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## Animal Welfare Act as it relates to aquatic animals

### **I. Introduction**

The welfare of captive marine mammals kept for entertainment purposes recently caused public outrage and brought both the public and the professionals' attention on welfare conditions of aquatic animals. At the same time, concerns over mass production of fish also emerge.

Aquatic species are, by definition, any kind of animals that primarily lives in the water. It is a broad category that covers vertebrates and invertebrates, air and water breathing animals, mammals, amphibians, mollusks crustacean, fish and many more.

There is no specific data on the number of aquatic animals in the wild, and bred for food and entertainment purposes. Aquatic animals are extremely diverse and usually divided in various and very different categories, which make them difficult to count. In some cases, some animals are so numerous, that they are being counted in tons rather than numerically, especially in the context of farming<sup>1</sup>. Finally, the scientific research is still in the process of discovering new species in the oceans, as technology develops and help us get a better access to very deep and remote ecosystems<sup>2</sup>.

Animal welfare was first thought in the context of the protection of terrestrial animal<sup>3</sup>. As we still struggle with philosophical, scientific and practical issues related to the

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<sup>1</sup> In the case of shrimp production, for example

<sup>2</sup> Paul Snelgrove, A Census of the Ocean, TED talk, July 2011, [http://www.ted.com/talks/paul\\_snelgrove\\_a\\_census\\_of\\_the\\_ocean](http://www.ted.com/talks/paul_snelgrove_a_census_of_the_ocean).

<sup>3</sup> T. Hastein et al., Science-based Assessment of Welfare: Aquatic Animals, 529-530 (2005).

ethics of terrestrial animals, the specific question of aquatic animal welfare now begins to emerge. Yet, it is notable that terrestrial and aquatic animals “have similar anatomies, physiologies and behaviors”<sup>4</sup>.

Despite the practical challenges we face in conferring actual legal protections to aquatic animals, the Animal Welfare Act, however lacunar, still presents opportunities to include aquatic animals within a meaningful legal framework.

## **II. The Animal Welfare Act**

While providing a narrow definition of what an animal is, the AWA implicitly excludes cold-blooded animals as well as animals used for food:

Section 2132 of the AWA: definition of “animals”

*The term “animal” means any live or dead dog, cat, monkey (nonhuman primate mammal), guinea pig, hamster, rabbit, or such other warm-blooded animal, as the Secretary may determine is being used, or is intended for use, for research, testing, experimentation, or exhibition purposes, or as a pet; but such term excludes (1) birds, rats of the genus *Rattus*, and mice of the genus *Mus*, bred for use in research, (2) horses not used for research purposes, and (3) other farm animals, such as, but not limited to livestock or poultry, used or intended for use as food or fiber, or livestock or poultry used or intended for use for improving animal nutrition, breeding, management, or production efficiency, or for improving the quality of food or fiber.*

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<sup>4</sup> *Id.*

Even though this definition applies to warm-blooded animals, it does not explicitly exclude cold-blooded animals, such as fish. However, it explicitly excludes animals used for food, including fish used for food.

The intended purpose of the AWA is to assure the humane treatment of animals used in research facilities and for exhibition purposes or for use as pets, as well as the humane treatment of animals during transport in commerce.<sup>5</sup> The number of aquatic animals in the US is overwhelming. By excluding protection under the AWA to cold-blooded animals, the AWA misses its purpose.

### **III. Analysis of Animal Welfare Act**

Our analysis focuses on poikilothermic aquatic animals, a term designating cold-blooded aquatic animals. In other words, every aquatic animal except marine mammals who already are covered under federal statute<sup>6</sup>. Based on the use that is usually made of poikilothermic animals, and the structure of the AWA, we identified four relevant categories of regulations that could well apply to cold-blooded aquatic animals: transportation ; public and private exhibition and biomedical research. Those categories sometimes overlap.

