

Aquaculture/Aquatic Animal Business Plan

Fiscal Years 2014 to 2018

Animal and Plant Health Inspection Service Veterinary Services

I. Aquaculture/Aquatic Animal Health Program Description

The Animal and Plant Health Inspection Service (APHIS) partners with commercial aquaculture industries, other Federal agencies and States to work collectively to protect and certify the health of farmed raised aquatic animals and facilitate their trade as well as to safeguard the nation's wild aquatic animal populations and resources.

The overall objectives of the APHIS Veterinary Services (VS) Aquaculture/Aquatic Animal Health Program are to:

- Protect the health of farm raised aquatic animals (finfish, mollusks, and crustaceans, both freshwater and saltwater), and
- Support the U.S. aquaculture industries to facilitate and leverage domestic and international trade.

These objectives are met through the implementation of elements in the National Aquatic Animal Health Plan (NAAHP). APHIS works in collaboration with other Federal NAAHP co-authors and partners, specifically the National Oceanic and Atmospheric Administration National Marine Fisheries Service (NOAA-NMFS) and the U.S. Fish and Wildlife Service (USFWS), to share authority for overall aquatic animal health in the United States. A memorandum of understanding (MOU) with these NAAHP partners has established the following:

- With regards to issuing export health certificates to foreign countries that APHIS is the lead agency and responsible for farm-raised aquatic livestock;
- NOAA-NMFS is the lead agency and responsible for marine feral aquatic animals, in captivity or captured from the wild; and
- USFWS is the lead agency and responsible for freshwater feral aquatic animals.

In addition to the NAAHP, this business plan proposes the development of model standards for an aquaculture health code) in partnership with industry which would emphasize APHIS as the lead agency for Federal oversight for a farm-raised aquatic animal health program. The authority of USDA for aquatic animals is established in the Animal Health Protection Act (AHPA).

The goals and efforts of both the NAAHP and aquaculture health code (model standards) are linked through the joint mission to protect aquatic animal health in this country — both farmed and wild populations. The NAAHP provides a national roadmap for overall aquatic animal health



and the infrastructure to support related activities. The standards of the code provide more specific guidance for on-farm (i.e., commercial aquaculture production sites) surveillance, testing requirements and animal health management and biosecurity. The code and the model standards will provide the structure through which APHIS, states and industry may attest to production, testing and biosecurity standards to approve an animal or product for international export or interstate movement.

This type of an industry-led program shifts APHIS' role from regulation to partnership in the development and oversight of farmed aquatic animal health standards. With these two complimentary plans (the NAAHP and code), APHIS in collaboration with USFWS and NOAA-NMFS sets the structure for national surveillance, roles and responsibilities of parties, laboratory and diagnostic approval and emergency management. While the aquaculture health code model standards addresses the farm-level to ensure animal health and farm biosecurity. The ultimate goals common to both the NAAHP and aquaculture health code are to protect and promote aquatic animal health, farmed and wild populations, and facilitate the trade of aquatic animals with minimal risk.

National Aquatic Animal Health Plan

The NAAHP was implemented in 2008. The goal of the NAAHP is to provide recommendations to industry, States, Tribes, Federal agencies and other stakeholders that 1) protect aquatic animal health; 2) facilitate trade; 3) ensure availability of diagnostic, inspection and certification services; and 4) minimize the impacts of disease.

The NAAHP itself is not a regulation, but provides general principles and guidelines for U.S. Federal agencies with responsibility for aquatic animals (e.g., APHIS, NOAA-NMFS and USFWS) and the action they should take to: 1) protect farmed and wild aquatic animal resources, 2) facilitate safe trade, 3) make available competent laboratory services, 4) train professionals, and 5) identify other strategies to fully implement the NAAHP.

Full implementation of the NAAHP has been slow and the plan needs to be updated. Over the next 5 years, two key elements in the NAAHP that will be further honed for implementation are 1) surveillance and 2) disease prevention, control and management. The NAAHP is the overarching roadmap for regional pathogen surveillance, laboratory engagement and broad education and training for aquatic animal health professionals. Because the MOU with NOAA-NMFS and USFWS is pending renewal and VS has reorganized, now is a good time to update the NAAHP, redefine roles and reprioritize all elements in the Plan. Activities to achieve these goals are listed in the Program Components section.

Aquaculture Health Code Model Standards

The aquaculture health code initiative is a developing partnership between aquaculture industries, APHIS, and States. The goal of the code is the establishment of model standards that protect, improve and verify farmed aquatic animal health to improve marketability and facilitate fair and robust trade both domestically and internationally. This partnership aligns with APHIS authority for farmed aquatic animals and health certification of farmed raised animals and their products. This effort could also assist States to develop consistent and uniform guidelines for aquatic animal testing and certification for domestic movement purposes.

