

# **PROGRESS TOWARDS THE NATIONAL STRATEGIC PLAN TO ENHANCE REGULATORY EFFICIENCY IN AQUACULTURE (2022)**

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*PREPARED BY THE*  
NATIONAL SCIENCE AND TECHNOLOGY COUNCIL  
SUBCOMMITTEE ON AQUACULTURE  
REGULATORY EFFICIENCY TASK FORCE

FEBRUARY 2023

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## Abbreviations and Acronyms

<b>AFWA</b>	Association of Fish & Wildlife Agencies	<b>NAAHP</b>	National Aquatic Animal Health Plan
<b>AADAP</b>	Aquatic Animal Drug Approval Partnership	<b>NEPA</b>	National Environmental Policy Act
<b>AOA</b>	Aquaculture Opportunity Area	<b>NIFA</b>	National Institute of Food and Agriculture
<b>AMS</b>	USDA Agricultural Marketing Service	<b>NMFS</b>	National Marine Fisheries Service
<b>APHIS</b>	USDA Animal and Plant Health Inspection Service	<b>NOAA</b>	National Oceanic and Atmospheric Administration
<b>ARS</b>	USDA Agricultural Research Service	<b>NOS</b>	National Ocean Service
<b>BOEM</b>	Bureau of Ocean Energy Management	<b>NSF</b>	National Science Foundation
<b>BSEE</b>	Bureau of Safety and Environmental Enforcement	<b>NSTC</b>	National Science and Technology Council
<b>CAHPS</b>	Comprehensive Aquaculture Health Program Standards	<b>OMB</b>	Office of Management and Budget
<b>CVM</b>	Center for Veterinary Medicine	<b>OSTP</b>	Office of Science and Technology Policy
<b>DOC</b>	Department of Commerce	<b>R&amp;D</b>	Research and Development
<b>DOE</b>	Department of Energy	<b>RMA</b>	USDA Risk Management Agency
<b>DOI</b>	Department of the Interior	<b>SCA</b>	NSTC Subcommittee on Aquaculture
<b>DOS</b>	Department of State	<b>SG</b>	NOAA National Sea Grant Program
<b>EEZ</b>	Exclusive Economic Zone	<b>U.S.</b>	United States
<b>EFH</b>	Essential Fish Habitat	<b>USACE</b>	United States Army Corps of Engineers
<b>EPA</b>	Environmental Protection Agency	<b>USCG</b>	United States Coast Guard
<b>ESA</b>	Endangered Species Act	<b>USFWS</b>	United States Fish & Wildlife Service
<b>FDA</b>	Food and Drug Administration	<b>USDA</b>	United States Department of Agriculture
<b>FSIS</b>	Food Safety Inspection Service	<b>USGS</b>	United States Geological Survey
<b>NASS</b>	National Agricultural Statistics Service		

## Executive Summary

Aquaculture enhances coastal resiliency, creates jobs, improves food security and human nutrition and is a valuable tool to help rebuild some protected species and habitats. Limits to wild fisheries, environmental changes, the nutritional benefits of seafood, and trends in global seafood markets underscore the need to strategically expand U.S. aquaculture. This strategic expansion will complement fisheries and terrestrial food production to ensure global food security for future generations, increase our capacity to mitigate the effects of climate change, and provide jobs in rural, urban, coastal, and tribal communities. Despite the promise aquaculture holds, there are constraints to the sustainable development of aquaculture. Regulatory uncertainty is one of the key factors discouraging investment in aquaculture in the United States.

In February 2019, the White House Office of Science and Technology Policy’s (OSTP) Subcommittee on Aquaculture (SCA) established a Regulatory Efficiency Task Force and charged it with developing a new work plan for interagency coordination to improve regulatory efficiency. After extensive public engagement<sup>1</sup>, in February 2022, the SCA published *A Strategic Plan to Enhance Regulatory Efficiency in Aquaculture* (SPEREA or “the Plan”). The Plan is available online.<sup>2</sup> The Plan outlines actions that Federal agencies commit to take within their existing statutory authorities and budgetary resources to improve efficiency, predictability, and timeliness; and reduce the costs of reviewing, approving, monitoring, and enforcing permits and other regulatory requirements for marine commercial aquaculture ventures. The Plan was developed with the intent to report agency achievements that supports implementation on an annual basis. This implementation report identifies specific progress collectively made in fiscal year 2022 by federal agencies on the Plan’s goals and objectives since the Plan was initially released.

