



# Animal Welfare Institute

900 Pennsylvania Avenue, SE, Washington, DC 20003

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Hawaii Department of Agriculture  
Animal Industry Division  
1428 S. King Street  
Honolulu, HI 96814

Via email to [hdoaai@hawaii.gov](mailto:hdoaai@hawaii.gov)

**Re: Hawaii Department of Agriculture Proposed Rule Amendments Regarding the Transport of Farm Animals by Sea**

Dear Chairperson Shimabukuro-Geiser:

On behalf of the Animal Welfare Institute (AWI)<sup>1</sup> and the undersigned organizations, the following comments are submitted in response to the Hawaii Department of Agriculture's (HDOA) proposed amendments to its regulations governing the transport of animals by sea vessels.

Our organizations support the proposed amendments to Chapter 4-16, which will, if approved, provide legally mandated standards for interisland shipment of certain animal species. These long-awaited changes are essential to mitigating the risk of suffering and untimely death of animals during transport.

Specifically, we welcome the requirement that carriers of animals submit to the HDOA a Shipmaster's Declaration that includes the number of animals shipped and the number of animals that died or were injured, with details describing the circumstances and nature of these events. We also appreciate the acknowledgement of the importance of adequate ventilation. Finally, we applaud the inclusion of rules related to the condition of animal containers, including requirements that they have a solid roof, be structurally sound without protruding objects that could injure animals, and include nonslip flooring.

However, the HDOA's proposal largely codifies the same standards that gave rise to the circumstances that highlighted the rule's necessity. In 2019, 21 cows perished on a barge due to a lack of adequate ventilation on a ship that purportedly complied with the Hawaii Cattlemen's Council standards for the transport of cattle on sea vessel.<sup>2</sup> The HDOA's proposal makes no improvements to this standard in adopting it in regulation.

In its commitment to promulgate these rules, the HDOA agreed to develop regulations consistent with 9 C.F.R. pt. 91 (federal live animal export regulations), and to include protections for all species. Our organizations were disappointed to find that the HDOA's proposal fails to meet this commitment. Key

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<sup>1</sup> The Animal Welfare Institute, founded in 1951 and headquartered in Washington DC, is dedicated to reducing animal suffering and advancing the welfare of all animals, including those raised for food. As part of our mission, we work to improve conditions for farm animals, including during transport. AWI has over a decade of experience advocating on behalf of animals transported by sea vessel.

<sup>2</sup> Daysog, R. (2019). Critics: Deaths of 21 cattle on barge bound for Kauai 'cruel and inhumane.' *Hawaii News Now*. <https://tinyurl.com/2apsjyv6>.

provisions to prevent heat stress, prohibit the transport of unfit animals, and provide access to food and water are missing, and the proposal does not include protections for pigs and horses. Our organizations have thus prepared comments asking that HDOA meet its commitment by revising its proposal and by extending these protections to pigs and horses. Suggested in-text revisions are attached to this document.

## Preventing Excessive Heat Stress Aboard Shipping Vessels

As written the HDOA's proposal fails to ensure that heat stress is prevented during transport. As such, the proposal should be revised to limit loading density and ensure placement and loading practices minimize heat stress.

Heat stress occurs when the body is exposed to and cannot get rid of excess heat. The tissues and organs of the body can only function within a relatively narrow range, so severe heat stress can result in debilitation, suffering, and death. Under natural conditions, livestock have many mechanisms for thermoregulation, which allow them to tolerate a range of temperature and humidity levels. However, these mechanisms are largely thwarted under transport conditions. Dehydration, which is likely to develop in transported livestock deprived of water for up to 24 hours, diminishes an animal's ability to deal with heat stress through evaporative cooling via panting or sweating.<sup>3, 4</sup>

Farm animals being transported by sea in containers are particularly susceptible to heat stress, which has been identified in multiple studies as a major contributor to poor welfare during transport by ship.<sup>5</sup> Excessive heat stress is a common cause of livestock mortality during transport by sea, especially in sheep.<sup>7</sup> The American Veterinary Medical Association emphasizes the importance of protecting animals from environmental extremes during transport.<sup>8</sup> The primary species of cattle raised in Hawaii is *Bos taurus*, which is more susceptible to heat stress than the *Bos indicus* species.<sup>9, 10</sup>

In addition to the metabolic heat generated by the animals in the container, heat can radiate from hot metal surface and from nearby engine or boiler rooms, fuel oil storage walls, the ceiling on the

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<sup>3</sup> Hogan, J. P., Petherick, J. C., & Phillips, C. J. (2007). The physiological and metabolic impacts on sheep and cattle of feed and water deprivation before and during transport. *Nutrition research reviews*, 20(1), 17–28.

