure that practices he and the rest of the nation consider unacceptable are no longer allowed. The Minister must use the upcoming review of the pig code of welfare to introduce a ban on the use of pig crates. Anything short of that would be a national disgrace," says Mr Kriek.

In the meantime SAFE calls on consumers to play their part.

"The pigs shown in the *Sunday* programme are still inside those crates today. They will still be there tomorrow. It is likely sows will still be in pig crates for many years to come unless consumers boycott factory farmed pig products immediately," says Mr Kriek.

## SOCIAL STUDIES TEXTS

### Short Written Texts (Media Releases)

'Consumer ad campaign challenges pig industry'. SAFE Media Release (July 2010).



#### MEDIA RELEASE

19 July 2010

### CONSUMER AD CAMPAIGN CHALLENGES PIG INDUSTRY

**A striking new advertising campaign launched today by national animal advocacy organisation SAFE seeks to warn consumers about a planned '100% New Zealand Welfare Approved Pork' label. The 'Don't be fooled' consumer campaign will be SAFE's largest ever, and will consist of billboards, posters and a series of radio advertisements.**

The 'Don't be fooled' campaign, launched on the eve of the New Zealand Pork Board's 2010 national conference, will directly challenge the New Zealand Pork Industry Board's proposed 'Welfare Approved' pork labelling scheme. SAFE says the misleading labels will be available to any farm that passes an audit based on the current pig welfare code and, indeed, to the very same farms that caused consumer outrage in 2009 after their facilities were shown on television.

"SAFE says the standards for the pig welfare audit are so low that farmers who use cruel sow stalls or farrowing crates will be able to call their pork 'Welfare-Approved'. It is outrageous that the pig industry has the audacity to label pork produced from factory-farmed pigs 'welfare-approved', given that research shows that crated pigs suffer, and consumers oppose these cruel farming methods," says SAFE campaign director Hans Kriek.

SAFE also challenges pork industry comments that pork sold in supermarkets does not come from sows kept in stalls.

"These comments are designed to fool consumers into believing that sow crates are not used in the production of pork. The truth is that over half the pork on supermarket shelves comes from pigs born to mothers confined in sow stalls and farrowing crates. These pigs spend their first four weeks inside the crates with their mothers and most continue to be factory farmed until they are slaughtered, and will never see a grassy field or feel the sun on their backs," says Mr Kriek.

#### **ACTION TODAY**

SAFE will launch its 'Don't be fooled' campaign outside the Willis Street New World supermarket in Wellington at 12.30pm today. Lucy, the 2.5-metre high 'super-pig', will be on hand to warn consumers about falsely labelled pork.

## SOCIAL STUDIES TEXTS

### Short Written Texts (Media Releases)

'Disturbing new pig cruelty footage reveals no change to pig welfare'. SAFE Media Release (April 2010).



#### MEDIA RELEASE

9 April 2010

### **DISTURBING NEW PIG CRUELTY FOOTAGE REVEALS NO CHANGE TO PIG WELFARE**

**The cruelty of the New Zealand pig industry has once again been exposed as disturbing new footage on TV One's *Close Up* programme tonight reveals there is no change to the way tens of thousands of pigs are being reared on factory farms.**

Animal advocacy group SAFE says assurances from the New Zealand Pork Industry Board that pig welfare is being taken seriously are nothing more than hollow talk. Almost one year after comedian Mike King exposed pig cruelty on factory farms in New Zealand, pigs continue to endure a living hell, says the group.

Members of Open Rescue, who supplied SAFE with the original footage, visited three Waikato piggeries last week and filmed appalling scenes of injured, dead and dying piglets and sows confined in tiny farrowing crates, lying in their own excrement in filthy, fly-infested sheds. The group also found dead piglets, some of which had been cannibalised, scattered outside or dumped in bins.

"This new footage reveals that the pig industry has failed to rectify serious welfare problems despite unprecedented public outrage over pig cruelty. Promises by the NZ Pork Industry Board to undertake animal welfare audits are nothing short of utter nonsense and their failure to take action to relieve the suffering of tens of thousands of pigs is reprehensible," says SAFE campaign director Hans Kriek.

The National Animal Welfare Advisory Committee (NAWAC) has recommended a phase-out of sow stalls (pregnant sows confined in crates) but it will continue to allow farrowing crates, despite these crates being in breach of New Zealand animal welfare legislation.

"SAFE is appalled that NAWAC has no intention of banning farrowing crates, and will urge the Minister of Agriculture, David Carter, not to sign off a code that fails to uphold the Animal Welfare Act and allows the ongoing suffering of pigs," says Mr Kriek.

Public submissions on the draft code can be made until April 16 and SAFE urges people to have their say against factory farm cruelty.

Information on how to make a submission can be found on <http://www.lovepigs.org.nz>

## SOCIAL STUDIES TEXTS

### Short Written Texts (Media Releases)

'Govt fails to ban factory-farmed animals'. SAFE Media Release (November 2010).



#### MEDIA RELEASE

11 November 2010

### GOVT FAILS TO BAN FACTORY-FARMED ANIMALS

**Animal advocacy group SAFE says the Government should brace itself for a public backlash after National and Act both stymied a Private Member's Bill that would have seen sow crates and battery cages banned within five years.**

"The majority of New Zealanders will be appalled to know that the Government was in a position to ban cruel farming practices last night yet it deliberately stood in the way of those calling for a change and voted against Green Party MP Sue Kedgley's Animal Welfare Amendment Bill," says SAFE director Hans Kriek.

"Ms Kedgley gave a passionate speech about the importance of this Bill and how it would greatly improve the lives of tens of thousands, if not millions, of animals. Despite the Bill being supported by Labour, United Future, the Maori Party and the Green Party, the Government failed to see its importance and dismissed it without any serious consideration," says Mr Kriek.

The Bill was intended to close loopholes in the Animal Welfare Act that allow the ongoing cruel confinement of millions of battery hens and tens of thousands of crated pigs. Speaker Lockwood Smith refused to allow a conscience vote, claiming that animal welfare is primarily an economic issue.

"The Government seemed too afraid to let MPs vote with their conscience on this important animal welfare issue, as if they were well aware that this Bill would have been voted through," says Mr Kriek.

"The Government has passed up a great opportunity to improve the lives of millions of factory-farmed animals by siding with the vested interests of those wanting to continue abusing animals for profit. Eight out of ten New Zealanders want battery hen cages and sow crates banned," says Mr Kriek.

SAFE will step up its factory farming campaign with the help of the recently established two million dollar Animal Justice Fund. A public awareness campaign will see consumers informed about the cruelty in the meat chicken, battery egg and pig farming industries.

"The public will be urged to boycott factory-farmed products as the most effective way to end this suffering," says Mr Kriek.

## SOCIAL STUDIES TEXTS

### Short Written Texts (Media Releases)

'Sow stall ban first important step'. SAFE Media Release (December 2010).



#### MEDIA RELEASE

1 December 2010

### SOW STALL BAN FIRST IMPORTANT STEP

**The government has taken the first crucial step to improve pig welfare in New Zealand by announcing it will ban the use of sow stalls from 2016.**

SAFE, which has fiercely campaigned for three years to end sow stalls and farrowing crates, says it welcomes the announcement, although it is disappointed that the ban excludes farrowing crates - an equally cruel confinement system.

"SAFE is delighted the government has finally accepted that sow stalls are cruel and in breach of welfare legislation. The five-year phase-out period, however, still means that over 15,000 sows will continue to suffer in sow stalls until 2016. It is great to know sow stalls are finally going after so much lobbying and campaigning but we remain mindful that pigs are not yet free," says SAFE director Hans Kriek.

"With a ban on sow stalls now in place, SAFE will focus its attention on farrowing crates, which are used by over 60 per cent of the pig industry.. The organisation will continue to lobby for a ban on farrowing crates, as research shows these confinement systems are just as cruel as sow stalls," says Mr Kriek.

Since the government is unlikely to take further action in the short term, SAFE is stepping up its consumer focus and beginning to encourage supermarkets to take meaningful animal welfare initiatives by not stocking pork products from suppliers who continue to use sow stalls.

"It is up to consumers to get the pigs out of their cruel crates sooner than 2016," says Mr Kriek. "Eight out of ten New Zealanders are opposed to sow stalls and farrowing crates. SAFE plans to urge New Zealand supermarkets to follow the example of Coles, Australia's second largest supermarket chain, by refusing to buy pork from farms that still use sow stalls."

"Supermarkets must start taking some responsibility for how animals are being raised on factory farms. Consumers don't want pork products produced on factory farms and it is time supermarkets heeded the wishes of the New Zealand public," says Mr Kriek.

"It is encouraging to see New Zealand following the lead of the UK, which banned sow stalls over a decade ago, but there is a long way to go before we see an end to pig cruelty in New Zealand," says Mr Kriek.

## Comedian does U-turn on pork

Last updated 23:30 17/05/2009

Comedian Mike King, who used to front a campaign promoting pork products, says the "callous and evil" practice of crate farming pigs should be outlawed immediately.

King said that after breaking into a pig farm with animal activists where pigs were kept in crates, he was deeply ashamed he took part in promoting the type of farming, TVNZ's Sunday programme reported.

The pigs were unable to move and obviously in distress, chewing at the cage bars and frothing, King said.

There was one dead pig in the sties and Mr King described the pigs as being "despairing, terrified and lost".

It was "callous, evil" treatment of pigs and the sound of "screaming" pigs he would never forget.

"It was like they were screaming for you to help them.

"If I had known this was going on I would never have supported this. I firmly believe that anyone who sees this would say this has to stop."

The farm was filmed by animal rights group Open Rescue and footage shown to Agriculture Minister David Carter, who said he wasn't aware of the extent to which pigs were confined.

It was a bit disturbing to see them in such conditions but he said he needed to know if the footage showed what was typical of the pork industry and he suspected it was not.

Animal rights group Save Animals from Exploitation's director Hans Kriek said such cage farming was widespread.

The pigs were touching the sides of the 60cm wide and 2m long cages and couldn't turn around.

Some pigs could live for up to five years in a cage, he said.

About 45 percent of New Zealand's sows, or 22,000, were kept in crates and the law was giving legal protection to farmers to be cruel to animals, Mr Kriek said.

However, the Pork Industry Board said intensive farming was the only way it could remain competitive and changing from crates and stalls would cost millions of dollars.

They were the best way to prevent indoor pigs them from injuring each other.

The board said less than half the country's pigs, about 20,000, were kept in such ways and by 2015 the proposal was they would spend half their time out of the crates.

The Animal Welfare Code for pigs is due for review this year.

Mr Carter will make a final decision after recommendations from the National Animal Welfare Advisory Committee.

- NZPA

### Key finds pig probe 'disturbing'

#### Minister calls for pig farm probe

Last updated 19:04 18/05/2009

Prime Minister John Key says he found television footage of intensive pig farming "very, very disturbing".

TVNZ's Sunday programme aired footage by animal welfare organisation Open Rescue, who were accompanied by comedian Mike King during a break-in at a North Island intensive pig farm.

King, a long-standing front man for a campaign advertising pork, said he was deeply ashamed of his role in promoting that type of farming.

The pigs were unable to move and obviously in distress, chewing at the cage bars and frothing, he said.

At his post cabinet press conference today, Mr Key told reporters he found the programme "very, very disturbing".

There was a need for change if that was indicative of a large number of piggeries around New Zealand, he said.

"You'll be aware the Minister of Agriculture has put out a press release requesting the location of that piggery so his officials can go and investigate," Mr Key said.

"All I can tell you is there's a process we're going through."

The New Zealand Pork Industry told One News the pork industry was phasing out long-term use of sow stalls.

The programme did not represent the pork industry as a whole, it said.

In light of the programme, the New Zealand Pork Industry Board said it had decided to postpone the annual Bacon of the Year awards, due to be announced this week.

In response to the programme, the SPCA has called for a ban on sow stalls and farrowing crates.

SPCA chief executive Robyn Kippenberger said it was calling on "the Agriculture Minister David Carter to ensure that the Animal Welfare Code for Pigs was altered, as soon as possible, to ban these cruel practices".

"It is total nonsense for a code that is meant to reflect the humane principles of the 1999 Animal Welfare Act, to allow pigs to be kept for most of their lives in such tight conditions that they can't even turn round."

Pigs were an intelligent and sensitive species and there was considerable evidence that this type of ongoing cruelty lead to demented behaviour, such as biting their cage bars, Ms Kippenberger said.

Pig farmers who continued to use sow stalls and farrowing crates were "behaving in a totally inhumane and unacceptable way, for the sake of short-term profit".

"The industry as a whole does itself no favours by continuing to protect and support these farming methods, which are banned in the United Kingdom and much of the rest of the European Union," Ms Kippenberger said.

There was a widespread misconception that only imported pork and bacon was produced in inhumane conditions, she said.

The only way to avoid eating pork or bacon produced in grossly inhumane conditions was to purchase meat labelled 'free farmed' or 'free range', she said.

"And to be absolutely sure, it's best to look for bacon or pork that bears the blue and white 'SPCA Approved' logo on its packaging," Ms Kippenberger said.

Mr Carter today urged SAFE to reveal the location of the property shown on TV, so it could be inspected by animal welfare investigators.

"The television images were disturbing. It is essential we find out if this intensive pig farming operation is in breach of the Animal Welfare Act.

"If SAFE has the welfare of these animals at heart, it needs to provide details of the property today so the authorities can take appropriate action," Mr Carter said.

SAFE campaign director Hans Kriek said the minister would be given the farm's location, most likely by tomorrow, but expressed concern Mr Carter was "playing games to a degree".

He said Mr Carter was attempting to "dilute" the issue by making it out to be a rogue farm, not typical of those found around the country.

"This is an average New Zealand farm," Mr Kriek said.

- NZPA

SERVING THE REGION SINCE 1880

**ManawatuStandard**

Wednesday, May 20, 2009

## Piggery practice legal but not acceptable

**T**he power of publicity may have just saved tens of thousands of pigs in this country from a tormented life that was only ever made possible by the indifference of the pork industry, and the ignorance of everybody else.

The pictures that beamed into the homes all around New Zealand on Sunday night, images as unpalatable as the filth and squalor in which sow stall pigs live, have opened the eyes of the ignorant to an inhumane practice, and the ears of the indifferent to public calls for it to cease.

What seems to not be in dispute is that the conditions on the Levin pig farm recorded by animal welfare activists and former pork industry front man Mike King are not breaking the law.

The national attention sparked by the release of the footage prompted Ministry of Agriculture and Forestry (MAF) officials to visit the Levin farm, owned by former New Zealand Pork Industry Board chairman and Feilding farmer Colin Kay.

The inspectors who visited the farm said last night they found no signs of suffering.

In any event, it seems the conditions broadcast on Sunday do not contravene the law. What this episode has shown us, however, is that legal practice is not always acceptable practice.

The avalanche of public attention that has smothered the pork industry the past two days has placed Agriculture Minister David Carter in an awkward position.

After seeing the footage broadcast on the *Sunday* programme, Mr Carter was clearly disturbed but pleaded ignorance as to whether the conditions at that particular farm were typical of the industry, or if it was a rogue operation.

That the Minister was oblivious to the conditions of pigs living in sow stalls is concerning, but his relatively short time in the job should afford him the benefit of the doubt.

What he should not be given any credit for, however, is his attack on Save Animals from Exploitation (SAFE) for how it has brought attention to intensive pig farming.

Mr Carter has criticised SAFE for not revealing the identity of the farm where the footage was taken sooner.

"Instead, the organisation seems more intent on playing publicity games than assisting the animals on this farm."

Of course SAFE played publicity games, and did so with a degree of panache that reaped unprecedented success, making Mr Carter's befuddled handling of the matter look positively amateurish.

SAFE and Mr King have wielded the power of publicity masterfully, and the weight of public opinion has swung behind their cause quickly and with a force that's given the Government little option but to act.

Whether or not it does will be a matter of great interest but, like the rest of us, it can no longer plead ignorance.



**Michael Cummings**  
Deputy Editor

DOMINION POST, TUESDAY MAY 21, 2009

# To save your bacon, just add celebrity

**I**T CAN be hard to credit the brute power of the television-created celebrity – greater, it turns out, than the power of television itself.

As TV's *Campbell Live* reminded viewers on Tuesday, the now infamous footage of suffering pigs that TV One's *Sunday* programme made so much of this week is absolutely nothing new.

*Campbell Live* screened footage of the same sort of suffering at the same piggery back in 2006, and that time, too, an official investigation was promised, and took place – and all of a sudden, nothing happened. This was just one of many times sundry television programmes have brought us horrific pictures of the routine suffering of animals in intensive farming operations. Green politicians, the SPCA, animal rights guerrillas, ethical farmers – all have told us time and time again what's going on, to no avail.

What's different this time? The presence of a celebrity. (You might like to put the C-word in inverted commas, but inverted comma overuse is as pernicious as celebrity overuse, so we'd be no further ahead.)

It turns out that a man who parlayed a middling career as a stand-up comedian into the mighty



Jane Clifton  
**TELEVISION**

sway of a man who cooks sausage balls on a television commercial can trump all.

To give *Sunday* its full due, this was a great story. Mike King, who for years accepted the money of the pork industry to promote its products, recently received information from friends about the cruel practice of sow-crating, got the shock of his life, and has now turned animal-rights campaigner.

Roads to Damascus were never so righteous as this. King – though stopping short of flinging money back in the pork industry's snout – was abject in his apology to consumers, and by implication, to pigs. You could ask yourself, where had he been that he didn't know there was a fierce controversy about intensive pig farming in this country – and overseas, from where a high

proportion of our pork comes? But that'd be a silly question, because it's not a celebrity's job to ask why, when money and extra lashings of television exposure are being offered. Better late than never to realise that associating oneself with cruelly-treated animals is a big mistake.

Suffice to say, offered live on television the chance to accompany more cameras to more pig farms, he practically leapt out of his trousers with avidity.

The television-led animal welfare debate, King's epiphany touched off has been riveting. The Pork Board's chairman Chris Trengrove, who channelled another species to embody the stunned mullet, found himself the prisoner of inherent contradictions, live on television: no, he had no idea such cruel treatment went on and the treatment in the King footage looked pretty illicit; and yes, the way this particular farmer is treating his pigs is not at all illegal and this week's Ag and Fish investigation vindicated him utterly.

The poor guy had no rational choice but to agree to *Close-Up*'s demand on TV One that its reporters be made welcome with cameras at any piggery, anywhere, anytime, forthwith – otherwise making his



**Pigs' champion:** Mike King has done an about-turn on his support for the pork industry in New Zealand.

members look shifty. The next night he was made a monkey of, by footage of a piggery physically barricading itself against *Close-Up* reporters with giant machines, and another saying it couldn't let *Close-Up* in because of bio-security restrictions (the latter a plausible ar-

gument, considering how much hair product some television reporters use).

Poor old John Campbell, furiously aggrieved, held out until Tuesday when he had no choice but to follow up the TV One-created story. He was perfectly correct: the

sheer gimmick of Mike King having turned turtle on the industry should not obscure that it is not a new story. Farmers have been keeping pigs in this horrific way, with the full blessing of the law, for years, under governments of all stripes. He also interviewed university lecturer Peter Sankoff, an expert on animal welfare law, who explained how economic considerations were embedded in law-making process in such a structural way as to overwhelm welfare issues.

And there was a telling interview with animal rights activist Mark Eden, whose footage touched off the 2006 investigation. Mr Eden said an official who initially intended to prosecute the piggery later phoned him back and said his boss had said such a prosecution would now not take place.

TV One news, understandably revelling in its channel having set the news agenda for the week, took a gloating trip to the supermarket chillers, to record women tut-tutting over the poor suffering pigs, the woeful labelling of bacon as "made from domestic and imported ingredients" and even saying that although they couldn't really afford it, they'd be prepared to pay more for ethically farmed pigs.

The farmer whose unhappy-looking pigs have been the star of this whole debate – secondarily to Mike King, of course – gave a couple of cameo appearances, pointing out that he had never broken the law, and accusing King's film crew of having deliberately rarked the pigs up, to make them look unhappy when they weren't really.

Alas for his PR chances, you can't rark a pig up if it's dead, as one of his pigs incontrovertibly was.

And frankly, if you lived for weeks on end in a filthy cage, unable to move, developing deformities and having to sit in your own excrement, you'd probably get a bit excited by the novelty of a film crew in the dead of night too.

The most extraordinary thing about this phenomenon is that it's win-win, all the way round – save for the pork industry.

King, whose career is hardly pumping, gets a boost; the animal rights toilers finally have serious cut-through for the cause; consumers gets a comprehensive reality check about what they're eating; and best of all, the poor pigs might finally catch a break.

The recipe for all this success: just add a celebrity, and stir.

'Let the light shine in'. *The Press*. Mainlander. Philip Matthews (23 May 2009).



Life-long battles: Hans Kriek, campaign director for Safe, with a model of a pig in a sow crate. Photo: OORIS/STP

# Let the light shine in

It's been a fantastic week for animal rights campaigners, who have finally got the public interested in the welfare of farmed pigs. PHILIP MATTHEWS catches up with a happy Hans Kriek.

**H**ans Kriek is on the phone with one newspaper reporter as another walks into his office. In an adjacent room, there are three people taking his calls and trying to reply to his emails. This is the kind of crazy week he's had.

No complaints though. For animal rights advocates like Kriek, the campaign director for Save Animals From Exploitation (Safe), the week just completed has brought his cause the kind of coverage few thought possible. And this public relations masterclass was directed by one astute man from the Safe offices above a bakery in Armagh St.

It began last weekend when TV One's high-rating current affairs show *Sunday* ran an item about intensive pig farming. Those in the business had seen this kind of footage before: sows crammed into narrow crates on concrete floors, unable to turn around, depressed and screaming. The intensive farming in this dark, cramped barn didn't bear much relation to the high hopes of the Animal Welfare Act which stresses the need for animals to be allowed to display "normal patterns of behaviour".

But this time the footage wasn't presented by some earnest, bestie-wearing activist but by a New Zealand everybloke who also happened to be the former front man for pork advertising, comedian Mike King. A depression sufferer himself, King empathised with these miserable animals. He felt guilty, he felt ashamed: it was riveting television.

"We knew it was going to be big," Kriek says. "But this went beyond our imagination. I've been doing this since 1985 in New Zealand and I've never seen anything like it. The response is unprecedented in the history of New Zealand animal welfare."

The *Sunday* report was followed up by newspapers, radio and television. *Close Up* ran stories over three nights. Hundreds of thousands of viewers saw Kriek and King debate pork industry figures.

Kriek took a *Close Up* team to pig farms in the Wairarapa. He had seen pictures taken inside these places. One farmer blocked the roads into his farm with tractors and refused to let the television crew in. That became the instant symbol of an industry in damage-control mode.

Kriek: "The farmer said it was perfectly fine and the pigs were happy. Well, show us your happy pigs. There was no hope in hell."

On the flight back to Christchurch, Kriek was stopped by a farming couple. "Big guy, big hands. I thought: uh oh. Then he said, 'I saw the item on pigs. Good on ya, mate'."

"And I get comments from workers on farms saying, 'You thought that was a bad farm? You should see the one I work on.'"

How did this happen? Kriek was already working with *Sunday* on an expose of the pig-farming industry. King was a late addition to the story, but a crucial one. Kriek says Safe had tried for years to get bold of King and alert him to the cruel reality behind the product he promoted but it only made contact last year.

Some have suggested that King must have known about sow crates but Kriek is adamant that he didn't. And Kriek knows this because it was Safe that told him.

"Mike actually did not believe us. He thought that the footage we were providing was not from New Zealand."

When King realised that it was, he did more research. Then he was set up with Open Rescue, an animal rights group who took King to a farm near Levin run by former Pork Industry Board chairman Colin Kay. It was pre-dawn and King did his shockol pieces to camera lit only by a camera light, to a soundtrack of distressed animals. The rest is current affairs history.

'Let the light shine in'. *The Press*. Mainlander. Philip Matthews (23 May 2009).

# Let the light shine in

Kriek wants to make some important distinctions. Safe does not do this kind of work itself, but Open Rescue's clandestine footage is gratefully received and Kriek admits the people who get it. Safe works strictly within the law, but nor is Open Rescue as radical as the UK's notorious Animal Liberation Front. Open Rescue members are unmasked; they won't break in but will go through unlocked doors.

Then again, is lawbreaking justified? There is a long history of it in the animal rights movement. One of its founding thinkers, philosopher Peter Singer, argues illegal actions are not always morally wrong. Even in a democracy, Singer thinks there can be times when it is morally right to disobey the law.

"If the public is kept largely unaware of what is happening in factory farms and laboratories, then illegal actions may be the only available avenue for assisting animals and obtaining evidence about what is happening," he has said.

