

HSVMA VETERINARY REPORT

Welfare Concerns Associated with Intensive Farm Animal Confinement Methods: *Battery Cages, Gestation Crates, and Veal Crates*

There is overwhelming scientific evidence for prohibiting restrictive farm animal confinement systems – battery cages, gestation crates and veal crates - because of their negative impact on the physical and psychological health of the individual animals, as well as the public safety issues they present. The information below provides scientific support for banning each of the three practices.

EGG-LAYING HEN CONFINEMENT

The use of battery cages—small wire enclosures crowding up to ten hens in single units that are frequently stacked in egg production is widely regarded as inhumane for many reasons:

Physical Impacts:

- The small size of the cage affords each hen, on average, only 67 square inches of space—less space than the area of a single sheet of letter-sized paper—on which to live her entire life.¹ The space provided is so small that the hens can't even spread their wings.
- The severe limitation of physical movement leads to metabolic disorders, including disease osteoporosis² and liver damage,³ and cage layer fatigue, a disease in which the skeletal system can become so weak that hens become paralyzed.^{4,5} Unattended birds die from dehydration and starvation in their cages.^{6,7}
- Egg-laying hens commonly suffer from bone fractures due to calcium continually being leached from their skeletal system to produce eggs, and in the battery cages they do not get exercise that might otherwise increase their strength.⁸

Psychological Impacts:

- Hens are naturally inquisitive, active animals with complex social and communicative behavior and cognitive capabilities.
- Caged hens are denied almost all of their natural behavior including nesting, perching, foraging, and dustbathing, all important for hen welfare.
- Nesting is so important to hens that in laboratory behavior experiments they will push through heavily weighted doors to access an enclosed, secluded nest box when they are about to lay an egg.^{9,10}
- Hens in battery cages cannot engage in normal dustbathing behavior, which balances the oil levels in their feathers.^{11,12,13}
- Caged hens cannot engage in normal ground pecking and scratching in loose substrate, an activity which would occupy 50% of the hens' waking activity budget in a more natural environment.^{14,15}
- Hens' feet are adapted to close around a tree-branch or other similarly shaped perch. This is the natural resting position of a bird.^{16,17} Battery cages do not provide places for hens to perch and roost at night.

- Many studies have shown that comfort behavior important for body maintenance and care of feathers, such as stretching, wing-flapping, body-shaking, and preening, are reduced or adversely affected in some way by the battery-cage environment.^{18,19,20}
- Preference testing has demonstrated that hens prefer more space than is typically allotted to them in a conventional battery cage and that when given the opportunity to choose between enclosures that differ in size, they will generally choose the larger enclosure.^{21,22,23,24,25}

Cage-free alternatives:

- Commercial-scale egg production can be cage-free. Producers around the country (and around the world) are already embracing barn, aviary and free-range production.
- In barn and aviary systems, the hens are still kept indoors, but they have room to move, loose litter for pecking and scratching, elevated perches, and enclosed nesting spaces. The egg industry's economic analysis on producing cage-free rather than cage confinement eggs concluded that it adds a producer cost of only 11.75 cents per dozen (i.e., less than a penny per egg more).²⁶

BREEDING SOW CONFINEMENT

The use of gestation crates – small, barred cages, approximately two feet wide used to confine breeding sows²⁷ – in pork production is also widely considered inhumane for a variety of reasons:

Physical Impacts:

- Immobilization, a byproduct of the cage's small size, atrophies sows' muscles and bones,²⁸ making the most basic movements difficult.²⁹ These cages are too small for the pigs to turn around or take more than a step forward or backwards.³⁰
- Lack of exercise and decreased water consumption greatly increases the risk of urinary tract infections.³¹
- Lack of exercise results in reduced cardiovascular fitness.³²

Psychological Impacts:

- Research shows that pigs have incredibly vast cognitive and emotional capabilities.^{33,34} Dr. Temple Grandin notes that pigs are social animals,³⁵ and normal social interactions are made impossible by gestation crates.
- These animals are unable to perform their natural behavior when confined in gestation crates.^{36,37}
- Sows often resort to stereotypic behaviors, such as repetitively chewing the bars of the cage. This is indicative of psychological distress.³⁸
- Unresponsiveness in sows is another behavioral disorder indicative of poor welfare. Over time, crated sows respond less to external stimuli, including water poured on their backs, sow grunts, and an electronic buzzer.^{39,40}

More humane alternatives to gestation crates are economically viable:

- A variety of group housing systems, including Electronic Sow Feeding (ESF), free access stalls and trickle feeding systems, are already in place and being successfully used in the industry.
- An Iowa State University study found that gestation crates and group housing yielded the same reproductive performance with no significant labor differences. The two-and-a-half year study concluded that group housing cost 11% less per individual pig than gestation crates.⁴¹
- Group housing can match or exceed the productive performance of a gestation crate facility.⁴²

VEAL CALF CONFINEMENT

Veal crates are small, individual cages used to confine newborn calves prior to their slaughter.⁴³ Both the size of the crates and a tether at the calves' necks prevent them from turning around.⁴⁴ Similar to battery cages and gestation crates, veal crates cause significant harm:

Physical Impacts:

- Due to the cramped conditions, calves are unable to lie down fully on their side, in a comfortable resting position.⁴⁵
- Calves raised in an environment with ample space will play vigorously (e.g. they will gallop, buck and kick), but crates prevent all of this locomotive activity.
- Cattle naturally lick all the accessible parts of their bodies, but when tethered to the front of a stall, calves are unable to groom their hindquarters, back legs or tail.
- Prolonged inactivity inhibits muscle development and coordination.⁴⁶

Psychological Impacts:

- Cattle are social animals and social interaction is especially important for calves raised without their mothers.^{47,48} Veal crate confinement prohibits access to other calves, as well as the ability to fully groom and explore.⁴⁹
- Calves are social animals, and will rub, push and groom each other, but crates limit this important tactile contact or may prevent it altogether.
- Unsocialized calves are more fearful in novel social and environmental situations,⁵⁰ and in learning experiments, they perform poorly compared to calves that are raised with social companions.⁵¹
- Calves tethered in stalls have higher adrenal responses than calves in group housing arrangements. This is an indicator of chronic stress.⁵²

Group housing:

- Calves can be raised in small social groups in straw-bedded pens instead of confined in veal crates.
- In group housing, calves can socialize, play, and lie down more comfortably in full lateral recumbency. Group housing permits healthy movement, play behavior and exercise.
- Social housing has been shown to improve solid feed intake and weight gain of calves.⁵³

- The American Veal Association has already recommended that its members transition to group housing by 2017. In fact, more than 70 percent of veal producers have already moved to group housing.⁵⁴

HUMAN HEALTH AND FOOD SAFETY ISSUES

Industrial animal operations put human health at risk because high-density confinement of tens of thousands of animals promotes the spread of disease. For example, numerous studies show that egg operations confining hens in battery cages have higher rates of *Salmonella*, the leading cause of food poisoning-related deaths in America.

- *Salmonella* causes a million illnesses in the US each year.⁵⁵
- Study after study shows that forcing chickens to endure confinement inside cages increases the risk of *Salmonella* compared to keeping chickens in a cage-free environment.⁵⁶

SCIENTIFIC AND PUBLIC SUPPORT FOR PHASING OUT INTENSIVE CONFINEMENT

- There is strong support in the scientific community for phasing out intensive farm animal confinement methods.
 - The Pew Commission on Industrial Farm Animal Protection recommended that all forms of confinement that restrict an animal's natural movement be phased out. This committee included a former veterinary school Dean and a former U.S. Secretary of Agriculture.⁵⁷
 - The LayWel project, a collaborative effort among working groups in seven different European countries, reviewed the science and concluded that battery cages do not provide satisfactory welfare for laying hens.⁵⁸
 - The Scientific Veterinary Committee of the European Commission opposes the use of gestation crates and veal crates.^{59,60}
 - The California Veterinary Medical Association and more than 700 individual California veterinarians supported Proposition 2, a 2008 measure that banned the intensive confinement of egg-laying hens, pregnant sows and calves raised for veal in the state of California.⁶¹
- There is significant public support for ending intensive confinement of farm animals as well:
 - The entire European Union has already banned battery cages,⁶² gestation crates,⁶³ and veal crates.⁶⁴
 - Within the United States, ten states have already passed laws to phase out types of extreme confinement.⁶⁵