<sup>4</sup> EFSA Panel on Animal Health and Welfare (AHAW). (2011). Scientific Opinion concerning the welfare of animals during transport. *EFSA Journal*, 9(1):1966.

<sup>5</sup> Caulfield, M. P., Cambridge, H., Foster, S. F., & McGreevy, P. D. (2014). Heat stress: a major contributor to poor animal welfare associated with long-haul live export voyages. *Veterinary journal (London, England: 1997)*, 199(2), 223–228.

<sup>6</sup> Phillips, C. J., & Santurtun, E. (2013). The welfare of livestock transported by ship. *Veterinary journal (London, England: 1997)*, 196(3), 309–314. <sup>7</sup>

<sup>7</sup> Collins, T., Hampton, J. O., & Barnes, A. L. (2018). A Systematic Review of Heat Load in Australian Livestock Transported by Sea. *Animals: an open access journal from MDPI*, 8(10), 164.

<sup>8</sup> American Veterinary Medical Association. (n.d.). Transport, sale yard practices, and humane slaughter of hoofstock and poultry. *AVMA policies*. <https://tinyurl.com/mkkx2k>.

<sup>9</sup> Fukumoto, G.K. & Kim, Y.S. (2007). Carcass Characteristics of Forage-Finished Cattle Produced in Hawai'i. Food Safety and Technology. <https://www.hicattle.org/Media/HiCattle/Docs/fst-25.pdf>

<sup>10</sup> Sullivan, K. F., & Mader, T. L. (2018). Managing Heat Stress Episodes in Confined Cattle. *The Veterinary clinics of North America. Food animal practice*, 34(2), 325–339. <https://doi.org/10.1016/j.cvfa.2018.05.001>

uppermost deck, and the sides of the ship.<sup>11</sup> Placing livestock containers too close together can impede ventilation such that excessive heat stress results.

### Loading Density

Because of the metabolic heat generated by animals in shipping containers, ensuring that loading density is appropriate is essential to preventing excessive heat stress. It also ensures animals have room to brace themselves and shift their footing to keep their balance in the face of continuous floor motion due to waves. High loading densities increase the risk that animals who lose their balance will be unable to stand back up and will be trampled, potentially creating a domino effect in which additional animals go down as they trip on the fallen animals underfoot.<sup>12</sup>

For several reasons, the HDOA's current proposal to regulate loading density is inadequate. First, the document referenced as Exhibit B has several sections removed and includes space requirements only for cattle. All information related to pigs and horses has been removed. In the Sheep and Goats section, the standard entitled *Space* states “\*See table,” however the accompanying table for load densities has been deleted.<sup>13</sup>

Second, the chart on cattle space requirements that is referenced by the proposal fails to account for the actual internal dimensions of shipping containers used to transport animals. This chart lays out the area (sq. ft.) each animal of a given weight class should be allotted as well as the loading density for each size of container, expressed as maximum number of animals to load per container. Unfortunately, as described below, the chart assumes a larger internal area for shipping containers than is the case; as a result, both the “Area per Animal” and loading density figures are incorrect.

It appears that the creators of the Space Requirement chart in the Interisland Transportation Space Requirements used the *external* dimensions of 40-ft. and 20-ft. containers (40 ft. x 8 ft. and 20 ft. x 8 ft., respectively) in their calculations; however, it is the *internal* dimensions that need to be used when calculating space allowance per animal and loading density per container. The internal dimensions of 40-ft. and 20-ft. containers are consistent across a range of references.<sup>14-15</sup>

The following equations, in conjunction with the internal dimensions of the respective container, can be used to determine the actual space allowance provided to each animal, and what the maximum loading density would need to be to provide the reported space allowance:

$$\text{Area (sq. ft.)} = \text{Length (ft.)} \times \text{Width (ft.)}$$

$$\text{Space Allowance (sq. ft./animal)} = \text{Area (sq. ft.)} \div \# \text{ of animals}$$

$$\text{Correct Loading Density to Achieve Reported Space Allowance}$$

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<sup>11</sup> Anonymous. (2021). Heat Stress. *Veterinary Handbook*. <https://tinyurl.com/2p83z63p>.