If slavery was still legal and you broke the law to free a slave, would that be morally wrong? Many activists feel the same way about suffering animals.

But Kriek is careful to make sure that his organisation is seen as the legal, mainstream, unthreatening face of the movement. Of course the name helps.

And the mainstreaming seems to have worked. A decade ago, Safe had no paid staff. Now it has 12 and is backed by 11,000 supporters who regularly donate (the profile is about 70 per cent female). Kriek expects that this week's coverage should lift numbers greatly. And because of this mainstreaming, Kriek has become the most reliable and articulate spokesperson on animal rights.

How did things use to be? Not long after Kriek arrived in New Zealand from the Netherlands in the 1980s, he saw an anti-vivisection march with activists dressed in black with skeletons painted on their clothes or wearing grim reaper costumes.

"I thought, a... that's stupid. That just scares people. You are not winning the hearts and minds of the public by doing it like that."

"We have to look at animal rights as a business. We have to package it in such a way that it will be palatable for people to digest because it is a big thing. Animal cruelty takes place wherever animals are used for our convenience. A lot of people would rather not know."

An example of making it palatable: years ago, when he was working for the SPCA in Hamilton and doing volunteer work for Safe, Kriek set up an anti-vivisection stall. He borrowed live rats, mice, guinea pigs and rabbits from people who had them as pets, put them in cages and surrounded the cages with anti-vivisection literature. People were looking at the animals and crying and Kriek realised that the public is sensitive to these issues too, if only it could be reached.

Which is how Greens MP Sue Kedgley has long felt. Before Kedgley was an MP, it was Kriek who told her how some farm animals are treated. She was researching a chapter about meat for her book *Eating Safely in a Toxic World*. "He educated me. Like everyone else who discovers this, I was horrified."

"Hans is absolutely dogged. He's just been plugging away at this issue."

When Kedgley took her concerns into Parliament as animal welfare spokesperson for the Greens, "MPs would roll their eyes and crack jokes and sneer". She spent years fighting through legal channels, frustrated that no progress was being made. Until now. "If consumers actually went into these pig farms and saw for themselves the misery that these pigs endure, they wouldn't be allowed to continue. The conditions are so heinous that you cannot fail to be repelled."

Which happened last weekend. Another alarming feature of the Sunday report was the revelation that agriculture minister David Carter, already in Safe's sights over plans to resume live sheep exports, knew nothing about the use of sow crates in New Zealand.

"It stretches my credulity that he didn't know this is a widespread practice," Kedgley says.

"We were surprised at how badly he came across," Kriek adds.

But public opinion and consumer demand will take over where political will has failed or been stymied by the industry's lobbying. That happened with battery hens. Kriek began the battery hen campaign for Safe. Soon there were supermarket managers coming to Safe meetings and telling Kriek that a demand for free-range eggs had been created. Now he says that 300,000 chickens per year don't have to live in cages.

"But you will not see Safe promoting free range," Kriek says. "We are an animal rights group and that means we do not advocate the farming of animals at all."

It's about baby steps. Safe would advocate a fully vegetarian or vegan diet but they aren't intending to declare war on meat-eaters.

"I can't tell you to go vegetarian. We don't want to alienate people who eat meat. I used to eat meat. When I found out about factory farming when I was 16 years old, I decided I wasn't going to support it."

He was told about factory farming by his high-school biology teacher. None of his friends was vegetarian; his parents thought it was a phase. About a year later, he discovered a Dutch translation of Peter Singer's *Animal Liberation*. "It said everything I could not verbalise at that age. I was amazed it existed and there were other people feeling like me."

Singer argued against "speciesism". Coming after civil rights, gay rights and women's rights, this was the last frontier of discrimination. Just as racism stresses differences rather than shared characteristics, so speciesism ignores the abilities of animals to suffer, to feel pain or pleasure, or exhibit intelligence.

In the three decades since Singer first published *Animal Liberation*, there has been obvious progress. Who now tolerates performing animals in circuses? Or believes that a few square metres of concrete in a zoo could resemble an animal's natural habitat? Who would wear fur?

These are the visible signs of changing attitudes. But behind the scenes, there have been setbacks. Kriek has concerns

about the use of animals in cloning and genetic engineering research. Factory farming has intensified as worldwide food demand has increased. It was estimated that 10 billion birds and mammals were raised and killed for food in the United States alone in 2002.

And when public opinion frowns on factory farming in one place, it simply goes elsewhere. The US's largest pork supplier, Smithfield Foods, made a big show of responding to public opinion by announcing it would phase out sow crates, but in Mexico Smithfield is half-owner of the intensive pig farm that was investigated during the recent swine flu outbreak.

In New Zealand, the phase-out that the pork industry has talked about this week isn't a phase-out at all, Kriek emphasises, but a reduction. Under the best possible outcome, not due to be introduced until 2015, sows will still spend 20 weeks a year in stalls and farrowing crates.

"Almost half their life in a crate where they can't turn around," Kriek says. "That still breaches the conditions set out in the Animal Welfare Act."

The problem in the past is that the industry has successfully argued for exemptions to the act. Any animal rights body in this country is up against a formidable opponent.

Their lobbying power and advertising power far outstretches what we have," Kriek says. "The only advantage that we have over them is that we're right and they're wrong."

"It sounds like an arrogant statement but it's actually not because if people could be confronted with the practices that they carry out on a daily basis, they would not accept it. If battery hen farmers had to farm them behind shop windows on a main street, it would not happen. Can you imagine pigs in crates there the whole day? People would not tolerate it."

"It's only because it happens behind closed doors. So we know that the public is with us."

■ For more information on the Safe campaign, visit [lovepigs.org.nz](http://lovepigs.org.nz)

## **Editorial: Writing on the wall for sow stalls**

4:00 AM Monday May 25, 2009

The Agriculture Minister, David Carter, wants to issue a new welfare code for pigs by the end of the year. This, indeed, may be necessary to prevent a sizeable drop in the purchase of Christmas hams this December. Such has been the public reaction to television pictures of pigs chewing at their cage bars, frothing at the mouth and unable to move that the minister had little option but to address the issue urgently. Pig farmers, for their part, will have to accept that sow stalls fly in the face of popular modern concepts of animal welfare and that their use will have to cease much earlier than they would have liked.



In fairness, only a minority have not seen the writing on the wall. Less than a third of the national breeding sow herd is farmed using these stalls. The balance are farmed free-range or in group housing pens. Most producers have taken note of animal-welfare developments, not least that sow stalls have been banned in Britain and Sweden and will be phased out in all other European Union nations by 2012. New Zealand started along a similar path 10 years ago with the passing of the Animal Welfare Act, which introduced codes governing farming practices.

Since then, the industry has mounted a rearguard action based, most rationally, on the view that the practice was essential if some farms were to remain economically viable. It has sought to give these farms as much time as possible to phase out sow crates. The campaign succeeded inasmuch as a new code, introduced in 2005, mentioned only a reduction in the use of the stalls over 10 years. By the start of 2015, the maximum permitted confinement was to be four weeks after mating.

All that work has, however, now been undone by the television exposure. It has rendered the industry largely defenceless. Given the mental cruelty and more arguable physical harm to the pigs, that is not surprising. And even the defence of economics must now be open to question given that farmers in comparable jurisdictions are having to bear the cost of more humane practices.

It is, as the SPCA suggests, now very much in the industry's interest to adopt a labelling system so that shoppers can differentiate between pigs raised in crates and other pigs. Only if this is done will all farmers escape the popular odium directed towards the secretly filmed Levin farm. It will also test the depth of that feeling, if only because consumers who buy free-range ham and bacon will be required to pay more. Indeed, given that pigs – and intensively farmed battery hens – have been the prime targets of animal-welfare activists for many years, it is surprising such a step was not taken some time ago.

Introducing such labelling would at least have acknowledged an intensifying of the debate on what constitutes fair treatment of animals, both in this country and its biggest markets. Internationally, inhumane farming practices will be seized on by those eager to dent New Zealand's image. Closer to home, the outrage over the use of sow stalls is part of a continuum that has also seen jumps racing in Victoria brought almost to its knees. The state's racing industry has staved off the threat of closure by accepting changes designed to enhance the safety of the horses. But if more die, it will prove to be only a reprieve.

Pig farmers loath to abandon sow stalls are denying the reality of that trend. So will the National Animal Welfare Advisory Committee if it does not revise the code so that the practice is banned in relatively quick order. As always, the final sanction lies with the consumer. More humane farming practices will cost producers. But if recalcitrance becomes the order of the day, shoppers are likely to slash even more dollars from the industry's profitability.

– [NZ Herald](#)

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'Pig farming rules a legal cruelty'. *RodneyTimes*. Opinion. Pat Booth (26 May 2009).

## Pig farming rules a legal cruelty

BY PAT BOOTH Last updated 05:00 26/05/2009

OPINION: Just about everyone's a loser in the great pork controversy. Particularly the pigs.

A few influential humans look and sound unthinking/irresponsible/ inhumane in varying degrees.

Notably the experts who draft, police and exploit the regulations which are at the core of the controversy.

How can anyone with any intelligence, sensitivity and humanity believe that housing animals in a space barely bigger than they are is anything other than barbaric, cruel and totally unacceptable?

People who interpret what are clearly badly-drafted and crazy rules in this way are doing so for their own convenience and profit.

The dithering and unconvincing spokesman for the pork board on television didn't even begin to mount any case for the defence.

His stumbling explanation – that sows are stropky and aggressive to each other at stages of pregnancy and must be protected from injury – in no way justified pinning them in cages with only centimetres to spare.

That appears to be accepted by pork people as being good and necessary practice.

And the owner – apparently a former pork board chairman – was alternately unconvincing and belligerent.

Minister of Agriculture David Carter wasn't much better, at first pleading surprisingly that he didn't know that such travesties were being practised and then criticising animal welfare activists who took former pork board advertising frontman Mike King to the farm.

His response: They should have told him or his officers what they had found, not gone public so effectively.

Going by the first reaction of inspectors who called next day, that would have been a waste of time.

They seem to have run their tape measures over the crates and decided that the totally nonsensical regulations which condemn pigs to these conditions were not being breached.

Now, belatedly, the government wants the rules investigated and redrafted by the end of the year.

Presumably by the same heartless or unthinking law draftsmen who produced the present inhumane code.

Among other responses was a rather righteous reaction from a daily media columnist who lambasted Mike King for not knowing that this is what happens on money-making pig farms.

And then suggesting archly that King should hand back the fee he got for fronting pork promotion.

Actually, Mike King did seem ill at ease over that aspect of his involvement which he stressed over and over resulted from ignorance.

I can only suggest that if every media celebrity or journalist was required by law or conscience to repay money earned while unwittingly or irresponsibly advancing what seemed good causes at the time which failed later, then the lists of celebrity bankrupts would soar – and fast.

And among the names would be those media financial writers and analysts who ticked the boxes in one way or another for what have since been revealed as incompetent and, in some cases, recent and tragic shonky investment packages.

Thousands of investors who believed them lost millions.

Like Mike King, they accepted smooth-tongued assurances that all was well. The only difference – those publicly-accepted media experts have not so far recanted and admitted responsibility as he has.

My test suggestion: If the departmental and farming experts believe there is no harm in housing highly intelligent pigs in this way, perhaps they would like to join in a rerun of a piece of earlier Green Party campaigning.

Then Sue Kedgley was effectively photographed inside a sow crate on Parliament's steps to stress the inhumanity involved.

So let the minister, his officers and consultants, plus pork board spokesmen, spend weeks in a skin-tight metal cage in the build-up to outlawing what they will then belatedly recognise is a harshly cruel system. And fast.

• A matter of record: My wife and I were both joint presidents of Safe at a stage of its formative years in the 1970s.

'Carter gives industry hurry-up on sow crates'. The New Zealand Herald. Politics (21 July 2009).

POLITICS

A6 The New Zealand Herald • Tuesday, July 21, 2009

# Carter gives industry hurry-up on sow crates

## Minister says mood of public is for change before 2015 deadline

The pork industry should address consumer concerns about animal welfare and reductions to the length of time sows can be kept in dry stalls need to kick in sooner, Agriculture Minister David Carter says.

The pork industry recently came under the spotlight when TVNZ's Sunday programme broadcast footage taken in April of animal rights organisation Open Rescue escorting comedian Mike King around a Horowhenua intensive pig farm belonging to former New Zealand Pork Industry Board chairman Colin Kay.

King, a long-standing front man for a campaign advertising pork, said some pigs were unable to move and obviously in distress, chewing at the cage bars and frothing at the mouth.

However a Ministry of Agriculture and Forestry investigator found animal welfare laws were not broken at the well managed piggery.

Mr Carter, in a speech to the New Zealand pork industry board conference, said the investigation raised questions around lactics used in the



**SNIFF OF TROUBLE:** Pictures like these stirred up debate and affected sales.

PICTURE / NZ OPEN RESCUE

ination of dry sow crates. "I am not going to preempt this review, but I have made it clear that I personally feel that the 2015 date needs to come forward significantly."

Mr Carter said the industry could treat welfare issues as opportunities rather than just problems.

Consumers had genuine concerns that affected their purchasing decisions. "This is their right and as an industry you ignore them at your peril ... Another consideration had to be animal rights activists.

"Rightly or wrongly these groups will utilise all manner of means to sell their message, both legal and illegal. If you think they are not planning further attempts to discredit you, then you're dreaming.

"The challenge for you is how you are going to respond."

Mr Carter said the New Zealand industry should promote positives such as grazing pigs outdoors or raising them in an organic method.

Also "unlike overseas competitors, your industry makes very little use of antibiotics, if any at all, and you certainly don't use growth hormones. This is something that we should all be proud of."

"In the past your industry has been great marketers. Do it again, but this time I suggest you use the merits of your product, not the words of a celebrity."

— NZPA

you haven't done well enough."

The National Animal Welfare Advisory Committee (Nawac) is reviewing the 2005 pig code. Under the code the amount of time a sow can be kept in a dry sow stall will be reduced to four weeks after mating from 2015.

programme. But the animal welfare concerns mattered and affected sales.

"As I see it, you have a real opportunity here to take the initiative, to take the high ground," he said.

"Some of you have taken that message on board, but as an industry

"It is my belief that the Nawac code delivered to you such a long lead-in — 2015 — that a degree of complacency crept in."

Mr Carter said he was not criticising Nawac, but the mood of the public was for faster change leading to elim-

**Bekoff, Marc.** *'Animals are conscious and should be treated as such'*. *New Scientist*, Issue 2883, Comment (September 22, 2012).

### ANIMALS ARE CONSCIOUS AND SHOULD BE TREATED AS SUCH

**Now that scientists have belatedly declared that mammals, birds and many other animals are conscious, it is time for society to act**

By Marc Bekoff

**Marc Bekoff is an emeritus professor of ecology and evolutionary biology at the University of Colorado, Boulder. He has written many essays and books about animal emotions, animal consciousness and animal protection**

ARE animals conscious? This question has a long and venerable history. Charles Darwin asked it when pondering the evolution of consciousness. His ideas about evolutionary continuity – that differences between species are differences in degree rather than kind – lead to a firm conclusion that if we have something, “they” (other animals) have it too.

In July of this year, the question was discussed in detail by a group of scientists gathered at the University of Cambridge for the first annual Francis Crick Memorial Conference. Crick, co-discoverer of DNA, spent the latter part of his career studying consciousness and in 1994 published a book about it, *The Astonishing Hypothesis: The scientific search for the soul*.

The upshot of the meeting was the Cambridge Declaration on Consciousness, which was publicly proclaimed by three eminent neuroscientists, David Edelman of the Neurosciences Institute in La Jolla, California, Philip Low of Stanford University and Christof Koch of the California Institute of Technology.

The declaration concludes that “non-human animals have the neuroanatomical, neurochemical, and neurophysiological substrates of conscious states along with the capacity to exhibit intentional behaviors. Consequently, the weight of evidence

indicates that humans are not unique in possessing the neurological substrates that generate consciousness. Non-human animals, including all mammals and birds, and many other creatures, including octopuses, also possess these neurological substrates.”

My first take on the declaration was incredulity. Did we really need this statement of the obvious? Many renowned researchers reached the same conclusion years ago.

The declaration also contains some omissions. All but one of the signatories are lab researchers; the declaration would have benefited from perspectives from researchers who have done long-term studies of wild animals, including nonhuman primates, social carnivores, cetaceans, rodents and birds.

I was also disappointed that the declaration did not include fish, because the evidence supporting consciousness in this group of vertebrates is also compelling.

Nevertheless, we should applaud them for doing this. The declaration is not aimed at scientists: as its author, Low, said prior to the declaration: “We came to a consensus that now was perhaps the time to make a statement for the public... It might be obvious to everybody in this room that animals have consciousness; it is not obvious to the rest of the world.”

The important question now is: will this declaration make a difference? What are these scientists and others going to do now that they agree that consciousness is widespread in the animal kingdom?

Bekoff, Marc. 'Animals are conscious and should be treated as such'. *New Scientist*, Issue 2883, Comment (September 22, 2012).

### ANIMALS ARE CONSCIOUS AND SHOULD BE TREATED AS SUCH CONTINUED

I hope the declaration will be used to protect animals from being treated abusively and inhumanely. All too often, sound scientific knowledge about animal cognition, emotions and consciousness is not recognised in animal welfare laws. We know, for example, that mice, rats and chickens display empathy, but this knowledge has not been factored into the US Federal Animal Welfare Act. Around 25 million of these animals, including fish, are used in invasive research each year. They account for more than 95 per cent of animals used in research in the US. I'm constantly astounded that those who decide on regulations on animal use have ignored these data.

### “All too often, scientific knowledge about animal cognition is not recognised in welfare laws”

Not all legislation ignores the science. The European Union's Treaty of Lisbon, which came into force on 1 December 2009, recognises that animals are sentient beings and calls on member states to “pay full regard to the welfare requirements of animals” in agriculture, fisheries, transport, research and development and space policies.

There are still scientific sceptics about animal consciousness. In his book, Crick wrote “it is sentimental to idealize animals” and that for many animals life in captivity is better, longer and less brutal than life in the wild.

Similar views still prevail in some quarters. In her recent book *Why Animals Matter: Animal consciousness, animal welfare, and human well-being*, Marian Stamp Dawkins at the University of Oxford claims we still don't really know if other animals are conscious and that we should “remain skeptical and agnostic... Militantly agnostic if necessary.”

Dawkins inexplicably ignores the data that those at the meeting used to formulate their declaration, and goes so far as to claim that it is actually harmful to animals to base welfare decisions on their being conscious.



I consider this irresponsible. Those who choose to harm animals can easily use Dawkins's position to justify their actions. Perhaps given the conclusions of the Cambridge gathering, what I call “Dawkins's Dangerous Idea” will finally be shelved. I don't see how anyone who keeps abreast of the literature on animal pain, sentience and consciousness – and has worked closely with any of a wide array of animals – could remain sceptical and agnostic about whether they are conscious.

Let us applaud the Cambridge Declaration on Consciousness and work hard to get animals the protection they deserve. And let us hope that the declaration is not simply a grandstanding gesture but rather something with teeth, something that leads to action. We should all take this opportunity to stop the abuse of millions upon millions of conscious animals in the name of science, education, food, clothing and entertainment. We owe it to them to use what we know on their behalf and to factor compassion and empathy into our treatment of them.

MacKenzie, Debora. 'Chicken genome plucked bare by inbreeding'. *New Scientist* (Daily News, 4 November 2008).

#### CHICKEN GENOME PLUCKED BARE BY INBREEDING

Modern livestock is bred to be super-productive. But at what cost? In the first genetic assessment of an entire agricultural product, scientists have found that, on average, super-productive modern chickens have lost more than half the genes present in ancestral populations. Some have lost 90%.

This means most of the world's chickens lack characteristics that evolved when they lived in the wild, and may be useful again to help them face stress and disease as livestock.

Scientists want to breed DNA for traits such as disease resistance, or "animal well-being", back into commercial birds without introducing undesirable traits at the same time.

Inbreeding is a concern with chickens, as the industry is dominated by a few big corporations that produce billions of birds from a handful of private breeding lines.

#### Homogenised hens

Bill Muir of Purdue University in West Lafayette, Indiana, and colleagues used the recently sequenced chicken genome to measure genetic diversity across these lines, and compared it with 19th century breeds and wild chickens.

They found that chickens had already lost a lot of genetic diversity before modern breeders got started.

In the 19th century, breeders turned the common European chicken – variably coloured birds with erratically shaped combs that periodically laid clutches of green speckled eggs – into breeds such as the White Leghorn. These were white birds with identical combs that laid a single white egg daily.

"The basic level of inbreeding was already 10% when modern poultry companies came into being," Muir told *New Scientist*.

#### Closer than auntie

That means 10% of the genes of any two birds from the four classic breeds that were adopted by modern producers are already identical.

Commercial breeding has pushed this commonality to 15% over the whole industry. That makes any two chickens more closely related than aunts and nieces in a typical human population, who on average share 12.5% of their genes.

Most of the remaining genetic differences are between different companies' breeding lines, which never cross. Within lines, though, much more has been lost.

Lines of chickens bred for eating share at least 30% of their genes. Some lines of laying hens share a staggering 90% of genes – meaning they have also lost 90% of their potential diversity.

Muir is heading an effort to reintroduce ancestral genes into modern chickens.

Journal reference: Proceedings of the National Academy of Sciences, DOI: 10.1073/pnas.0806569105

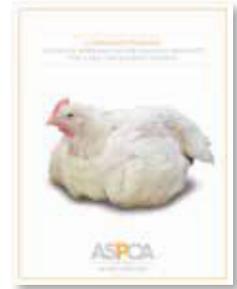
By Debora MacKenzie

# BIOLOGY TEXTS

## Short Written Texts (Reports)

American Society for the Prevention of Cruelty to Animals (ASPCA). *A Growing Problem – Selective Breeding in the Chicken Industry: The Case for Slower Growth* (2015).

Extracts from pp. 3, 4 & 5.



Through today's factory-farming system, birds are selectively bred to pack on excessive weight in just a few weeks. The National Chicken Council estimates that from 1925 to 2011, the average number of days it took to raise a chicken plummeted from 112 to 47, while the birds' average weight ballooned from 2.5 lbs to 5.8 lbs.<sup>6</sup> Since then, chickens' weights have continued to rise, hitting nearly six pounds in April 2013.<sup>7</sup> Even the USDA has declared today's chickens to be "too fat," and that was in 2008 when chickens weighed less than today.<sup>8</sup> These are conditions that are prevalent not just in the U.S., but on a global scale, as similar breeds are used internationally.



Photo credit: Compassion in World Farming

Importantly, while some large U.S. chicken companies are starting to have somewhat better welfare conditions for select product lines to appeal to concerned consumers,<sup>13</sup> they continue to use conventional, fast-growing birds. Thus, despite labels telling consumers the birds are raised more humanely than those in conventional systems, continuing the use of the fastest-growing birds significantly limits the companies' ability to achieve meaningful welfare improvements by skirting the underlying problems of unsustainable growth, weight and body shape.

**"If humans grew at a similar rate, a 3 kg (6.6 lb) newborn baby would weigh 300 kg (660 lb) after 2 months."**  
– Academics from the University of Arkansas in peer-reviewed article published in *Poultry Science*.

