

25 July 2019

The Director
Select Committee on the use of battery cages for hens in the egg industry
Parliament House
Macquarie Street
SYDNEY NSW 2000

Via email: egg.industry@parliament.nsw.gov.au

Dear Committee Members

Submission to the Select Committee on the use of battery cages for hens

Thank you for the opportunity to provide a submission to the inquiry into the use of battery cages for hens in the egg industry. While we welcome this inquiry, it is nevertheless a source of deep regret for the RSPCA that we find ourselves still debating this topic in 2019.

The battery cage system was introduced to egg farming in the 1950s. Its design is completely indifferent to the behavioural, psychological, and welfare needs of hens. Hens are by their nature intelligent, social animals with good memories and the ability to make complex cognitive decisions. They have strong innate behavioural motivations to forage, to flap their wings, to perch, to dust bathe, and to access a nest to lay their eggs. All of these behaviours are prevented inside the battery cage system. Such is a hen's desire to engage in these behaviours that scientific studies have shown they will forgo food in preference for access to a nest box when in lay. Hens in battery cages are also known to perform what is referred to as 'sham dust-bathing' where they engage in all of the behavioural elements of normal dustbathing despite the complete absence of dirt or other substrate.

Such extreme confinement also causes physical health problems for hens such as the highest rates of non-infectious diseases of any system including disuse osteoporosis (or 'brittle bones') and fatty liver disease. Hens in battery cages also suffer the highest rates of bone breakage at depopulation when they are removed from their cages for transport to slaughter. The scientific evidence base for these impacts is presented in our comprehensive 2016 literature review, *The Welfare of Layer Hens in Cage and Cage-free Housing Systems*, available at www.rspca.org.au/campaigns/layer-hen-welfare.

It is important to note that these consequences are inherent to the battery system itself. They cannot be addressed through good management. They are unchangeable. This is a fundamental point we ask Committee Members to be mindful of when you inevitably hear the statement - 'all systems have their advantages and disadvantages.' Of course, this is true. But the welfare challenges in non-cage systems are highly variable between farms and can be addressed through appropriate design of sheds, genetic selection, and good management. They are variable and changing. Conversely, the disadvantages of the battery cage system are constant and unchanging, as it is the system itself that causes the welfare impacts.

RSPCA Australia Inc.
ABN 99 668 654 249

P 02 6282 8300
F 02 6282 8311
E rspca@rspca.org.au
W rspca.org.au

PO Box 265
Deakin West ACT 2600



It is this fact that has led eminent national animal welfare scientific councils across the world to recommend the phase out of battery cages, including the UK Farm Animal Welfare Council in 1997, the European Union Scientific Veterinary Commission in 1998, the National Animal Welfare Advisory Committee of New Zealand in 2012, and the National Farm Animal Care Council of Canada in 2017. Each of these committees, consisting of respected specialists in their fields with decades of experience and expertise in animal health and welfare science and livestock husbandry, conducted comprehensive scientific reviews and arrived at the same conclusion - that it is impossible to meet the welfare needs of hens in the battery cage system.

Thankfully, the advice of these committees was heeded by every single one of the governments they reported to. Battery cages have now been phased out across the 28 nations of the European Union. New Zealand's 10-year phase-out is due to be complete in 2022 and Canada's phase out in 2036. Additionally, increasing numbers of US states are following suit - California, Michigan, Ohio, Rhode Island, Washington, Oregon, and Massachusetts have passed legislation to phase out battery cages and several others are considering similar legislation.

Yet here in Australia, approximately 10-11 million hens remain confined to barren battery cages with no phase out timeline in place. This can only be described as a national embarrassment.

RSPCA Australia argued strongly for phasing out battery cages during the previous review of the national *Model Code of Practice for the Welfare of Poultry* in the late 1990s with a 46-page submission outlining all of the available evidence at the time including two of the scientific reviews mentioned above. Our proposal was not accepted and the issue was deferred to a future review of the Code.

Fast forward to 2019, 20 years and approximately 140 million layer hens later, we again find ourselves having to fight for the science to be recognised and a phase out to be included in the draft *Australian Animal Welfare Standards and Guidelines for Poultry*. The lack of leadership from industry and Government on this issue has been astounding.