According to the UK Medway Report on Angling and Shooting - for purposes of feeling pain in fish, it has been determined that there is no difference between warm-blooded and cold-blooded animals<sup>7</sup>. The biologists for Fish and Fisheries also concluded that fish are “steeped in social intelligence, pursuing Machiavellian strategies of manipulation, punishment and reconciliation, exhibiting stable cultural traditions, and co-operating to inspect predators and

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<sup>5</sup> 7 U.S.C. § 2131 (1966).

<sup>6</sup> 16 U.S.C. § 1362 (1972).

<sup>7</sup> Franz Heymann, Extracts from the Medway Report on Shooting and Angling, Narkive News Group Archive, 2004, <http://uk.rec.fishing.coarse.narkive.com/y5PrJJqC/extracts-from-the-medway-report-on-shooting-and-angling>

catch food.”<sup>8</sup>. Based on those findings, the AWA should explicitly include warm-blooded aquatic animals and extend its coverage to cold-blooded aquatic animals.

#### **IV. Aquatic animals’ suggested role in the AWA**

##### **A. Animal Welfare Act should protect aquatic animals for purposes of transportation**

According to the FAO, there are two main ways of transporting live fish: “*The closed system is a sealed container in which all the requirements for survival are self-contained. The simplest of these is a sealed plastic bag partly filled with water and oxygen. The open system consists of water-filled containers in which the requirements for survival are supplied continuously from outside sources. The simplest of these is a small tank with an aerator stone*”<sup>9</sup>.

Ornamental fish as well as some farmed fish are transported alive and they all suffer adverse consequence of the lack of regulations regarding their welfare during transport. Health consequences can even last after transport, as studies about ornamental fish show<sup>10</sup>. Furthermore, some species of aquatic animals can be transported without water, and might suffer from the lack of it<sup>11</sup>.

We can distinguish three periods of the transport:

- Pre-transport : draining of ponds, starvation

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<sup>8</sup> “Scientists Highlight Fish ‘Intelligence’”, BBC News 31 Aug. 2003.

<sup>9</sup> R. Berka, The Transport of Live Fish: A Review, Fisheries Research Institute Scientific Information Centre, Food and Agriculture Organization of the United Nations (FAO), 1986, <http://www.fao.org/docrep/009/af000e/AF000E01.htm>.

<sup>10</sup> Terry D. Bartelme, Reducing Losses Associated with Transport; Handling in Marine Teleost Fish, *Advanced Aquarist*, May 2004, <http://www.advancedaquarist.com/2004/5/aafeature>

<sup>11</sup> Live Transport of Farmed Fish, Fish Count, July 2012, <http://fishcount.org.uk/farmed-fish-welfare/farmed-fish-transport>

## Animal Law Clinic

- Loading
- Journey: low water quality (low oxygen levels and filth)<sup>12</sup>

Fish suffer from stress at every stage of transport, which can induce other adverse health effects. Among those side effects, stress causes the weakening of the immune system, which in turn can provoke death. Stress-induced deaths are the major cause of death in transportation<sup>13</sup>. Studies show that the loading of fish into the containers is a great source of stress in fish. Common procedures require the use of nets, pumps and pipes, which create damage to the skin.

During transport, it is usual to lower the temperature of the water to slow the metabolism of fish. Yet, the changes in temperature are often too brutal to fish, therefore adding to the list of factor of stress. Some aquatic animals are transported without water and are still able to survive. But they also suffer from lack of oxygen and temperature<sup>14</sup>.

Even though the overall death of fish during transport is hard to estimate, the factors causing death have been identified, and the procedures to reduce the suffering of fish, based on the shipping method and the species, are known<sup>15</sup>.

We identified several section of the AWA that should include poikilothermic animals. Section 2140 concerning the record keeping by intermediate handlers and carriers is essential in that it would allow us to collect more data on the amount of aquatic animals being transported. Such data are currently lacking, precisely because there is no legal requirement regarding record keeping. Section 2143 on the standards and certification process for humane

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<sup>12</sup> A. Mood & P. Brooke, Estimating the Number of Farmed Fish Killed in Global Aquaculture Each Year, 27, (2012) <http://fishcount.org.uk/published/std/fishcountstudy2.pdf>

<sup>13</sup> Bartelme, *supra*, at 1

<sup>14</sup> *Id.*

<sup>15</sup> L. Swann, Transportation of Fish in Bags, (2007) (an example of one procedure commonly used for the transportation of fish using bags).

handling, care treatment and transportation of animals could also well include aquatic animals so as to ensure that the carriers and handlers are qualified to handle, treat and transport aquatic animals and abide by the rules that grant them basic legal protections.