<sup>12</sup> Schwartzkoff-Genswein, K. & Grandin, T. (2019) Cattle Transport in North America. In T. Grandin (Ed.), *Livestock Handling and Transport* (5<sup>th</sup> ed., pp. 153-183). CAB International.

<sup>13</sup> The complete version of the document is available on the Hawaii Cattlemen's Council website. Hawaii Cattlemen's Council, Inc., *Interisland Livestock Shipping Standards Checklist All Species* (2020) <https://tinyurl.com/yc483duz>.

<sup>14</sup> K & K Global, *Container Dimension* <https://tinyurl.com/3avmkdek>; <https://tinyurl.com/2p8hah98>.

<sup>15</sup> *What is the internal dimensions of a 40FT container?* Leonieclaire. (2020). <https://tinyurl.com/2p8fmnjy>.

$$= \text{Actual Area (sq. ft.)} \div \text{Reported Space Allowance (\# animals/sq. ft.)}$$

We noted these calculation errors in the Space Requirement charts for all species and weight classes in the complete Interisland Livestock Shipping Standards document. Here are some examples:

For a 40 ft. Container:

Reported Space Allowance = **19 sq. ft. per 1,500-lb. cow**, if loaded at **17 cattle/container**

Actual Area = 39.46 ft. x 7.71 ft. = 304.24 sq. ft.

Actual Space Allowance = 304.24 sq. ft.  $\div$  17 cattle = **17.9 sq. ft. per 1,500-lb. cow**

Correct Loading Density to Achieve Reported Space Allowance

$$= 304.24 \text{ sq. ft.} \div 19 \text{ sq. ft./1,500-lb. cow} = \mathbf{16 \text{ cattle/container}}$$

For a 20 ft. Container:

Reported Space Allowance = **11 sq. ft. per 800-lb. cow**, if loaded at **15 cattle/container**

Actual Area<sup>16</sup> = 18.67 ft. x 7.67 = 143.2 sq. ft.

Actual Space Allowance = 143.2 sq. ft.  $\div$  15 cattle = **9.55 sq. ft. per 800-lb. cow**

Correct Loading Density to Achieve Reported Space Allowance

$$= 143.2 \text{ sq. ft.} \div 11 \text{ sq. ft./800-lb. cow} = \mathbf{13.01 \text{ cattle/container}}$$

Third, for most of the weight classes, the space requirement described in the chart falls significantly short of space allowances recommended in the available scientific literature and provide significantly less space allowance than federal regulations regarding export of animals via ocean vessel.

For example, calves being shipped often need to lie down due to fatigue, negative energy balance, and dehydration. Sheep also need to lie down after approximately four hours.<sup>17</sup> For short duration transportation, use of the following equation is recommended to determine the minimum area necessary to permit all animals to lie down simultaneously:<sup>18</sup>

$$\text{area (m}^2\text{)} = 0.027W^{0.66}, \text{ where } W = \text{liveweight (kilograms)}$$

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<sup>16</sup> Young Brothers. (n.d.) YB Equipment Available for Use: 20-Foot Dry Container – Internal Dimensions. <https://tinyurl.com/4wh5xfpv>

<sup>17</sup> Knowles, T.G. & Warriss, P. D. (2009). A comment on Space allowances for confined livestock and their determination from allometric principles. *Applied Animal Behaviour Science*, 120(1), 117–118. <https://doi.org/10.1016/j.applanim.2009.06.005>

<sup>18</sup> Petherick, J.C., Phillips, C.J.C. (2009) Space allowances for confined livestock and their determination from allometric principles. *Applied Animal Behaviour Science*, 117, (1–2):1-12.

Utilizing this equation, a 400 lb. (181.8 kg) calf should receive a minimum of 9 sq. ft., rather than 7 sq. ft., and a 40' container should be loaded with no more than 33 calves, rather than 46, as indicated by the chart in the Interisland Livestock Shipping Standards.