This Plan identifies the following goals and objectives:

- **Goal 1. Improve Efficiencies in Aquaculture Permitting and Authorization Programs**
  - Objective 1.1: Expand the range of aquaculture activities authorized under general permits and through programmatic consultations.
  - Objective 1.2: Maintain and update State-by-State information on shellfish farming requirements.
  - Objective 1.3: Establish regional interagency coordinating groups and processes for implementation of permits and authorizations for aquaculture in Federal waters.
  - Objective 1.4: Improve aquaculture-specific outreach on the NPDES program and continue to provide information on the water quality risks associated with aquatic animal production.
  - Objective 1.5: Establish a clear and transparent Federal Process for ensuring the safety of molluscan shellfish grown in Federal waters.
- **Goal 2. Implement a National Approach to Aquatic Animal Health Management of Aquaculture**
  - Objective 2.1: Review, evaluate, and update the National Aquatic Animal Health Plan.
  - Objective 2.2: Work with partners and stakeholders to update and establish proficient, efficient, and equivalent standards or guidelines for diagnostics and inspections of aquatic animals.

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<sup>1</sup> See 87 FR 12075

<sup>2</sup> <https://www.ars.usda.gov/SCA/>

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- Objective 2.3: Improve efficiencies obtaining legal marketing status for drugs, food additives for animal feed, and biologics.
- Objective 2.4: Review and clarify guidance for domestic movement of live aquatic animals across State lines
- Objective 2.5: Develop surveillance strategies and emergency response plans for priority aquatic animal pathogens.
- Objective 2.6: Clarify and define Federal agency roles in aquatic animal health attestations/certification and import/export of aquatic animals.
- Objective 2.7: Establish standard operating procedures for agency communication and points of contact for Federal and State agencies involved in the movement (import/export) of aquatic animals.
- **Goal 3. Refine and Disseminate Tools for Aquaculture Regulatory Management**
  - Objective 3.1: Identify additional science information needed to inform Federal and State permit reviews, consultations, and policy decisions.

These strategic goals guide Federal agencies, with public and private sector partners, to build an interagency collaborative regulatory framework to meet the Nation’s aquaculture priorities. These goals ensure aquaculture facilities continue to meet all applicable environmental, public health, and other Federal requirements.



## Goal 1. Improve Efficiencies in Aquaculture Permitting and Authorization Programs

Navigating application and review processes for multiple local, State<sup>3</sup>, and Federal requirements can be challenging, given the number and variety of current laws, regulations, and administrative protocols that exist. For example, agencies must evaluate the potential conflicts with uses (fishing, recreation, energy production, shipping, etc.) and potential impacts on a range of environmental and socio-economic concerns (water quality, marine ecosystems, wild fish stocks, protected species, habitats, cultural resources, etc.). For applicants, permitting and authorization processes can be time consuming, difficult to navigate, and expensive.

Federal agencies have taken actions to improve interagency coordination and make regulatory processes more efficient. Several of these are noted in the subsections below. Federal agencies intend to work with State and Tribal agencies and others to build on these coordinating efforts and address challenges that affect specific aquaculture sectors and the industry nationwide. Additionally, Federal agencies intend to improve efficiencies in Federal aquaculture permitting and authorization processes, such as expanding the range of aquaculture activities authorized under general permits (discussed below) through programmatic approaches to environmental review and other applicable authorizations. Efforts to make the permit process and management of permit compliance more efficient are not intended to eliminate, circumvent, or reduce conservation, environmental stewardship, and public health requirements. In fact, the NSTC's *National Strategic Plan for Aquaculture Research* is a companion to this Plan and serves to communicate Federal priorities for research and technology development that will facilitate responsible expansion of domestic aquaculture. The intent of enhanced efficiency is to improve coordination across Federal agencies to reduce redundancies and shorten permitting timelines through concurrent rather than consecutive processes.

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<sup>3</sup> Most aquaculture in the United States is located either on land or in nearshore waters and is subject to both State and Federal laws and regulations.



**Objective 1.1: Expand the range of aquaculture activities authorized under general permits and through programmatic consultations.**

***DOC - National Oceanic and Atmospheric Administration***

NOAA's National Marine Fisheries Service (NMFS) is working closely with subject specific teams from regional Fisheries Service Centers (including the Northwest, Southwest, Northeast, and Southeast) and the NOAA National Oceans Service's (NOS) National Centers for Coastal Ocean Science (NCCOS) to develop science to support for advice products such as technical memoranda, models, and guidance documents to inform Programmatic permit reviews for proposed Aquaculture Opportunity Areas (AOAs). Subject specific areas include social science, economics, genetics, structural engineering, disease and biosecurity, and risk assessment. Progress has been made in all areas with respect to developing these products.