### Welfare Costs

Producing some nine billion oversized birds a year as quickly as possible does not come without a cost. In fact, this model causes large-scale suffering. Conventional chickens raised for meat easily gain an average of 65 grams of weight per day or even more,<sup>19</sup> which is about 2.5% of their eventual total body weight. It becomes clear that this growth is at the root of chickens' poor welfare when we see the conventional fast-growing birds suffering even when raised in the highest welfare conditions with plentiful space, enrichment, veterinary care, fresh air, proper lighting and even pasture.<sup>20</sup>

Despite their astonishing growth rate, chickens are still juveniles when they're slaughtered at just a few weeks old. They have barely advanced past their chick days, still behaving as youngsters and a long way from sexual maturity.<sup>21</sup> While from the outside, their bodies are adult-sized, their organs and bones are much smaller and do not grow quickly enough to support their massive muscles.<sup>22</sup> After only a few weeks, there is evidence that the birds' skeletons and organs cannot keep up: Their hearts, lungs and legs strain to work under severe pressure, causing severely low stamina,<sup>23</sup> shortness of breath,<sup>24</sup> trouble standing and walking, collapse and even congestive heart failure.<sup>25</sup>

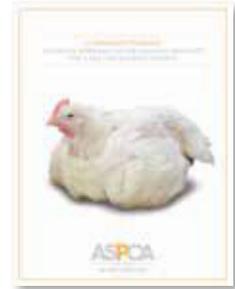


Photo credit: Mercy for Animals

## BIOLOGY TEXTS

### Short Written Texts (Reports)

American Society for the Prevention of Cruelty to Animals (ASPCA). *A Growing Problem – Selective Breeding in the Chicken Industry: The Case for Slower Growth* (2015). Extract from p. 6.



congestive heart failure.<sup>25</sup> The birds' massive chests also make them top-heavy and awkward, putting too much weight on their lower bodies which leads leg bones, tendons and joints to develop improperly, degenerate or give way, causing pain and debilitation.<sup>26</sup> These conditions may become so severe that a chicken is unable to reach food or water (they must stand to drink water from their "nipple" drinkers which may spell death for a handicapped chicken).<sup>27</sup>



Photo credit: Wakker Dier

Conventional chickens eat an extraordinary amount of food, due partly to their breeding, which has resulted in "insatiable" appetites.<sup>28</sup> Selective breeding has reduced their ability to detect when they are actually full, so they eat larger meals<sup>29</sup> due to a "genetic defect in hypothalamic appetite regulation."<sup>30</sup> It has been suggested that broiler chickens will continue feeling hungry until they reach physical capacity (i.e., they cannot physically fill themselves any further), whereas other types of chickens feel satiated before this point of complete inundation.<sup>31</sup>

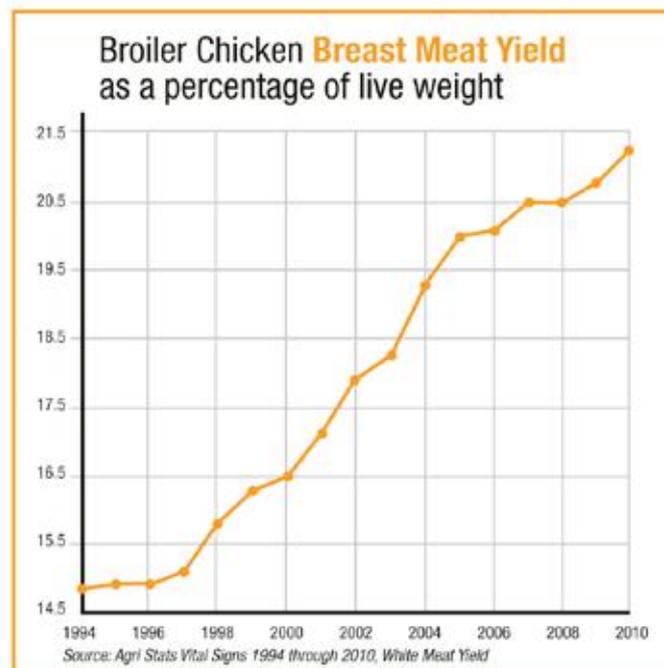
Overweight, weak and disproportionately sized chickens, particularly in their final weeks of life, often have trouble staying standing and spend long hours lying down.

There is typically nowhere for them to lie but directly on the shed floor, which is covered in their own waste (see Interaction Between Growth and Living Conditions, below), so birds may develop lesions from their bodies pressing down on the wet, ammonia-soaked floor. These lesions are not only painful but they make it harder for the birds to move, forcing them to spend even more time lying down and acting as gateways to infections, thereby creating a downward spiral of suffering and potentially leading to foodborne illness in humans.<sup>32</sup> All of this pushes chickens' bodies and immune systems to the brink, so many producers feed chickens "subtherapeutic" (preventative) antibiotics. This creates a vicious cycle by allowing the chicken industry to perpetuate substandard conditions such as crowding and unhealthy lighting. These are the chickens that make their way to America's dinner plates every day.

#### Labored Movement

In a study comparing conventional birds to heritage breed birds, conventional chickens were found to have breasts "dramatically" larger and faster-growing than their counterparts.<sup>33</sup> Their breasts, which continued to grow way beyond the age at which the heritage birds' stopped, grew at a rate 3.8 times faster than the heritage birds'. The conventional birds' breasts finally plateaued at a whopping 18% of their total body mass: twice that of the heritage birds.<sup>34</sup>

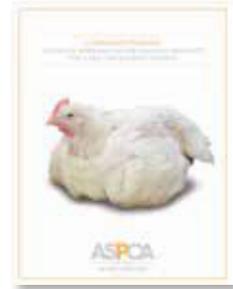
Chickens' unnaturally large breasts and heavy weight that comes on quickly make for painful and difficult locomotion. This is a complex problem with numerous contributors including fast growth, heavy weight, unnatural body shape, bacterial and viral infections and nutrition.



# BIOLOGY TEXTS

## Short Written Texts (Reports)

American Society for the Prevention of Cruelty to Animals (ASPCA). *A Growing Problem – Selective Breeding in the Chicken Industry: The Case for Slower Growth* (2015). Extract from p. 7.



A 2012 study declared lameness to be “year in and year out” a leading cause of mortality.<sup>35</sup> A 2011 study found that “compared with chickens bred for high egg production, the motor ability of broilers has been compromised and is of increasing concern in broiler breeding and production.”<sup>36</sup> A 2009 study done on U.S. farms found 41% of birds to have detectable gait problems,<sup>37</sup> while a 2013 study noted similarities between broiler chickens’ slow, tentative walking style and that of obese humans.<sup>38</sup> At just six weeks old, the over-sized birds are already elderly in terms of their genetically-predetermined lifespan. They often walk slowly and unsteadily, becoming out of breath from the slightest exertion,<sup>39</sup> and grow progressively weaker, often spending the final portion of their lives lying in their own waste,<sup>40</sup> unwilling or unable to walk even a few steps.<sup>41</sup> The same 2013 study found that “musculoskeletal abnormalities and poor walking ability (commonly referred to together as ‘leg weakness’) are the most prevalent causes of culling and late mortality in the modern broiler.”<sup>42</sup> There is evidence the birds are also in pain: studies have found they respond positively to food containing painkiller, increasing their activity levels after consuming it.<sup>43</sup>

Difficulty in standing, walking or exertion has major welfare implications for chickens. Beyond any immediate pain and frustration they might be experiencing, an additional cascade of secondary problems can occur: illness, injury, disease and even starvation or dehydration from not being able to reach food or water. Because they live in large numbers all together on a shed floor (see Interaction Between Growth and Living Conditions, below), ambulation is an important survival mechanism. Stilted movements mean less ability to access food and water and less ability to escape one another. It stands to reason that strained movement also leads to increased stress, which in turn further taxes their immune systems.<sup>44</sup>

Overweight, weak and with almost no room to move, birds spend up to 90% of their lives lying down<sup>45</sup> in their litter, a combination of bedding and excrement, causing a series of secondary welfare problems. It’s common for a farm to place a new flock directly on top of a previous flock’s waste. In fact, one quarter of respondents to a 2008 USDA survey of chicken farmers raising birds under production contracts reported not fully cleaning out their sheds at all in 2006.<sup>46</sup>

As a result of these conditions, chickens’ eyes and lungs frequently become injured from the high ammonia fumes and dust content in their sheds. Many birds suffer from eye infections,<sup>47</sup> and the USDA condemned over 4 million chicken carcasses in 2012 for respiratory infections.<sup>48</sup>

When chickens so much time lying or standing in their own waste, the skin is exposed to moisture and ammonia, which can lead to open sores on their feet, legs and chests.<sup>49</sup> These wounds may become deep ulcers<sup>50</sup> that can then further develop into abscesses.<sup>51</sup> These lesions are something the chicken industry is keenly aware of but struggles to control, despite a growing acknowledgement that they can directly impact bird welfare<sup>52</sup> by causing pain, reduced mobility and trouble eating and drinking.<sup>53</sup> A leading chicken genetics company admits that foot lesions among chickens are “a common and wide spread problem.”<sup>54</sup>

Similarly, the “hock burns” found on the backs of chickens’ legs (the portion coming in contact with their litter when they lie down) have also been declared “a common disease.”<sup>55</sup> A 2009 U.S. on-farm study found 14% of birds had foot lesions and 20% had burns on the backs of their legs. It explained “lame broilers spend more time lying in the litter and can be stepped on by other birds. These 2 factors could cause more lesions in the skin of the breast and legs.”<sup>56</sup> It has been speculated that the sores birds develop on the backs of their legs are akin to pressure sores tracing back to their heavy body weights.<sup>57</sup> These lesions and burns can make the birds’ already compromised ability to move around even harder by making it painful to stand and walk.

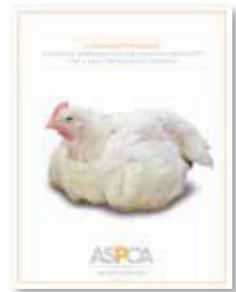


Photo credit: Hillside Animal Sanctuary

# BIOLOGY TEXTS

## Short Written Texts (Reports)

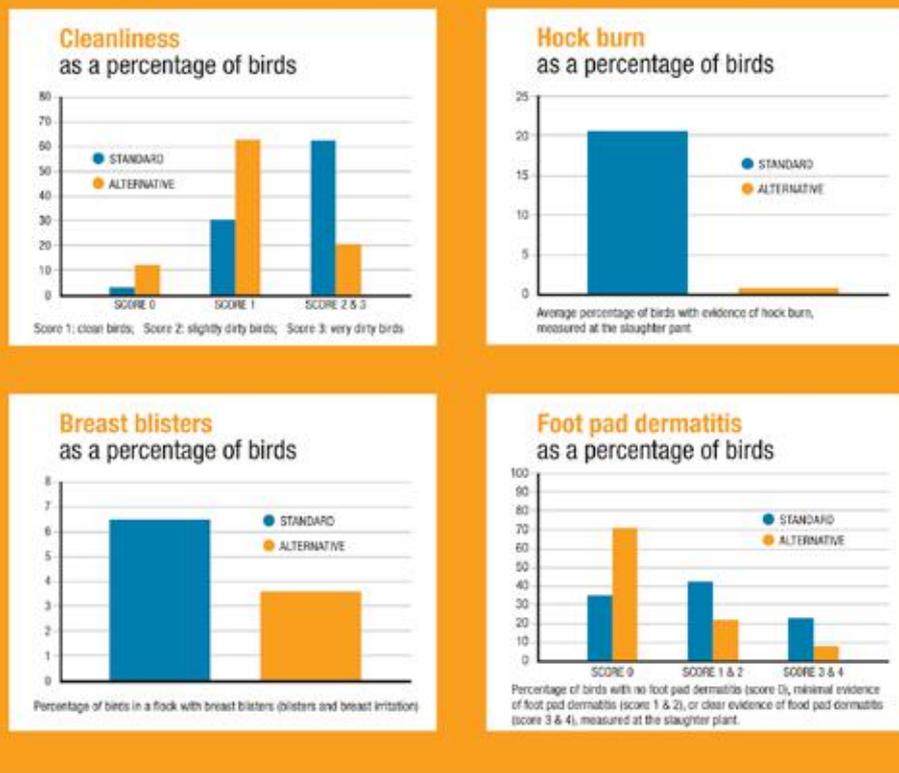
American Society for the Prevention of Cruelty to Animals (ASPCA). *A Growing Problem – Selective Breeding in the Chicken Industry: The Case for Slower Growth* (2015). Extract from p. 8.



A 2005 study of Grade A chicken carcasses in UK supermarkets found that 82% had hock burns, with larger burns being more common among the heavier chickens.<sup>58</sup> These lesions were interpreted by the study's authors as being "painful" and an indication of "poor welfare."

Charts comparing birds with standard growth rates, stocking densities and living conditions to slower growing genotypes of chickens raised with more room, natural light and enrichments.

Source: Wageningen UR Livestock Research, 2011. *Simplifying the Welfare Quality assessment protocol for broilers.*



### Chronic Hunger for Breeding Birds

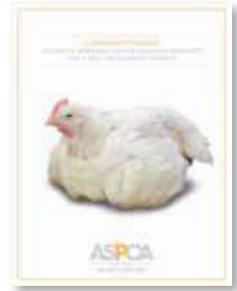
While chickens raised for meat are allowed to eat as much as they like, their parents, who breed and hatch the next generation of chickens, are not. It takes five to seven weeks before a chicken can lay eggs but these birds are predisposed to gain weight so rapidly that they often collapse at just a few weeks old.<sup>59</sup> The chicken industry faces a dilemma: It must breed these birds for fast growth and unnatural size so they may pass these traits to their offspring, but it must keep them as lean and trim as possible to stave off death, morbidity and infertility. As a result, breeding birds are fed only a fraction of the calories they crave. Some are fed to only 25% satiety; others are fed only every other day.<sup>60</sup> Many also have water withheld to stop them from desperately trying to quell their hunger with liquid.<sup>61</sup> This is an extreme form of cruelty that stems from the industry's commitment to fast growth and uncontrollable size.

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# BIOLOGY TEXTS

## Short Written Texts (Reports)

American Society for the Prevention of Cruelty to Animals (ASPCA). *A Growing Problem – Selective Breeding in the Chicken Industry: The Case for Slower Growth* (2015). Extract from p. 9.



### Compromised Physiological Function

According to what is known as “resource allocation theory,” growth, maintenance (including immune function) and production are three physiological functions that must always work in balance with one another. Anytime an animal is bred to strongly emphasize one of these traits—such as excessive growth, in the case of chickens— it is a “zero-sum paradigm”: the other two traits are necessarily tampered with. This has far-reaching consequences for welfare.<sup>62</sup> Thus it is no surprise that chickens, being bred for excessive growth, suffer from a “weak physiological structure”<sup>63</sup> and the plethora of problems described above.

Metabolically, they also suffer from several life-threatening conditions that stem from their bodies’ demands for massive amounts of oxygen to fuel their over-paced metabolisms.<sup>64</sup> Their hearts are sometimes hard-pressed to meet their oxygen demands since their unnatural selection for large breast muscles appears to have caused a simultaneous shrinkage of heart size.<sup>65</sup> Congestive heart failure is a common problem for chickens. Pulmonary hypertension, known as “water belly,” is one symptom.<sup>66</sup> Fluid backs up in the abdomen because the heart and lungs cannot sufficiently oxygenate the body. When this condition is present, chickens’ overall growth outpaces their lung capacity, making their pulmonary vascular capacity only “marginally adequate.”<sup>67</sup> Slowing down their growth is the key to avoiding this condition.

Another result of chickens’ struggles to oxygenate their bodies is “Green Muscle Disease,” a condition where the breast muscles hemorrhage and may even die and atrophy inside the body, turning purple, green or brown. The underlying cause is the breast muscles growing so large that they have no further room to expand in the breast cavity when even the simplest physical movement requires increased blood flow to that region.<sup>68</sup> A motion as simple as a bird flapping its wings can trigger this event. Green Muscle Disease was found to be increasing among chickens as of 2013 and can only be expected to further increase as it is tied to the selection of birds for breast muscles.<sup>69</sup> Called “a hidden problem” by the industry,<sup>70</sup> this growth-related disease was estimated in a recent study to be costing the industry \$50 million every year in losses.<sup>71</sup> The discolored and slimy meat is not detectable from the outside, and so is not discovered until a chicken’s carcass is cut open, often by a consumer.<sup>72</sup>

Sudden Death Syndrome is another result of inadequate blood and oxygen flow. It is a sudden form of heart failure in which the fastest-growing, largest birds suddenly drop dead with no forewarning. It can happen as early as the first week of life. As would be expected, slower growth rates decrease its prevalence.<sup>73</sup>

Addressing chickens’ myriad welfare problems ultimately requires changes to the current practice of selective breeding for fast growth, massive body size and disproportionate body shape. Even small movements on the growth spectrum can make a significant difference for birds’ health and welfare, not just for the chickens that are eaten but also for their parents used for breeding.

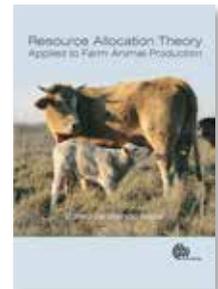


Photo credit: Bengt-Erik Norum, Three Birch Farm, U.S.

## BIOLOGY TEXTS

### Short Written Texts (Reports)

University of Nevada-Reno: Department of Animal Biotechnology. Rauw, Wendy (ed). *Resource Allocation Theory Applied to Farm Animal Production*. CABI (2008). Extracts from pp. 12 & 15.



Under natural selection, individuals need to be ready at any time to allocate their resources among the demands of maintenance, growth and reproduction, with some amount held in reserve as a buffer. However, in animals that origin from a population that is selected for high production, the weighing given to some other components will be increased. During the domestication process, the relative importance of ability to reproduce in captivity or tameness increased. Subsequently, with active selection, the weighting given to production increased (Rauw *et al.*, 1998; Mignon-Grasteau *et al.*, 2005). Preferential allocation of resources may occur because the animal is 'programmed' to allocate a disproportionately large portion of its resources to a particular one of these demands, leaving it lacking in ability to respond to other demands, such as coping with disease and stress (Siegel and Dunnington, 1997; Rauw *et al.*, 1998). Animals that are genetically driven to produce at high levels may reallocate resources away from other processes, where buffer capacities and traits not defined in the breeding goal may be the first to be affected, because their importance is not specifically recognized (Rauw *et al.* 1998, 1999). In addition, historically, it has been necessary to make changes slowly, giving the whole animal time to equilibrate to both direct and correlated responses. If genetic changes are too radical or sought too rapidly (e.g. with introgression of desirable genes into available populations), new genes may disrupt resource allocation that has evolved gradually, and the homeostatic balance may be at risk (Dunnington, 1990).

Moberg (2000) developed a model of animal stress describing the importance of the cost of the stress to animal welfare. When the cost of coping with the stressor diverts resources away from other biological functions, such as growth, reproduction or the immune function, the animal experiences distress, which places it in a prepathological state and increases its vulnerability to a number of pathologies. Similarly, McNamara and Buchanan (2005) indicate that a reduction in the physiological state resulting from the inability to maintain optimal physiological condition during periods of environmental stress potentially includes reduced physiological reserves of essential vitamins, minerals and amino acids, reduced body condition and immunocompetence, and reduced fat reserves, leading to increased mortality and decreased reproductive potential.

Rauw *et al.* (1998) and Rauw (2007) reviewed the literature on undesirable correlated effects of selection for high production efficiency in broilers, pigs and dairy cattle, and showed that the highly favourable increase in production levels is indeed often compromised by behavioural, physiological and immunological problems. The most striking examples of undesirable correlated responses were reported in broiler chickens with an increasing incidence of heart failure syndrome and leg problems. In poultry, selection has been almost for one trait only, i.e. body weight at a certain age, and selection intensity has been high with a short generation interval. In cattle and pigs, selection has been less intensive, for more traits and during fewer generations, resulting in more controversial results (Rauw *et al.*, 1998).

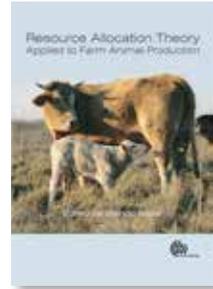
### 6. Implications

Undesirable effects of increased production efficiency have raised questions about what is ethically acceptable in animal breeding. A question similar to that asked by Corning and Kline (1998) regarding natural selection can be asked with respect to artificial selection: when we speak of a 'breeding goal' do we actually have any particular value in mind, or is the goal simply 'more'? The answer is given by Groen in Chapter 16: 'Genetic improvement is not aiming at an opti-

# BIOLOGY TEXTS

## Short Written Texts (Reports)

University of Nevada-Reno: Department of Animal Biotechnology. Rauw, Wendy (ed). *Resource Allocation Theory Applied to Farm Animal Production*. CABI (2008). Extracts from pp. 15 & 16.



mum; genetic improvement is dynamically searching for improvements. Given animal genetic variation (within or between breeds), there is always a means of improvement.' The key ethical question is not whether animal breeding should be abandoned, but how we should breed (Gamborg and Sandøe, 2003). The general opinion is that it is acceptable to use animals as long as it is done 'humanely' and does not result in physical damage, pain or distress (Christiansen and Sandøe, 2000).

Animal well-being and welfare can be *improved* by breeding as well. Increased emphasis on welfare-associated traits in the selection index, such as longevity and health, will result in improved animal welfare and increased public confidence in animal farming (Pryce *et al.*, 1999; Kerr *et al.*, 2001; Stott *et al.*, 2005). Breeding companies can play an important role in addressing welfare problems by defining broader breeding goals that include not only production traits but also functional traits and non-economic values, such as emotional and societal values (Kanis *et al.*, 2005; Olsson *et al.*, 2006). Every trait that matters must be included in the breeding objective, which necessarily means that improvement must go more slowly in each of the many traits in order to achieve progress towards the total goal (Beilharz and Nitter, 1998; Oltenacu and Algers, 2005). Kanis *et al.* (2005) proposed a selection-index method to obtain the proper weights for societally important traits in the breeding goal, such as welfare and health. It will become clear from Chapters 12 to 14 that breeding programmes are more frequently including functional traits in the breeding goal, and that this is successful. Chapters 16–18 discuss breeding goals, robustness traits and resource allocation models, respectively, as methods to improve the breeding objective.

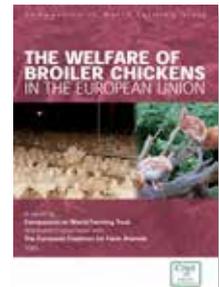
Falconer (1952) suggested that '[i]t would therefore generally be recommended that selection should be carried out under the environmental conditions in which the improved breed is destined to live'. He also suggested that performance in two different environments (such as on a low versus a high plane of nutrition, or temperate versus tropical climates) can be regarded as two different characters that are genetically correlated. Thus, selection for the character in one environment will bring about a correlated response in the trait in the other environment. But an advantage of selection in the secondary environment would accrue only an advantage through an increased heritability, and this should be great enough to offset the loss of efficiency through selection being made for a character that has not exactly the same genetic basis as the desired character (Falconer, 1952). According to the Resource Allocation Theory, using highly productive animals from populations that were selected in favourable environments, in poorer environments is very likely to cause problems with fitness (Beilharz and Nitter, 1998).

Questions are being asked on the future direction of agriculture in several countries, with special emphasis on the question as to how the agricultural sector can find sustainable ways of being more productive (Garnier *et al.*, 2003; Oltenacu and Algers, 2005). MacArthur Clark *et al.* (2006) recommend the establishment of a committee for the evaluation of welfare problems associated with breeding technologies that would advise on the effectiveness of existing legislations and practices relating to animal breeding procedures to assure animal welfare, and would give consideration to ethical questions associated with animal breeding even where measurable detrimental effects on animal welfare may not be immediately evident. We may expect that increased and combined efforts may result in better animal welfare in the future.

## BIOLOGY TEXTS

### Short Written Texts (Reports)

Turner, Jacky, Garcés, Leah and Smith, Wendy. *The Welfare of Broiler Chickens in the European Union*. Compassion in World Farming Trust (2005). Extracts from pp. 7 & 10.



### 2.1 Fast growth rates

Standard intensively farmed broiler chickens are reared to their slaughter weight (typically around 2 kg, sometimes 3 kg) very rapidly. They reach slaughter weight of 2 kg within about 40 days of being hatched, whereas they would not reach adulthood until about five or six months. Broilers are thus very young animals for the whole of their rearing period. By selective breeding, the length of time broiler chicks take to grow to 2 kg has been halved in the last 30 years and between 1976 and 2007 it is likely to have been reduced by 1 day every year. The amount of feed needed to achieve this weight gain has been reduced by almost 40% since 1976. Meanwhile, breeding for increased breast muscle means that the broilers' centre of gravity has moved forward and their breasts are broadened compared to their ancestors, which affects the way they walk and puts additional stresses on their hips and legs (SCAHAW, 2000, Sect. 4.2). Broilers have become very inactive. At just 6 weeks old, they spend 76%-86% of their time lying down (Weeks *et al.*, 2000). They have a mortality rate 7 times that of young laying hens of the same age (SCAHAW, 2000, Sect. 5.4).

### 3.2 Leg problems and lameness

#### 3.2.1 High incidence of lameness

In the early 1990s scientists at Bristol University Veterinary Department developed a 'gait score' (GS) method to rate the walking ability and lameness of commercial broiler chickens. On this scale, GS 0 indicated normal walking ability, GS 3 indicated an obvious gait abnormality which affected the bird's ability to move about and GS 5 indicated a bird that could not walk at all. GS 5 birds tried to use their wings to aid walking, or crawled along on their shanks. As we have seen, almost 26% of the birds examined at that time were rated as GS 3 or above, and can therefore be considered to have suffered from painful lameness (Kestin *et al.*, 1992).

In 2000 SCAHAW reported that:

Leg disorders are a major cause of poor welfare in broilers. Gait scoring surveys have shown that large numbers of broilers have impaired walking abilities and there is evidence that birds with score 3 or higher experience pain or discomfort (SCAHAW, 2000, Conclusions 6).

## BIOLOGY TEXTS

### Short Written Texts (Reports)

Turner, Jacky, Garcés, Leah and Smith, Wendy. *The Welfare of Broiler Chickens in the European Union*. Compassion in World Farming Trust (2005). Extracts from pp. 10 & 11.



