

Aquaculture Factsheet

Background

“Aquaculture is the breeding, rearing, and harvesting of fish, shellfish, algae, and other organisms in all types of water environments.” Aquaculture production is steadily on the rise, in part responding to increasing demand for seafood which is expected to double by 2050.

By 2016, fishes raised in aquaculture systems already accounted for more than half of the seafood consumed by humans. Aquaculture has many problems that legislation should focus on addressing, including harms to aquatic animals, the environment, and consumers.

Aquaculture practices occur in many environments including the middle of the ocean, protected bays, manmade ponds, and indoor facilities. The methods of confining aquatic animals for aquaculture include floating cages, net enclosures, earth ponds, and constant water circulation systems.

Although aquaculture proponents assert that it can lessen the decline of wild aquatic animal populations, this is often untrue for relevant species and ignores the many other species more heavily taken from the wild in order to feed the animals in aquaculture facilities. Positive claims also tend to ascribe asserted benefits far too widely and inaccurately, and to ignore the many negative impacts on the environment, humans, and aquatic animals. Some of these harms are discussed below.

Animal Suffering

Aquatic animals raised in aquaculture suffer in every stage of the process, from breeding, to rearing, to transportation and slaughter. Significant suffering results from overcrowded enclosures, which leads to injuries and disease, and the inability to access food. The captive animals live in high concentrations of waste and with parasites from which they cannot escape. These animals are also frequently transferred from one enclosure to another causing additional stress and injury. When aquaculture producers deem the animals ready for market, they deprive them of food to ready them for transportation. The aquatic animals then undergo stressful transport and then painful slaughter with no anesthesia or requirements for a swift, painless, or humane death.

Environmental Harms

Aquaculture results in significant harms to wild aquatic animals and their environment. Aquatic animals raised in aquaculture facilities are typically carnivorous, so the aquaculture system feeds them by catching other wild aquatic animals, which further depletes wild populations. Aquaculture facilities have also had significant escapements, including hundreds of thousands of animals in single events, into the wild environment.

These escaped animals can potentially breed with wild populations and pass along maladaptive traits or diseases. Aquatic animals can also become invasive and outcompete native aquatic animal populations. Aquaculture facilities sometimes kill wildlife (birds and fishes) who try to enter into net enclosures or feed on the animals there. Aquaculture enclosures have also destroyed vital habitats, such as mangroves, and their accumulation of excrement and feed have contributed to declines in wild aquatic animal populations and the degradation of habitats, affecting many species.

Consumer Harms

Aquaculture animals hold more toxins and chemicals in their bodies compared to wild aquatic animals. Therefore, consuming these animals poses greater health risks to consumers. Aquaculture producers add chemicals and hormones into the enclosures to reduce disease and promote fast growth. These hormones and chemicals can still be found in aquatic animals when they are sold and have been linked to increased risks of developing cancer and premature sexual development.

Economic Harm

The monopolization and industrialization of aquaculture has negatively impacted economies as well. Although aquaculture is expanding, jobs have consistently declined in this sector as a result of mechanization and consolidation. Corporations have begun to invest in aquaculture operations and entice countries with promises of economic growth. However, corporations export these countries' aquaculture outputs and sell the products to other countries. These corporations also take most of the profit and leave very little to the countries housing the aquaculture facilities. Instead of seeing economic gains, these countries are left to address the pollution and worker exploitation resulting from corporate practices. Additionally, some wild caught fisher folk suggest that aquaculture facilities reduce their ability to maintain their livelihoods.

Key Considerations

1. Lack of Animal Welfare Regulations in Aquaculture Context

Although terrestrial farmed animal welfare legislation is very limited, regulations regarding the welfare of aquatic animals is almost nonexistent. The very minimal protections afforded to terrestrial farmed animals generally don't apply to aquatic farmed animals. For example, the Humane Methods of Slaughter Act in the U.S. only applies to cattle, horses, mules, sheep, and swine, and does not include aquatic animals thus denying them even the minimal protection of a quick and painless death.

The EU has the General Farming Directive which protects all "animal[s] (including fishes, reptiles or amphibians) bred or kept for the production of food, wool, skin or fur or for other farming purposes" from unnecessary pain, suffering, or injury. However, the

Directive lacks proper enforcement procedures and excludes aquatic animals from most of the provisions, including humane slaughter mandates. The Directive excludes fishes from the requirement of addressing their physiological and ethological needs. This exemption means that aquaculture producers do not have to provide enclosures that allow for free movement or provide medical care to sick or injured animals.