Some AWA regulations are also relevant to fish and aquatic animals in general in the context of transport. The regulations found in section 2.77 and 2.78<sup>16</sup> further explain the AWA general dispositions we just mentioned, 2.78 further requiring that each animal be delivered with a health certificate, which also is of relevance when collecting data on the health conditions of fish being transported.

Section 2.131<sup>17</sup> applies to wild or exotic animals, that could well be ornamental fish and exotic aquatic animals. It bans the infliction of trauma, physical abuse and food and water deprivation. Water deprivation is particularly of our interest regarding the species who can survive without water, but whose welfare would greatly improved if they were provided water during transportation.

Finally, the transportations standards in section 3.136 to 3.142<sup>18</sup> are also relevant to the transportation of all aquatic animals.

B. Animal Welfare Act should protect aquatic animals for purposes of public and private exhibition

Obtaining actual data for how many aquatic animal species are currently held in captivity for purposes of exhibition in the United States is quite difficult, in part because there are no current mandatory laws regulating record-keeping of such data for individuals in public or

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<sup>16</sup> 7 U.S.C. § 2131(2)(G)

<sup>17</sup> 7 U.S.C. § 2131 (2)(I)(2.131)

<sup>18</sup> 7 U.S.C. § 2131 (2)(III)(F)

private inventories across the country. This has made it quite easy for exhibitors, whether they're a largely funded public aquarium or an in-home aquarium "hobbyist," to skirt around minimum standards for the animals in their care. Many fish die within days of being purchased for exhibition,<sup>19</sup> whereas other species of aquatic animals such as crustaceans and sharks do not fare much better. Many fish kept in aquariums are housed in enclosures that do not properly regulate water temperature,<sup>20</sup> have ammonia build up that can cause disease outbreak among fish and other species within the enclosure,<sup>21</sup> result in a lack of oxygen due to cramped conditions,<sup>22</sup> and are not adequately sized for the species living inside it, causing developmental deformities, environmental stresses due to noises from pumps and other equipment and a lack of environmental enrichment.<sup>23</sup>

However, it is estimated that more than 20 million fish are caught from the wild per year for exhibition purposes,<sup>24</sup> and upwards of 250 million goldfish are bred and then sold to zoos, pet stores, and elsewhere per year.<sup>25</sup> This is an incredibly small snippet of the sheer numbers of individual lives that go unregulated by AWA protection and yet, it is these very lives that the AWA was enacted to protect, by ensuring that animals "for exhibition purposes or for use as pets are provided humane care and treatment..."<sup>26</sup>

There are millions -- if not billions -- of animals being exhibited in the United States per year that are housed in inadequate, inhumane, and otherwise ineffective enclosures to

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<sup>19</sup> Bartelme, *supra*, at Stress Management

<sup>20</sup> Floyd, R.F. Introduction to Fish Health Management, University of Florida, (1997).

<sup>21</sup> *Id.*

<sup>22</sup> *Id.*

<sup>23</sup> Dr. B. Maa, Prepared and Shipped, RSPCA, (2000).

<sup>24</sup> United Nations Environment Programme, "From Cauliflower Corals to Clown Fish," UNEP news release, 30 Sep. 2003.

<sup>25</sup> Caryn Rousseau, Goldfish Galore Spawn at Arkansas Farms. Just Don't Overfeed Them, Associated Press, (August 2, 2004).

<sup>26</sup> 7 U.S.C. § 2131(1)

meet their needs. By amending Animal Welfare Act to explicitly include both warm-blooded and cold-blooded aquatic animals, such as fish, sharks, crustaceans, and cetaceans, the AWA will further its goal to provide for the humane treatment of animals by mandating data-keeping of those animals used for exhibition purposes, as it does with other animals kept in similar circumstances, like zoos or in private ownership.