In fact, there is evidence that, far from improving, leg problems may have deteriorated further during the 1990s. Large and representative surveys of commercial broiler flocks in Denmark (1999) and Sweden (2002) found that in Denmark, 75% of the chickens had some walking abnormality and 30.1% were very lame (gait score greater than 2). In Sweden, over 72% of the chickens had some walking abnormality and around 20% were very lame. 36.9% of the chickens surveyed in Denmark and around half (46.4% and 52.6%, depending on strain) of the chickens surveyed in Sweden had leg deformities (varus/valgus). 57% of the chickens surveyed in Denmark and around half of the chickens surveyed in Sweden showed some evidence of tibial dyschondroplasia (Sanotra, Berg and Lund, 2003).

#### 3.2.2 Pain and dehydration

The fact that lame broilers suffer pain is underlined by experiments reported in the *Veterinary Record* in 1999 and 2000, where broilers were treated with carprofen, an analgesic. In one experiment, healthy birds took 11 seconds to complete an obstacle course, whereas lame birds took 34 seconds. When the birds were treated with carprofen, there was no effect on the healthy birds' speed but the lame birds now took only 18 seconds to traverse the course, suggesting that the pain of lameness had been relieved by the drug (Mc Geown *et al.*, 1999). In a second experiment, chickens were allowed to choose between feed that contained carprofen and their normal feed. The lame birds chose to eat more of the feed laced with carprofen. The authors concluded that their results supported the view that:

*lame broiler chickens are in pain and that this pain causes them distress from which they seek relief (Danbury *et al.*, 2000).*

Even the birds with gait score 1 (the least obvious lameness) chose to eat the carprofen, suggesting that they were in pain even though they were not obviously very lame (Webster, 2005).

When broilers are too lame to stand upright, they may be unable to reach up to their water containers and become dehydrated. A UK study of broilers that had been kept to the age of 84 days (well beyond the 42 days at which intensively farmed broilers are normally slaughtered) found that:

*Many of the lame birds appeared unable to reach bell drinkers (400mm from the litter) and drank avidly when the drinkers were lowered (Butterworth *et al.*, 2002).*

Analysis of the state of dehydration of the broilers suggested that many of the birds with the most severe lameness may have been unable to drink for more than 100 hours (Butterworth *et al.*, 2002).

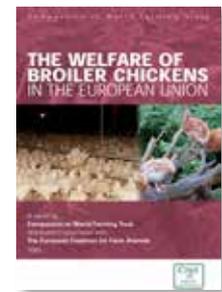
#### Abnormal bone development

The diseases caused by abnormal development of leg bones are generally attributed to the fast growth of the broiler chicks, which means that they become too heavy for their legs. The leg bones may be bent either inward or outward or the leg may be twisted. The most common problem of broiler leg bones is tibial dyschondroplasia, involving defective formation of cartilage so that the calcification of the bone does not happen as it should. This disease is much more common in heavy breeds of chicken and has been found to affect over 47% of birds in one commercial strain of broilers (SCAHAW, 2000, Sect. 5.5.3.). As mentioned above (Section 3.2.1), development of tibial dyschondroplasia has been found in between 45% and 57% of broilers surveyed in Denmark and Sweden (Sanotra, Berg and Lund, 2003).

## BIOLOGY TEXTS

### Short Written Texts (Reports)

Turner, Jacky, Garcés, Leah and Smith, Wendy. *The Welfare of Broiler Chickens in the European Union*. Compassion in World Farming Trust (2005). Extracts from pp. 12 & 13.



#### 3.2.4 Lameness and selective breeding

The leg problems of broilers are largely the result of selective breeding and could be reversed by the breeding companies. Slower-growing chickens have a lower incidence of lameness than fast-growing strains. A study by Bristol University Veterinary Department, published in *Veterinary Record* in 2001, reported the incidence of lameness in 13 broiler strains including commercial fast-growing hybrids, slower-growing strains suitable for free-range systems and 'traditional' breeds. The study concluded that high growth rate was the most important factor leading to lameness, with the modern genotypes of broiler being less able to walk than the slower-growing birds (Kestin *et al.*, 2001). The scientists concluded that their results

[S]upport the hypothesis that the lameness which develops in modern genotypes of broiler is a result of their selection for high liveweights and rapid growth rates, resulting in abnormally high loads being placed on relatively immature bones and joints (Kestin *et al.*, 2001).

Although it is generally recognised that many leg problems are caused by the fast growth rate of modern broiler chickens, there are significant differences between the different fast-growing broiler strains. A report in *Poultry Science* in 1999 compared the gait scores of four strains of commercial broilers, most of which are commonly used in the EU and available worldwide. They found that there was a difference of over 0.5 gait score units between two of the broiler strains, even though the weight of the birds was the same. This comparatively large difference was due to genetics alone, whereas changes in husbandry and management have been shown to make only small improvements to leg problems (Kestin, Su and Sørensen, 1999).

The SCAHAW report supports the view that the broiler breeding companies could undoubtedly improve the welfare of broilers by selecting for improved leg strength and walking ability and by reversing the trend towards faster growth rates. There is a wealth of scientific evidence from the EU that slower-growing chickens suffer less from lameness and are more active. A study from Bristol University has showed that chickens from traditional breeds had a gait score of 2.6 units better than the fast-growing hybrids, and the slower-growing commercial hybrids had a gait score 1.1 units better than the fast-growing hybrids (Kestin *et al.*, 2001).

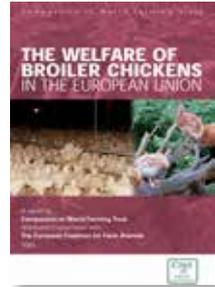
#### 3.3 Heart failure

Fast-growing broilers suffer from two forms of heart failure, known as ascites and Sudden Death Syndrome (SDS, also known as 'flip-over syndrome'). These conditions are relatively common and are likely to be due to the fact that the broilers' fast growth requires high levels of oxygen to support metabolic demands. All their energy is spent on growth and efficient feed conversion, leaving them short of oxygen for their other bodily needs so that their hearts have to work much harder. The broiler selectively bred and managed for very fast growth has a genetically induced mismatch between its energy supplying organs and its energy consuming organs, according to research cited by SCAHAW

# BIOLOGY TEXTS

## Short Written Texts (Reports)

Turner, Jacky, Garcés, Leah and Smith, Wendy. *The Welfare of Broiler Chickens in the European Union*. Compassion in World Farming Trust (2005). Extracts from pp. 13 & 14.



(SCAHAW, 2000, Sect. 4.2). SCAHAW concludes that:

Fast growth rates increase the risk of ascites and SDS by increased oxygen demand of the broilers, which intensifies the activity of the cardio-pulmonary systems (SCAHAW, 2000, Conclusions 10).

Ascites affects fast growing chickens when the right side of the heart becomes enlarged in response to increased workload. The chickens then develop heart failure and changes in liver function, causing fluid to accumulate in the abdominal cavity. The skin of the abdomen may become red and the abdomen becomes swollen with fluid. The bird has to breathe more rapidly and its lungs become congested (Julian, 1990). Nearly 5% of broilers worldwide have this disease, according to a 1996 survey, making it one of the major causes of death in broilers (SCAHAW, 2000, Sect. 6.5.1). UK broiler producers reported a death rate of 1.4% in 1993 (Maxwell and Robertson, 1998). The incidence of ascites has actually increased in recent years, according to SCAHAW (SCAHAW, 2000, Conclusions 9), and is recognised as one of the leading causes of carcase condemnation in modern broiler flocks around the world (Olkowski *et al.*, 2001).

SDS has a death rate of 0.1% to 3% in Europe (SCAHAW, 2000, Sect. 6.5.2). UK broiler producers reported an incidence of 0.8% in 1993 (Maxwell and Robertson, 1998). SDS is an acute heart failure disease that affects mainly male fast-growing chickens which seem to be in good condition. The birds suddenly start to flap their wings, lose their balance, sometimes cry out and then fall on their backs or sides and die, usually all within a minute. SCAHAW considers that:

Even though the apparent time from onset of the syndrome until death is only a matter of minutes, it may still have an important impact on bird welfare (SCAHAW, 2000, Conclusions 10).

Both ascites and SDS are examples of heart failure occurring in young birds only a few weeks old. Their hearts and lungs have been unable to keep up with the fast growth of their body muscle. These are largely preventable diseases caused by breeding and managing broilers for high growth rate and feed conversion, at the expense of their overall health.

### 3.4 Susceptibility to disease

There is evidence that the selection of broilers for rapid growth and efficient feed conversion has reduced their immunity to disease. Broilers selected for fast growth rate have been found to have lower antibody responses when exposed to infection, according to a 1998 review (Rauw *et al.*, 1998). An experiment on the immune responses of different broiler strains in Israel found that 40% of the fast-growing, heavier broilers died when infected with *Escherichia coli* bacteria, compared to 8% - 20% mortality for slower-growing breeds. The scientists commented that:

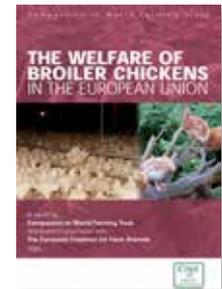
These results indicate that rapid growth rate substantially reduces broiler viability (Yunis *et al.*, 2002).

Fast growth rates are believed to be related also to high incidence of cellulitis in modern broiler farms. Cellulitis is a disease caused by bacteria such as *E.coli* and is characterised by infected scratches on the surface of the skin. In addition, broilers selected for fast growth have been found to have increased susceptibility to various non-infectious diseases (Boersma, 2001).

## BIOLOGY TEXTS

### Short Written Texts (Reports)

Turner, Jacky, Garcés, Leah and Smith, Wendy. *The Welfare of Broiler Chickens in the European Union*. Compassion in World Farming Trust (2005). Extracts from pp. 15 & 16.



### 3.6 Feed restriction and the welfare of broiler breeders

Broiler breeders are the broiler chickens that are allowed to live into adulthood in order to breed and produce the broiler chicks that are reared for meat. They are often kept in specialist breeder farms. Female broiler breeders start laying eggs at around 5 months old and produce up to 140 chicks during their laying lives of around 10 months, after which they are sent for slaughter. Typically 1 male breeder chicken is kept for every 7-10 females. Although the numbers of broiler breeders are of course much fewer than the numbers of broilers bred for meat, the breeders also have serious welfare problems caused by the selection of chickens for fast growth and efficient feed conversion.

While broiler breeders are growing to adulthood their food is severely restricted, leading to chronic hunger. This restriction is carried out to prevent them from growing as fast as the meat broilers, because they are required to survive healthily into adulthood in order to produce chicks. According to a review in *World's Poultry Science Journal* in 2002, they may be fed as little as one fifth of the quantity that they want to eat, and feed restriction of up to 50% may continue during adulthood. The review states that:

Broiler breeders show evidence of physiological stress as well as an increased incidence of abnormal behaviours, and are also chronically hungry (Mench, 2002).

Broilers are selectively bred to have very large appetites and to reach around 2 kg weight in less than 6 weeks. They are slaughtered well before adulthood. But breeding birds are required to reach similar weights (2.8 kg for females and 3.7 kg for males) only

at sexual maturity around 24 weeks of age. If the females were allowed to eat as much as they wanted, by 24 weeks they would weigh over 6 kg, they would be fat, many would be lame and the death rate from skeletal problems and heart disease would be unacceptably high. Severe food restriction decreases the health problems that are caused by too fast growth. It also minimises food costs and increases fertility (SCAHAW, 2000, Sect. 9.1).

As SCAHAW points out, the breeding industry has created a welfare dilemma for itself. Broilers have been selectively bred to eat enormously but to succumb to obesity, skeletal problems and heart failure after a few weeks of life if they are allowed to eat as much as they want.

There is no doubt that broiler breeders suffer from severe hunger because of the food restriction to which they are subjected. An experiment at the Roslin Institute in the UK found that broilers fed restrictively (according to recommendations for parent broilers by a major breeding company) ate only one quarter to a half as much during their growing period as broilers that were allowed to eat as much as they wanted. Their motivation to feed was almost 4 times as strong as that of fully-fed broilers which had been starved for 72 hours before the motivation tests. The scientists concluded that their results were evidence that:

restricted-fed broiler breeders are chronically hungry, frustrated and stressed (Savory, Maros and Rutter, 1993).

## BIOLOGY TEXTS

### Short Written Texts (Reports)

Webster, Jim, Cameron, Catherine and Rogers, Andrea. *Survey of Lameness in New Zealand Meat Chickens*. Ministry for Primary Industries (2013). *Extracts from pp. 3 & 4.*



The main health-related welfare issues with regard to the growing phase of meat chicken production include metabolic problems, skin lesions and leg disorders (Bessei, 2005; Bessei, 2006). A recent extensive review by an expert panel concluded that many of these problems are linked to the rapid growth rates of the birds (EFSA, 2010) and they are rare in slow-growing strains of poultry (Weeks & Butterworth, 2004). Many of these welfare problems are heritable and can be influenced by genetic selection, (Ask, 2010; Akbas *et al.*, 2009; Bennett, 2006; Haslam *et al.*, 2007). Metabolic problems, such as the failure of organ systems, can arise from rapid growth due to the increased work-load on that organ or system and include cardiovascular problems such as ascites and sudden death syndrome (Julian, 2005). Skin lesions are predominantly caused by contact dermatitis of the foot pads (FPD), hocks and breast due to prolonged contact with moist litter (Martland, 1985; Shepherd & Fairchild, 2010). The lesions may be painful and provide a route for ingress of infection (Shepherd & Fairchild, 2010). Leg disorders, outwardly exhibited as lameness, reduce welfare via detrimental effects on activity (inability to access food and water), behaviour (Weeks *et al.*, 2000) and the likelihood of associated pain (Danbury *et al.*, 2000; Naas *et al.*, 2009; McGeown *et al.*, 1999). This is considered to impinge on four of the five freedoms<sup>1</sup> defined by the Farm Animal Welfare Council, UK, (FAWC) as requirements for farm animals (Bradshaw *et al.*, 2002). The five freedoms form the basis for defining obligations to animals under the NZ Animal Welfare Act (1999). Lameness is therefore recognised as the single most important welfare issue in the meat chicken industry (Gregory & Grandin, 2007).

Leg disorders can be categorised as infectious, developmental or degenerative, based on the predominant underlying cause, although there is much overlap between these categories (Bradshaw *et al.*, 2002). Most of the non-infectious leg disorders such as spondylolisthesis (kinky-back), tibial dyschondroplasia (TD), valgus-varus deformity (twisted legs) and rotated tibia are related to rapid growth (Julian, 2005). Slowing growth, particularly in the first 15–20 days of life markedly reduces the incidence of twisted legs, TD and kinky back, which accounts for 65–80% of the non-infectious causes of leg deformity and lameness in meat chickens (Classen & Riddell, 1989; Julian, 2005). Infectious causes of lameness are caused by bacterial chondronecrosis of the bones and joints, viral and fungal infections (Butterworth, 1999) and may include some forms of femoral head necrosis (Bradshaw *et al.*, 2002). The effects tend to impact birds later in the growing phase and are considered to be severe due to the high incidence, painfulness and decreased ability to access food and water (Bradshaw *et al.*, 2002).

One of the challenges when assessing welfare within the meat chicken industry is the scale of the industry. The meat chicken industry in New Zealand (NZ), in terms of animal numbers, dwarfs other production sectors in this country with around 84 million birds processed in 2011. As a result, birds are commonly raised and processed on a flock basis, whereas welfare is focussed at the level of the individual. Welfare assessment methods must be capable of identifying the welfare status for individual birds and provide recommendations for improvements at that level.

NOTE: While this report was produced for MPI the opinions it contains may not be approved or endorsed by MPI.  
© Webster, Jim, Cameron, Catherine and Rogers, Andrea (2013). *Survey of Lameness in New Zealand Meat Chickens*. Ministry for Primary Industries. Reproduced with permission.

## BIOLOGY TEXTS

### Short Written Texts (Reports)

Webster, Jim, Cameron, Catherine and Rogers, Andrea. *Survey of Lameness in New Zealand Meat Chickens*. Ministry for Primary Industries (2013). *Extracts from pp. 5, 6 & 7.*



### MEASUREMENTS

Each shed was visited once during the growing phase, 1-3 days before a thin<sup>2</sup> or a terminal slaughter. The results from these farms visits are presented. All measures used in this study, apart from collection of information on shed light levels and carrying out of post-mortems on GS 3, 4 and 5 birds, were previously used in the 2005 study to allow for direct comparisons.

#### Gait scoring

A minimum of 300 birds were gait scored from each shed using an internationally recognised 6 point (0-5) scoring method (Kestin *et al.*, 1992). At a minimum of 10 random locations throughout each shed approximately 30 birds were penned within a 2 x 4 m area (using 0.5 m high, hinged plastic corkboard) and the GS of each bird recorded as they were individually encouraged to walk out of the pen. All birds in the study were assessed by either of two observers, who also took part in the 2005 study, to reduce variation in scoring. Techniques developed at the University of Bristol were used to train, re-calibrate and test the reliability of the observers prior to gait scoring for the study. This involved reviewing the written definitions of each gait score (see below) and viewing standardised video clips of birds of each GS. This procedure was also performed immediately before entering a shed to GS birds during the study. Reliability testing of observers was conducted prior to (n=3) and during the study (n=5). This involved independently scoring multiple video clips of birds of varying GS and scoring birds in a shed. Scores were compared and analysed as described in Statistical Analysis.

The GS was based on the following definitions (Kestin *et al.*, 1992):

#### *Gait Score 0 - Normal, dextrous and agile.*

“The bird walked normally with no detectable abnormality; it was dextrous and agile. Typically the foot was picked up and put down smoothly and each foot was brought under the bird’s centre of gravity as it walked (rather than the bird swaying). Often the toes were partially furled while the foot was in the air. The bird should have been capable of balancing on one leg and walking backwards easily if necessary. It should also have been in full command of where it was going, and been able to deviate its course easily to avoid other birds.”

#### *Gait Score 1 - Slight abnormality, but difficult to define.*

“The bird had a slight defect which was difficult to define precisely but would have precluded its use for breeding if gait had been the sole selection criteria at the standard of a pedigree breeder. For example, the bird may have taken unduly large strides which, although the observer may not have recognised the exact cause, produced an uneven gait.”

## BIOLOGY TEXTS

### Short Written Texts (Reports)

Webster, Jim, Cameron, Catherine and Rogers, Andrea. *Survey of Lameness in New Zealand Meat Chickens*. Ministry for Primary Industries (2013). Extracts from pp. 7 & 19.



#### *Gait Score 2 - Definite and identifiable abnormality.*

“The bird had a definite and identifiable defect in its gait but the lesion did not hinder it from moving or competing for resources. For example, it may have been sufficiently lame on one leg to produce a rolling gait which did not seriously compromise its manoeuvrability, acceleration or speed.”

#### *Gait Score 3 - Obvious abnormality, affects ability to move.*

“The bird had an obvious gait defect which affected its ability to move about. For example, the defect could take the form of a limp, jerky or unsteady strut, or severe splaying of one leg as it moved. The bird often preferred to squat when not coerced to move, and its manoeuvrability, acceleration and speed were affected.”

#### *Gait Score 4 - Severe abnormality, only takes a few steps.*

“The bird had a severe gait defect. It was still capable of walking, but only when driven or strongly motivated. Otherwise it squatted down at the first available opportunity. Its acceleration, manoeuvrability and speed were all severely affected.”

#### *Gait Score 5 - Incapable of walking.*

“The bird was incapable of sustained walking on its feet. Although it may have been able to stand, locomotion could only be achieved with the assistance of the wings or by crawling on the shanks.”

The average GS for the industry was not significantly different from the 2005 study indicating that there is no change in the average degree of lameness. However, there was evidence that lameness is more prevalent for heavier and older birds (LW 3) in 2011 than 2005, and the industry is moving progressively to heavier bird production. This was significant for Ross birds, but the same trend was apparent for the industry as a whole. For Ross birds, there was a higher average GS for LW 3 birds and a greater percentage of these birds in the GS 3, and GS 3-5 category in 2011 than 2005. This difference in lameness could not be fully explained by the heavier weight of the Ross birds in 2011 than 2005.

In the UK meat chicken industry, 27.6% of birds had a GS of 3 and above (Knowles *et al.*, 2008). In that study it was concluded that the main risk factors for lameness and leg health were related to rapid growth. The increase in growth rate from 2005 to 2011 in the NZ industry may therefore be contributing to a detrimental effect on GS. In the present study,  $30.2 \pm 4.77\%$  of birds evaluated had a GS of 3 or above which is a similar figure to that found by Knowles *et al.*, (2008) and Kestin *et al.*, (1992) of 26 - 28%. A marked effect of LW on GS was found in the present study, with the proportion of birds with GS 3-5 increasing from 13.40% at LW 1 to 55.90% at LW 3. Due to the large number of GS 3 birds in this group, the percentage of lame birds with a GS 4 and above was much lower with  $1.74 \pm 0.697\%$  of birds overall and a maximum of  $4.2 \pm 1.04\%$  at LW 3. These levels are similar to those for the UK of 3.3% for GS 4 and above (Knowles *et al.*, 2008). For Ross birds at LW3, the percentage of GS 4 and 5 birds (4.2%) tended to be higher than in 2005 (0.5%).

## BIOLOGY TEXTS

### Short Written Texts (Reports)

Webster, Jim, Cameron, Catherine and Rogers, Andrea. *Survey of Lameness in New Zealand Meat Chickens*. Ministry for Primary Industries (2013). Extracts from pp. 19, 20 & 21.



In the study of Knowles *et al.*, (2008) the age at which the birds were assessed was important in determining GS, with every extra day, across the range of 28 to 56 days, leading to an average daily deterioration (daily increase) in GS of 0.048. This is similar to the effect of age on GS found in the current study of 0.045 GS per day. A small seasonal change was found in GS by Knowles *et al.*, (2008), with lowest (best values) in winter and worst (highest values) in late summer. Based on this, our sampling during winter to early spring could be expected to give a better estimate of GS if indeed there was a seasonal effect in New Zealand, though no seasonal effect found in the 2005 study, suggesting there may not be.

Large differences in GS were reported between the five UK companies examined by Knowles *et al.*, (2008) and also between ten UK companies in a study by Dawkins *et al.*, (2004). This is different from the current study, which found no differences between the three companies in any significant GS characteristics. This perhaps indicates that the NZ companies that took part in the study are more uniform than in the UK. Knowles *et al.*, (2008) also reported bird genotype had an influence on GS. This comparison was not possible in the current study as the same Ross genotype is used exclusively throughout the NZ industry.

There is debate over the implications of different GS in terms of welfare and specifically whether birds with a significantly altered walking ability at GS 3 and above are in pain or physically unstable (Gregory & Grandin, 2007). A GS of 3 and above has been proposed as a cut-off point for lame birds (Knowles *et al.*, 2008) based on evidence of self selection of analgesics by these birds indicating they are in pain (Danbury *et al.*, 2000), alterations in behaviour in GS 3 birds (Weeks *et al.*, 2000) and the ability of analgesic administration to improve the walking ability (speed) of GS 3 birds (McGeown *et al.*, 1999). Increasing GS is associated with walking asymmetry and uneven slower walking (Naas *et al.*, 2010). In this same study there was also evidence that pain might be contributing to the lameness in birds with a GS of 3 and above as GS was improved by administration of analgesics (Naas *et al.*, 2009). Furthermore it was suggested that if standing and moving causes pain in these birds they would be less likely to perform activities such as eating and drinking and thus their welfare would be compromised (Naas *et al.*, 2009). Not all reductions in walking ability are necessarily due to pain however as heavier birds walked less and were less motivated to walk for food (Bokkers *et al.*, 2007). Morphological changes associated with rapid growth and bodyweight, including a shift in the centre of gravity due to increased breast muscle and relatively short legs, alter the gait of the birds and are proposed as an explanation for reduced activity (Corr *et al.*, 2003). It is pointed out by Bradshaw *et al.*, (2002) that even if walking ability is impaired without associated pain, it would still represent a welfare compromise due to the reduced ability to exhibit behaviours and access food and water. The aforementioned authors conclude that welfare is likely to be compromised at GS >3 (i.e. GS 4 and 5).