NMFS developed socioeconomic indicators for the Gulf of Mexico. A Story Map, along with data and methods manual for how to use the data is currently under review and community case study interviews are complete and are being transcribed. Regarding economics, Aquaculture Opportunity Area (AOA) market overview guides for the Gulf of Mexico and the Southern California Bight are nearly complete and spatial analysis is currently being incorporated. Financial and price analysis for the Gulf of Mexico and Southern California Bight AOAs is ongoing and socio-economic impact models regarding displacement of commercial fishing due to AOAs is ongoing. For work in genetics, the Offshore Aquaculture Escapes Genetics Assessment (OMEGA) model simulations and scenario-based risk matrix development to inform consequences (i.e., genetic introgression, competition with native species, predation on natives) of aquaculture escapes are ongoing. For assistance with structural engineering, a technical guidance document for aquaculture gear is in preparation. Regarding biosecurity, production of the technical memorandum Recommendations for biosecurity and disease management for marine aquaculture in US waters is complete. This includes a summary of an associated workshop held July 12, 2022. A second technical memorandum titled *Scientific support for biosecurity and disease management in Aquaculture Opportunity Areas in the U.S.* is in preparation. This document includes a summary of the associated workshop titled *Aquaculture Disease and Biosecurity Regulatory Frameworks* (held October 11, 2022). Two additional workshops were conducted during 2022 on the topic of pathogen transfer and disease modeling in the marine environment. Additionally, a 'guide' for how to apply risk assessments to aquaculture siting is in development.

NCCOS published two Atlases that identify options for AOAs in the Gulf of Mexico and the Southern California Bight. The Atlases were developed collaboratively, using the best available science and broad stakeholder engagement, and identify areas that have the highest potential to support three to five marine aquaculture operations and the least amount of conflict with other ocean uses. The Atlases provide the most comprehensive marine spatial analyses ever developed for any U.S. ocean space.

***US Army Corp of Engineers***

To further refine and develop science information and tools for programmatic permit review, USACE-HQ and respective districts continue to work with other federal agencies (EPA and NOAA primarily) and provide input on aspects of aquaculture that fall under USACE statutory authorities. USACE-HQ and districts also participate, as time allows, in other aquaculture efforts, such as the NOAA-led aquaculture engineering structures workshop in January 2022. In federal waters, USACE-HQ routinely participates in NSTC meetings, Regulatory Efficiency task force meetings, and EO 13921 implementation meetings with NOAA and EPA. USACE-HQ also routinely participates in stakeholder and interagency outreach.

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Specific coastal District accomplishments to improve the permitting process include:

- *SWG* (Galveston District) has been coordinating with the Texas Parks and Wildlife Department and Texas Sea Grant on the implementation and permitting involved with the state's new cultivated oyster mariculture permitting work group to streamline aquaculture reviews.
- *SPL* (Los Angeles District) participated in the California Offshore Aquaculture Interagency Working Group to facilitate efficient communication with other state and federal agencies about aquaculture permitting. *SPL* organized several meetings with the local US Coast Guard office to facilitate navigational safety risk assessments for aquaculture projects.
- *MVN* (New Orleans District) reauthorized a Programmatic General Permits (PGP) in June 2022 that can be used (but not solely used for) aquaculture projects in the Louisiana coastal zone.
- *NAE* (New England District), Maine developed a General Permit (GP) for aquaculture in October 2022, Rhode Island revised and reissued an existing aquaculture GP in May 2022, New Hampshire revised an existing aquaculture GP to include new category exclusions in September 2022, Connecticut reissued an aquaculture and mariculture GP in December 2021, and Massachusetts is currently working on updating and improving an existing GP, scheduled for April 2023.
- *SAJ* (Jacksonville District) continues to utilize two PGPs - the SAJ-99 for aquaculture activities in state waters (administered by the Florida Department of Agriculture and Consumer Services) and the SAJ-71 for live-rock culture in the Florida EEZ (administered by the NMFS Southeast Regional Office). *SAJ* has no new GPs.

### ***US Fish & Wildlife Service***

The USFWS recently updated its T50<sup>4</sup> website to streamline the process for stakeholders importing salmonids and the efforts to increase the number of Certifying Officials. USFWS is currently updating the National Wild Fish Health Survey<sup>5</sup> to provide better access to pathogen detection nationwide.

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<sup>4</sup> More information can be found here: <https://www.fws.gov/service/steps-importing-salmonids-united-states-america>

<sup>5</sup> More information can be found here: <http://www.fws.gov/story/2022-08/wild-fish-health-survey-protecting-wild-fisheries>

**Objective 1.2: Maintain and update State-by-State information on shellfish farming requirements.**

***DOC - National Oceanic and Atmospheric Administration***

On September 30, 2021, NOAA NMFS published the "State by State Summary of Shellfish Aquaculture Permitting/Leasing Requirements"<sup>6</sup> in an effort to regularly update state-by-state information on shellfish farming requirements, which includes information for the Pacific Islands. This document will be updated as needed.