This new initiative is accomplished as a partnership with commercial exporting aquaculture facilities to develop nonregulatory model standards in order to ensure aquatic animal health and facilitate animal movement. Model standards for on-farm pathogen surveillance and testing, biosecurity, disease prevention/control and management strategies and response will be developed with APHIS that are both protective and rigorous to scrutiny from domestic and international trading partners. APHIS will partner with States to oversee the implementation of the standards on a facility or compartment/farm level. APHIS will seek further collaboration from extension staff and offices to assist in the development of standard operating procedures (SOP) and managing on-farm training events.

The model standards will be on the scale of the farm-level for commercial aquaculture businesses engaged in domestic and international movement of animals. The standards will account for specific pathogens of concerns and species with natural pathogen susceptibility (based on scientific literature) and on-farm production and management/husbandry practices to develop a matrix for animal testing and health verification.

II. Program Elements

There are four overarching elements common to any aquaculture program, including the NAAHP. These elements are 1) prevention, preparedness and communication; 2) monitoring, surveillance and detection; 3) response and containment; and 4) continuity of business, mitigation and recovery. Several activities fall under each of these elements.

1. Prevention, Preparedness & Communication

Provide training/educational activities for USDA personnel, accredited veterinarians, laboratory personnel and U.S. aquatic animal stakeholders on disease risks, biosecurity, inspection procedures, surveillance, and certification.

Prepare, maintain, and exercise plans, SOPs, response templates, and guidance documents for responding to endemic, exotic, and emerging disease events impacting aquatic animal species.

Maintain readiness of APHIS responders on established incident management teams to respond to aquatic animal health events.

Ensure effective communications and information exchange with relevant Federal, State, Tribal, industry, and other stakeholders during adverse events affecting aquatic animal health, industry productivity, or safety.

Provide the regulatory framework necessary to implement the NAAHP including rulemaking, if necessary, and the development of program standards.

Partner with industry and States to develop and implement model standards to protect farmed aquatic animal health as well as facilitate trade (e.g., aquaculture health code).

Continue timely preparation and distribution of program and/or surveillance activity reports.

Assist in investigations of zoonotic disease incidences/outbreaks related to aquatic animals.

2. Monitoring, Surveillance & Detection

Develop a comprehensive and integrated surveillance (CIS) strategy by commodity group.

Conduct or analyze surveillance data for specific aquatic animal pathogens, such as infectious salmon anemia (ISA) virus in farmed animals and, when appropriate, in targeted and high-risk species (e.g., wild aquatic species) to facilitate specific disease control, animal health or trade decisions.

Maintain, develop and implement new methods, strategies and surveillance streams to facilitate efficient and accurate health determination of health status for facilities, compartments, regions and/or zones. Implement new approaches and improve efficiency of surveillance systems that detect existing, emerging and re-emerging pathogens.

Conduct periodic NAHMS surveys of relevant aquatic animal health and productivity topics.

Conduct investigations of potential exotic and emerging aquatic animal diseases. Conduct appropriate tracings and epidemiological investigations when aquatic animal health issues are identified.

Support the national laboratory infrastructure necessary to ensure the health of the U.S. aquatic animal industry by maintaining a wet lab at the National Veterinary Services Laboratories (NVSL); continuing to develop an aquaculture component under the National Animal Health Laboratory Network (NAHLN); including providing training and testing to demonstrate proficiency in conducting pathogen specific diagnostic tests; evaluating new testing methodologies and platforms; and producing/providing appropriate reagents for diagnostic testing.

License and monitor veterinary biologics and diagnostic kits used in association with aquatic animal health programs, and foster research to develop new biologics and diagnostic tests where appropriate.

Evaluate how management, the environment, and animal welfare practices interact to influence industry-specific health parameters and product wholesomeness, and subsequently work with industry to promote good production practices (e.g., aquaculture health code).

Promote ongoing monitoring/reporting via the National Animal Health Reporting System (NAHRS).

3. Response & Containment

Monitor, mitigate and control, if possible, the spread of significant aquatic animal pathogens, such as spring viremia of carp (SVC), ISA, and viral hemorrhagic septicemia (VHS) that currently have limited geographic distribution in the U.S. in wild populations.

When necessary and appropriate request and construct disease spread models.

Develop contingency emergency plans to execute timely response operations to aquatic animal health events.

Plan and conduct disease response activities such as cleanup, trace-back investigations, post exposure monitoring, testing, and disposal of high risk animals where appropriate.

4. Continuity of Business, Mitigation & Recovery

Partner with States/Tribes and industry to develop, maintain, and exercise impact mitigation, continuity of business, and other business recovery plans and guidance documents.

Develop and implement policies and procedures (surveillance, biosecurity, biosafety, and permitting activities) necessary for the continued movement of aquatic species and products from noninfected facilities within quarantine zones during disease outbreaks.

Manage aquatic animal health programs and disease/health-related activities to avoid disruptions to production, the food sector, and consumers.

Implement proactive risk assessments, surveillance plans, biosecurity requirements, permit processes, and information management for movement of non-contaminated aquatic animals/products during aquatic animal health events.