This disappointment and frustration is shared by our many thousands of supporters in NSW and around the country and has been conveyed to this inquiry in the form of thousands of submissions. This large community response was also experienced during the recent public consultation on the draft *Animal Welfare Standards and Guidelines for Poultry*, during which, more than 167,000 submissions were received. This constitutes the largest number of public submissions ever made to an animal welfare consultation in Australia's history.

This level of public concern cannot be ignored. Recent research commissioned by the federal Department of Agriculture - *Australia's Shifting Mindset on Farm Animal Welfare* - found that 95% of Australians are concerned about farm animal welfare and 91% want to see reform to address it. The report found that failing to respond to these concerns will accelerate eroding levels of community trust and confidence in animal agriculture and Government's performance in regulating acceptable welfare standards. Low levels of trust also give rise to increasing levels of protest and activism as we have seen recently with the increased incidents of 'vegan activists' entering farming properties. This was foreshadowed by rural sociologists Parbery and Wilkinson in their 2012 report for Agriculture Victoria - *Victorians' Attitudes to Farming*.

Consumers have been voting with their wallets and the market share of battery cage eggs has been steadily declining. From a retail market share of approximately 75% in 2005, it has now dropped to below 50% today, demonstrating that it is entirely feasible to produce safe, affordable, nutritious eggs without

the use of battery cages. But despite these encouraging trends, the market is incapable of phasing out battery cage eggs on its own as many cage eggs are used as product ingredients in processed foods where consumers have little to no ability to make an informed choice. It is therefore incumbent upon Governments to act to put a final end date on the use of the remaining battery cages in Australia.

New South Wales is the largest producer of eggs in the country at 31%. It is therefore well-placed to lead the nation in phasing out battery cages in favour of more humane and sustainable systems of production. We urge Committee Members to listen to the views of the community, to act on the scientific evidence base, and to recommend a legislative phase out of existing battery facilities over a reasonable timeframe.

We believe that based on the age of current cage infrastructure, a 10-year timeframe would be entirely feasible. We know that our supporters would like the timeframe to be much shorter but we understand such transitions take time. We would also strongly support any government assistance that can be provided to producers to make this transition occur as soon as possible.

Our attached submission provides further information about the animal welfare science on layer hen housing systems, relevant data on community expectations, market trends and international developments, and an outline of our proposal for a 10-year phase out of battery cages. We trust our submission will be of assistance and look forward to providing any further assistance the Committee may require moving forward.

Yours sincerely,

A handwritten signature in blue ink, appearing to read "J. Goodfellow", with a stylized flourish at the end.

Dr Jed Goodfellow
Science and Policy Team Lead (A/g)
RSPCA Australia

Animal welfare science

The following information highlights key welfare issues relating to housing poultry in conventional cages and supports the conclusion that battery cages (referred to hereafter as ‘conventional cage systems’) must be phased out.

Osteoporosis and susceptibility to fractures are problems that face layer hens in all types of housing systems (Widowski et al. 2013). High rates of egg production are thought to weaken the leg and wing bones in particular. However, it is generally accepted that a lack of movement is the main cause of bone fragility in hens (EFSA 2005). In conventional cages, hens are not able to exercise or perch, and their movement is severely restricted. This severe behavioural restriction, including the inability to walk or fly, contributes to bone weakness (LayWel 2006). When birds from conventional cages are handled, it results in a very high rate of bone fractures. Typically, furnished cages allow hens to perch, which contributes to improved bone strength (Lay et al. 2011). However, they are still unable to perform their full behavioural repertoire, including foraging, ground-scratching, and dustbathing.