A study that examined the effect of space allowance on simulated sea transport concluded that 0.26 sq. meter (2.8 sq. feet) for a 28 kg (61.6 lb.) sheep – a space allowance slightly *higher* than that in the complete version of Interisland Livestock Shipping Standards – was “likely to be inadequate” because of the promotion of pushing and aggression between the animals and failure to permit lying behaviors.<sup>19</sup> A subsequent study found that increasing space allowance to 0.52 sq. meters (5.6 sq. ft.) per 25 kg (55 lb.) sheep improved animal welfare, particularly by providing more opportunity for them to step to keep their balance.<sup>20</sup> This space allowance is more than twice that in the Interisland Livestock Shipping Standards.

It is widely recognized that loading densities based on the physical dimensions of the animals alone are inappropriate because this will not permit effective thermoregulation.<sup>21</sup> For example, both United States regulations and the European Commission require greatly increasing space allowance for unshorn sheep.<sup>22-23</sup>

Given that the space requirements under the Interisland Livestock Shipping Standards are already inadequate to ensure animal welfare and effective thermoregulation, it is extremely concerning that HDOA is proposing to allow for these loading densities to be exceeded by up to 10%. This virtually guarantees that severe heat stress and associated animal welfare issues will develop, thus, this provision should be deleted.

The following measures are recommended to correct the problems associated with loading density in the current proposal:

- Include minimum space requirements and/or maximum loading densities for cattle, sheep and goats, pigs, and horses. Ensure calculations are based on the correct internal dimensions of shipping containers.
- Decrease the “maximum number to load” as indicated in the attached document. Remove any provision to exceed the maximum loading densities specified in the regulations.
- Ensure that space requirements are not based on the animals’ physical dimensions alone. Space requirements should consider the physiologic status of animals, such as whether sheep are shorn or unshorn, whether animals have horns, and whether animals need to lie

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<sup>19</sup> Navarro, G., Col, R., & Phillips, C.J.C. (2018). Effects of space allowance and simulated sea transport motion on behavioural and physiological responses of sheep. *Applied Animal Behaviour Science*, 208: 40-48.

<sup>20</sup> Navarro, G., Col, R., & Phillips, C. (2020). Effects of Doubling the Standard Space Allowance on Behavioural and Physiological Responses of Sheep Experiencing Regular and Irregular Floor Motion during Simulated Sea Transport. *Animals: an open access journal from MDPI*, 10(3), 476.

<sup>21</sup> Consortium of the Animal Transport Guides Project. (2017). Guide to good practices for the transport of cattle. Revision May 2018. <https://tinyurl.com/cnxvj59s>.

<sup>22</sup> Consortium of the Animal Transport Guides Project. (2017). Guide to good practices for the transport of sheep. Revised 2018. <https://tinyurl.com/4sc9d3k4>.

<sup>23</sup> Animal and Plant Health Inspection Service. (2020). Program Handbook: Exportation of Live Animals, Hatching Eggs, and Animal Germplasm from the United States. <https://tinyurl.com/3asjuns3>.

down during the journey. Consider decreasing maximum loading density when temperature and humidity are high and thermoregulation is more difficult.

### Loading Practices and Placement of Animals Onboard

While we are pleased that the proposal includes a requirement for adequate ventilation, additional amendments should be made to ensure that the loading practices and placement of animals onboard ensure adequate ventilation to protect from heat stress.

The proposed rule should be amended to include practices to minimize time onboard by requiring carriers to implement loading practices that ensure that animals are the last on and first off a docked vessel. Prioritizing animals in this way will ensure that animals are not exposed to the elements and stresses of transport for unnecessary durations, minimizing the potential for negative health and welfare outcomes.

Further, ventilation is essential to the welfare of animals transported by ship, as it mitigates heat stress, provides fresh air (including oxygen) and removes noxious fumes from accumulated urine and feces. The regulations should thus be amended to ensure that animals are not placed in a location that prevents cross-ventilation for animals, or in locations that produce excessive heat. Examples of such locations include nearby engine boiler rooms, fuel oil storage walls, the ceiling on the uppermost deck, or the sides of the vessel. Carriers should also be prohibited from placing animals in a location in which water intrusion may occur, such as on the sides of barges used for interisland transport.

### Conditions in Loading and Staging Areas

#### Access to Food and Water

We also note that the proposed amendment includes only a very minimal requirement regarding the provision of food and water to transported animals, requiring that they not be deprived of food or water for longer than 24 hours (§ 4-16-11(f)). This is in contrast to the complete version of the Interisland Livestock Shipping Standards which requires pigs and horses not be deprived of water for longer than 12 hours and requires that horses have continuous access to feed.

