Animal Welfare Institute
900 Pennsylvania Avenue, SE, Washington, DC 20003

October 7, 2022

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

Via email to HDOA.BOARD.TESTIMONY@HAWAII.GOV

Re: Hawaii Department of Agriculture Proposed Rule Amendments to Chapter 4-16 Regarding the Transport of Farm Animals by Sea

Dear Chairperson Phyllis Shimabukuro-Geiser and Board Members,

On behalf of the Animal Welfare Institute (AWI)[1] and the undersigned organizations, the following testimony is submitted in response to the Hawaii Department of Agriculture's (HDOA) proposed amendments to its regulations governing the transport of animals by sea vessels.

In its commitment to promulgate these proposed rules, the HDOA agreed to develop regulations consistent with 9 C.F.R. pt. 91 (federal live animal export regulations). Despite this agreement and understandings reached during conversations with HDOA and industry stakeholders that indicated it planned to honor that assurance, the HDOA's proposed rules again fail to fully meet its commitments.

Our organizations support many of the proposed amendments to Chapter 4-16, which are significant improvements on the draft rules published in April. We are glad to see the rules incorporate fitness for transport standards as well as a requirement that carriers provide water in staging areas. We also commend the department for acknowledging the importance of adequate ventilation and of loading procedures that minimize the risk of suffocation and heat stress.

We are disappointed, however, to find that key provisions we recommended were ignored, most notably the requirement that carriers provide shade for animals waiting in staging areas. Aspirational language and a vague loophole are included in the provision requiring last-on first-off loading, and loading density standards continue to deviate from space allowances recommended for sea-faring vessels and allow for an unacceptable 10% deviation. Finally, the proposed rules fail to specify that animals may not go without feed or water for longer than 24 hours *including time spent in holding, loading, transport, and unloading*.

Our organizations ask that HDOA meet its commitment by making small but important changes to the proposed rule. Suggested in-text revisions are included below.

[1] 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.

Excessive Heat Stress Aboard Shipping Vessels and Loading Density

As written, the HDOA's proposed rules fail to ensure that significant heat stress is prevented during transport. The rules should, at the least, be amended to remove the 10% loading density deviation allowance.

We wish to reiterate the following reasoning from our previous written testimony:

> 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.[2, 3] Excessive heat stress is a common cause of livestock mortality during transport by sea, especially in sheep.[4] The American Veterinary Medical Association emphasizes the importance of protecting animals from environmental extremes during transport.[5] The primary species of cattle raised in Hawaii is *Bos taurus*, which is more susceptible to heat stress than the *Bos indicus* species.[6, 7]
>
> 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.[8]

In our previous written testimony, we pointed out that the chart on cattle space requirements that is referenced by the rules failed to account for the actual internal dimensions of shipping containers used to transport animals. Rather than fixing this error, the new chart deviates from the original Interisland Transportation Space Requirements for cattle and the first proposed rule[9] by decreasing the area each animal of a given weight class should be allotted. Space allowances are now on par with AAPB's recommendations for land transport of cattle.

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[2] 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.

[3] Phillips, C. J., & Santurtun, E. (2013). The welfare of livestock transported by ship. *Veterinary journal (London, England: 1997)*, *196*(3), 309–314.

[4] 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.

[5] American Veterinary Medical Association. (n.d.). Transport, sale yard practices, and humane slaughter of hoofstock and poultry. *AVMA policies*. https://tinyurl.com/mkkxzr2k.

[6] Fukumoto, G.K. & Kim, Y.S. (2007). Carcass Characteristics of Forage-Finished Cattle Produced in Hawai'i. Food Satety and Technology. https://www.hicattle.org/Media/HICattle/Docs/fst-25.pdf

[7] 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

[8] Schwartzkoft-Genswein, K. & Grandin, T. (2019) Cattle Transport in North America. In T. Grandin (Ed.), *Livestock Handling and Transport* (5th ed., pp. 153-183). CAB International.

[9] Hawaii Cattlemen's Council, *Interisland Livestock Shipping Standards | Cattle* (n.d.) https://www.hicattle.org/Media/HICattle/Docs/interisland-shipping-standards-checklist-all-species.pdf

In the submittal document, HDOA justifies the proposed space allowances by stating they are standards put forth by the American Association of Bovine Practitioners and Temple Grandin.[10] However, the standards to which they refer were developed for land transportation of polled cattle. The AAPB Transportation and Fitness-to-Travel Recommendations for Cattle document contains a separate chart with recommended space allowances for animals being transported by sea in 40-foot "cowtainers," and these recommend space requirements are significantly higher than both the previously and currently proposed space requirements:

Animal Weight (lbs)	AABP: Area per Animal Traveling by Ship (sq. ft.)	Area per Animal – Earlier Draft (sq. ft.)	Area per Animal - Proposed Changes 14-6 (sq. ft)
400	7.61	7	6.4
500	9.24	8	7.5
600	10.78	9	8.5