**Objective 1.3: Establish regional interagency coordinating groups and processes for implementation of permits and authorizations for aquaculture in Federal waters.**

NOAA, EPA, and USACE have collaborated to kick-off or undertake NEPA analyses for proposed aquaculture facilities in offshore waters in the northeast, southeast, and off Southern CA. The agencies will continue to collaborate to complete an EIS for a finfish farm proposed for siting off of Southern CA. The agencies are developing programmatic NEPA environmental impact statements to consider identifying Aquaculture Opportunity Areas in the Gulf of Mexico and Southern California region.

***US Army Corp of Engineers***

To continue collaboration on permitting applications in the Gulf of Mexico, USACE continues to coordinate with EPA and NMFS in accordance with EO 13921. USACE is supporting the processing of the SAJ-Manna Fish Farms project (Pensacola, FL). The current request for a 12-pen offshore finfish aquaculture facility is being evaluated as a Nationwide Permit 56<sup>7</sup> (NWP56). The use and applicability of NWP 56 for this proposal is subject to change.

Additionally, SAJ was a cooperating agency for EPA Region 4's Environmental Assessment for the Vellella Epsilon net pen project (SAJ-2017-03488). Lastly, SWG has been participating on the monthly Gulf of Mexico Interagency Aquaculture Team calls, and virtual workshops.

USACE districts along the Gulf Coast, as well as Southern California districts, are all regularly participating in coordination calls, meetings, and workshops for AOAs and their associated PEIS. SAJ (Vellella Epsilon, Manna Fish Farms), NAE (Bluewater Fisheries), and SPL (Pacific Ocean Aquafarms) have all worked with, and continue to work with, NOAA, EPA, and all other applicable agencies to process NEPA documents as needed. NOAA has also offered to assist SPL in the consultation process with local NOAA protected resources division staff by reviewing the Biological Assessment and helping to resolve issues during the consultation process.

***DOC - National Oceanic and Atmospheric Administration***

NOAA is continuing the process to identify AOAs in southern California and the Gulf of Mexico. NOS NCCOS and NMFS initiated a marine spatial planning study to identify potential AOA options in the federal waters of the US Gulf of Mexico. The Areas of Interest for spatial analyses were identified using a series of public engagement approaches including a Request for Information published in the Federal Register (85 FR 67519; October 23, 2020) and one-on-one meetings with stakeholders. These Areas of Interest were delineated based on bathymetric data for depths ranging between 50 m (164 ft) and 150

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<sup>6</sup> The report is found here: <https://www.fisheries.noaa.gov/resource/document/state-state-summary-shellfish-aquaculture-leasing-permitting-requirements-2021>

<sup>7</sup> Link to USACE NWPs found here: <https://www.usace.army.mil/Missions/Civil-Works/Regulatory-Program-and-Permits/Nationwide-Permits/>

m (492 ft), political boundaries associated with offshore policies and regulation of submerged lands, outer continental shelf boundary, state and federal water demarcations, and marine protected areas.

NOAA has released two Atlases compiling the best available science to inform the identification of AOAs in the Gulf of Mexico and Southern California. Areas in the Atlases have characteristics expected to support multiple types of aquaculture industries including finfish, shellfish, seaweed, or some combination. NOAA expects the draft PEISs will be available for public comment in 2023.

NOS NCCOS, in partnership with the NOS Office of Coastal Management, completed a spatial census of aquaculture in 2022. The census is conducted every five years to assess the development of aquaculture in coastal waters. Aquaculture data depicts active commercial lease areas, and where possible, the species' grown within each leased area (e.g., macroalgae, shellfish, fish). The data can also be easily accessed and used to explore ocean use and opportunity in OceanReports. NOAA Fisheries has aided in the development of a scientific decision-support tool called the Offshore Mariculture Escapes Genetics Assessment (OMEGA) model to better understand the effects of genetic impacts due to interbreeding strategies to address the potential risks to marine resources.

**Objective 1.4: Improve aquaculture-specific outreach on the NPDES program and continue to provide information on the water quality risks associated with aquatic animal production.**

***Environmental Protection Agency***

EPA has released a short video that describes how National Pollutant Discharge Elimination System (NPDES) permits apply to discharges from aquaculture operations.<sup>8</sup> EPA is in the process of developing another video about how permittees can best participate in the permitting process and are in the very early stages of creating a video about monitoring and reporting requirements found in permits. EPA is nearing completion of two interactive infographics that discuss common types of water quality management activities at flow-through, and net pen facilities. EPA is looking to have further conversation with industry partners in hopes of releasing additional infographics.

