

AQUATIC ANIMALS AS FOOD

AQUACULTURE IN FOCUS

REVIEW AND ANALYSIS OF REGULATION
IN THE UNITED STATES AND BEYOND
(Working Draft)



Animal Law Clinic
Lewis & Clark Law School
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TABLE OF CONTENTS

ABOUT THE CLINIC	3
HISTORY	3
STUDENTS	3
OUR WORK	3
DISCLAIMERS	4
PART I: BACKGROUND INFORMATION	5
INTRODUCTION TO THE ISSUE	8
PART II: WILD CAUGHT FISHING CURRENT LEGAL / REGULATORY FRAMEWORK	10
A. OREGON STATE.....	10
B. FEDERAL LEVEL	20
C. TRIBAL LAWS	33
D. STEP BY STEP PROCEDURE FOR SETTING UP A COMMERCIAL FISHING BUSINESS	40
PART III: AQUACULTURE: CURRENT LEGAL FRAMEWORK/REGULATION	49
A. OREGON STATE.....	51
B. FEDERAL LEVEL	58
C. TRIBAL LAWS.....	71
D. CERTIFICATION SCHEMES	81
E. SENTIENCE.....	81
PART IV: HARMS OF AND GAPS IN REGULATION OF AQUACULTURE	83
A. SUGGESTED CONSIDERATIONS AND PROVISIONS.....	94
PART V: LOOKING AHEAD	98
ACKNOWLEDGEMENTS	102
APPENDIX A – AQUACULTURE IN CHILE	103
APPENDIX B – AQUACULTURE IN THE E.U.	106

ABOUT THE CLINIC

HISTORY

The Aquatic Animal Law Initiative (AALI) was created in order to consider the legal, as well as scientific and economic, contours of issues resulting from the use of aquatic animals.

AALI works to protect and promote the interests of aquatic animals by:

- i. Advocating on their behalf through the legal system;
- ii. Promoting their value to the public by providing education about their cognitive, emotional, and physiological capacities; and
- iii. Harmonizing human, animal, and environmental interests.

STUDENTS

Students at the Animal Law Clinic conduct research, represent clients, and work on clinic projects to develop the field of animal law and encourage consideration of the interests of animals in legal decision-making. Students also work with other lawyers as well as community members, veterinarians, scientists, economists, and other professionals.

The Clinic promotes the academic and professional growth of its students by working to:

- i. Foster the transition from law student to lawyer;
- ii. Create life-long learners who are excellent and effective advocates;
- iii. Create respectful dialogue on difficult conversations; and
- iv. Invite and engage different perspectives.

OUR WORK

Animal Law Clinic works on local, national, and international animal law issues in addition to working with the state and local community. Clinic work includes policy, legislative, transactional, and administrative law work, occasional litigation work, research, advocacy, and strategic planning.

The Clinic works to develop the field of animal law by working to:

- i. Harmonize human and animal interests;
- ii. Advance legal protection, representation, and access to justice for non-human animals;
- iii. Achieve justice for animals and humans by making clear the link between human and animal violence; and
- iv. Creatively use the laws we have, as well as develop new laws and tools, to better address questions of animal law.

DISCLAIMERS

This Memorandum is provided by the Clinic for informational and educational purposes only. It is not a complete source of information for the issues addressed. The resources provided are not exhaustive; they are illustrative and thus limited in scope.

Nothing contained in this Memorandum is intended to constitute (among other things) legal advice. Accordingly, you should not construe any of the information presented as legal advice. The Clinic recommends consulting with your own attorney for specific advice that is tailored to your legal needs.

The Memorandum includes legal information from different jurisdictions. It is important to note that the issues addressed may be regulated at federal, state, tribal, and local levels and can vary widely among different jurisdictions within and across countries. Specific laws and regulations may also apply to different species of animals.

The Memorandum contains resources created by the Clinic itself and by other organizations. Any mistakes in attribution are unintentional. The Clinic is not affiliated with the organizations referenced in the Memorandum. Inclusion of information or documentation from the organizations referenced in the Memorandum should not be construed as an endorsement of any organization or its practices.

The Clinic makes no representation or warranty of any kind, express or implied, including, without limitation, any warranties of merchantability, fitness for a particular purpose, title, and/or non-infringement. The Clinic does not accept any responsibility for any loss or damage suffered by any person as a result of reliance on the contents of the Memorandum.

This is a working document that has been compiled over a few years with various student researchers. We have attempted to ensure that this document is up to date as at March 2022, however we make no warranties as to the up-to-dateness of this Memorandum, which may need to be updated, which the Clinic reserves the right to do.

This memorandum does not guarantee the accuracy of the sources referred to herein.

A number of international and foreign resources have been included herein. Some of these have been translated. We do not make any warranties as to the accuracy of these sources nor the information contained herein. Furthermore, these have been provided by students, faculty and staff of the Clinic who may or may not be lawyers in the jurisdictions mentioned herein.

For the sake of brevity, we sometimes utilize the term “fish” as inclusive of other aquatic animals.

We note that there are various dimensions, including but not limited to political, economic, social, cultural, technological, environmental, legal, and otherwise. We cannot hope to cover all these complexities and considerations, but trust that the Memorandum provides some more information of use and interest. We encourage you to continue your own research on these and other subjects of interest. We have included some additional resources to assist in your further exploration of these topics.

This Memorandum is a comprehensive document with information separated into different sections and subsections. It should be read in its totality, and with reference to its specific purpose.

PART I: BACKGROUND INFORMATION

Aquatic animals play a critical role in our societies and ecosystems. They are important not only as a group, but also as valuable and exciting individuals with intrinsic worth. By “aquatic animals”, we mean not only fish, but also a myriad of other animals that live in water for most of their life: amphibians, marine mammals, crustaceans, reptiles, molluscs, aquatic birds, aquatic insects and even animals such as starfish and corals. Despite this, aquatic animals are widely used and abused around the world, and they face a multitude of different threats.

Aquatic animals face numerous threats and are utilized in a number of ways. In many instances, these uses and threats go hand in hand. Wild caught fishing is one of the activities putting significant pressure on animals in the wild. But other uses, including aquaculture, also exacerbate the problems, which can be compounded by non-use dangers, such as pollution and climate change.

Many fish species are close to collapse and even extinction. Corals are disappearing or facing "bleaching." This has a huge impact on the marine ecosystem. We have seen a dramatic reduction in the populations of certain species. For example, bluefish tuna – since the 1960s, there has been a 97% reduction in both Pacific and Atlantic Tuna. Other species also have rapidly dwindling numbers, like Vaquitas – there are only nine of these animals left in the entire world.

There is an urgent need to give aquatic animals the proper consideration they deserve. Through law, policy, education, advocacy and good stewardship of the earth, our efforts to raise awareness of the plight of aquatic animals must rise to meet the immense challenges they now face. We must also consider our interactions with aquatic animals, our treatment of them, and the often-devastating impacts we are having on them and their habitats

For purposes of this Memo, we have categorized some of the uses and threats aquatic animals face. This is by no means a complete list and the contents have been included for illustrative purposes only.

Aquatic animals are a source of food for many people around the world. There are two predominant sources of this: aquaculture, where animals are farmed and wild caught fishing, where animals are taken directly from the wild.

Aquaculture –

According to World Ocean Review:

Aquaculture is expected to satisfy the growing world population’s demand for fish – and at the same time protect ocean fish stocks. Hopes are pinned on farming as an alternative to over-fishing. But the use of copious amounts of feed derived from wild fish, the destruction of mangrove forests and the use of antibiotics have given fish farming a bad name. Current research and development projects, however, show that environmentally sound aquaculture systems are possible. The impact of aquaculture on the environment depends on several factors. It makes a difference whether the fish are farmed inland in freshwater, or along coastal areas. Intensive fish farms in coastal waters can pollute entire bays with uneaten food and fish faeces.¹

¹ Towards More Eco-friendly Aquaculture, WORLD OCEAN REV. (2013), <https://worldoceanreview.com/en/wor-2/aquaculture/eco-friendly-aquaculture/> (last visited Jan. 24, 2021).

Some important background context to aquaculture and the need for this Memorandum:

- “Aquaculture supplies 50% of all fish consumed globally today and by 2030 it is predicted that aquaculture will be the prime source of fish due firstly to demands from consumers, and secondly due to depletion of wild capture fisheries.”²
- “Negative social outcomes are also associated with aquaculture in countries where there are weak regulatory frameworks and there is concern about emerging diseases and disease transmission as a result of increased intensification and globalization.”³
- “Reform of the European Common Fisheries Policy (CFP) in 2015 (Commission Delegated Regulation (EU) No. 1394/2014 further supports the marine sector being a key source of protein.”⁴
- “While fish is seen as a healthy food by consumers, food safety risks such as heavy metal content could represent a potential barrier to consumption frequency, particularly concerning contamination of wild fish.”⁵
- “...since early 1990s, most growth in production from the sector as a whole has been from aquaculture, while capture fisheries production has been relatively stable, with some growth essentially concerning inland capture”⁶
- There has been a 527% increase in global aquaculture production from 1990 to 2018, as well as a 122% increase in total food fish consumption during that same time period.⁷
- “In 2018, about 88 percent of the 179 million tonnes of total fish production was utilized for direct human consumption.”⁸
- “Fish and fish products are recognized not only as some of the healthiest foods on the planet, but also as some of the least impactful on the natural environment. For these reasons, they are vital for national, regional and global food security and nutrition strategies, and have a big part in transforming food systems and eliminating hunger and malnutrition.”⁹
- “Total fish production is expected to expand from 179 million tonnes in 2018 to 204 million tonnes in 2030. Aquaculture production is projected to reach 109 million tonnes in 2030, an increase of 32 percent (26 million tonnes) over 2018.”¹⁰

Wild Caught Fishing –

Wild caught fishing includes all fishing where aquatic animals are extracted from their natural habitats to be utilized as food. This affects multiple species, and ecosystems more broadly.

According to One Green Planet,

Whaling, shark, and dolphin hunting are among some of the most imminent threats to marine mammals. Slaughtering animals for sport or to sell as specialty foods is a practice that has greatly reduced the number of large marine mammals across the world’s oceans. During the

² Maeve Henchion et al., *Future Protein Supply and Demand: Strategies and Factors Influencing a Sustainable Equilibrium*, 6 *Foods* 53 (2017), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5532560/>.

³ *Id.*

⁴ *Supra*, note 2.

⁵ *Supra*, note 2.

⁶ FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS, *The State of World Fisheries and Aquaculture 2020*, <http://www.fao.org/state-of-fisheries-aquaculture>.

⁷ *Id.*

⁸ *Supra*, note 6.

⁹ *Supra*, note 6.

¹⁰ *Supra*, note 6.

2013 to 2014 season, Japan's Taiji dolphin hunt was responsible for the deaths of more than 800 dolphins. Shark finning is another inhumane, senseless practice that slaughters on average 100 million sharks a year!¹¹

World Wildlife Foundation has this to say about overfishing:

Fishing is one of the most significant drivers of declines in ocean wildlife populations. Catching fish is not inherently bad for the ocean, except for when vessels catch fish faster than stocks can replenish, something called overfishing. The number of overfished stocks globally has tripled in half a century and today fully one-third of the world's assessed fisheries are currently pushed beyond their biological limits, according to the Food and Agriculture Organization of the United Nations. Overfishing is closely tied to bycatch – the capture of unwanted sea life while fishing for a different species. This, too, is a serious marine threat that causes the needless loss of billions of fish, along with hundreds of thousands of sea turtles and cetaceans.¹²

Furthermore,

In many maritime regions of the world, illegal fishing has massively contributed to the depletion of fish stocks, especially in developing countries' coastal waters. Better international cooperation to control fishing vessels is now being launched. The aim is to eliminate illegal fishing in future. Nowadays, the world's fish stocks are not only under threat from intensive legal fishing activities; they are also at risk from illegal, unreported and unregulated (IUU) fishing. Illegal fishing refers to fishing activities conducted by foreign vessels without permission in waters under the jurisdiction of another state, or which contravene its fisheries law and regulations in some other manner. Unreported fishing refers to fishing activities which have not been reported, or have been misreported, by the vessels to the relevant national authority. Unregulated fishing refers to fishing activities in areas where there are no applicable management measures to regulate the catch.¹³

¹¹ The 10 Biggest Threats Marine Mammals Face Today, ONE GREEN PLANET, <https://www.onegreenplanet.org/animalsandnature/biggest-threats-marine-mammals-face-today/> (last visited Jan. 24, 2021).

¹² Overfishing Overview, WORLD WILDLIFE FUND, <https://www.worldwildlife.org/threats/overfishing> (last visited Jan. 24, 2021). Note that these analyses do not consider the impact on the animals themselves.

¹³ Illegal Fishing, WORLD OCEAN REV. (2013), <https://worldoceanreview.com/en/wor-2/fisheries/illegal-fishing/> (last visited Jan. 24, 2021).

INTRODUCTION TO THE ISSUE

The main purpose of this Memorandum is to highlight some of the current gaps in the regulation of aquaculture within the USA and the need for proper regulation. In an attempt to achieve this, the memorandum considers the current State regulation, Federal Regulation and Tribal Issues for wild caught fishing as a comparative industry, as well as aquaculture.

It is apparent from a review of the relevant regulatory regimes pertaining to the practices of aquaculture within the USA, that there exist major lacuna, inconsistencies, and uncertainties. This is particularly problematic from an industry which is the fastest growing food production system in the world, and which is consistently being promoted and supported by Government. Such support and promotion take the form of regulation and policy, financial incentives, bailouts and subsidies. While achieving food security as well as social, economic, political and other aims is critical, all relevant factors must be properly considered.

As a food production system, aquaculture should also be considered with land food production systems, particularly those relating to the use of animals. An analysis and comparison of land-based animal production systems has not been included herein, unless otherwise specified, but would be an additional useful analysis. This is particularly relevant in the context of concerns relating to: animal welfare, environmental factors, consumer protection, worker safety and wellbeing and others.

In seeking to achieve proper regulation, best practices should be promoted, through a review of other jurisdictions. As such, this Memorandum considers the regulation of aquaculture in Chile and the European Union. There are a number of promising developments in foreign jurisdictions which should be considered in the USA and incorporated into regulation. These range from animal welfare requirements and standards (such as mandating the humane slaughter of aquatic animals used in aquaculture, as Norway does), to banning and restricting certain practices altogether (such as the recently implemented ban on open net salmon farming in Argentina).

In the USA, while there is some federal regulation, laws relating to aquaculture are largely done at a state level, particularly where these occur in state waters or on state land, where there are no federal elements. This is somewhat different than wild-caught fishing, for which there are various laws and policies at a federal level. For this memorandum, the focus is on the state of Oregon.

For purposes of our memorandum, we have identified three categories of utilization of aquatic fauna in Oregon (although there are others):

1. The commercial fishing industry (wild caught)
2. The aquaculture industry
3. The sport fishing industry. (As aforementioned, this industry will not be dealt with in detail and only referenced for comparative purposes.)

It furthermore sets out the basic process and requirements for setting up a wild-caught commercial fishing business in Oregon as well as the basic process and requirements for establishing an aquaculture business. It will note that there is currently insufficient regulation in the aquaculture industry, when compared with the wild caught fishing industry and suggest reform for the current regulation.

The sport fishing industry has not been dealt with in this document, other than for comparative purposes. Nevertheless, it is important to note that sports fishing has an impact on wild populations, and that certain elements of the industry, such as hatcheries, relate to aquaculture. There are a number of requirements (including permits/registrations/etc.) in relation to sports fishing in Oregon, which may have indirect application or relevance to the regulation of aquaculture. For information regarding sport fishing in Oregon, we suggest consulting the following website:

<http://www.eregulations.com/oregon/fishing/> which contains the latest regulations pertaining to sports fishing in the State.

Generally, the information considered and included in this memorandum relates to industrial and large-scale operations for aquaculture and wild-caught fishing. It does not focus on smaller scale operations included artisanal and tribal, unless otherwise specifically indicated. In addition to the abovementioned exclusions, this memorandum does not, unless otherwise indicated, include any information in relation to:

- Aquaculture for non-food purposes
- Sport and trophy fishing
- non-commercial fishing
- hatcheries
- any species-specific information which may be applicable
- any health requirements (for people or animals)
- any labeling and consumer protection requirements
- any other animal welfare/animal protections provisions which may be applicable
- any other commercial/company requirements

This memorandum presents a high-level baseline of regulation of wild-caught fishing and aquaculture in Oregon. For further information regarding fishing in Oregon, the Oregon Department of Fish and Wildlife has helpful resources in respect of commercial fishing operations. Please visit their website at <http://www.dfw.state.or.us/resources/fishing/> for further information. For more information regarding the aquaculture industry in Oregon, please consult the following source:
<http://www.oregonaquaculture.org/>.

When considering a wild-caught commercial fishing business, one needs to consider various jurisdictional issues that may arise (some of which have been dealt with in further detail below). There are certain overlaps between State and Federal laws. In order to assist with clarifying the position, we have set out in **Appendix A** a helpful table that addresses this issue.

It is important to note that there may be certain Tribal treaties in place that regulate wild-caught fishing which need to be taken into account. These have not been dealt with here but should be noted and are addressed in a section below.

PART II: WILD CAUGHT FISHING CURRENT LEGAL / REGULATORY FRAMEWORK

As aforementioned, wild-caught fishing is much more regulated both at a federal and state level than aquaculture. It is accordingly useful to highlight the types of issues that are regulated in this industry and whether similarly applicable factors occur in the aquaculture industry. In addition, other relevant factors should be considered such as the scope and economic value of these industries.

This section is divided into four parts:

- Part A: Oregon State law
- Part B: US Federal law
- Part C: Selected Tribal laws
- Part D: A step-by-step analysis of setting up a commercial fishing business

A. OREGON STATE

BACKGROUND - COMMERCIAL FISHING IN OREGON

There are a number of species utilized in the wild-caught fishing industry in Oregon. According to the *Commercial Fishing* website:¹⁴

Oregon commercial fishing includes fisheries for pink shrimp, crabs, clams, sea urchins, tuna, salmon, sardines, Pacific whiting, and several other species of groundfish. The Oregon commercial fishing, seafood, and aquaculture industries have a significant impact on the state's economy. Oregon ports include Astoria, Warrenton, Garibaldi, Pacific City, Deboe Bay, Newport, Florence, Winchester Bay, Charleston, Bandon, Port Orford, Gold Beach, and Brookings. The Oregon Dungeness crab industry is the state's most valuable fishery. Oregon is the top producer of Dungeness crab worldwide.¹⁵

This is further delineated by species. For example, for salmon specifically, there are three types of commercial salmon fisheries in Oregon:

- An ocean troll chinook fishery along the Oregon coast. Commercial fishermen using this method catch fish by slowly towing lines which consist of baited rigs or artificial lures.
- An open gillnet fishery exists on the lower Columbia River.
- A native American treaty gillnet fishery exists on the Columbia River. Native American tribes are entitled to catch limited numbers of fall chinook and steelhead under treaties with the U.S. government specifying that the tribes reserved the right to fish "at all usual and

¹⁴ *Oregon Commercial Fishing*, COMMERCIAL FISHING, <https://www.commercial-fishing.org/regional/usa/oregon-commercial-fishing/>.

¹⁵ *Id.*

accustomed fishing sites in common with citizens of the United States.” The fall chinook run typically makes up the largest portion of the Columbia River salmon catch.¹⁶

The Oregon coast is also home to an albacore tuna fishery. The Pacific Fisheries Management Council (PFMC) has put into place a highly migratory species (HMS) fisheries management plan (FMP) for albacore tuna.¹⁷

Pacific Whiting also play an important role in Oregon’s commercial fishing industry:

Most Oregon whiting are landed by mid-water trawl vessels which hold a federal exempted fishing permit (EFP). Non-EFP vessels may also land whiting, but are subject to groundfish trip limits, and must discard prohibited species.

There is also a large Pacific whiting at-sea fishery off the Oregon Coast. Large factory trawlers harvest Pacific whiting and process the fish on-board. Motherships also process fish at sea that are caught by smaller vessels and transferred.¹⁸

Pacific ocean perch, lingcod, darkblotched rockfish, canary rockfish, widow rockfish, yelloweye rockfish, sablefish, Dover sole, and shortspine thornyhead are other species of groundfish in Oregon’s commercial fisheries.¹⁹

ECONOMIC IMPACT OF FISHING IN OREGON

Commercial Industry

Both revenue and employment in the Oregon commercial fishing industry are species specific. Below is an example of the average value and how specific species contribute to that value. While species specific values may be increasing or decreasing, the average value for commercial fishing in Oregon is on the rise. According to **2016 Oregon’s Commercial Fishing Industry: 2016 Brief, Oregon**,²⁰ commercial onshore harvests were valued at **\$144.1 million in 2016**, which was up somewhat from \$137.7M in 2015, but less than the previous 5-year average (\$154.4M). There were 1,051 different vessels making a total of 27,365 landings to Oregon ports in 2016. These landings amounted to **225.4 million pounds of fish** (209.9M lbs. in 2015; 5-year average 291M). Newport and Astoria were the top ports in terms of both volume and value, each with about 1/3 of Oregon’s total onshore harvest value. The highest value fisheries were **Dungeness crab** (\$51.3M), **pink shrimp** (\$25.1M), **groundfish** (\$16.8M; not including sablefish and whiting), and **sablefish** (\$15.1M). The closure of the Pacific sardine directed fishery continued. Overall, the Oregon commercial fishing industry generated an estimated \$544M in household income in 2016, about half of which came from distant fisheries (e.g. Alaska fisheries, at-sea fisheries).

¹⁶ *Supra*, note 14.

¹⁷ *Supra*, note 14.

¹⁸ *Supra*, note 14.

¹⁹ *Supra*, note 14.

²⁰ *Oregon Commercial Fishing Industry Year 2016 Economic Activity Summary Version 1.5*, OR. DEP’T OF FISH AND WILDLIFE (Apr. 2017),

<https://www.dfw.state.or.us/agency/docs/TRG%20OR%20Comm%20Fishing%20Econ%20contribution%20thr%202016%20narrative%20ver.%201.5.pdf>.

More recently, a **2018** report indicated that Oregon’s commercial fishing industry value increased to 173 million dollars – up from 148 million in 2017 – while the industry harvest is averaging 151 million dollars per year since 2010. An estimated 1,310 commercial fisheries worked in Oregon in 2018.²¹

In **2019**, revenues from commercial fishing in Oregon revenues shrank about 9 percent from 2018, but remained above the average level of the previous 10 years. After adjusting for inflation, harvests have been averaging around “\$156 million (2019 dollars) per year since 2010.” Total landed value dropped to \$160 million in 2019, down from \$176 million in 2018. Smaller pink shrimp and Dungeness crab and pink shrimp harvests were primarily to blame for the decrease.²²

“Oregon’s commercial fishing industry revenues fell about 6% in **2020** from the previous year, and they were a little below the average level of the past 10 years. Harvests averaged about \$158 million (2020 dollars) per year from 2010 through 2019. Total landed value decreased to \$152 million in 2020. This was down from \$163 million in 2019. The decrease was mainly due to the smaller groundfish (often rockfish) and whiting harvests. The revenue from groundfish dropped 34% in 2020 – a drop of \$9.7 million in total. Revenue from whiting fell 30% – a loss of \$6.5 million. The Dungeness crab was the main winner in 2020; revenue was up 7% from 2019 as both harvests and prices increased. Oregon pink shrimp harvests rose 61%, and its total revenue rose by \$2.6 million even though the price per pound dropped. Overall, the revenue from fishing dropped by \$11 million in 2020 even as the volume of harvests increased by 10 million pounds.”²³

Sport Fishing Industry

According to a study sponsored by the Oregon Department of Fish and Wildlife (ODFW) and administered by the Oregon Coastal Zone Management Association (OCZMA),²⁴ there is “scattered and disparate information available about the economic effects from recreational finfish fisheries in Oregon’s coastal areas.” The study noted the following:

- Recreational angling contributes substantially to coastal economies. Trip spending generated \$66.7 million in 2013 and \$68.9 million in 2014 of total personal income to coastal economies.
- Oregon Coast recreational fishing trips have been increasing in recent years, mostly from increases in freshwater fisheries, but still are low compared to the early 2000’s when salmon abundances allowed for more recreational ocean fishing opportunities.

²¹ Report shows increase in Oregon commercial fishing harvest for 2018, YACHATS NEWS (Mar. 2019), <https://yachatsnews.com/report-shows-increase-in-oregon-commercial-fishing-harvest-for-2018/>.

²² Eric Knoder, *Oregon’s Commercial Fishing in 2019*, STATE OF OR. EMPLOYMENT DEPT. (Mar. 2020), <https://tinyurl.com/y58w62vg>.

²³ *Oregon’s Commercial Fishing in 2020*, (March 2021), QUALITY INFO. <https://www.qualityinfo.org/-/oregon-s-commercial-fishing-in-2020>.

²⁴ *Oregon Marine Recreational Fisheries Economic Contributions in 2013 and 2014*, OR. DEP’T OF FISH AND WILDLIFE (Sept. 2015), https://www.dfw.state.or.us/agency/docs/ODFW_Marine_Rec_Ec_Effects_2013-2014.pdf.

The study further revealed the following figures related to Oregon recreational fishing in 2013 and 2014:

Table 1:

Economic Contributions in 2013							
Target Fishery	Commercial Ocean Salmon	Recreational				Total	Fishery Share
		Location					
		Ocean	Coast Inland		Lower Columbia River		
			Salmon/ Steelhead	Marine Species			
Ocean salmon	\$10.14	\$4.11				\$4.11	6.2%
Inland fall salmon			\$32.59		\$0.36	\$32.94	49.4%
Inland steelhead			\$9.89		\$0.05	\$9.94	14.9%
Inland spr./sum. Chinook			\$4.55		\$0.40	\$4.96	7.4%
Mainstem fall salmon					\$1.81	\$1.81	2.7%
Ocean halibut		\$1.55				\$1.55	2.3%
Ocean tuna		\$0.76				\$0.76	1.1%
Ocean bottomfish		\$6.78				\$6.78	10.2%
Other marine species				\$3.34	\$0.03	\$3.37	5.1%
Sturgeon				\$0.09	\$0.38	\$0.47	0.7%
Total	\$10.14	\$13.19	\$47.03	\$3.43	\$3.04	\$66.69	100.0%
Shares		19.8%	70.5%	5.1%	4.6%	100.0%	

Table 2:

Economic Contributions in 2014		Recreational					
Target Fishery	Commercial	Location				Total	Fishery Share
		Ocean	Coast Inland		Lower		
	Ocean Salmon		Salmon/ Steelhead	Marine Species	Columbia River		
Ocean salmon	\$19.50	\$6.25				\$6.25	9.1%
Inland fall salmon			\$32.59		\$0.36	\$32.94	47.8%
Inland steelhead			\$9.89		\$0.05	\$9.94	14.4%
Inland spr./sum. Chinook			\$4.55		\$0.37	\$4.93	7.2%
Mainstem fall salmon					\$3.08	\$3.08	4.5%
Ocean halibut		\$1.19				\$1.19	1.7%
Ocean tuna		\$1.01				\$1.01	1.5%
Ocean bottomfish		\$6.04				\$6.04	8.8%
Other marine species				\$3.34	\$0.03	\$3.37	4.9%
Sturgeon				\$0.09	\$0.04	\$0.13	0.2%
Total	\$19.50	\$14.49	\$47.03	\$3.43	\$3.94	\$68.89	100.0%
Shares		21.0%	68.3%	5.0%	5.7%	100.0%	

Notes: 1. Economic contributions are expressed as personal income in millions of 2014 dollars and are at the coastwide economic level.
2. Fall Columbia River mainstem salmon is sometimes referred to as the Buoy 10 salmon fishery.
3. Other marine species is sometimes referred to as bottomfishing when it takes place in the ocean.

Source: Study.

According to a 2013 study entitled *Sport Fishing Expenditures and Economic Impacts on Public Lands in Oregon*.²⁵

Anglers spent a total of \$680.6 million on trip-related and equipment purchases in Oregon in 2011. Overall, approximately 65.2% of boating-related outdoor recreation occurs on public lands in Oregon. After accounting for differences in fishing activity across the nine travel regions in Oregon, an estimated \$444 million of the angler spending is estimated to be related to fishing that takes place on public lands. Including the statewide economic multiplier effects, this spending supports 7,204 jobs and \$249.7 million of income statewide. Additionally, the total economic activity supported by fishing on public lands results in \$47.2 million in state and local taxes and \$59.9 million in federal taxes.²⁶

Aquaculture Industry

It is difficult to obtain accurate and up to date information as to the value, size and other factors of Oregon's aquaculture industry. The resources that are available are outdated. Although as of 2021, there have been various efforts to bolster this industry, including through the provision of funds and research.²⁷

As of 2015, the aquaculture industry is estimated to be valued at \$12.1 million in Oregon with the intention to grow this substantially in the upcoming years. The goal is to boost the value of aqua-farmed products to \$22.7 million, which is 90 percent more than the current value.²⁸

According to the 2018 Census of Aquaculture, published by the U.S. Department of Agriculture, Oregon ranked 17th in the nation with annual sales just over \$23 million, largely a result of oyster production.²⁹

REGULATION OF "TAKE"

The Oregon Fish and Wildlife Services (OFWS) was contacted by then interns of the Animal Law Clinic on February 12, 2018 in order to obtain information on the economics as well as the regulation of "Take" in relation to fish and the fishing industries. OFWS informed the Clinic that "take" is regulated on a species-by-species basis. Certain quotas are set in relation to species, as a maximum roof, and these quotas must be complied with.

Some species are managed more stringently than others. For example, salmon as a species is managed extremely carefully. Even within the category of salmon, there are numerous sub-species who each have their own requirements/restrictions. It therefore becomes increasingly important for anyone

²⁵ *Sport Fishing Expenditures and Economic Impacts on Public Lands in Oregon*, SOUTHWICK ASSOCIATES (Oct. 2013), at 1, <https://olis.leg.state.or.us/liz/2017R1/Downloads/CommitteeMeetingDocument/105757>.

²⁶ *Id.*

²⁷ See, e.g., *Aquaculture Advocates Want to Bring More Oregon-grown Fish From Farm to Table*, OPB, <https://www.opb.org/article/2021/06/21/fish-farming-aquaculture-oregon/> (June 21, 2021).

²⁸ Wendy Culverwell, *Oregon aims to double its fish farming industry to \$23M*, PORTLAND BUS. J. (May 28, 2015), <https://www.bizjournals.com/portland/blog/sbo/2015/05/oregon-aims-to-double-its-fish-farming-industry-to.html>.

²⁹ Nick Houtman, *Farming the Waters*, OR. STATE UNIV. (Feb. 13, 2020), <https://terra.oregonstate.edu/2020/02/farming-the-waters/>.

involved in the wild caught fishing industry to keep up to date with all the regulations and the status of certain species.

Species without quotas need to be looked at on a case-by-case basis.

Wild Caught Industry

It would not be possible to review all species used or otherwise implicated in the wild caught industry. It should be noted that non-subject species are injured and killed by the millions due to issues such as bycatch, entanglements and various other ways. By way of an example, this memo uses the example of Albacore Tuna compared with wild caught anchovy:³⁰

- A fishery for albacore tuna exists along the Oregon coast.
- The Pacific Fisheries Management Council (PFMC) has a highly migratory species (HMS) fisheries management plan (FMP) in place for albacore tuna.
- A Highly Migratory Species permit from the National Marine Fisheries Service is required, but the number of permits is not restricted. It is managed through the Inter-American Tropical Tuna Commission and the Western Central Pacific Fisheries Commission, as well as the Pacific Fishery Management Council. They manage the albacore stock and fisheries within their respective areas of jurisdiction and the US-Canada Albacore Treaty addresses reciprocal fishing effort off the west coast.

Compare with wild caught anchovy:³¹

- Logbooks are required.
- Oregon Rules for Anchovy Fishery prohibits reduction fisheries for anchovy. No more than 10% is allowed for uses other than human consumption or fishing bait.
- In the Columbia River there are gear requirement, including seines with mesh size greater than or equal to half an inch and less than or equal to 1,400 feet in length. All other species caught must be immediately returned to the water.
- In June 2016, permanent rules were adopted to reduce potential for wastage and add more protection to bycatch species. This included: the requirement for dip-netting of groundfish and salmon, and return them immediately to the water; the requirement of 2 and 3/8 inch grate over hold intake; and allows a coastal pelagic species catching vessel to pump fish from the pursed seine of another, up to 20% of each landing, and recorded in logbook.

Sport Fishing Industry

In the sport fishing industry “take” is regulated by the ODFW in terms of quotas. These quotas are set by ODFW to ensure sustainable numbers. The state sets bag and possession limits. Bag and possession limits apply to all waters and across zone boundaries and apply to all fish and shellfish in an angler’s possession in the field regardless of condition. An important source of information for Sport Fishing is:

³⁰ *Fishery Management Plan for U.S. West Coast Fisheries for Highly Migratory Species*, PACIFIC FISHERY MGMT. COUNCIL (July 15, 2011), <http://www.pcouncil.org/wp-content/uploads/HMS-FMP-Jul11.pdf>.

³¹ Cyreis Schmitt, et al., *Commercial Anchovy Fishery Public Meeting*, OR. DEP’T OF FISH AND WILDLIFE (Feb. 15, 2017), http://www.dfw.state.or.us/MRP/docs/Anchovy_Presentation_021517.pdf.

<https://myodfw.com/recreation-report/fishing-report/columbia-zone> ; or
<http://www.eregulations.com/oregon/fishing/general-statewide-regulations/>.

By way of an example, if one wanted to fish for Trout, one may consult the following websites:
<https://myodfw.com/fishing/species/trout/stocking-schedule> or
<http://www.dfw.state.or.us/resources/fishing/trout.asp>. In terms of reporting, here is a useful link setting out certain sport catch statistics: <http://www.dfw.state.or.us/resources/fishing/sportcatch.asp>.

Aquaculture Industry

As of 2018, there are 40 aquaculture farms in Oregon, and 56 ponds within those farms.³² Only 7 farms have recirculating systems, and 8 farms have non-recirculating systems.³³ There are 12 mollusks on bottom farms, 13 mollusks off bottom farms, 3 catfish farms, and 15 trout farms.³⁴

There are currently no state agencies dedicated solely to aquaculture, so aquaculture is generally regulated between a mix of agriculture agencies and fishing agencies. Accordingly, it is unclear who regulates all aspects of aquaculture including but not limited to the “take” of aquaculture species. It is likely that the Oregon Department of Agriculture (ODA) is assigned this. With that, it is unclear what the ODA considers a “take” for aquaculture purposes.

In 2021, a Bill was introduced in the Oregon legislature in an attempt to deal with some of the issues “HB 2776”.³⁵ More specifically, the Bill: “Transfers regulatory authority over propagation of finfish in private commercial aquaculture facilities from State Department of Fish and Wildlife and State Fish and Wildlife Commission to State Department of Agriculture. Prohibits releasing finfish produced by private commercial aquaculture facility into waters of state unless finfish health is certified by State Department of Agriculture. Requires Oregon Business Development Department to establish and administer grant program for economic development projects involving operation of private commercial aquaculture facilities or utilization of finfish propagated in private commercial aquaculture facility.”

It is critical that there is clarity as to which agencies have the power and mandate to deal with the various aspects of the aquaculture industry. This will not only ensure legal certainty, but accountability for making regulation, and its enforcement.

Because Oregon “lacks many of the geographic attributes that make land attractive for aquaculture development,” few people are interested in developing and expanding aquaculture operations, especially compared to its neighboring state, Washington, which is home to many estuaries, as well as Puget Sound, which holds a vast amount of oyster beds.³⁶ There are also limitations due to Oregon’s climate, which “is a little too cold for warm-climate fish and a little too warm for cold-water animals”, greatly limiting options for potential aquaculture farmers.³⁷ State regulations stand in the way of further growth as well, as the department in charge, the Oregon Department of Fish and Wildlife, is

³²SONNY PERDUE, 2018 CENSUS OF AQUACULTURE 17 (United States Department of Agriculture, Vol. 3 Part 2).
https://www.nass.usda.gov/Publications/AgCensus/2017/Online_Resources/Aquaculture/Aqua.pdf.

³³ *Id.* at 18.

³⁴ *Supra*, note 32 at 20-31.

³⁵ OREGON STATE LEGISLATURE, <https://olis.oregonlegislature.gov/liz/2021R1/Measures/Overview/HB2776>.

³⁶ Jason E. Kaplan, *Out of the Wild*, OREGON BUSINESS. (Feb. 18, 2020), <https://www.oregonbusiness.com/article/farms-forests/item/18984-out-of-the-wild>.

³⁷ *Id.*

difficult to work with and uses high licensing fees to discourage aquaculture farming for fear that it would harm the already endangered natural ecosystem.³⁸

There is also a 2015 report by the Oregon Department of Agriculture titled, *Developing Additional Investment in Aqua Farming in Oregon: a roadmap for sustainable development*, that might be of use, but it's not as recent. Some points that might be worth noting include:

- The report states a target of \$22.8 million (versus the original paragraph's prediction of \$22.7 million).³⁹
- In order for aquaculture economic growth to occur, there needs to be political and financial support.⁴⁰
 - Funding could come from regular state fiscal sources or be extra-budgetary.