Calves and other young animals are at particular risk of adverse health effects from food and water deprivation. Depending on their age, unweaned calves with free access to the dam feed an average of 12 times per day, or every two hours. The transport process increases energy expenditure above baseline. This means that calves who do not receive food and water for 24 hours experience prolonged hunger and thirst, develop significant dehydration, and may become hypoglycemic.<sup>24, 25, 26</sup> They may also be more likely to develop enteric infections after arrival at their destination.<sup>27</sup> Their risk of dying or becoming nonambulatory during shipment and their risk of becoming sick and dying during the

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<sup>24</sup> Roadknight, N., Mansell, P., Jongman, E., *et al.* (2021). Invited review: The welfare of young calves transported by road. *Journal of dairy science*, 104(6), 6343–6357.

<sup>25</sup> Marcato, F., van den Brand, H., Kemp, B., *et al.* (2020). Effects of pretransport diet, transport duration, and type of vehicle on physiological status of young veal calves. *Journal of dairy science*, 103(4), 3505–3520.

<sup>26</sup> González, L. A., Schwartzkopf-Genswein, K. S., Bryan, M., *et al.* (2012). Factors affecting body weight loss during commercial long haul transport of cattle in North America. *Journal of animal science*, 90(10), 3630–3639.

<sup>27</sup> Hogan, J. P., *supra* note 3.

immediate post-transport period is likely to increase if subjected to 24 hours of food and water deprivation.<sup>28, 29</sup>

Similarly, weaned pigs become dehydrated and fatigued when transported for more than 12 hours without feed or water, and with dehydration worsening the longer the transport continues.<sup>30</sup> Clinical dehydration and thirst are considerable in weaned pigs transported for 24 hours, and significant weight loss and markedly elevated blood stress markers (neutrophil:lymphocyte ratio) are noted in pigs transported without water for 32 hours.<sup>31-32</sup>

At high temperatures, evaporative cooling is the primary way that cattle and many other species dissipate heat.<sup>33</sup> For this reason, water requirements increase with increasing temperature and water availability during time of heat stress risk is crucial.<sup>34</sup>

For these reasons, we suggest that the standard be revised to ensure that animals are not allowed to go without food or water for more than 24 hours during transport *including hold times*. It is essential that the carrier ensure clean water is accessible at the port and that the responsible party provide animals with this water if holding-plus-shipping time exceeds 24 hours or as indicated by the temperature-humidity conditions and evidence of heat stress.

We also suggest that the limit on water deprivation be decreased to 12 hours for pigs and horses, as indicated in the complete Interisland Livestock Shipping Standards, and for calves 3 months of age and younger.

### Access to Shade

Currently, a major challenge for preventing dangerous levels of heat stress among livestock on interisland journeys is the lack of shade in loading and staging areas. While vessel movement may improve airflow at sea, stationary containers are subject to rapid increases in temperature-humidity index due to poor airflow.<sup>35</sup> Under these circumstances, solar radiation is a major component of heat load, and shade to mitigate this heat load is essential.<sup>36</sup>

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<sup>28</sup> Roadknight, N., *supra* note 24.

<sup>29</sup> Schwartzkoff-Genswein, K. & Grandin, T. *supra* note 12.

<sup>30</sup> Sutherland, M. A., Backus, B. L., & McGlone, J. J. (2014). Effects of Transport at Weaning on the Behavior, Physiology and Performance of Pigs. *Animals (Basel)*, 4(4), 657–669.

<sup>31</sup> EFSA Panel on Animal Health and Welfare (AHAW), *supra* note 4.

<sup>32</sup> Garcia, A., Sutherland, M., Pirner, G., *et al.* (2016). Impact of Providing Feed and/or Water on Performance, Physiology, and Behavior of Weaned Pigs during a 32-h Transport. *Animals: an open access journal from MDPI*, 6(5), 31.

<sup>33</sup> Blackshaw, J.K., Blackshaw, A.W. (1994). Heat stress in cattle and the effect of shade on production and behaviour: a review. *Aust J Exp Agric*, 34, 285–295.

<sup>34</sup> Sullivan, K. F., *supra* note 10.

<sup>35</sup> Fisher, A. D., Stewart, M., Duganzich, D. M., Tacon, J., & Matthews, L. R. (2005). The effects of stationary periods and external temperature and humidity on thermal stress conditions within sheep transport vehicles. *New Zealand veterinary journal*, 53(1), 6–9.