Expanding the care requirements for animals raised in aquaculture should include enhanced space requirements, simulation of natural habitats in captivity settings, the ability to engage in natural behaviors, stimulation and habitats designed to allow for positive welfare, and the provision of medical care when needed. California's Proposition 12 could be used as a blueprint for creating legislation that obligates minimum space requirements for farmed animals. Space requirements should be based on the natural behaviors and needs of each aquatic species.

2. Existing Aquaculture Regulation

Very few countries have created legislation solely focused on aquaculture. The aquaculture industry in many countries falls under a government agency's control such as a Department of Fisheries or Department of Food Safety, but the agency has little jurisdiction to regulate the industry. This section explores Norway and Chile's aquaculture legislation, which is extensive compared to other countries.

a. Norway

Norway possesses some of the most extensive aquaculture laws. Norway regulates aquaculture under the Aquaculture Act, which seeks to expand the profitability of the aquaculture industry while promoting sustainable practices. Companies must apply for aquaculture licenses through the government. Within these applications, companies must detail how their operations will comply with environmental standards. Facilities are not allowed on environmentally protected areas or certain areas of shallow water due to the accumulation of salt and waste that collects in these operations.

The Norwegian government has the power to enter facilities to inspect, survey, and document compliance. If an inspector concludes a facility is causing detrimental impacts to the land or wild aquatic organisms, the government has the ability to shut down or relocate the company. If the damage is caused by a failure to comply with aquaculture regulations, the government may also fine the company.

Norway responded to the problem of overuse of antibiotics by passing the Act Relating to Veterinarians and Other Animal Health Personnel. The Act states that a person can only obtain antibiotics for an animal with a veterinarian or aquamedicine biologist's prescription. If a pharmacy believes that a veterinarian or aquamedicine biologist is abusing their power, the pharmacy is obligated to report the individual. This strict regulation on medicine has pushed Norway to explore alternatives to antibiotics, including vaccines to maintain aquatic animal health. Norway now raises 99% of its aquacultural animals without antibiotics.

Even though Norway has provided space requirements (25kg/m³) for aquatic animals in aquaculture, the government should expand this space requirement. Norway should also provide species-specific care guidelines, which can list ways to best mimic the natural habitats and social structures of each aquatic animal species used in aquaculture.

b. Chile

Chile's General Fisheries and Aquaculture Law requires facilities to obtain a permit before engaging in production activities and avoid placement in protected areas. The government conducts an Environmental Impact Assessment for all placements, which considers the facility's impacts on human health, soil, water, air, and other human activity.

The General Fisheries and Aquaculture Law regulates the import of aquatic animals to mitigate the spread of disease to endemic species and the negative environmental impacts if the non-native animals escape into the wild. If disease occur at an aquaculture facility, the Regulation on High Risk Diseases of Living Aquatic Species provides detailed steps to prevent disease from spreading to other facilities and enacts veterinary procedures to stop the outbreak.

Chile does not mention the welfare of aquatic animals in its legislation. Its environmental and human health protections are positive but could be expanded to include space requirements and provision of enrichment or the recreation of natural environments for each aquatic species.

3. Proposed Legislation

Although some state laws regulating aquaculture exist in the United States, no federal legislation solely regulates aquaculture. Congress is currently considering whether to pass the Advancing the Quality and Understanding of American Aquaculture Act to regulate offshore aquaculture. The bill proposes creating an aquaculture licensing and inspection system, investing in research and technology focusing on sustainable aquaculture, and avoiding adverse environmental impacts. It does not address animal welfare concerns.

Aquatic animals have the ability to feel pain and fear and also have complex cognitive processes. This knowledge should be taken into account when farming aquatic animals to create enclosures that provide free movement and the ability to perform natural behaviors. Spatial planning regulation is also an important aspect to consider when providing licenses to producers. The congregation of aquaculture facilities could increase the spread of disease among enclosures and the rate of pollution to the environment. Additionally, the depth of water in a location can impact the pollution rates as well. Deeper water allows waste, food, and salts to dissipate within the water

whereas shallow water allows these byproducts to settle to the bottom of the body of water creating ecological damage.

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