The submittal attempts to defend the adoption of space requirements developed for land transportation, rather than those developed for transportation by sea, by stating that "the duration of the Intrastate movement of livestock in Hawaii is most closely aligned with the interstate ground transportation of livestock by trucks and trailers on the Mainland US."[11] However, as discussed in the scientific literature on this subject, the motion of ships is very different to that of road vehicles and there is no evidence that stocking density recommendations developed for land transport are adequate for sea transport, even when journey durations are the same.[12]

The submittal goes on to defend the decision to decrease the minimum space allowance and the inclusion of a 10% deviation allowance by pointing to "many decades of successful inter-island livestock shipments" and asserting that the proposed mandatory Shipmaster's Declaration requirement will allow shipments to be monitored and evaluated. However, there are multiple problems with this rationale. First, the Shipmaster's Declaration will only record mortality of transport by sea. While mortality may be considered the "ultimate measure" of animal welfare, it certainly should not be considered the only measure—it ignores the distress and negative welfare impacts experienced by animals subjected to non-lethal heat stress.[13,14] In addition, climate change is projected to increase Hawaii's air and surface water temperatures considerably in the coming decades. In the last 40 years, air temperature in Hawaii has been increasing by about over 0.3°F (0.17°C) per decade, with daily temperature ranges documented to

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American Association of Bovine Practitioners, *Transportation and Fitness-to-Travel Recommendations for Cattle* (2019) https://www.aabp.org/Resources/AABP_Guidelines/transportationguidelines-2019.pdf ; Grandin, T., *Recommended Trucking Practices* (2013) https://www.grandin.com/behaviour/rec.truck.htm

[11] Hawaii Department of Agriculture, Animal Industry Division, Submittal for October 11, 2022.

[12] Phillips, C. J., & Santurtun, E. (2013). The welfare of livestock transported by ship. *Veterinary journal (London, England: 1997)*, *196*(3), 309–314.

[13] 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.

[14] Gonzalez-Rivas, P. A., Chauhan, S. S., Ha, M., Fegan, N., Dunshea, F. R., & Warner, R. D. (2020). Effects of heat stress on animal physiology, metabolism, and meat quality: A review. *Meat science*, *162*, 108025. https://doi.org/10.1016/j.meatsci.2019.108025

be increasing more rapidly on some Hawaiian islands than the global mean.[15] Models predict that Hawaii's temperatures will increase by 4 to 5 degrees Fahrenheit (2.2-2.8 degrees Celsius) by 2085.[16] HDOA must take these factors into consideration in adopting minimum space requirements that will adequately protect animals being transported from significant heat stress.

Even if the flawed minimum space requirements currently being advanced were to be accepted, the 10% deviation allowed in loading density that remains in proposed paragraph (e) will result in square footage per animal that is less than that advocated by AAPB and Grandin.

As we explained in our prior written testimony, the actual internal dimension of 20' and 40' containers are 143.2 sq. ft and 304.24 sq. ft. respectively. [17-18] 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 if a 10% upward deviation is allowed:

Area (sq. ft.) = Length (ft.) x Width (ft.)

Max Number to Load + 10% Deviation = Actual Max Number to Load

Space Allowance (sq. ft./animal) = Area (sq. ft.) ÷ # of animals

The following are two examples of how the space allowance is calculated with a 10% upward deviation:
For a 40 ft. Container:

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

36 cattle max + 3.6 = 39.6 = 39 cattle

Actual Space Allowance = 304.24 sq. ft. ÷ 39 cattle = **7.8 sq. ft. per 600-lb. cow**

AAPB/Grandin Area Per Animal recommendation**: 8.5 sq ft. per 600-lb. cow.**

For a 20 ft. Container:

Container Area[19] = 18.67 ft. x 7.67= 143.2 sq. ft.

10 cattle + 1 = 11 cattle

Actual Space Allowance = 143.2 sq. ft. ÷ 11 cattle = **13 sq. ft. per 1,200-lb. cow**

AAPB/Grandin Area Per Animal**: 15.3 sq ft. (with horns)/14.5 sq ft. (polled) per 1,200-lb. cow.**

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[15] Eversole, D. (2014). Climate change impacts in Hawai'i: a summary of climate change and its impacts to Hawaii's ecosystems and communities. University of Hawaii at Manoa. Sea Grant College Program; School of Ocean and Earth Science and Technology (SOEST). Available at: https://repository.library.noaa.gov/view/noaa/39931

[16] Keener, V.W., K. Hamilton, S.K. Izuka, K.E. Kunkel, L.E. Stevens, and L. Sun. (2013). Regional Climate Trends and Scenarios for the U.S. National Climate Assessment. Part 8. Climate of the Pacific Islands, NOAA Technical Report NESDIS 142-8. Available at: https://nesdis-prod.s3.amazonaws.com/migrated/NOAA_NESDIS_Tech_Report_142-8-Climate_of_the_Pacific_Islands.pdf?_ga=2.207678866.1603814035.1665167455-1222588789.1665167455

[17] K & K Global, *Container Dimension* https://tinyurl.com/3avmkdek; https://tinyurl.com/2p8hah98.