Locomotion is severely restricted in cages, which contributes to disuse osteoporosis (LayWel 2006). In addition, maintenance and thermoregulatory behaviours are significantly compromised (Nicol 1987; Lay et al. 2011). Non-infectious diseases, including fatty liver and osteoporosis, are more prevalent in conventional cages compared with systems that allow a greater opportunity for behavioural expression and movement (Kaufman-Bart 2009; Lay et al. 2011; Widowski et al. 2013). Fatty liver is a common metabolic disease mainly seen in layer hens housed in cages (EFSA 2005). It causes rupture of the liver and sudden death. Factors which are thought to contribute to the development of fatty liver include a lack of exercise and restricted locomotion, high environmental temperatures, and a high level of stress (EFSA 2005). Non-infectious diseases which may be attributed to a lack of movement such as disuse osteoporosis and fatty liver are very difficult to manage in conventional cages due to the inherent extreme behavioural restriction.

Infectious diseases may be more readily contracted and spread in floor-based housing systems, while non-infectious diseases can be more prevalent in cage systems. Infectious diseases can be managed. Management includes strict biosecurity practices and vaccination programs. There has been a consistent decline in the proportion of birds with viral (Marek’s disease), parasitic (coccidian and helminths), and feather-pecking and cannibalism during the 12 years since the 1999 phase out of conventional cages in the European Union. This change is thought to be due to improved vaccination, and greater emphasis on management in litter-based and free-range systems (Kaufman-Bart 2009; Widowski et al. 2013; Fraser et al. 2013). Vaccination and hygiene are reportedly the most effective precautions against infections. Control strategies have brought about a marked decline in notifiable diseases, especially *Salmonella* Enteritidis (Kaufman-Bart 2009). In addition to the greater emphasis on day-to-day management and stockpersonship, there is work being done across Europe to optimise the long-term management of non-cage systems, such as the LayWel and Hennovation projects in the UK which include management strategies aimed at controlling the expression of feather-pecking.

Non-infectious diseases which are mainly attributed to, or exacerbated by, the lack of movement in conventional cages cannot be remedied by management. The problems associated with fatty liver, kidney disease, and osteoporosis require changes in housing system to allow the birds to move and exercise sufficiently, thereby alleviating the problems associated with non-infectious diseases.

When housing constraints prevent poultry from performing behaviours which they are motivated to perform, this presents a welfare concern since birds experience psychological distress, and physical

consequences including compromised biological function, or harmful variants of the behaviour such as feather-pecking and hysteria (Lay et al. 2011). Welfare problems can result when the environment unduly constrains the basic movements and behaviours of animals. This has been quantified in various studies which assess an animal's motivation to perform certain behaviours, by measuring how much an animal will work to be able to perform those behaviours (Dawkins et al. 2004; Fraser et al. 2013).

In 1999, the European Commission passed the Directive (CEC, 1999) requiring that by 2012 all barren conventional cages be prohibited, and that all cages must be furnished, and provide at least: 750 cm² of floor space per hen, of which 600 cm² is at least 45 cm high, a nest, a littered area for scratching and pecking, 15 cm of perch, 12 cm of food trough per hen, and a claw-shortening device (Appleby et al. 2002). Appleby (2002) compared furnished and conventional cages; behaviour was more unrestricted and varied, and physical condition was better in hens in furnished than conventional cages. Furnished cages generally allow more movement than conventional cages, and allow for some expression of the most highly motivated behaviours which are prevented in conventional cages. However, there is still behavioural restriction in furnished cages. Locomotion, wing-flapping, flying, dustbathing, ground-scratching, ground-pecking and foraging are limited, and not able to be performed satisfactorily. This is due to the limited space available and the amount of substrate that is provided, which may be quickly depleted (Lay et al. 2011). The large spaces provided to birds in non-cage systems allow greater opportunities for locomotion. Locomotion is increased because resources are spread out horizontally and sometimes vertically. However, movement may be compromised if stocking densities are too high (Leone and Estevez 2008; Lay et al. 2011).

All species of poultry confined to conventional cages are severely limited in their ability to perform any behaviours. This includes basic movements. Hens in conventional cages suffer extreme behavioural inhibition, and are unable to walk, flap their wings, lay eggs in a nest, or perch. They suffer the poorest bone strength of all housing systems, and the highest number of fractures incurred at depopulation. Hens have been found to perform higher levels, or 'rebound' levels of wing-flapping, tail-wagging, and stretching when they are moved to a large space after weeks of confinement in a small area, with some behaviours correlated to the duration of confinement. This indicates that hens do not adjust to prolonged spatial restriction (Nicol 1987; Lay et al. 2011).