**Objective 1.5: Establish a clear and transparent Federal Process for ensuring the safety of molluscan shellfish grown in Federal waters.**

***DOC - National Oceanic and Atmospheric Administration***

The NOAA Seafood Inspection Program (SIP) and FDA worked with the Interstate Shellfish Sanitation Conference (ISSC) Federal Waters Committee to develop and draft new guidance and propose updated language for the National Shellfish Sanitation Program (NSSP) Guide for the Control of Molluscan Shellfish regarding Federal waters commercial shellfish harvesting (including shellfish aquaculture) that specifically addresses this action item.

***Food & Drug Administration***

To address the NSSP requirements for marine biotoxins for both wild harvested and aquacultured molluscan shellfish in Federal waters, the FDA has established a Federal Waters Shellfish Biotxin

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<sup>8</sup> EPA NPDES permit short video found here: <https://www.youtube.com/watch?v=ro6Viys1Oul&t=1s>. Or can be accessed from EPA Aquaculture webpage: <https://www.epa.gov/npdes/managing-aquaculture-protect-water-quality>

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Advisory Board (FWSBAB). One of the main goals of the FWSBAB is to gather and review marine biotoxin data in order to assist the FDA in defining areas in Federal waters where a shellfish marine biotoxin management plan may be required. The FWSBAB includes multiple federal agencies including, FDA, EPA, NOAA, NOAA SIP, and the Centers for Disease Control and Prevention (CDC).



## **Goal 2. Implement a National Approach to Aquatic Animal Health Management of Aquaculture**

Aquatic animal health is paramount for the success of the aquaculture industry. Both infectious and noninfectious diseases affect animal productivity and well-being. The inevitable bridges between natural resources and aquaculture farms create an opportunity for the introduction and transmission of pathogens throughout and between facilities and jurisdictions. Therefore, aquatic animal health, whether in farm-raised or wild animals, must be addressed with a uniform approach on a national level. Federal agencies are working together to assess animal health using a risk-based approach using the best available science. They are coordinating to more effectively protect animal health, safeguard wild stocks and environmental quality, and instill confidence in animal production practices. Also, Federal and State agencies are working to develop a unified road map and collaborative framework to implement a national approach to managing aquatic animal health. Effective aquatic animal health management depends on a unified approach to how health is determined, reported, maintained, and protected on aquatic animal farms. This approach must involve all Federal and State agencies with authority for aquatic animal health and aquaculture. These authorities have oversight of pathogen surveillance and testing in aquaculture farms and wild aquatic animal populations. They also oversee drug approval and licensing of vaccines, which can minimize the use of drugs on a farm and help keep farmed animals healthy.

### **Objective 2.1: Review, evaluate, and update the National Aquatic Animal Health Plan.**

#### ***USDA Animal and Plant Health Inspection Service***

USDA APHIS revised the National Aquaculture Health Plan and Standards, 2021-2023 (NAAHP&S), which includes the Comprehensive Aquaculture Health Program Standards (CAHPS). Both NOAA and USFWS provided comments to the NAAHP & Standards. The Technical Working Group of the NAAHP&S is updating the plan. All agencies have representatives on the working group.



**Objective 2.2: Work with partners and stakeholders to update and establish proficient, efficient, and equivalent standards or guidelines for diagnostics and inspections of aquatic animals.**

The AFS Blue Book<sup>9</sup> Revision Steering Committee has completed its work. Recommendations from the committee have been submitted to the AFS Fish Health Section ExCom which is meeting at the end of January 2023 to review the recommendations. This group is working to establish criteria of assays to be included in the document for diagnostic procedures. USDA and USFWS are heavily involved in these efforts and invite AFS FHS to update on the ExCom's decision and timeline for the update.

**Objective 2.3: Improve efficiencies obtaining legal marketing status for drugs, food additives for animal feed, and biologics.**

***Food & Drug Administration***

On April 20, 2022, FDA published for comment a draft revision of GFI #106, "The Use of Published Literature in Support of New Animal Drug Approvals," and is working on finalizing this guidance.

The FDA is working on finalizing GFI #61, "Special Considerations, Incentives, and Programs to Support the Approval of New Animal Drugs for Minor Uses and for Minor Species."