As GS increased there was an increase in leg problems, specifically twisted legs, joint infections, septicaemia and a decrease in FPD. This indicates that leg problems underlie increasing GS. For GS 3 birds, FPD was the most common problem at 23.6% although 65% of the GS3 birds had no diagnosed problem. The high number of GS 3 birds with no observed underlying pathology suggests that the decreased walking ability in these birds were due to factors such as weight distribution, or that the pathology was not revealed by the methodology used. Rates of 40 to 50% FPD were found in Danish and Swedish flocks (Sanotra *et al.*, 2003). A recent study has confirmed litter quality as a causative factor, susceptibility is higher at a younger age and that the severity can decrease with improvements in litter quality (Cengiz *et al.*, 2011). Some FPD is likely to be painful and results in reduced activity in affected birds (Bradshaw *et al.*, 2002). As this problem can resolve, culling for FPD alone may not be the best option, as outcomes can therefore be potentially improved by

## BIOLOGY TEXTS

### Short Written Texts (Reports)

Webster, Jim, Cameron, Catherine and Rogers, Andrea. *Survey of Lameness in New Zealand Meat Chickens*. Ministry for Primary Industries (2013). *Extracts from pp. 21 & 22.*



management factors. There needs to be caution on this point however as mentioned above, decreased mobility, irrespective of the underlying cause can compromise welfare. FPD rates were similar for GS 4 and GS 3 birds but total leg problems were higher in GS 4 birds, primarily due to increases in twisted legs and joint infections. For GS 5 birds, FPD had decreased, perhaps due to less time these birds spend on their feet, but infectious causes of lameness were higher. Bacterial chondronecrosis was judged to have the highest welfare impact by Bradshaw *et al.*, (2002) due to the severe pain and inability of birds to reach food and water combined with the fact that it is so common. The best outcome for GS 4 and 5 birds is proposed to be culling as there is no practicable treatment for individual birds. The speed with which these birds are recognized and culled would have an important influence on their overall welfare.

The main reasons for non-infectious leg disorders are considered to be skeletal affects resulting from genetic selection, (associated with growth rate, conformation, food conversion efficiency and deformities) and management factors (associated with nutrition, lighting, stocking density and activity) (Julian, 2004). Many non-infectious leg problems have a genetic basis and in a recent study (Akbas *et al.*, 2009), estimated heritabilities of leg problems were 0.21, 0.72, 0.17 and 0.34 for TD, valgus-varus deformity, hock burns and FPD, respectively. This indicates that genetic selection could be an effective way of reducing these problems (Akbas *et al.*, 2009). Slowing growth rate is considered to be a successful way to reduce developmental leg disorders although without genetic change this would need to be achieved by feed restriction which could be a welfare issue in its own right (Bradshaw *et al.*, 2002).

TD and twisted legs are a common cause of lameness and TD is reported to cause 5 to 25% of lameness (Julian, 2005), however the lameness and skeletal impact on the birds of TD has been reduced due to genetic selection (Gregory & Grandin, 2007). TD lesions can be difficult to diagnose by standard post-mortem and may require sectioning of the joint. TD was not seen in the current study. Twisted legs or valgus/varus angulation is characterized by deformation of the tibial bones and defects in the associated joints leading to tendon displacement and rotation of these joints (Cruickshank & Sim, 1986). Twisted legs are considered to be one of the most common causes of lameness (Julian, 2005). Affected birds are bowlegged, knock-kneed or unable to walk (Julian, 2004). A number of studies have concluded that this problem is heritable (Akbas *et al.*, 2009; Le Bihan-Duval *et al.*, 1996). Twisted legs reduce the mobility of birds affected and therefore reduce their ability to access feed and water. While the degree of deformity may not correlate with the degree of pain, it is considered to be a painful condition if there is tension on the joint or if the bird is walking on its hocks (Julian, 2004). Incidences of twisted legs of around 30 to 40% are reported in a number of studies internationally (Leterrier & Nys, 1992; Shim *et al.*, 2012; Sanotra *et al.*, 2003) which is similar to the percentages found in birds culled by the farmer and in GS 5 birds in the current study. In an Irish study, 13.6% twisted legs were found in lame birds defined as GS > 3 (McNamee *et al.*, 1998), this being similar to the incidence in GS 4 birds in the current study.

Spondylolisthesis or kinky back is a dislocation of the vertebra resulting in pinching of the spinal cord, leg weakness and paralysis (Julian, 2004). It is associated with rapid growth and genotype and while impacts on welfare are severe because of the resultant pain and immobility (Julian, 2004), it is less common than other pathologies affecting around 0.3% of birds (Butterworth, 2004). In the current study it was also very uncommon with an incidence of 1%.

# BIOLOGY TEXTS

## Short Written Texts (Reports)

Hiemstra, Sipke and Napel, Jan. *Study of the Impact of Genetic Selection on the Welfare of Chickens Bred and Kept for Meat Production*. IBF International Consulting (2013). Extracts from pp. 26, 30 & 31.



### Status of chicken genetic lines and genetic erosion

According to the State of the World's Animal Genetic Resources<sup>22</sup> genetic diversity within and between breeds and lines is threatened. A relatively high proportion (33%) of (local) chicken breeds and genetic lines listed in the European and global database<sup>23</sup> is endangered, when compared with other major livestock species. At the same time a large and commercially most relevant proportion of genetic diversity in poultry is owned and maintained by the poultry breeding industry, although the breeding companies do not reveal exact numbers.

There are also questions to what extent overall allelic diversity in chicken is being conserved for the future. Muir et al<sup>24</sup> indicated that as much as 50% of the genetic diversity in the hypothetical ancestral population is absent in commercial pure lines of broilers and layers. They concluded that this is primarily due to the limited number of chicken breeds that went into the formation of the modern commercial poultry lines. They also concluded that the modern farming system has contributed less than 5% to the level of inbreeding of 14-15%, despite intense levels of selection, closed populations and industry consolidation since 1950, indicating that the breeding companies maintain their genetic resources in a sustainable manner.

### 4.3 Genetic selection

Genetic selection is identifying the most appropriate birds to become the parents of the next generation. The breeding goal determines what "most appropriate" means in practice. Various methods exist for genetic selection<sup>44</sup>. At pedigree level, birds are typically selected taking into account information on relatives, whereas at multiplication levels birds are typically rejected based on their own characteristics, as parents are not generally known.

The group of birds destined to replace the birds in the pedigree flocks are generally selected in such a way that the average genetic relationship within the group is as low as possible and the average value for the selection index is as high as possible. This maximises the genetic gain, while minimising the rate of inbreeding in the specific pure line<sup>45</sup>. After selecting the birds that will contribute to the next generation, the birds that follow on average genetic merit are allocated to multiplication.

### 4.4 Breeding sites involved in the multiplication process

The multiplication process may include three types of steps (Table 4.1). The first type at the GGP level is pure-line multiplication. In this step the birds are bred pure, but the progeny never flow back into the pedigree flocks. The objective is to produce sufficient pure-line birds, without having to increase the pedigree breeding sites. The second type at the grandparent level is crossing animals of pure lines to produce the crossbred parent stock<sup>46</sup>. The third type at the parent stock level is crossing crossbred birds to produce commercial broilers. The size of the multiplication farms/flocks is calculated from the number of parent stock or broilers they have to generate, taking information on hatchability and liveability into account<sup>47</sup>. Among birds in the multiplication process only birds with visible abnormalities are rejected, but no further selection takes place.

# BIOLOGY TEXTS

## Short Written Texts (Reports)

Hiemstra, Sipke and Napel, Jan. *Study of the Impact of Genetic Selection on the Welfare of Chickens Bred and Kept for Meat Production*. IBF International Consulting (2013). Extract from p. 42.



### 7.1 Impact of genetic selection on the welfare of chickens reported in the scientific literature

EFSA recently reviewed the scientific literature and concluded that “It is generally accepted that most of the welfare problems are caused by genetic factors”, but management and environmental conditions may alleviate or aggravate the magnitude of the welfare problems. Birds develop welfare problems if they have a genetic predisposition and are kept in a risk environment. The extents to which welfare problems are caused by genetic factors or environmental and management factors may vary. Even in an environment that causes expression of the genetic predisposition, only part of the variation between animals can be attributed to variation in genotype and this is commonly referred to as the heritability of a trait. Estimates of the heritability of Tibial Dyschondroplasia (TD) are around 40%, of Foot Pad Dermatitis (FPD) between 20 and 30%, of hock burn between 10 and 20% and of Sudden Death Syndrome (SDS) around 30%<sup>79</sup>. The remaining major part of the variation is due to non-additive genetic effects, such as dominance and epistasis, and non-genetic effects. Genetic selection impacts only on the additive genetic merit.

The breeding companies are critical of the EFSA recommendations, because the report is based on peer-reviewed scientific literature only, and they say that it does not present a balanced description of the current situation.

Genetics not only affects the welfare of the broilers, but also the welfare of the parent stock (broiler breeders) and further up in the selection pyramid, that of grandparents and great grandparents. As broilers are selected for fast growth and lean meat production, these characteristics are also present in the parent stock. As for broilers, the welfare of parent stock is influenced by genetic as well as environmental and management factors. Major welfare problems in parent stock are: a strong motivation to eat after consuming the daily feed allowance, aggressive and rough mating behaviour, a barren environment and a high stocking density<sup>80</sup>.

The literature reviewed by EFSA provides evidence that the genetic predisposition for aspects of these welfare problems was higher in lines strongly selected for production traits than in other lines, at least at the time of the experiments. There is evidence that the genetic predisposition may be largely masked in high-quality environments and more fully expressed in broader commercial conditions, as Kapell et al.<sup>81</sup> showed for foot pad dermatitis, a form of contact dermatitis. Genetic selection for production traits, however, does not inevitably lead to increased welfare problems. The reviewed genetic correlations between welfare traits and production traits were all in the range of 0.30 to +0.30, indicating that both groups of traits can be improved simultaneously, by including welfare traits in the breeding goal.

### 7.2 The genetic selection methods currently used and foreseen within the next fifteen years

Chicken of pedigree flocks and some male chicken in multiplication flocks are subject to broilerisation. It means that they are fed and reared for 6 weeks as if they were broilers. Selected individuals are then placed on a standard broiler breeder rearing feed programme from 7 to about 20 weeks of age so that the birds will achieve the physical and physiologic attributes to be a successful breeder. Broilerisation of male chicks in multiplication is aimed at identifying cockerels without a genetic predisposition to welfare problems in commercial conditions<sup>82</sup>.



# BIOLOGY TEXTS

## Short Written Texts (Reports)

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The selection environment is critical for developing robust lines. In reality, it is common practice to use additional selection environments that are similar to commercial production environments, by testing birds under different diets, on different continents, in flocks with a varying disease burden, at various levels in the breeding pyramid and in flocks with optimal versus suboptimal management<sup>87</sup>.

The breeding companies do not believe that any of their main broiler products require above-average management for acceptable welfare of the birds, but improving management standards of all customers helps achieving optimal performance, health and animal welfare. They believe that anyone with reasonable experience can achieve the levels of management that are needed to deliver a good outcome in terms of performance, and animal welfare, including health, both with fast-growing and slower-growing birds. Substantially slower growing birds are in general more robust and will be able to deal with a larger variety of circumstances.

### 7.5 Level of integration of welfare aspects or traits within the selection process by breeding companies and the balance achieved with meat production aspects or traits

All three breeding companies are currently selecting for leg strength, heart and lung fitness and against contact dermatitis and they are culling birds with a family record or signs of any genetic abnormalities. For some companies and some traits, this has been practised for over 25 years<sup>88</sup>. Traits included in the genetic programmes of the three companies are shown in Table 7.1. The individual traits in the four categories vary somewhat between companies, but the majority of traits are the same across companies. All breeding companies are using BLUP breeding values in the pedigree flocks, at least for some of the traits listed. Changing to a BLUP procedure for all these traits would improve the efficacy of genetic selection. On multiplication breeding sites, selection is generally based on independent culling<sup>89</sup>.

Table 7.1 Traits associated with welfare of broilers that are subject to genetic selection in at least one breeding company

		Indicator
<b>Skeletal integrity</b>	- Leg strength	Subjective score
	- Walking ability	Subjective gait score
	- Tibial dysplasia (TD)	X-ray
	- Crooked toes	Absence
	- Varus / valgus deformities	Absence
	- Femur head necrosis	X-ray
	- Symmetric keel bone	Presence
	- Hump back	Absence
<b>Contact dermatitis</b>	- Foot pad dermatitis (FPD)	Subjective score
	- Hock burns	Subjective score
<b>Heart &amp; lung function (ascites &amp; SDS)</b>	- O <sub>2</sub> pressure in the blood	Oximeter
<b>Liveability</b>	- Mortality	Alive at 2 and 6 weeks

The breeding companies seek a balance in the breeding goal between reproduction traits, welfare traits, including health traits, and broiler production traits by reviewing the breeding goal regularly taking into account the commercial information from the broiler production chain and routine customer feedback. The relative weighting of the welfare traits in the breeding goal varied from 18% to 33% across breeding companies.

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## SCIENCE TEXTS

### Short Written Texts (Reports)

Von Borell, E., Broom, D.M., Csermely, D., Dijkhuizen, A.A., Hylkema, S., Edwards, S.A., Jensen, P., Madec, F. and Stamataris, C. *The Welfare of Intensively Kept Pigs*. Scientific Veterinary Committee (1997). *Extracts from pp. 18 & 19.*

## THE WELFARE OF INTENSIVELY KEPT PIGS

### 1.6.4 Abnormal behaviours

Abnormal behaviours are those which differ in pattern, frequency or context from those which are shown by most members of the species in conditions which allow a full range of behaviour (Broom and Johnson 1993). There can be abnormalities of feeding, grooming, sexual behaviour etc. One category of abnormal behaviour is the stereotypy. Stereotypies are repeated, relatively invariable sequences of movements which have no obvious purpose (Fraser and Broom 1990). A considerable amount of discussion is focused at present upon stereotypies and their causes, function and consequences for animal welfare. The many studies on this topic have been presented in reviews (Sambraus 1985, Dantzer 1986, Mason 1991) and books (Lawrence and Rushen 1993). Regardless of the function of stereotypies (as a coping mechanism or otherwise), their presence in an animal's behaviour helps to pinpoint the specific problems of the animal's environment for its welfare (Rushen and de Passillé 1992). Stereotypies develop when the animal is severely or chronically frustrated. Hence their development indicates that the animal is having difficulty in coping and its welfare is poor.

Other abnormal behaviours include those which are directly attributable to a physical restriction and those which are responses, perhaps as part of attempts to cope with problems. Confined animals may be unable to show certain movements or take longer to carry out movements, animals on slippery floors may slip or have to modify their lying movements and animals unable to suck the mother's teat may suck something else. Activity, the variety of behaviour shown and responsiveness to stimuli may be much lower in depressed individuals than in those which are not depressed. Social responses may be exaggerated or misdirected.

### 2.8 Choice of farrowing sites

After a pregnancy lasting on average about 115 days both in wild and feral pigs, the sows show a remarkable change in behaviour in the period preceding parturition. In wild boars and feral pigs, some studies indicate that behavioural change may begin already several weeks before parturition, manifested as a higher tendency to stay alone outside the normal home range for long periods of the day (Graves 1984b, Martys 1982). In domestic pigs in seminatural enclosures, sows leave the herd about 24-48 hours before farrowing and wander long distances outside the normal home range, apparently in search of a suitable nest site (Jensen 1987, Jensen 1988b).

The farrowing sites finally chosen have been studied in some detail for domestic sows in semi-natural enclosures, and they usually show some specific features: they are situated well outside the normal home ranges, they are protected horizontally towards at least one side by slopes or large stones, and they are protected vertically by branches (Jensen 1989).

## SCIENCE TEXTS

### Short Written Texts (Reports)

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#### **2.9 Nest building**

When the farrowing site has been chosen the sow commences nest building, which is a typical behaviour of wild and feral sows as well as of domestic pigs. The onset of nest building precedes farrowing by about 16-20 hours, and this appears the same both in wild boar and in domestic pigs (Gundlach 1968, Jensen 1989, Jensen *et al.* 1993).

Both in wild pigs and in domestic pigs in natural surroundings, nest building consists of an initial phase of rooting and pawing, followed by fetching, carrying and arranging grass or other soft material (Gundlach 1968, Jensen *et al.* 1993). Experimental studies of domestic pigs have demonstrated, that even though the behavioural sequence is sensitive to environmental cues, the behaviour is essentially triggered by hormonal changes and is performed largely intact also in complete absence of relevant stimuli (Jensen 1993, Lawrence *et al.* 1994).

#### **2.10 Birth and neonatal behaviour**

In domestic pigs, the new-born young usually manage to find the teats within less than 30 min post partum and during a period of several hours they sample different teats and ingest colostrum (Fraser *et al.* 1995). Piglets failing to ingest colostrum within the first about 20 hours post partum will almost inevitably die (English 1975, Fraser *et al.* 1995).

#### **2.11 Maternal behaviour**

The sudden abandoning of the nest marks a change in the strategy of the piglets from mainly acting as "hidrs" to acting as "followers" (Jensen and Redbo 1987).

## SCIENCE TEXTS

### Short Written Texts (Reports)

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#### 5.2.1 Studies of preferences

Sows show strong preferences for certain resources and for possibilities for carrying out particular behaviours. Where the strength of preference can be assessed by observation and experiment we can discover what is important to the animal. Deprivation of something which is important to the animal makes the welfare of the animal worse. This occurs because of: firstly, the inability of the animal to carry out normal biological functioning and to control its interactions with its environment and secondly, any direct adverse effects of a lack of resource.

Sows show strong preferences for food, water, social companions and the avoidance of danger. They also devote time and energy to exploring their environment and seeking diversity in that environment (Jensen 1980, Stolba and Wood-Gush 1989, Wood-Gush *et al.* 1990). They root in earth and manipulate materials such as straw; pigs will work for access to earth and bedding for manipulation as well as for lying (van Rooijen 1980, 1981, 1982, Hutson and Haskell 1990).

When sows are put into a very small pen, they indicate by their behavioural responses that they find the confinement aversive. If given the opportunity, they leave the confined space and they usually resist attempts to make them return to that place. If moved on the farm after spending some time in a stall or tethered, sows attempt to move around and investigate open spaces rather than doing what the person moving them wants them to do. This is a rebound effect (Bogner 1984, Nicol 1987) where behaviour which has been prevented for some time is shown to a large degree when the opportunity arises.

#### 5.2.2 Stereotypies and other abnormal, non-social behaviour

The most frequent abnormal non-social behaviours which have been reported in studies of the welfare of sows in relation to their housing and management, are stereotypies and apathetic, unresponsive behaviour. As discussed in chapter 1, stereotypies indicate that the individual is having difficulty in coping with its environment and hence that its welfare is poor. The extent of stereotypy gives an indication of how poor the welfare is. Similarly, welfare is also poor in individuals which are abnormally inactive, depressed and unreactive to stimuli which would normally elicit a reaction. Here too, the severity of the effect on the individual, and hence the extent of poor welfare, can be quantified.

Stereotypies such as bar-biting, sham-chewing, drinker-pressing, head-weaving, repeated patterns of nosing in a trough and tongue-rolling have been reported by many authors as occurring in many sows confined in stalls or tethers. Such behaviour is extremely rare in sows kept in complex environments but it does occur, usually at low incidence levels in some sows kept in groups, especially when the amount of food available is low and no manipulable material is provided. Bar-biting cannot be shown in circumstances where there are no bars but other stereotypies which could be shown are not shown. Sows kept in fields may chew stones, particularly when food availability is limited but it is not clear that this behaviour is stereotyped. In general, stereotypies are a characteristic behaviour of sows confined in a small space, typically in stalls or tethers, with little complexity in their environment and little possibility for the sow to regulate her interactions with all aspects of her environment.

## SCIENCE TEXTS

### Short Written Texts (Reports)

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In all studies of stereotypies in sows, three factors must be taken into account. One is whether or not they are confined in a stall or by a tether, the second is the level of energy providing food which is available to them, and the third is the presence or absence of manipulable material such as straw. The amount of freedom and the design of the stall or tether can also have some effect. These three factors are interactive in their effects. The worst condition for the sow, as judged by the extent of stereotypies, is to be confined in a stall or tether, to have a level of feed which is below that required for body and foetus maintenance and growth, and to have no manipulable material present. If the food level is increased to that typical of dry sow production systems, the extent of stereotypy may be reduced by a small amount. If food level is doubled it can be reduced further but such a change is very unlikely to occur in commercial pig production. In order to avoid the welfare problems which are indicated by this measure, the sows must not be confined in a stall or tether, they must be given enough high energy food for body and foetus maintenance and growth, and must have some bulky food and manipulable material available to them.

The existence of apathetic behaviour in some sows was pointed out by van Putten and Dammers (1976). A parallel can be shown with depressed behaviour in humans and learned helplessness in a variety of species (Seligman 1975). Since inactivity and unresponsiveness are the measurable aspects of apathy, this abnormal behaviour is open to measurement (Wiepkema *et al.* 1983). In studies of sows in stalls and in groups, Broom (1986, 1987) measured their responses to food, and to controlled novel stimuli. The sows in stalls responded readily to food but were much less responsive to other stimuli than were the group-housed sows. This abnormal inactivity and unresponsiveness in confined sows is very widespread. Most authors who have measured confined sow activity levels have reported that, with the exception of some very high stereotypers, they are very low (e.g. 12% Vestergaard 1984) in comparison with sows in environments where they have opportunity for exercise and exploration (e.g. 56% of time active Wood-Gush *et al.* 1990). Farmers often comment that their stall-housed or tethered sows are lying for much of the day. Since the extent of the inactivity and unresponsiveness indicates abnormal behaviour, the sows may well be depressed in the clinical sense and poor welfare is indicated. Some sows show this abnormal behaviour as an alternative to stereotypies and there are brain correlates of both of these types of abnormal behaviour (Section 5.2.5).

When sows are confined in stalls and tethers, the associated lack of exercise has consequences for muscle mass and bone strength (Marchant and Broom 1996a) and for behaviour. Schmid and Hirt (1993) demonstrated that sows restrained whilst growing chose to lie down whilst leaning against a wall on 77% of occasions as compared with only 3% of occasions for sows loose-housed during growth. The time taken by sows to lie down was 20 seconds in stall-housed sows but only 9 seconds in group-housed sows and the duration of lying was associated with the proportional weight of the extensor carpi radialis muscles (Marchant and Broom 1996b). These stalls were 2.2 x 0.6 m but in smaller stalls, lying problems would be greater. Confined housing leads to problems for sows in relation to these important movements and hence may affect the likelihood of squashing piglets after these are born.

## SCIENCE TEXTS

### Short Written Texts (Reports)

Von Borell, E., Broom, D.M., Csermely, D., Dijkhuizen, A.A., Hylkema, S., Edwards, S.A., Jensen, P., Madec, F. and Stamataris, C. *The Welfare of Intensively Kept Pigs*. Scientific Veterinary Committee (1997). *Extracts from pp. 97 & 98.*

#### 5.2.7 Body function and injuries

The effects of lack of exercise in sows which are tethered or in stalls is to reduce the mass of some muscles which are particularly concerned with locomotion so that several of these are smaller, in proportion to body weight, than in group-housed sows (Marchant and Broom 1996). As mentioned in Section 5.1.3., these changes affect ability to lie down. Lack of exercise also affects bone strength and stall-housed sows had leg bones which were only two thirds of the strength of those of group-housed sows. Although having weaker bones means that the animal is less well able to cope with its environment, sows seldom break their legs. Sows in both confined and group-housing conditions may have leg problems.

Bäckström (1973) found that the number of traumatic injuries caused by pen fittings and flooring was 6.1% in confined sows but 0.8% in loose housing. Most studies of leg injuries and infections which cause lameness have related their incidence to the type of flooring. de Koning (1983) utilised a precise method for quantifying integumental lesions and has reported that such lesions can be of high frequency in tethered sow units. It is clear from practical veterinary experience that lameness can occur in group-housing as well as in stalls and tethers but research results suggest that on well managed units with good flooring the problem may be worse amongst confined sows. If group-housing systems are not well managed, for example if the animals are fed high energy food more than once per day or if new animals are introduced frequently, there may be interactions which increase the chances of fighting injuries and leg injuries and this may explain some atypical results (e.g. den Hartog *et al.* 1996).

All of these effects of housing system on leg problems and leg weakness are significant because of any direct painful effects on the animal but also because weak bones or lameness mean poorer ability to cope with the environment and perhaps earlier death as a consequence. Christenson *et al.* (1995) reported that the commonest problem in sow mortality cases was leg weakness (28.5%).

Another consequence of lack of exercise in stall-housed and tethered sows is that they use their cardiovascular system less. This is significant in the situation where many pigs which die during transport are diagnosed as having cardiovascular problems. In a study of heart-rate responses to a feeding situation, Marchant and Rudd (1993) concluded that the level of cardiovascular fitness in stall-housed sows was less than that in group-housed sows.