STATE LEGISLATIVE FRAMEWORK

When it comes to fisheries management, federal and state legislation and regulations are very intertwined. Individual coast states manage fisheries three nautical miles from the coastline. Federal agencies regulate from that point onwards. At a federal level, wild caught fishing is mostly regulated by The United States Fish and Wildlife Service (FWS) and the National Marine Fisheries Service (NMFS).⁴¹ The latter is an office of the National Oceanic and Atmospheric Administration (NOAA). Both FWS and NOAA regulate fisheries by breaking them down into regions. Under FWS, Oregon is in the Pacific Region and under NOAA, Oregon is in the West Coast region. Useful resources on their laws, regulations, and regions can be found at: <https://www.fisheries.noaa.gov/insight/understanding-laws-and-noaa-fisheries> and <https://www.fws.gov/pacific/>. Below is a description of the legislative framework relating to Commercial Fishing in Oregon.

Oregon State Law provides: “*Consistent with the policy of ORS 496.012, the State Fish and Wildlife Commission shall implement the policies and programs of this state for the management of wildlife.*”⁴² Accordingly, commercial fishing is regulated by the Oregon Department of Fish and Wildlife (ODFW).

This regulation is done primarily through “Rules”. For the full website, see:

https://www.dfw.state.or.us/mrp/regulations/commercial_fishing/.

For 2021, there is a document prepared by the Oregon Fish & Wildlife Department is a great source of information regarding commercial fishing in Oregon - “Synopsis of Oregon Commercial Fishing Regulations” which can be found at the following link:

https://www.dfw.state.or.us/fish/commercial/docs/2021_Commercial_Synopsis.pdf

³⁸ *Supra*, note 36.

³⁹ Oregon Department of Agriculture, *DEVELOPING ADDITIONAL INVESTMENT IN AQUA FARMING IN OREGON: A ROADMAP FOR SUSTAINABLE DEVELOPMENT*, 4 (2015) <https://www.oregon.gov/oda/shared/Documents/Publications/MarketAccess/AquacultureInvestment.pdf>.

⁴⁰ *Id.* at 5.

⁴¹ The National Marine Fisheries Service (NMFS) is also known as NOAA Fisheries. *About Us*, NOAA FISHERIES, <https://www.fisheries.noaa.gov/about-us>.

⁴² OR. REV. STAT. § 496.138 (2017).

Oregon Administrative Rules for Oregon Department of Fish and Wildlife

“Oregon Administrative Rules (OARs) for fish and wildlife are adopted by the state Fish and Wildlife Commission consistent with ORS.496.138.⁴³ These rules, along with the Oregon Revised Statutes are the basis of the regulations published in the Oregon Big Game, Oregon Sport Fishing, Oregon Game Bird, Oregon Furbearer Trapping and Hunting regulation booklets as well as the Synopsis Oregon Commercial Fishing Regulations.”⁴⁴

The Fish and Wildlife Department states on its website that: “Our environment is dynamic, therefore the need to update regulations occurs frequently. In order to keep the public informed we have developed this guide to help you understand the Rulemaking Process and notify you of rulemaking hearings on permanent rules that are being proposed for amendment, repeal or adoption, at upcoming state Fish and Wildlife Commission meetings.”⁴⁵

What is a Rule?

According to the Oregon Department of Fish and Wildlife’s website, “rule” is “any agency directive, standard, regulation or statement of general applicability that implements, interprets or prescribes law or policy, or describes the procedure or practice requirements of any agency” - ORS 183.310(9).⁴⁶ Furthermore, administrative agencies “may adopt, amend, repeal, suspend or renumber rules, permanently or temporarily (up to 180 days), using the procedures outlined in the Oregon Attorney General’s Administrative Law Manual.”⁴⁷ There are resources on the website Oregon Secretary of State’s website with more information on the rulemaking process.⁴⁸

ODFW Administrative and Temporary Rules

“Oregon Administrative Rules (OARs) for fish and wildlife are adopted by the state Fish and Wildlife Commission pursuant to ORS 496.138. In addition, the state Fish and Wildlife Commission may delegate rulemaking authority to the ODFW Director pursuant to ORS 496.116.”⁴⁹

Secretary of State, Department of Fish and Wildlife Oregon Administrative Rules

“The official copy of an Oregon Administrative Rule is contained in the Administrative Order filed at the Archives Division, 800 Summer St. NE, Salem, Oregon 97310. Any discrepancies with the published version are satisfied in favor of the Administrative Order. The Oregon Administrative Rules and the Oregon Bulletin are copyrighted by the Oregon Secretary of State.”⁵⁰

- Secretary of State, Oregon Administrative Rules (OARs)⁵¹

⁴³ *Id.*

⁴⁴ *Oregon Administrative Rules and Rulemaking*, OR. DEP’T OF FISH AND WILDLIFE, <https://www.dfw.state.or.us/OARs/>.

⁴⁵ *Id.*

⁴⁶ *Oregon Dept. of Fish & Wildlife Administrative Rule Making – Chapter 635*, OR. DEP’T OF FISH AND WILDLIFE, <https://www.dfw.state.or.us/OARS/index.asp>.

⁴⁷ *Id.*

⁴⁸ *OARD Filing Resources*, OREGON SEC’Y OF STATE, https://sos.oregon.gov/archives/Pages/oar_resources.aspx.

⁴⁹ *Supra*, note 44.

⁵⁰ *Supra*, note 44.

⁵¹ *State Archives*, OREGON SECRETARY OF STATE, <https://secure.sos.state.or.us/oard/displayChapterRules.action?selectedChapter=81>.

Oregon Statutes & Court Rules

Oregon Revised Statute addresses commercial fishing and fisheries, below are the relevant statutes:

Title 42. Commercial Fishing and Fisheries

Chapter 506. Application, Administration and Enforcement of Commercial Fishing Laws

OR ST T. 42, Ch. 506, Refs & Annos

Sets out, among others, the provisions for collection and use of commercial fish moneys, developmental fishery, commercial fishing law enforcement, fisheries conservation zones, fish marketing and penalties.

Chapter 507. Compacts with Other States

- OR ST T. 42, Ch. 507, Refs & Annos
- 507.010. Oregon–Washington Columbia River Fish Compact
- 507.020. Waters Deemed Oregon–Washington Concurrent Jurisdiction Waters
- 507.030. Modification of Oregon–Washington Columbia River Fish Compact
- 507.040. Pacific States Marine Fisheries Compact
- 507.050. Representation on Pacific States Marine Fisheries Commission

Chapter 508. Licenses and Permits

OR ST T. 42, Ch. 508, Refs & Annos

Sets out, among others, the provisions for when licenses and permits are required; how they are applied for, issued and regulated; catch fees; salmon hatchery permits; and the commercial fisheries fund.

Chapter 509. General Protective Regulations

OR ST T. 42, Ch. 509, Refs & Annos

Sets out, among others, the provisions for: taking, possessing, buying, selling and handling food fish; wasting, injuring and destroying fish; fishing gear; net fishing for salmon in the Pacific Ocean; crabs and other shellfish; fish passage; fishways; and enforcement.

Chapter 511. Local and Special Regulations

OR ST T. 42, Ch. 511, Refs & Annos

Sets out, among others, the provisions for the following areas: Columbia River, Tillamook Bay; Rough River; Curry County, Coos Bay; Nestucca Bay; Netarts Bay; and Willamette River.

Chapter 513. Packing Fish and Manufacture of Fish Products

- OR ST T. 42, Ch. 513, Refs & Annos
- 513.010. “Reduction Plant” Defined

- 513.020. Control and Regulation of Means of Handling Fish and Fish Products
- 513.030. Authority to Conduct Inspections
- 513.040. Authority to Control and Regulate Amount and Kind of Fish Commercially Handled

Note: Chapter 510, 512, 514, and 515 are Reserved or Repealed and are therefore omitted here.

In addition to the above legislative framework for commercial fishing generally, the following Oregon state laws apply where relevant:

Oregon State Endangered Species Act

The State of Oregon and the federal government maintain separate lists of Threatened and Endangered (T & E) species. These are species whose status is such that they are at some degree of risk of becoming extinct.⁵²

Under Oregon law (ORS 496.171-496.192) the Fish and Wildlife Commission through ODFW maintains the list of native wildlife species in Oregon that have been determined to be either “threatened” or “endangered” according to criteria set forth by rule (OAR 635-100-0105). The list can be found on the ODFW Website.⁵³

Other legislation of note:

2001 Oregon Laws Ch. 923⁵⁴ which relates to, amongst other things, artificial obstructions and migratory native fish.

O.R.S. § 497.252⁵⁵ Fish propagation license; requirements; application of other licensing laws.

B. FEDERAL LEVEL

AREAS COVERED

The United States marine fisheries – which comprise commercial, recreational, and subsistence fishing – “are the largest in the world, covering 4.4 million square miles of ocean.”⁵⁶ On the Federal level, wild caught fishing laws are made in various ways, including statutes by Congress, Executive Orders by the President, and Court Orders. The U.S. government has also created two federal agencies that regulate fishing, FWS (under the Secretary of the Interior) and NOAA Fisheries (under the Secretary of Commerce). Generally, FWS manages land and freshwater species, while NOAA Fisheries manages marine and anadromous species. As noted above, both NOAA Fisheries and FWS regulate fisheries by breaking the U.S. down into regions. Information on these regions can be found at:

⁵² *Threatened, Endangered, and Candidate Fish and Wildlife Species*, OR. DEP’T OF FISH AND WILDLIFE, http://www.dfw.state.or.us/wildlife/diversity/species/threatened_endangered_candidate_list.asp.

⁵³ *Id.*

⁵⁴ H.B. 3002, 2001 Leg., 71st Sess. (Or. 2001).

⁵⁵ OR. REV. STAT. § 497.252 (2017).

⁵⁶ *Understanding Fisheries Management in the United States*, NOAA FISHERIES (June 25, 2017), <https://www.fisheries.noaa.gov/insight/understanding-fisheries-management-united-states>.

<https://www.fisheries.noaa.gov/insight/understanding-laws-and-noaa-fisheries> ; and <https://www.fws.gov/pacific/>.

FWS is dedicated to the management of fish, wildlife, and natural habitats. Their responsibilities include enforcing federal wildlife laws, protecting endangered species, and restoring nationally significant fisheries, along with many other things.⁵⁷

NOAA Fisheries is dedicated to protecting the use of ocean and coastal resources along with providing ways to improve stewardship of the environment. Some responsibilities of NOAA Fisheries include managing the use of U.S. coastal and marine environments, regulating fisheries and marine sanctuaries, and protecting threatened and endangered marine species. Both NOAA Fisheries and FWS work in coordination with federal, state, local, tribal, and international authorities.

While both agencies are tasked with regulating, NOAA Fisheries is the main agency responsible for regulating, implementing, and enforcing domestic fisheries management at the federal level. NOAA Fisheries has jurisdiction over fishing occurring between three to two hundred nautical miles off the coast.⁵⁸ NOAA Fisheries works closely with eight regional fishery management councils who are responsible for the fisheries in their region. NOAA Fisheries also works closely with three Interstate Marine Fisheries Commissions, which coordinate with NOAA Fisheries and states to manage fisheries resources in their shared coastal regions.⁵⁹

A. FEDERAL STATUTES

This section contains a non-exhaustive list of certain federal laws which regulate or impact wild caught fishing. The purpose of this section is to indicate some of the issues that are regulated, how these are regulated, and to illustrate the plethora of regulations one must navigate while undertaking wild-caught fishing activities. This should be compared with the federal regulation of aquaculture and consider whether any of these issues are similarly applicable to the aquaculture industry.

The following alphabetically arranged statutes have provisions covering different aspects of wild caught fishing and related issues (including aquatic habitats and other species) under the Federal jurisdiction of the United States:

i. Airborne Hunting Act⁶⁰

This Act applies to any person who (1) while airborne in an aircraft, shoots or attempts to shoot for the purpose of capturing or killing any bird, fish, or other animal; or (2) uses an aircraft to harass any bird, fish, or other animal; or (3) knowingly participates in using an aircraft for any purpose referred to in paragraphs (1) or (2). It prohibits the person from doing acts in paragraphs (1), (2), or (3) and imposes a penalty of not more than \$5,000 or imprisonment not more than one year or both. These prohibitions do not apply to persons employed or licensed by a state or the federal government to administer or protect “land, water, wildlife, domesticated animals, human life, or crops.”

⁵⁷ *About the U.S. Fish & Wildlife Service*, U.S. FISH & WILDLIFE SERVICE (last updated Jan. 21, 2021), https://www.fws.gov/help/about_us.html.

⁵⁸ *Understanding Fisheries Management in the United States*, NOAA FISHERIES (June 25, 2017), <https://www.fisheries.noaa.gov/insight/understanding-fisheries-management-united-states>.

⁵⁹ *Supra*, note 56.

⁶⁰ 16 U.S.C. § 742j-1 (2004).

ii. Anadromous Fish Conservation Act, 16 U.S.C. §§ 757(a)-757(f)⁶¹

“Anadromous” is an adjective that describes the movement of fish, such as salmon, migrating up rivers from the seas for purposes of spawning. This Act authorizes the Secretary of Interior and Commerce to enter into cooperative agreements with the states for the conservation, development, and enhancement of the Nation’s anadromous fishery resources. Pursuant to such agreements, the federal government may undertake studies and activities to restore, enhance, or manage anadromous fish, fish habitat, and passages. The Act authorizes federal grants to the states or other non-Federal entities to improve spawning areas, install fishways, construction fish protection devices and hatcheries, conduct research to improve management, and otherwise increase anadromous fish resources.

iii. The Coastal Zone Management Act (CZMA), 16 U.S.C. § 1451 *et seq.*⁶²

The CZMA is administered by NOAA and provides for the management of the nation’s coastal resources, including the Great Lakes. The goal is to preserve, protect, develop, and where possible, restore or enhance the resources of the nation’s coastal zone. This statute intertwines state and federal overview. At the federal level, agencies implement CZMA’s national policies and provisions. States and territories, however, determine the details of their coastal management programs, including boundaries of their coastal zones, issues of most important to the state, and policies to address these issues. Since fish are a natural resource, this is a good way for states to take the lead in fishing areas.

iv. Dingell-Johnson Act (Sport Fish Restoration Act), 16 U.S.C. §§ 777-777(l)⁶³

This Act provides Federal aid to the States for management and restoration of fish having “material value in connection with sport or recreation in the marine and/or fresh waters of the United States.” It also provides funds to the states for aquatic education, wetlands restoration, boat safety, and clean vessel sanitation devices.

v. Dolphin Protection Consumer Information Act, 16 U.S.C. § 1385⁶⁴

This Act establishes conditions for protection of dolphins by ocean vessels when harvesting tuna with purse seine nets or driftnets. It prohibits the false labeling of tuna products as dolphin safe if the tuna is harvested using methods harmful to dolphins.

Further, it makes it a violation of Section 5 of the Federal Trade Commission Act, 15 U.S.C. section 45, for any producer, importer, exporter, distributor, or seller of any tuna product exported from or offered for sale in the United States to include on the label the term “dolphin safe” or any other term or symbol that falsely claims or suggest that the tuna contained in the product were harvested using a method of fishing that is not harmful to dolphins⁶⁵ if the product contains tuna harvested:

⁶¹ 16 U.S.C. § 757a-757f.

⁶² 16 U.S.C. ch. 33 § 1451.

⁶³ 16 U.S.C. § 777-777(l).

⁶⁴ 16 U.S.C. § 1385.

⁶⁵ 16 U.S.C. § 1385.

- a. On the high seas by a vessel engaged in driftnet fishing;
- b. Outside the eastern tropical Pacific Ocean by a vessel using purse seine nets; or
- c. In the eastern tropical Pacific Ocean by a vessel using a purse seine net unless the tuna meets the requirements for being considered dolphin safe under paragraph (2).

Violators of this section are subject to a civil penalty of up to \$100,000.

vi. Driftnet Impact Monitoring, Assessment, and Control Act of 1987, 16 U.S.C. § 1822⁶⁶

This Act finds that “the use of long plastic driftnets is a fishing technique that may result in the entanglement and death of enormous numbers of target and nontarget marine resources in the waters of the North Pacific Ocean, including the Bering Sea.” It, therefore, provides that the Secretary of Commerce, through the Secretary of State, shall negotiate with foreign governments to monitor driftnet fishing, and shall evaluate the feasibility of various methods of reducing the number of driftnets discarded or lost at sea. Expanded provisions were made in amendments via the Driftnet Act Amendments of 1990, 16 U.S.C. § 1826.

vii. Endangered Species Act of 1973 (ESA)⁶⁷

The primary purpose of this Act is to provide for the conservation of endangered and threatened species of fish, wildlife, and plants and the habitats in which they are found. The U.S. Fish and Wildlife Services (FWS) and the U.S. National Oceanic and Atmospheric Administration (NOAA) are the lead agencies for implementing the ESA. The Act requires federal agencies, in consultation with FWS and NOAA, to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of any listed species or result in destruction or adverse modification of designated critical habitat of such species. The law also prohibits any action that causes a “taking” of any listed species of endangered fish or wildlife, including import, export, interstate, and foreign commerce. A total of 166 fish species are listed under the ESA either as threatened or endangered.⁶⁸

viii. Fish and Wildlife Conservation Act, 16 U.S.C. §§ 2901-2912⁶⁹

The purposes of this Act are to encourage all federal departments and agencies to utilize their statutory and administrative authority, to the maximum extent practicable and consistent with each agency's statutory responsibilities and to conserve and to promote conservation of non-game fish and wildlife and their habitats. Another purpose is to provide financial and technical assistance to the states for the development, revision, and implementation of conservation plans and programs for nongame fish and wildlife. The Act defines “nongame fish and wildlife” as wild vertebrate animals in an unconfined state, that are not ordinarily taken for sport, fur, or food, not listed as endangered or threatened species, and not marine mammals within the meaning of the Marine Mammal Protection Act.

⁶⁶ 16 U.S.C. § 1822.

⁶⁷ Endangered Species Act of 1973, 16 U.S.C. § 1531-1544.

⁶⁸ *Species Search Results*, U.S. FISH AND WILDLIFE SERVICE, <https://ecos.fws.gov/ecp0/pub/SpeciesReport.do?groups=E&listingType=L&mapstatus=1>.

⁶⁹ 16 U.S.C. § 2901-2912.

ix. High Seas Driftnet Fishing Moratorium Protection Act⁷⁰

This Act was amended by the Magnuson-Stevens Act which requires the United States to improve international fisheries management. However, this Act still requires the United States to identify nations to Congress for Illegal, Unreported, and Unregulated (IUU) fishing, and/or bycatch of protected living marine resources or shark catch on the high seas for nations who do not have regulatory measures comparable to the U.S.

x. High Seas Fishing Compliance Act of 1995, 16 U.S.C. §§ 5501-5509⁷¹

This Act requires that all commercial fishing vessels registered in the United States have a permit to fish on the high seas. The high seas are those waters extending beyond the exclusive economic zone, or seaward of 200 miles. Those holding this permit must comply with international living marine resource agreements, including any measure implementing such agreements. Permit holders are required to record all fishing efforts on the high seas.

xi. International Dolphin Conservation Program Act (IDCPA) of 1992, P.L. 102-523⁷²

This Act amended the Marine Mammal Protection Act of 1972, the Tuna Conventions Act of 1950, and the South Pacific Tuna Act of 1988, all of which are discussed in this summary. The IDCPA directed the National Marine Fisheries Service to conduct studies to determine whether the intentional deployment on or encirclement of dolphins with purse seine nets is having significant adverse impacts on any depleted dolphin stock in the eastern tropical Pacific Ocean.

xii. Lacey Act, 18 U.S.C. §§ 41-48⁷³

This Act prohibits trade in wildlife, fish, and plants that have been illegally taken, possessed, transported, or sold. The Act underscores other federal, state, and foreign laws protecting wildlife by making it a separate offense to take, possess, transport, or sell wildlife that has been taken in violation of those laws. The Act is administered by the Departments of Interior, Commerce, and Agriculture. The Lacey Act is one of the broadest and most comprehensive forces in the federal arsenal to combat wildlife crime.

xiii. Magnuson-Stevens Fishery Conservation and Management Act (MSA), 16 U.S.C. §§ 1801-1891(d)⁷⁴

The MSA is the primary law governing the management of marine fisheries in U.S. federal waters. The Act was passed to extend U.S. fisheries management to 200 nautical miles from shore (our EEZ). The key objectives of the Act are to: 1) prevent overfishing, 2) rebuild overfished stocks, 3) increase long-term economic and social benefits, 4) use reliable data and sound science, 5) conserve essential fish habitat, and 6) ensure a safe and sustainable supply of seafood. The Act and the amendments are relevant to both the wild caught and aquaculture subjects.

⁷⁰ 16 U.S.C. 1826d et seq.; 76 Fed. Reg. 2011 (Jan. 12, 2011); 50 C.F.R § 300.

⁷¹ 16 U.S.C. § 5501-5509.

⁷² International Dolphin Conservation Program Act of 1992, Pub. L. No. 105-42, 111 Stat. 1122.

⁷³ 18 U.S.C. § 41-48.

⁷⁴ 16 U.S.C. § 1801-1891d.

xiv. Marine Mammal Protection Act of 1972 (MMPA), 16 U.S.C. §§ 1361 *et seq.*⁷⁵

One of the most stringent wildlife protection laws in the United States is the MMPA, which “prohibits, with certain exceptions, the ‘take’ of marine mammals in U.S. waters and by U.S. citizens on the high seas, and the importation of marine mammals and marine mammal products into the U.S.” This Act plays a fragmented role in fisheries management practices. While it was enacted to protect dolphins, whales, porpoises, seals, and sea lions, it regulates interactions between commercial fishing exploration and protected marine mammal species as well.

xv. Marine Plastic Pollution Research and Control Act of 1987, P.L. 100-220, Title II⁷⁶

This Act amended the Act to Prevent Pollution from Ships, 33 U.S.C. §§ 1901-1915, in part to direct the Environmental Protection Agency, in consultation with the Secretary of Commerce, to study “improper disposal practices and associated specific plastic articles that occur in the environment with sufficient frequency to cause death or injury to fish or wildlife.”

xvi. National Environmental Policy Act of 1969, 42 U.S.C. §§ 4321-4370(f)⁷⁷

“The National Environmental Policy Act (NEPA) was one of the first laws written that establishes the broad national framework for protecting our environment. NEPA's basic policy is to assure that all branches of government give proper consideration to the environment prior to undertaking any major federal action that significantly affects the environment.

NEPA requirements are invoked when airports, buildings, military complexes, highways, parkland purchases, and other federal activities are proposed. Environmental Assessments (EAs) and Environmental Impact Statements (EISs), which are assessments of the likelihood of impacts from alternative courses of action, are required from all Federal agencies and are the most visible NEPA requirements.”⁷⁸

xvii. Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990, 16 U.S.C. §§ 4701-4751⁷⁹

This Act focuses on all aquatics, including plants and created the Aquatic Nuisance Species Task force, which is an intergovernmental organization, administered by the FWS. This Act is intended to:

- a. Prevent unintentional introduction and dispersal of nonindigenous species into waters of the United States through ballast water management and other requirements;
- b. Coordinate federally conducted, funded or authorized research, prevention, control, information dissemination and other activities regarding the zebra mussel and other aquatic nuisance species;

⁷⁵ 16 U.S.C. § 1361-1423h.

⁷⁶ Marine Plastic Pollution Research and Control Act of 1987, Pub. L. No. 100-220, 101 Stat. 1458.

⁷⁷ 42 U.S.C. §§ 4321-4370(f).

⁷⁸ *Summary of the National Environmental Policy Act*, EPA, <https://www.epa.gov/laws-regulations/summary-national-environmental-policy-act>.

⁷⁹ 16 U.S.C. § 4701-4751.

- c. Develop and carry out environmentally sound control methods to prevent, monitor and control unintentional introductions of nonindigenous species from pathways other than ballast water exchange;
- d. Understand and minimize economic and ecological impacts of nonindigenous aquatic nuisance species that become established, including the zebra mussel; and
- e. Establish a program of research and technology development and assistance to States in the management and removal of zebra mussels.

The statute finds that nonindigenous species, such as the zebra mussel, if left uncontrolled, would disrupt the economy and “the diversity and abundance of native fish.”

xviii. Pacific Salmon Treaty Act of 1985, 16 U.S.C. §§ 3631-3645⁸⁰

This Act implements a treaty between the United States and Canada, the purposes of which were to “prevent overfishing and provide for optimum production” and to “provide for each Party to receive benefits equivalent to the production of salmon originating in its waters.” It authorizes Federal regulatory preemption by the Secretary of Commerce to meet treaty obligations. The Act authorized creation of an advisory committee to assist and authorize appropriations of sums of fish as may be necessary for carrying out the purposes of the Tribal Treaty and this Act.

xix. Pacific Whiting Act of 2006, 16 U.S.C. §§ 7001-7010⁸¹

The Pacific Whiting Treaty is a bilateral agreement between the United States and Canada that makes both countries responsible for the management of the coastal stock of Pacific whiting. The agreement allocates a set percentage of the harvest quota to American and Canadian fisherman. This statute requires the Secretary of Commerce to establish the United States catch level for Pacific whiting according to the standards and procedures of the Agreement. Harvest quota of Pacific whiting is found under this statute rather than under the standards and procedures of the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. 1801 et seq.), except to the extent necessary to address the rebuilding needs of other species.

xx. Pelly Amendment (§ 8 of the Fisherman’s Protective Act)⁸²

§ 8 of the Fishermen’s Protective Act, also known as the Pelly Amendment, was added to 22 U.S.C. § 1978. The Pelly Amendment authorizes the President to embargo wildlife products (including all fish not previously covered) whenever the Secretary of the Interior or the Secretary of Commerce certifies that nationals of a foreign country are engaging in trade or takings that diminish the effectiveness of an international program in force with respect to the United States for the conservation of endangered or threatened species or when the nationals of a foreign country are conducting fishing operations in a manner or under circumstances which diminish the effectiveness of an international fishery conservation program. The U.S. Fish and Wildlife Service (FWS) utilizes the Pelly Amendment when negotiating with other Parties to

⁸⁰ 16 U.S.C. § 3631.

⁸¹ 16 U.S.C. § 7001.

⁸² Pelly Amendment, 22 U.S.C. § 1978; *Pelly Amendment*, U.S. FISH & WILDLIFE SERV., <https://www.fws.gov/international/laws-treaties-agreements/us-conservation-laws/pelly-amendment.html>.

the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) on the listing of certain species.

xxi. Pittman-Robertson Wildlife Restoration Act, 16 U.S.C. § 669-669(k)⁸³

Also known as the “Federal Aid in Wildlife Restoration Act,” this Act authorizes the Secretary of the Interior to cooperate with the States, through their respective fish and game departments, in wildlife restoration projects, which are defined as the “selection, restoration, rehabilitation, and improvement of areas of land or water adaptable as feeding, resting, or breeding places for wildlife.” This statute was amended by the Wildlife and Sport Fish Restoration Programs Improvement Act of 2000, discussed below.

xxii. Salmon and Steelhead Conservation and Enhancement Act of 1980, 16 U.S.C. §§ 3301-3345⁸⁴

This Act established a salmon and steelhead enhancement program to be jointly administered by the Departments of Commerce and Interior. It also established a Washington State and Columbia River conservation area and directed the Secretary of Commerce to establish an advisory committee of representatives from Washington and Oregon, the Washing and Columbia River tribal bodies, the Pacific Fisheries Management Council, and the National Marine Fisheries Service. The purpose is to “encourage stability in and promote the economic well-being” of commercial fishing through “coordinated research, enhancement, and management of salmon and steelhead resources and habitat.”

xxiii. Shark Finning Prohibition Act, 16 U.S.C. § 1822⁸⁵

Signed into law on December 21, 2000 as Public Law 106-557. This Act amended the Magnuson-Stevens Fishery Conservation and Management Act by adding 16 U.S.C. § 1857(1)(P) to make it unlawful “to remove any of the fins of a shark (including the tail) and discard the carcass of the shark at sea.” It also requires the Secretary of Commerce, acting through the Secretary of State, to, among other things, “initiate discussions as soon as possible for the purpose of developing bilateral or multilateral agreements with other nations for the prohibition of shark-finning.”

xxiv. Sikes Act, 16 U.S.C. §§ 670(a)-670(o)⁸⁶

This Act authorizes the Secretary of Defense to carry out a program of planning for, and the development, maintenance, and coordination of, wildlife, fish, and game conservation and rehabilitation in each military reservation in accordance with a cooperative plan mutually agreed upon by the Secretary of Defense, the Secretary of Interior, and the appropriate State agency designated by the State in which the reservation is located.

⁸³ 16 U.S.C. § 669.

⁸⁴ 16 U.S.C. § 3301.

⁸⁵ 16 U.S.C. § 1822.

⁸⁶ 16 U.S.C. § 670.

xxv. Tuna Conventions Act of 1950, 16 U.S.C. §§ 951-962⁸⁷

This Act prohibits fishing in violation of any regulation adopted by the Secretary of Commerce pursuant to the Convention for the Establishment of an Inter-American Tropical Tuna Commission and prohibits commerce in fish taken in violation of such regulations.

xxvi. Western and Central Pacific Fisheries Convention Implementation Act of 2007, 16 U.S.C. §§ 6901-6910⁸⁸

This Act provides for the representation of the United States on the Commission for the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean. It requires the Secretary, in coordination with the Secretary of State, to develop a memorandum of understanding with the Western Pacific, Pacific and North Pacific Management Councils, that clarifies the role of the relevant council or councils with respect to specified matters relating to highly migratory species.

xxvii. Whale Conservation and Protection Study Act, 16 U.S.C. §§ 917-917d⁸⁹

This Act, enacted on October 17, 1976, directs the Secretary of Commerce to undertake comprehensive studies of all whales found in waters subject to the jurisdiction of the United States. The studies shall consider all relevant factors regarding the conservation and protection of all such whales; the distribution, migration patterns, and population dynamics of whales; and the effects on all such whales of habitat destruction, disease, pesticides and other chemicals, disruption of migration patterns, and food shortages for purpose of developing adequate and effective measures, including appropriate laws and regulations, to conserve and protect such mammals. The Act requires other federal agencies to cooperate with the Secretary in preparing the study and recommendations. The Secretary also is required, through the Secretary of State, to initiate negotiations with Mexico and Canada for the protection and conservation of whales.

xxviii. Whaling Convention Act of 1949, 16 U.S.C. §§ 916-916l⁹⁰

This Act authorizes the Secretary of Commerce to implement the provisions of the International Convention for the Regulation of Whaling and to issue regulations necessary for this purpose. Under this Act, it is illegal for any person under U.S. jurisdiction to engage in any act prohibited or fail to do any act required by the Convention, this Act, or any regulations promulgated by the Secretary of Commerce pursuant to this Act. It is also illegal to ship, transport, purchase, sell, offer for sale, import, export, or have in possession any whale or whale products taken in violation of the Convention, this Act, or any regulation promulgated by the Secretary of Commerce pursuant to this Act. The prohibitions of this Act do not preclude the taking of whale for scientific investigation, with the approval of the Secretary.

⁸⁷ 16 U.S.C. § 951.

⁸⁸ 16 U.S.C. § 6901.

⁸⁹ 16 U.S.C. § 917.

⁹⁰ 16 U.S.C. § 916.

xxiv. Wildlife and Sport Fish Restoration Programs Improvement Act of 2000, 16 U.S.C. § 669-669(k)⁹¹

This Act amends the Pittman-Robertson Wildlife Restoration Act and the Dingell-Johnson Sport Fish Restoration Act to enhance the funds available for grants to States for fish and wildlife conservation projects, and to increase opportunities for recreational hunting, bow hunting, trapping, archery, and fishing, by eliminating chances for waste, fraud, abuse, maladministration, and unauthorized expenditures for administration and implementation of those Acts.

B. COURT DECISIONS

There are innumerable court decisions on diverse contested subject matters about wild caught fishing law in the United States and it is beyond the scope of this Memorandum to set out these decisions due to their sheer bulk and scope. To be noted, however, is that the legal positions in the above summarized statutes and legal instruments have been fully debated and settled by numerous authorities.

This should be compared to the bringing and contemplation around issues pertaining to aquaculture. While this is undoubtedly increasing, including the use of lateral statutes such as the Endangered Species Act as well as other environmental legislation like the Clean Water Act, and even consumer protection laws, the judicial jurisprudence in respect of aquaculture is notably less than wild-caught fishing.

C. PRESIDENTIAL ORDERS

- i. **Executive Order No. 13921⁹²** is an order by President Donald Trump, Promoting American Seafood Competitiveness and Economic Growth. According to the purpose of the act,

America needs a vibrant and competitive seafood industry to create and sustain American jobs, America needs a vibrant and competitive seafood industry to create and sustain American jobs, put safe and healthy food on American tables, and contribute to the American economy. Despite America's bountiful aquatic resources, by weight our Nation imports over 85 percent of the seafood consumed in the United States. At the same time, illegal, unreported, and unregulated fishing undermines the sustainability of American and global seafood stocks, negatively affects general ecosystem health, and unfairly competes with the products of law-abiding fishermen and seafood industries around the world. More effective permitting related to offshore aquaculture and additional streamlining of fishery regulations have the potential to revolutionize American seafood production, enhance rural prosperity, and improve the quality of American lives. By removing outdated and unnecessarily burdensome regulations; strengthening efforts to combat illegal, unreported, and unregulated fishing; improving the transparency and efficiency of environmental reviews; and renewing our focus on long-term strategic planning to facilitate aquaculture projects, we can protect our aquatic environments; revitalize our Nation's

⁹¹ 16 U.S.C. § 669.

⁹² Exec. Order No. 13921, 85 Fed. Reg. 15 (May. 12, 2020). <https://www.federalregister.gov/documents/2020/05/12/2020-10315/promoting-american-seafood-competitiveness-and-economic-growth>.

seafood industry; get more Americans back to work; and put healthy, safe food on our families' tables.

- ii. **Executive Order No. 9634**⁹³ is an order by President Harry S. Truman, providing for the establishment of fishery conservation zones. It requires the Secretary of State and the Secretary of the Interior to, when necessary, jointly recommend to the President the establishment by Executive orders of fishery conservation zones in areas of the high seas contiguous to the coasts of the United States. Such an executive order shall be for the regulation and control of the fishery resources of and fishing activities in such zones.
- iii. **Executive Order No. 9892**⁹⁴ is an order that designated the Fish and Wildlife Service as the agency responsible for the enforcement of the Sockeye Salmon Fishery Act of 1947. The Sockeye Act is a convention between the United States of America and the Dominion of Canada for the protection, preservation, and extension of the sockeye salmon fishery of the Fraser River system signed in 1930. The convention creates the International Pacific Salmon Fisheries Commission to implement the convention.
- iv. **Executive Order No. 13196**⁹⁵ is an order by President Bill Clinton titled “Final Northwestern Hawaiian Islands Coral Reef Ecosystem Reserve.” It prohibits commercial fishing in these zones.
- v. **Executive Order No. 13443**⁹⁶ of August 16, 2007: Facilitation of Hunting Heritage and Wildlife Conservation. This Order directs the Chairman of the Council on Environmental Quality to coordinate with Federal agencies, in consultation with the Sporting Conservation Council and in cooperation with State and tribal fish and wildlife agencies not later than 1 year following this proclamation, and periodically thereafter, to convene a White House Conference on North American Wildlife Policy to facilitate the exchange of information and advice relating to wildlife conservation. Thereafter, not later than 12-year after the Conference to prepare a comprehensive Recreational Hunting and Wildlife Conservation Plan that incorporates existing and ongoing activities and sets forth a 10-year agenda for fulfilling the actions identified in the conference.
- vi. **Executive Order No. 13449**⁹⁷ by President George W. Bush for the Protection of Striped Bass and Red Drum Fish Populations. It prohibited subjecting these species to wild caught fishing except those species reared under aquaculture. This Order was made to assist in ensuring realization of the demands of the Magnuson-Stevens Fishery Conservation and Management Act, the Atlantic Coastal Fisheries Cooperative Management Act, and the Atlantic Striped Bass Conservation Act.
- vii. **Proclamation No. 9173**⁹⁸ Pacific Remote Islands Marine National Monument by President Barack Obama on September 25, 2014. Through Proclamation 8336 of January 6, 2009, the President established the Pacific Remote Islands Marine National Monument to protect and preserve the marine environment around Wake, Baker, Howland, and Jarvis Islands,

⁹³ Exec. Order No. 9634, 3 C.F.R. § 1943-1948 (1945).

⁹⁴ Exec. Order No. 9892, 12 Fed. Reg. 6345 (Sept. 24, 1947).

⁹⁵ Exec. Order No. 13196, 66 Fed. Reg. 15 (Jan. 23, 2001).

⁹⁶ Exec. Order No. 13443, 3 C.F.R. § 13443 (2008).

⁹⁷ Exec. Order No. 13449, 72 Fed. Reg. 60531 (Oct. 24, 2007).

⁹⁸ Proclamation No. 9173, 79 Fed. Reg. 58645 (Sept. 29, 2014).