INDUSTRY SHIFTING AWAY FROM EXTREME CONFINEMENT

- In response to public pressure, the industry is moving away from extreme forms of confinement.
 - The United States' largest pork producer, Smithfield Foods, has already moved the majority of its sows from gestation crate systems to group housings,⁶⁶ as have several other large producers.
 - More than 60 leading food retailers have condemned cage confinement, mandating better conditions for animals in their supply chain, including McDonalds, Wendy's and Safeway.⁶⁷

REFERENCES

- ¹ Shields, S. and Duncan, Ian J.H. (n.d.) An HSUS Report: A Comparison of the Welfare of Hens in Battery Cages and Alternative Systems <http://www.humanesociety.org/assets/pdfs/farm/hsus-a-comparison-of-the-welfare-of-hens-in-battery-cages-and-alternative-systems.pdf>
- ² Norgaard-Nielsen, G. (1990). Bone strength of laying hens kept in an alternative system compared with hens in cages and on deep-litter. *British Poultry Science* 31(1):81-9.
- ³ Leeson, S. (2007). Metabolic challenges: past, present, and future. *Journal of Applied Poultry Research* 16:121-5.
- ⁴ Leeson S. (2007). Metabolic challenges: past, present, and future. *Journal of Applied Poultry Research* 16:121-5.
- ⁵ Riddell C, Helmboldt CF, Singsen EP, and Matterson LD. 1968. Bone pathology of birds affected with cage layer fatigue. *Avian Diseases* 12(2):285-97.
- ⁶ Riddell C, Helmboldt CF, Singsen EP, and Matterson LD. 1968. Bone pathology of birds affected with cage layer fatigue. *Avian Diseases* 12(2):285-97.
- ⁷ Riddell C. 1992. Non-infectious skeletal disorders of poultry: an overview. In: Whitehead CC (ed.), *Bone Biology and Skeletal Disorders in Poultry*. Poultry Science Symposium Number Twenty-three (Oxfordshire, U.K.: Carfax Publishing Company, pp. 137-8).
- ⁸ D'Silva, J. (2006). "Adverse impact of industrial animal agriculture on the health and welfare of farmed animals." *Integrative Zoology*, p. 53-8.
- ⁹ Follensbee ME, Duncan IJH, and Widowski TM. 1992. Quantifying nesting motivation of domestic hens. *Journal of Animal Science* 70(Suppl.1):164.
- ¹⁰ Cooper JJ and Appleby MC. 2003. The value of environmental resources to domestic hens: a comparison of the work-rate for food and for nests as a function of time. *Animal Welfare* 12(1):39-52.
- ¹¹ Van Liere DW and Bokma S. 1987. Short-term feather maintenance as a function of dust-bathing in laying hens. *Applied Animal Behaviour Science* 18(2):197-204.
- ¹² Olsson IAS and Keeling LJ. 2005. Why in earth? Dustbathing behaviour in jungle and domestic fowl reviewed from a Tinbergian and animal welfare perspective. *Applied Animal Behaviour Science* 93(3-4):259-82.
- ¹³ Shields SJ. 2004. Dustbathing by broiler chickens: characteristics, substrate preference, and implications for welfare. Ph.D. Dissertation, University of California, Davis, pp.10-2.
- ¹⁴ Savory CJ, Wood-Gush DGM, and Duncan IJH. 1978. Feeding behaviour in a population of domestic fowls in the wild. *Applied Animal Ethology* 4:13-27.
- ¹⁵ Dawkins M.S. 1989. Time budgets in Red Junglefowl as a baseline for the assessment of welfare in domestic fowl. *Applied Animal Behaviour Science* 24:77-80.
- ¹⁶ Baxter M. 1994. The welfare problems of laying hens in battery cages. *The Veterinary Record* 134(24):614-9.
- ¹⁷ Blokhuis HJ. 1984. Rest in poultry. *Applied Animal Behaviour Science* 12(3):289-303, citing: Ellenberger W and Baum H. 1943. *Handbuch der vergleichenden Anatomie der Haustiere* (Berlin, Germany: Springer Verlag, p. 1155).