<sup>36</sup> Blackshaw, J.K., *supra* note 33.

In hot weather, cattle and other livestock are highly motivated to seek shade, and when prevented from doing so, they show signs of physiological and behavioral stress and may even engage in aggressive behaviors to gain access to shade.<sup>37, 38</sup>

Shade can reduce the heat load from solar radiation by 30 to 45 percent or more.<sup>39, 40</sup> Providing shade is considered the most effective method of reducing morbidity and mortality due to heat stress, reducing heat load by 1,400kJ/hour.<sup>41</sup> Its importance is even greater in water-restricted animals. Research shows that shading cattle in hot weather improves physiologic indicators, such as rumination times, and indicators of heat stress, such as body surface temperatures and respiratory rate.<sup>42</sup> While the containers in which livestock are shipped are typically roofed, this does not provide sufficient shade for mitigating heat stress. Because the roof is only slightly above the heads of the animals, it serves to decrease the airflow needed to dissipate metabolic heat generated by the animals' bodies. In addition, the heat absorbed by the roof and sides of the container is transmitted to the animals. While animals may technically be shaded by the roof when the sun is directly overhead, they will still experience direct solar radiation at other times of day. In addition, solar radiation is reflected from the ground and other surfaces adjacent to the container, further increasing heat load.

A variety of materials are available for providing shade, and effectiveness for mitigating heat stress varies widely. To ensure the shade structure constructed succeeds in providing an acceptable microclimate underneath the covered area, we recommend careful deliberation prior to selecting the shade material. While trees are often the most effective shade structure, providing beneficial cooling as moisture evaporates from their leaves, they are unlikely to be an effective solution under port conditions. Numerous resources are available for comparing the relative utility of differently types of shade materials, such as painted aluminum, shade cloths of different colors and light-excluding abilities, thatch, and other materials.<sup>43, 44, 45</sup> Slats and other shade materials that only provide interrupted shade are considerably less effective and are not recommended.

Construction of shaded areas should take into consideration several factors including: (1) the orientation and slope of the shade structure, (2) the height of the shade structure, and (3) the length-to-width ratio

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<sup>37</sup> Kamal, R., Dutt, T., Patel, M., Dey, A., Bharti, P. K., & Chandran, P. C. (2018). Heat stress and effect of shade materials on hormonal and behavior response of dairy cattle: a review. *Tropical animal health and production*, 50(4), 701–706. <https://doi.org/10.1007/s11250-018-1542-6>

<sup>38</sup> Mitlöhner, F. M., Morrow, J. L., Dailey, J. W., Wilson, S. C., Galyean, M. L., Miller, M. F., & McGlone, J. J. (2001). Shade and water misting effects on behavior, physiology, performance, and carcass traits of heat-stressed feedlot cattle. *Journal of animal science*, 79(9), 2327–2335. <https://doi.org/10.2527/2001.7992327x>

<sup>39</sup> Blackshaw, J.K., *supra* note 33.

<sup>40</sup> Kamal, R., *supra* note 37.

<sup>41</sup> Blackshaw, J.K., *supra* note 33.

<sup>42</sup> Reis, N. S., Ferreira, I. C., Mazocco, L. A., Souza, A., Pinho, G., da Fonseca Neto, Á. M., Malaquias, J. V., Macena, F. A., Muller, A. G., Martins, C. F., Balbino, L. C., & McManus, C. M. (2021). Shade Modifies Behavioral and Physiological Responses of Low to Medium Production Dairy Cows at Pasture in an Integrated Crop-Livestock-Forest System. *Animals: an open access journal from MDPI*, 11(8), 2411. <https://doi.org/10.3390/ani11082411>

<sup>43</sup> Blackshaw, J.K., *supra* note 33.