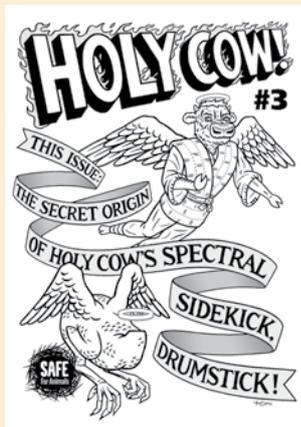


## Saving Lucy

### TV advert competition!

Watch SAFE's Saving Lucy advertisement, bet a \$3 donation to help pigs like Lucy, and go into the draw to win this cruelty free hamper worth \$500!!

[CLICK HERE TO ENTER DRAW](#)



# Hi! I'M LUNCHEON

I am sick, lame and live in pain.

**SAFE** LovePigs.org.nz

# SAY NO TO CRUEL PORK

**SAFE** LovePigs.org.nz

# Hi! I'M HAM

They never let me outside.

**SAFE** LovePigs.org.nz

## SOCIAL STUDIES TEXTS

Written and Visual Texts (Advertisements)

'Your Say Matters!' Advertisement. SAFE (2010).



# YOUR SAY MATTERS!

It's time for you to help change the law so that cruel sow and farrowing crates are banned.

## HAVE YOUR SAY. SIGN NOW.

SUBMISSIONS TO AMEND THE PIG CODE OF WELFARE CLOSE 16 APRIL 2010



Dear John Key

I seek your help to protect factory-farmed pigs in New Zealand.



As you are aware, thousands of sows are cruelly confined in tiny stalls and farrowing crates that are in breach of the Animal Welfare Act 1999 (AWA). The pig code is under review, however I am not confident the National Animal Welfare Advisory Committee (NAWAC) will phase out these appalling confinement systems despite widespread public opposition to them.

This is my submission calling on NAWAC to a) uphold the principles of the AWA and b) ban sow stalls and farrowing crates immediately. Pigs have suffered for too many years.

Prime Minister, please pass my submission on to NAWAC, and I ask you to use your influence to ensure that pigs no longer have to endure these cruel confinement systems. Thank you.

NAME

SIGNATURE

ADDRESS

### POST COMPLETED SUBMISSION FORM TO:

Prime Minister John Key, Parliament Buildings, Wellington. No stamp required.

### HAVE YOUR SAY ONLINE:

For latest news and updates visit our LovePigs website.

[lovepigs.org.nz](http://lovepigs.org.nz)



## SOCIAL STUDIES TEXTS

Written and Visual Texts (Advertisements)

'Saving Lucy'. TV Advert. SAFE (2008).



# Saving Lucy

## TV advert competition!

Watch SAFE's Saving Lucy advertisement, pay a \$3 donation to help pigs like Lucy, and go into the draw to win this cruelty free hamper worth \$500!!!

[CLICK HERE TO ENTER DRAW](#)



## SOCIAL STUDIES TEXTS

Written and Visual Texts (Advertisements)

'Finally, this pig has enough room to turn around'. Advertisement. SAFE (May 2009).



Finally, this pig  
has enough room  
to turn around.

A photograph of a pig's head, including its snout and ears, curled up and cooking in a dark, circular frying pan. The pan is set against a plain white background. The lighting is dramatic, highlighting the texture of the meat and the shape of the pan.

Over 20,000 mother pigs  
in New Zealand spend most  
of their lives in cages not  
much bigger than their  
bodies. Help us stop this  
cruel practice. Make sure  
you don't buy factory farmed  
pork, bacon or ham. For more  
information on how to help,  
go to [www.lovepigs.org.nz](http://www.lovepigs.org.nz)

SAFE

© SAFE Inc 2009. 'Finally, this pig has enough room to turn around'. SAFE Advertisement. Reproduced with permission.

## SOCIAL STUDIES TEXTS

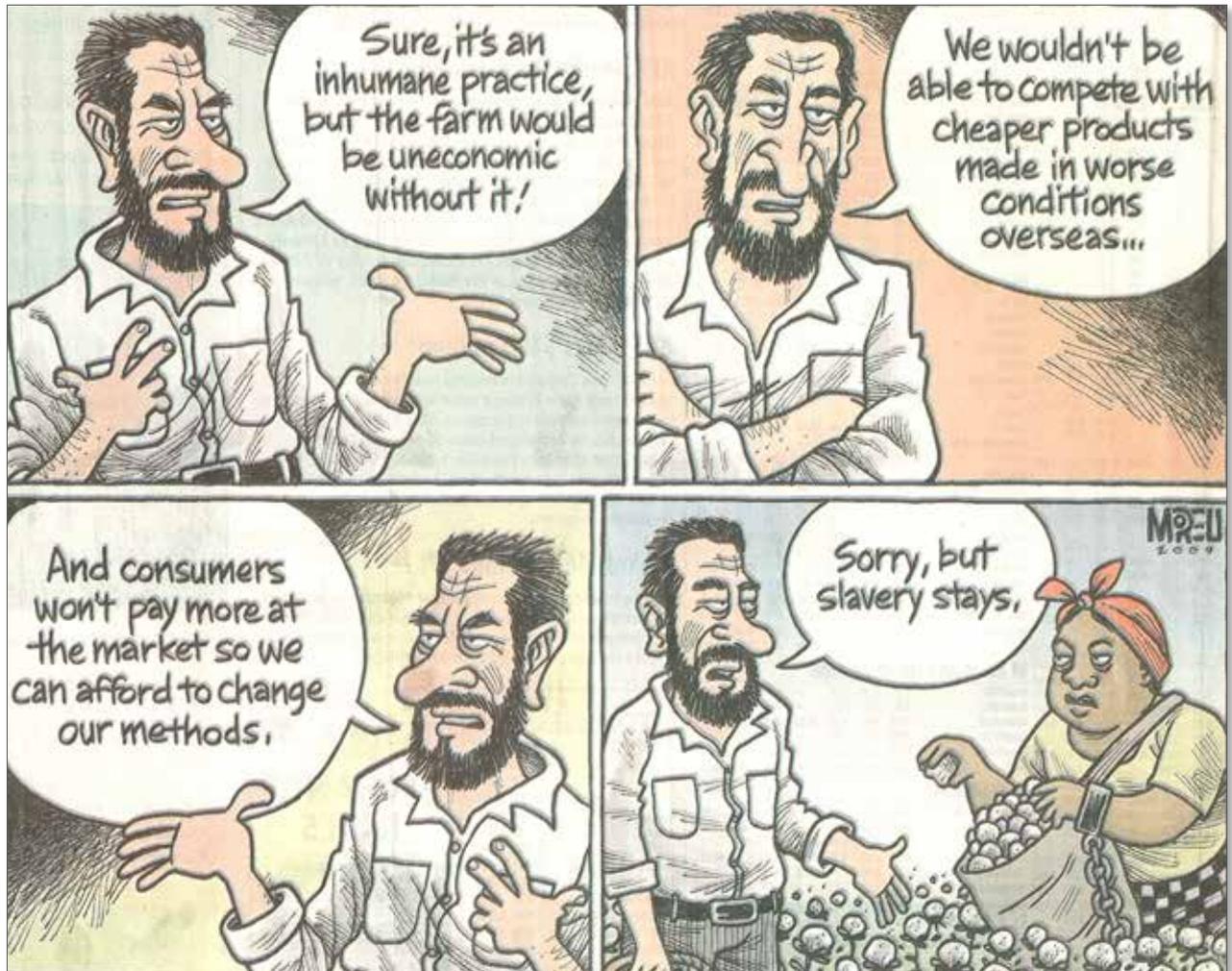
Written and Visual Texts (Banners)

'Ban the Sow Crate'. Banners. SAFE (2006).



Written and Visual Texts (Cartoons)

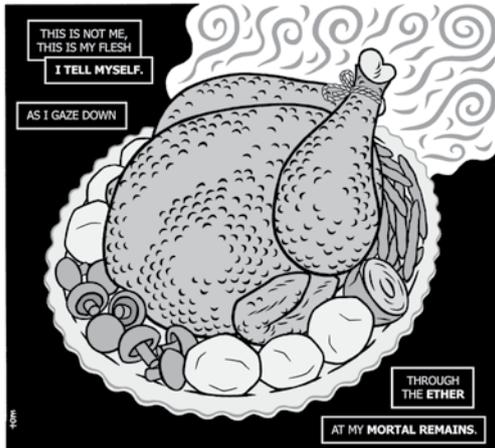
'Sure, it's an inhumane practice, but the farm would be uneconomic without it!' Manawatu Standard. Michael Moreu (20 May 2009).



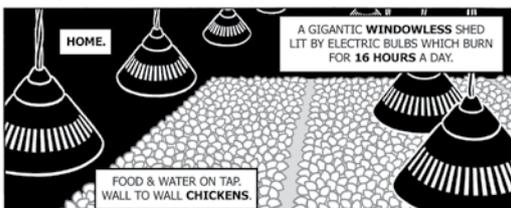
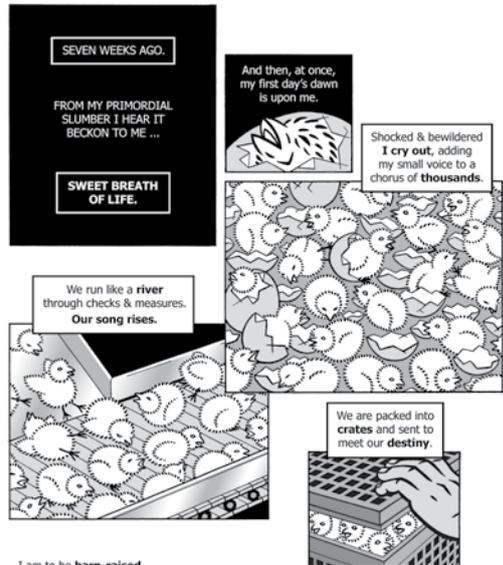
# ENGLISH TEXTS

Written and Visual Texts (Cartoons)

Williamson, Tom. 'Secret Origin. Holy Cow! No. 3'. SAFE (2005).



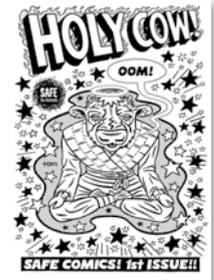
**SAFE** For Animals **SECRET ORIGIN**



# ENGLISH TEXTS

Written and Visual Texts (Cartoons)

Williamson, Tom. 'The Price of Cheap Pork. Holy Cow! No. 1'. SAFE (2005).



Life for wild pigs is a generational saga played out on nature's canvas. They may live for 25 years or longer in families and small groups. Litters can range from 4-13 piglets and are nursed for 3-4 months before weaning. In captivity things are different...

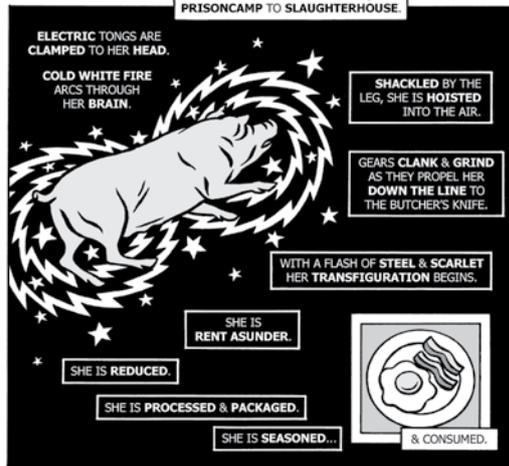
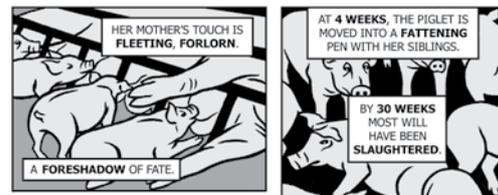
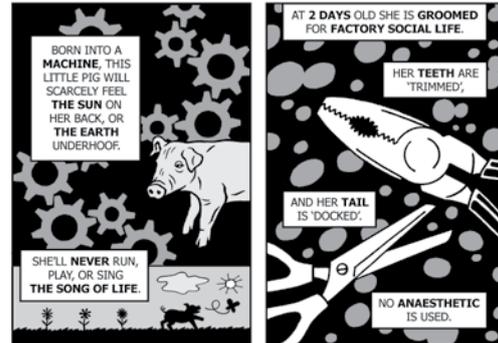
**SAFE Presents The Price of Cheap Pork**



A METAL CAGE WITH A CONCRETE FLOOR.  
A FARROWING CRATE.



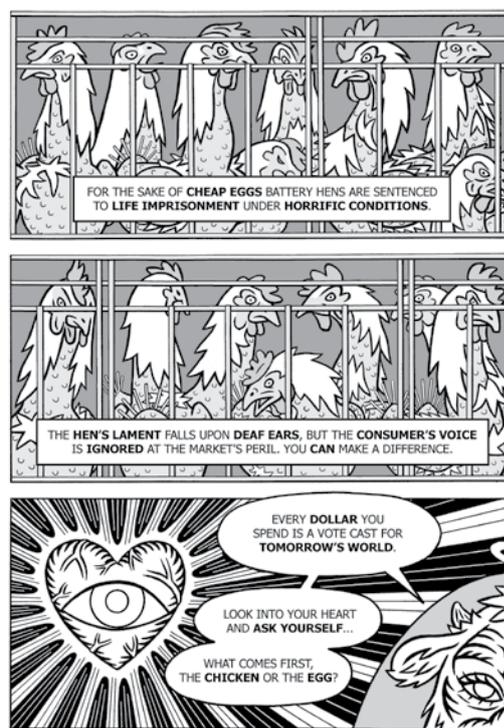
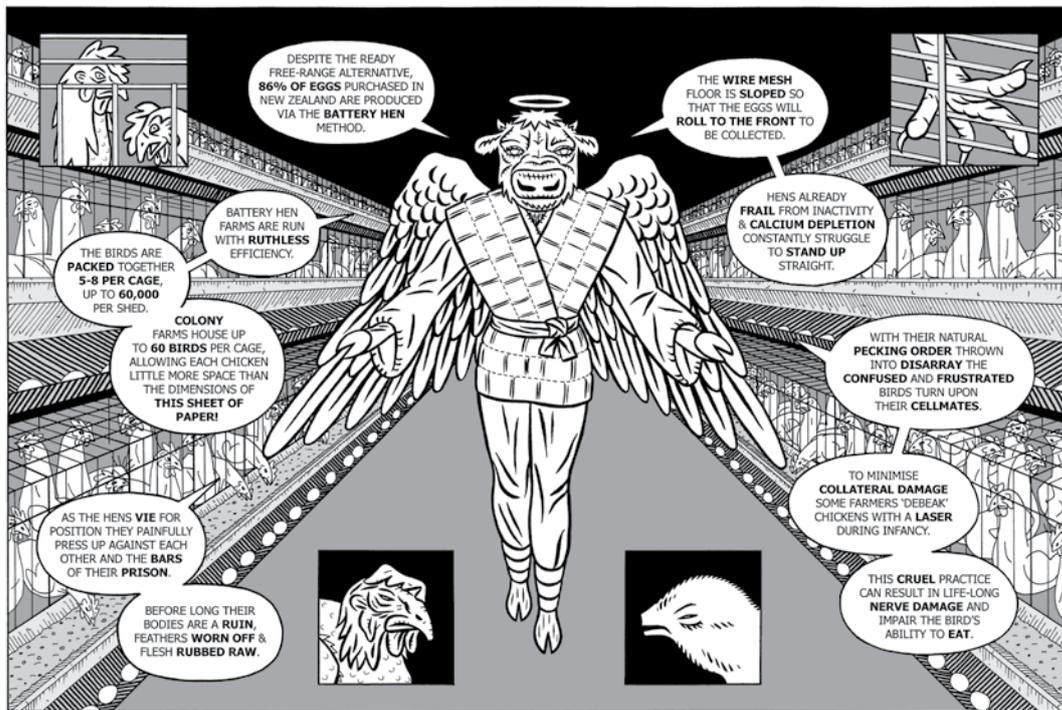
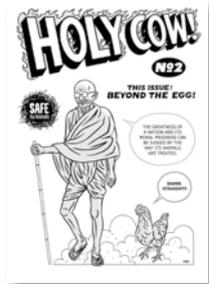
HERE SHE WILL KNOW MOTHERHOOD.  
BIRTH, LOVE AND LOSS THROUGH BARS.



# ENGLISH TEXTS

## Written and Visual Texts (Cartoons)

Williamson, Tom. 'Beyond the Egg! Holy Cow! No. 2'. SAFE (2005).



# SOCIAL STUDIES TEXTS

## Written and Visual Texts (Leaflet)

'For the love of pigs...'. Leaflet. SAFE (June 2007).



LOVEPIGS.ORG.NZ
SAFE'S FREEDOM FOR PIGS CAMPAIGN

# FOR THE LOVE OF PIGS...



**Actress Angela Bloomfield says ...**  
 "While pigs continue to be disrespected, we have a problem. SAFE offers us easy access to change it if we all work together. Take the time to write a letter and send it to your MP ... it's that easy!"



### SOW STALL CRUELTY



A sow can spend all or part of her 16-week pregnancy in a narrow stall on a bare concrete floor. She can only stand up or lie down. Kept in semi-darkness she repeatedly bites in frustration at the metal bars. This severe confinement can lead to abnormal behaviour, leg weakness and health problems. In New Zealand approximately 22,000 sows will suffer in stalls.

Sow stalls are banned in the United Kingdom and Sweden and will soon be phased out in Poland, Switzerland, the Netherlands and Denmark.



Idyllic images of tranquil farm animal life are imprinted on us from childhood – happy and contented animals blissfully living life freely outdoors.

The reality for most farmed animals could not be further from the truth.

In New Zealand most pigs lead a miserable existence inside dark, overcrowded pens or in crates so small they can't even turn around.

### DEPRIVED FREEDOM



At the end of her pregnancy, she is placed in a farrowing crate where she will give birth. Again, she can only stand up and lie down. With no straw, she is unable to build a nest for her piglets. Her inability to express her normal mothering behaviour causes frustration and can lead to depression. Her piglets are often taken away at a mere four weeks of age. The grieving sow is usually impregnated again and returned to the sow stall where the cycle of abuse starts all over again.

Ordinarily, a pregnant sow will construct a private nest to give birth to her babies.



**'FARMED' FOR PORK**



Separated from their mothers, piglets spend the remainder of their short lives crammed inside dark, overcrowded pens on concrete or wooden-slatted floors. The piglets are unable to roam, dig or play. The stress of living under such harsh conditions can cause the piglets to bite each other's tails. This can lead to more serious forms of cannibalism. To combat this, farmers usually cut off the piglets' tail in their first week of life, instead of providing the animals with more space.

Around 850,000 pigs are farmed and slaughtered each year in New Zealand.

## HELP SAFE END PIG CRUELTY

**Former Miss New Zealand Kay Anderson says ...**  
 "Pigs are very sensitive creatures with great intelligence. They must suffer terribly inside factory farms. Please join me in supporting SAFE's campaign against pig cruelty."

**YES, YOU HAVE MY SUPPORT TO HELP FREE THE PIGS BY DONATING:**  
 \$10    \$25    \$50    \$100    \$500    OTHER \_\_\_\_\_

**DONATE OVER \$10 AND RECEIVE YOUR PIG RESCUE PACK (WITH WAYS TO HELP PIGS)**

NAME: \_\_\_\_\_ SIGNATURE: \_\_\_\_\_  
 ADDRESS: \_\_\_\_\_  
 PHONE: \_\_\_\_\_ EMAIL: \_\_\_\_\_  
 MOBILE: \_\_\_\_\_

**CREDIT CARD**    VISA    MASTERCARD    AMERICAN EXPRESS

ACCOUNT: \_\_\_\_\_ EXPIRY: \_\_\_\_\_

**CHEQUE**    I ENCLOSE MY CHEQUE PAYABLE TO SAFE FOR \$ \_\_\_\_\_

POST TO: LOVEPIGS, SAFE, PO Box 13366, Christchurch 8141   [WWW.SAFE.ORG.NZ](http://WWW.SAFE.ORG.NZ)



**SAY NO TO CRUEL PORK!**

Love Pigs, not Pork!



# SOCIAL STUDIES TEXTS

Written and Visual Texts (Mail-out)

'Meet Lucy - Give Pigs a Chance'. Mail-out. SAFE (2010).



SAFE'S LOVEPIGS NATIONAL APPEAL



## MEET LUCY...

She spends most of her life in a small metal-barred cage. She can't walk or turn around. Her life is filled with misery and frustration. You can help save her.

SAFE

The Animal For All Animals

lovepigs.org.nz

# GIVE PIGS A CHANCE



**FOR THE PAST THREE** years SAFE has made pig welfare its top campaign issue. In the process SAFE has become New Zealand's most proactive animal advocacy organisation. The pressure created by SAFE is likely to see the Government ban sow stalls from 2018 but eight years is still a long way off and pigs will still be confined to farrowing crates. SAFE is determined to end all pig cruelty and significantly improve the living conditions for those intelligent and sensitive animals. When SAFE and comedian Mike King exposed the plight of pigs on Sunday in April 2009, the nation was shocked, yet nearly two years on we still have thousands of sows in crates! It is up to us all to stand up in defence of pig welfare. SAFE's LovePigs campaign has already had an enormous effect within New Zealand, resulting in an ever-increasing change in the way politicians, consumers and the media think about cruel factory farming practices.



Tens of thousands of sows will continue to be confined to cruel farrowing crates.

**DONATE TO SAFE'S EXCITING CAMPAIGN TO HELP PIGS**

**PIGS ON AIR!**  
\$250 donation will fund hard-hitting radio adverts reaching tens of thousands of listeners!

**PIGS ON BILLBOARDS!**  
\$100 donation will keep our six metre billboard visible in a busy inner-city intersection.

**PIGS ON THE STREET!**  
\$50 donation will ensure the placement of our large colour posters on the street!

**LOBBYING FOR PIGS!**  
\$25 donation will help circulate 250 consumer postcards used to lobby MPs for a ban on cruel farming practices.

**TV HOST BRENDON PONGIA** (Good Morning) says, "The way pigs are treated is disgusting. The Pork Industry needs to be accountable for their actions. It's disgraceful that any living being should be treated this way. Make a change."

**PIZZA MAKER AND ACTOR TAIKA WAITITI** says, "It's not necessarily a question of who you eat, but rather where that food comes from... I support the work of SAFE and hope that one day the inhumane treatment of pigs in New Zealand disappears completely."

**SAFE IN ACTION**

- ◆ SAFE's first eye-catching billboards calling on the public to boycott cruel pork are placed in Auckland, Wellington and Christchurch. Feedback to date is that they're vitally striking.
- ◆ Outrageous Fortune star Robyn Malcolm and SAFE director Hans Kriek discuss the status of the pig industry, and where to go from here, in a new online campaign message. [Youtube: SAFEAnimalAdvocacy](#)

**PIGGY CHAMPIONS**

Comedian **Mike King** has done more to expose pig cruelty than almost anyone in New Zealand. He's not the only celebrity supporting SAFE's LovePigs campaign, however: actor **Glin Wignmore**, Go Girl actor **Tania Nolan**, Former Fox Go presenter **Kevin Milne**, Lovey Bones actor **Rose McIver** and Outrageous Fortune actor **Antony Starr** are just a few of the others!



◆ SAFE produces 30,000 consumer postcards calling on MPs to support a ban on sow stalls and battery cages.

◆ SAFE's 'Help Lucy' TV advertisement returns to air on TV3 and C4 until January 2011, reminding viewers that sows still need help.

◆ SAFE successfully launches its 'Don't be Fooled' campaign outside a New World supermarket in Wellington.

# SOCIAL STUDIES TEXTS

## Written and Visual Texts (Campaign Report)

'Campaign Report 2008'. Campaign Report. SAFE (2008).



www.safe.org.nz
CAMPAIGN REPORT 2008

**Showcasing SAFE activities, victories and campaign updates**

This campaign report makes splendid reading. It showcases many of SAFE's accomplishments, successes and victories throughout 2008. I take great pride in trumpeting SAFE's victories and momentous occasions because I know everyone at SAFE has worked exceptionally hard and deserves the recognition. They give their best, which is why I am excited that this campaign report is an opportunity to celebrate how their efforts, with your support, have helped animals.

2008 has been an outstanding year for SAFE. While still a modest organization the level of activity, support and growth is inspiring. We have definitely matured into an effective and confident voice for the animals in New Zealand. This year SAFE launched a world-class humane education resource focused on animal rights. We successfully convinced Auckland City Council to ban rodeos, and Canterbury University to go caged egg-free. We have had great media coverage, launched five new websites and welcomed the support of many top New Zealand celebrities, including Guinness Fortune star Robyn Malcolm. The same is true for ethically minded businesses that recognise the value of supporting SAFE and the issues.