Johnston and Palmyra Atolls, and Kingman Reef for the care and management of the historic and scientific objects therein. The Monument is an important part of the most widespread collection of marine and terrestrial life protected areas sustaining many endemic species of corals, fish, shellfish, marine mammals, seabirds, water birds, land birds, insects and vegetation. By the present proclamation, the President put all the subject areas under the control and protection of the Government of the United States. The effect of this is, among others, empowering the Secretaries and the Interior and Commerce to permit noncommercial fishing upon request, at specific locations within the protected areas. Recreational fishing may be managed as a sustainable activity.

- viii. **Executive Order No. 13921**⁹⁹ Signed by President Donald Trump on May 7, 2020, *Promoting American Seafood Competitiveness and Economic Growth* is intended to “strengthen the American economy; improve the competitiveness of American industry; ensure food security; provide environmentally safe and sustainable seafood; support American workers; ensure coordinated, predictable, and transparent Federal actions; and remove unnecessary regulatory burdens.”¹⁰⁰

SOURCES

1. *Brief Summaries of Federal Animal Protection Statutes* - Congressional Research Service.¹⁰¹
2. Federal Register.¹⁰²

D. INTERNATIONAL TREATIES

Although the exact number is impossible to state with certainty, it is estimated that every year between 1 and 3 trillion fish are caught from the wild and killed globally.¹⁰³ This number does not include farmed fish or fish caught for recreational purposes.¹⁰⁴ The market for human consumption of fish is expanding, and fish products account for approximately 39% of animal products consumed globally.¹⁰⁵ Fish migrate through international waters as well as the territorial waters of scores of nations, making it impossible to regulate fisheries without cooperation among nations. Below is a non-exhaustive list of international treaties that the U.S. is a party to that apply to fishing. Some of the treaties not included are the North Atlantic Salmon Treaty, the Northwest Atlantic Fisheries Treaty, and the Pacific Salmon

⁹⁹ Exec. Order No. 13921, 85 FR 28471 (May 7, 2020).

¹⁰⁰ Put another way, this Executive Order “moved to open up federal waters to commercial fish farming (aquaculture). The area has previously been logistically prohibitive to break into. The executive order intends to promote U.S. seafood production and create a hassle-free regulatory process for offshore aquaculture projects...The executive order designates ... (NOAA) as the government agency lead on all aquaculture projects in the EEZ and also requires that all permitting decisions on new aquaculture projects be made within two years, significantly speeding up the process.” Ariella Simke, *The Pros And Cons Of Expanding United States Offshore Aquaculture In 2020*, FORBES (July 19, 2020), <https://www.forbes.com/sites/ariellasimke/2020/07/19/the-pros-and-cons-of-expanding-united-states-offshore-aquaculture-in-2020/?sh=29461a0a755f>.

¹⁰¹ Vivian S. Chu, *Brief Summaries of Federal Animal Protection Statutes*, CONG. RSCH. SER. (Feb. 1, 2010) <http://nationalaglawcenter.org/wp-content/uploads/assets/crs/94-731.pdf>.

¹⁰² National Archives, FED. REG., <https://www.federalregister.gov/documents/2007/08/20/07-4115/facilitation-of-hunting-heritage-and-wildlife-conservation>.

¹⁰³ David N. Cassuto; Amy M. O’Brien, *You Don’t Need Lungs to Suffer: Fish Suffering in the Age of Climate Change with a Call for Regulatory Reform*, 5 CAN. J. COMP. & CONTEMP. L 31 (2019).

¹⁰⁴ *Id.*

¹⁰⁵ *Supra*, note 103.

Treaty.¹⁰⁶ Although these will not be discussed for purposes of this memorandum, it should be noted that there are also several Regional Fisheries Management Organizations (RFMOs).¹⁰⁷ A RFMO “is an international body made up of countries that share a practical and/or financial interest in managing and conserving fish stocks in a particular region.”¹⁰⁸ These RFMOs vary in focus, from regulating fishing of a particular species, to ensuring an entire fishery does not have a negative impact on the marine ecosystem.¹⁰⁹ There are approximately 17 RFMOs worldwide.¹¹⁰

The below are examples of treaties, agreements, conventions and other international documents that regulate directly, or regulate aspects of wild-caught fishing, aquatic habitats or species. These are meant to be indicative of issues and not exhaustive. These should also be considered in the context of the international regulation, or rather lack thereof, in respect of aquaculture.

i. **Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on The High Seas.**

Recognizing that fisheries, including aquaculture, provide a vital source of food, employment, recreation, trade and economic wellbeing for people throughout the world, this agreement sets out principles and international standards of behavior for responsible practices with a view to ensuring the effective conservation, management, and development of living aquatic resources, with due respect for the ecosystem and biodiversity. The objective of this agreement is to strengthen international cooperation with a view to ensuring compliance by fishing vessels on the high seas. It applies to all fishing vessels used or intended for fishing on the high seas. Parties agree to take all necessary measures to ensure that fishing vessels entitled to fly their flag do not engage in activity that undermines the effectiveness of international conservation and management measures and adopt enforcement measures in respect of fishing vessels which act in contravention. Since this agreement applies to fishing generally, it also applies to aquaculture.¹¹¹

ii. **The Convention for the Conservation of Anadromous Stocks in the North Pacific Ocean**¹¹²

The Convention desires to coordinate efforts and establish an effective mechanism of international cooperation for the conservation of anadromous fish stocks in the North Pacific Ocean. To do so, the treaty establishes the North Pacific Anadromous Fish Commission and defines “fishing” to mean: a) The catching, taking, harvesting of fish, or any other activity which can reasonably be expected to result in the catching, taking and harvesting of fish; b) Any operation at sea in preparation for or in direct support of any activity described in the preceding paragraph (a).

¹⁰⁶ *Digest of Federal Resource Laws of Interest to the U.S. Fish and Wildlife Service*, FWS, <https://www.fws.gov/laws/lawsdigest/treaty.html#PACIFIC>.

¹⁰⁷ *Regional fisheries management organizations and deep-sea fisheries*, FAO, <http://www.fao.org/fishery/topic/166304/en>.

¹⁰⁸ PEW RES. CTR, *FAQ: What is a Regional Fishery Management Organization?*, (Feb. 23, 2012),

<https://www.pewtrusts.org/en/research-and-analysis/fact-sheets/2012/02/23/faq-what-is-a-regional-fishery-management-organization>.

¹⁰⁹ *Id.*

¹¹⁰ *Supra*, note 108.

¹¹¹ Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas, art. 4-5, Nov. 29, 1993, available at: <https://www.ecolex.org/details/treaty/agreement-to-promote-compliance-with-international-conservation-and-management-measures-by-fishing-vessels-on-the-high-seas-tre-001183/>.

¹¹² Convention for the Conservation of Anadromous Stocks in the North Pacific Ocean, Feb. 11, 1992.

iii. **The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)**¹¹³

CITES is an international agreement with the aim to ensure that international trade in specimens of wild animals and plants does not threaten their survival. Under CITES there are three different Appendices that determine the restrictions on import, export, re-export, and introduction from the sea. Trade restrictions and regulations depend on whether a species is listed under Appendix I, Appendix II, or Appendix III. Aquaculture issues arise under CITES when Parties harvest and trade commercially exploited aquatic species listed in the CITES Appendices.

C. TRIBAL LAWS

INTRODUCTION

A review of the regulation of wild-caught fishing would not be complete without including tribal laws and regulation. While this landscape is complex, and the scope of these laws and their application differ, this section sets out examples of regulations and how these operate within the broader context of wild-caught fishing.

Tribal Fishing and Water Rights are governed by the individual treaties between the respective tribes and the federal government. These rights must be taken into consideration for both wild caught and farmed fish.

The catching or harvesting of fish in the wild falls under the fishing rights of the tribes, while farmed fishing is likely to be governed by the water rights of the tribes. When artificial farms are created on land by non-Indian¹¹⁴ parties, it is unlikely that there will be an issue. However, when parts of a body of water are sectioned off to allow for the farming of fish this may affect the water rights of the tribes.

This section should once again be considered in the context of aquaculture and issues that may be applicable thereto.

OREGON TRIBES¹¹⁵

This section discusses the tribes in Oregon state, the treaties that apply to these tribes, and some of the applicable rights that the tribes are entitled to in accordance with the terms of these treaties. These rights are generally limited in scope in terms of geographic areas and other relevant factors, and need to be respected by the Government as well as third parties. It is therefore important for anyone in the wild caught fishing business to understand these rights and ensure that their fishing activities are not in conflict with these rights.

¹¹³ Convention on International Trade in Endangered Species of Wild Fauna and Flora, <https://www.cites.org/eng/cop/index.php>.

¹¹⁴ As a legal reference, we have chosen to use the term “non-Indian”. However, we acknowledge and respect that others may prefer alternative terms.

¹¹⁵ *Commission on Indian Services*, OR. STATE LEGIS., <https://www.oregonlegislature.gov/cis/Pages/TribalWebsites.aspx>.

Oregon tribes are mainly “confederations” of three or more tribes and bands.¹¹⁶ An individual tribe’s “area of interest” may expand considerably outside its reservation location or tribal governmental center.¹¹⁷

- Burns Paiute Tribe
 - Signed a Treaty in 1868, President Johnson signed the Malheur Reservation into law, Congress never ratified the treaty.¹¹⁸
- Confederated Tribes of Coos, Lower Umpqua & Siuslaw
 - Signed a Treaty in 1855, not ratified by Senate. The Tribe was forcibly moved to the Great Coast Reservation in 1856.¹¹⁹
- Confederated Tribes of the Warm Springs Reservation
 - The Treaty of 1855 defined the area of the Reservation and affirmed Tribes rights to harvest fish, game, and other foods on accustomed lands outside the reservation boundaries.
 - The Tribal Constitution and By-Laws established the Tribal Government in 1938.
 - The Corporate Charter incorporated the Tribes in 1938.
 - The Declaration of Sovereignty of June 25, 1992 declared the sovereign authority of the Tribes to determine their “destiny and control all persons, land, water, resources, and activities free from outside interference.”¹²⁰
- Coquille Indian Tribe
 - Entered into two treaties with the U.S. government in 1851 and 1855, which were never ratified by the Senate.¹²¹
- Klamath Tribes
 - In 1870 the Klamath Tribes Treaty of 1864 was ratified and proclaimed by the U.S. Senate and President Grant.
 - The Klamath Tribes may exercise their treaty hunting, trapping, and fishing rights without following state fish and game regulations, the rights have survived the Klamath

¹¹⁶ *Introduction to Oregon’s Indian Tribes*, Oregon Blue Book, <https://sos.oregon.gov/blue-book/Pages/national-tribes-intro.aspx>.

¹¹⁷ *Id.*

¹¹⁸ Don Sampson, *Oregon Tribes and Treaties*, INST. FOR TRIBAL GOV’T, <https://www.frbsf.org/community-development/files/Don-Sampson-5-2-2014.pdf>.

¹¹⁹ *Id.*

¹²⁰ CONFEDERATED TRIBES OF WARM SPRINGS, <https://warmsprings-nsn.gov/treaty-documents/>.

¹²¹ *Supra*, note 118.

Termination Act for all tribal members, and they have water rights sufficient to maintain their treaty rights to hunt and fish on the former reservation.¹²²

- Cow Creek Band of Umpqua Tribe of Indians
 - The Treaty was ratified on 12 April 1854 and proclaimed on 5 February 1855.¹²³
- Confederated Tribes of the Umatilla Indian Reservation
 - An 1855 Treaty involved a commitment by the U.S. “to establish the Umatilla Indian Reservation as a tribal homeland, to recognize the sovereignty of the Tribes” over the Reservation “and to reserve certain off-reservation rights to fish, hunt, gather foods/medicines, pasture livestock.”¹²⁴
- Confederated Tribes of Grand Ronde
 - Confederation of over 27 tribes and bands; removed to the Grand Ronde Reservation in 1856.¹²⁵
- Confederated Tribes of Siletz
 - Between 1853-1855, the first two treaties with Joe Palmer, Superintendent of Indian Affairs for Oregon Territory, went jointly through the full process of being ratified. Over the next two years, the Tribes “would be forced to sign a total of seven treaties - which ceded the entire area between the Columbia River & the summits of the Siskiyou and from the Summit of the Cascades to the summit of the Coast Range (approximately 15 million acres). Six of these treaties were for actual cession of lands and reserving temporary reservations and one was for the specific purpose of giving the U.S. Government permission to confederate other tribal groups with the original Rogue River Treaty Tribes.”¹²⁶

TRIBAL FISHING RIGHTS (Generally)

- Jurisdiction depends on whether fishing is done by an Indian or Non-Indian, whether the fishing takes place in or out of Indian country, and whether or not there is a treaty that modifies usual jurisdictional rules.¹²⁷ In general, for the tribes, treaties reserved 50 percent of the harvestable surplus of fish destined to pass through their usual and accustomed fishing areas and reserved “federally protected fishing rights to the fishery resource in the rivers running through the reservations.”¹²⁸

¹²² *Treaty of 1864*, THE KLAMATH TRIBES, <http://klamathtribes.org/treaty-of-1864/>.

¹²³ *Treaty with the Umpqua-Cow Creek Band, 1853*, FISH AND WILDLIFE SERVICES, https://www.fws.gov/pacific/ea/tribal/treaties/Umpqua_cowcrk.pdf.

¹²⁴ *Supra*, note 118.

¹²⁵ David Lewis, *Confederated Tribes of Grand Ronde*, OR. HIST. SOC’Y, <http://ohs.org/museum/exhibits/the-confederated-tribes-of-grand-ronde.cfm>.

¹²⁶ *A Siletz History-The Western Oregon Treaties of 1853-1855*, CONFEDERATED TRIBES OF SILETZ INDIANS, <http://www.ctsi.nsn.us/chinook-indian-tribe-siletz-heritage/our-history/part-vi#content>.

¹²⁷ William C. Canby, Jr., *American Indian Law in a Nutshell*, at 518.

¹²⁸ *Sovereign Relations on the West Coast*, NOAA, http://www.westcoast.fisheries.noaa.gov/whatwedo/sovereign_relations/index.html.

- The establishment of a reservation by treaty, statute, or agreement includes an implied right of Indians to hunt and fish on that reservation free of regulation by the state.¹²⁹
 - Public Law 280 provides that a state shall not “deprive any Indian or Indian Tribe ... of any right, privilege, or immunity afforded under Federal treaty, agreement, or statute with respect to hunting, trapping, or fishing or the control, licensing, or regulation thereof.”¹³⁰
 - The state may also be proscribed from prohibiting the possession or sale off-reservation of fish or game caught on the reservation by Indians.¹³¹
- If a tribe that is unrecognized by the federal government descended from a treaty signatory and maintained a tribal structure since, they are entitled to the same rights.¹³² However, if the group has not retained cohesion with the treaty tribe, they do not retain treaty rights.¹³³
- Treaty rights to fish off reservation
 - When a treaty reserves the rights of the tribe to fish in its “usual and accustomed places,” the state may not preclude them access, may not require them to get a permit or license, and must allow them to erect structures at those sites (the type of structure allowed varies).
 - These rights can be extended to Non-Indian spouses of members of the signatory tribe, but only apply to the “usual and accustomed places” of the tribe that originally signed the treaty.¹³⁴
- Treaty rights can be asserted even if they have not been used in many years. However, they can also be abandoned if the tribe leaves the land reserved for them.¹³⁵
- The power to regulate hunting and fishing by the tribes on tribal land is left to the tribes.¹³⁶
- Congress has complete power over Indian affairs. This power extends to regulation of Indian fishing, and Congress can, and has, fully revoked these rights.¹³⁷
- The Secretary of the Interior is authorized to issue regulations governing Indian fishing on a few reservations, has provided for identification of treaty Indians fishing off-reservation, and can ban commercial fishing by Indians on their reservation without having to show the “kind of imminent threat to conservation required for state regulation of treaty fishing.”¹³⁸

¹²⁹ William C. Canby, Jr., *American Indian Law in a Nutshell* at 518, citing *Menominee Tribe v. United States*, 391 US 404 (1968).

¹³⁰ *Id.* citing 18 USCA §1162(b).

¹³¹ *Supra*, note 129, at 518.

¹³² *Supra*, note 129, at 519, citing *United States v. Washington*, 520 F2d 676, 692-693 (9th Cir. 1975).

¹³³ *Supra*, note 129, at 519, citing *United States v. Oregon* 29 F3d 481, amended 43 F3d 1284 (9th Cir. 1994).

¹³⁴ *Supra*, note 129, at 520.

¹³⁵ *Supra*, note 129, at 525.

¹³⁶ *Supra*, note 129, at 527.

¹³⁷ *Supra*, note 129, at 527.

¹³⁸ *Supra*, note 129, at 528.

- Hunting/Fishing by Non-Indians on Indian land¹³⁹
 - The federal government has the power to regulate this, but they usually do not exercise this power and leave it to the tribes.
 - Two exceptions:
 - 18 U.S.C. § 1165¹⁴⁰ – makes it a federal crime to enter Indian land without permission to hunt or fish there; and
 - The Lacey Act¹⁴¹ – prohibits transport of or traffic in fish or game taken or possessed in violation of federal, state, or tribal law.
 - Tribes have the power to exclude Non-Indians from hunting or fishing on Indian Land and/or to issue licenses to Non-Indians to hunt or fish on their land.

TIMELINE¹⁴²

- **1855** – “Treaties with Columbia River tribes were signed. In these treaties, tribes ceded most of their lands – but reserved the right to fish at “all usual and accustomed fishing places...in common with citizens.”
- **1905** – “In the first major fishing rights case to reach the Supreme Court, *U.S. v. Winans*, justices held that treaty Indians had reserved the right to cross non-Indian lands to fish at “usual and accustomed” places and that treaties were to be interpreted the way Indians had understood them.” The Yakima Nation Indians have a treaty with the United States, created in 1859, that included an exclusive right of taking fish at all usual and accustomed places, “in common with citizens of the Territory,” within and surrounding the reservation.¹⁴³ The white people who continued to use land outside of the reservation to fish began to use new technology, called fish wheels, to increase their bounty, which the Supreme Court allowed, as long as the Indians were not wholly excluded from fishing in these areas as well.¹⁴⁴
- **1968** – “Fourteen Yakama tribal members led suit against Oregon’s regulation of off-reservation fishing (*Sohappy v. Smith*). The U.S. and the Yakama, Warm Springs, Umatilla, and Nez Perce tribes also sued to enforce Indian off-reservation fishing rights (*U.S. v. Oregon*). The federal court combined the two cases.”
- **1974** – “In *U.S. v. Washington* (Boldt Decision), Judge Boldt mandated that a ‘fair share,’ meant 50 percent of the harvestable fish destined to pass the tribes’ usual and accustomed fishing places and reaffirmed tribal management powers... In *Settler v. Lameer*, the Ninth Circuit Court of Appeals ruled that the treaty fishing right was a tribal right, not an individual

¹³⁹ *Supra*, note 129, at 545-547.

¹⁴⁰ 18 U.S.C. § 1165.

¹⁴¹ 16 U.S.C. § 3371.

¹⁴² *Fisheries Timeline: Chronology of Tribal Fishing and Fishing Rights on the Columbia River*, COLUMBIA RIVER INTER-TRIBAL FISH COMM’N, <https://www.critfc.org/about-us/fisheries-timeline/>.

¹⁴³ *Id.* at 378.

¹⁴⁴ *Supra*, note 142, at 382.

right, and that tribes had reserved the authority to regulate tribal fishing on and off the reservations.”

- **1977** – By resolution, the Nez Perce, Warm Springs, Yakama, and Umatilla tribes created the Columbia River Inter-Tribal Fish Commission.
- **1985** – “President Ronald Reagan and Canadian Prime Minister Brian Mulroney signed the U.S./Canada Pacific Salmon Treaty, which reduced Canadian and Alaskan harvest of Columbia River salmon and added tribal representation to the international decision-making body along with other government fish managers.”
- **1986** - Coho salmon in the Snake River became extinct.
- **1991** - Several salmon runs from the Columbia’s largest tributary, the Snake River, were listed under the Endangered Species Act.
- **1994** – “In *Idaho Department of Fish and Game (IDFG) v. National Marine Fisheries Service (NMFS)*, brought under the [Endangered Species Act], Judge Marsh ruled that NMFS’ biological opinion of ‘no jeopardy’ regarding hydro system operations on the Columbia and Snake violated the act. He ordered the fish management parties to recommend to NMFS what hydro system changes were needed to restore endangered salmon.”
- **1995** – “The four CRITFC member tribes developed their own Columbia River salmon restoration plan, ‘Wy-Kan-Ush-Mi Wa-Kish-Wit’ (Spirit of the Salmon). The plan’s goal is to have 4 million salmon returning to the Columbia River by 2020.”
- **1997** - Native steelhead in the upper Columbia were declared endangered.
- **1999** – “Lower Columbia chum salmon, lower Columbia fall chinook salmon, Willamette and Clackamas spring chinook salmon, Willamette winter steelhead, and middle Columbia winter and summer steelhead were declared threatened under the Endangered Species Act.”
- **2004** – “The Technical Review Team for the lower Columbia and Willamette rivers published a status report for salmonids, finding that all spring Chinook and winter steelhead populations were either at ‘high’ or ‘very high’ risk of extinction and that there were no viable wild populations.”
- **2008** - A 10-year *U.S. v. Oregon* management agreement established harvest rate schedules that conserve weak populations while providing harvest opportunities on healthy runs.
- **2008** - The chinook harvest of Vancouver Island’s west coast was reduced by thirty percent and southeast Alaska’s by fifteen percent by the Pacific Salmon Treaty.
- **2008** – “Tribal salmon gross sales reached \$4 million. As comparison, the 2005 gross sales totaled \$700,000.”
- **2010** – “Columbia River Inter-Tribal Fisheries Enforcement received law enforcement commissions from each of the four-member tribes and the Bureau of Indian Affairs. To commemorate the occasion, a special intertribal oath emphasizing tribal sovereignty and service to the tribes was administered to all officers.”

Additional Information on selected cases above:

*Sohappy v. Smith*¹⁴⁵

The United States negotiated similar treaties with the Yakima Tribe, the Tribes of Middle Oregon, the Umatilla Tribe, and the Nez Perce Tribe, securing each of the tribes “the right of taking fish at all usual and accustomed places in common with citizens of the Territory”, yet Oregon and the tribes did not agree to the meaning of this phrase.¹⁴⁶ The State contended its regulatory limitations on fishing on the Colombia River applied to the tribes and did not violate the terms of the treaties.¹⁴⁷ The tribes argued that before Oregon could regulate a taking of fish under their treaties, the regulation must be reasonable and necessary for the conservation of the fish, and the tribes wanted Oregon to address their treaty fishing rights separately from fishing done by others.¹⁴⁸ The case was decided in favor of the interpretation of the Indian tribes.¹⁴⁹

*United States v. State of Washington*¹⁵⁰

Judge Boldt held that “every fishing location where members of a tribe customarily fished from time to time at and before treaty times, however distant from the then usual habitat of the tribe, and whether or not other tribes then also fished in the same waters, is a usual and accustomed ground or station at which the treaty tribe reserved, and its members presently have, the right to take fish.”¹⁵¹ The tribes involved in the case were allowed to self-regulate, provided that they meet certain conditions:

- (a) Provide for full and complete tribal fishing regulations which, before adoption, have been discussed in their proposed final form with Fisheries and Game, and include therein any state regulation which has been established to the satisfaction of the tribe, or upon hearing by or under direction of this court, to be reasonable and necessary for conservation.
- (b) Permit monitoring of off reservation Indian fishing by Fisheries and Game to the extend reasonable and necessary for conservation.
- (c) Provide fish catch reports, as to both on and off reservation treaty right fishing, when requested by Fisheries or Game for the purpose of establishing escapement goals and other reasonable and necessary conservation purposes.¹⁵²

The court further explained that under the treaties, the tribes could harvest up to 50% of the fish, not including fish harvested for traditional tribal ceremonies and personal subsistence purposes.¹⁵³

*Settler v. Lameer*¹⁵⁴

After the Yakima authorities arrested several members for violating their fishing regulations, despite the fact that the arrests took place off reservation, but within the accustomed fishing locations, the court ruled that the treaty that gave the Yakima Tribe their fishing rights to begin with also included regulatory and enforcement powers with respect to tribal fishing off reservation.¹⁵⁵

¹⁴⁵ *Sohappy v. Smith*, 302 F. Supp. 899 (Or. 1969).

¹⁴⁶ *Id.* at 904.

¹⁴⁷ *Supra*, note 145, at 907.

¹⁴⁸ *Supra*, note 145, at 907.

¹⁴⁹ *Supra*, note 145, at 908.

¹⁵⁰ *United States v. Washington*, 384 F. Supp. 312 (Wa. 1974).

¹⁵¹ *Id.* at 332.

¹⁵² *Supra*, note 150, at 341.

¹⁵³ *Supra*, note 150, at 343.

¹⁵⁴ *Settler v. Lameer*, 507 F.2d 231 (Wa. 1974).

¹⁵⁵ *Id.* at 239.

*Idaho Dep't of Fish & Game v. National Marine Fisheries Serv.*¹⁵⁶

The defendants operated the Federal Columbia River Power System (FCRPS) in a manner that violated the Endangered Species Act (ESA), by harming listed species through hydropower operations.¹⁵⁷ The base period the National Marine Fisheries Service (NMFS) chose to evaluate the individual proposed activities to determine if there would be a “significant reduction in mortality” of salmon was arbitrary and capricious, as the agency “failed to consider relevant facts such as the drought condition and low run numbers of the species during the base period.”¹⁵⁸

*United States v. Oregon*¹⁵⁹

The U.S. v Oregon Management Agreement provides a framework for managing salmon and steelhead fisheries and hatchery programs in much of the Columbia River Basin.¹⁶⁰ Beginning with the decision in *Sohappy v. Smith*, and continuing with the similar decision in *United States v. Washington*, Indian Tribes in the Pacific Northwest have 50 percent of all harvestable fish in designated fishing regions reserved, laying the foundation for salmon and steelhead fisheries management.¹⁶¹ In the 1980s, the parties and the court of *United States v. Oregon* “agreed to the first of a series of Columbia River Fish Management Plans to provide a multi-year framework for fisheries management.”¹⁶² The Management Agreement mentioned ran from 2008 to 2017.¹⁶³

D. STEP BY STEP PROCEDURE FOR SETTING UP A COMMERCIAL FISHING BUSINESS

This section highlights some of the aspects applicable to establishing a commercial fishing business in Oregon. It has been included in this section for illustrative purposes of some of the requirements, and again as a comparison with aquaculture. This information has been pulled from various sources and highlights the various provisions with which one must comply, compared to the relatively unavailable information for establishing an aquaculture business.

These factors are non-exhaustive, depend on the jurisdiction, species and other factors.

SUBSECTION I: SALT WATER

STEP 1: DETERMINE JURISDICTION

Select the jurisdiction of the proposed fishing business, i.e. will it fall within “Oregon territory”, federal territory, or have some overlap. These factors will determine what regulation is applicable.

¹⁵⁶ *Idaho Dep't of Fish & Game v. National Marine Fisheries Serv.*, 850 F. Supp. 886 (Or. 1994)

¹⁵⁷ *Id.* at 891.

¹⁵⁸ *Supra*, note 156, at 893.

¹⁵⁹ *United States v. Oregon*, 302 F. Supp. 899 (Or. 1968).

¹⁶⁰ 2018-2027 *United States v. Oregon Management Agreement*, NOAA FISHERIES (Dec. 18, 2019), <https://www.fisheries.noaa.gov/west-coast/sustainable-fisheries/2018-2027-united-states-v-oregon-management-agreement>.

¹⁶¹ *U.S. v. Oregon*, NORTHWEST POWER AND CONSERVATION COUNCIL, <https://www.nwcouncil.org/reports/columbia-river-history/USvOregon>.

¹⁶² *Id.*

¹⁶³ *Supra*, note 160.

Below is a map from Oregon Ocean Information¹⁶⁴ that sets out jurisdiction, followed by a brief description of applicable territorial considerations.



Source: Oregon Ocean Information

Below is a brief description of the legal authorities and jurisdictions in the ocean off the Oregon Coast

For a thorough discussion, consult Part One of the Oregon Territorial Sea Plan.¹⁶⁵

The state's ocean jurisdiction [the Territorial Sea] extends three nautical miles from shore [Mean Low Water], although offshore rocks and islands can extend this area seaward, such as at Orford Reef near Cape Blanco [see map to right; Territorial Sea is shaded white].¹⁶⁶

Oregon's interests in ocean resource policy and management are not limited to state waters. Because the ocean is a fluid, dynamic environment and is part of a much larger regional marine ecosystem, ocean uses and activities that occur in federal waters farther to the west, such as fishing or, potentially, oil or gas drilling, can affect Oregon's coastal environment and communities.¹⁶⁷

So, Oregon has designated an Ocean Stewardship Area [see map above] that extends from shore seaward across the relatively shallow continental shelf then down to the toe of the continental slope at about 2500 to 3000 meters deep, some 15 to 40 miles offshore. This area is the most biologically productive, where human uses and effects are most intense, and where the need for management and protection is greatest. The Ocean Stewardship Area was first expressed as a recommended

¹⁶⁴ *Ocean Stewardship Area*, OR. OCEAN INFO., <https://www.oregonocean.info/index.php/ocean-stewardship-area>.

¹⁶⁵ *Territorial Sea Plan*, OR. COASTAL MGMT. PROGRAM, <https://www.oregon.gov/lcd/OCMP/Pages/Territorial-Sea-Plan.aspx>; Part One, D, *Laws and Legal Authorities Affecting Ocean Management*, and Part One, E, *Ocean Management Agencies*, are especially helpful summary of the laws and agencies affecting Ocean Management in Oregon. PDFs of these documents are available at https://www.oregon.gov/lcd/OCMP/Documents/otsp_1-d.pdf and https://www.oregon.gov/lcd/OCMP/Documents/otsp_1-e.pdf.

¹⁶⁶ *Regulatory Road Map*, OR. OCEAN INFO., <https://www.oregonocean.info/index.php/cs-reg-road-map>.

¹⁶⁷ *Id.*

policy in the Oregon Ocean Resources Management Plan, adopted in 1990, and was incorporated into Statewide Planning Goal 19, Ocean Resources, in 2000.¹⁶⁸

Areas of on-shore authority -

A variety of state and federal agencies have regulatory authority or jurisdiction in Oregon's Territorial Sea area, and “[a]ctual jurisdictional boundaries along the ocean shore are complicated because of two factors.”¹⁶⁹

First, jurisdictional boundaries are almost always expressed in terms of the height of the water, or sea level. Sea level can vary with the slope of the shore, the height of the tide, storm events, and, over time, tectonic uplift of the continent or, conversely, sea level rise. So average water levels are reference, but these can change over time. In addition, land-based surveys historically began at a different base level than nautical or sea level surveys.¹⁷⁰

Second, different state and federal laws have been enacted that refer to different water levels to establish jurisdictional or regulatory boundaries. Different terminology between statutes can also lead to complications.¹⁷¹

STEP 2: SCOPE OF OPERATIONS: SPECIES SELECTION

Once it has been determined with certainty that the Oregon jurisdiction applies, one should consider the species.

1. It is important to note that there are certain regulations pertaining to different fish and other species. For example, a particular species:
 - a. may require special permits¹⁷² (e.g. Albacore Tuna);¹⁷³
 - b. may be subject to certain quotas or other restrictions may apply;
 - c. may be subject to existing tribal rights; and/or
 - d. may have additional other requirements/restrictions.

¹⁶⁸ *Supra*, note 166.

¹⁶⁹ *Supra*, note 166; A pdf of a diagram “showing the general areas of concern for many of these agencies and programs” can be found at <https://www.oregonocean.info/index.php/ocean-documents/planning/1528-op-agency-diag>. See Appendix D of the Oregon Territorial Sea Plan for a description of terms used to describe shore boundaries and a diagram that shows the boundaries and terminologies in use along the Oregon coast.

¹⁷⁰ *Supra*, note 166.

¹⁷¹ *Supra*, note 166.

¹⁷² Restricted fishery permits are required in addition to a Commercial Fishing Boat License to participate in the fisheries listed on the following website: <http://www.dfw.state.or.us/fish/commercial/>. Permits must be renewed annually to remain valid for the next year. The permits are transferable and may be bought and sold by vessel owners and the transaction must be approved and recorded by the Department. The Department has no knowledge of permits for sale. We suggest fisheries trade magazines, coastal newspapers, and harvester's associations as possible sources of information on permits available for purchase. For information about the permit requirements or the permit transfer process, please contact Licensing, (503) 947-6101.

¹⁷³ 2017 *Synopsis of Oregon Commercial Fishing Regulations*, OR. FISH AND WILDLIFE, at 24, http://www.dfw.state.or.us/fish/commercial/docs/2017_Commercial_Synopsis.pdf.

2. Once one has selected the species, one would need to do the necessary research and feasibility studies. One should also be aware of any relevant limitations applicable to your business issued by the Federal or State Government. We have not delved into these in detail for purposes of this memo.

STEP 3: SCOPE OF OPERATIONS: SUPPLY CHAIN

1. Determine at which stages in the supply chain the business would be involved, i.e. will it be involved from “catch to plate” or simply in certain catch/distribution channels within the supply chain.
2. This will determine the requirements particular to the business, including for example, the type of licenses and permits the business will need to obtain as well as the limitations, quotas and other relevant factors.
3. If one is not involved in the entire supply chain, it will need to be ensured that the business’ suppliers (and, if applicable, customers) have the necessary licenses and permits and comply with other relevant rules, regulations and legislation.
4. Examples of licenses and permits required are set out in Step 4 below and can be found at <http://www.dfw.state.or.us/fish/commercial/>.

STEP 4: OBTAINING OF NECESSARY PERMITS AND LICENSES

1. There are permits/licenses required at every stage in the wild-caught fishing process and fees associated with the obtaining of such licenses/permits:¹⁷⁴
 - a. **Fish Dealer Licenses, Permits and Applications:** Commercial fishers are required to deliver their catch to a wholesale fish dealer, a wholesale fish bait dealer or sell it off their vessel using a limited fish sellers’ permit. All commercially caught fish or shellfish must be reported on fish tickets that are issued to the fish dealers. The fish buyer’s license is required in addition to a wholesale fish dealer’s license when the fish or shellfish are purchased away from the dealer’s licensed location. Fish dealer licenses are issued only through the Salem office.¹⁷⁵ There are specific license fees for Tuna.¹⁷⁶
 - b. **Individual and Crew Licenses and Application:** Every individual operating or assisting in the operation of any commercial fishing gear or fishing boat must have a commercial fishing license or crewmember license. Every member of the crew on a commercial fishing boat must be licensed.¹⁷⁷
 - c. **Boat Licenses:** Licenses are required for any boat, vessel, or floating craft used in taking of food fish or shellfish for commercial purposes, except clams and crayfish. Boat licenses are not required to take fish for bait under a bait fishing license. A single

¹⁷⁴ *Licenses and Limited Entry Fishery Permits*, OR. DEP’T OF FISH AND WILDLIFE, <http://www.dfw.state.or.us/fish/commercial/>.

¹⁷⁵ For information about the fish dealer requirements and the application process, contact Licensing, (503) 947-6101.

¹⁷⁶ *2017 Synopsis of Oregon Commercial Fishing Regulations*, OR. FISH AND WILDLIFE, at 11, http://www.dfw.state.or.us/fish/commercial/docs/2017_Commercial_Synopsis.pdf.

¹⁷⁷ For information about the licensing requirements and the application process, contact Licensing, (503) 947-6101.

delivery license may be obtained in lieu of commercial fishing and boat licenses for each separate landing of catch.¹⁷⁸

- d. **Restricted Fishery Permits:** Restricted fishery permits are required in addition to a Commercial Fishing Boat License to participate in the fisheries listed below (see Table I):

Permits must be renewed annually to remain valid for the next year. The permits are transferable and may be bought and sold by vessel owners and the transaction must be approved and recorded by the Department. The Department has no knowledge of permits for sale. Fisheries trade magazines, coastal newspapers and harvester's associations are sources of information on permits available for purchase.¹⁷⁹

The 2021 Synopsis of Oregon Commercial Fishing Regulations can be found at https://www.dfw.state.or.us/fish/commercial/docs/2021_Commercial_Synopsis.pdf

e. **Other Species-Specific requirements**

As indicated previously, specific species have additional requirements. It is not feasible to include the specific requirements applicable to every species in this memo. Some of the license requirements applicable to one species, Albacore Tuna, have been set out below as an illustrative example:

i. **Albacore Tuna Specific Licenses**¹⁸⁰:

1. Albacore Tuna Fishery:¹⁸¹ Commercially Licensed and Unlicensed Boat Albacore Tuna Landing License may be obtained in lieu of commercial fishing (including crew member) and boat licenses when landing only albacore tuna.
2. A tuna landing license is not required for vessels that hold a current Oregon Commercial Boat license and whose crew are fishing using a valid crew license or a valid Oregon Personal Commercial License.
3. A Commercially Licensed Boat Albacore Tuna Landing License may be obtained for a boat that holds a current commercial boat license in another state.
4. An Unlicensed Boat Albacore Tuna Landing License may be obtained for any boat not commercially licensed in any state. These licenses apply only to fishing for and landing albacore tuna and do not exempt fishers from any relevant Fish Dealer License requirements.
5. Application for either of these licenses may be made and the fee paid at time of landing, on an ODFW license application form. This license

¹⁷⁸ *Id.*

¹⁷⁹ For information about the permit requirements or the permit transfer process, contact Licensing, (503) 947-6101.