<sup>44</sup> Brown-Brandl, T. M., Chitko-McKown, C. G., Eigenberg, R. A., Mayer, J. J., Welsh, T. H., Davis, J. D., & Purswell, J. L. (2017). Physiological responses of feedlot heifers provided access to different levels of shade. *Animal: an international journal of animal bioscience*, 11(8), 1344–1353. <https://doi.org/10.1017/S1751731116002664>

<sup>45</sup> Kamal, R., *supra* note 37.

of the shade structure.<sup>46</sup> It is important to ensure air movement is not inhibited by excessive width (>12 meters (39 ft.)), unless several continuous roof openings are provided for air circulation. It is also important that sufficient shade be provided such that the entire container is shaded throughout the entire day and areas around the containers are shaded to decrease the container's heat load from solar radiation reflected by the ground. Under feedlot conditions, 3.7-5.6 square meters (40-60 sq. ft.) of shade are recommended per animal.<sup>47, 48</sup>

## Ensuring Fitness for Transport

HDOA's proposal should be revised to incorporate fitness for transport standards. This can be achieved by incorporating the Hawaii Cattlemen's Council's fitness to travel provisions from its Interisland Livestock Shipping Standard and by further limiting the transport of vulnerable animals to be consistent with international standards.

Transporting animals involves the potential risk of death or injury, and the physiological and physical condition of an animal determines his or her "fitness for transport," or ability to cope with transport stressors.<sup>49</sup> Both within the United States and internationally, it is recognized that animals must be fit for transport, both to ensure animal welfare and to reduce risk of disease dissemination.<sup>50, 51, 52</sup> This requirement is even more crucial for animals transported by ship, because of the additional challenge of maintaining balance in the face of constant floor motion due to waves.

In fact, although the version of the Interisland Livestock Shipping Standards included as Exhibit B was truncated to remove it, the complete version of this document includes a statement regarding fitness for transport:<sup>53</sup>

Animals that are injured, obviously ill, unable to bear weight on all 4 limbs, are likely to give birth during transport, or those that have not been weaned and are traveling separate from the mother should not be transported. Aggressive animals should be transported separately.

In addition to the fitness criteria described in the complete version of the Interisland Livestock Shipping Standards, the regulations should adopt fitness criteria included in federal export regulations and in international standards.<sup>54</sup> The HDOA should forbid the transport of animals that are injured, ill, have unhealed wounds, or are unable to bear weight on all four limbs; are blind in both eyes; are likely to give birth during transport or have given birth in the past 48 hours and traveling without their offspring; or are not weaned and traveling separate from the mother. Aggressive animals should be transported separately.

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<sup>46</sup> Blackshaw, J.K., *supra* note 33.

<sup>47</sup> *Id.*

<sup>48</sup> Sullivan, K. F., *supra* note 10.

<sup>49</sup> Schwartzkoff-Genswein, K. & Grandin, T., *supra* note 12.

<sup>50</sup> American Veterinary Medical Association, *supra* note 8.

<sup>51</sup> World Org. for Animal Health (OIE). Chapter 7.2. Transport of Animals by Sea, <https://tinyurl.com/5y22pusf>.

<sup>52</sup> Government of Canada. (2013). Guide to Assessing Fitness for Transport. <https://tinyurl.com/yn9pav8b>.

<sup>53</sup> Interisland Livestock Shipping Standards Checklist All Species, *supra* note 13.

<sup>54</sup> World Org. for Animal Health, *supra* note 51.

## Conclusion

In sum, AWI and the undersigned organizations generally support the adoption of the proposal but believe that several changes to the standard are necessary for ensuring that the circumstances that gave rise to the rule's promulgation are not codified. HDOA should implement fitness to transport standards for all animals and ensure that heat stress is prevented by revising its load density requirement, improving loading and holding practices, and requiring food and water for animals when transport/holding exceed 12 to 24 hours. Thank you for the opportunity to comment on the proposed amendments and for your thoughtful consideration of our concerns.

Respectfully Submitted,



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Animal Welfare Institute

### Hawaii Supporters

Aloha Animal Advocates  
Aloha Lokahi Association  
Animal Rights Hawai'i  
Kauai Humane Society  
Maui Humane Society

### National Supporters

Animal Legal Defense Fund  
Animal Outlook  
Mercy For Animals  
The Humane Society of the United States

Attachments: Proposed Amendments to Hawaii Livestock Shipping Standards



# Animal Welfare Institute

900 Pennsylvania Avenue, SE, Washington, DC 20003

## Proposed Amendments to Hawaii Livestock Shipping Standards

Proposed amendments are indicated in red font.

4-16-11 Carrier responsibility ~~{on importations}~~

(a) Carriers transporting cattle, bison, water buffalo, camelids, sheep, or goats . . .

...