-
- ¹⁸ Nicol CJ. 1987. Effect of cage height and area on the behaviour of hens housed in battery cages. *British Poultry Science* 28(2):327-35.
- ¹⁹ Appleby MC, Mench JA, and Hughes BO. 2004. *Poultry Behaviour and Welfare* (Wallingford, U.K.: CABI Publishing, p. 64).
- ²⁰ Tanaka T and Hurnik JF. 1992. Comparison of behavior and performance of laying hens housed in battery cages and an aviary. *Poultry Science* 71(2):235-43.
- ²¹ Hughes BO. 1975. Spatial preference in the domestic hen. *British Veterinary Journal* 131(5):560-4.
- ²² Dawkins M. 1978. Welfare and the structure of a battery cage: size and cage floor preferences in domestic hens. *British Veterinary Journal* 134(5):469-75.
- ²³ Nicol CJ. 1986. Non-exclusive spatial preference in the laying hen. *Applied Animal Behaviour Science* 15:337-50.
- ²⁴ Dawkins M. 1981. Priorities in the cage size and flooring preferences of domestic hens. *British Poultry Science* 22(3):255-63.
- ²⁵ Dawkins M.S. 1983. Cage size and flooring preferences in litter-reared and cage-reared hens. *British Poultry Science* 24(2):177-82.
- ²⁶ Bell, Don. A Review of Recent Publications On Animal Welfare Issues For Table Egg Laying Hens. 2006. United Egg Producers Meeting. <http://animalscience.ucdavis.edu/Avian/WelfareIssueslayingHens.pdf>. Accessed August 26, 2015.
- ²⁷ Commission of the European Communities. 2001. COM(2001) 20 final 2001/0021 (CNS) Communication from the Commission to the Council and the European Parliament on the welfare of intensively kept pigs in particularly taking into account the welfare of sows reared in varying degrees of confinement and in groups. Proposal for a Council Directive amending Directive 91/630/EEC laying down minimum standards for the protection of pigs.
- ²⁸ Marchant JN, Broom DM. Effects of dry sow housing conditions on muscle weight and bone strength. *Animal Science*. 1996;62:105-113.
- ²⁹ Marchant JN, Broom DM. Effects of dry sow housing conditions on muscle weight and bone strength. *Animal Science*. 1996;62:105-113
- ³⁰ Marchant JN, Broom DM. Effects of dry sow housing conditions on muscle weight and bone strength. *Animal Science*. 1996;62:105-113.
- ³¹ Tillon JP, Madec F. Diseases affecting confined sows: data from epidemiological observations. *Annales de Recherches Vétérinaires (Annals of Veterinary Research)*. 1984;15(2):195-9.
- ³² Commission of the European Communities. 2001. COM (2001) 20 final 2001/0021 (CNS) Communication from the Commission to the Council and the European Parliament on the welfare of intensively kept pigs in particularly taking into account the welfare of sows reared in varying degrees of confinement and in groups. Proposal for a Council Directive amending Directive 91/630/EEC laying down minimum standards for the protection of pigs.
- ³³ Dawkins M.S. 1998. *Through Our Eyes Only? The Search for Animal Consciousness*. Oxford, UK: Oxford University Press; 1998: 156-7.
- ³⁴ Signoret JP, Baldwin BA, Fraser D, Hafez ESE. The behaviour of swine. In: Hafez ESE ed. *The Behaviour of Domestic Animals*. 3rd ed. London, UK: Baillibre Tindall; 1975:300.