By my reckoning, 2008 has been SAFE's greatest year of achievements in our 75-year history. We are ending the year victorious knowing we have helped advance the animal rights movement in New Zealand. More importantly, we know we are making a significant difference to the lives of animals, and this feeling is priceless. I pay tribute to those who have been part of the crusade over the year to make this a more compassionate world for animals. Bring on 2009!

Anthony Terry, Director

## LovePigs

**TV ADVERT A HIT!**  
SAFE's campaign to end cruel pig farming practices continues to receive overwhelming attention and support from the New Zealand public. SAFE's 'Saving Lucy' television advertisement, screening recently on TV3 and C4, has been a huge success. The fantastic response to the advert has resulted in thousands of dollars in donations and the enlistment of thousands of more supporters. Internet traffic on the LovePigs website increased from 20,000 to 140,000 hits in one month alone!

**EXPOSING ABUSE**  
Presentation flip charts, stalls and library displays, the distribution of thousands of campaign packs and the production of 150,000 colourful LovePigs leaflets all helped highlight the plight of pigs in New Zealand. SAFE also commissioned the making of 15 life-like model sow crates now used on almost all information stalls.

**PIGS DESERVE COMFORT, NOT CRUELTY!**

"I am thrilled we are now able to provide all of our active volunteer centres with these model pigs," says campaign director Hans Kriek.

"These pigs are a work of art and are amazingly realistic. They are perfect to illustrate the close confinement of sows in a manner easily related to by the public. We receive many comments from people who see them. Most people will never witness the cruelty of a pig factory farm so our model pigs are as close as they will ever come to being exposed to this kind of animal abuse. It is great to see people responding to the pigs and pledging to no longer eat factory farmed pigs."

**PIGS BUST'D!**  
SAFE's latest campaign initiative involves three little pigs travelling around on public transport taking the message to a captive audience. The thought-provoking signage and handouts remind commuters that pigs are more than merely ham, pork and luncheon!

**PIGGERY CANNED!**  
After making a submission to the local council SAFE was overjoyed to hear Environment Waikato had declined a resource consent application to build what would have been New Zealand's largest pig farm. "We are delighted to hear that the resource consent has been declined," says campaign director Hans Kriek. "If this farm had been allowed to proceed, tens of thousands of pigs would have been condemned to a life of misery inside this monstrous farm."

**TAKE ACTION**

- 1) Take the LovePigs pledge. Visit: [www.lovepigs.org.nz](http://www.lovepigs.org.nz)
- 2) Don't buy factory farmed bacon, ham or pork products.
- 3) Buy one of our latest designer campaign t-shirts (see catalogue on page 7).
- 4) Support the campaign by making a donation.

**SHOULDER PIGGY!**  
Get yourself looking rather supermarket savvy with a 'LovePigs, Not Pork' re-usable shopping bag. A mere \$2 helps spread the message and helps protect the environment. Order at [www.ChooseCrueltyFree.org.nz](http://www.ChooseCrueltyFree.org.nz)

PO Box 13366, Armagh, Christchurch, 8141.  
E: [safe@safe.org.nz](mailto:safe@safe.org.nz) P/F: 03 379 3711

## SOCIAL STUDIES TEXTS

Written and Visual Texts (Merchandise)

'Love Pigs'. Merchandise. SAFE (2007).



# SOCIAL STUDIES TEXTS

Written and Visual Texts (Pledge)

'Take the Pledge Against Pig Cruelty'. Pledge. SAFE (2009).



# TAKE THE PLEDGE AGAINST PIG CRUELTY



**RECEIVE YOUR FREE SHOPPING PAD!**



## USE YOUR CONSUMER POWER EACH TIME YOU SHOP to end pig cruelty on factory farms.



DEAR SUPERMARKET MANAGER

As a loyal customer I am concerned that your supermarket stocks factory farmed pork products. I urge you to stop selling pork, bacon and ham products from farms that use pig crates or fattening pens.

In the meantime, please identify the farming methods used on the packaging. This provides vital information I need to make informed buying decisions.

.....

FULL NAME \_\_\_\_\_ SIGNED \_\_\_\_\_

Sign a pledge card each time you shop to keep reminding your supermarket that you seek their support to help pigs. Please hand to the teller to give to the manager or place in their suggestion box.

© SAFE Inc 2009. 'Take the Pledge'. SAFE Pledge. Reproduced with permission.

# SOCIAL STUDIES TEXTS

Written and Visual Texts (Postcards)

'Lobbying for Lucy'. Postcards. SAFE (2006).



**VOTERS AGAINST PIG CRUELTY**

**LOBBYING  
LOBBYING FOR LUCY**

Factory-farmed pigs like Lucy are kept in cruel confinement systems that have been found to breach New Zealand animal welfare legislation. Despite this, the Minister of Agriculture has failed to ban these practices. We now need your help to convince the Minister to do his job and enforce the law to protect pigs like Lucy.

**Please help convince the Minister to do his job by enforcing the law to protect animals in New Zealand from cruelty.**



The voice for all animals

Date: \_\_\_\_\_

I am a member of your constituency and seek your help to protect factory farmed pigs. Please use your influence to ensure that the Animal Welfare Act (AWA) is upheld.

At present thousands of pregnant sows are cruelly confined in stalls and farrowing crates. These cages are so narrow the animals cannot even turn around. Sow stalls and farrowing crates do not allow pigs to express their normal behaviour as is required under the AWA. Only a minority of pig farmers in New Zealand still use sow stalls. The vast majority use alternative systems and have done so for decades. Despite the obligations of the AWA, the Minister of Agriculture, Jim Anderton still has not acted to phase out these illegal confinement systems.

Please urge Mr Anderton to uphold the principles of the AWA and phase out sow stalls and farrowing crates without undue delay. Please let me know what action you intend to take on this matter.

Name: \_\_\_\_\_

Address: \_\_\_\_\_

Signature: \_\_\_\_\_

To find your local MP go to: [www.parliament.nz/en-NZ/MPP/MPs/MPV](http://www.parliament.nz/en-NZ/MPP/MPs/MPV)

Write name of your MP

**Parliament Buildings  
WELLINGTON**

**QUIT STALLING!**



The voice for all animals

[www.safe.org.nz](http://www.safe.org.nz)

# SOCIAL STUDIES TEXTS

## Written and Visual Texts (Postcards)

'Are Your Customers Fed Up with Pig Cruelty?' Postcards. SAFE (2006).



**VOTERS AGAINST PIG CRUELTY**

**LOBBYING FOR LOBBYING FOR LUCY**



Factory-farmed pigs like Lucy are kept in cruel confinement systems that have been found to breach New Zealand animal welfare legislation. Despite this, the Minister of Agriculture has failed to ban these practices. We now need your help to convince the Minister to do his job and enforce the law to protect pigs like Lucy.

**Please help convince the Minister to do his job by enforcing the law to protect animals in New Zealand from cruelty.**





**ARE YOUR CUSTOMERS FED UP WITH PIG CRUELTY?**



**To the Manager/Owner of my favourite eatery...**

After learning about how pigs are raised on New Zealand factory farms, I have become sensitive to pig welfare. It upsets me to think that these intelligent animals are kept in small crates and overcrowded pens. I have pledged to no longer buy or eat intensively farmed bacon, ham and pork. I am asking you, as the manager of one of my favourite eateries, to also help pigs by investigating alternatives to the factory farmed pig products you use in your establishment.

The organisation leading the campaign against pig cruelty is offering you free information so you can make a considered decision on this matter. I hope you will accept this offer by returning this card to the free post address.

Customer name:

Phone/Email:

**SUPPORTER RESPONSE**

**LOVE PIGS LOVE PIGS!**

"I've been a vegetarian for 10 years but I've decided to eat meat again!"



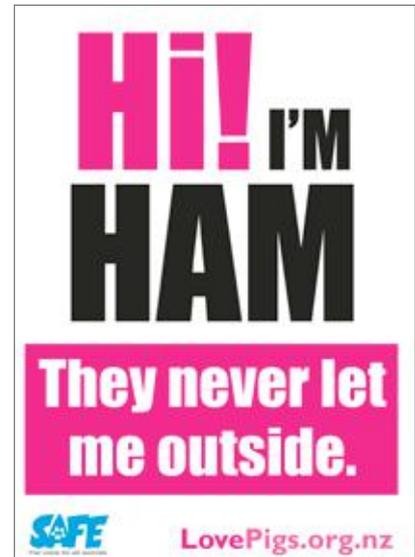
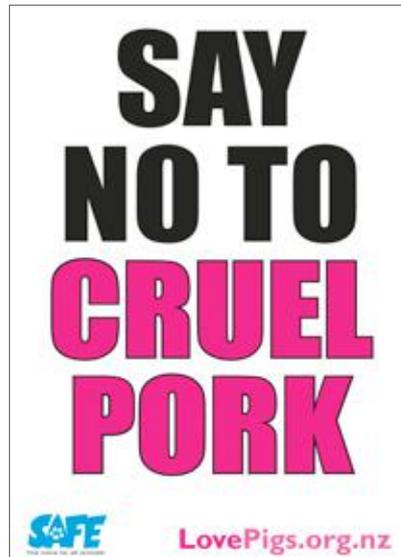
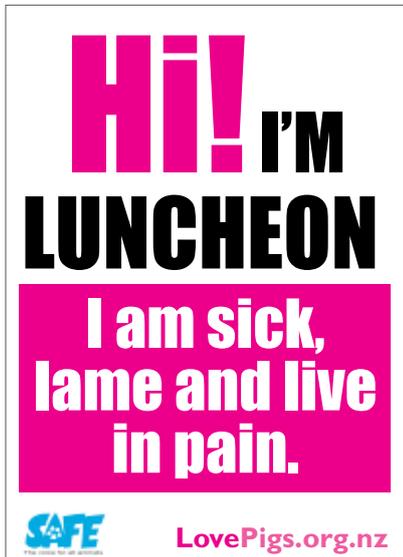


**Help protect pigs in New Zealand by being part of SAFE's FREEDOM FOR PIGS campaign.**

## SOCIAL STUDIES TEXTS

Written and Visual Texts (Posters)

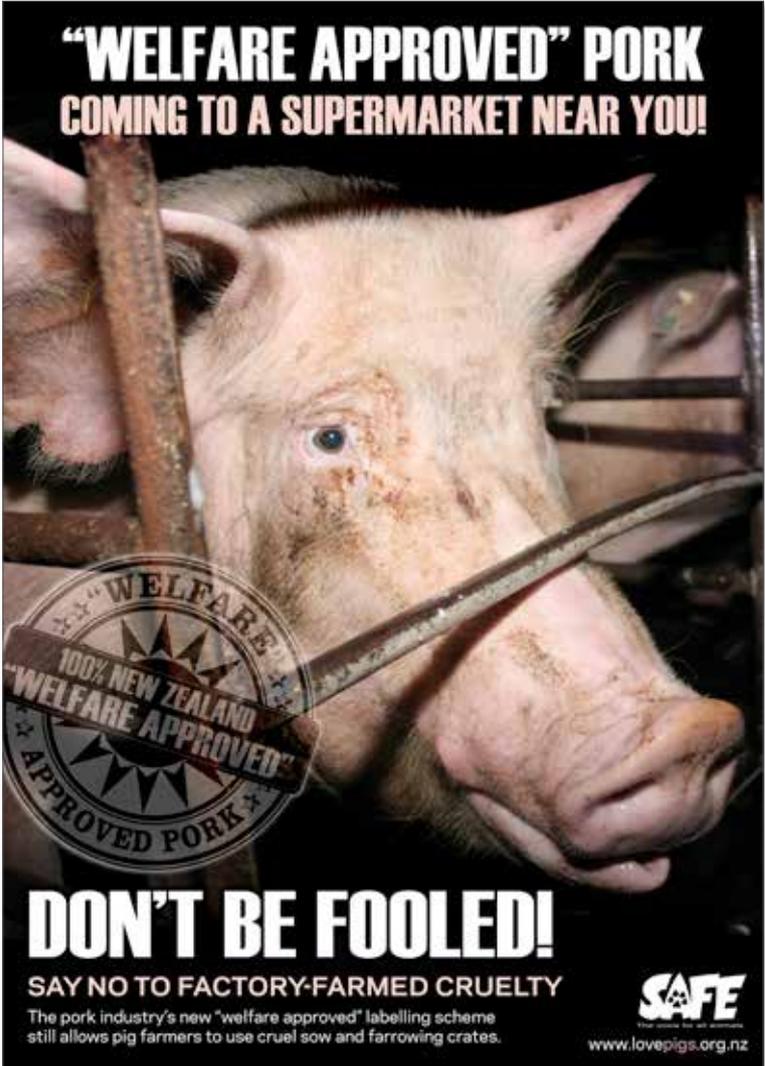
'Hi! I'm...'. Posters. SAFE (2008).



**SOCIAL STUDIES TEXTS**

Written and Visual Texts (Street Poster)

“Welfare Approved” Pork – Don’t be Fooled! Street Poster. SAFE (July 2010).



© SAFE Inc 2010. “Welfare Approved” Pork – Don’t be Fooled! SAFE Street Poster. Reproduced with permission.

# SOCIAL STUDIES TEXTS

Written and Visual Texts (Posters)

'Freedom for Pigs Campaign'. Posters. SAFE (September 2008).



LOVEPIGS.ORG.NZ SAFE'S FREEDOM FOR PIGS CAMPAIGN

## NO LIFE FOR ANY MUM




All the end of her pregnancy, the sow is placed in a farrowing crate where she will give birth.



She can only stand up and lie down. Her inability to express her normal mothering behaviour causes stress and can lead to depression. Her piglets are taken away at only four weeks of age.



The growing sow will be impregnated again and returned to the sow stall where the cycle of abuse starts all over again.

\* Outdoors, pregnant sows construct a private nest in which to give birth to, and suckle, their babies.

Love Pigs, not Pork! SAFE

LOVEPIGS.ORG.NZ SAFE'S FREEDOM FOR PIGS CAMPAIGN

## FOR THE LOVE OF PIGS...




Idyllic images of tranquil farm animal life are imprinted on us from childhood – happy and contented animals blissfully living life freely outdoors.



The reality for most farmed animals could not be further from the truth.



In New Zealand most pigs lead a miserable existence inside dark, overcrowded pens or in crates so small they can't even turn around.

**SAY NO TO CRUEL PORK!**

Love Pigs, not Pork! SAFE

LOVEPIGS.ORG.NZ SAFE'S FREEDOM FOR PIGS CAMPAIGN

## SOW STALL CRUELTY




A pregnant sow is kept in a narrow stall on a concrete floor. She can only stand up or lie down.



Out of frustration, she will repeatedly bite at the metal bars around her. This severe confinement can lead to abnormal behaviour, leg weakness, and health problems.



In New Zealand approximately 22,000 sows will suffer in stalls.

\* Sow stalls are banned in the United Kingdom and Sweden and will soon be phased out in Finland, Switzerland, the Netherlands and Denmark.

Love Pigs, not Pork! SAFE

LOVEPIGS.ORG.NZ SAFE'S FREEDOM FOR PIGS CAMPAIGN

## WAYS YOU CAN HELP




Say no to cruel pork!  
At the very least, have a pork-free week once a month!



Ask your favourite café or restaurant to not use factory-farmed pork.



Contact your local MP and ask for legislation that will end cruel factory farming practices.

Become a SAFE volunteer or make a donation. Donate over \$10 and receive a cool pig information pack.

Contact: SAFE, PO Box 13366, Christchurch  
Ph/Fax: 03 379 9711 Email: safe@safe.org.nz

Love Pigs, not Pork! SAFE







SECTION 3

# OTHER RESOURCES, LINKS & GLOSSARY





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- **Coe, Sue.**  
***Cruel: Bearing Witness to Animal Exploitation.***  
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*Cruel conveys the terrible beauty, and intense suffering, of both the animals so sacrificed and the workers involved in their violent destruction. While unexpectedly beautiful in its depiction of the brutal consequences of meat eating, this is a deeply moving, upsetting work, not for the faint of heart. Armed only with her sketchpad, Coe is often allowed access to places no photographer or reporter is admitted: the result is a passionate testimony to the waste and violence perpetrated by one species against so many others.*
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*production with little labour.*

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*Are non-human animals our friends or enemies? In this provocative book, Dinesh Wadiwel argues that our mainstay relationships with billions of animals are essentially hostile. The War against Animals challenges us to examine this idea in all aspects of our lives, as individuals and as a society.*



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## WEBSITE LINKS

Accessed 8 May 2016

- Animal Aid (United Kingdom)**  
[www.animalaid.org.uk/](http://www.animalaid.org.uk/)  
*Animal Aid is the UK's largest animal rights group. They campaign peacefully against all forms of animal abuse and promote a cruelty-free lifestyle. They investigate and expose animal cruelty, and their undercover investigations and other evidence are often used by the media, bringing these issues to public attention.*


- Animals & Society Institute**  
[www.animalsandsociety.org/](http://www.animalsandsociety.org/)  
*The Animals & Society Institute develops knowledge in the field of human-animal studies, supports practices to address the relationship between animal cruelty and other violence, and promotes action to protect animals through the adoption of ethical, compassionate public policy.*


- Animal Liberation Victoria (Australia)**  
[www.alv.org.au/](http://www.alv.org.au/)  
*Animal Liberation Victoria (ALV) was founded over 35 years ago, with the mission of saving lives and ending animal exploitation. What sets ALV apart from the majority of other animal organisations is that they will never support calls for bigger cages or more 'humane' killing: they fight to end violence against animals, not regulate it. ALV believes that all sentient beings, regardless of species, have the right to be treated as independent entities and not as the property of others.*


- Animal Sanctuary (Aotearoa New Zealand)**  
[www.animalsanctuary.co.nz/](http://www.animalsanctuary.co.nz/)  
*The Sanctuary is an animal refuge run by Shawn Bishop and Michael Dixon in Matakana, New Zealand. They provide a safe haven for abused and neglected animals, and care for injured or orphaned native birds.*


- Animals Australia**  
[www.animalsaustralia.org/](http://www.animalsaustralia.org/)  
*Animals Australia is Australia's foremost national animal protection organisation, representing some 40 member groups and over 1.5 million individual supporters. Animals Australia, along with its global arm Animals International, has an unprecedented track record in investigating and exposing animal cruelty and for conducting world-first strategic public awareness campaigns.*


- Black Sheep Sanctuary (Aotearoa New Zealand)**  
[www.theblacksheep.org.nz/](http://www.theblacksheep.org.nz/)  
*The Black Sheep Animal Sanctuary is a safe and sustainable space to rehabilitate and rehome abused, injured and neglected non-human animals. They are a relatively new sanctuary on 26 acres of land at Otaki Forks, an hour's drive north of Wellington, Aotearoa New Zealand. The Sanctuary operates according to animal rights principles and promotes animal liberation.*


- Brightside Animal Sanctuary (Australia)**  
[www.brightside.org.au/](http://www.brightside.org.au/)  
*Brightside is a farm sanctuary and shelter for animals set on 50 acres in Tasmania's Huon Valley. Brightside educates, advocates and campaigns for farm and companion animals. They provide hundreds of abused and neglected animals with a permanent loving and secure home. Their mission is to raise awareness with regard to the plight of millions of factory farmed animals in Australia.*


- Centre for Animals and Social Justice (CASJ)**  
[www.casj.org.uk/](http://www.casj.org.uk/)  
*The Centre for Animals and Social Justice (CASJ) is a think tank founded by leading academics and animal advocates that heralds a unique and innovative approach to advancing animal protection. It is dedicated to research, education and policy engagement that establish animals' rightful status as recipients of social justice.*



Accessed 8 May 2016

- **Compassion in World Farming (United Kingdom)**  
[www.ciwf.org.uk/](http://www.ciwf.org.uk/)  
*Compassion in World Farming was founded in 1967 by a British farmer who became horrified by the development of modern, intensive factory farming. Today they campaign peacefully to end all factory farming practices. They believe that the biggest cause of cruelty on the planet deserves a focused, specialised approach so they only work on farm animal welfare.*



- **Edgar's Mission (Australia)**  
[www.edgarsmission.org.au/](http://www.edgarsmission.org.au/)  
*Edgar's Mission is a not for profit farm sanctuary that seeks to create a humane and just world for humans and non-humans. Edgar's Mission Farm Sanctuary is set on 153 peaceable acres and provides lifelong love and care to over 350 rescued animals.*



- **Farm Sanctuary (United States)**  
[www.farmsanctuary.org/learn/factory-farming/#](http://www.farmsanctuary.org/learn/factory-farming/#)  
*Farm Sanctuary was founded in 1986 to combat the abuses of factory farming and encourage a new awareness and understanding about farm animals. Today, Farm Sanctuary is the largest and most effective farm animal rescue and protection organisation in the United States. Farm Sanctuary is committed to ending cruelty to farm animals and promoting compassionate vegan living through rescue, education and advocacy efforts.*



- **Farmwatch (Aotearoa New Zealand)**  
[www.farmwatch.org.nz/](http://www.farmwatch.org.nz/)  
*Farmwatch serves as a voice for animals by investigating and exposing cruelty. Animals experience feelings very similar to our own and deserve to live a natural life, free from suffering and slaughter. Farmwatch works to create a future where all animals are treated with the compassion and respect they deserve. Exposing the reality of animal industries is essential to show the consuming public how farmed animals are bred and killed.*



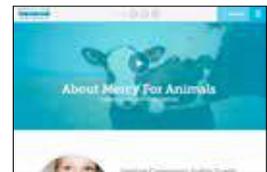
- **HUHA (Aotearoa New Zealand)**  
[www.huha.org.nz/](http://www.huha.org.nz/)  
*Helping you help animals (HUHA) is a charitable trust dedicated to teaching empathy to the community and providing shelter for those less fortunate animals that struggle to survive in today's disposable culture.*



- **Humane Society (United States)**  
[www.humanesociety.org/](http://www.humanesociety.org/)  
*The Humane Society of the United States (HSUS) is the nation's largest and most effective animal protection organisation. HSUS and their affiliates provide hands-on care and services to more than 100,000 animals each year, and professionalise the field through education and training for local organisations. They are the leading animal advocacy organisation, seeking a humane world for people and animals alike.*



- **Mercy For Animals (United States)**  
[www.mercyforanimals.org/](http://www.mercyforanimals.org/)  
*Mercy For Animals is on the front lines fighting to protect farmed animals. From factory farms to corporate boardrooms, courts of justice to courts of public opinion, Mercy For Animals is there to speak up against cruelty and for compassion.*



- **New Zealand Centre for Human-Animal Studies**  
[www.nzchas.canterbury.ac.nz/](http://www.nzchas.canterbury.ac.nz/)  
*The New Zealand Centre for Human-Animal Studies, based at the University of Canterbury, brings together scholars from the humanities and social sciences whose research is concerned with the conceptual and material treatment of non-human animals in culture, society and history. Human-animal studies is a growing area of research. The centre says it believes this kind of research and scholarship brings with it a responsibility to challenge attitudes towards animals and to account for the interests of animals. This site has useful links to other research sites.*



- **NZ Vegetarian Society (Aotearoa New Zealand)**  
[www.vegetarian.org.nz/](http://www.vegetarian.org.nz/)  
*The NZ Vegetarian Society is an organisation for all vegetarians. They endeavour to support all types of vegetarians and also to help in the transition to vegetarianism and to veganism. The NZ Vegetarian Society believes every action that reduces animal deaths is a valuable one. The fact that they include all vegetarians is one of the things that makes the NZ Vegetarian Society unique and special.*



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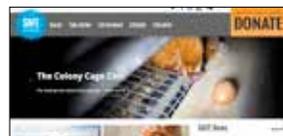
- **People for the Ethical Treatment of Animals (PETA)**  
[www.peta.org/issues/animals-used-for-food/](http://www.peta.org/issues/animals-used-for-food/)

*People for the Ethical Treatment of Animals (PETA) is the largest animal rights organisation in the world, with more than five million members and supporters. PETA focuses its attention on the four areas in which the largest number of animals suffer the most intensely for the longest periods of time: in the food industry, in the clothing trade, in laboratories and in the entertainment industry. They also work on a variety of other issues, including the cruel killing of rodents, birds and other 'pests' as well as cruelty to domesticated animals.*



- **SAFE (Aotearoa New Zealand)**  
[www.safe.org.nz/](http://www.safe.org.nz/)

*Founded in 1932, SAFE aims to make significant improvements to the lives of animals by raising awareness, challenging cruel practices, changing attitudes and fostering compassion so that they are no longer exploited or abused by humans. SAFE undertakes high-profile campaigns, public stalls, displays, demonstrations, meetings, education services and research to foster a more informed understanding of the state of human-animal relations in contemporary Aotearoa New Zealand.*



- **The Meatrix**  
[www.themeatrix.com/](http://www.themeatrix.com/)

*The Meatrix website offers information on the issues surrounding factory farming, as well as alternatives to conventionally raised meat, poultry, dairy and eggs. The website also features The Meatrix Interactive 360, a tool to help people learn about factory farming, with in-depth information on the issues.*



- **United Poultry Concerns (United States)**  
[www.upc-online.org](http://www.upc-online.org)

*Founded in 1990 by Karen Davis, United Poultry Concerns is the world's foremost non-profit organisation dedicated to promoting the respectful treatment of domestic fowl. UPC runs a haven for chickens in Virginia, and also teaches people about the egg and chicken meat industries, the natural lives of free chickens, pleasures and benefits of human-chicken companionship, and alternatives to chicken farming and the use of chickens in education and scientific experimentation.*



- **Vegan Society (Aotearoa New Zealand)**  
[www.vegansociety.org.nz/](http://www.vegansociety.org.nz/)

*The Vegan Society supports and facilitates a vegan lifestyle and plant-based eating by creating a vibrant, visible and influential community, and by providing information and resources.*



- **Vegan Society (United Kingdom)**  
[www.vegansociety.com/](http://www.vegansociety.com/)

*Founded in 1944, the Vegan Society works towards making veganism an easily adopted and widely recognised approach to reducing animal and human suffering.*



- **Voiceless: The Animal Protection Institute (Australia)**  
[www.voiceless.org.au/](http://www.voiceless.org.au/)

*Voiceless is a non-profit think tank led by father-daughter team Brian and Ondine Sherman, supported by patrons who include J M Coetzee, Hugo Weaving and Jane Goodall. Established in 2004, Voiceless is a community of informed and passionate animal advocates working together to make animal protection a social justice issue.*



- **World Animal Protection (formerly WSPA)**  
[www.worldanimalprotection.org.nz/](http://www.worldanimalprotection.org.nz/)

*World Animal Protection is the new name for an organisation that has been in existence since 1950. They campaign in many areas, such as bullfighting, dancing bears, bears milked for bile and factory farming. As WSPA, they began lobbying the EU in the 1980s, were given consultative status at the UN in 1981 and by the 1990s had been represented at the Council of Europe. They now regularly address the UN.*





Farmwatch

**AAWS:** Australian Animal Welfare Strategy, a government document aimed at assisting in the creation of a more consistent and effective *animal welfare* system.