¹⁸⁰ OR. ADMIN. R. §§ 635.004.0560-635.004.0570.

¹⁸¹ *Id.*

allows unlimited landings of albacore tuna by the vessel during the calendar year of issue.

6. Note: Federal commercial fishing requirements: If one is obtaining this license to catch and then sell fish, one is operating as a commercial fishing vessel and not a recreational vessel. A commercial fishing vessel has different safety equipment requirements than a recreational vessel.¹⁸²
7. Calculate the vessels' tonnage.¹⁸³
8. Additional permits may be required from local authorities.
 - a. A fishery for albacore tuna exists along the Oregon coast. The Pacific Fisheries Management Council (PFMC) has a highly migratory species (HMS) fisheries management plan (FMP) in place for albacore tuna.
 - b. There is specific legislation dealing with this.¹⁸⁴
9. There are some specific Vessel Monitoring Systems requirements for certain Tuna boats.¹⁸⁵

STEP 5: ONGOING COMPLIANCE AND MONITORING

1. One will need to ensure compliance with all the necessary rules and regulations. In this regard, we refer again to the 2017 Synopsis of Oregon Commercial Fishing Regulations, which can be found at: http://www.dfw.state.or.us/fish/commercial/docs/2017_Commercial_Synopsis.pdf
2. There are certain organizations that regulate fishing in Oregon, for example the Pacific Fishery Management Council.¹⁸⁶ Such organizations often make provisions for certain species, e.g. there is specific mention on the Pacific Fishery Management Council's website about highly migratory species including Tunas: north Pacific albacore, yellowfin, bigeye, skipjack, and northern bluefin.¹⁸⁷
3. There are other jurisdictional bodies which regulate wild-caught fishing, for example:

¹⁸² United States Coast Guard, <http://www.fishsafewest.info/>.

¹⁸³ Visit: www.uscg.mil/hq/cg5/msc/interactive_tonnage.asp, follow the directions and fill out the form to calculate your vessel's tonnage. If the vessel measures greater than 5 "net tons" your vessel must be federally documented, not state registered. VMS is required for commercial fishing vessels, 24 meters (78 feet, 9 inches) or more in overall length, used to target tunas in the area bounded by the west coast of the Americas and on the north, south and west respectively, by the 50° N. and 50° S. parallels, and the 150° W. meridian. Federal requirements for Highly Migratory Species permits and logbooks also apply. A permit application and logbook, as well as Instructions for US vessels wanting to fish in Canada, are available at: www.westcoast.fisheries.noaa.gov/fisheries/migratory_species/highly_migratory_species.html.

¹⁸⁴ 50 C.F.R. § 660 (2000).

¹⁸⁵ *2017 Synopsis of Oregon Commercial Fishing Regulations*, OR. FISH AND WILDLIFE, at 11, http://www.dfw.state.or.us/fish/commercial/docs/2017_Commercial_Synopsis.pdf.

¹⁸⁶ PACIFIC FISHERY MANAGEMENT COUNCIL, <http://www.pcouncil.org/>.

¹⁸⁷ *Highly Migratory Species: Background*, PACIFIC FISHERY MGMT. COUNCIL, <http://www.pcouncil.org/highly-migratory-species/background/>.

- a. The U.S. is also a member of the Western and Central Pacific Fisheries Commission (WCPFC),¹⁸⁸ which plays a parallel role in the western and central Pacific (generally, west of 150° W. longitude).
 - b. The U.S. is a member of the Inter-American Tropical Tuna Commission (IATTC),¹⁸⁹ which is responsible for the conservation and management of fisheries for tunas and other species taken by tuna-fishing vessels in the eastern Pacific Ocean.
4. There may also be special “plans” in place applicable to species, e.g. with highly migratory species the National Marine Fisheries Service (NMFS) partially approved the fishery management plan for West Coast highly migratory species fisheries on February 4, 2004.¹⁹⁰
 5. A good source of information is The Pacific Fisheries Information Network (PacFIN) website, which is a “collaboration between member state and federal fishery agencies that supply the information needed to effectively manage fish stocks on the west coast of the United States.”¹⁹¹ There are additional groups and organizations that can be joined on a voluntary basis and provide their members with information and access benefits.

SUBSECTION II: FRESH WATER

Like the saltwater commercial fishing industry, Fresh water commercial fishing and sport fishing are regulated by the Oregon Department of Fish & Wildlife (ODFW).

Various documents – according to the species affected (for example, crayfish¹⁹²) – set out rules governing general requirements, the licenses required, and other specific information (including the seasons, equipment, size limit, protection of females, identification of gear and closed areas).

STEP 1: DETERMINE JURISDICTION

Again, as with the saltwater industry, it is important to consider what falls within Federal jurisdiction and what falls within the State jurisdiction.

Oregon River Rights come from two sources: federal law and common law known as the “Public Use Doctrine.”¹⁹³ When Oregon became a state in 1859, the federal government charged the state with certain responsibilities to protect in terms of the Oregon Admission Act. Section 2 of that act deals with jurisdiction over waters forming the boundary of the state; and use of navigable waters as free highways stating:

That the said State of Oregon shall have concurrent jurisdiction on the Columbia and all other rivers and waters bordering on the said State of Oregon, so far as the same shall form a

¹⁸⁸ WESTERN & CENTRAL PACIFIC FISHERIES COMM’N, <https://www.wcpfc.int/>.

¹⁸⁹ INTER-AMERICAN TROPICAL TUNA COMM’N, <http://www.iattc.org/HomeENG.htm>.

¹⁹⁰ *Highly Migratory Species: Fishery Management Plan and Amendments*, PACIFIC FISHERY MANAGEMENT COUNCIL, <http://www.pcouncil.org/highly-migratory-species/fishery-management-plan-and-amendments/>; *West Coast Highly Migratory Species*, NOAA FISHERIES, <https://www.fisheries.noaa.gov/west-coast/sustainable-fisheries/west-coast-highly-migratory-species>.

¹⁹¹ PACIFIC FISHERIES INFO. NETWORK, <http://pacfin.psmfc.org/>.

¹⁹² *Commercial Crayfish Information*, OR. DEP’T OF FISH AND WILDLIFE, <http://www.dfw.state.or.us/fish/commercial/docs/Commercial%20Crayfish%20Handout.pdf>.

¹⁹³ *Oregon Admission Act*, OR. LEGIS., https://www.oregonlegislature.gov/bills_laws/ors/admacts.html.

common boundary to said State, and any other State or States now or hereafter to be formed or bounded by the same; and said rivers and waters, **and all the navigable waters of said State, shall be common highways and forever free, as well as to the inhabitants of said State as to all other citizens of the United States, without any tax, duty, impost, or toll therefor** [11 Stat. 383 (1859)] (emphasis added).¹⁹⁴

Since that 1859 document, federal courts have further clarified the law. “Navigable rivers are waterways that at the time of statehood (1859) were navigated or were big enough for a boat of that time to make successful progress through the waterway. Typically, this is interpreted as a boat the size of a canoe, which drafts about 4” of water. So, the entire question of a river being state owned and “navigable” is a question of the facts of that river in 1859, in terms of its flow and obstructions.”¹⁹⁵

A federal court is the final decision maker on this issue, using “historical records, hydrologist reports, and geologist reports” to confirm whether a body of water meets the definition of a river or river segment.¹⁹⁶

The diagram below illustrates how the Columbia River Basin is divided by jurisdiction and by species.



Source: <https://www.hayden-island.com/fishing/>

¹⁹⁴ *Id.*

¹⁹⁵ *Federal Law, COMMON WATERS OF OR.*, <https://commonwaters.wordpress.com/law/>.

¹⁹⁶ *Id.*

STEP 2: SCOPE OF OPERATIONS: SPECIES SELECTION

Determining the species involved encompasses the remainder of the steps, including the necessary permits needed, any applicable restrictions, and so on as set out above. The most popular freshwater species in Oregon include Trout, Steelhead, Salmon, and Bass.¹⁹⁷ The remaining steps relating to the starting of a commercial fishing business for oceanic fish above would apply equally herein.

¹⁹⁷ *Most Popular Species*, OR. DEP'T OF FISH AND WILDLIFE, <https://myodfw.com/fishing/species>.

PART III: AQUACULTURE: CURRENT LEGAL FRAMEWORK/REGULATION

As aforementioned, wild-caught fishing is much more regulated both at a federal and state level than aquaculture. It is accordingly useful to highlight the types of issues that are regulated in this industry and whether similarly applicable factors occur in the aquaculture industry. In addition, other relevant factors should be considered such as the scope and economic value of these industries.

This section is divided into three parts:

Part A: Oregon State law

Part B: US Federal law

Part C: Relevant Tribal laws

What is aquaculture?

The term “aquaculture” is defined by NOAA as broadly referring to “the cultivation of aquatic organisms in controlled aquatic environments for any commercial, recreational or public purpose.”¹⁹⁸ Breeding, raising and harvesting of aquatic animals occurs in a variety of water environments including the ocean, lakes, rivers, ponds, rivers, and land-based man-made “closed” systems.¹⁹⁹ In aquaculture – which “is one of the fastest growing forms of food production in the world” – a variety of freshwater and marine species are “farmed.”²⁰⁰ Marine aquaculture involves “the culturing of oceanic species,” such as shrimp, clams, oysters, mussels, and salmon.²⁰¹ Marine aquaculture comprises only twenty percent of overall aquaculture production in the U.S., primarily consisting of shellfish, such as clams, oysters, and mussels.²⁰² In contrast, around seventy percent of U.S. aquaculture is “freshwater farming of catfish and trout.”²⁰³ Just a few U.S. aquaculture operations farm marine finfish like salmon in Washington State and Maine, and Pacific threadfin (moi) and yellowtail in Hawaii.²⁰⁴

Forms or types of aquaculture

There are different forms and methods used in aquaculture in the United States including:

- 1) Marine-based or Ocean-based aquaculture; this includes offshore or open ocean aquaculture;
- 2) Land-based aquaculture.

3.1 Marine-based or Ocean-based Aquaculture

¹⁹⁸ *What is Aquaculture?* NOAA, <https://www.noaa.gov/stories/what-is-aquaculture>.

¹⁹⁹ *Id.*

²⁰⁰ *Supra*, note 198.

²⁰¹ *Supra*, note 198.

²⁰² *Supra*, note 198.

²⁰³ *Supra*, note 198.

²⁰⁴ *Supra*, note 198.

Marine aquaculture refers to the farming of fish species in the open ocean. Marine aquaculture is comprised of two main segments: fed and unfed.²⁰⁵

Fed aquaculture projects include finfish ...these fish produce waste byproducts and require feed, which often—though not always—contains wild-caught fish. Unfed systems include seaweed and shellfish such as mussels and oysters. Seaweed requires only sunlight, and mussels and oysters feed off microscopic plankton that naturally occurs in seawater, sustaining themselves without additional inputs²⁰⁶

Marine aquaculture in the United States “produces numerous species including oysters, clams, mussels, shrimp, seaweeds, and fish such as salmon, black sea bass, sablefish, yellowtail, and pompano,” using cages or pens of different types.²⁰⁷

According to a NOAA report entitled *Marine Cage Culture & The Environment*, the major challenges of ocean-based aquaculture include:

- a. Water Quality- the primary potential effects to water quality associated with marine cage culture include dissolved nitrogen and phosphorus, turbidity, lipids and dissolved oxygen depletion. Typically, there are no measurable effects 30 meters beyond the cages when farms are sited in well-flushed waters. “Impaired water quality may be observed around farms in nearshore or intertidal habitats where flushing is minimal and at farms using feeds that include unprocessed raw fish rather than formulated feeds.” Protection of water quality will be best achieved by siting farms in well-flushed waters.²⁰⁸
- b. Chemicals - the “use of antibiotics, therapeutants and antifoulants at marine fish farms has declined greatly (up to 95%) in the last 20 years, resulting in decreased potential for secondary harmful effects of these chemicals on the marine environment... Heavy metals from feed and antifoulants are known to accumulate beneath cages but are often in low concentrations and sequestered in the sediment.”²⁰⁹
- c. Marine Life – “the broader ecological role of aquaculture operations within the marine environment must be considered since fish farms in the open ocean must co-exist with a host of wild organisms including phytoplankton, benthic fauna, wild fish, marine mammals and corals. If farm nutrients accumulate and persist in the water column or sediment, marine organisms can be impacted.”²¹⁰
- d. Benthic effects – the benthic zone is the ecological region at the lowest level of a body of water such as an ocean or a lake, including the sediment surface and some sub-surface layers.²¹¹ “Excess feed and fish waste are discharged from the farms and, if they

²⁰⁵ Alexandra Carter & Miriam Goldstein, *American Aquaculture: An Overview of the Current Status, Environmental Impacts, and Legislative Opportunities*, CTR. FOR AM. PROGRESS (May 13, 2019), <https://www.americanprogress.org/issues/green/reports/2019/05/13/469730/american-aquaculture/>.

²⁰⁶ Alexandra Carter & Miriam Goldstein, *American Aquaculture: An Overview of the Current Status, Environmental Impacts, and Legislative Opportunities*, CTR. FOR AM. PROGRESS (May 13, 2019), <https://www.americanprogress.org/issues/green/reports/2019/05/13/469730/american-aquaculture/>.

²⁰⁷ *What is Aquaculture?*, NOAA, <https://oceanservice.noaa.gov/facts/aquaculture.html>.

²⁰⁸ Carol Seals Price and James A. Morris, Jr., *Marine Cage Culture & The Environment* at ii, 5, NOAA Technical Memorandum NOS NCCOS 164 (Dec. 2013), [https://www.noaa.gov/stories2013/pdfs/2013_PriceandMorris_MarineCageCultureandTheEnvironment\(5\).pdf](https://www.noaa.gov/stories2013/pdfs/2013_PriceandMorris_MarineCageCultureandTheEnvironment(5).pdf).

²⁰⁹ *Id.* at 110.

²¹⁰ *Supra*, note 208, at iii, 58.

²¹¹ *Benthic zone*, NEW WORLD ENCYCLOPEDIA, https://www.newworldencyclopedia.org/entry/Benthic_zone.

accumulate, may alter the chemical processes of decomposition and nutrient assimilation”; if a fish farm is well-managed, it may exhibit little perturbation.²¹²

Solutions to some of these challenges:

One of the most effective solutions is good site selection.²¹³ Outside of good site selection, “fallowing and integrated multi-trophic aquaculture (IMTA) are two management tools that can be used to further reduce the potential environmental effects of marine fish farms.”²¹⁴ According to *Marine Cage Culture & The Environment*:

Fallowing is the practice of relocating or not re-stocking marine fish cages to allow the sediment below to undergo natural recovery, both geochemically and ecologically, from the impacts of nutrient loading. Under ideal conditions, farms should not require a fallowing period for the purposes of sediment recovery. Currently, this practice is widely and successfully implemented around the world as a method for preventing long lasting damage to the benthic environment. IMTA is the practice of culturing species from multiple trophic levels in systems that allow for the assimilation of fish waste particles and dissolved nutrients into additional valuable crops, thereby reducing environmental discharge and expanding the economic base of a farming operation. The species most commonly selected for IMTA with marine fish are seaweeds, oysters, and mussels, lobsters, sea urchins, and sea cucumbers.²¹⁵

A. OREGON STATE

1. Background

Oregon aquaculture operations raise salmon, trout, as well as algae and ornamental fish for aquariums.²¹⁶ Compared with other agribusinesses, aquaculture is underdeveloped in the state.²¹⁷ There is some “food fish” production, but investment in aquaculture in Oregon has primarily been on farming oysters.²¹⁸ There is of course “farming” of fish such as salmonid fingerlings for stocking, and other hatcheries;²¹⁹ however that is not our focus here.

As previously mentioned, there are two main types of aquaculture: marine and freshwater. There are several ways to farm marine shellfish, including raising them in floating or bottom cages; marine fish farming is generally done in tanks on land or net pens in the water.²²⁰ Freshwater aquaculture, on the other hand, mainly occurs in ponds or other manmade systems on land.²²¹

²¹² Carol Seals Price and James A. Morris, Jr., *Marine Cage Culture & The Environment* at 22, NOAA (Dec. 2013), [https://www.noaa.gov/stories2013/pdfs/2013_PriceandMorris_MarineCageCultureandTheEnvironment\(5\).pdf](https://www.noaa.gov/stories2013/pdfs/2013_PriceandMorris_MarineCageCultureandTheEnvironment(5).pdf).

²¹³ *Id.* at v.

²¹⁴ *Supra*, note 212, at v.

²¹⁵ *Nutrient Impacts of Finfish Aquaculture*, NOAA, <https://www.fisheries.noaa.gov/aquaculture/nutrient-impacts-finish-aquaculture>.

²¹⁶ *Cultivating Change through Research*, OR. STATE UNIV., <https://seagrant.oregonstate.edu/outreach-and-engagement/aquaculture>.

²¹⁷ John Moehl, *Developing Additional Investment in Aqua Farming in Oregon: a roadmap for sustainable development* (2015) at 1, <https://www.oregon.gov/oda/shared/Documents/Publications/MarketAccess/AquacultureInvestment.pdf>.

²¹⁸ *Id.* at 12.

²¹⁹ *Supra*, note 217, at 13.

²²⁰ *Supra*, note 207.

²²¹ *Supra*, note 207.

Aquaculture operations can use either open-systems or closed-systems. Some of the most common open-system methods include open net pens or cages – where fish are placed in large netted areas in offshore coastal areas or freshwater lakes; and submersible nets or pens – which are spherical cages located off-shore below the surface.²²² Some of the most common closed-system methods include raceways – where fish are raised in confined pools/channels and water is diverted into the pools from waterways, such as streams; and recirculating systems – where fish are raised in tanks and water is treated and re-circulated through the tanks.²²³

The 2012 Census of Agriculture from the United States Department of Agriculture (USDA)²²⁴ is useful for understanding the numbers of animals involved and other data relevant to the aquaculture industry. However, it does not contain information specific to Oregon. This is due to the fact that, as far as we are aware, Oregon’s statistics are not kept in a consolidated way and Oregon agencies mostly rely on the USDA numbers. This is of course an important issue and something that needs to be addressed going forward.

In addition to the lack of statistical information, it is difficult to locate the regulations related to this industry. As we have set out below, there is some regulation, but they are not necessarily easily accessible, nor are the regulations codified in an organized way. This makes it difficult for anyone with an interest in aquaculture to determine exactly what is regulated, how it is regulated, the potential penalties for non-compliance, and other important factors. This is problematic and an additional issue that needs to be addressed going forward.

This section deals with the current legal framework relating to aquaculture in Oregon, sets out some of the requirements for establishing an aquaculture business in Oregon (and identifies useful resources in this regard), provides information on the state agencies tasked with enforcement of matters relating to aquaculture, identifies other issues, and highlights gaps in the current regulations. It is not intended to deal with all relevant matters but rather to illustrate that the current framework is insufficient (especially when compared with other agri-businesses, including the wild caught fishing industry) and to suggest the need for an improved regulatory approach, for the sake of those involved in the industry, for the public at large, and for legal certainty.

2. Current State Legal Framework

The current legal framework pertaining to aquaculture in Oregon is insufficient. Although there are a number of specific provisions and regulations relating to shellfish²²⁵ (including, for example, rules relating to shellfish sanitation promulgated by the USDA),²²⁶ there is not much relating to other species, nor to the aquaculture industry in general.

²²² *Fishing & Farming Methods*, SEAFOOD WATCH, <http://www.seafoodwatch.org/ocean-issues/fishing-and-farming-methods>.

²²³ *Id.*

²²⁴ *2012 Census Full Report*, USDA,

https://www.agcensus.usda.gov/Publications/2012/Online_Resources/Aquaculture/aquacen.pdf.

²²⁵ *Commercial Shellfish Licensing*, OR. DEP’T OF AGRIC.,

<http://www.oregon.gov/oda/programs/foodsafety/fslicensing/pages/commercialshellfish.aspx>.

²²⁶ OR. ADMIN. R. 603.100.

The operating assumption appears to be that, after obtaining the relevant permits (which we discuss in further detail in subsequent sections), and complying with a few regulations dealing with limited issues, one may conduct the business according to one's own definition of appropriate practices.

For inland aquaculture there are propagation and transport permits and licenses from the Oregon Department of Fish & Wildlife and other issues relating to the DEQ and Water agencies. After such permits have been obtained, there is little governing the aquaculture business itself (aside from that mentioned herein) and even less relating to the subject of the farming of fish, specifically with respect to their protection.

Below is an example of how aquaculture is dealt with in Oregon law:

ORS 497.252 Fish propagation license; terms and conditions; rules; applicability of other licensing laws²²⁷

*“(1) Except as provided in ORS 508.700 to 508.745 and 622.220, no person shall engage in the business of propagating game fish or food fish for sale unless a **fish propagation license** is first obtained from the State Department of Fish and Wildlife.*
(2) The State Fish and Wildlife Commission may refuse to issue a license to an applicant if the commission finds that the conduct of the fish propagation business would tend to be harmful to existing game fish or food fish populations.
*(3) The commission, by rule, **may prescribe** requirements for the **care, inspection, transportation and the sale, taking or other disposition of the game fish or food fish, and for such record keeping and reporting procedures** as will insure that the propagation activities are conducted in such manner as will **not be harmful to existing game fish or food fish populations.***
(4) Persons propagating the following food fish under the license prescribed in subsection (1) of this section are exempt from the licensing provisions of ORS 508.025 and 508.035:
(a) Food fish raised entirely in, then harvested from facilities which are enclosed or designed to prevent escape and from which the fish are not released for natural rearing.
(b) Food fish harvested from the wild under licenses prescribed in ORS 508.025 and 508.035 and on which the appropriate fee has been paid at the time holding or rearing commences in the licensed fish propagation facility” (Emphasis added).

Notably, this statute provides the Oregon Fish and Wildlife Commission with the power to proscribe requirements for the operation of certain businesses in the interest of protecting existing “game fish or food fish populations.” However, it does not mention the power to proscribe conduct in the interest of the welfare of the fish; rather, the primary concern is the avoidance of disturbing existing practices of harvesting fish by referring to their “populations”.

The Oregon Department of Fish and Wildlife has few rules that may apply to aquaculture.²²⁸ The Oregon Department of Agriculture has rules pertaining to the lease of state land for purposes of oyster, clam or mussel farming.²²⁹

²²⁷ OR. REV. STAT. § 497.252.

²²⁸ OR. ADMIN. R. 635.

²²⁹ OR. ADMIN. R. 603.

While the rules relating to aquaculture in Oregon are lacking, there are some regulations that apply to agriculture that could potentially apply to aquaculture, specifically in the health and safety realm. Although there are currently no rules pertaining to health and safety of workers in aquaculture specifically, Oregon does have rules pertaining to the health and safety of agricultural workers. The Oregon Safe Employment Act²³⁰ authorizes the Oregon Occupational Safety and Health Administration (Oregon OSHA) to enforce the state's workplace safety and health rules. Oregon Administrative Rules chapter 437, Division 4 specifically talks about health and safety of workers in agriculture.²³¹ Oregon OSHA also has guidebooks to help understand the rules.²³² There are also rules under the Oregon Department of Agriculture, Food Safety Program for safeguarding consumer health and safety by preventing the spread of foodborne illness.²³³

Although not legal documents, there are some plans that could potentially apply to Oregon aquaculture businesses; these apply only to ocean-based, not land-based facilities:

Oregon Aquaculture operations are covered by Goal 19 of Oregon's Statewide Planning Goals, the Territorial Sea Plan (TSP), and also the Coastal Management Plan. The TSP Part II provides the standard for agencies to apply when reviewing proposals that affect Oregon's ocean resources. Together these plans provide implementation requirements and management measures for any actions likely to affect ocean resources or Oregon's territorial sea.²³⁴

3. Starting an Aquaculture Business in Oregon

Users Guide: A snapshot of the processes to follow to start an aqua farming business in Oregon is an excellent resource from the Oregon Department of Agriculture that sets out the various considerations and requirements for starting an aquaculture business in the state.²³⁵ It explains that there are two points of entry for those considering investing in an aquaculture business: the local government and the Oregon Department of Agriculture (ODA).²³⁶ It then goes on to set out some of the important questions these authorities will ask a potential aquaculture investor, including:

- Whether the selected site is approved for aquaculture use.
- Whether the selected "crop" is approved in Oregon.
- What controls apply to raising and marketing this crop.²³⁷ (Note that the word "crop" in the ODA document refers to the animals being raised as food.)

When starting an aquaculture business, it is first necessary to consider aquaculture issues at a local level and then move to the state level. Below is a helpful diagram setting out some of the state permitting considerations:

²³⁰ Oregon Safe Employment Act, OR. ADMIN. R. 437.

²³¹ Oregon Safe Employment Act, OR. ADMIN. R. 437.004.

²³² *Agriculture*, OR. OCCUPATIONAL SAFETY AND HEALTH, <https://osha.oregon.gov/Pages/topics/agriculture.aspx>.

²³³ *About Food Safety*, OR. DEP'T OF AGRIC.,

<https://www.oregon.gov/ODA/programs/FoodSafety/Pages/AboutFoodSafety.aspx>.

²³⁴ Susan Bunsick & Brian Fredieu, *Federal and State Policies, Offshore Aquaculture in the Pacific Northwest*, SEA GRANT OR. 15 (2008), <https://seagrant.oregonstate.edu/sites/seagrant.oregonstate.edu/files/sgps/onlinepubs/w08001.pdf>.

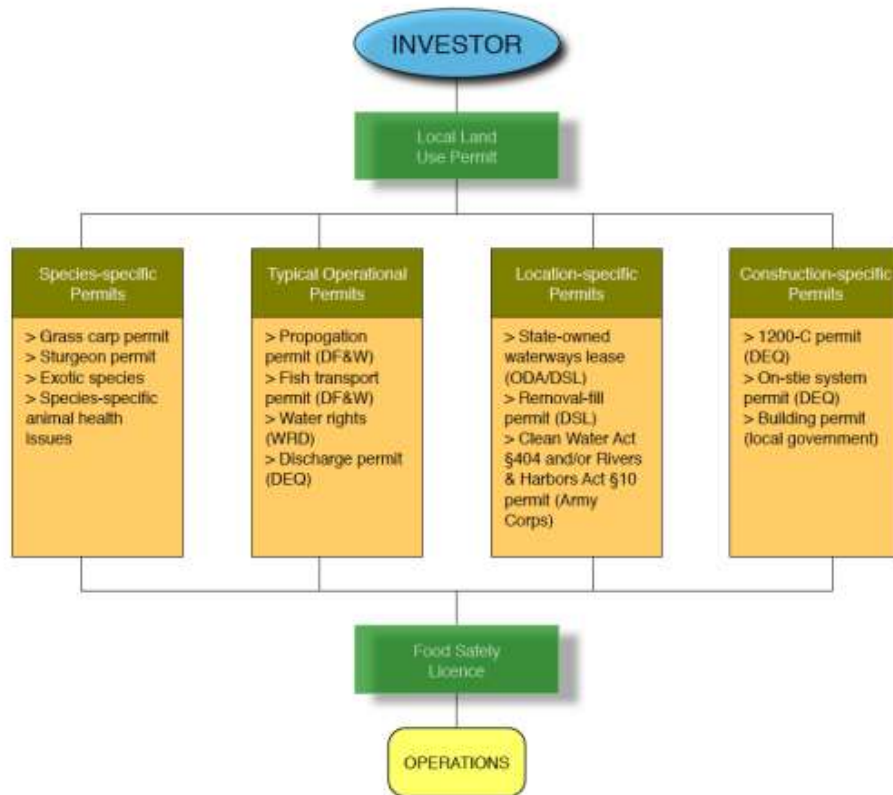
²³⁵ *Users Guide: A Snapshot of the Processes to Follow to Start an Aqua Farming Business in Oregon*, OR. DEP'T OF AGRIC., <http://www.oregon.gov/ODA/shared/Documents/Publications/MarketAccess/AquacultureUsersGuide.pdf>.

²³⁶ *Id.* at 1.

²³⁷ *Supra*, note 235, at 1.

Aqua Farming Permitting

Major categories and indicative samples of permits requiring consideration by the new aqua farmer



Source: *Users Guide: A snapshot of the processes to follow to start an aqua farming business in Oregon*

The User's Guide notes the following:

The diagram above is generic, applying to most aqua farming businesses. However, each crop and site are specific; unfortunately, there is no one-size-fits-all process for beginning aqua farming. Nevertheless, the basic categories of permitting above apply to most enterprises. Farming state-owned lands and waters is overseen by Department of State Lands (DSL), in some cases in close collaboration with ODA. As farming tidal waters frequently involves using navigable waterways, both DSL and the Army Corps of Engineers are important actors.²³⁸

There is also a useful U.S. Department of Agriculture source regarding the planning, design, and construction of ponds.²³⁹ Although specific to Tilapia farming in North Carolina, a document from the North Carolina Department of Agriculture and Consumer Service may also be helpful; it sets out some of the important considerations applicable to an aquaculture business, including but not limited to,

²³⁸ *Supra*, note 235, at 4.

²³⁹ *Ponds - Planning, Design, Construction*, USDA, https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs144p2_030362.pdf.

medication and chemicals; feeding; waste removal; oxygen; and others.²⁴⁰ Another useful aquaculture roadmap is available from the Michigan Aquaculture Association.²⁴¹

4. State Regulatory Agencies

While the Oregon Department of Fish and Wildlife is the state agency that regulates wild-caught fish, no such agency exists for aquaculture. Please see section relating to HB. Below is a list of agencies that can regulate aquaculture:

1. Oregon Department of Agriculture (ODA)

ODA regulates the farming and harvesting of shellfish and their enclosures. A license is required for commercial shellfish harvesting, and a state-owned waterway lease must be acquired.²⁴² ODA also issues species-specific permits, so the aquatic animal to be grown must be determined in advance.²⁴³ ODA is responsible for developing plans to prevent and control water pollution from agricultural activities and soil erosion on rural lands.²⁴⁴ ODA is also responsible for ensuring that farmers and ranchers help achieve water quality standards and meet the agricultural pollutant load allocations assigned by the Department of Environmental Quality (DEQ) in their Total Maximum Daily Loads (TMDLs).²⁴⁵

2. Oregon Water Resources Department (OWRD)

OWRD serves “the public by practicing and promoting responsible water management through two key goals: 1) to directly address Oregon’s water supply needs; and 2) to restore and protect stream flows and watersheds in order to ensure the long-term sustainability of Oregon’s ecosystems, economy, and quality of life.”²⁴⁶

OWRD’s core functions are “to protect existing water rights, facilitate voluntary streamflow restoration, increase the understanding of the demands on the state’s water resources, provide accurate and accessible water resource data, and facilitate water supply solutions.”²⁴⁷ Its Director is charged “with carrying out the water management policies and rules set by the Water Resources Commission and with overseeing the enforcement of Oregon’s water laws.”²⁴⁸

3. Department of State Lands (DSL)

²⁴⁰ *Aquaculture in North Carolina*, N. C. DEP’T OF AGRIC. AND CONSUMER SERVS., <http://www.ncagr.gov/markets/aquaculture/Tilapia01.pdf>.

²⁴¹ Joe Colyn and Gary Boersen, *Aquaculture in Michigan Roadmap through Regulation*, ORIGINZ (2012), <http://michiganaquaculture.org/wp-content/uploads/2012/09/20120801-AIM-Roadmap.pdf>.

²⁴² *Supra*, note 235, at 3.

²⁴³ *Supra*, note 235, at 3.

²⁴⁴ *Frequently Asked Questions*, OR. DEP’T OF AGRIC., www.oregon.gov/ODA/AboutUs/Pages/FAQs.aspx.

²⁴⁵ *Id.* Notably, H.B. 2776, which was introduced on January 11, 2021, would transfer regulatory authority over propagation of finfish in private commercial aquaculture facilities” from Oregon’s Department of Fish and Wildlife and State Fish and Wildlife Commission to the Oregon Department of Agriculture,” Oregon H.B. 2776 (2021), <https://legiscan.com/OR/bill/HB2776/2021>; <https://olis.leg.state.or.us/liz/2021R1/Measures/Overview/HB2776>.

²⁴⁶ *About Us*, OR. WATER RES. DEP’T, <https://www.oregon.gov/owrd/aboutus/Pages/default.aspx>.

²⁴⁷ *Oregon: Water Resources Department*, WESTERN WATERS DIGITAL LIBRARY, https://collections.lib.utah.edu/details?id=1145920&facet_setname_s=wwdl_er.

²⁴⁸ *Id.*

DSL operates the Aquatic Resource Management program (ARM), whose mission is “to conserve, restore and protect the waters” of the state, “and the ecosystem services they provide, through implementation of Oregon’s removal-fill and wetlands planning and conservation laws.”²⁴⁹ ARM’s mission also includes managing “State-owned waterways to preserve the public trust rights of navigation, fishing, recreation, and commerce.”²⁵⁰

Core functions include: 1) regulating removal-fill activities in waters of the state; 2) managing mitigation programs, including mitigation banking and payment-in-lieu programs; 3) managing the state’s aquatic resource planning program; and 4) implementing the proprietary waterways program. Staff provide public information about conserving wetlands and help permit applicants understand regulatory standards.²⁵¹ Coastal ventures falling under the Territorial Sea Plan or coastal management are the auspices DLC while the Army Corps is involved in oversight for shoreline or in-water developments in navigable waters. To operate an aquaculture facility in the state, a removal-fill permit must first be obtained.²⁵²

4. Oregon’s Department of Fish and Wildlife (ODFW)

ODFW regulates the harvest, protection, and enhancement of fish populations. Fish hatcheries are, in part, harvest programs, used for the augmentation of fishing and harvest opportunities.²⁵³ ODFW also “implements disease preventative strategies in all aspects of fish culture,” including prescribing for nutritional needs, environmental considerations, and the combating of diseases.²⁵⁴ Typical aquaculture permits required by ODFW include a propagation permit and a fish transport permit.²⁵⁵

5. Oregon Plan for Salmon & Watershed (OPSW)

OPSW conducts monitoring to ensure, among other objectives, “watershed health, water quality, and salmon recovery.”²⁵⁶ It also conducts biological and physical sampling “to determine whether salmon habitats and populations improved under conservation and restoration efforts.”²⁵⁷

6. Department of Environmental Quality (DEQ)

DEQ is responsible for protecting and enhancing Oregon’s water and air quality, for cleaning up spills and releases of hazardous materials, for managing the proper disposal of hazardous and solid wastes, and for enforcing Oregon’s environmental laws.²⁵⁸ DEQ implements state and federal environmental laws to protect the quality of Oregon’s air, water and land. DEQ uses monitoring information, science and laws to carefully design permits and licenses for municipalities, service

²⁴⁹ *A Guide to the Removal-Fill Permit Process*, OR. DEP’T OF STATE LANDS, https://www.oregon.gov/dsl/WW/Documents/Removal_Fill_Guide.pdf; *Home*, DEP’T. OF STATE LANDS, <http://www.oregon.gov/DSL/pages/index.aspx>.

²⁵⁰ *Id.*

²⁵¹ *Home*, DEP’T. OF STATE LANDS, <http://www.oregon.gov/DSL/pages/index.aspx>.

²⁵² *A Guide to the Removal-Fill Permit Process*, OREGON DEP’T OF STATE LANDS, https://www.oregon.gov/dsl/WW/Documents/Removal_Fill_Guide.pdf.

²⁵³ *Fish Division*, OR. DEP’T OF FISH AND WILDLIFE, <http://www.dfw.state.or.us/fish/>.

²⁵⁴ *Id.*

²⁵⁵ *Fish Division*, OR. DEP’T OF FISH AND WILDLIFE, https://www.dfw.state.or.us/fish/license_permits_apps/fish_propagation_license_process.asp.

²⁵⁶ *About the Oregon Plan*, Oregon Plan for Salmon and Watersheds, www.oregon.gov/OPSW/Pages/about_us.aspx.

²⁵⁷ *Id.*

²⁵⁸ *About Us*, OR. DEP’T OF ENVIRONMENTAL QUALITY, http://www.oregon.gov/deq/Pages/about_us.aspx.

providers, businesses and industrial facilities. With regard to fish hatcheries, DEQ provides NPDES permits,²⁵⁹ as well as on-site system permits.²⁶⁰

B. FEDERAL LEVEL

1. General

As indicated earlier, aquaculture involves the breeding, rearing, and harvesting of animals and plants in all types of water environments.²⁶¹ Aquaculture is a method used to achieve a number of diverse ends.²⁶² This section seeks to identify the most important federal laws on aquaculture in the United States. It also sets out the types of aquaculture carried out, and the role, benefits, and challenges of aquaculture.

Aquaculture's role in the United States can be summarized as follows:

- a. It is used to generate food supply, including bivalve mollusks (oysters, clams, mussels), salmon, shrimp.²⁶³
- b. It supports commercial fisheries by providing hatcheries before the fingerlings are transferred to the Pacific Northwest open waters.²⁶⁴
- c. It is used to restore habitats and at-risk fish species. For example, oyster reefs, abalone and corals can be restored through aquaculture.²⁶⁵
- d. It maintains economic activities in coastal communities through direct sales of harvested fish and in the employment of people in diverse jobs.²⁶⁶

2. Administration of Aquaculture in the United States

There are a number of problematic areas when it comes to the regulation of aquaculture in the US. This is because aquaculture is regulated at the both the federal and state level.