While cages allow greater control over the environment and bird health and a lower incidence of fractures incurred throughout production when compared to non-cage systems, it is important to consider the full impact on the welfare of the hens. Hens do not only possess physiological needs for food, water, thermal comfort, and freedom from disease. They also have innate behavioural needs, such as those for nesting and dustbathing. Allowing hens the opportunity to perform behaviours which they demonstrate that they are motivated to perform is central to achieving positive welfare states (Mellor and Webster 2014). Conversely, the inability to perform these behaviours including comfort movements, foraging and nesting behaviour, has negative welfare impacts (Nicol et al., 2017). Conventional cages have no provisions for the expression of innate behaviours. These behaviours include:

Movement

Animals require an absolute amount of physical space to extend their limbs and perform basic movements including changing posture and turning around. The amount of space required for a hen to turn around and stretch its wings is greater than the space which is provided in most conventional cages (Widowski et al., 2016; Nicol et al., 2017).

Examples of the amount of space required by hens to perform basic behaviours and the inhibition that is imposed by conventional cages is illustrated in the excerpt from Nicol et al. (2017):

The spatial restriction of the conventional cage prevents or constrains the performance of most comfort movements, and there are no resources to meet the birds' roosting and nesting needs. A limited amount of foraging can take place in the feed trough. At the high stocking rates and small cage sizes typical of a conventional cage, hens are effectively prevented from performing even simple locomotor and comfort movements.

In a classic paper, Dawkins and Hardie (1989) recorded the unrestricted behaviour of brown hybrids. They presented the following ranges of space occupied to turn around (540 to 1,006 cm²), stretch wings (653 to 1,118 cm²), wing flap (860 to 1,980 cm²), preen (814 to 1,270 cm²), and ground scratch (540 to 1,005 cm²). More recently, in a video kinematic study of white hybrid layers, Mench and Blatchford (2014) determined the space required by hens to stand (563 cm²), turn around (1,315 cm²), lie down (318 cm²), and wing flap (1,693 cm²) (Nicol et al., 2017).

Birds without the ability to stretch or flap their wings, walk or run suffer disuse osteoporosis, frustration (which can manifest in rubbing on the sides of the cage and pacing) (LayWel 2006), and a decreased ability to thermoregulate. Access to feed and water may also be compromised due to high stocking densities (Lay et al. 2011). There is limited control in social interactions, and an ability to escape unpleasant situations in conventional cages, due to a lack of environmental complexity (Cordiner and Savory 2001).

Perching

Hens have demonstrated a strong motivation to access perches by pushing through weighted doors to access them (Olsson and Keeling 2002). The use of perches can reduce fearfulness and aggression (Donaldson and O'Connell, 2012), reduce bird density on the floor (Cordiner and Savory, 2001), lower the risks of piling and smothering (Lay et al., 2011), improve motor activity, and provide resting locations and places of refuge from aggressors (Cordiner and Savory, 2001; Lay et al., 2011; Yan et al., 2014). The provision of perches within the first four weeks of life has also been shown to reduce the risk of cloacal cannibalism in adulthood (Gunnarsson et al., 1999). The inability to perch decreases musculoskeletal health, and the ability to escape aggressors (which is more possible in non-cage systems which offer complex environments and multi-level perches) (Yan et al. 2014). Hens show signs of unrest when they are deprived of the opportunity to perch at night, and experience frustration and reduced welfare if perching is not possible (Olsson and Keeling 2002; Fraser et al. 2013).

Nesting

Nesting is identified as a behavioural priority for layer hens (Weeks and Nicol 2006; Lay et al. 2011), particularly immediately prior to oviposition (egg-laying). The need for layer hens to utilise a nest has been assessed by motivation tests, which have consistently demonstrated that it is a high priority (Widowski et al., 2013). Cooper and Appleby (2003) concluded that hens' work-rate to access a nest 20 minutes prior to egg-laying, as measured by the extent to which they were willing to work by pushing a push-door for resources, was twice the work-rate to access food after four hours of confinement without feed. If denied a nest, birds can become frustrated, pace, and retain their eggs beyond the expected time of lay (Yue and Duncan 2003; Widowski et al. 2013). In addition, the absence of a nest can contribute to cloacal cannibalism, due to the lack of an enclosed nesting area and the visibility of the cloaca during egg-laying (Newberry et al. 2004; Lay et al. 2011).