FDA reviewed all comments submitted in response to our Federal Register Notice requesting input from the public on expanding the eligibility for indexing. The vast majority of the comments were supportive of expanding eligibility to include certain subsets of food-producing minor species when there is a reasonable certainty that those animals will not be consumed by humans or food-producing animals after receiving an indexed drug. On July 25, 2022, FDA announced that it was withdrawing Guidance for Industry (GFI) #210, "The Index of Legally Marketed Unapproved New Animal Drugs for Minor Species", because it no longer reflects FDA's current thinking on eligibility for indexing. FDA is revising GFI #210 and will publish the revised draft guidance as quickly as possible. In the meantime, FDA's Office of Minor Use & Minor Species (OMUMS) will determine the eligibility of a drug for Indexing on a case-by-case basis.

CVM developed an on-line Comprehensive Animal Feed Ingredient Submission course to educate the industry and stakeholders on the mechanisms and procedures to obtain FDA approval to market new ingredients intended for animal and aquaculture food. The material is hosted at The Association of American Feed Control Officials (AAFCO) website. FDA has engaged with several individual firms on specific projects this year.

CVM continues to encourage all food processors to meet with them prior to submitting a Generally Recognized as Safe (GRAS) notice, a Food Additive Petition, or an AAFCO Ingredient Definition.

***US Fish & Wildlife Service***

USFWS continues to work with partners to obtain FDA approval for safe and effective new drugs for use in aquaculture and fisheries management. In fiscal years 2021 and 2022, the USFWS suspended enrollment fees typically required to participate in the National Investigational New Animal Drug (INAD) Program in appreciation of partner support. This fee waiver financially benefited INAD program participants including other federal agencies, tribes, states, academia, and private entities. In addition, a research program continues to conduct or assist partners with Effectiveness and Target Animal Safety

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<sup>9</sup> <https://units.fisheries.org/fhs/fish-health-section-blue-book-2020/>

studies to fulfill data needs for Technical Sections required for drug approvals through the FDA. USFWS worked with the National Aquaculture Association and other partners in providing justification to FDA's Office of Minor Use and Minor Species for expansion of eligibility for indexing drugs to include certain subsets of food-producing minor species, such as broodstock fish, when there is a reasonable certainty that these animals will not be consumed by human or food-producing animals after receiving an indexed drug.

#### **Objective 2.4: Review and clarify guidance for domestic movement of live aquatic animals across State lines**

##### ***US Fish & Wildlife Service***

Recent examples of contaminated commodities (e.g. crayfish found in shipments of feeder goldfish) suggest that additional mitigation work is needed within supply chains of wildlife, fish, and plants at the producer, supplier, and retail levels. To help mitigate such risks, the Aquatic Nuisance Species Task Force formed the Organisms in Trade Hitchhikers Workgroup under the Prevention Subcommittee to engage with the aquaculture and pet industry to explore opportunities to manage risks within aquaculture producer supply chains and trail settings to reduce invasions risks of hitchhiking organisms within pet commodities. Various outposts are being pursued by the Workgroup and its members, such as developing outreach messaging and training for pet retailers and entire supply chain that guide staff on what biosecurity or risk mitigation practices to follow when a contaminate is received within wildlife, fish, or plant commodity shipments.

The USFWS awarded a grant to Oregon State University to produce an after-action report of the action taken to respond to the importation of zebra mussel contaminated moss ball products into the United States. The report will compile and catalog existing statutes, regulations, and policies related to the response. A detailed case study will be developed of invasive species legal framework, how that framework supported the response, the interplay of the state's response with the federal response, and the role (if any) local governments played in the response. The report will also identify gaps in federal authorities and regulations and identify opportunities for states to better align their responses to national-scale incidents. Anticipated completion of the report is September 2023.

Using appropriations from the Bipartisan Infrastructure Law to the Department of Interior (DOI), the USFWS, in collaboration with other DOI bureaus, awarded a grant to Conservation Collaborations LLC to develop an action plan to mitigate the risks of AIS trade and transport through commerce. A component of the action plan will identify regulatory gaps nationally and regionally, and provide specific regulatory language to federal agencies and the states to implement laws that address aquatic invasive species sold through commerce. The project will also develop an online toolkit for industry sellers to ensure accessible information about restricted species in each state, as well as information about best management practices and responsibilities associated with buying aquatic species. Anticipated completion for the project is September 2023.

#### **Objective 2.5: Develop surveillance strategies and emergency response plans for priority aquatic animal pathogens.**

##### ***USDA Animal and Plant Health Inspection Service***

USAD APHIS is updating the National List of Reportable Animal Diseases reporting requirements. APHIS expects public engagement on this issue in FY23.



**Objective 2.6: Clarify and define Federal agency roles in aquatic animal health attestations/certification and import/export of aquatic animals.**

***USDA Animal and Plant Health Inspection Service***

USDA APHIS and NOAA are updating an MOU governing interagency export coordination of aquatic animals. No estimated time of completion.