“The Food and Drug Administration (FDA) ... the Department of Agriculture (USDA), and the Environmental Protection Agency (EPA) are the leading federal agencies that regulate aquaculture.”²⁶⁷ Other federal agencies and programs, including the National Oceanic and Atmospheric Administration (NOAA), the Joint Subcommittee on Aquaculture, the Center for Veterinary Medicine (under the FDA), the Animal and Plant Health Inspection Service (under the USDA), and the U.S. Fish and Wildlife Services are also involved in the regulation of aquaculture.²⁶⁸

Pertinent federal statutes seldom directly address aquaculture, so more legislation specific to aquaculture is present at the state level.²⁶⁹ For instance, “the Federal Water Pollution Control Act, the Food, Drug & Cosmetic Act, the Animal Drug Availability Act, and the Magnuson-Stevens Fisheries

²⁵⁹ *Water Quality Permit Program*, OREGON DEP'T OF ENV'T QUALITY, <http://www.deq.state.or.us/wq/wqpermit/indinfo.htm#300>.

²⁶⁰ *Permit Applications and Renewal Forms*, OR. DEP'T OF ENV'T QUALITY, <https://www.oregon.gov/deq/wq/wqpermits/Pages/All-Permits-Applications.aspx>.

²⁶¹ *Aquaculture*, NOAA FISHERIES, <https://www.fisheries.noaa.gov/topic/aquaculture>.

²⁶² *Supra*, note 207.

²⁶³ *U.S. Aquaculture*, NOAA, <https://www.fisheries.noaa.gov/national/aquaculture/us-aquaculture>.

²⁶⁴ *Id.*

²⁶⁵ *Supra*, note 263.

²⁶⁶ *Supra*, note 263.

²⁶⁷ *National Aquaculture Legislation Overview: International Agreements*, FAO, http://www.fao.org/fishery/legalframework/nalo_usa/en#tcNB0055.

²⁶⁸ *Id.*

²⁶⁹ *Supra*, note 267.

Conservation Act do not significantly address aquaculture, but they do provide the statutory framework for regulating food safety, veterinary medicines, HACCP programs, coastal zone management, and other activities related to aquaculture.”²⁷⁰

Because fish and shellfish culture in the U.S. are regulated by a number of federal agencies, sometimes it can be difficult to determine which agency may be responsible for specific aspects of aquaculture. To that end, the Fish Culture Section of the American Fisheries Society has developed some fact sheets “to help culturists navigate the federal regulatory waters”; these fact sheets can be found at the following link: <https://fishculture.fisheries.org/resources/federal-aquaculture-regulations/>.

As noted above, there are many agencies that regulate aquaculture. The primary federal agencies involved in permitting of offshore aquaculture include:²⁷¹

- Army Corps of Engineers: for the permitting of activities affecting navigable waters under the Rivers and Harbors Act.
- Environmental Protection Agency (EPA): issues the National Pollutant Discharge Elimination System (NPDES) permits and reviews environmental effects of aquaculture under the Clean Water Act.
- U.S. Fish and Wildlife Services: for consultations under the Endangered Species Act (ESA) to ensure that no project interferes with any species-recovery program.
- National Marine Fisheries Service (NMFS): for exempted fishing permits under the Magnuson-Stevens Fishery Conservation and Management Act (MSA) and for consultations under the ESA and MSA’s essential fish habitat provisions.
- Minerals Management Service (MMS): for aquaculture as an alternative use of facilities on the Outer Continental Shelf, under proposed rules.²⁷²

Because of the regulatory uncertainty relating to agencies and offshore aquaculture, a case was brought by a collection of fishermen and environmental groups regarding NOAA’s attempts to regulate offshore aquaculture permitting.²⁷³ In *Gulf Fishermen’s Association v. NMFS*, the Fifth Circuit Court of Appeals, which covers the individual districts of Mississippi, Louisiana, and Texas, ruled that NOAA did not have the authority to regulate offshore aquaculture.

Of all the federal agencies, the National Oceanic and Atmospheric Administration (NOAA) is likely the most important in the Federal administration of aquaculture matters. NOAA has a variety of regulatory and marine management mandates and initiatives that affect permitting of finfish farms in U.S. state and federal waters.²⁷⁴ NOAA and the Department of Commerce both have Aquaculture Policies that can be found here: <https://www.fisheries.noaa.gov/noaa-aquaculture-policies>. NOAA also regulates aquaculture permitting on the West Coast, which covers Oregon. In state waters, permits for aquaculture “are generally required from state and federal agencies and may include coordination with local tribes. Permits may also be required from local counties. For aquaculture in Federal waters,

²⁷⁰ *Supra*, note 267.

²⁷¹ *Offshore Aquaculture in the Pacific Northwest*, SEA GRANT OR. 15 (Sept. 9, 2008), <https://seagrant.oregonstate.edu/sites/seagrant.oregonstate.edu/files/sgpubs/onlinepubs/w08001.pdf>.

²⁷² *Id.*

²⁷³ *Gulf Fishermen’s Association v. National Marine Fisheries Service*, 968 F.3d 454 (5th Cir. 2020).

²⁷⁴ *Aquaculture: Regulation & Policy*, NOAA FISHERIES, <https://www.fisheries.noaa.gov/topic/aquaculture#regulation-&-policy>.

permits are required from federal agencies and will include coordination with states.”²⁷⁵ For more information, visit: <https://www.fisheries.noaa.gov/west-coast/aquaculture/aquaculture-permitting-west-coast>.

3. Offshore or Open Ocean Aquaculture²⁷⁶

A subset of marine- or ocean-based aquaculture is offshore aquaculture, also known as open ocean aquaculture. Offshore aquaculture “is generally defined as the rearing of marine organisms in ocean waters beyond significant coastal influence, primarily in the federal waters of the exclusive economic zone (EEZ).”²⁷⁷ While “there are some research-focused and proposed commercial offshore facilities, no commercial [aquaculture] facilities are currently operating in U.S. federal waters” – at present, marine aquaculture operations are located in nearshore state waters.²⁷⁸ Advocates of offshore aquaculture point out that out “the extensive U.S. coastline and adjacent U.S. ocean waters provide potential sites for offshore aquaculture development” and that “by moving offshore, aquaculturalists can avoid many user conflicts they have encountered in inshore areas.”²⁷⁹ The fact that offshore locations are thought to be “less prone to pollution and fish diseases” are also noted as advantages of offshore aquaculture.²⁸⁰ Advocates claim that development of the offshore aquaculture industry “has significant potential to increase U.S. seafood production and provide economic opportunities for coastal communities.”²⁸¹

On the other hand, opponents of offshore aquaculture, including environmental groups and fishers, argue that locating aquaculture facilities in federal waters is “short-sighted and ill-informed.”²⁸² Among their concerns are “the spread of disease, antibiotic use, and escapes from fish farm ... [the] amount of fish waste that will be deposited in the ocean, which could cause algal blooms due to increased levels of nutrients like nitrogen and phosphorous.”²⁸³ Some researchers assert that the advantages touted by proponents of offshore aquaculture are based on “questionable assumptions,” and that freshwater aquaculture is both more affordable, more sustainable, and overall “a better way to help fight hunger and bolster food security” than fish farming at sea.²⁸⁴

²⁷⁵ *Aquaculture Permitting on the West Coast*, NOAA FISHERIES, <https://www.fisheries.noaa.gov/west-coast/aquaculture/aquaculture-permitting-west-coast>.

²⁷⁶ For a comprehensive look at the challenges associated with the development and expansion of offshore aquaculture in the United States, including, but not limited to “(1) the legal and regulatory environment; (2) potential environmental harm; (3) economic, trade, and stakeholder concerns related to development of a new industry; and (4) business and institutional support,” see Harold F. Upton, *U.S. Offshore Aquaculture Regulation and Development*, CONG. RSCH. SERV. (Oct. 10, 2019), <https://crsreports.congress.gov/product/pdf/R/R45952>; For a report summarizing the “findings of a rapid appraisal of trends in global offshore finfish aquaculture,” see CA. EN ASSOC., *OFFSHORE FINFISH AQUACULTURE: GLOBAL REVIEW AND U.S. PROSPECTS* (2018), <https://www.packard.org/wp-content/uploads/2019/02/Offshore-Aquaculture-Report.pdf>.

²⁷⁷ Harold F. Upton, *U.S. Offshore Aquaculture Regulation and Development*, CONG. RSCH. SERV. (Oct. 10, 2019), <https://crsreports.congress.gov/product/pdf/R/R45952>.

²⁷⁸ *Id.*

²⁷⁹ *Supra*, Note 277.

²⁸⁰ *Supra*, Note 277.

²⁸¹ *Supra*, Note 277, at 6-7.

²⁸² Ariella Simke, *The Pros and Cons of Expanding United States Aquaculture in 2020*, FORBES (July 19, 2020), <https://www.forbes.com/sites/ariellasimke/2020/07/19/the-pros-and-cons-of-expanding-united-states-offshore-aquaculture-in-2020/?sh=4afeb54d755f>.

²⁸³ *Id.*

²⁸⁴ Ben Belton, Dave Little & Wenbo Zhang, *Farming fish in fresh water is more affordable and sustainable than in the ocean*, PHYS ORG (Mar. 26, 2021), <https://phys.org/news/2021-03-farming-fish-fresh-sustainable-ocean.html>.

Regulation of offshore aquaculture

One hurdle to the development of offshore aquaculture in the United States that has been identified is “regulatory uncertainty.”²⁸⁵ Notably:

[T]here is currently no coordinated federal regulatory oversight over the permitting and leasing of federal waters for aquaculture. Instead, aquaculture development in federal waters is current governed by at least three federal agencies—the U.S. Environmental Protection Agency (EPA), the U.S. Army Corps of Engineers, and the National Marine Fisheries Service (NMFS)—each with jurisdiction over different aspects of aquaculture, and none acting under federal statutes that were written specifically with the problems of aquaculture in mind.²⁸⁶

Although efforts have been made to pass legislation aimed at promoting offshore aquaculture, as of April of 2021, “there is no explicit statutory authority for permitting and developing aquaculture in federal waters.”²⁸⁷

Legislative and other efforts to promote offshore aquaculture

Broad “offshore aquaculture bills were introduced in the 109th, 110th, 111th, 112th, and 115th Congresses, but none were enacted.”²⁸⁸ The Advancing the Quality and Understanding of American Aquaculture Act (AQUAA; S. 3138 and H.R. 6966) was introduced in the 115th Congress, but was not enacted. In 2020, the AQUAA Act (H.R. 6191) was reintroduced in the 116th Congress, but again was not enacted.²⁸⁹

The AQUAA (S. 3100) was once again reintroduced in the 117th Congress to “establish national standards for sustainable offshore aquaculture,” and designate NOAA as the “lead federal agency for marine aquaculture.”²⁹⁰

The AQUAA Act would furthermore:

- Uphold existing environmental standards while providing regulatory certainty and clarity to the industry;
- Include a set of national standards to guide development of offshore aquaculture, and aquaculture management plans that implement those standards on a regional scale;
- Include a national plan to identify and establish areas particularly well-suited for aquaculture, similar to the President’s recent Executive Order on Promoting American Seafood Competitiveness and Economic Growth;
- Establish an Office of Marine Aquaculture within NOAA, which would be charged with coordinating the federal permitting process;
- Establish a permit through NOAA that would give an individual the security of tenure necessary to secure financing for an aquaculture operation; and

²⁸⁵ Harold F. Upton, *U.S. Offshore Aquaculture Regulation and Development, Summary*.

²⁸⁶ *Aquaculture: Regulation*, CTR. FOR FOOD SAFETY, <https://www.centerforfoodsafety.org/issues/312/aquaculture/regulation-328>.

²⁸⁷ *Supra*, note 285.

²⁸⁸ *Supra*, note 285.

²⁸⁹ *Supra*, note 285.

²⁹⁰ Rubio, Wicker, Schatz Reintroduce AQUAA Act to Advance American Aquaculture (Oct. 28, 2021) <https://www.rubio.senate.gov/public/index.cfm/2021/10/rubio-wicker-schatz-reintroduce-aquaa-act-to-advance-american-aquaculture#:~:text=Oct%2028%202021%20Washington%2C%20D.C.%20%E2%80%94%20U.S.%20Senators,to%20establish%20national%20standards%20for%20sustainable%20offshore%20aquaculture>.

- Fund research and extension services to support innovation and the growth of aquaculture in the United States.²⁹¹

As mentioned in the Wild Caught Fishing Section, 2020 also saw President Donald Trump sign an executive order aimed at promoting offshore aquaculture. One of the “stated goals” of EO 13921, Promoting American Seafood Competitiveness and Economic Growth is “more effective permitting related to offshore aquaculture and additional streamlining of fishery regulations,” with “the potential to revolutionize American seafood production.”²⁹² In other words, the EO includes “provisions to expedite the development of offshore aquaculture in deep federal waters.”²⁹³ Environmental and conservation groups roundly criticized the EO, with one commenter stating that letting “net-pen aquaculture and its environmental harms in the Gulf of Mexico is a grave threat.”²⁹⁴

In line with EO 13921, in early 2021 the U.S. Army Corps of Engineers issued a nationwide permit package to facilitate “the rapid development and construction of large-scale commercial finfish aquaculture facilities in federal waters.”²⁹⁵ Although the permit package was supposed to be effective on Mar. 15, 2021,²⁹⁶ it was placed on hold pending review by the Biden Administration.²⁹⁷ As of April 2021, the permit package was still on hold.

Examples of other legislative efforts to restrict or ban offshore aquaculture

On the other hand, the last few years has also seen the introduction of bills intended to restrict or ban aquaculture permits in the EEZ.²⁹⁸ For instance, The Keep Finfish Free Act of 2019 (H.R. 2467) would have proscribed “the issuance of permits to conduct finfish aquaculture in the EEZ until a law is enacted that allows such action”; the bill was not enacted.²⁹⁹ The Keep Finfish Free Act was reintroduced in 2021 and is briefly discussed later in this Memorandum : Pending Legislation. It remains to be seen whether legislation can be enacted “that would provide the regulatory framework desired by potential commercial developers of offshore aquaculture and avoid or minimize risks of environmental harm to the satisfaction of those currently opposed to offshore aquaculture development.”³⁰⁰

²⁹¹ *Id.*

²⁹² EO 13921 (May 7, 2020), Promoting American Seafood Competitiveness and Economic Growth, 85 FR 28471 <https://www.federalregister.gov/documents/2020/05/12/2020-10315/promoting-american-seafood-competitiveness-and-economic-growth>; Patrick Whittle, *Trump eyes aquaculture boom, but environmentalists dig in*, YAHOO! NEWS (Aug. 31, 2020), <https://news.yahoo.com/trump-eyes-aquaculture-boom-environmentalists-152026448.html>.

²⁹³ Patrick Whittle, *Trump Eyes Aquaculture Boom, but Environmentalists Dig in*, YAHOO! NEWS (Aug. 31, 2020), <https://news.yahoo.com/trump-eyes-aquaculture-boom-environmentalists-152026448.html>.

²⁹⁴ *Id.*

²⁹⁵ Reissuance and Modification of Nationwide Permits, 86 FR 2744 (Jan. 13, 2021), <https://www.federalregister.gov/documents/2021/01/13/2021-00102/reissuance-and-modification-of-nationwide-permits>; *U.S. Army Corps of Engineers Issues Nationwide Permit for Industrial Finfish Facilities in Federal Waters, Risking Ecosystems and Livelihoods*, FRIENDS OF THE EARTH (Jan. 13, 2021), <https://foe.org/news/u-s-army-corps-of-engineers-issues-nationwide-permit-for-industrial-fish-facilities-in-federal-waters-risking-ecosystems-and-livelihoods/>.

²⁹⁶ Reissuance and Modification of Nationwide Permits, 86 FR 2744 (Jan. 13, 2021).

²⁹⁷ Executive Order on Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis, THE WHITE HOUSE (Jan. 20, 2021), <https://www.whitehouse.gov/briefing-room/presidential-actions/2021/01/20/executive-order-protecting-public-health-and-environment-and-restoring-science-to-tackle-climate-crisis/>.

²⁹⁸ *Supra*, note 285.

²⁹⁹ *Supra*, note 285.

³⁰⁰ *Supra*, note 285.

3.2 Land-Based Aquaculture

In the U.S., the backbone of land-based aquaculture is channel catfish production, which happens primarily in earthen ponds in southeastern states, and oysters, which takes place along the coasts.³⁰¹ Some of the possible benefits of land-based fish farming systems are “minimized threats of cultured fish escaping and competing with wild populations, improved control of diseases and parasites, true management of water quality (temperature, oxygen rate, nutrient and suspended solids content), and better control of nutrient releases to the environment.”³⁰²

Challenges of land-based include “high capital costs, increased energy demand and operational costs, and potential for rapid chemistry alterations, which requires continuous monitoring.”³⁰³ The three standard land-based aquaculture production systems being used include:

- Recirculating aquaculture system (RAS) – “Closed systems, commonly tank based, in which water is processed to remove suspended solids and nutrients and re-used. These systems have high energy use for pumping and filtering water, but are typically modular, and hence, are scalable and can be located nearly anywhere, including urban environments.”³⁰⁴
- Flow-through systems (FTS) – “These commonly take the form of raceways or tanks with a one-time flow through of water with varying degrees of input and output water treatment methods. Water sources include river flows, well water, or water pumped from a nearby coast. Compared to RAS, water use is high and nutrient releases are more challenging to control but pumping energy needs are typically reduced.”³⁰⁵
- Pond systems – “Possibly the earliest and most natural form of LBA, these consist simply of earthen or lined ponds or ditches, often using ecological processes to manage water quality.”³⁰⁶

OVERVIEW OF THE FEDERAL LEGAL FRAMEWORK

The rapid growth of the aquaculture industry has led legislators to acknowledge the need for laws. However, these laws tend to be amendments to already existing fishing, environmental, or public health statutes. There are very few laws that apply solely to aquaculture. With the lack of laws specific to aquaculture, aquaculture is slipping through the cracks and is not being properly regulated. Below is a list of statutes that may apply to aquaculture.³⁰⁷

³⁰¹ *Land-Based Aquaculture*, OR. DEP’T OF ENV’T QUALITY, <http://www.oregon.gov/deq/FilterDocs/PEF-Aquaculture-ExecutiveSummary.pdf>.

³⁰² *Id.*

³⁰³ *Supra*, note 301.

³⁰⁴ *Supra*, note 301.

³⁰⁵ *Supra*, note 301.

³⁰⁶ *Supra*, note 301.

³⁰⁷ A helpful resource in this area is *Aquaculture Overview*, NAT’L AGRIC. L. CTR., <http://nationalaglawcenter.org/research-by-topic/aquaculture/>.

1. Laws Directly Related to Aquaculture:

1.1 National Aquaculture Act of 1980 (NAA), 16 U.S.C. §§ 2801, *et seq.*³⁰⁸

The NAA “authorizes the Secretary of Agriculture, Commerce, and the Department of the Interior to develop a National Aquaculture Development Plan (NADP), to identify aquatic species, make recommendations to public and private sector on issues including research and development, technical assistance, extension and education services, and training. The NADP includes, inter alia, facility design, water quality management, use of waste products, nutrition and development of economic foods, life history, disease control, processing and marketing, production management and quality control.”³⁰⁹ This Act “established aquaculture as a national policy priority for the U.S. and created the Interagency Working Group on Aquaculture as the institutional structure through which NOAA coordinates with other federal agencies on aquaculture-related activities.”³¹⁰

See also in this Memorandum: “*Legislative and other efforts to promote offshore aquaculture*”

1.2 Reissuance and Modification of Nationwide Permits³¹¹

Nationwide Permits (NWP) authorize certain activities under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899. The NWPs help protect the aquatic environment and the public interest by providing incentives to reduce impacts on jurisdictional waters and wetlands while effectively authorizing activities that have no more than minimal individual and cumulative adverse environmental effects. In this final rule, the Corps is reissuing and modifying 12 existing NWPs and issuing four new NWPs. For these 16 NWPs, the Corps is also reissuing and modifying the NWP general conditions and definitions. The Corps is not reissuing or modifying the remaining 40 existing NWPs or finalizing proposed new NWP E at this time. Those 40 remaining NWPs continue to be in effect under the January 6, 2017, final rule and the existing general conditions and definitions in the 2017 final rule continue to apply to those permits.³¹²

These 16 NWPs, the 32 general conditions, and the associated definitions went into effect on March 15, 2021.

Laws that May Apply to Aquaculture Through Other Avenues:

For purposes of this section, non-specific aquaculture regulation has been set out. This is due to the fact issues regulated by these statutes are implicated by aquaculture and can be utilized to regulate aspects thereof. Certain of these statutes are increasingly being utilized in litigation relating to aquaculture. Note that these are federal laws, and there may be additional state level laws that apply.

2. Environmental and Conservation Laws

³⁰⁸ National Aquaculture Act of 1980, 16 U.S.C. § 2801.

³⁰⁹ *National Aquaculture Legislation Review, United States of America*, FAO FISHERIES DIV., http://www.fao.org/fishery/legalframework/nalo_usa/en.

³¹⁰ *Aquaculture: Regulation & Policy*, NOAA FISHERIES, <https://www.fisheries.noaa.gov/topic/aquaculture#regulation-&-policy>.

³¹¹ United States, Department of the Army, Corps of Engineers. *Reissuance and Modification of Nationwide Permits*. Vol. 86, No. 8 Fed. Reg. 2774 (Jan. 13, 2021).

³¹² *Id.*

2.1 Clean Water Act (CWA), 33 U.S.C. §§ 1251 *et seq.* (1972)³¹³

“The Clean Water Act (CWA) establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters. . . . Under the CWA, EPA has implemented pollution control programs such as setting wastewater standards for industry.”³¹⁴ While it does not address animal welfare, the CWA is a critical environmental law that assists in protecting the navigable waters of the United States from the contaminants produced by the aquaculture industry. This Act has the potential to offer environmental protections and some regulation of aquaculture operations to the degree they impact relevant regulated waters.

2.2 Endangered Species Act (ESA) 16 U.S.C. § 1531 *et seq.*³¹⁵

The ESA is considered to be perhaps the strictest wildlife protection law in the country.³¹⁶ However, the loopholes available in the ESA, which are outside the scope of this Memorandum, render it essentially inapplicable to many aquaculture practices. Generally, the ESA protects endangered and threatened species and their habitats by prohibiting the take of listed animals and the trade of such species, except under Federal permit.³¹⁷ The ESA has the potential to shape some aquaculture practices if they are having adverse effects on any wild endangered species. However, there are loopholes for commercial fishing. As long as aquaculture is not treated as analogous to commercial fishing, there is potential to use the ESA to protect endangered species that might be harmed by certain aquaculture practices.

In 2014, when the U.S. Fish and Wildlife Service designated the lesser prairie chicken as a threatened species, this designation, rather than naming the bird as “endangered”, created an “exemption allowing continued oil and gas drilling and other destructive activities in exchanged for promised action under voluntarily conservation plans that are virtually unenforceable.”³¹⁸ This undermined the very purpose of the ESA: to recover imperiled species so that they no longer require protection.³¹⁹

Another exemption that the U.S. Fish and Wildlife Service routinely uses to avoid the ESA’s conservation requirement is the 4(d) provision, which applies to threatened species, not endangered ones.³²⁰ This provision says the FWS must issue regulations that are “necessary and advisable to provide for the conservation of threatened species in an effort to prevent them from becoming endangered.”³²¹ The FWS has instead used this provision to sanction actions that are harmful to the

³¹³ Clean Water Act, 33 U.S.C. § 1251.

³¹⁴ *Summary of the Clean Water Act*, EPA Laws & Regulations, <https://www.epa.gov/laws-regulations/summary-clean-water-act> (last visited Mar. 20, 2021).

³¹⁵ 16 U.S.C. § 1531.

³¹⁶ *Endangered Species Act: An Overview*, NAT’L AGRIC. LAW CTR., <https://nationalaglawcenter.org/overview/esa/>.

³¹⁷ *Id.*

³¹⁸ Press Release, Center for Biological Diversity, Unprecedented Loopholes Undermine Endangered Species Act Protections for Lesser Prairie Chicken (Mar. 27, 2014),

https://www.biologicaldiversity.org/news/press_releases/2014/lesser-prairie-chicken-03-27-2014.html.

³¹⁹ *Id.*

³²⁰ Tanya Sanerib et al., *Lethal Loopholes: How the Obama Administration Is Increasingly Allowing Special Interests to Endanger Rare Wildlife*, Center for Biological Diversity, (2016),

https://biologicaldiversity.org/programs/biodiversity/endangered_species_act/pdfs/Lethal_Loophole_4d_Rule_Report.pdf.

³²¹ *Id.*

threatened species, such as exempting ranching activities in the native home of the California tiger salamander.³²²

2.3 Interjurisdictional Fisheries Act of 1986, 16 U.S.C. §§ 742c, 779, 4001³²³

This Act repealed the Commercial Fisheries Research and Development Act and substituted it. The purpose of this title is:

- a. To promote and encourage State activities in support of the management of interjurisdictional fishery resources;
- b. To promote and encourage management of interjurisdictional fishery resources throughout their range; and
- c. To promote and encourage research in preparation for the implementation of the use of ecosystems and interspecies approaches to the conservation and management of interjurisdictional fishery resources throughout their range.

2.4 Marine Mammal Protection Act (MMPA) 16 U.S.C. Chapter 31³²⁴

One of the most stringent wildlife protection laws in the United States is the MMPA, which prohibits, with certain exceptions, the ‘take’ of marine mammals in U.S. waters and by U.S. citizens on the high seas, and the importation of marine mammals and marine mammal products into the U.S. without a permit.³²⁵ Unfortunately, it only applies to marine mammals and does not include aquaculture within its regulatory jurisdiction. However, the MMPA might have the ability to protect marine mammals from adverse effects of aquaculture if those effects result in a “take.” Aquaculture practices have yet to be challenged under the MMPA. However, commercial fishing operations (which often accidentally catch and kill marine mammals), have been challenged under the MMPA. NOAA Fisheries responded by authorizing exemptions to the take of marine mammals incidental to commercial fishing and other non-fishing activities.³²⁶ If NOAA Fisheries does not make the same exemptions for aquaculture, then the MMPA has the potential to spark changes in some aquaculture practices in order to reduce takes of marine mammals.³²⁷

2.5 National Marine Sanctuaries Act (NMSA), 16 U.S.C. § 1431 *et seq.*³²⁸

Under NMSA the Secretary of Commerce is allowed to designate and manage certain areas of the marine and Great Lakes environments as sanctuaries if they believe that the area is of national significance or merits federal management. Any individual/group must obtain a permit from NOAA to conduct aquaculture activities in an area that has been designated as a national marine sanctuary under this act.³²⁹

³²² *Supra*, note 320.

³²³ Interjurisdictional Fisheries Act of 1986, 16 U.S.C. § 742, 779.

³²⁴ 16 U.S.C. Ch. 31.

³²⁵ *Marine Mammal Protection*, NOAA FISHERIES, <https://www.fisheries.noaa.gov/topic/marine-mammal-protection>.

³²⁶ *Understanding Marine Mammal Protections*, NOAA FISHERIES, <https://www.fisheries.noaa.gov/insight/understanding-marine-mammal-protections> (last visited Mar. 20, 2021).

³²⁷ Changes such as strengthening water polluting standards for aquaculture operations in areas with known marine mammal activity.

³²⁸ 16 U.S.C. § 1431.

³²⁹ *Legislation, National Marine Sanctuaries Act*, NOAA NAT’L MARINE SANCTUARIES, <https://sanctuaries.noaa.gov/about/legislation/>.

2.6 Additional Environmental and Conservation Laws that May Apply

Other relevant environmental laws include: the Magnuson-Stevens Fishery & Conservation Management Act (MSA); the National Environmental Policy Act (NEPA); the Coastal Zone Management Act (CZMA); the Toxic Substances Control Act of 1976 (TSCA); the Safe Drinking Water Act (SDWA); the Rivers and Harbors Appropriation Act of 1899; and the Lacey Act. However, most of these laws apply more directly to commercial wild-caught fish operations, rather than aquaculture.

Food Safety and Consumer Protection Laws

2.7 Animal Health Protection Act of 2002, 7 U.S.C. § 8301 *et seq.*³³⁰

This law was created to prevent, detect, control, and eradicate diseases in farmed animals, including aquaculture animals. These objectives were deemed crucial for purposes of protecting animal health, the health and welfare of the people of the U.S., the economic interests of the livestock and related industries, the environment, and commerce in animals. Note that animal welfare is implicitly excluded by specifically mentioning human health and welfare, while only addressing the health interests for animals.

However, this statute could potentially be utilized in cases where the animals in aquaculture operations suffer from parasitic infections and diseases as a result of overcrowding and unsanitary conditions. If these animals enter interstate commerce and are carrying contagious infections or diseases, then there could be grounds for enforcement of this statute. The primary purpose of this statute is to preserve the health of the overall livestock population in the U.S. If the poor living conditions of these animals pose a threat to that health, then the responsible parties could be subject to criminal or civil penalties. This enforcement would likely motivate aquaculture operations to improve sanitation conditions and reduce overcrowding for their aquatic animals. The primary issue with the utilization of this law is that enforcement is completely at the discretion of the Secretary of Agriculture. There is no mechanism by which a private citizen can take action if they know of a violation.

2.8 Federal Insecticide Fungicide and Rodenticide Act of 1996 (FIFRA), 7 U.S.C. §§ 136-136y³³¹

The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) “provides for federal regulation of pesticide distribution, sale, and use. All pesticides distributed or sold in the United States must be registered (licensed) by EPA. Before EPA may register a pesticide under FIFRA, the applicant must show, among other things, that using the pesticide according to specifications ‘will not generally cause unreasonable adverse effects on the environment.’”³³²

“FIFRA defines the term ‘unreasonable adverse effects on the environment’ to mean: ‘(1) any unreasonable risk to man or the environment, taking into account the economic, social, and environmental costs and benefits of the use of any pesticide, or (2) a human dietary risk from residues

³³⁰ Animal Health Protection Act of 2002, 7 U.S.C. § 8301-8321.

³³¹ Federal Insecticide Fungicide and Rodenticide Act of 1996, 7 U.S.C. § 136.

³³² *Summary of the Federal Insecticide, Fungicide, and Rodenticide Act*, EPA, <https://www.epa.gov/laws-regulations/summary-federal-insecticide-fungicide-and-rodenticide-act>.

that result from a use of a pesticide in or on any food inconsistent with the standard under § 408 of the Federal Food, Drug, and Cosmetic Act.”³³³

2.9 Federal Food, Drug, and Cosmetic Act (FFDCA), 21 U.S.C. §301 *et seq.*³³⁴

The FFDCA gives the U.S. Food and Drug Administration (FDA) the authority to regulate the manufacturing, registration, distribution and testing of chemicals and veterinary drugs in fish and other foods. While this statute does not directly apply to aquaculture, it provides a statutory framework for regulating food safety, veterinary medicines, and other things that are relate to aquaculture, such as the use of feed additives used in aquaculture activities.³³⁵

2.10 Additional Food Safety and Consumer Protection Laws that may apply

There are numerous food safety laws that are applicable to aquaculture, though none of them address animal welfare in aquaculture. Some of the other notable laws and regulations include: Food Safety Modernization Act of 2011; Virus-Serum Toxin Act; Fish and Fishery Products HACCP regulation, 21 C.F.R. § 123; and the Food Quality Protection Act of 1996 (FQPA).

2.11 Marine Protection, Research, and Sanctuaries Act of 1972, 16 U.S.C. §§ 1431-1445³³⁶

Titles I and II of the Marine Protection, Research, and Sanctuaries Act (MPRSA), also referred to as the Ocean Dumping Act, generally prohibits:

- a. Transportation of material from the United States for the purpose of ocean dumping;
- b. Transportation of material from anywhere for the purpose of ocean dumping by U.S. agencies or U.S.-flagged vessel and
- c. Dumping of material transported from outside the United States into the U.S. territorial sea.

A permit is required to deviate from these prohibitions.

Under MPRSA, the standard for permit issuance is whether the dumping will "unreasonably degrade or endanger" human health, welfare, or the marine environment. EPA is charged with developing ocean dumping criteria to be used in evaluating permit applications. The MPRSA provisions administered by EPA are published in Title 33 of the U.S. Code. The MPRSA provisions that address marine sanctuaries are administered by the National Oceanic and Atmospheric Administration and are published in Title 16 of the U.S. Code.

2.12 Outer Continental Shelf Lands Act, 16 U.S.C. § 1456-1466 (and Outer Continental Shelf Lands Act Amendments)³³⁷

While the Act declares that the national interest will be served by a policy of increased domestic production of the oil and gas resources of the Outer Continental Shelf it further declares that the purpose of the Act is to establish policies and procedures for management of the oil and gas resources

³³³ *Id.*

³³⁴ Federal Food, Drug, and Cosmetic Act, 21 U.S.C. § 301.

³³⁵ *Id.*; *National Aquaculture Legislation Review, United States of America*, FAO FISHERIES DIV., http://www.fao.org/fishery/legalframework/nalo_usa/en.

³³⁶ Marine Protection, Research, and Sanctuaries Act of 1972, 16 U.S.C. § 1431.

³³⁷ Outer Continental Shelf Lands Act, 16 U.S.C. §1456.

of the Outer Continental Shelf, while minimizing or eliminating adverse impacts of such development on marine, coastal or the human environment.

Stipulates that the Secretary shall be responsible for preparing any environmental impact statements as required by the National Environmental Policy Act of 1969. Directs the Secretary to study areas included in lease sales in order to establish information concerning the potential impact of the proposed oil and gas development on the coastal human, and marine environments.

Provides for a study of the adequacy of existing safety and health regulations, technology, equipment, and techniques relating to Outer Continental Shelf activities.

Allows citizen suits by persons adversely affected by actions under this Act. Imposes civil penalties of not more than \$10,000 per day for failure to comply with the provisions of this Act. Imposes criminal penalties in fines of not more than \$100,000 and/or imprisonment for not more than ten years for knowing and willful violations of this Act.

Directs the person in charge of a vessel or facility to immediately notify the Secretary of Transportation of any pollution incident in which the vessel or facility is involved.

3. Regulations

Apart from these statutes, there are important federal regulations relevant to aquaculture in the United States (each providing for different permitting and licensing requirements derived from provisions of the respective principal statutes)

- a. Coastal Zone Management Act Regulations, 15 C.F.R. §§ 923.1-923.135
- b. Federal Food, Drug and Cosmetic Act Regulations, 21 C.F.R. Parts 1-99
- c. Federal Insecticide Fungicide and Rodenticide Act (FIFRA) Regulations, 40 C.F.R. Parts 150-180
- d. Federal Water Pollution Control Act (a/k/a Clean Water Act) Regulations 40 C.F.R. Parts 104—424.
- e. Lacey Act Regulations, 50 C.F.R. §§ 14.1 – 14.225
- f. Endangered Species Act Regulations, 50 C.F.R. §§ 17.1-17.108
- g. Martine Protection, Research and Sanctuaries Act of 1972 Regulations, 50 C.F.R. §§18.1-18.129
- h. National Marine Fisheries Service (shellfish) Regulations, 50 C.F.R Part 260
- i. Magnuson-Stevens Fishery Conservation and Management Act Regulations, 50 C.F.R. Part 300.
- j. Animals and Animal Products Regulations (various parts of Title 9 could be relevant).

4. International Instruments that may Apply to Aquaculture

“The market for human consumption of fish is expanding, and fish products account for approximately 39% of animal products consumed globally.”³³⁸ In addition, “farmed fish account for 70% of all animals farmed worldwide and the fish farming industry has been expanding at a rate of 8% per year since the 1980s.”³³⁹ While there are currently no international agreements that apply to aquaculture,

³³⁸ *Supra*, note 103; Available at <https://digitalcommons.pace.edu/cgi/viewcontent.cgi?article=2132&context=lawfaculty>.

³³⁹ *Id.*

there are some that could potentially apply to aquaculture. Listed below are some international treaties that the U.S. is a party to that could apply to aquaculture. Other relevant treaties include the Convention on International Trade in Endangered Species, Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on The High Seas, and the Convention for the Conservation of Anadromous Stocks in the North Pacific Ocean, which are discussed above in the wild-caught fish section.³⁴⁰

4.1 Codex Alimentarius, 1963³⁴¹

The Codex Alimentarius is a collection of food safety standards, codes of practice, guidelines and other recommendations developed under the guidance of the Codex Alimentarius Commission (CAC) to protect consumers' health, ensure fair-trade practices in the food trade and promote coordination of all food standards' work undertaken by IGOs and NGOs. The CAC is the central part of the Joint FAO/WHO Food Standards Program. There are presently around 200 Codex Standards, of which several are applicable to fisheries commodities. There are currently 18 standards, two guidelines, and the Code of Practice for Fish and Fisheries Products, which also cover the aquaculture sector.

4.2 Convention on the Inter-American Institute for Cooperation on Agriculture, 1979³⁴²

This Convention establishes the Inter-American Institute for Cooperation on Agriculture whose purpose is to encourage, promote, and support the efforts of the Member States to achieve their agricultural development and rural welfare. The objective is to improve the productivity and competitiveness of the agricultural sector, strengthen agriculture's contribution to the development of rural areas and the well-being of the rural population, improve agriculture's capacity to mitigate and adapt to climate change and make better use of natural resources, and improve agriculture's contribution to food security.