Dustbathing

Functionally, dustbathing is performed to clean the feathers (Lay et al., 2011). It acts to remove skin parasites, regulate the amount of feather lipids, and maintain plumage condition (Olsson and Keeling, 2005). Birds which are unable to dustbathe experience deteriorated plumage condition and the build-up of stale preen oil in the feathers (Scholz et al. 2014). It is an intrinsically motivated behaviour, and hens can perform 'sham' dustbathing in the absence of suitable dustbathing material, which lacks positive feedback (Widowski and Duncan 2000), and may indicate a reduced welfare state (Lay et al. 2011). Further, when birds are unable to dustbathe, plumage is in a poorer condition as it is dirtier, less waterproof, and less insulative (Scholz et al. 2014).

Foraging and exploration

Foraging is an important part of the normal behavioural repertoire of hens (LayWel 2006), and when litter is available, it is used extensively by hens for scratching and pecking (Ekesbo 2011). When litter is available, hens may spend the majority of their time ground-pecking and ground-scratching (Hartcher et al. 2015). Further, hens perform foraging behaviours even when feed is provided *ad libitum* (Lay et al., 2011; Widowski et al., 2013), a phenomenon termed 'contrafreeloading', demonstrating an innate behavioural motivation to forage for food (Widowski et al. 2013), (Lay et al. 2011).

There is extensive scientific literature on the motivation for poultry to perform the above behaviours, which improve welfare and decrease negative states.

Community expectations and trust in Australian agriculture

There has been a steady increase in public awareness around issues of farm animal welfare in recent years, which is expected to continue in the coming years (Futureye, 2018). Australian consumers are becoming increasingly aware of farm animal welfare, and more discerning about the quality of life that the animals experienced.

Concern for the welfare of layer hens in conventional cages has probably attracted more debate than any other intensive husbandry system (Freire & Cowling 2013). A recent survey by McCrindle (2017) of 1000 Australians revealed that 84% of the Australian public are concerned about the welfare of hens in conventional cages, and that 8 in 10 want to see battery cages phased out, an increase since previous research conducted in 2015 found 2 in 3 Australians were concerned about hens in battery cages.

If animal welfare standards fail to reflect the expectations and values of the Australian public, the sustainability of the production system may be threatened in the face of increasing concern about the way farm animals are treated (Hender, 2015). This could present a significant risk to an industry's social licence.

The concept of social licence is generally thought of as the acceptance of a company or industry's practices by the general public, where a company must be seen to operate responsibly (Futureye, 2018; Hampton and Teh-White, 2019). A social licence is the implicit acceptance of a product, service, company and government. Acceptance requires ongoing alignment to society's values, paying attention to their concerns, and resolving issues (Futureye, 2018). This concept is applicable to animal industries, where animal housing and husbandry practices are increasingly subject to public scrutiny.

There is a current perceived lack of responsiveness by industry and government to the concerns of the public, who also believe that government and industry actions are insufficient to ensure good animal welfare standards (Futureye, 2018). The current regulatory environment has the potential to provoke significant public outrage if it is unable to effectively regulate farm animal welfare issues. A potential consequence of this is a loss of confidence in the government's ability to protect animal welfare, and may result in increased pressure on producers and industries. Quantitative research shows that the public has high concern for the welfare of egg-producing hens in particular (Futureye, 2018).

Since surveys have found that the vast majority of Australians are concerned about farm animal welfare, governments, industry, and food companies need to ensure that their policies encompass good animal welfare in order to maintain social licence. The use of conventional cages to house layer hens is not a sustainable housing system and will not be accepted by the public going forward.