**Objective 2.7: Establish standard operating procedures for agency communication and points of contact for Federal and State agencies involved in the movement (import/export) of aquatic animals.**

***US Fish & Wildlife Service***

USFWS established the Organisms in Trade (OIT) - Hitchhiker Workgroup, a workgroup under the Aquatic Nuisance Species Task Force (ANSTF), to develop a master list of contacts that may be included in the Invasive Species Experts Database<sup>10</sup> as the ANSTF pursues expansion and modernization of this tool in FY23.

USFWS has also updated the Title 50 Salmon Import website<sup>11</sup> to streamline standard procedures for internal and external partners.

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<sup>10</sup> ANSTF maintains the Experts Database, found here: <https://www.fws.gov/services/steps-importing-salmonids-united-states-america>

<sup>11</sup> Title 50 Salmon Import website found here: <https://www.fws.gov/services/steps-importing-salmonids-united-states-america>



### **Goal 3. Refine and Disseminate Tools for Aquaculture Regulatory Management**

Regulatory processes require objective, efficient, and timely decisions based upon the best available science, so science has a key role in improving regulatory decision-making. Science-based tools are needed, for example, to site and manage aquaculture facilities, identify strategies to minimize, and avoid negative impacts to protected species and habitats, reduce the risk of invasive species introductions, minimize use conflicts, and evaluate risks associated with disease and genetic risk interactions between farmed and wild populations. Decision-support tools grounded in sound science can greatly improve the quality, consistency, and efficacy of regulatory decision-making for the benefit of industry, society, and the environment. The development of Federal science tools for aquaculture management is occurring through a combination of work at Federal research laboratories; Federal funding of university, nonprofit, and industry scientists through competitive grants or contracts; cooperative extension work by USDA, the National Sea Grant College Program, and State extension agents; and other public-private research partnerships. Specific science needs for aquaculture regulatory management and industry development are featured in the companion *National Strategic Plan for Aquaculture Research, 2021–2025*.

#### **Objective 3.1: Identify additional science information needed to inform Federal and State permit reviews, consultations, and policy decisions.**

##### ***US Department of Agriculture***

USDA ARS has developed a retrospective report of accomplishments during 2018 – 2022, this will serve as the basis of an external program review in spring 2023. ARS and NIFA will co-host a series of stakeholder listening sessions in 2023 that will identify research priorities and inform the direction of their programs, including development of the next ARS National Program Action Plan for Aquaculture that will be published in 2024.

##### ***DOC - National Oceanic and Atmospheric Administration***

The NMFS Office of Aquaculture will jointly issue grants with Atlantic States, Gulf States, and Pacific States Marine Fisheries Commissions to fund marine aquaculture pilot projects focusing on sustainable aquatic farming techniques and regional business practices to grow U.S. domestic seafood. The Commissions encourage projects that draw upon partnerships between the seafood industry and research/academic community that focus on the development, validation, and deployment of

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economically and environmentally sustainable marine aquaculture in coastal and open water environments of the U.S.

Sea Grant has completed the final draft of the "National Sea Grant College Program 2024-2027 Strategic Plan", which includes the national Focus Area of "Sustainable Fisheries and Aquaculture". Before the plan is published, NSGO will collect and collate the individual strategic plans from all 34 state Sea Grant Programs. Along with the recently published "NOAA 5-Year Strategic Plan for Aquaculture", these documents will inform and guide an updated version of the "10-Year NOAA Sea Grant Aquaculture Vision" (last updated in 2016).

The National Sea Grant Program reports recent examples of support provided for Extension Services, workforce development, test beds, and demonstration and production assistance include:

- Establishing a Southern New England Aquaculture Hub,
- Establishing a Hawai'i-Pacific Aquaculture Consortium: *A Revitalization and Expansion of the Aquaculture Development Program*,
- Catalyzing a Cross-Pacific Regional Collaborative Hub to advance Indigenous aquaculture practices and enhance marine food production for cultural-ecological benefits,
- Supporting a Maine Aquaculture Hub to build capacity for industry-driven innovation, diversification, and workforce development and supporting a Great Lakes Sea Grant Aquaculture Collaborative to provide supplemental aquaculture funding to several projects that increase extension capacity and workforce training.
- The "Food From the Sea" Careers Program includes projects focused on seafood resources (fisheries) and aquaculture training and workforce development. This is an open competition that support FY23 aquaculture workforce development support projects.
- Provided COVID-19 Rapid Response funding to help increase extension capacity.