(c) Carriers shall ensure that cattle, bison, water buffalo, camelids, sheep, and goats are provided adequate ventilation. **Carriers shall not place or stack containers in a manner that prevents cross-ventilation for animals.** Animals shall not be stowed during transportation or staged prior or subsequent to transportation in a manner that prevents natural ventilation unless ventilation with large industrial type fans is provided.

...

(e) Ocean carriers for the intrastate movement of **livestock cattle, bison, water buffalo, camelids, sheep, and goats** shall ensure that the Interisland **Livestock Animal** Shipping Standards by species, attached as Exhibit B are followed. **Load densities shall not deviate by greater than 10% of the maximum load densities listed in interisland space requirements by species listed.**

(f) It shall be the responsibility of the carrier, owner, **and** stock tender of **livestock animals** being transported interstate and intrastate to **(1)** provide provisions **for the livestock** during transport and not allow **livestock animals** to go without feed or water for a period exceeding **a total of 24 hours at any time including transport and holding time.** **Water deprivation for pigs, horses, and calves 3 months of age or younger shall not exceed 12 hours including transport and holding time.**

(g) Ocean carriers shall implement loading practices that ensure animals are the last on and first off a docked vessel. Carriers shall restrict animals from being loaded into locations that produce excessive heat, such as nearby engine boiler rooms, fuel oil storage walls, the ceiling on the uppermost deck, or the sides of the vessel (except interstate ships with no water intrusion). Carrier practices shall minimize staging, loading, and off-loading area wait time for animals. Carriers shall ensure that staging areas have access to clean water and shade (constructed or natural) for animals.

(h) No animal shall be transported via ocean vessel that is injured, ill, has unhealed wounds or is unable to bear weight on all four limbs; is blind in both eyes; is likely to give birth during transport or has given birth in the past 48 hours and traveling without their offspring; or is not weaned and traveling separate from the mother. Aggressive animals shall be transported separately.

...

Exhibit B

Other standards contained in Exhibit B shall be revised to be consistent with above revisions (e.g., ventilation, water/food access, loading practices) for all animals.

Interisland Transportation Space Requirements – Cattle					
Avg. Body Wt. (lbs.)	Area per Animal (ft <sup>2</sup> )	Height	20' container (max number to load)	40' container (max number to load)	40' x 2 Double Decker (max number to load)
400	7	Stand comfortably, ensure 12 inches of clearance above head	<del>23</del> 20	<del>46</del> 43	<del>70</del> Over height limit
500	8		<del>20</del> 17	<del>40</del> 38	<del>61</del> Over height limit
600	9		<del>18</del> 15	<del>36</del> 33	<del>54</del> Over height limit
800	11		<del>15</del> 13	<del>29</del> 27	Over height limit
1,000	14		<del>11</del> 10	<del>23</del> 21	Over height limit
1,200	15.5		<del>10</del> 9	<del>21</del> 19	Over height limit
1,500	19		<del>8</del> 7	<del>17</del> 16	Over height limit

Interisland Transportation Space Requirements – Sheep & Goats					
Avg. Body Wt. (lbs.)	Area per Animal (ft <sup>2</sup> )	Height	20' container (max number to load)	40' container (max number to load)	40' x 2 Double Decker (max number to load)
60	2.4	Stand comfortably, ensure 12 inches of clearance above head	59	126	Consistent with load density calculation. Must ensure 12 inches of clearance above head for each level.
80	2.7		53	112	
100	3		47	101	
120	3.6		39	84	

Interisland Transportation Space Requirements – Pigs					
Avg. Body Wt. (lbs.)	Area per Animal (ft <sup>2</sup> )	Height	20' container (max number to load)	40' container (max number to load)	40' x 2 Double Decker (max number to load)
50	1.8	Stand comfortably, ensure 12 inches of clearance above head	79	168	Consistent with load density calculation. Must ensure 12 inches of clearance above head for each level.
100	2.8		51	108	
150	3.5		40	86	
200	4.2		34	72	
250	5.1		28	59	
300	6		23	50	
350	6.6		21	46	

Interisland Transport Space Requirements – Horses					
Avg. Body Wt. (lbs.)	Area per Animal (ft <sup>2</sup> )	Height	20' container (max number to load)	40' container (max number to load)	40' x 2 Double Decker (max number to load)
300-1100	20 (2.5 x 8ft)	Stand comfortably, ensure 12 inches of clearance above head	6	13	Over height limitation