- ³⁵ Grandin, Temple. Department of Animal Science, Colorado State University. "Recommendations for Investigators Using Pigs for Research." <http://www.awionline.org/pubs/cq/pigs.htm>.
- ³⁶ Stolba A, Wood-Gush DGM. The behaviour of pigs in a semi-natural environment. *Animal Production*. 1989; 48:419-25.
- ³⁷ Fraser AF, Broom DM. *Farm Animal Behaviour and Welfare*. 3rd ed. London, UK: Bailliere Tindall; 1990:107.
- ³⁸ Mendl MT. The effects of alternative forms of intensive pig husbandry on measures of pig welfare. In: Bradley A, Sckofield WL, eds. *Proceedings of the First Association of Veterinary Students Animal Welfare Symposium*. Cambridge, UK: Association of Veterinary Students; 1991.
- ³⁹ Broom DM. Stereotypies and responsiveness as welfare indicators in stall-housed sows. *Animal Production*. 1986;42:438-9.
- ⁴⁰ Barnett JL, Hemsworth PH, Cronin GM, Jongman EC, Hutson GD. A review of the welfare issues for sows and piglets in relation to housing. *Australian Journal of Agricultural Research*. 2001;52:1-28. Cited by: Barnett JL. The welfare of sows: housing options for dry sows. Report to the Pig Research and Development Corporation. Canberra. 1995.
- ⁴¹ Iowa State University College of Agriculture and Life Sciences (2007). "Alternatives to Sow Gestation Stalls Researched at Iowa State." <http://www.cals.iastate.edu/news/releases/alternatives-sow-gestation-stalls-researched-iowa-state>.
- ⁴² Parsons, Thomas D., 2013. Lessons Learned from a Decade of Transitioning Sow Farms from Stalls to Pens. *Advances in Pork Production*, Vol 24: 91-100.
- ⁴³ U.S. Department of Agriculture, Food Safety and Inspection Service. 2006. Veal from farm to table. http://www.fsis.usda.gov/wps/wcm/connect/c1c3ed6a-c1e5-4ad0-ba6c-d53d71d741c6/Veal_from_Farm_to_Table.pdf?MOD=AJPERES. Accessed August 26, 2015.
- ⁴⁴ European Commission, Scientific Veterinary Committee, Animal Welfare Section. 1995. Report on the welfare of calves. Adopted November 9. http://ec.europa.eu/food/fs/sc/oldcomm4/out35_en.pdf. Accessed August 26, 2015.
- ⁴⁵ Friend TH and Dellmeier GR. 1988. Common practices and problems related to artificially rearing calves: an ethological analysis. *Applied Animal Behaviour Science* 20(1/2):47-62.
- ⁴⁶ Dellmeier GR, Friend TH, and Gbur EE. 1985. Comparison of four methods of calf confinement: II. Behavior. *Journal of Animal Science* 60(5):1102-9.
- ⁴⁷ Friend TH and Dellmeier GR. 1988. Common practices and problems related to artificially rearing calves: an ethological analysis. *Applied Animal Behaviour Science* 20(1/2):47-62.
- ⁴⁸ Flower FC and Weary DM. 2003. The effects of early separation on the dairy cow and calf. *Animal Welfare* 12(3):339-48.
- ⁴⁹ Reinhardt V and Reinhardt A. 1981. Cohesive relationships in a cattle herd (*Bos indicus*). *Behaviour* 77:121- 51.
- ⁵⁰ Jensen MB and Larsen LE. 2014. Effects of level of social contact on dairy calf behavior and health. *Journal of Animal Science* 97:5035-44.
- ⁵¹ Meagher RK, Daros RR, Costa JHC, von Keyserlingk MAG, Hötzel MJ, and Weary DM. 2015. Effects of degree and timing of social housing on reversal learning and response to novel objects in dairy calves. *PLoS ONE* 10(8): e0132828.
- ⁵² Dantzer R, Mormede P, Bluth RM, and Soissons J. 1983. The effect of different housing conditions on behavioural and adrenocortical reactions in veal calves. *Reproduction Nutrition and Development* 23(3):501-8.