Aquariums that are open to the public persist throughout the country as places to see these animals up close, and yet little - if any - federal regulations exist to ensure that the animals housed in these exhibits are housed with their best interests in mind. While the AWA regulates public zoos, roadside zoos, sanctuaries, and other forms of exhibition for land animals, it is silent on its protection of animals in aquariums, which are essentially zoos for aquatic animals. So much in fact, that the leader in private accreditation of zoos - Association of Zoos and Aquariums - lists aquariums in its name and the standards for both type of exhibitor are similar.<sup>27</sup> Additionally, pet stores are included as exhibitors under AWA and pet stores often house more aquatic animals (especially fish) than any other type of animal class.

Further, aquarium tanks in the home, at office spaces, and as interior design elements have been around for centuries.<sup>28</sup> These aquariums boast fish, sharks, turtles, and other aquatic animals as pets (“companion animals”) and yet there is little to no law protecting their welfare. It is estimated that over 13% of U.S. homes own either a saltwater or freshwater fish, and with this ownership, some of these homes likely also have other forms of aquatic animals in their aquarium tanks.<sup>29</sup> While the AWA protects other species of companion animals, such as dogs and cats, there is a gap in coverage for a significant number of animals living similar roles.

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<sup>27</sup> Association of Zoos & Aquariums, <https://www.aza.org/accreditation/>

<sup>28</sup> Bernd Brunner, Through a Looking Glass, Sadly, Aeon, <https://aeon.co/essays/why-it-s-time-to-put-an-end-to-the-cult-of-the-aquarium> (2015).

<sup>29</sup> Pet Industry Market Size & Ownership Statistics, American Pet Products Association,

Section 2133 of the AWA requires that dealers and exhibitors apply for and obtain a license to ensure that the dealer or exhibitor “shall have demonstrated that his facilities comply with the standards promulgated by the Secretary pursuant to section 2143 of this title...”<sup>30</sup> Since aquariums and pet stores alike keep and exhibit aquatic animals, AWA should regulate the welfare standards for *all* animals in their care.

Section 2140 of the AWA requires recordkeeping by dealers and exhibitors, which helps maintain that animal welfare standards are met and provides necessary data for transportations, purchasing, deaths, and other actions that can befall a given individual animal that is put into the stream of commerce. By including aquatic animals, this requirement would provide data about their movements and outcomes in exhibitions throughout the country that is currently lacking or non-existent.

Section 2141 requires the marking and identification of animals under its regulations, which would make it easier to catalogue the number of individual aquatic animals being used in exhibition per year.

Section 2143 sets forth standards and its certification process for the humane handling, care, treatment, and transportation of animals. By including aquatic animals under AWA protections, this section would provide a much needed minimum standard of care for aquatic animals used for exhibition and dealership purposes.

Additionally, there are numerous other sections and subsections under the AWA that would provide protections for aquatic animals not currently given. These protections come

in the form of licensing, demonstrating compliance of care, licensing, and ensuring good business practices are met by all dealers and exhibitors.<sup>31</sup>

C. Animal Welfare Act should protect aquatic animals for purposes of biomedical research

Aquatic animals are increasingly used in research. A good example would be that of the zebrafish, currently being used in several fields of medical research, such as cancer and genetics. Zebrafish are considered to be excellent models for five main reasons. Firstly, as vertebrate, they present similarities to humans. Secondly, compared to other animal models, such as rodents they are easier to care for. Thirdly, because they are transparent, scientists can easily observe the impact of their experiments. It is interesting to note that invasive procedures are also limited, therefore reducing the likelihood of affecting the results. Fourthly, compared to rodents, zebrafish generate a greater number of offspring: up to 300, which then grow faster than any other animal models. Finally, it is easier to introduce genetic changes, in larger quantities than those used on rodents<sup>32</sup>.