**Abattoir:** a slaughterhouse, or facility where animals are killed for food.

**Abscess:** a swollen area within body tissue, containing an accumulation of pus.

**ACT:** Australian Capital Territory.

**Action patterns:** an *instinctive* behaviour sequence that is consistent within a species, and inevitably runs to completion.

**Adjustment disorder:** an abnormal and excessive reaction to an identifiable life stressor.

**Aggravate:** make worse.

**Agnostic:** having a doubtful or non-committal attitude towards something.

**Agribusiness:** the group of industries dealing with agricultural produce and services required in farming.

**Allele:** each of two or more alternative forms of a *gene* that arise by *mutation* and are found at the same place on a chromosome.

**Alleviate:** make (pain or difficulty) less severe.

**Ammonia:** a colourless gas with a characteristic pungent smell, which dissolves in water to give a strongly alkaline solution.

**Analgesic:** (of a drug) acting to relieve pain.

**Analogy:** a comparison between one thing and another made for the purpose of explanation or clarification.

**Ancestral population:** original members of a genetically related species.

**Animal advocate:** a person who works to bring about positive change for animals.

**Animal rights:** the belief that animals should not be exploited for human advantage.

**Animal sanctuary:** typically a place where rescued farm, *domesticated* or wild animals are allowed to live out their normal lifespan under the care of humans.

**Animal welfare:** the belief that the well-being of animals should be considered when humans use animals. Reductions in welfare are defined (and measured) as reductions in *biological* fitness.

**Animal welfare paradigm:** a way of viewing the world that prioritises *animal welfare* and challenges conventional thinking about animals as resources.

**Antagonist:** a substance which interferes with or inhibits the *physiological* action of another.

**Antibody:** a blood protein produced by the body in response to and counteracting a specific antigen. Antibodies combine chemically with substances which the body recognises as alien, such as bacteria, viruses and foreign substances in the blood.

**Apathy:** lack of interest, enthusiasm or concern.

**Arbitrary dispensation:** exemption from a rule or usual requirement.

**Ascites:** the accumulation of fluid in the peritoneal cavity, causing abdominal swelling.

**Assuage:** make (an unpleasant feeling) less intense.

**Asymmetry:** lack of equality or equivalence between parts or aspects of something; lack of symmetry.

**Atrophy:** (of body tissue or an organ) waste away, especially as a result of the *degeneration* of cells.

**AWA:** Animal Welfare Act, the law that is designed to protect animals in New Zealand.



Bill Evans

**Bacterial chondronecrosis:** a bone disease that leads to *lameness*. Also known as 'femoral head necrosis'.

**Barbarism:** extreme cruelty or brutality.

**Battery cages:** a large number of small cages in which egg-laying hens are kept.

**Battery egg:** an egg produced by a *battery hen*.

**Battery hen:** colloquial term used to describe an egg-laying hen that lives in a *battery cage*. Also described by egg producers as a 'caged layer'.

**Biodiversity:** the variety of plant and animal life in the world or in a particular habitat, a high level of which is usually considered to be important and desirable.

**Biological:** relating to biology or living organisms.

**Broiler:** a chicken that is bred and raised exclusively for their meat.

**Bursa:** a fluid-filled sac or sac-like cavity, especially one countering friction at a joint.

**Campaign:** an organised course of action to achieve a goal, typically a political or social one.

**Cannibal:** an animal that eats the flesh of its own species.

**Carcass/carcase:** the dead body of an animal.

**Cardiopulmonary:** relating to the heart and the lungs.

**Cardiovascular:** relating to the heart and blood vessels.

**Cartesian:** of or relating to the French philosopher René *Descartes* (1596-1650) and his ideas.

**Case law:** the law as established by the outcome of former cases.

**Castrate:** remove the testicles of (a male animal or man).

**Cellulitis:** inflammation of subcutaneous connective tissue.

**Cetacean:** a marine *mammal* of the order Cetacea; a whale, dolphin or porpoise.

**Chi-square test:** a statistical method assessing the goodness of fit between a set of observed values and those expected theoretically.

**Cloaca:** a common cavity at the end of the digestive tract for the release of both excretory and genital products in vertebrates (except most *mammals*) and certain invertebrates.

**Code of welfare layer hens:** colloquial term used to describe the Animal Welfare (Layer Hens) Code of Welfare.

**Code of welfare pigs:** colloquial term used to describe the Animal Welfare (Pigs) Code of Welfare.

**Cognition:** the mental action or process of acquiring knowledge and understanding through thought, experience and the senses.

**Colony cages:** a system of cages for *layer hens* that allow groups of up to 60 birds in one cage, with some additional features such as perches and scratch pads. Also known as 'enriched cages'.

**Conformation:** the shape or structure of something, especially an animal.

**Consciousness:** the fact of awareness by the mind of itself and the world.

**Constituency:** a body of voters in a specified area who elect a representative to a *legislative* body.

**Contact dermatitis:** a medical condition in which the skin becomes red, swollen and sore, sometimes with small blisters, resulting from direct irritation of the skin by or allergic reaction to an external agent.

**Corticosterone:** a *hormone* secreted by the adrenal cortex, one of the glucocorticoids.

**Creep:** a feeding enclosure for young animals. Usually adjacent to the *farrowing crate* on intensive pig farms.

**Cull:** reduce a population by selective slaughter.

**Dam:** the female parent of an animal, especially a *mammal*.

**Debilitation:** the state of being weak and infirm.

**Deep litter systems:** indoor *intensive farming* systems where birds are kept on flooring of sawdust or other similar material. Often used in barn and *broiler* systems.



Farmwatch

**Defended hearing:** a court hearing in which a judge decides cases where the defendant has pleaded not guilty but the charges do not warrant a jury trial.

**Degenerative:** (of a disease or symptom) characterised by progressive, often irreversible, deterioration and loss of function in organs or tissues.

**Deoxyribonucleic acid (DNA):** a self-replicating material which is present in nearly all living organisms as the main constituent of chromosomes. It is the carrier of genetic information.

**Descartes:** a philosopher who believed that animals did not have *consciousness* and did not have the ability to feel pain.

**Detrimental:** having a harmful or negative effect.

**Diachronic:** concerned with the way in which something (especially language) has developed through time.

**DNA:** deoxyribonucleic acid.

**DNA sequencing:** the process of determining the precise order of nucleotides within a *DNA* molecule.

**Domesticate:** bring (an animal or species) under human control for some specific purpose such as carrying loads, hunting or food.

**Dust bathing:** the act of a bird working dust into their feathers in order to clean them.

**Dyschondroplasia:** a disease that affects the growth of bone and cartilage.

**Electrophoresis:** the movement of charged particles in a fluid or gel under the influence of an electric field.

**Embryo selection:** various technologies for selecting embryos that have the desired chromosomes.

**Enriched:** used to describe environments that have additional features besides those required to sustain life; designed to allow for some expression of natural behaviours.

**Enzymes:** *biological* molecules (proteins) that act as catalysts and help complex reactions occur everywhere in life.

**Epistasis:** interaction of *genes* that are not *alleles*; in particular, the suppression of the effect of one such gene by another.

**Ethical:** acting according to a set of moral principles, especially ones relating to or affirming a specified group, field or form of conduct.

**Ethogram:** a catalogue or table of all the different kinds of behaviour or activity observed in an animal.

**Euthanise:** put (a living being) to death *humanely*.

**Factory farming:** a system of rearing livestock indoors under strictly controlled conditions.

**Farrowing:** (of a sow) giving birth to (piglets).

**Farrowing crate:** used to confine a sow who is due to give birth. The crate includes a *creep* area for piglets. The sow remains confined in a narrow crate. All she can do is stand or lie down to nurse her piglets.

**FDP:** foot pad dermatitis.

**Feed conversion:** a measurement of how much feed is necessary to produce a certain amount of milk or number of eggs.

**Feedlot:** an area or a building where farm animals are fed and fattened up.

**Felony:** a crime regarded in the US and many other judicial systems as more serious than a misdemeanour, or minor crime.

**Femoral head necrosis:** bacterial chondronecrosis.

**Foot pad dermatitis:** dermatitis, or inflammation, of the foot pad.

**Furl:** roll, curl or fold up.

**Gait:** manner of walking.

**Gait scoring system:** a system for rating the incidence or absence of *lameness*.

**Gene:** a unit of heredity which is transferred from a parent to offspring and is held to determine some characteristic of the offspring.

**Gene mapping:** methods used to identify the locus (position) of a *gene* and the distances between genes.



**Gene technology:** a range of activities concerned with understanding *gene* expression, modifying genes and transferring them to new hosts.

**Genetically modified:** (of an organism) containing genetic material that has been artificially altered so as to produce a desired characteristic.

**Genetic diversity:** the total number of genetic characteristics in the genetic make-up of a species.

**Genetic engineering:** the deliberate modification of the characteristics of an organism by manipulating its genetic material.

**Genetic marker:** a *gene* or *DNA sequence* with a known location on a chromosome that can be used to identify individuals or species.

**Genetic viability:** the degree of *genetic diversity* in a population, which shows if it has a realistic chance of avoiding *inbreeding* and the problems this brings.

**Genome:** the complete set of *genes* or genetic material present in a cell or organism.

**Genomics:** the branch of molecular biology concerned with the structure, function, evolution and mapping of *genomes*.

**Genotype:** the genetic constitution of an individual organism.

**Gestation:** the process or period of developing inside the womb between conception and birth.

**Gestation crates/housing:** see *Sow stall*.

**Gilt:** a young *sow*.

**Gratuitous:** done without good reason; uncalled for.

**Group-housed sows:** adult female pigs housed in large sheds instead of being confined to individual stalls.

**Growth enhancers:** *hormones* or nutrients used to encourage growth.

**Habituation:** the diminishing of an innate response to a frequently repeated *stimulus*.

**Haemorrhage/hemorrhage:** an escape of blood from a ruptured blood vessel.

**Haplotype:** a set of genetic determinants located on a single chromosome.

**Heritable:** transmissible from parent to offspring.

**Heterosis:** the tendency of a cross-bred individual to show qualities superior to those of both parents. Also known as 'hybrid vigour'.

**Heterozygote:** an individual having two different *alleles* of a particular *gene* or genes, and so giving rise to varying offspring.

**Hock burns:** marks found on the upper joints of chickens and other birds raised on *broiler* farms, caused by *ammonia*.

**Holistic:** characterised by the belief that the parts of something are intimately interconnected and explicable only by reference to the whole.

**Homeostatic:** having a tendency towards a relatively stable equilibrium between interdependent elements, especially as maintained by *physiological* processes.

**Home range:** the area in which an animal lives and moves on a daily basis, and the additional area they cover at certain times of the year if they migrate to find food or mates.

**Homozygote:** an individual having two identical *alleles* of a particular *gene* or genes, and so breeding true for the corresponding characteristic.

**Hoop-housed sows:** adult female pigs housed in unheated, arched tubular structures with deep bedding that allow the pigs to make nests and to socialise freely with other pigs.

**Hormone:** a regulatory substance produced in an organism and transported in tissue fluids such as blood or sap to stimulate specific cells or tissues into action.

**Humane:** having or showing compassion or benevolence.

**Husbandry:** the care, cultivation and breeding of crops and animals.



Farmwatch

**Hypothalamic appetite regulation:**

the action of a region of the forebrain below the thalamus which coordinates both the autonomic *nervous system* and the activity of the pituitary gland, controlling body temperature, thirst, hunger and other *homeostatic* systems, and involved in sleep and emotional activity.

**Hypothesis:** a supposition or proposed explanation made on the basis of limited evidence as a starting point for further investigation.

**Hypothetical:** supposed but not necessarily real or true.

**Immune function:** the state in which the body recognises foreign materials and is able to neutralise them before they can do any harm.

**Impinge:** have an effect, especially a negative one.

**Inbreeding:** breeding from closely related people or animals, especially over many generations.

**Infectious bursal disease:** a highly contagious disease of young chickens caused by infectious bursal disease virus (IBDV), characterised by immunosuppression and mortality generally at 3 to 6 weeks of age.

**Instinct:** an innate pattern of behaviour in animals in response to certain *stimuli*; an animal's largely inheritable tendency to respond in a particular way without reason.

**Institutionalised:** apathetic and dependent after long-term residence in an institution.

**Intensive farming:** a method of farming designed to increase productivity by the expenditure of more capital rather than by an increase in the land or raw materials used. Intensive farming practices include keeping animals indoors, often in restricted spaces. Many of these practices have unwelcome side effects.

**Inter alia:** Latin phrase meaning 'among other things'.

**Interest group:** a group of people seeking to influence legislators on a particular issue.

**Intrinsic:** belonging naturally; essential.

**Invasive:** (of research) involving the introduction of instruments or other objects into the body or body cavities.

**Judiciary:** the judicial authorities of a country; judges collectively.

**Jurisdiction:** a system of law courts.

**Keel bone:** in birds, a bone that is an extension of the breastbone and which anchors the wing muscles.

**Kinky back:** spondylolisthesis.

**Lameness:** inability to walk without difficulty as the result of an injury or illness affecting the leg or foot.

**Latency:** the state of existing but not yet being obvious or *manifest*.

**Latitude:** leeway or scope for freedom of action or thought.

**Layer hen:** a sexually mature egg-producing bird from 18 weeks to end-of-lay.

**Legislation:** laws, considered collectively; the process of making or enacting laws.

**Legislative:** having the power to make laws.

**Leucosis shedders:** animals that carry and can pass on a leukaemic disease of animals, especially one of a group of malignant viral diseases of poultry or cattle.

**Life processes:** the series of actions that are essential to determine if an animal is alive. Living things have seven essential processes in common: movement, respiration, sensitivity, growth, reproduction, excretion and nutrition.

**Ligation:** the joining of two *DNA* strands or other molecules by phosphate ester linkage.

**Lobbying:** actions of a group of people seeking to influence legislators on a particular issue.

**Locomotion:** movement or the ability to move from one place to another.

**Maceration:** a method of killing male chicks in a high-speed grinder.

**MAF:** Ministry of Agriculture and Forestry, the former government department responsible for managing *animal welfare* policy and practice in New Zealand.



Michael Cullen

**Mammal:** a warm-blooded vertebrate animal of a class that is distinguished by the possession of hair or fur, the secretion of milk for the nourishment of young, and (typically) the birth of live young.

**Manifest:** (of an ailment) become apparent through the appearance of symptoms.

**Meat chicken:** a chicken reared to be eaten.

**Mediolateral force:** a type of pressure exerted on the hip, knee and ankle joints by walking.

**Metabolic:** relating to the chemical processes that occur within a living organism in order to maintain life.

**Minimum standards:** specific actions that must be taken to meet the obligations of the Animal Welfare Act, set out in *codes of welfare*. Failure to meet a minimum standard could result in legal action being taken.

**Minister:** Member of Parliament with responsibility for certain areas such as agriculture, trade or justice.

**Molecular genetics:** the field of biology and genetics that studies the structure and function of *genes* at a molecular level. The study of chromosomes and gene expression of an organism can give insight into heredity, genetic variation and *mutations*.

**Moot:** subject to debate, dispute or uncertainty; having little or no practical relevance.

**Morality:** principles concerning the distinction between right and wrong or good and bad behaviour.

**Motor ability:** relating to muscular movement or the nerves activating it.

**MP:** Member of Parliament.

**MPI:** Ministry for Primary Industries, the government department responsible for managing *animal welfare* policy and practice in New Zealand.

**Mutant:** resulting from or showing the effect of *mutation*.

**Mutation:** a change in the structure of a *gene* resulting in a variant form which may be transmitted to subsequent generations, caused by the alteration of single base units in *DNA* or the deletion, insertion or rearrangement of larger sections of genes or chromosomes.

**NAWAC:** National Animal Welfare Advisory Committee, a statutory committee set up to advise the *Minister of Agriculture* on issues relating to the welfare of animals and to develop, and advise the Minister on, *codes of welfare*.

**Nervous system:** the network of nerve cells and fibres that transmits nerve impulses between parts of the body.

**Neuroanatomical:** relating to the anatomy of the *nervous system*.

**Neurochemical:** relating to the branch of biochemistry concerned with the processes occurring in nerve tissue and the *nervous system*.

**Neurologicals:** drugs designed to have an effect on an animal or human's *neurological system*.

**Neurological system:** another term for the *nervous system*.

**Neurophysiological:** relating to the physiology of the *nervous system*.

**Paradigm:** a world view underlying the theories and methodology of a particular scientific subject; a typical example, pattern or model of something.

**Parameters:** limits or boundaries that define the scope of a particular process or activity.

**Parity:** the fact or condition of having given birth.

**Pathology:** the branch of medicine concerned with the causes and effects of diseases.

**Pectoralis major:** in birds, the main muscle of the chest, involved primarily in the downward wing movement.

**Pectoralis minor:** in birds, the chest muscle involved primarily in shoulder movement, including the upward movement of the wing.

**Pedigree:** the recorded ancestry or lineage of a person or family; a pure-bred animal; a record showing such.

**Phenotype:** the set of observable characteristics of an individual resulting from the interaction of its *genotype* with the environment.



Farmwatch

**Physiological:** relating to the branch of biology that deals with the normal functions of living organisms and their parts.

**PIANZ:** Poultry Industry Association of New Zealand, the industry body that promotes egg and chicken production for food.

**Plasticity:** the adaptability of an organism to changes in its environment.

**Plateau:** a levelling out, with neither an increase nor a decrease.

**Pleiotropy:** the production by a single *gene* of two or more apparently unrelated effects.

**Polymerase:** an *enzyme* which brings about the formation of a particular polymer, especially *DNA* or *RNA*.

**Polymerase chain reaction (PCR):** a method of making multiple copies of a *DNA sequence*, involving repeated reactions with a *polymerase*.

**Post-mortem:** a surgical examination of a dead body to determine the cause of death.

**Predicate (something) on:** found or base (something) on.

**Predisposition:** a liability or tendency to suffer from a particular condition, hold a particular attitude or act in a particular way.

**Preening:** (of a bird) tidying and cleaning the feathers using the beak.

**Prepathological:** (of a *physiological* or *psychological* state or change) preceding or potentially leading to the development of a disease.

**Prescriptive ethic:** relating to the imposition or enforcement of a rule or method.

**Prima facie:** Latin phrase meaning 'based on the first impression; accepted as correct until proved otherwise'.

**Prime Minister:** leader of the political party voted to power.

**Proclivity:** a tendency to choose or do something regularly; an inclination or *predisposition* towards a particular thing.

**Progeny:** a descendant or the descendants of a person, animal or plant; offspring.

**Protocol:** a procedure for carrying out a scientific experiment or a course of medical treatment.

**Psychological:** of, affecting or arising in the mind; related to the mental and emotional state.

**Pullet:** a young female domestic fowl less than a year old.

**Pulmonary hypertension:** a state of great *physiological* stress.

**Quantitative trait:** a characteristic produced by the interaction or combination of two or more *genes*.

**Reify:** make (something abstract) more concrete or real.

**Resource allocation theory:** a theory that explains how a living organism utilises available resources for maintenance, growth, production and other processes in a balanced way.

**Restriction enzymes:** *enzymes* that can modify *DNA*.

**Rooting:** (of an animal) digging or pulling up a plant by the roots.

**Sadistic:** having the tendency to derive pleasure from inflicting pain, suffering or humiliation on others.

**Sanction:** permit, allow.

**Schedule:** an addition to a formal document or *statute*, such as a list or table.

**Selective breeding:** the process of choosing which males and females will sexually reproduce in order to develop particular characteristics.

**Sensitise:** cause (someone) to respond to certain *stimuli*; make sensitive.

**Sentience:** the ability to perceive or feel things.

**Septicaemia:** blood poisoning, especially that caused by bacteria or their toxins.

**Single-nucleotide polymorphism (SNP):** a genetic variation that can affect susceptibility to diseases.

**Sire:** the male parent of an animal, especially a stallion or bull kept for breeding.

**Skeletal:** relating to or functioning as a skeleton; emaciated.



**SNP:** single-nucleotide polymorphism.

**Social action:** actions to try and change what is wrong in our society and introducing new ideas and processes for doing things better in the future.

**Sow:** an adult female pig, especially one that has *farrowed*.

**Sow stall:** a *gestation crate* in which a breeding sow is kept.

**Spondylolisthesis:** a congenital deformity of chickens involving displacement of a vertebra, or bone in the spine, causing back pain and numbness in the legs. Also known as 'kinky back'.

**Statute:** a written law passed by a *legislative* body.

**Stereotypic behaviours:** repetitive or ritualistic movements, postures or utterances, sometimes seen in captive animals, particularly those held in small enclosures with little opportunity to engage in more normal behaviours. These behaviours may be maladaptive, involving self-injury or reduced reproductive success.

**Stereotypy:** the persistent repetition of an act, especially by an animal, for no obvious purpose.

**Stimulus:** a thing or event that evokes a specific functional reaction in an organ or tissue.

**Stocking density:** the number of animals in a specific area.

**Subordinate:** make subservient to or dependent on something else.

**Sudden death syndrome (SDS):** sudden death, usually due to heart failure.

**Synchronic:** concerned with something (especially language) as it exists at one point in time.

**TD:** tibial dysplasia, a deformity involving excessive bowing or curvature of the tibia (one of the long bones in the lower leg).

**Tendon:** a flexible but inelastic cord of strong fibrous tissue attaching a muscle to a bone.

**Tethered sows:** pigs kept in *sow stalls*, in which their freedom of movement is severely restricted.

**Tibial dyschondroplasia:** a disease in which the tibia (one of the long bones in the lower leg) does not mature enough to harden and is prone to fracture, infection and deformity.

**Tissue culture:** the growth of tissues or cells separate from an organism, usually using a liquid, semi-solid or solid growth medium such as broth or agar.

**Trait:** a genetically determined characteristic.

**Transgenic:** relating to or denoting an organism that contains genetic material into which *DNA* from an unrelated organism has been artificially introduced.

**Ulcer:** an open sore on an external or internal surface of the body, caused by a break in the skin or mucous membrane which fails to heal.

**Uropygial gland:** a gland on the rump of a bird (the part supporting the tail feathers).

**Utilitarianism:** the doctrine that an action is right in so far as it promotes happiness, and that the greatest happiness of the greatest number should be the guiding principle of conduct.

**Vacuum/sham chewing:** a fixed pattern of behaviour when an animal makes chewing motions without actually having anything to chew on.

**Valgus:** a deformity involving oblique displacement of part of a limb away from the midline.

**Varus:** a deformity involving oblique displacement of part of a limb towards the midline.

**Velleity:** a wish or inclination not strong enough to lead to action.

**Viability:** the ability to survive or live successfully.