International developments

All countries in the European Union, which include Austria, Belgium, Bulgaria, Croatia, Republic of Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and the UK have banned conventional cages. This was due to Directive 1999/74/EC which banned housing laying hens in barren conventional cages, and was effective from 1 January 2012. The directive was based on a report from the European Union's Scientific Veterinary Committee, and evidence has continued to mount since then, with several scientific reports published. The ban of conventional cages in the EU was affected by mounting scientific evidence, public pressure as well as by all sectors of society, including producers, retailers, consumers, legislators, and the media (Appleby 2003). Therefore, since 2012, all hens in the EU are required to be provided with dustbathing substrate, nests, perches, and a pecking and scratching area in order to allow hens to express their natural behaviours and satisfy their ethological needs (Guinebreière et al. 2014).

In Switzerland, cage systems for laying hens, both in conventional and furnished cages, are completely prohibited (Lukanov and Alexieva 2013). Sweden banned conventional cages in 2002. In 1989, egg farmers were given a period of 10 years to phase out conventional cages, which was later extended, and conventional cages were no longer used from 2002. In Austria, conventional cages were successfully prohibited in 2009, and furnished cages will also be banned by 2020. Similarly, Belgium has banned conventional cages and has proposed to ban furnished cages by the end of 2024.

New Zealand has implemented a six year legislative phase-out of conventional cages. The National Animal Welfare Advisory Committee developed the code, which will result in conventional cages being phased out by 2022. This change was in response to scientific evidence and strong public opinion, despite over 80% of eggs in New Zealand having been produced from conventional cages.

Canada has also announced a phase out of conventional cages over the next 20 years, by 2036. This change is led by the industry, the Egg Farmers of Canada, and represents a voluntary phase out, despite approximately 90% of egg production currently occurring in conventional cage systems. The industry plans to move to a 50-50 split in eight years, and 85% non-conventional cage systems in 15 years. The Egg Farmers of Canada state that this change is in response to the best available scientific research, as well as changing consumer preferences, and that the industry plans to diversify production practices in line with these developments (Heppner 2016).

In the United States, California, Michigan, Ohio, Rhode Island, Washington, Oregon, and Massachusetts have passed legislation to phase out conventional cages with several other states likely to follow in the next year. In addition to legislative changes, nearly a hundred major companies in the US have stopped sourcing eggs from conventional cages. These include McDonald's, Denny's, IHOP, Kroger, Albertson's, and now Walmart, America's biggest food seller, accounting for 25% of all groceries sold in the United States (Pacelle 2016).

Market trends

Public concern for the welfare of layer hens is reflected in purchasing choices; the proportion of eggs produced from hens housed in conventional cages has fallen sharply over the past several years in Australia. From a retail market share of approximately 75% in 2005, it has now dropped to below 50% today (2005-2018 Australian Egg Corporation Limited Annual Reports). Conversely, the proportion of non-cage eggs, including barn-laid, has grown strongly over the past five years. Barn systems are relatively low-cost compared to free-range, but do not have the same negative connotations in relation to animal welfare as cage systems (IBISWorld, 2015).

Since 2012, non-cage eggs represent the highest value to the egg industry in Australia in terms of the grocery sales farming system market share, and have rapidly been growing since then (2011-2017 Australian Egg Corporation Limited Annual Reports). This change is reflective of Australians' concerns for animal welfare in conventional cages (IBISWorld 2015).

In addition to consumers purchasing more non-cage eggs, the retail and food service sector is making the switch with many large retailers making cage-free commitments. Among these, Arnott's, McDonalds, Hungry Jacks, Subway, Nando's, Oporto, Coles, Woolworths, Aldi, Harris Farm Markets, Ikea, Kellogg's, Compass Group, Mars, Nestle, PepsiCo and Unilever have all started phasing out cage eggs from their supply chains. The breadth and scale of cage-free commitments are clearly documented at:

www.welfarecommitments.com and <https://www.rspca.org.au/campaigns/layer-hen-welfare/cage-free-proud>.

With these commitments cage production is becoming marginalised. Increasingly, companies are being held to account for their practices, and the public reporting of their policies and practices. This is assisted by initiatives such as the Business Benchmark on Farm Animal Welfare, which annually ranks the world's leading food companies on their farm animal welfare policies, practices and performance based on publicly available information.