[18] *What is the internal dimensions of a 40FT container? Leonieclaire.* (2020). https://tinyurl.com/2p8fmnjy.

[19] Young Brothers. (n.d.) YB Equipment Available for Use: 20-Foot Dry Container – Internal Dimensions. https://tinyurl.com/4wh5xfpv

These calculations show that an upward deviation results in a smaller area per animal than industry standard:

Avg. Body Wt. (lbs.)	Area per Animal (proposed 14-6)	Area per Animal (AABP/Grandin)	20' container (max # to load)	40' container (max # to load)	20' container 10% deviation # to load/ resulting area per animal (ft^2)	40' container 10% deviation # to load/ resulting area per animal (ft^2)
400	6.4	6.4	23	46	25/5.7	50/ 6.08
500	7.5	n/a	20	40	22/6.5	44/6.9
600	8.5	8.5	18	36	20/7.16	39/7.8
800	10.4	10.9/10.4	15	29	16/8.95	32/9.5
1,000	13	12.8/12	11	23	12/11.9	25/12.2
1,200	14.7	15.3/14.5	10	21	11/13	23/13.2
1,500	18	19/18	8	17	9/15.9	19/16

Again, we would like to reiterate that 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 than federal regulations regarding export of animals via ocean vessel.[20]

Given that the space requirements under the Interisland Livestock Shipping Standards are already inadequate to ensure animal welfare and effective thermoregulation, it is unacceptable that HDOA will 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. Instead, the provision should read:

> (e) Ocean carriers for the intrastate movement of livestock cattle, bison, water buffalo, camelids, sheep, and goats shall ensure that the Interisland Livestock 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~~.

Loading Practices and Placement of Animals Onboard

While we are pleased that the proposal includes a requirement for adequate ventilation, we are concerned that the language used to articulate the last-on/first-off loading requirement is aspirational and contains a vague loophole for "harbor logistical limitations." This practice must be more than aspired to and the exception must only be for demonstrable circumstances beyond the carrier's control. Thus, the provision should read:

> (g) Ocean carriers, barring circumstances beyond the carrier's control ~~harbor logistical limitations~~, shall implement loading practices that ~~strive to~~ ensure animals are the last on and first off a docked vessel.

[20] See Comments by Animal Welfare Institute on Hawaii Department of Agriculture Proposed Rule Amendments Regarding the Transport of Farm Animals by Sea (May 16, 2022) pp 4-5.

Prioritizing animals in this way will ensure that they are not exposed to the elements and stresses of transport for unnecessary durations, minimizing the potential for negative health and welfare outcomes.

Conditions in Loading and Staging Areas

Access to Food and Water

We note that the proposed rules include 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)). For the reasons already articulated in our previous testimony, the standard should be revised to ensure animals are not allowed to go without food or water for more than 24 hours during transport, which includes staging, loading, and unloading times. As there are no interisland transports that exceed 12 hours, this provision would be meaningless unless clarified. It should read:

> (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 time including time spent in holding, loading, transport, and unloading.

We also suggest that an asterisk be added next to "trips" in the "Feed and Water" sections of Exhibit A and B charts, with corresponding language that the asterisk defines trips as including "staging, loading, transport, and unloading."

At high temperatures, evaporative cooling is the primary way that cattle and many other species dissipate heat.[21] Therefore, water requirements increase with increasing temperature, and water availability during time of heat stress risk is crucial.[22] It is essential that the carrier ensure clean water at the port is accessible to animals. For clarity, we suggest the addition of the word "in" to the provision:

> (g) … Carriers shall restrict animals from being loaded into locations that produce excessive heat, have restricted ventilation and are placed in locations that may flood containers with ocean water. Carriers shall ensure that livestock in staging areas within harbors have access to clean water . . .

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. Shade can reduce the heat load from solar radiation by 30 to 45 percent or more.[23, 24] Unsurprisingly, providing shade is considered the most effective method of reducing morbidity and mortality due to heat stress, reducing heat load by

[21] 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.
[22] Sullivan, K. F., *supra* note 7.
[23] Blackshaw, J.K., *supra* note 21.
[24] 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

1,400kJ/hour.[25] For these reasons, as well as those articulated in our prior testimony, animals waiting at port in loading or staging areas must be provided with shade. Paragraph (g) should read:

> (g) . . . Carriers shall ensure that livestock in staging areas within harbors have access to clean water, sufficient shade for all animals, and adequate ventilation.

Conclusion

AWI and the undersigned organizations generally support the adoption of the proposed rule, but we strongly believe that the changes described above are necessary for ensuring that the circumstances that gave rise to the rule's promulgation are not codified. To prevent heat stress and poor welfare outcomes for animals during transport HDOA must revise its loading density requirement, improve the language governing loading practices, require that sufficient shade for all animals be provided in staging areas, and require food and water for animals when transport and holding exceed 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 Rights Hawai'i
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[25] Blackshaw, J.K., *supra* note 21.