- ⁵³ Costa JHC, Meagher RK, von Keyserlingk MAG and Weary DM. 2015. Early pair housing increases solid feed intake and weight gains in dairy calves. *Journal of Dairy Science* 98:6381-86.
- ⁵⁴ Veal Farmers Move Calves to Group Pens, *Beef Magazine*, May 9, 2012. <http://beefmagazine.com/sectors/veal-farmers-move-calves-group-pens>.
- ⁵⁵ Centers for Disease Control and Prevention (CDC). (2015). "Salmonella." <http://cdc.gov/salmonella/>. Accessed April 15, 2015.
- ⁵⁶ HSUS. (2011). "Cage Confinement of Laying Hens Increases Salmonella Risk." http://www.humanesociety.org/issues/confinement_farm/facts/salmonella.html. Accessed August 25, 2015.
- ⁵⁷ Pew Commission on Industrial Farm Animal Production. 2008. Putting meat on the table: industrial farm animal production in America. [www.ncifap.org/ images/PCIFAPFin.pdf](http://www.ncifap.org/images/PCIFAPFin.pdf). Accessed August 26, 2015.
- ⁵⁸ LayWel. 2006. Welfare implications of changes in production systems for laying hens. <http://www.laywel.eu/web/pdf/deliverable%2071%20welfare%20assessment.pdf>. Accessed August 26, 2015.
- ⁵⁹ Scientific Veterinary Committee, Animal Welfare Section. 1997. The welfare of intensively kept pigs. For the European Commission, http://ec.europa.eu/food/fs/sc/oldcomm4/out17_en.html. Accessed August 26, 2015.
- ⁶⁰ European Commission, Scientific Veterinary Committee, Animal Welfare Section. 1995. Report on the welfare of calves. Adopted November 9. http://ec.europa.eu/food/fs/sc/oldcomm4/out35_en.pdf. Accessed July 8, 2012.
- ⁶¹ Humane Society Veterinary Medical Association, Veterinarians and Proposition 2: An Unprecedented Partnership, http://www.hsvma.org/veterinarians_and_proposition_2#.VeCP2yVViko, Accessed August 26, 2015.
- ⁶² European Commission. 1999. Animal welfare on the farm—laying hens. http://ec.europa.eu/food/animal/welfare/farm/laying_hens_en.htm. Accessed July 2, 2012
- ⁶³ Humane Society of the United States (2013). An HSUS Report: Welfare Issues with Gestation Crates for Pregnant Sows (2). <http://www.humanesociety.org/assets/pdfs/farm/HSUS-Report-on-Gestation-Crates-for-Pregnant-Sows.pdf>.
- ⁶⁴ Council of Europe. 1997. Council Directive 97/2/EC of 20 January 1997 amending Directive 91/629/EEC laying down minimum standards for the protection of calves. http://ec.europa.eu/food/fs/aw/aw_legislation/calves/97-2-ec_en.pdf. Accessed August 26, 2015.
- ⁶⁵ Humane Society of the United States, Massachusetts Ballot Initiative Seeks to Curb Farm Animal Confinement, http://www.humanesociety.org/news/press_releases/2015/08/massachusetts-ballot-initiative081915.html, Accessed August 26, 2015.
- ⁶⁶ Humane Society of the United States (2011). An HSUS Report: The Economics of Adopting Alternatives to Gestation Crate Confinement of Sows (8). http://animalstudiesrepository.org/hsus_reps_impacts_on_animals/29/.
- ⁶⁷ Humane Society of the United States (2013). An HSUS Report: Welfare Issues with Gestation Crates for Pregnant Sows (2). <http://www.humanesociety.org/assets/pdfs/farm/HSUS-Report-on-Gestation-Crates-for-Pregnant-Sows.pdf>.