However, the wholesaling, manufacturing and food service sectors continue to use eggs from conventional cages. Due to this, despite the majority of consumers demanding non-cage eggs and purchasing non-cage fresh eggs at the supermarket, the majority of layer hens in Australia (54%) are still housed in conventional cages.

The way forward - a national legislative phase out of battery cages

While these consumer and food business trends are positive, the market is incapable of phasing out battery cage eggs completely because of the use of cage eggs as ingredients in processed foods and also because a minority segment of the consumer base simply do not care about animal welfare when making purchasing decisions.



It is therefore incumbent upon Government to act to put a final end date on the use of the remaining battery cages in Australia. RSPCA Australia is aware that there has been little to no investment in new conventional cage infrastructure in Australia since 2008, and that much of the existing cage infrastructure is old and in need of upgrade or replacement.

The New Zealand National Animal Welfare Advisory Committee factored in an average lifespan of 18 years for conventional cages when developing its 10-year phase out strategy (New Zealand National Animal Welfare Advisory Committee, 2012). If a similar infrastructure lifespan is applied in Australia, all current cage infrastructure would require replacement before 2029, which is within a 10-year phase out period if applied from 2020 onwards.

RSPCA Australia is therefore calling for State and Territory Governments to agree to a national legislative phase-out of conventional cages over a 10-year timeframe and for the introduction of an immediate ban on the construction of any new cage infrastructure in the intervening period. RSPCA Australia would support any industry adjustment packages that State and Territory Governments can provide to affected producers to assist with the investment in new infrastructure to meet the 10-year timeframe.

References

- Appleby MC (2003) The European Union ban on conventional cages for laying hens: history and prospects. *J Appl Animal Welfare Sci* 6:103-121.
- Appleby MC, Walker AW, Nicol CJ, et al (2002) Development of furnished cages for laying hens. *Br Poultry Science* 43:489-500.
- Australian Eggs (2011-2018) Annual Reports. [Australianeggs.org.au](http://australianeggs.org.au)
- Cordiner LS and Savory CJ (2001) Use of perches and nestboxes by laying hens in relation to social status, based on examination of consistency of ranking orders and frequency of interaction. *Applied Animal Behaviour Science* 71:305-317.
- Dawkins MS, Donnelly CA, Jones TA (2004) Chicken welfare is influenced more by housing conditions than by stocking density. *Nature* 427:342-344.
- Donaldson CJ, O'Connell NE (2012) The influence of access to aerial perches on fearfulness, social behaviour and production parameters in free-range laying hens. *Applied Animal Behaviour Science* 142:51-60.
- EFSA (2005) Welfare aspects of various systems for keeping laying hens. *EFSA J* 1-23.
- Ekesbo I (2011) Domestic Fowl (*Gallus gallus domesticus*). *Farm Animal Behaviour. Characteristics for Assessment of Health and Welfare*. 105-112.
- Fraser D, Duncan IJH, Edwards SA, et al (2013) General Principles for the welfare of animals in production systems: The underlying science and its application. *Vet J*.
- Freire R and Cowling A (2013) The welfare of laying hens in conventional cages and alternative systems: first steps towards a quantitative comparison. *Animal Welfare* 22:57-65.
- Futureye (2018) Australia's Shifting Mindset on Farm Animal Welfare. <http://www.agriculture.gov.au>.
- Guinebretière M, Beyer H, Arnould C, Michel V (2014) The choice of litter material to promote pecking, scratching and dustbathing behaviours in laying hens housed in furnished cages. *Applied Animal Behaviour Science* 155:56-65.
- Gunnarsson S, Keeling L, Svedberg J (1999) Effect of rearing factors on the prevalence of floor eggs, cloacal cannibalism and feather pecking in commercial flocks of loose housed laying hens. *British Poultry Science* 40:12-18.
- Hampton JO and Teh-White K (2019) Animal Welfare, Social License, and Wildlife Use Industries. *The Journal of Wildlife Management* 83(1):12-21.
- Hartcher KM, Tran KTN, Wilkinson SJ (2015) The effects of environmental enrichment and beak-trimming during the rearing period on subsequent feather damage due to feather-pecking in laying hens. *Poultry Science* 94:852-859.