4.3 International Plant Protection Convention (IPPC) of 1951³⁴³

IPPC is an international plant health agreement with a vision of protecting global plant resources from pests. The IPPC mission is to secure cooperation among nations in protecting global plant resources from the spread and introduction of pests of plants in order to preserve food security, biodiversity and to facilitate trade.³⁴⁴ The Convention coordinates its activities with the Convention on Biological Diversity through the Biodiversity Liaison Group.³⁴⁵ The relevance of the IPPC is that by protecting the plants from the harmful effects of invasive plants and pests, the environment and biodiversity (including fish) are protected. An example of a harmful invasive plant that severely affects fish is the water hyacinth through its oxygen depleting capabilities.³⁴⁶

³⁴⁰ *National Aquaculture Legislation Overview: International Agreements*, FAO, http://www.fao.org/fishery/legalframework/nalo_usa/en#tcNB0055; see also *International standards and intergovernmental agreements of relevance to aquaculture certification*, FAO, <http://www.fao.org/3/ai388e/AI388E10.htm>.

³⁴¹ *About Codex Alimentarius*, CODEX ALIMENTARIUS, <http://www.fao.org/fao-who-codexalimentarius/about-codex/en/#c453333>.

³⁴² *Convention on the Inter-American Institute for Cooperation on Agriculture of 1979*, art. 4, Mar. 6, 1979, http://www.oas.org/en/sla/dil/inter_american_treaties_C-17_Convention_Inter-American_Institute_Cooperation_Agriculture.asp.

³⁴³ *International Plant Protection Convention of 1951*, Dec. 6, 1951, 23 U.S.T. 2767, 150 U.N.T.S. 1963.

³⁴⁴ *Analyzing the benefits of implementing the IPPC*, FOOD AND AGRIC. ORG. OF THE UNITED NATIONS (Sept. 2017), <http://www.fao.org/3/a-i7267e.pdf>.

³⁴⁵ *Liaison Group of Biodiversity-related Conventions*, CONVENTION ON BIOLOGICAL DIVERSITY, <https://www.cbd.int/blg/>.

³⁴⁶ A.M. Villamagna, *Ecological and socio-economic impacts of invasive water hyacinth: a review*, FRESHWATER BIOLOGY (2010), <https://onlinelibrary.wiley.com/doi/pdf/10.1111/j.1365-2427.2009.02294.x>.

4.4 World Organization for Animal Health³⁴⁷

The World Organization for Animal Health, also known as OIE, is an international organization with several missions, including “to provide a better guarantee of food of animal origin and to promote animal welfare through a science-based approach.”³⁴⁸ While the OIE’s main focus is on animal health and diseases, they are also involved in the development of documents on animal welfare. The OIE Aquatic Animal Health Code (the Aquatic Code) “provides standards for the improvement of aquatic animal health worldwide.” This includes standards for the welfare of farmed fish. The Aquatic Code provides sanitary measures for the import and export of aquatic animals to prevent the spread of disease via international trade in aquatic animals and their products. OIE also publishes a Manual of Diagnostic Tests for Aquatic Animals (Aquatic Manual) which provides effective laboratory testing for pathogenic agents that may adversely affect aquatic animals to support the Aquatic Animal health Services. The Aquatic Code and Aquatic Manual are available at: <https://www.oie.int/en/standard-setting/aquatic-code/access-online/> and <https://www.oie.int/en/standard-setting/aquatic-manual/access-online/>.

5. Other International Treaties

While the United States is not a party to the following international agreements, they are important to take note of because some of their principles have become customary law.

5.1 Convention on Biological Diversity 1992 (CBD)³⁴⁹

The Convention is dedicated to promoting sustainable development recognizing that biological diversity is important not only for plants, animals, micro-organisms and their ecosystems, but also for people globally as it contribute to food security. Aquaculture is particularly dependent on biodiversity for productivity and food security. CBD Parties have been encouraged to create enabling conditions, provide positive incentives and remove perverse incentives for the adoption of sustainable production practices that will benefit biodiversity. CBD also contains several provisions specific to aquaculture particularly concerning the transboundary movement of aquatic organisms and the control of alien species.

C. TRIBAL LAWS

Tribal rights regarding aquaculture are different than regular tribal fishing rights. There are three bases for granting rights to the tribes in regard to aquaculture. These include the express water and fishing rights that are stated in the treaties as well as any implied rights that are based on the protection of the lifestyle and traditions of the tribes. As stated above, farmed fishing is governed by a combination of express water rights as well as implied fishing rights. When artificial farms are created on land by non-Indian parties, it is unlikely that there will be an issue. However, when parts of a body of water are sectioned off to allow for the farming of fish this could cause the water rights, as well as the fishing rights, of the tribes to be affected. This is therefore an important consideration for anyone in the

³⁴⁷ *Aquatic Animal Health Code*, OIE, <https://www.oie.int/standard-setting/aquatic-code/>.

³⁴⁸ *Objectives*, OIE, <https://www.oie.int/about-us/our-missions/>.

³⁴⁹ Convention on Biological Diversity, Dec. 29, 1993, 1760 U.N.T.S. 79.

aquaculture business to take note of these rights and ensure that their activities are not in conflict with these rights.

TRIBAL WATER RIGHTS (Generally)

- *Winters v. State*:³⁵⁰ The Native Americans who resided on the Fort Belknap Indian Reservation of Montana used water from the Milk River for domestic, culinary, and irrigation purposes, promoting civilization and improvement.³⁵¹ The defendants began diverting water from the Milk River for use on their homesteads, taking water which the Native Americans had been using.³⁵² The land given to the Native Americans would have been valueless without irrigation.³⁵³ The court said that when ruling on the interpretation of agreements and treaties with Native Americans, “ambiguities occurring will be resolved from the standpoint of the Indians.”³⁵⁴ And here, if the court sided with Winters, the very purpose of the treaty would be defeated.³⁵⁵ When the government created the reservation and the accompanied treaties, it intended for the Native Americans to have a continued reservation of the water.³⁵⁶
- If water is necessary to the full use of reservation lands, Indians will be presumed to have rights over that water. In cases where there are conflicting water-rights claims and ambiguities as to the water rights that Indians received, those ambiguities must be resolved in favor of Indians. The Tribes are entitled to full and exclusive rights to the water necessary for their reservation.³⁵⁷
- “Although Indian reserved rights generally attach to whatever water sources may be within or adjacent to the reserved lands, it is generally understood that reserved rights do not necessarily require that the water source be encompassed within the reserved lands.”³⁵⁸
- **The Winters Doctrine**:³⁵⁹ Non-Indian settlers built dams that diverted the flow of the Milk River and interfered with the Indians agricultural uses of the river. Even though water rights were not specifically mentioned in the treaty, the Court held that they were implied as the tribe had reserved land for agriculture purposes, so reserved water was necessary. From the *Winters* and *Arizona v. California* cases, it is possible to summarize some of the characteristics of reserved Indian water rights, commonly referred to as “Winters rights”:
 - Winters rights are federal rights and their existence is defined by federal law
 - Establishment of a reservation by treaty, statute, or EO includes an implied reservation of water rights to sources in or bordering the reservation.

³⁵⁰ *Winters v. United States*, 207 U.S. 564 (1908).

³⁵¹ *Id.* at 567.

³⁵² *Supra*, note 350, at 569.

³⁵³ *Supra*, note 350, at 576.

³⁵⁴ *Supra*, note 350, at 576.

³⁵⁵ *Supra*, note 350 at 577.

³⁵⁶ *Supra*, note 350 at 577.

³⁵⁷ *Supra*, note 350, at 564.

³⁵⁸ Cynthia Brougher, *Indian Reserved Water Rights Under the Winters Doctrine: An Overview*, CONG. RSCH. SER. (June 8, 2011), <http://nationalaglawcenter.org/wp-content/uploads/assets/crs/RL32198.pdf> 4, citing *Cappaert*, 426 U.S. at 138-39; *Arizona v. California*, 373 U.S. at 598-99; *Supra*, note 350, at 565. See also *United States v. Ahtanum Irrigation Dist.*, 236 F.2d 321, 325 (9th Cir. 1956).

³⁵⁹ *Supra*, note 350.

- These rights are reserved as of the date of creation. Pre-existing rights take precedence, but rights created later are subordinate.
 - The amount of water reserved to the tribes must be enough to accomplish the purposes of the reservation (agricultural and other).
 - These rights are not lost by non-use.³⁶⁰
 - When the purpose of the reservation is fishing, then water must be reserved to accommodate that use.³⁶¹
 - Winters rights from a treaty or statute are considered “property” and cannot be taken by the government without compensation. However, when created by EO, the title to these rights is unrecognized and it is likely that they could be subject to taking without compensation.
 - Under *Winters*, “the priority and extent of Indian reserved water rights is affected by the purposes of the Indian reservation, the date when the Indian reservation was created, the quantification of water sufficient to accomplish those purposes, and the sources of water that may be used to fulfill the particular water rights.”³⁶²
 - “These aboriginal uses of water may include irrigation ... or fisheries... In those cases, ‘[t]he rights were not created by the [treaty], rather the treaty confirmed the continued existence of these rights.’ *United States v. Adair*, 723 F.2d 1394, 1414 (9th Cir. 1983). Where water is reserved to a tribe under this approach, the tribe’s priority date is ‘time immemorial,’ making the tribe the senior water user. *Id.*”³⁶³ Most water rights related to taking water out of rivers.³⁶⁴ But instream water rights are for the environment; for fish and riparian habitats.³⁶⁵ Once established, an instream flow right is part of the water right system, and future water users must meet those standards.³⁶⁶
- *Arizona v. California*, 373 U.S. 546 (1963) – involves a dispute between the states over how much water each has a legal right to use from the Colorado River.³⁶⁷ The Colorado River created problems for those who lived beside it or used it, including flooding, and even erosion depositing materials in the water that hurt crops.³⁶⁸ When talk of a national project, building a dam and reservoir, increased during the 1920s, the northern basin states were concerned that all the water of the Colorado River would be used before it reached them, as the law of prior appropriation was the leading rule in Western States.³⁶⁹ “Under that law the one who first appropriates water and puts it to beneficial use thereby acquires a vested right to continue to divert and use that quantity of water against all claimants junior to him in point of time.”³⁷⁰
 - Congress passed the Project Act in 1929, which included some limitations of water use per state, the source of the disagreement.³⁷¹ The court decided that Congress intended the Secretary of the Interior to “both carry out the allocation of the waters of the main

³⁶⁰ William C. Canby, Jr., *American Indian Law in a Nutshell* 498-499 (6th ed. 2015).

³⁶¹ *Id.* at 502.

³⁶² *Supra*, note 360; Cynthia Brougher, *Indian Reserved Water Rights Under the Winters Doctrine: An Overview*, CONG. RES. SER. at 2 (June 8, 2011), <http://nationalaglawcenter.org/wp-content/uploads/assets/crs/RL32198.pdf>.

³⁶³ William C. Canby, Jr., *American Indian Law in a Nutshell* at 373 (6th ed. 2015).

³⁶⁴ Western Resource Advocates, *Instream Flows*, <https://westernresourceadvocates.org/healthy-rivers-lakes/keeping-water-rivers-lakes/instream-flows/>.

³⁶⁵ *Id.*

³⁶⁶ *Id.*

³⁶⁷ *Arizona v. California*, 373 U.S. 546, 551 (1963).

³⁶⁸ *Id.* at 554.

³⁶⁹ *Id.* at 555.

³⁷⁰ *Id.*

³⁷¹ *Id.* at 561.

Colorado River among the Lower Basin states and to decide which users within each State would get water.”³⁷² Additionally, there is a federal reservation of water rights, and when the government “has exercised this power and undertaken a comprehensive project for the improvement of a great river and for the orderly and beneficial distribution of water, there is no room for inconsistent state laws.”³⁷³

- The United States created five Indian Reservations in Arizona, California, and Nevada from 1865 to 1907, which all asserted water rights from the Colorado River.³⁷⁴ This included enough water to irrigate the farmable portions of their land.³⁷⁵ The court expressed no doubt in declaring that the United States had the power to reserve water rights for its reservations and its property.³⁷⁶ Water was necessary to make the reservations habitable, implying a reservation of water rights.³⁷⁷
- *United States v. New Mexico*, 438 U.S. 696 (1978) – Re: Non-Indian federal reserved rights to water, case dealt with Gila National Forest. “Court distinguished between the primary and secondary purposes for which the land was set aside, looking at ‘the specific purposes for which the land was reserved’ and concluding that a federal reservation was entitled to reserved rights for those primary purposes only. ... Water rights for a secondary purpose must be obtained under state law.” It has not yet been determined in the Court if this primary-versus-secondary purpose analysis will apply to *Winters* rights on reservations.³⁷⁸
- Practicably Irrigable Acreage – The primary measure of tribal water rights, re: quantification, is an agriculture measure since agriculture has been determined to be either one of the purposes, or the sole purpose, of every reservation’s reserved water rights. It allows for irrigation from a stream to the reservation under certain circumstances. (See *Arizona v. California*)³⁷⁹
- Instream Flow Right – If the continuation of fishing practices is a purpose of the reservation, then the courts will award an “instream flow right” which generally required that water be left in place. It is a right to maintain a specified quantity of water in a stream for a specified purpose. It is the right to prevent others from drawing down the water below a certain level and to prevent others from injuring a resource as opposed to a right to take the resource. It supports game and fish harvesting rights. (See *United States v. Adair*, 723 F.2d 1394 (9th Cir. 1983)).³⁸⁰
- Prior Appropriation – In states that use prior appropriation for water rights, most western states, “water users who make beneficial use of a water supply, regardless of their location relative to it, obtain a right to that water under a seniority system that reflects the order in which the right was obtained.”³⁸¹

³⁷² *Id.* at 580.

³⁷³ *Id.* at 587.

³⁷⁴ *Id.* at 596.

³⁷⁵ *Id.*

³⁷⁶ *Id.* at 598.

³⁷⁷ *Id.* at 599.

³⁷⁸ William C. Canby, Jr., *American Indian Law in a Nutshell* at 379 (6th ed. 2015).

³⁷⁹ *Id.* at 380-387.

³⁸⁰ *Supra*, note 378, at 380-387.

³⁸¹ Cynthia Brougher, *Indian Reserved Water Rights Under the Winters Doctrine: An Overview*, CONG. RSCH. SERV. at 2 (June 8, 2011), <http://nationalaglawcenter.org/wp-content/uploads/assets/crs/RL32198.pdf>.

- Cases that have recognized tribal non-consumptive water rights for hunting and fishing purposes:³⁸²
 - *United States v. Adair*, 723 F.2d 1394 (9th Cir. 1983) – The Court held that the tribe is entitled to “the amount of water necessary to support its [sic] hunting and fishing rights as currently exercised to maintain the livelihood of the Tribe members, not as these rights one were exercised by the Tribe in 1864 ... unless of course no lesser level will supply them with a moderate living.” (“Moderate living” phrase was drawn from *Washington v. Washington State Commercial Passenger Fishing Vessel Association*, 443 U.S. 658, 686 (1979)).
 - *United States v. Adair*, 187 F.Supp. 2d 1273 (D.Or. 2002) – The above mentioned “moderate living” standard only applies “if tribal needs may be satisfied by a lesser amount” than 50% (9th Cir. Vacated this decision; not ripe for federal court review)
 - *United States v. Anderson*, 6 Indian L. Rep. F-129 (E.D. Wash. 1979) – Held that the Spokane Tribe had the right to a sufficient quantity of water to keep the water temperature at 68 degrees or less because a higher temperature would endanger the native fish population.
- ***Washington v. United States*, 584 U.S. (2018).**³⁸³
 - **Issues:**

(1) Whether a treaty “right of taking fish, at all usual and accustomed grounds and stations ... in common with all citizens” guaranteed “that the number of fish would always be sufficient to provide a ‘moderate living’ to the tribes”; (2) whether the district court erred in dismissing the state’s equitable defenses against the federal government where the federal government signed these treaties in the 1850’s, for decades told the state to design culverts a particular way, and then filed suit in 2001 claiming that the culvert design it provided violates the treaties it signed; and (3) whether the district court’s injunction violates federalism and comity principles by requiring Washington to replace hundreds of culverts, at a cost of several billion dollars, when many of the replacements will have no impact on salmon, and plaintiffs showed no clear connection between culvert replacement and tribal fisheries.
 - **Facts:**

In 1854 and 1855, the federal Indian tribes in what is currently the state of Washington entered into a series of treaties, collectively known as the ‘Stevens Treaties,’ which provided that the Tribes would relinquish significant portions of their land to make up the state of Washington, and in exchange, they would be guaranteed the right to off-reservation fishing. This so-called ‘fishing clause’ guaranteed the Tribes ‘the right of taking fish, at all usual and accustomed grounds and stations . . . in common with all citizens of the Territory.’

³⁸² *Supra*, note 378, at 380-387.

³⁸³ *Washington v. United States*, 584 U.S. (2018). Reporter: 2018 U.S. Dist. LEXIS 68940, https://plus.lexis.com/document/?pdmfid=1530671&crd=876f99ab-1a89-4fab-af83-bdecddfc0048&pddocfullpath=%2Fshared%2Fdocument%2Fcases%2Furn%3AcontentItem%3A5S5S-X5W1-JPP5-252C-00000-00&pdcontentcomponentid=6419&pdteaserkey=&pdslpamode=false&pdworkfolderlocatorid=NOT_SAVED_IN_WORK_FOLDER&eomp=gf4k&earg=sr0&prid=5f6778bf-2216-4c79-a9ff-ca1940233640.

Since those treaties, there have been recurring and ongoing disputes between the Tribes and (originally) the white settlers there and (today) the state government itself. The present case arises from the Tribes' contention that the government was building and maintaining culverts (channels carrying water under roads or sidewalks) that diminished the size of salmon runs in traditional fishing areas for the Tribes. The 20+ Tribes represented in the suit allege that this diminishment amounts to violation of the fishing clause of the treaties.

Washington contends that it constructed the culverts in a particular way according to federal law and that the federal requirement caused it to violate the treaties.

The district court found for the Tribes and issued an injunction ordering Washington to correct its offending culverts. The Ninth Circuit affirmed.³⁸⁴

- **Arguments**

- The tribes argue that the reserved treaty rights are meaningless if the habitat that sustains the fish is allowed to degrade until there are no fish to catch. They claim that the culverts infringe on their treaty rights by limiting the number or available fish.
- The state claims that the culverts do not limit the number of fish and that they were built following the instructions of the federal government. The Washington Attorney General is concerned that the decision of the 9th Circuit Court of Appeals is overbroad and that the tribes will use this decision to insist that other steps, such as dam removal or curtailment of logging, farming, or construction, be made based on claims that these also affect the habitats of fish.

- **Decision**

- "In a per curiam opinion, [a] ... divided Court affirmed the lower court's decision. Justice Anthony Kennedy took no part in the consideration or decision of the case."³⁸⁵ The decision left "in place a lower court order that forces state government to foot the bill for removing culverts that block fish migration."³⁸⁶

GROUNDWATER RIGHTS

- The Supreme Court has not yet ruled that *Winters* extends to groundwater. However, a 2010 Ninth Circuit opinion stated, "[S]urface water contributes to groundwater and groundwater contributes to surface water. The reciprocal hydraulic connection between groundwater and surface water has been known to both the legal and professional communities for many years."³⁸⁷
- The closest the Court has come to recognizing a reserved right to groundwater was in its 1979 decision, *Cappaert v. United States* which involved an injunction that restricted a rancher's

³⁸⁴ Washington v. United States, 584 U.S. (2018); *Washington v. United States*, OYEZ, <https://www.oyez.org/cases/2017/17-269>

³⁸⁵ *Id.*

³⁸⁶ Washington v. United States, 584 U.S. (2018); Hal Bernton, *Tied US Supreme Court Decision Means Washington Must Remove Barriers to Salmon Migration*, SEATTLE TIMES (June 11, 2018), <https://www.seattletimes.com/seattle-news/environment/tied-u-s-supreme-court-decision-means-washington-must-remove-barriers-to-salmon-migration/>.

³⁸⁷ *United States v. Orr Ditch Co.*, 600 F.3d 1152, 1158 (9th Cir. 2010).

groundwater pumping to the extent necessary to preserve a rare species of fish. The Supreme Court upheld the injunction but declined to extend the federal reserved water rights to groundwater, reasoning that the water in question was really surface water. However, the Court did recognize that surface water and groundwater were parts of the same hydrological cycle and held that “whether the diversion is of surface or groundwater” a rancher may not pump water to the point that it impairs the survival of a particular fish species.³⁸⁸

- The Case involved the question of whether “the reservation of Devil’s Hole as a national monument reserved federal water rights in unappropriated water.”³⁸⁹ There is a rare race of desert fish that resides in Devil’s Hole, which cannot be found anywhere else in the world, and should be afforded particularly special protection.³⁹⁰ The Cappaerts were owners of a nearby ranch, and pumped groundwater onto their land to irrigate their crops.³⁹¹ The groundwater came from the same source that fed Devil’s Hole, which began significantly affecting the water level of the national monument, and threatening the survival of the fish.³⁹²
- The Supreme Court acknowledged that “when the Federal Government withdraws its land from the public domain and reserves it for a federal purpose, the Government, by implication, reserves appurtenant water then unappropriated to the extent needed to accomplish the purpose of the reservation.”³⁹³ The Presidential Proclamation of 1952, which reserved Devil’s Hole as a national monument, expressed an intention to reserve unappropriated water.³⁹⁴ This reserves only the necessary amount of water to fulfil the purpose of the reservation.³⁹⁵ Because the groundwater the Cappaerts were pumping and the surface water of Devil’s Hole are connected, and “the implied-reservation-of-water-rights doctrine is based on the necessity of water for the purpose of the federal reservation,” the Supreme Court held that the Government could protect its surface water, which holds the implied reservation, from subsequent diversion, whether that diversion is of surface or groundwater.³⁹⁶ The Supreme Court upheld the injunction to stop the Cappaerts from diverting excess water, although the farmers were still allowed to use some of the groundwater, as long as the levels they took did not harm the rare fish.³⁹⁷
- Although there is currently very little legal precedent that recognizes federally reserved tribal rights to groundwater, it is possible that courts could protect the right to quality groundwater based on the effect(s) that the depletion or contamination of groundwater can have on surface water.³⁹⁸

³⁸⁸ *United States v. Cappaert*, 426 U.S. 128 (1976).

³⁸⁹ *Id.* at 128, 131.

³⁹⁰ *Supra*, note 388, at 128, 131.

³⁹¹ *Supra*, note 388, at 133.

³⁹² *Supra*, note 388, at 133.

³⁹³ *Supra*, note 388, at 138.

³⁹⁴ *Supra*, note 388, at 139.

³⁹⁵ *Supra*, note 388, at 141.

³⁹⁶ *Supra*, note 388, at 143.

³⁹⁷ *Supra*, note 388, at 147.

³⁹⁸ Tracy Loew, *State officials let mega-dairy use loophole to tap endangered Oregon aquifer*, STATESMAN JOURNAL (Mar. 22, 2018), <https://www.statesmanjournal.com/story/tech/science/environment/2018/03/22/lost-valley-mega-dairy-oregon-used-loophole-tap-aquifer-allowed-state-officials/426738002/?eType=EmailBlastContent&eId=d7dd624c-da10-49d7-8e26-ddac05bd472f>. Rights regarding quality groundwater might be raised in regard to Lost Valley Farm. The farm has been accused of drilling three wells into an already dwindling aquifer without telling the state, registering the wells, or properly recording the amount of water used. In addition, the farm has also been accused of repeatedly violating its

FISHERIES TIMELINE

“Indian people have lived in the Columbia River Basin for thousands of years and salmon has always been a staple of their lives, the foundation of their culture and economy, and an important part of their religion. According to conservative estimates, prior to European settlement, the Columbia River’s annual salmon returns ranged from 11-16 million fish.”³⁹⁹

- **1855** - The Colombia River tribes signed treaties in which they “ceded most of their lands – but reserved the right to fish at “all usual and accustomed fishing places...in common with citizens.”⁴⁰⁰
- **1905** - *U.S. v. Winans*, discussed in part above, was decided.⁴⁰¹ Although the Court stated that the settlers were permitted use different technologies than the Indians to harvest salmon “it does not follow that the Indians may be absolutely excluded” and that the settlers may not “construct and use a device which gives them exclusive possession” by severely diminishing the viability of the tribe’s salmon harvest. The Court held that the settlers may not use technology which depletes the commons to the point of “absolutely excluding” the tribe’s harvest. This holding was not based on the particular technology used by the settlers. Instead, the Court looked at the impact that the technology had on the tribe’s ability to sustain their treaty reserved economic resources.⁴⁰²
- **1938** - Congress passed the **Bonneville Project Act**⁴⁰³ to market power from federal dams on the Columbia. Dams would eventually inundate important Indian fishing places and impede salmon migration to 2,800 miles of fish habitat. Congress also passed the **Mitchell Act**,⁴⁰⁴ which promised that fish lost because of the dams would be replenished with the help of hatcheries.⁴⁰⁵
- **1942** - The Supreme Court decided in *Tulee v. Washington* that the state could regulate treaty fisheries for purposes of conservation.⁴⁰⁶ Sampson Tulee, a member of the Yakima Tribe, was arrested and convicted after being caught catching salmon with a net, without first having obtained a license by the state.⁴⁰⁷ Tulee argues that statute does not apply to him, as it does not align with the treaty created by the U.S. with the Yakima Tribe.⁴⁰⁸ The treaty gave the “exclusive right of taking fish in all the streams, where running through or bordering said reservation ... as also the right of taking fish at all usual and accustomed places...”⁴⁰⁹ The Court stated that, while the State did not have the power to impose restrictions on the Yakima Tribe Indians in the same manner as other people living in the territory, there could still be restrictions “of a purely regulatory nature concerning the time and manner of fishing outside the reservation as are necessary for the conservation of fish...”⁴¹⁰

wastewater permit and allowing manure to overflow storage lagoons and seep into the soil which can endanger nearby municipal and private drinking water wells.

³⁹⁹ *Fisheries Timeline*, COLUMBIA RIVER INTER-TRIBAL FISH COMM’N, <http://www.critfc.org/about-us/fisheries-timeline/>.

⁴⁰⁰ *Id.*

⁴⁰¹ *Supra*, note 399.

⁴⁰² *Removing Dam Development to Recover Columbia Basin Treaty Protected Salmon Economies*, 24 Am. Indian L. Rev. 357, 382 (2000).

⁴⁰³ 16 U.S.C.A. § 832

⁴⁰⁴ 16 U.S.C.A. § 755

⁴⁰⁵ *Supra*, note 399.

⁴⁰⁶ *Supra*, note 399.

⁴⁰⁷ *Supra*, note 399, at 682.

⁴⁰⁸ *Supra*, note 399, at 682.

⁴⁰⁹ *Supra*, note 399, at 683.

⁴¹⁰ *Supra*, note 399, at 684.

- **1948** – “State and federal fish agencies began implementing the **Mitchell Act**, siting only two of the 25 hatcheries in the tribes’ upriver fishing areas.”⁴¹¹
- **1957** – “Celilo Falls was inundated behind the newly completed The Dalles Dam. The Columbia River Compact restricted commercial fishing between Bonneville and Miller Island and prohibited all commercial salmon fishing (treaty Indian & non-Indian) above Miller Island.”⁴¹²
- **1960** – “The U.S. and Canada signed the Columbia River Treaty which required Canada to build three massive water storage dams and allowed the U.S. to build Libby Dam. The treaty dealt solely with flood control and hydropower generation. The tribes were not consulted, and tribal fishing interests were not addressed in the treaty.”⁴¹³
- **1969** – “Judge Belloni, in *Sohappy v. Smith/U.S. v. Oregon* ..., ruled that the four treaty tribes were entitled to a ‘fair share’ of the fish runs and the state was limited in its power to regulate treaty Indian fisheries. The state could only regulate when ‘reasonable and necessary for conservation.’ Further, state conservation regulations must use the least restrictive means possible and cannot discriminate against the tribes.”⁴¹⁴
- **1974** – Judge Belloni applied the *U.S. v. Oregon* 50/50 “fair share” principle to Columbia River fisheries.⁴¹⁵
- **1975** – “The U.S. Army Corps of Engineers completed Lower Granite Dam, the last of four lower Snake River dams, compounding downstream passage problems and causing further declines in fish runs. The total number of dams on the mainstream Columbia and Snake rivers rose to 18.”⁴¹⁶
- **1977** – “The federal court, under its jurisdiction in *U.S. v. Oregon*, approved a five-year plan that set up an in-river harvest-sharing formula between non-Indian and Indian fisheries. The plan failed because it did not include specific controls on ocean harvests or specific measures to replace fish runs destroyed by development.”⁴¹⁷
- **1979** – “The Supreme Court upheld *U.S. v. Washington* (Boldt Decision). Columbia River, Puget Sound, and Washington coastal tribes sued the Secretary of Commerce over ocean fishing regulations because a large percentage of treaty fish were being caught in waters managed by the Department of Commerce. (Columbia River tribes also sued in **1980**, **1981**, and **1982** (*Confederated Tribes, et al. v. Krepes*; *Yakama, et al. v. Klutznik*; *Hoh v. Baldrige*; and *Yakama, et al. v. Baldrige*.) As a result, the federal government was held to have a legal obligation to regulate the ocean fishery to ensure that a reasonable number of salmon reached tribal fishing places on the Columbia River.”⁴¹⁸
- **1980** – “Congress passed the Northwest Power Act, which, for the first time, mandated that Columbia River power production and fisheries be managed as coequals. It called for a Fish and Wildlife program to make up for losses caused by federal water development in the Basin. The Federal District Court issued the *U.S. v. Washington* (Phase II) decision that included hatchery-produced fish in the 50/50 allocation and affirmed a right to protection of the habitat supporting fish runs subject to treaty catch.”⁴¹⁹

⁴¹¹ *Supra*, note 399.

⁴¹² *Supra*, note 399.

⁴¹³ *Supra*, note 399.

⁴¹⁴ *Supra*, note 399.

⁴¹⁵ *Supra*, note 399.

⁴¹⁶ *Supra*, note 399.

⁴¹⁷ *Supra*, note 399.

⁴¹⁸ *Supra*, note 399.

⁴¹⁹ *Supra*, note 399.

- **1982** – “The Columbia River Inter-Tribal Fisheries Enforcement department was established and charged with enforcing tribal fishing regulations along the Columbia River Zone 6.”⁴²⁰
- **1988** – “Congress directed the Corps of Engineers to acquire and develop at least six sites on the Bonneville pool and to improve 20 specified locations for treaty fishing access sites between Bonneville and McNary dams. (By 2010, this legislation had created 24 sites with two more under development.) After five years of negotiations, the states of Oregon and Washington, federal fishery agencies, and the treaty tribes agreed to the Columbia River Fish Management Plan, a new, detailed harvest and fish production process under the authority of *U.S. v. Oregon*. Judge Marsh entered the plan as an order of the U.S. District Court.”⁴²¹
- **1994** – “*U.S. v. Oregon* fall season litigation pitted tribal treaty rights against the Endangered Species Act. The conflict had the potential to shut down the tribal Zone 6 fishery. The dispute was settled out of court. The Snake River fall Chinook supplementation program was a direct result of this litigation.”⁴²² “In 1994, the Colville Confederated Tribes sought to intervene in the *United States v. Oregon* litigation on behalf of five constituent tribes—the Wenatchi, Entiat, Chelan, Columbia, and Palous tribes—that were parties to the Yakama Treaty...”⁴²³ This was a conditional intervention, with Colville required to establish that “it has federally secured off-reservation *treaty fishing rights* either by initial grant or by succession in interest.”⁴²⁴ Colville failed to establish this right, and their intervention was dismissed.⁴²⁵
- **1998** – “Human development in the Columbia River Basin reduced the area available to salmon and steelhead to just 73,000 square miles. Of all salmon and steelhead habitat in the Basin, 55% of the area and 31% of the stream miles have been eliminated by dam construction.”⁴²⁶
- **2008** - “The **Columbia Basin Fish Accords** set aside almost \$1 billion to implement tribal fishery projects.”⁴²⁷

CLAMMING

- The Oregon Department of Fish & Wildlife (ODFW) has adopted rules under the terms and conditions of a Memorandum of Understanding (MOU) entered into by the Coquille Indian Tribe and the State of Oregon in 2017 on clam harvesting opportunities.⁴²⁸
- These management provisions will apply to members of the Coquille Tribe in areas that are open to recreational harvest as long as there is no wastage and the harvested clams are not used for commercial purposes.⁴²⁹
 - Harvesters must possess Tribal and Department documentation and must allow for inspection of their catch by the Tribe, ODFW, or state peace officers.⁴³⁰
 - The provisions provide for annual reporting and data sharing by the Tribe and ODFW and invite collaboration on research.⁴³¹

⁴²⁰ *Supra*, note 399.

⁴²¹ *Supra*, note 399.

⁴²² *Supra*, note 399.

⁴²³ *Supra*, note 399, at 814.

⁴²⁴ *Supra*, note 399, at 814.

⁴²⁵ *Supra*, note 399, at 814.

⁴²⁶ *Supra*, note 399.

⁴²⁷ *Supra*, note 399.

⁴²⁸ OAR 635-041-0550, Coquille Tribal Clam Harvest, https://oregon.public.law/rules/oar_635-041-0550; Caren Braby, *Exhibit E: Coquille Tribal Clamming*, OR. FISH AND WILDLIFE,

http://www.dfw.state.or.us/agency/commission/minutes/17/06_june/Exhibit%20E_Presentation.pdf.

⁴²⁹ *Id.*

⁴³⁰ *Supra*, note 428.

⁴³¹ *Supra*, note 428.

- Similarly, Under OAR 635-041-0525, Siletz Tribal members are authorized to take clams under the terms and conditions of a MOU entered into with the State of Oregon.⁴³²
- The Confederated Tribes of Siletz are also involved in restoration projects and education efforts to aid in the recovery of Olympia Oysters.⁴³³ These oysters, which were once abundant, were depleted in the late 1800s with populations being almost absent since European settlement.⁴³⁴

D. CERTIFICATION SCHEMES

At present there are at least 30 certification schemes and eight key international agreements relevant to aquaculture certification. At least another nine initiatives were also identified as addressing sustainability issues and creating a framework for differentiating sources of aquatic products in this respect.⁴³⁵

The main certification schemes relevant to aquaculture can be found here:

<https://www.fao.org/3/ai388e/AI388E08.htm>

E. SENTIENCE

In 2021, the United Kingdom (UK) introduced an amendment to the Animal Welfare (Sentience) Bill (Bill) following a report⁴³⁶ issued by the London School of Economics and Political Science on decapod and cephalopod sentience (LSE Report). This amendment extends the scope of the Bill to recognize lobsters, crayfish, and crabs (and all other decapod crustaceans) and cephalopod molluscs (including octopus, squid, and cuttlefish) as sentient beings, for purposes of governmental policy decision making. Prior to this amendment, the Bill already recognized all vertebrates as sentient beings. The LSE Report concluded that strong scientific evidence exists that decapod crustaceans and cephalopod molluscs are sentient, and that these animals have complex central nervous systems, one of the key indicators of sentience.⁴³⁷

The LSE furthermore made the following recommendations relating to commercial practices:

- Declawing crabs causes suffering. Prohibiting declawing would serve as an effective intervention to improve the welfare of decapod crustaceans.
- Nicking, which refers to the cutting of the tendon of a crab's claw, causes suffering and poses a health risk to the crabs. Practical alternatives to nicking should be considered when developing regulations that affect crabs.

⁴³² OAR 635-041-0525, Siletz Tribal Clam Harvest, https://oregon.public.law/rules/oar_635-041-0525?highlight=siletz&hide=no.

⁴³³ See *Bringing Back the Oyster*, THE WETLANDS CONSERVANCY (Jan. 18, 2018), <https://wetlandsconservancy.org/oyster-yaguina/> (discussing how “the Confederate Tribes of the Siletz Indians, The Wetlands Conservancy, and Oregon Oyster Farms have partnered up to restore Olympia oysters at Poole Slough in the Yaquina Bay”).

⁴³⁴ *Oysters*, OR. DEP'T OF FISH AND WILDLIFE, http://www.dfw.state.or.us/mrp/shellfish/bayclams/about_oysters.asp.

⁴³⁵ *Overview of Current Aquaculture Standards and Certification Schemes*, Food and Agriculture Organization of the United Nations (last visited Jan. 14, 2022), <https://www.fao.org/3/ai388e/AI388E08.htm>.

⁴³⁶ Jonathan Birch et al., *Review of the Evidence of Sentience in Cephalopod Molluscs and Decapod Crustaceans*, THE LONDON SCHOOL OF ECONOMICS AND POLITICAL SCIENCE, 2021.

⁴³⁷ *Lobsters, Octopus and Crabs Recognised as Sentient Beings*, GOV.UK, (Nov. 19, 2021), https://www.gov.uk/government/news/lobsters-octopus-and-crabs-recognised-as-sentient-beings?utm_medium=email&utm_campaign=govuk-notifications&utm_source=994c7ffd-9c00-4347-9563-bc9a0754ecad&utm_content=immediately.