## Publications, Regulatory Tools, and Other Information

1. Guide to Permitting Marine Aquaculture in the United States (SCA) (2022);  
<https://media.fisheries.noaa.gov/2022-07/Guide-Permitting-Marine-Aquaculture-United-States-June2022.pdf>
2. Guide to Federal Aquaculture Grant and Financial Assistance Services (SCA) (2022);  
<https://media.fisheries.noaa.gov/2021-09/Guide-to-Federal-Aquaculture-Grant-and-Financial-Assistance-Services-August2021.pdf>
3. State by State Summary of Finfish Aquaculture Leasing/Permitting Requirements (NOAA Fisheries)  
<https://media.fisheries.noaa.gov/2021-09/Report-State-by-State-Summary-of-Finfish-Aquaculture-Leasing-Permitting-Requirements-2021.pdf>
4. State by State Summary of Seaweed Aquaculture Leasing/Permitting Requirements (NOAA Fisheries)  
<https://media.fisheries.noaa.gov/2021-09/Report-State-by-State-Summary-of-Seaweed-Aquaculture-Leasing-Permitting-Requirements-2021.pdf>
5. State by State Summary of Shellfish Aquaculture Leasing/Permitting Requirements (NOAA Fisheries)  
<https://media.fisheries.noaa.gov/2021-09/Report-State-by-State-Summary-of-Shellfish-Aquaculture-Leasing-Permitting-Requirements-2021.pdf>
6. Aquaculture: Water Quality and the National Pollution Discharge Elimination System (EPA)  
<https://www.youtube.com/watch?v=ro6Viys1Oul&t=1s>
7. Stephanie Otts, *Exploring Options to Authorize Offshore Aquaculture: Facilitating Discussions among Regulators and Industry Members to Find Common Ground*, *Sea Grant Law & Policy Journal*, Vol. 11:1, 1 (August 2021); <http://nsglc.olemiss.edu/sglpj/vol11no1/sglpj11.1.pdf>
8. Zachary Klein, *Exploring Options For Granting Property Rights to Offshore Aquaculture Operations in the Exclusive Economic Zone*, *Sea Grant Law & Policy Journal*, Vol. 11.1, 15 (August 2021);  
<http://nsglc.olemiss.edu/sglpj/vol11no1/sglpj11.1.pdf>
9. Zachary Klein, Stephanie Otts, and Catherine Janasie, *Security of Tenure for Offshore Aquaculture: A Comparative Analysis of Property Rights Conferred by Management Regimes For Commercial Activities on Federal Lands*, *Sea Grant Law & Policy Journal*, Vol. 11:1, 151 (August 2021);  
<http://nsglc.olemiss.edu/sglpj/vol11no1/sglpj11.1.pdf>
10. [Farmer NA, Powell JR, Morris JA, Jr., Soldevilla MS, Wickliffe LC, Jossart JA, et al. \(2022\) Modeling protected species distributions and habitats to inform siting and management of](#)

[pioneering ocean industries: A case study for Gulf of Mexico aquaculture. PLoS ONE 17\(9\):e0267333; DOI: https://doi.org/10.1371/journal.pone.0267333](https://doi.org/10.1371/journal.pone.0267333)

11. Halley E. Froehlich, Rebecca R. Gentry, Sarah E. Lester, Mae Rennick, Hayley R. Lemoine, Sebastian Tapia-Lewin, Luke Gardner. 2022. Piecing together the data of the U.S. marine aquaculture puzzle. *Journal of Environmental Management*, Volume 308, Article 115623, DOI: <https://doi.org/10.1016/j.jenvman.2022.114623>
12. Lysel Garavelli, Mikaela C. Freeman, Levy G. Tugade, David Greene, Jim McNally. 2022. A feasibility assessment for co-locating and powering offshore aquaculture with wave energy in the United States, *Ocean & Coastal Management*, Volume 225; DOI: <https://doi.org/10.1016/j.ocecoaman.2022.106242>
13. Caitlin R. Fong, Claire M. Gonzales, Mae Rennick, Heather J. Lahr, Luke D. Gardner, Benjamin S. Halpern, Halley E. Froehlich. 2022. California aquaculture in the changing food seascape, *Aquaculture*, Volume 553; DOI: <https://doi.org/10.1016/j.aquaculture.2022.738009>  
  
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14. Douglas W. Bell, Suzanne B. Bricker, Christopher Kinkade & Elizabeth S. Darrow (2022) Bivalve Shellfish Aquaculture in the National Estuarine Research Reserves: Assessing Current Activities, Relevant Policy, and Engagement Approaches, *Coastal Management*, 50:5, 419-441, DOI: <https://doi.org/10.1080/08920753.2022.2082857>