Hender (2015) The Treatment of Farm Animals in Australia: Are Legal Standards Set in Accordance with Democratic Principles? Faculty of Law, University of Sydney.

Heppner, K (2016) Egg Farmers Announce Canada-Wide Move Away from Conventional Housing. realagriculture.com

IBISWorld (2015) Egg farming in Australia. IBISWorld Industry Report A0172.

Kaufman-Bart MH (2009) Diseases in chicks and laying hens during the first 12 years after battery cages were banned in Switzerland. *Vet Rec* 164:203-207

Lay DC, Fulton RM, Hester PY, et al (2011) Hen welfare in different housing systems. *Poultry Science* 90:278-294.

Leone EH, Estevez I (2008) Use of space in the domestic fowl: separating the effects of enclosure size, group size and density. *Animal Behav* 76:1673-1682.

LayWel (2006) LayWel - Overall strengths and weaknesses of each defined housing system for laying hens, and detailing the overall welfare impact of each housing system.

LayWel (2006) Results of the European project SSPE-CT-2004-502315 - welfare implications of changes in production systems for laying hens. European Union. Available at <http://www.laywel.eu/>

Lukanov H, Alexieva D (2013) Trends in battery cage husbandry systems for laying hens - Enriched cages. *Agric Sci Technol* 5:143-152.

Mellor DJ, Webster JR (2014) Development of animal welfare understanding drives change in minimum welfare standards. *Review Science Technology* 33:121-130.

Newberry RC (2004) Cannibalism. Pages 239-258 in *Welfare of the Laying Hen*. G. C. Perry, ed., CABI Publishing, Wallingford, UK.

New Zealand National Animal Welfare Advisory Committee (2012) *Animal Welfare (Layer Hens) Code of Welfare Report*.

Nicol CJ, Bouwsema J, Caplen G, Davies AC, Hockenhull J, Lambton SL, Lines JA, Mullan S, Weeks CA (2017) *Farmed Bird Welfare Science Review*. Department of Economic Development, Jobs, Transport and Resources. 1-321.

Nicol CJ (1987) Behavioural responses of laying hens following a period of spatial restriction. *Animal Behaviour* 35:1709-1719.

Olsson IAS and Keeling LJ (2002) The push-door for measuring motivation in Hens: Laying hens are motivated to perch at night. *Animal Welfare* 11:11-19.

Scholz B, Kjaer JB, Petow S et al (2014) Dustbathing in food particles does not remove feather lipids. *Poultry Science* 93:1877-1882.

Pacelle, W (2016) Breaking News: Walmart, the Nation's Biggest Food Seller, Says No to Cage Confinement for Hens. humanesociety.org

Parbery, P and Wilkinson, R (2012) *Victorians' Attitudes to Farming*. Department of Primary Industries, Victoria.

Weeks CA and Nicol CJ (2006) Behavioural needs, priorities and preferences of laying hens. *World's Poultry Science Journal* 62:296-307.

Widowski TM, Hemsworth PH, Barnett JL (2016) Laying hen welfare I. Social environment and space. *World's Poultry Science Journal* 72:333-342.

Widowski T, Classen H, Newberry R, et al (2013) Code of practice for the care and handling of pullets, layers and spent fowl: Poultry (layers). Review of scientific research on priority areas.

Widowski TM, Duncan IJ. (2000) Working for a dustbath: are hens increasing pleasure rather than reducing suffering? *Applied Animal Behaviour Science* 68:39-53.

Yan FF, Hester PY, Cheng HW (2014) The effect of perch access during pullet rearing and egg laying on physiological measures of stress in White Leghorns at 71 weeks of age. *Poultry Science* 93:1318-1326.

Yue S, Duncan IJH (2003) Frustrated nesting behaviour: relation to extra-cuticular shell calcium and bone strength in White Leghorn hens. *Br Poultry Science* 44:175-181.