- The sale of live decapod crustaceans to untrained, non-expert handlers (including consumers) should be prohibited, to avoid the risk of poor handling and inappropriate storage and slaughter techniques. Such a prohibition would serve as an effective intervention to improve the welfare of these animals.
- Good welfare during the transport and storage of decapod crustaceans requires the animals to have access to dark shelters, cool temperatures, and appropriate stocking density.
- Electrical stunning can induce a seizure-like state in relatively large decapod crustaceans, and while stunning reduces the nervous system's response to boiling water, it does not abolish this response. Further research is required as to how to achieve effective electrical stunning.
- The following methods, used to slaughter decapod crustaceans, should be prohibited, unless effective electrical stunning can be administered beforehand: "boiling alive, slowly raising the temperature of water, tailing (separation of the abdomen from the thorax, or separation of the head from the thorax), any other form of live dismemberment, and freshwater immersion (osmotic shock)."⁴³⁸ The most reasonable methods for slaughtering decapod crustaceans are "double spiking (crabs), whole-body splitting (lobsters), and electrocution using a specialist device on a setting that is designed and validated to kill the animal quickly after initially stunning it."⁴³⁹
- Various slaughter methods are commonly used to slaughter cephalopod molluscs, "including clubbing, slicing the brain, reversing the mantle and asphyxiation in a suspended net bag,"⁴⁴⁰ all of which are inhumane.
- In shrimp aquaculture, it is a common practice to sever the eyestalks of females to accelerate breeding. This inhumane practice is called eyestalk ablation, and should be prohibited.
- Octopuses are solitary animals and being kept in confined spaces in groups often lead to aggression between animals. Octopus Farming should thus be prohibited, as high-welfare octopus farming is impossible.⁴⁴¹

⁴³⁸ *Supra*, note 436, at 9.

⁴³⁹ *Supra*, note 436, at 9.

⁴⁴⁰ *Supra*, note 436, at 9.

⁴⁴¹ *Supra*, note 436, at 10.

PART IV: HARMS OF AND GAPS IN REGULATION OF AQUACULTURE

This section highlights some of the harms and issues associated with aquaculture by listing practical considerations arising from the industry. In addition to the harms, it highlights some of the gaps in the current regulation, which are non-specific to either federal or state law. These harms and gaps should be considered in the above context of the preceding sections relating to wild-caught fishing.

However, given the focus on Oregon in this Memorandum as an illustrative example, it aims to argue that there is a need to promulgate formal regulation for the aquaculture industry in Oregon. This is particularly important as Oregon intends to double the size of its aquaculture industry.⁴⁴² The need for this regulation has never been more necessary to protect the wild, consumers, the animals, and state industry.⁴⁴³

ILLUSTRATIVE EXAMPLES OF HARMS

There are numerous harms with the aquaculture industry. While non-exhaustive, these include harms to animals, humans and the environment. Illustrative practical examples include, but are not limited to, the categories of Animal Welfare and Cruelty Aspects; Environmental aspects and:

1. Animal Welfare and Cruelty Aspects: (non-exhaustive)
 - a. Conditions relating to the rearing and keeping of animals;
 - b. Stocking density (number of animals per square meter or weight [biomass] per square meter);
 - c. Slaughtering methods, including lack of mandatory stunning requirements; and
 - d. Transportation.

Aquatic animals are complex animals that deserve protection under the AWA. Fish behavior, for example, has been compared to that of primates, who are protected by the AWA. A 2014 article summarized the issue:

Fish have very good memories, live in complex social communities where they keep track of individuals and can learn from one another; a process that leads to the development of stable cultural traditions. They recognize themselves and other. They cooperate with one another and show signs of Machiavellian intelligence such as cooperation and reconciliation. They build complex structures, are capable of tool use and use the same methods for keeping track of quantities as we do. For the most part, their primary senses are just as good, and in many cases better, than our own. When comparing their behavior to primates, one finds very few differences with the exception, perhaps, of the ability for imitation. One must conclude therefore, that the level of cognitive complexity displayed by fishes is on par with most other vertebrates, and that

⁴⁴² Wendy Culverwell, *Oregon Aims to Double its Fish Farming Industry to \$23M*, PORTLAND BUSINESS JOURNAL (May 28, 2015), <https://www.bizjournals.com/portland/blog/sbo/2015/05/oregon-aims-to-double-its-fish-farming-industry-to.html>.

⁴⁴³ The Oregon Aquaculture Association sets out some information regarding its legislative activities on its website, as does the Oregon State University. See *Legislative/State Activities 2017-2018*, OR. AQUACULTURE, <http://www.oregonaquaculture.org/legislative-activities.html>; *Fisheries and Aquaculture Focus Area*, OR. STATE UNIV., <https://ceoas.oregonstate.edu/mrm/fisheries/>.

if any animals are sentient then one must conclude that fishes are too. While their brain evolutionary and developmental trajectory differs from other vertebrates, it is evident that there are many analogous structures that perform similar functions. This body of evidence strongly suggests that they are sentient and the evidence that they are capabl[e] of feeling pain in a manner similar to humans is gradually mounting.⁴⁴⁴

A. Nociception and Pain

The International Association for the Study of Pain (“IASP”) defines pain as “[a]n unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage.”⁴⁴⁵ The term “nociception” is “the unconscious detection of potentially injurious stimuli by peripheral, spinal, and subcortical levels of the nervous system.”⁴⁴⁶ Nociception is usually a precursor to pain.⁴⁴⁷ To be considered pain, nociceptive responses “must be translated in specific regions of the conscious brain into a psychological experience”⁴⁴⁸

In 2009, the European Food Safety Authority (“EFSA”)⁴⁴⁹ issued a Scientific Opinion (“EFSA Opinion” or “the Opinion”) on the topic of fish welfare and sentience. One of the conclusions in the Opinion stated that “[t]here is scientific evidence to support the assumption that some fish species have brain structures potentially capable of experiencing pain”⁴⁵⁰ In support of this conclusion, the Opinion cited several studies. One study concluded that “fish have the necessary brain areas for nociceptive processing to occur.”⁴⁵¹ More specifically with regard to the rainbow trout, the opinion states that “studies on nociceptor anatomy and physiology strongly support the hypothesis that the rainbow trout has the sensory equipment for detecting potentially painful stimuli.”⁴⁵² Other studies have shown that goldfish respond to electric shocks by “show[ing] agitated swimming,” and the “threshold for th[e] response is increased if morphine is injected.”⁴⁵³ It is generally accepted that “[t]he presence of a nociceptive system is clearly a necessary component for the perception of pain, but alone it does not provide evidence that the fish have an awareness of stimuli that we would consider to be painful in ourselves or terrestrial vertebrate such as birds and mammals.”⁴⁵⁴ That being said, several studies have shown that behavior after a noxious event may indicate that fish have the capacity to feel pain “in a way that is not merely responsive.”⁴⁵⁵

⁴⁴⁴ Culum Brown, *Fish Intelligence, Sentience and Ethics*, 18 *Animal Cognition* 1, 14 (2014).

⁴⁴⁵ International Association for the Study of Pain, *Pain Terms*, IASP-PAIN.ORG, <http://www.iasp-pain.org/Education/Content.aspx?ItemNumber=1698&navItemNumber=576#Pain> (last visited Jan. 16, 2017).

⁴⁴⁶ *Guidelines for the Use of Fishes in Research*, AMERICAN FISHERIES SOC’Y (2014), <https://fisheries.org/policy-media/science-guidelines/guidelines-for-the-use-of-fishes-in-research/>.

⁴⁴⁷ *Id.*

⁴⁴⁸ *Supra*, note 446.

⁴⁴⁹ “EFSA is a European agency funded by the European Union that operates independently of the European legislative and executive institutions . . . and EU member states. It was set up . . . to be a source of scientific advice and communication on risks associated with the food chain. . . . EFSA is responsible for [risk assessment (science)], and also has a duty to communicate its findings to the public.” European Food Safety Authority, *About EFSA*, EFSA.EUROPA.EU, <https://www.efsa.europa.eu/en/aboutefsa> (last visited Jan. 16, 2017).

⁴⁵⁰ European Food Safety Authority, *Scientific Opinion: General Approach to Fish Welfare and to the Concept of Sentience in Fish*, 954 *EFSA J.* 1, 12 (2009).

⁴⁵¹ *Id.*

⁴⁵² *Supra*, note 450.

⁴⁵³ *Supra*, note 450.

⁴⁵⁴ V. A. Braithwaite, et al., *Pain Perception, Aversion and Fear in Fish*, 75 *DISEASES OF AQUATIC ORGANISMS* 131, 137 (2007).

⁴⁵⁵ *Id.*

Other studies have shown that invertebrates may also experience pain.⁴⁵⁶ For example, when certain species of scallops encounter a predator and have no place to hide, their heart rate increases.⁴⁵⁷ Mussels have also been known to show a similar response in the presence of a known predator. Another study showed that some prawns groom in response to pinching or contact with chemicals.⁴⁵⁸ Yet, the grooming was reduced when a local anesthetic was applied beforehand.⁴⁵⁹

B. Stress and Fear

Physical pain is not the only type that may be suffered by aquatic animals.⁴⁶⁰ They are also capable of suffering emotional pain.⁴⁶¹ While studies regarding nociception and pain vary between species of fish, it is clear “that exposure to noxious stimuli . . . is stressful from a behavioral standpoint.”⁴⁶²

The EFSA Opinion also determined, based on available research, that some fish are capable of experiencing . . . fear.⁴⁶³ The studies reviewed in the Opinion include observations of fish responding to potential threats by attempting to escape, “freezing and sinking in the water,” swimming toward a hiding place and remaining in hiding for extended periods.⁴⁶⁴ With regard to stress, the EFSA Opinion stated that “[f]ish possess a suite of behavioural and physiological responses that have evolved to cope with stressors. Many of these are homologous with those of other vertebrates.”⁴⁶⁵ A number of studies of “sensory systems, brain structure and functionality, pain, fear, and distress there is some evidence for the neural components of sentience in some species of fish.”⁴⁶⁶

Some studies have focused specifically on zebrafish, whose use in research has increased significantly in recent years.⁴⁶⁷ Specifically, a 2015 study explained that:

[T]here is a growing body of information . . . that at least some of the brain mechanisms involved with feeling and emotion in mammals are conserved vertebrate features, that the responses of fishes to noxious stimuli are complex and include a motivational/attentional component and that fishes have well-developed learning capacities and show complex behaviour.⁴⁶⁸

After determining that zebrafish were capable of emotional fever, the study concluded that the “results add to the emerging picture of fishes as behaviorally complex animals that may well be sentient and

⁴⁵⁶ Jennifer A. Mather, *Philosophical Background of Attitudes Toward and Treatment of Invertebrates*, 52-2 INST. FOR LABORATORY ANIMAL RSCH. 205, 207 (2011).

⁴⁵⁷ *Id.*

⁴⁵⁸ *Supra*, note 456.

⁴⁵⁹ *Supra*, note 456.

⁴⁶⁰ *Supra* note 111, at 212.

⁴⁶¹ *Supra* note 111, at 212.

⁴⁶² *Guidelines for the Use of Fishes in Research*, AM. FISHERIES SOC’Y (2014), <https://fisheries.org/policy-media/science-guidelines/guidelines-for-the-use-of-fishes-in-research/>.

⁴⁶³ European Food Safety Authority, *Scientific Opinion: General Approach to Fish Welfare and to the Concept of Sentience in Fish*, 954 EFSA J. 1, 12 (2009).

⁴⁶⁴ *Id.*

⁴⁶⁵ *Supra*, note 463.

⁴⁶⁶ *Supra*, note 463.

⁴⁶⁷ *Zebrafish Make a Splash in FDA Research*, FDA (Apr. 8, 2013), <https://www.fda.gov/consumers/consumer-updates/zebrafish-make-splash-fda-research>.

⁴⁶⁸ Sonia Rey, et al., *Fish can show emotional fever: stress-induced hyperthermia in zebrafish*, 282 PROCEEDINGS OF THE ROYAL SOC’Y OF LONDON B: BIOLOGICAL SCIENCES 1, 5 (2015).

couscous to an extent at least. They therefore have important implications both for how the welfare of fishes is conceptualized and protected.”⁴⁶⁹

C. Social Interaction

“[Social interaction and hierarchies . . . are . . . considered to be important for fish welfare[.]]” yet few studies have looked at this.⁴⁷⁰ Some species of fish have the ability to “recognise social companions and form mental maps.”⁴⁷¹ AWA regulations do currently take into consideration the social nature of some species covered by the Act.⁴⁷² However, rather than addressing them generally, the current regulations only require the consideration of certain species in a limited number of contexts.⁴⁷³

D. Poor Animal Welfare in Aquaculture

Despite this scientific knowledge of the ability of fishes and invertebrates to feel pain, experience stress and fear, and the importance of social interaction in fishes, a recent analysis of the welfare scores of 41 species of farmed fishes found that “the general welfare state of farmed fishes is poor.”⁴⁷⁴ Furthermore, although there is possibility of improvement related to the potential of “research on species’ needs, “there are many remaining knowledge gaps.”⁴⁷⁵

In fact, according to another study, what is sorely lacking in aquaculture is specialized (species-specific) animal welfare knowledge.⁴⁷⁶ Accordingly, the FAO in 2018 “reported 82.12 million metric tons of farmed aquatic animals from six phyla and at least 408 species, ‘which is 20 times the number of species of farmed terrestrial animals.’”⁴⁷⁷ However, of these 408 species of farmed aquatic animals, researchers found that “[s]pecialized welfare information was available for 84 species, only 30% of individuals; the remaining 70% either had no welfare publications or were of an unknown species.”⁴⁷⁸ The researchers conclude that “immediate efforts are needed to safeguard the welfare of high-production, understudied species and to create policies that minimize welfare risks.”⁴⁷⁹

One welfare area in particular that researchers have identified as needing more attention is the ability to assess stress levels in fishes. According to these researchers, although the aquaculture industry, legislators, and organizations like the OIE have implemented guidelines and codes of practice to help ensure fish welfare, these guidelines are based upon “limited knowledge about fish biology.”⁴⁸⁰ Practices that are considered to be harmless in aquaculture – such as high fish density and constant

⁴⁶⁹ *Id.*

⁴⁷⁰ European Food Safety Authority, *Scientific Opinion: General Approach to Fish Welfare and to the Concept of Sentience in Fish*, 954 EFSA J. 1, 12 (2009).

⁴⁷¹ *Id.*

⁴⁷² See e.g., 9 C.F.R. § 3.81 (requiring environmental enhancement plans to “include specific provisions to address the social needs of nonhuman primates of species known to exist in social groups in nature”).

⁴⁷⁴ João Luis Saraiva, et al., *A Global Assessment of Welfare in Farmed Fishes: The FishEthoBase*, 4 FISHES 30 (2019), available at <https://www.mdpi.com/2410-3888/4/2/30>.

⁴⁷⁵ *Id.*

⁴⁷⁶ Becca Franks, Christopher Ewell & Jennifer Jacquet, *Animal Welfare Risks of Global Aquaculture*, 7 SCIENCE ADVANCES (Apr. 2, 2021), <https://advances.sciencemag.org/content/7/14/eabg0677>.

⁴⁷⁷ *Id.*

⁴⁷⁸ *Supra*, note 476.

⁴⁷⁹ *Supra*, note 476.

⁴⁸⁰ Pedro Miguel L. Rodrigues & Cláudia Raposo de Magalhães, *New Ways to Assess Stress in Fish Are Urgently Needed in Aquaculture*, THE GOOD MEN PROJECT (Mar. 8, 2021), <https://goodmenproject.com/featured-content/new-ways-to-assess-stress-in-fish-are-urgently-needed-in-aquaculture/>.

handling – can be “severe stress factors, sabotaging coping responses and disturbing these animals’ welfare. Furthermore, with respect to assessing stress levels in fish in aquaculture, these researchers feel that “current methods are unreliable and new approach is urgently needed.”⁴⁸¹ To them, stress levels in fishes need to be assessed with “cutting-edge new technologies, like metabolomics and proteomics.”⁴⁸²

E. Stunning & Slaughter

Studies on fish welfare during slaughter have shown that many of the commonly used methods to stun fish are unacceptable as they cause avoidable stress prior to death.⁴⁸³ The most commonly used slaughter techniques for fish include asphyxiation, ice chilling and exsanguination (draining the fish of blood). These techniques cause substantial suffering over prolonged periods of time before death.⁴⁸⁴ It is thus imperative that more humane slaughter techniques for fish are implemented.

In 2021, a scientific study was conducted using a non-invasive electroencephalographic (EEG) method to determine the state of sensibility in fish in response to various stunning methods such as ice chilling, electrical stunning, electrical stunning followed by exsanguination, percussive stunning, and immersion in isoeugenol (hereinafter the “Humane Slaughter Study”). Ice chilling took between 2.6 and 7.6 minutes to induce insensibility, during which time the fish exhibited aversive behaviors.⁴⁸⁵

Electrical stunning induced insensibility immediately. However, the fish would gain sensibility again after a period of time. Depending on the duration of the stun, the fish would either regain sensibility immediately or within 4.9 minutes after electrical stunning. In cases where an electrical stun was immediately followed by exsanguination and immersion in ice, the duration of insensibility was arguably sufficient to humanely kill the fish.⁴⁸⁶

Another study showed that exposure to CO₂ saturated water caused aversive struggling and escape responses for several minutes prior to immobilization, after which the fish did not recover. Despite this, fish stunned with CO₂ had less than half the plasma levels of cortisol compared with fish that were immediately immobilized by electrical stunning. This confirms the importance of using both behavioral and physiological stress indicators in order to accurately assess fish welfare in aquaculture.⁴⁸⁷

A third study sought to determine whether visual indicators of consciousness (equilibrium, eye-roll reflex, and ventilation) are sufficient for determining whether CO₂ stunning is humane. In this study, which was based on EEG, the presence or absence of visually evoked responses (VERs), which are indicative of brain function and sensibility, were assessed. CO₂ stunning at 10°C showed that visual indicators of consciousness and loss of sensibility did not necessarily go hand-in-hand, as VERs were present up to 3.5 minutes after ventilation was lost and up to 6.5 minutes after the fish lost equilibrium. Water temperatures also affected the results, with cold-water temperatures prolonging the time taken

⁴⁸¹ *Id.*

⁴⁸² *Supra*, note 480.

⁴⁸³ Albin Gräns et al., *Stunning fish with CO₂ or electricity: Contradictory results on behavioural and physiological stress responses*, ANIMAL: AN INTERNATIONAL JOURNAL OF ANIMAL BIOSCIENCE, 2015, at 1.

⁴⁸⁴ *Id.*

⁴⁸⁵ *Supra*, note 483.

⁴⁸⁶ *Supra*, note 483.

⁴⁸⁷ *Supra*, note 483.

until loss of consciousness. Visual indicators are thus insufficient for assessing when sensibility is lost during CO₂ stunning.⁴⁸⁸

Percussive stunning is used to render fish insensible by administering a severe blow to the skull with a solid instrument such as a fish priest (a wooden or metal rod with a heavy, blunt end). The Humane Slaughter Study showed that, when administered correctly, manual percussive stunning with a fish priest induced insensibility immediately and permanently. However, due to the skill required to accurately administer a manual percussive stun of sufficient force on a live and struggling fish, in practice, it is likely that approximately 36% of fish will regain sensibility after being (incorrectly) stunned in this manner.⁴⁸⁹

Isoeugenol is the active ingredient in a fish anesthetic that has been approved for use to lightly sedate, anaesthetize and/or euthanize farmed fish in a few countries, including Australia and New Zealand.⁴⁹⁰ The Humane Slaughter Study showed that catfish appeared to be sedated after being immersed in isoeugenol. However, the EEG showed that visually invoked responses were still present at doses exceeding that recommended for euthanasia of salmonids, indicating that isoeugenol may not be suitable for stunning purposes in other species of fish. That said, isoeugenol might be effective as a pre-stunning sedative so that fish may be handled easier, and to reduce stress in fish during handling.⁴⁹¹

It is evident from the Humane Slaughter Study that, when administered alone, none of the abovementioned stunning techniques reliably renders fish insensible immediately and/or permanently without welfare implications. However, using a combination of these methods increases effectiveness and mitigates welfare concerns. An example of such a combination of methods is an electrical or percussive stun administered to immediately render the fish insensible, followed immediately by exsanguination and immersion in ice, to maintain insensibility until death.⁴⁹²

F. Enrichment

Environmental enrichment can be used as a passive and non-invasive tool to improve the welfare of captive fish. Structural environmental enrichment can be achieved by adding physical complexity to the rearing environment of farmed fish, in order to reduce undesirable characteristics developed in captivity. In a study conducted to determine the effects of structural environmental enrichment for fish in captive environments, it was found that enrichment affects the biology of captive fish in numerous ways. These biological factors include aggression, stress, energy expenditure, injury, and disease susceptibility.⁴⁹³

Another study showed that structural environmental enrichment increases cognition, exploratory behavior, and brain physiological functions of fish. In this such study, seabream reared under enriched conditions displayed significantly more exploratory behavior, spatial orientation, and learning capability than seabream reared in a non-enriched environment. Results also suggest that fish reared in enriched environments display improved coordination of balance, movements, and orientation.

⁴⁸⁸ Jennifer Bowman et al., *Evaluation of the Reliability of Indicators of Consciousness During CO₂ Stunning of Rainbow Trout and the Effects of Temperature*, AQUACULTURE RESEARCH, 2020, at 1.

⁴⁸⁹ J. Brijs et al., *Humane Slaughter of African Sharptooth Catfish (Clarias gariepinus): Effects of Various Stunning Methods on Brain Function*, AQUACULTURE Vol. 531, 2021, at 1.

⁴⁹⁰ *Id.* at 5.

⁴⁹¹ *Supra*, note 489.

⁴⁹² *Supra*, note 489.

⁴⁹³ Joacim Näslund & Johnsson Jörgen, *Environmental Enrichment for Fish in Captive Environments: Effects of Physical Structures and Substrates*, FISH AND FISHERIES (OXFORD, ENGLAND), Vol. 17 No. 1, 2016, 1–30, at 1.

Furthermore, fish in enriched environments showed increased antioxidant activity of the brain and improving welfare status during captivity.⁴⁹⁴ It is thus important that the regulation of aquaculture takes into account the need for enrichment to promote fish welfare. However, each species and life stage needs to be evaluated with respect to its unique preferences, as the results of enrichment vary based on these factors.⁴⁹⁵ The mere addition of structure is thus not a fix-all solution to the problems encountered in fish rearing.

2. Environmental Aspects (non-exhaustive)

- a. Effect of aquaculture on the surrounding environment:
 - i. Water quality
 - ii. Air quality
 - iii. Other potential environmental effects (such as on other species, including plants and animals, eutrophication of the sea floor)
- b. Escapements
 - i. Effect on “wild” population if mixing occurs
 - ii. Genetic considerations and biodiversity (and how this may impact other species, including endangered species) To genetic make-up of wild caught fish. Therefore, risk to biodiversity.⁴⁹⁶
 - iii. Scope (for highly migratory fish)

3. Human wellbeing (Individual and Societal) (non-exhaustive)

- a. Health impacts:⁴⁹⁷
 - i. Use of chemicals
 - ii. Use of antibiotics: for an overview of FDA guidance on the use of “safe and effective” drugs that can be used in aquaculture, including “guidance documents and sections of the Policy and Procedures Manual, research projects, and other information that are used in support of CVM’s aquaculture program, as well as drugs approved for use in aquaculture” see <https://www.fda.gov/animal-veterinary/development-approval-process/aquaculture>. For a look at the issue of antibiotic resistance in the aquaculture industry and the FDA’s regulation of the aquaculture industry, see Graham M. Wilson, *Note: A Day on the Fish Farm: FDA and the Regulation of Aquaculture*, 23 VA. ENVTL. L.J. 351 (2004).
- b. Consumer protection
 - i. Naming, labeling⁴⁹⁸ and mislabeling

⁴⁹⁴ P. Arechavala-Lopez et al., *Enriched Environments Enhance Cognition, Exploratory Behaviour and Brain Physiological Functions of Sparus Aurata*, SCIENTIFIC REPORTS, Vol. 10 No. 1, 2020, 11252, at 1.

⁴⁹⁵ Joacim Näslund & Johnsson Jörgen, *Environmental Enrichment for Fish in Captive Environments: Effects of Physical Structures and Substrates*, FISH AND FISHERIES (OXFORD, ENGLAND), Vol. 17 No. 1, 2016, 1–30, at 1.

⁴⁹⁶ A useful reference here may be R.S. Waples, K. Hindar, and J.J. Hard, *Genetic Risks Associated with Marine Aquaculture*, U.S. DEPT. COMMERCE, NOAA TECH. MEMO. NMFS-NWFSC-119 (2012), https://www.webapps.nwfsc.noaa.gov/assets/25/1949_10162012_143010_GeneticRisksAquacultureTM119WebFinal~Std.pdf.

⁴⁹⁷ Potentially useful sources here might be *Aquaculture: Human Health Risks*, CTR. FOR FOOD SAFETY, <https://www.centerforfoodsafety.org/issues/312/aquaculture/human-health-risks>; Amir Sapkota, et al., *Aquaculture practices and potential human health risks: Current knowledge and future priorities*, 34 ENV’L INT’L 1215 (2008), <https://www.sciencedirect.com/science/article/pii/S0160412008000718>.

⁴⁹⁸ Potentially useful sources here may include *De-Coding Seafood Eco-Labels: Why We Need Public Standards*, FOOD & WATER WATCH, https://www.ftc.gov/sites/default/files/documents/public_comments/guides-use-environmental-marketing-claims-project-no.p954501-00152%2%A0/00152-56693.pdf; Frode Alfnes, Xianwen Chen & Kyrre Rickertsen, *Labeling farmed seafood, A review*, AQUACULTURE ECON. & MGMT. (2017),

- ii. Green-washing, humane washing, blue washing
- c. Food safety
- d. Worker Considerations: Social and economic problems, including labor issues/poor working conditions?⁴⁹⁹

Several issues complicate the process of addressing the welfare of aquatic animals in aquaculture, including: the diversity among aquatic animals; understanding the practices involved in aquaculture and aquatic animal production; and understanding the philosophical approaches, policies, guidance, and regulations that may influence the provision of optimal welfare and humane practices for aquatic animals. The foundation of all welfare approaches is made up of the following factors: ethical and moral concepts of animal welfare and humane treatment; whether animals experience suffering from the potentially adverse practices used in their maintenance, management and use; and the public and institutional understandings of these issues and their results.⁵⁰⁰ An overview of all these issues and an exploration of these factors can be found here: <https://pubmed.ncbi.nlm.nih.gov/16358506/>

EXAMPLES OF REGULATORY ISSUES

Aquatic animals in aquaculture production receive no protections under the federal statutory framework, as the Animal Welfare Act⁵⁰¹ (AWA) expressly exempts agricultural animals and the Federal Meat Inspection Act⁵⁰² (FMIA) does not include fish or fish products under its definition of “meat food product.”⁵⁰³ Aquatic animals are also excluded from the Twenty-Eight-Hour Law. Additionally, there is no federal law addressing fish and aquatic animal inspection.

Animal and Plant Health Inspection Service (APHIS), a branch of USDA, “provides agricultural producers with a broad range of cooperative programs for protecting the health of animals and plants.”⁵⁰⁴ APHIS programs currently serve some aspects of aquaculture such as disease control and eradication, pest prevention, and wildlife damage management. APHIS also facilitates the import and export of aquacultural products. The National Aquatic Animal Health Task Force (NAAHTF) has been charged to develop a National Aquatic Animal Health Plan (NAAHP) to protect “wild and cultured resources, support efficient aquaculture, achieve efficient and predictable commerce, and meet the United States’ national and international trade obligations.”⁵⁰⁵ APHIS is also involved in activities related to “aquatic animal-health certification procedures for aquatic animals and products that are exported internationally and require attestations by the National competent authority APHIS -VS”, as well as “regulations for the importation and interstate movement of aquatic animals and products and

https://www.researchgate.net/publication/319994458_Labeling_farmed_seafood_A_review; FDA and Seafood Labeling (Dec. 13, 2013), <http://eli-ocean.org/wp-content/blogs.dir/6/files/Koufopoulos-FDA-Seafood-Labeling-12-13-13.pdf>.

⁴⁹⁹ A helpful source here may be *The Food Print of Farmed Seafood: A Food Print Report*, available at <https://foodprint.org/reports/the-foodprint-of-farmed-seafood/> (discussing various problems associated with aquaculture, including environmental, social and economic problems).

⁵⁰⁰ Håstein, T et al. *Science-based Assessment of Welfare: Aquatic Animals*. Revue Scientifique et Technique (International Office of Epizootics) vol. 24,2 (2005): 529-47.

⁵⁰¹ Animal Welfare Act 7 U.S.C. § 2131 et seq.

⁵⁰² Meat Inspection Act 21 U.S.C. § 601 et seq.

⁵⁰³ 21 U.S.C.A. § 601(j) (West).

⁵⁰⁴ APHIS, *Aquaculture Information*, <https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/animal-disease-information/aquaculture> (last visited Jan. 23, 2022).

⁵⁰⁵ APHIS, *Aquaculture Information*, <https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/nvap/NVAP-Reference-Guide/Aquatic-Animal/Aquatic-Animal-National-Health-Plan> (last visited Jan. 23, 2022).

the maintenance development of a laboratory network to support the movement of healthy aquatic animals.”⁵⁰⁶

These harms are problematic on their own but are further frustrated by the lack of sufficient regulation to counter these. Highlighted examples of the above categories of harms have been expanded on for purposes of this section:

1. Animal Welfare Aspects

- i. Fish are not covered by the Animal Welfare Act (“AWA”) nor the Humane Methods of Slaughter Act (“HMSA”).
- ii. Currently, the AWA “regulate[s] . . . the transportation, purchase, sale, housing, care, handling, and treatment of animals by carriers or by persons or organizations engaged in using them for research or experimental purposes or holding them for sale as pets or for any such purpose or use.”⁵⁰⁷ Therefore, the definition of “animals” is central to understanding the AWA. The Act defines the term “animal” as: “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.”⁵⁰⁸ In addition to the animals explicitly exempted from protection in the AWA, it is the USDA’s position that the Act also does not apply to “farm animals used for food or fiber (fur, hide, etc.); coldblooded species (amphibians and reptiles); horses not used for research purposes; fish; invertebrates (crustaceans, insects, etc.); or rats of the genus *Rattus* and mice of the genus *Mus* that are bred for use in research.”⁵⁰⁹ The USDA is the agency responsible for promulgating regulations to implement the AWA.⁵¹⁰ The regulations make clear that the AWA does apply to marine mammals, but not to other aquatic animals.⁵¹¹
- iii. State anti-animal cruelty statutes – That the AWA and HMSA do not apply to fish is further compounded by the fact that fish, fishing, and/or “‘accepted,’ ‘common,’ ‘customary,’ or ‘normal’” agricultural practices are frequently exempt from state anti-animal cruelty statutes.⁵¹²

⁵⁰⁶ APHIS, *Aquaculture Information*, <https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/nvap/NVAP-Reference-Guide/Aquatic-Animal/Aquatic-Animal-Health-Activities> (last visited Jan. 23, 2022).

⁵⁰⁷ 7 U.S.C. § 2131.

⁵⁰⁸ 7 U.S.C. § 2131(g). In its original form, the AWA did not explicitly exempt birds, rats, and mice. *See* Farm Security and Rural Investment Act of 2002, Pub. L. No. 107-171, Sec. 10301, 116 Stat. 134, 491 (2002). The statute was amended in 2002 by the Farm Security and Rural Investment Act of 2002 to exclude from the Act’s protection “birds, rats of the genus *Rattus*, and mice of the genus *Mus*, bred for use in research. . . .”

⁵⁰⁹ *Animal Welfare Act*, USDA,

https://www.aphis.usda.gov/aphis/ourfocus/animalwelfare/sa_awa/ct_awa_program_information/ (last visited Jan. 15, 2017).

⁵¹⁰ 7 U.S.C. § 2143(a)(1) (2012); *See also* 7 U.S.C. § 2132(b) (defining “Secretary” as the “Secretary of Agriculture or his representative who shall be an employee of the United States Department of Agriculture”).

⁵¹¹ 9 C.F.R. § 3.100 (2016) (setting forth the standards for the humane handling, care, treatment, and transportation of marine mammals).

⁵¹² *See, e.g.,* Pamela Frasch et al., *State Animal Anti-Cruelty Statutes: An Overview*, 5 ANIMAL L. 69 (1999), available at <https://www.animallaw.info/article/state-animal-anti-cruelty-statutes-overview-0>; David J. Wolfson, *Beyond the Law*:

- a. Care, handling, Transport
 - iv. AWA regulations set forth specific standards for humane handling, care, treatment, and transportation to be applied to animals covered by the Act.⁵¹³ These regulations essentially set forth requirements for carriers and immediate handlers, enclosures, conveyances, including motor vehicle, rail, air, and marine, food and water requirements, care in transit, terminal facilities, and handling.⁵¹⁴
 - v. However, it should be noted that these are very basic requirements. For example, with regard to water during the transportation of marine mammals, the regulations do not require for much more than “offer[ing] potable water within 4 hours of being placed in the primary transport enclosure”⁵¹⁵ As for food, the regulations require that marine mammals are “offered food as often as necessary and appropriate for the species involved or as determined by the attending veterinarian.”⁵¹⁶ Yet, without any specific criteria, much is left to the discretion of those transporting the animals or the “attending veterinarian.” Again, cold-blooded species, fish, invertebrates, and certain warm-blooded animals are exempted from these requirements, so these requirements would not be relevant to aquaculture.⁵¹⁷
- b. Slaughter
 - vi. The Federal Humane Methods of Slaughter Act, 7 U.S.C. § 1901 et seq., does not apply to fish.⁵¹⁸

2. Environmental Aspects

- a. The most common legal issues for biodiversity-based and environmental harms and challenges associated with aquaculture include:
 - vii. Conflict between the Public Trust Doctrine (PTD) and Property rights. “The PTD is the principle that certain natural and cultural resources are preserved for public use, and that the government owns and must protect and maintain these resources for the public’s use. The doctrine’s most frequent application is to bodies of water.”⁵¹⁹ “Generally, the PTD also prevents individual property from extending to the ocean.”⁵²⁰ This in turns clashes with the needs for individual autonomy and security (private rights) and the demands of public goals to be found in environmental protection and conservation laws. While the PTD has not completely prohibited zoning of coastal and offshore areas, it does give much latitude to new aquaculture activities because the siting of aquaculture-based activities offshore would require greater level of protection of the property and fish as compared to traditional forms of fishing. “If the PTD is applied, sea farmers will

Agribusiness and the Systemic Abuse of Animals, 2 ANIMAL L. 123 (1996) (discussing the minimal protections farmed animals receive at both the state and federal levels), available at <https://www.animallaw.info/article/beyond-law-agribusiness-and-systemic-abuse-animals>.

⁵¹³ 9 C.F.R. §§ 3.1–3.142.

⁵¹⁴ *Id.*

⁵¹⁵ 9 C.F.R. § 3.115(a).

⁵¹⁶ 9 C.F.R. § 3.115(b).

⁵¹⁷ 7 U.S.C. § 2131(g); *Supra*, note 264.

⁵¹⁸ HMSA “covers livestock animals, such as cattle, calves, horses, mules, sheep, swine, and ‘other livestock,’ which has been interpreted to include goats and ‘other equines.’” Cynthia F. Hodges, *Detailed Discussion of the Humane Methods of Slaughter Act*, ANIMAL LEGAL & HIST. CTR. (2010) <https://www.animallaw.info/article/detailed-discussion-humane-methods-slaughter-act>; Humane Methods of Slaughter Act § 1902(a); CFR § 313.15, § 313.16.

⁵¹⁹ *Public Trust Doctrine*, LEGAL INFO. INST., https://www.law.cornell.edu/wex/public_trust_doctrine.

⁵²⁰ *Id.*

- face the burden of proving that their farms do not cause so much environmental damage that courts should reject the PTD.”⁵²¹
- viii. Lack of a mechanism to guarantee and secure the leasing of public property as a leased right to the water column and associated bottom areas within and upon which the aquaculture cage/net/pen will reside. These rights ideally should naturally accrue to the investor who would have pumped in financial and equipment resources to run the operation as has been done to leased logging, leased piers, or docks. Leasing of public lands in the Exclusive Economic Zone has been limited to oil and gas exploration activities. This should be expanded to aquaculture activities because of the sheer space available.⁵²²
 - ix. Biological Pollution from fish escape: Frequently, fish and other farmed aquatic animals are not native to the locales in which they are farmed, and even if they are “the animals in aquaculture are genetically distinct from the wild fish around them.”⁵²³ Despite the fact that aquaculture facilities are constructed to keep fish contained, escapes – including large-scale escapes – nevertheless occur due to “equipment failures, negligence or storms.”⁵²⁴ Aquaculture fish escapes “may harm wild fish populations through competition and inter-breeding, or by spreading diseases and parasites. Escaped farmed Atlantic salmon (*Salmo salar*) are a particular problem and may threaten endangered wild Atlantic salmon” in the Pacific Northwest.⁵²⁵
 - x. Fish for Fish Feeds: “Some types of aquaculture use large quantities of wild-caught fish as feed ingredients, and thus indirectly affect marine ecosystems thousands of miles from fish farms.”⁵²⁶
 - xi. Organic Pollution and Eutrophication: “Some aquaculture systems contribute to nutrient loading through discharges of fish wastes and uneaten feed. Compared to the largest U.S. sources of nutrient pollution, aquaculture’s contribution is small, but it can be locally significant.”⁵²⁷
 - xii. Chemical Pollution: “A variety of approved chemicals are used in aquaculture, including antibiotics and pesticides. Chemical use in U.S. aquaculture is low compared to use in terrestrial agriculture, but antibiotic resistance and harm to nontarget species are concerns.”⁵²⁸

⁵²¹ Mark Dowie, The Public Trust Doctrine, INST. FOR AGRIC. AND TRADE POLICY (Sept. 2004), https://www.iatp.org/sites/default/files/Public_Trust_Doctrine_Will_a_doctrine_from_the.pdf.