Poikilothermic animals should be entitled to the protection set forth in the following section of the AWA:

Section 2144, is a general rule requiring the promulgation of standards, rules, regulations and orders and veterinary certificate, among other.

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<sup>31</sup> 7 U.S.C. §§ 2131(2)(A)(2.3), (2)(A)(2.5), (2)(G)(2.75), (2)(I)(2.125), (2)(I)(2.127).

<sup>32</sup> Five reasons why zebrafish make excellent research models, NC3Rs National Center for the Replacement Refinement & Reduction of Animals in Research, April 10, 2014  
<https://www.nc3rs.org.uk/news/five-reasons-why-zebrafish-make-excellent-research-models>

Under Section 2140, research facilities must keep a record of the animals used in biomedical research regarding their “purchase, sale, transportation, identification, ownership of animals”. Such requirements as applied to fish would help us keep track of the number of animals used in research. It is all the more relevant that the reproductive of fish is high. Regulations, Subpart C section 2.30: The regulations require research facilities that use animals to be registered.

Section 2.31 requires the creation of IACUC (Institutional Animal Care and Use Committee), which functions are the following: review the research facility’s program for humane care and use of animals, based on Title 9, Chapter I, A. “Animal Welfare”, inspect the facilities on that same ground (Title 9, Chapter I, A. “Animal Welfare”), review and investigate concerns from public complaints, make recommendations; review approve and require modifications; suspend an activity involving animals if the activity conducted is not in accordance with the description. IACUCs are essential as they provide tangible control over the enforcement of regulations regarding animal welfare. As a matter of fact, fish used in biomedical research already benefit from the mechanism set by the IACUC, through another legal mechanism than the AWA regulations. While excluded under the AWA, fish used in research, as any other vertebrate animals, are included in the Public Health Policy on Humane Care and Use of Laboratory Animals, known as the PHS policy. The PHS policy is one of the many policies enacted by the DHHS (Department of Health and Human Services), that include the NIH (National Institute of Health), charged with developing policies concerning the welfare of animals used in research<sup>33</sup>. In addition to PHS policies, which regulate the use of any live vertebrate in research, training, experimentation or biological testing, local regulations may also apply. However, the PHS guidance do not regulate the care of fish. Rather, it extended the

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<sup>33</sup> Claudia Harper & Christian Lawrence, *The Laboratory Zebrafish*, CRC Press, 121-122 (2010).

protection granted to avian live embryonated eggs to zebrafish embryos used in research<sup>34</sup>. The fact that zebrafish already benefit from the IACUCs further our argument: by enacting such guidelines, the NIH recognizes to fish basic protections regarding their welfare, thus fixing what can only be seen as unfair. Because fish are used in other contexts that those regulated by the NIH, the AWA should extend protections provided in Section 2.31 of the AWA to fish and cold-blooded aquatic animals.

Section 2.33 requires an attending veterinarian to be on the premises to provide adequate veterinary care. the same veterinarian shall be a voting member of the IACUC. His function is to provide guidance to investigators [...] regarding handling, immobilization anesthesia [...] and euthanasia. More specifically, Miscellaneous section (f) requires regulations concerning handling and prohibits physical abuse and the deprivation of food and water to animals. Fish are as much exposed to rough handling and unnecessary pain as any other animals used in research, and should be subject to such regulations too.

## **V. Conclusion**

As science is now sufficiently advanced to support the argument that fish and aquatic animals are able to feel pain, cold-blooded animals such as aquatic animals should be granted the basic legal protections afforded under the AWA.

While the AWA fails to include cold-blooded animals, it is easy to identify specific sections that could easily cover aquatic animals. Those sections regulate the transportation, the exhibition and the use of animals in the context of biomedical research.

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<sup>34</sup> Guidelines for Use of Zebrafish in the NIH Intramural Research Program  
<http://oacu.od.nih.gov/ARAC/documents/Zebrafish.pdf>

## Animal Law Clinic

Including aquatic animals in the AWA would provide basic legal protections to a great amount of animals, who are currently and unfairly denied any coverage.