⁵²² *Federal Offshore Lands*, BUREAU OF OCEAN ENERGY MGMT., <https://www.boem.gov/Federal-Offshore-Lands/>.

⁵²³ FOOD PRINT, THE FOODPRINT OF FARMED SEAFOOD 16, https://foodprint.org/wp-content/uploads/2020/10/2020_09_29_FP_Aquaculture_Report_FINAL-1.pdf.

⁵²⁴ *Id.* Large-scale escapes can happen due to net pen collapses, which “can introduce thousands of new fish into the environment at once: the collapse of net pens at a Washington state Atlantic salmon farm led to the escape of nearly a quarter million non-native fish into surrounding waters in 2017. Smaller-scale escapes also add up over time ... With overall rates of escape between one and five percent, researchers have estimated that millions of farmed fish make their way into the ocean every year, many of which are non-native species.”

⁵²⁵ *Marine Aquaculture in the United States: Environmental Impacts and Policy Options*, CTR. ON FOOD SAFETY & THE ENV’T, https://fse.fsi.stanford.edu/publications/marine_aquaculture_in_the_united_states_environmental_impacts_and_policy_options; *Marine Aquaculture in the United States*, PEW OCEANS COMM’N at 6, https://www.iatp.org/sites/default/files/Marine_Aquaculture_in_the_United_States_Enviro.pdf.

⁵²⁶ *Id.*

⁵²⁷ *Supra*, note 525.

⁵²⁸ *Supra*, note 525.

- xiii. Habitat Modification: Marine aquaculture spreads over expansive marine hectares meaning that “some facilities attract marine predators and can harm them through accidental entanglement or intentional harassment techniques.”⁵²⁹

3. Human Wellbeing Aspects

- a. Exemptions from Occupational Health and Safety Laws and other worker protection legislation

4. General Regulatory Aspects

- i. Lack of Reporting requirements, including proper record-keeping, enforcement
- ii. Transparency in the industry

MANAGING THE HARMS AND CHALLENGES

It is recommended that in order to ensure proper regulation, other jurisdictions are consulted in order to determine best practices. For illustrative purposes, aquaculture regulation in the European Union and Chile have been included as Appendices to this Memorandum. These seek to illustrate how other jurisdictions regulate specific aspects of the aquaculture industry.

The concept of best practice may include promulgating specific standards, such as welfare standards applicable to a specific species or type of aquaculture, or it may include prohibiting or restricting a practice altogether.

For example, the province of Tierra del Fuego passed a law on 30 June 2021 banning salmon farming in the province's territory, but essentially in the waters of the Beagle Channel. The measure marks a historic milestone for the promoters given the negative consequences that the salmon farming industry could have brought to the maritime environment. Argentina became the first country to speak out against industrial salmon production that threatens the environment and ecosystems.

In 2019, the Argentine government and the government of the Tierra del Fuego province signed an agreement with Norway to develop salmon production in cages. However, due to public outcry, the government temporarily halted the project. Vice-governor Mónica Urquiza and the provincial legislator, Pablo Villegas, presented the bill, which was unanimously approved.

A. SUGGESTED CONSIDERATIONS AND PROVISIONS

In light of the above, this section aims to highlight a select few examples of where “best practice” may be considered in order to start regulating relevant aspects of aquaculture.

Animal Welfare

- a. Provisions to ensure humane practices and high welfare for aquatic animals are crucial. A recommendation would be to base these provisions upon the “five pillars of aquatic animal welfare and their key interventions,” as identified in the Aquatic Life Institute’s *Welfare Guide*.⁵³⁰

⁵²⁹ *Supra*, note 525.

⁵³⁰ *Welfare Guide*, AQUATIC LIFE INST., <https://ali.fish/welfare-guide>; Key Aquatic Animal Welfare Recommendations for Aquaculture, AQUATIC ANIMAL ALLIANCE, https://www.canva.com/design/DAEObQScXQ8/ZRVvsVbqGJYlxhuxBDNbZQ/view?utm_content=DAEObQScXQ8&utm_campaign=designshare&utm_medium=link&utm_source=sharebutton#1.

- b. The five pillars of aquatic animal welfare use the UK Farm Animal Welfare Council's "Five Freedoms"⁵³¹ as "guiding principles" to "help define what high welfare means for aquatic animals."⁵³² In sum, the five pillars of aquatic animal welfare consist of the following:
 - i. Enriched Environment: Create an environment that meets species-specific ethological needs analogous to their ideal habitat.
 - ii. Feed Composition & Feeding: Reduce the amount of wild-caught fish required for aquaculture feed by researching alternative feed sources, improving feed conversion ratios, and substituting carnivorous farmed species with herbivorous species. Strive for the most optimal feeding times and quantities and avoid starvation periods exceeding 72 hours.
 - iii. Space Requirements & Stocking Density: Maintain appropriate space by species and life stage to avoid negative physical, psychological, and behavioral impacts.
 - iv. Water Quality: Key water quality indicators should be monitored continuously or at least once a day.
 - v. Stunning & Slaughter: All animals must be effectively stunned before slaughter while the time elapsed between stunning and slaughter must be minimized in order to lower the risk of consciousness being recovered.⁵³³
- c. Care, transport, antibiotics, etc.
 - i. See the Aquatic Life Institute's *Welfare Guide*. Farmed aquatic animals should be handled and transported only when "absolutely necessary," for the "shortest time possible," and with "minimum stress and disturbance" for all aquatic animals involved.⁵³⁴ If handling farmed aquatic animals for more than a "few seconds," an "anesthetic must be applied."⁵³⁵
 - ii. The *Welfare Guide* also includes recommendations on "Medical Treatment, Including Parasite Management, Routine Mutilations & Antibiotics." Namely, methods used for parasite management "must conform to rigorous scientific welfare documentation," routine mutilations (e.g. eyestalk ablation in shrimp farming) "should never be permitted in any instance," and vaccinations should

⁵³¹ "The Five Freedoms model of welfare ... is the standard for all terrestrial farmed animals," consists of "1. Freedom to access sustenance that sustains health and vigor. 2. Freedom to live in an appropriate environment that enables and does not impair wellbeing. 3. Freedom to live in an environment that prevents disease and does not expose to undue risk of injury, and have diseases rapidly and appropriately treated. 4. Freedom to live with sufficient space, and with such companionship and materials required to express natural behaviors. 5. Freedom to live in conditions that promote good psychological health, and avoid mental suffering." *Key Aquatic Animal Welfare Recommendations for Aquaculture*, AQUATIC ANIMAL ALLIANCE,

https://www.canva.com/design/DAEObQScXQ8/ZRVvsVbqGJYlxhuxBDNbZQ/view?utm_content=DAEObQScXQ8&utm_campaign=designshare&utm_medium=link&utm_source=sharebutton#1.

⁵³² *Welfare Guide*, AQUATIC LIFE INST., <https://ali.fish/welfare-guide>; *Key Aquatic Animal Welfare Recommendations for Aquaculture*, AQUATIC ANIMAL ALLIANCE,

https://www.canva.com/design/DAEObQScXQ8/ZRVvsVbqGJYlxhuxBDNbZQ/view?utm_content=DAEObQScXQ8&utm_campaign=designshare&utm_medium=link&utm_source=sharebutton#1.

⁵³³ *Welfare Guide*, AQUATIC LIFE INST., <https://ali.fish/welfare-guide>; *Key Aquatic Animal Welfare Recommendations for Aquaculture*, AQUATIC ANIMAL ALLIANCE,

https://www.canva.com/design/DAEObQScXQ8/ZRVvsVbqGJYlxhuxBDNbZQ/view?utm_content=DAEObQScXQ8&utm_campaign=designshare&utm_medium=link&utm_source=sharebutton#1.

⁵³⁴ *Key Aquatic Animal Welfare Recommendations for Aquaculture*, AQUATIC ANIMAL ALLIANCE, 6,

https://www.canva.com/design/DAEObQScXQ8/ZRVvsVbqGJYlxhuxBDNbZQ/view?utm_content=DAEObQScXQ8&utm_campaign=designshare&utm_medium=link&utm_source=sharebutton#1.

⁵³⁵ *Id.*

be done only if necessary, “with minimal distress,” and only by veterinarians or “adequately trained animal health professionals.”⁵³⁶

d. Slaughter Methods

- i. Humane slaughter is one of the Aquatic Life Institute’s 5 pillars of aquatic animal welfare as referenced above. More specifically, here it is “highly recommended to follow the World Organization for Animal Health’s ‘Aquatic Animal Health Code’(2010).”⁵³⁷ “Concurrent methods of stunning + slaughter are preferred ... but processes that stun followed by immediate decapitation are acceptable.” Unacceptable methods of slaughter include the use of salt, CO₂, asphyxiation in ice, or ammonia baths.⁵³⁸ Slaughter must occur on-site in all new aquaculture facilities in order to minimize handling and transportation of the animals.⁵³⁹ If on-site slaughter is impossible, handling and transportation before slaughter must be minimized to the greatest extent possible.⁵⁴⁰

Ideally, specific regulation including standards would be promulgated in respect of the aforementioned issues. This could for example, take the form of a specific law or provision that mandates the stunning of aquatic species prior to their slaughter.

If specific legislation and standards are not available, other laws and avenues may be expanded on to regulate aspects of aquaculture. For examples, in respect of the abovementioned legal issues for biodiversity-based and environmental harms and challenges associated with aquaculture, below are examples of proposed technologies and practices that are available that may assist with preventing or mitigate these environmental problems including:⁵⁴¹

1. “Developing strong effluent guidelines for aquaculture under the Clean Water Act;
2. Supporting National Marine Fisheries Service and Fish and Wildlife Service activities under the Endangered Species Act to protect wild Atlantic salmon;
3. Establishing an environmentally protective permitting program for offshore aquaculture;
4. Improving state oversight of aquaculture;
5. Championing research and development investments and cost-share incentives for sustainable aquaculture practices;
6. Establishing a federal approval process for transgenic fish that mandates environmental protection;
7. Supporting market incentives for environmentally sound fish-farming;
8. Developing bilateral agreements with Canada to study and to minimize the impact of salmon-farming on wild salmon stocks.”⁵⁴²

In addition, as previously mentioned, the number of animals used in the aquaculture industry in Oregon is not collected and made available. This information seems to be a necessary requirement for

⁵³⁶ *Supra*, note 534.

⁵³⁷ *Supra*, note 534, at 5.

⁵³⁸ *Supra*, note 534, at 5.

⁵³⁹ *Supra*, note 534.

⁵⁴⁰ *Supra*, note 534.

⁵⁴¹ *Supra*, note 534.

⁵⁴² *Supra*, note 525.

anyone operating an aquaculture business, for their sake and for the sake of appropriate regulation. Having all the information in one source would be extremely valuable and allow the state agencies to more readily determine whether their goals are being met.

To help fill some of these gaps, Oregon could look to legislation in other states, such as California and Florida. In California, the California Resource Agency is the lead agency responsible for the statutory framework of state aquaculture activities. In Florida, the Florida Department of Agriculture and Consumer Services is the lead aquaculture agency.⁵⁴³

The Aquatic Life Institute also recently released a report, *Benefits of Aquatic Animal Welfare for Sustainability*, which underscores the importance of aquatic animal welfare in achieving global sustainable development goals for public policy makers.

The report can be viewed here:

<https://ali.fish/aquatic-animal-welfare-sustainability>

⁵⁴³ *Fisheries and Aquaculture Department*, FAO, http://www.fao.org/fishery/legalframework/nalo_usa/en.

PART V: LOOKING AHEAD

In October 2018, the Subcommittee on Aquaculture (SCA) established the Science Planning Task Force charged with updating the National Strategic Plan for Federal Aquaculture Research 2014–2019 to communicate Federal priorities for research, science, and technology development that will facilitate expansion of domestic aquaculture. The SCA also established a parallel Regulatory Efficiency Task Force charged with developing a new work plan for interagency coordination to improve regulatory efficiency.⁵⁴⁴

The draft versions of A National Strategic Plan for Aquaculture Research 2021–2025 and A Strategic Plan to Enhance Regulatory Efficiency in Aquaculture can be found here:

<https://www.ars.usda.gov/SCA/taskforce.html>

PENDING LEGISLATION

This section provides an overview of pending legislation, at federal and international levels, related to wild-caught fishing and aquaculture. This information was current as of January 2022.

A. Federal

Bills introduced in the 117th Congress, not yet enacted (Arranged in alphabetical order):

- 1 A Bill to expand the definition of H-2A nonimmigrant for purposes of the Immigration and Nationality Act to include aliens engaged in seafood processing, horticultural commodities, or the care of horses⁵⁴⁵**

This Bill applies to labor related to aquaculture, fish trimming, and wild seafood processing.

- 2 Cormorant Relief Act⁵⁴⁶**

This Act regulates and authorizes the destruction of double-crested cormorants to protect fish at aquaculture facilities.

- 3 Farm to School Act of 2021⁵⁴⁷**

This Bill amends the Richard B. Russell National School Lunch Act to reauthorize the farm to school program, and promotes awareness of, and participation in, farm to school programs among agricultural and aquaculture producers.⁵⁴⁸

- 4 FISH Act⁵⁴⁹**

This bill gives the Fish and Wildlife Service (FWS) the sole authority to protect endangered or threatened species that are anadromous species (species of fish that spawn in fresh or estuarine waters and that migrate to ocean waters) or catadromous species (species of fish that spawn in ocean waters

⁵⁴⁴ Science Planning Task Force, Subcommittee on Aquaculture, *A National Strategic Plan for Aquaculture Research 2021–2025*, at i (2021).

⁵⁴⁵ S. 2443, 117th Cong. (2021).

⁵⁴⁶ S. 1050, 117th Cong. (2021).

⁵⁴⁷ H.R. 1768, 117th Cong. (2021).

⁵⁴⁸ H.R. 1768, 117th Cong. § 2(7)(C)(iv) (2021).

⁵⁴⁹ H.R. 866, 117th Cong. (2021).

and migrate to fresh waters). Currently, the FWS shares this authority with the National Marine Fisheries Service.⁵⁵⁰

5 Fishery Resource Disasters Improvement Act⁵⁵¹

This Act has been introduced and passed by the Senate to improve the Fishery Resource Disaster Relief program of the National Marine Fisheries Service. The Act provides that the Secretary may consider, among other factors, aquaculture operations revenue loss when determining the allocation of appropriations for a fishery resource disaster.⁵⁵²

6 Haulers of Agriculture and Livestock Safety Act of 2021 (HAULS Act of 2021)⁵⁵³

This Bill amends the Motor Carrier Safety Improvement Act of 1999 to modify certain agricultural exemptions for hours of service requirements, and includes fish and aquaculture products under the definition of agricultural commodities.⁵⁵⁴

7 Helping America's Farmers Act⁵⁵⁵

This Bill provides for agricultural economic injury disaster loans, and applies to producers of aquaculture, among others.⁵⁵⁶

8 Illegal Fishing and Forced Labor Prevention Act⁵⁵⁷

This Act addresses seafood slavery and combats illegal, unreported, or unregulated fishing. This Act also provides for the development and implementation of a strategy to improve the collection, quality and verifiability of data for: authorization to fish; unique vessel identifiers; catch document identifiers; wild-capture harvest or aquaculture locations; the type of fishing gear used to harvest fish; the names of farms or aquaculture facilities; and the locations of aquaculture facilities.⁵⁵⁸

9 Keep America's Waterfronts Working Act⁵⁵⁹

This Act amends the Coastal Zone Management Act of 1972 to establish a Working Waterfront Task Force and a working waterfronts grant program, and provides that coastal States must have working waterfront plans to gain access to grants, and that such plans must “provide for preservation and expansion of access to coastal waters to persons engaged in commercial fishing, recreational fishing and boating businesses, aquaculture, boatbuilding, or other water-dependent, coastal-related business.”⁵⁶⁰

⁵⁵⁰ *Summary: H.R. 866 — 117th Congress (2021-2022)*, <https://www.congress.gov/bill/117th-congress/house-bill/866?q=%7B%22search%22%3A%5B%22.%22.%22H.R.866%22.%22H.R.866%22.%22FISH%22.%22.%22Act%22.%225D%7D&s=8&r=1>.

⁵⁵¹ S. 2923, 117th Cong. (2021).

⁵⁵² S. 2923, 117th Cong. § 2(6)(C)(v) (2021).

⁵⁵³ S. 792, 117th Cong. (2021).

⁵⁵⁴ S. 792, 117th Cong. §§ 3(b)(2)(A)(i), 3(b)(3) (2021).

⁵⁵⁵ H.R. 4456, 117th Cong. (2021).

⁵⁵⁶ H.R. 4456, 117th Cong. § 2(a)(1)(A)(i) (2021).

⁵⁵⁷ H.R. 3075, 117th Cong. (2021).

⁵⁵⁸ H.R. 3075, 117th Cong. §103 (2021).

⁵⁵⁹ H.R. 3160, 117th Cong. (2021).

⁵⁶⁰ H.R. 3160, 117th Cong. § 320(b)(4)(c)(2)(A) (2021).

10 Keep Finfish Free Act of 2021⁵⁶¹

This bill prohibits the Department of the Interior and the Department of Commerce from authorizing commercial finfish aquaculture operations in the U.S. Exclusive Economic Zone, except in accordance with a law enacted after enactment of this bill.⁵⁶²

11 National Ocean and Coastal Security Improvements Act of 2021⁵⁶³

This Bill was introduced “to provide for ocean-based climate solutions to reduce carbon emissions and global warming; to make coastal communities more resilient; and to provide for the conservation and restoration of ocean and coastal habitats, biodiversity, and marine mammal and fish populations.”⁵⁶⁴

The Bill provides for grants to be allocated to “support programs and activities intended to protect, conserve, restore, better understand, and use ocean and coastal resources and coastal infrastructure, including, if appropriate, scientific research, resiliency planning, implementation, and monitoring and spatial planning, data-sharing, and other programs and activities carried out in coordination with Federal and State departments or agencies.”⁵⁶⁵ Funding may be allocated to “[e]fforts to preserve, protect, and collect data, including public ocean and coastal data portals, that would support sustainable water-dependent commercial activities including commercial fishing, recreational fishing businesses, aquaculture, boat building, or other coastal-related businesses”,⁵⁶⁶ among other activities.

12 Ocean-Based Climate Solutions Act of 2021⁵⁶⁷

This Act provides for: ocean-based climate solutions to reduce carbon emissions and global warming; the conservation and restoration of ocean and coastal habitats, biodiversity, and marine mammal and fish populations; and support for research and technology development to promote restorative aquaculture systems to maximize ecosystem benefits while avoiding adverse impacts to the marine environment and wild-capture fisheries and marine wildlife.

13 Paperwork Reduction for Farmers and H-2A Modernization Act⁵⁶⁸

This Bill streamlines the application process for H-2A employers, and applies to aliens that are temporarily coming to the United States to perform, among other labor, labor in aquaculture and the processing of wild seafood.⁵⁶⁹

14 Prevention of Escapement of Genetically Altered Salmon in the United States Act⁵⁷⁰

This bill prohibits a person from:

- shipping, transporting, offering for sale, selling, or purchasing a genetically altered finfish (e.g., salmon), or a food product containing those fish, in commerce;
- having custody, control, or possession of those fish or food products with the intent to ship, transport, offer for sale, sell, or purchase them in commerce;

⁵⁶¹ H.R. 274, 117th Cong. (2021).

⁵⁶² *Summary: H.R.274 — 117th Congress (2021-2022)*, <https://www.congress.gov/bills/117/congress/house-bills/274?q=%7B%22search%22%3A%5B%22Keep+Finfish+Free+Act+of+2021%22%2C%22Keep%22%2C%22Finfish%22%2C%22Free%22%2C%22Act%22%2C%22of%22%2C%222021%22%5D%7D&s=4&r=1> .

⁵⁶³ H.R. 3892, 117th Cong. (2021).

⁵⁶⁴ H.R. 3892, 117th Cong. Preamble (2021).

⁵⁶⁵ H.R. 3892, 117th Cong. § 905(a) (2021).

⁵⁶⁶ H.R. 3892, 117th Cong. § 905(a)(6) (2021).

⁵⁶⁷ H.R. 3764, 117th Cong. (2021).

⁵⁶⁸ H.R. 306, 117th Cong. (2021).

⁵⁶⁹ H.R. 306, 117th Cong. § 2(a)(2)(ii) (2021).

⁵⁷⁰ H.R. 273, 117th Cong. (2021).

- engaging in net-pen aquaculture (pens of fish contained by nets) of those fish;
- releasing those fish into a natural environment; or
- having custody, control, or possession of those fish with the intent to release them into a natural environment.

Fish, fish parts, or products confined for scientific research or collected to enforce this bill are exempted from the prohibition. An additional exemption is established if the National Oceanic and Atmospheric Administration (1) prepares a finding of no significant impact in accordance with the National Environmental Policy Act of 1969 after reviewing an application requesting a federal agency to permit activity prohibited by this bill, or (2) finds the application to be consistent with an environmental impact statement that includes an environmental risk analysis and specified assessments of costs and potential economic damage.⁵⁷¹

15 Shellfish Aquaculture Improvement Act of 2021⁵⁷²

This bill limits the ability of an aquaculture worker to bring a civil action against an employer for employment-related injuries. Specifically, the bill limits recovery for injuries sustained by an aquaculture worker if (1) state workers' compensation is available to such individual; and (2) at the time of injury, the individual was engaged in aquaculture in a place where the individual had lawful access. An aquaculture worker is an individual employed by commercial enterprises involved in the controlled cultivation and harvest of aquatic plants and animals, including the cleaning, processing, or canning of fish and fish products, the cultivation and harvesting of shellfish, and the controlled growing and harvesting of other aquatic species.⁵⁷³

16 Sustaining America's Fisheries for the Future Act of 2021⁵⁷⁴

This Act reauthorizes and amends the Magnuson-Stevens Fishery Conservation and Management Act, and provides for the regulation and provision of grants in the case of a fishery resource disaster, which funds may be provided in consideration of, among other factors: "losses of subsistence and Tribal ceremonial fishing opportunity; losses of recreational fishing opportunity; aquaculture operations revenue loss; and direct revenue losses to a fishing community."⁵⁷⁵

B. International

The UN has included aquatic animal welfare considerations in an official policy document, the Shanghai Declaration: Aquaculture for Food and Sustainable Development, "which serves as a roadmap to optimize the role that aquaculture can play in achieving the 2030 Agenda for Sustainable Development."⁵⁷⁶

⁵⁷¹ *Summary: H.R.273 — 117th Congress (2021-2022)*, <https://www.congress.gov/bill/117th-congress/house-bill/273?q=%7B%22search%22%3A%5B%22Prevention+of+Escapement+of+Genetically+Altered+Salmon+in+the+%5Ct%5CtUnited+States+Act%22%2C%22Prevention%22%2C%22of%22%2C%22Escapement%22%2C%22Genetically%22%2C%22Altered%22%2C%22Salmon%22%2C%22in%22%2C%22the%22%2C%22United%22%2C%22States%22%2C%22Act%22%5D%7D&s=6&r=1> .

⁵⁷² H.R. 628, 117th Cong. (2021).

⁵⁷³ *Summary: H.R.628 — 117th Congress (2021-2022)*, <https://www.congress.gov/bill/117th-congress/house-bill/628?q=%7B%22search%22%3A%5B%22H.R.628+%5Cu2013+Shellfish+Aquaculture+Improvement+Act+of%22%2C%22H.R.628%22%2C%22Shellfish%22%2C%22Aquaculture%22%2C%22Improvement%22%2C%22Act%22%2C%22of%22%5D%7D&s=4&r=1> .

⁵⁷⁴ H.R. 4690, 117th Cong. (2021).

⁵⁷⁵ H.R. 4690, 117th Cong. §§ 201(a)(6)(C)(iii-vi) (2021).

⁵⁷⁶ *Shanghai Declaration: Aquaculture for Food and Sustainable Development*, Food and Agriculture Organization of the United States (last visited on Jan. 15, 2022), <https://www.fao.org/asiapacific/perspectives/rtp-aquaculture/en/>.

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APPENDIX A – AQUACULTURE IN CHILE

A. Scope of Industry

The Chilean aquaculture industry (CHAI), which was almost non-existent in 1970, reached a production volume of 70,000 tonnes in 1990, and witnessed extraordinary development during the 1990s, which resulted in exceeding 600,000 tonnes at the end of the decade.⁵⁷⁷ The spectacular growth of salmon aquaculture was undoubtedly responsible for record growth rates shown by the CHAI by the end of the 20th century, putting Chile among the ten countries with the highest aquaculture production in the world.⁵⁷⁸ Today, the CHAI is one of the most developed sectors in Chile, playing an important role in the country's economy.⁵⁷⁹

B. Production

According to official statistics, fish represent 67.7% of the CHAI production; while the contributions of mollusks and algae are 30.6% and 1.7%, respectively.⁵⁸⁰ The primary resources correspond to Atlantic Salmon, Chorito, and Pacific Salmon, contributing 50.9%, 29.6%, and 11%, respectively, which account for 91.5% of the total harvest in 2018.⁵⁸¹ In that year, the Regions of Los Lagos and Aysén contributed with 880 thousand tonnes (64.9%) and 348 thousand tonnes (28%), respectively, which represents 92.9% of the country's total production.⁵⁸²

C. Legal Framework

The CHAI legal framework is mainly determined by the General Fisheries and Aquaculture Law No 18.892 (GFAL).⁵⁸³ However, there are several other laws and regulations ruling certain aspects of this industry, among them, the General Environmental Law N°19.300,⁵⁸⁴ the Environmental Regulation for Aquaculture,⁵⁸⁵ and the Decree with force of law N°2 (2011).⁵⁸⁶

D. Regulation and Enforcement Agencies

Some of the institutions with regulatory or enforcement powers are the General Directorate of the Maritime Territory and Merchant Marine, the Ministry of Economy, the Undersecretariat of Fisheries and Aquaculture, and the National Fisheries and Aquaculture Service.⁵⁸⁷

⁵⁷⁷ *National Aquaculture Sector Overview-Chile*, FAO, http://www.fao.org/fishery/countrysector/naso_chile/en (last visited Apr. 5, 2021).

⁵⁷⁸ *Chile*, WORLD FISHING & AQUACULTURE, <https://www.worldfishing.net/news101/regional-focus/chile> (last visited Apr. 5, 2021).

⁵⁷⁹ *Id.*

⁵⁸⁰ *Informe Sectorial De Pesca Y Acuicultura*, SUBPESCA 4 (Jan. 2019), http://www.subpesca.cl/portal/616/articles-103653_documento.pdf.

⁵⁸¹ *Id.*

⁵⁸² *Supra*, note 580.

⁵⁸³ General Fisheries and Aquaculture Law No. 18.892 (Nov. 21, 2019).

⁵⁸⁴ General Environmental Law No. 19.300 (Jan. 23, 2020).

⁵⁸⁵ Environmental Regulation for Aquaculture No. 320 (Aug. 24, 2001).

⁵⁸⁶ Modify Organic Structure of the National Fisheries Service Decree No. 2 (Feb. 25, 2011).

⁵⁸⁷ *Supra*, note 186.

E. Authorization System

The authorization and concession system to set up aquaculture facilities is regulated by the General Fisheries and Aquaculture Law.⁵⁸⁸ The law sets forth three classes of concessions and authorizations to conduct aquaculture: beach, coastal areas, and water-column and sea-bed lots.⁵⁸⁹ “An authorization or concession is not required for aquaculture activities carried out entirely on private property, even when inland or marine waters are used, provided they are used in accordance with the respective regulations.”⁵⁹⁰

F. Animal Welfare

The Law of Animal Protection (LAP) No. 20.380 recognizes animals as living and sensitive (or sentient) beings which are part of nature, and which deserve protection and respect.⁵⁹¹ In that context, article five establishes that industrial animal production facilities must be appropriately designed with attention to the respective species and categories of animals, in order to prevent abuse and deterioration of their health.⁵⁹² In the same direction, article eleven establishes that facilities dedicated to industrial animal production should use rational methods in animal sacrifice or slaughter, in order to avoid unnecessary suffering.⁵⁹³ Furthermore, the GFAL in article thirteen establishes that “Aquaculture must contemplate norms that protect animal welfare and procedures that avoid unnecessary suffering”.⁵⁹⁴

G. Gaps in Current Regulations and Law Reform

There are many issues that still need to be addressed by the legislature and administrations with regulatory powers. Some of these issues are related to carrying capacity, use of antibiotics, access to information, and lack of guidelines or codes of conduct within this industry. For example, there are currently no limits for the use of antibiotics in the control of fish diseases.

On 23 September 2021, a bill was presented in Chile that aims to establish animal welfare standards for fish and other aquatic animals in the aquaculture industry at all stages of production, including breeding, transport and slaughter, in addition to establishing prohibitions on display and cooking of live aquatic animals in retail outlets. The bill⁵⁹⁵ passed to the Fisheries and Aquaculture Committee of the Chamber of Deputies, and is currently in the first constitutional procedure. If approved, the second constitutional procedure in the Senate will proceed.

H. Major Challenges and Harms

“Chile is the second-largest salmon producer after Norway, and salmon from Chile is sold all over the world.”⁵⁹⁶ Some issues specific to salmon farming include:

⁵⁸⁸ *National Aquaculture Legislation Overview-Chile*, FAO, http://www.fao.org/fishery/legalframework/nalo_chile/en#tcNB007E (last visited Apr. 5, 2021).

⁵⁸⁹ *Id.*

⁵⁹⁰ *Supra*, note 588.

⁵⁹¹ Law on Animal Protection No. 20.380 (Sept. 11, 2009).

⁵⁹² Law on Animal Protection No. 20.380 Art. 5 (Sept. 11, 2009).

⁵⁹³ Law on Animal Protection No. 20.380 Art. 11 (Sept. 11, 2009).

⁵⁹⁴ General Fisheries and Aquaculture Law No. 18.892 Art. 13 (Nov. 21, 2019).

⁵⁹⁵ <https://www.camara.cl/legislacion/ProyectosDeLey/tramitacion.aspx?prmID=15102&prmBOLETIN=14620-21>.

⁵⁹⁶ Nicki Holmyard, *Chile Cleans Up Its Salmon Farming Industry*, SEAFOOD SOURCE (Sept. 21, 2016), <https://www.seafoodsource.com/features/chile-cleans-up-its-salmon-farming-industry> (last visited Apr. 5, 2021).

- i. The proliferation of “caligus,” a sea lice “a type of parasitic sea lice who can transmit viruses.
- ii. The eutrophication of coastal marine environments of southern Chile caused by salmon farms;
- iii. Stocking density, carrying capacity, the interactions between harmful algal blooms and harvested animals; and the regulation thereof
- iv. Sea lions in this context, including the mortality of sea lions due to direct and indirect causes;
- v. Gaps in the knowledge about the environmental consequences of the aquaculture industry;
- vi. Deficiencies in the control of welfare standards established for animals;
- vii. Products quality assurance according to international standards;
- viii. Other issues.⁵⁹⁷

I. Resources

For further reading:

- Food and Agriculture Organization of the United Nations, National Aquaculture Legislation Overview: Chile.
- Food and Agriculture Organization of the United Nations, National Aquaculture Legislation Overview: Chile.
- Exequiel González, Chile's National Aquaculture Policy: missing elements for the Sustainable Development of aquaculture.
- Ivonne Lozano and Others, Antibiotics in Chilean Aquaculture: A Review.
- Renato Quiñones and Others, Environmental issues in Chilean salmon farming: review.
- Alejandro Buschmann and Others, Salmon aquaculture and coastal ecosystem health in Chile: Analysis of regulations, environmental impacts and bioremediation systems.
- Alejandro Buschmann and Others, Salmon Aquaculture and Antimicrobial Resistance in the Marine Environment.

⁵⁹⁷ *Supra*, note 577; For an examination of the environmental issues associated with Chilean salmon farming, see Renato Quiñones, et al., *Environmental Issues in Chilean Salmon Farming: a Review*, REVIEWS IN AQUACULTURE (Apr. 2019), available at <https://onlinelibrary.wiley.com/doi/full/10.1111/raq.12337> (last visited Apr. 5, 2021).

APPENDIX B – AQUACULTURE IN THE E.U.

A. Introduction

The European Union (EU) is the leading region for consumption of seafood.⁵⁹⁸ Approximately 20% of fish production in Europe is from aquaculture.⁵⁹⁹ The main aquaculture producers within the EU are the United Kingdom and Greece for marine aquaculture; and France, Italy, and Spain for shellfish.⁶⁰⁰ The main species produced in the EU are Atlantic salmon, rainbow trout, oysters, mussels, and European seabass.⁶⁰¹

B. Regulation

In the EU, each Member State has its own regulations and provisions regarding aquatic animals at the national level. However, there are EU directives binding on Member States, which they should comply with. Some of the acts are aimed at regulating actions with respect to aquatic animals,⁶⁰² while others are aimed at animals or farmed animals in general, which define animals as vertebrates and do not apply to invertebrate animals, thus excluding entire categories of aquatic animals.⁶⁰³

Despite the strong protection and purpose of developing sustainable aquaculture in the EU, there are still existing regulatory gaps at the EU level. For instance, acquisition of a license to perform aquaculture related actions is not required and is not regulated at the EU level.⁶⁰⁴ Though some nations have such licenses, they vary widely in their requirements, and most nations do not require licenses at all.

C. Best Practices

As for best practices, there is a broad variety. For instance, the Czech Republic, Croatia, Denmark, Italy, and Slovenia “achieved high standards in terms of environmental and economic efficiency and can be used as examples for others.”⁶⁰⁵ “Use of well-developed recirculation systems, which optimize

⁵⁹⁸ *The EU Fish Market 2019 Edition is Out: Everything You Wanted to Know About the EU Market for Fish and Seafood*, EUROPEAN COMM’N (Mar. 12, 2019), https://ec.europa.eu/fisheries/press/eu-fish-market-2019-edition-out-everything-you-wanted-know-about-eu-market-fish-and-seafood_en (last visited Mar. 6, 2020).

⁵⁹⁹ *European Aquaculture*, EUROPEAN PARLIAMENT, <https://www.europarl.europa.eu/factsheets/en/sheet/120/european-aquaculture> (last visited Mar. 6, 2020).

⁶⁰⁰ *Id.*

⁶⁰¹ *Supra*, note 599.

⁶⁰² Council Directive 2006/88/EC (Oct. 24, 2006), available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32006L0088>.

⁶⁰³ Council Directive 98/58/EC (July 20, 1998), available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:31998L0058&from=EN>.

⁶⁰⁴ *See Strategic Guidelines for the sustainable development of EU aquaculture*, EUROPEAN COMM’N 3 (Apr. 29, 2013), https://ec.europa.eu/fisheries/sites/fisheries/files/docs/body/com_2013_229_en.pdf (discussing the issues of the licensing regime and how to better address it on an Administrative level).

⁶⁰⁵ *Summary of the 27 Multiannual national Aquaculture Plans*, EUROPEAN UNION 11 (May 2016), https://ec.europa.eu/fisheries/sites/fisheries/files/docs/body/27-multiannual-national-aquaculture-plans-summary_en.pdf.

use of energy, feed, water, and space is a specific example of what some Member States consider best practice (Belgium, the Czech Republic, Denmark, and Germany).”⁶⁰⁶

Moreover, several Member States, such as Belgium, Ireland, Romania, and the United Kingdom, have already formulated a code in relation to certain aquaculture practices.⁶⁰⁷ Bulgaria, Finland, Greece, Ireland, Italy, and Latvia have developed monitoring management and production practices “in relation to environmental impact, sanitary and veterinary conditions, and food safety,” in particular in open marine farming.⁶⁰⁸

D. Resources

For further reading:

- Strategic Guidelines for the sustainable development of EU aquaculture, European Commission, Brussels (2013): <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52013DC0229&from=EN>
- Summary of the 27 Multiannual National Aquaculture Plans (2016): https://ec.europa.eu/fisheries/sites/fisheries/files/docs/body/27-multiannual-national-aquaculture-plans-summary_en.pdf
- Aquaculture in the EU: https://ec.europa.eu/food/animals/live_animals/aquaculture_en
- EU Aquaculture. Policy, methods, agreements, regulations: https://ec.europa.eu/fisheries/cfp/aquaculture_en
- Commission Regulation (EC) 710/2009: <https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:204:0015:0034:EN:PDF>
- Council Directive 98/58/EC (1998): <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:31998L0058&from=EN>

⁶⁰⁶ *Id.*

⁶⁰⁷ *Supra*, note 605.

⁶⁰⁸ *Supra*, note 605.