III. Funding Sources

The Aquatic Animal Health (AAH) line supports activities to protect the health and improve the quality and productivity of U.S. aquaculture industries. The AAH line also supports efforts to minimize the impact of diseases on wild aquatic species. Total APHIS AAH appropriations for FY 2013 were \$2.1 million. Total APHIS FY 2014 AAH appropriated funding is \$2.25 million. Activities supported by the AAH line are in the following areas (as described above): prevention, preparedness and communication; monitoring, surveillance and detection; response and containment; and continuity of business, mitigation and recovery.

It is recognized that not all activities proposed in this business plan can be achieved given the current AAH line allocation. However, the goals outlined, especially national surveillance strategies for finfish, mollusk and crustacean pathogens, are critical to achieve overarching program objectives, therefore increased or alternative funding sources must be considered and explored.

IV. Value of Program Objectives

U.S. animal aquaculture includes the production of food fish (e.g., catfish, trout, salmon, tilapia), ornamental fish, baitfish, mollusks (e.g., clams and oysters), crustaceans (e.g., shrimp and crawfish) and some reptiles (e.g., alligators and turtles). These animals are grown across the United States in a variety of climates, fresh or salt water, using farming practices that range from

extensive to intensive production systems. In 2007, sales of the U.S. aquaculture industry totaled \$1.4 billion (0.5% of total U.S. agriculture sales). The top sectors included catfish, mollusks, trout, and other food fish species. Smaller sectors reported were sport or game fish, other aquaculture products such as aquatic plants, ornamental fish, crustaceans, and baitfish.

Domestic aquaculture production represents a less than 5% of total seafood supplied in the United States, as compared to imported seafood (about 90%) and domestic wild-caught (approximately 5%).

Despite being one of the world's largest exporters of seafood, the U.S. is the second largest seafood importer. In 2012, the U.S. imported \$16.6 billion of seafood (e.g., shrimp, salmon and tilapia), mostly from China, Canada, and Vietnam. During the same year, we exported \$5.7 billion of seafood—a trade deficit of \$10.9 billion. This deficit has been increasing over the past 3 years and represents the highest trade deficit among food, feeds, and beverage commodities reported. APHIS issues on an annual basis approximately 1500 import permits for over 30 million regulated fish (primarily koi and goldfish) from Asian-Pacific trading partners.

APHIS endorses export health certificates for live aquatic animals and products. Over the past decade, U.S. trading partners have been requesting new or additional export health certification for aquatic animals. We have bilateral aquatic health certificates with several countries and are negotiating additional health certificates with several other countries. Some trading partners require APHIS to register aquaculture facilities as exporting facilities of aquatic animals, which means an APHIS Veterinary Medical Officer must conduct a site visit to these facilities on an annual basis.

APHIS' leadership, engagement and commitment are necessary for the U.S. aquaculture industry to grow in the United States and expand markets worldwide. This leadership and direction not only provides assistance to domestic U.S. aquaculture industries trying to prevent and control diseases, but also help the industries achieve and demonstrate aquatic animal health to improve marketability of their animals and products. It is also important for our trading partners to see APHIS providing model standards for the use of industry and States, to show that the United States is knowledgeable of the health status of both its farmed and wild aquatic animal populations. This will also allow can provide credible information on the health status of U.S. aquatic animal populations to trade partners upon request.

V. Strategies by Fiscal Year

Year 1 (FY 2014) Strategies

Strategy 1 – Surveillance and monitoring

- Continue ISA surveillance project in the Pacific NW working with the United States Geological Service (USGS).
- Continue ISA surveillance and testing in Maine.
- Prioritize pathogens for targeted surveillance in open systems for finfish, mollusks and crustaceans.

- Begin development of a general comprehensive and integrated surveillance (CIS) strategy to guide future development of aquaculture commodity specific plans.
 - Identify system requirements, evidence streams, decision support methods, surveillance requirements and methods of prioritization.
- Initiate planning for future NAHMS studies of aquatic animal industries (i.e., salmonid industry, ornamental industry, baitfish industry, molluscan, crawfish/shrimp/prawn, hatchery for stock enhancement etc.).
- Begin investigation on how to internally conduct an OIE Performance of Veterinary Services (PVS) tool analysis to identify VS infrastructure gaps.

Strategy 2 – Aquaculture Health Code

- Participate in an industry organized meeting with multiple aquatic industry groups to begin development of model standards for the code (April 2014).
- Initiate a surveillance needs assessment.
- Engage aquaculture extension to list SOPs needed for code.
- Engage States for support and collaboration of the aquaculture health code.

Strategy 3 – Education, Outreach, and Training

- Develop a stakeholder outreach and communication plan for the rescission of the VHS Federal Order.
- Engage stakeholders (Federal Partners, States, and Tribes) to obtain input on the aquaculture health code.
- Work with industry and States to assess their VHS risk in the absence of the VHS Federal Order and assist with the development of a model of minimum standards/guidelines to minimize VHS risks.
- Develop and implement a pilot focus group to discuss needs and concerns for molluscan industry and examine the molluscan model of facility/state partnership for data collection.
- Use a novel integrative group process (IGP) to strengthen stakeholder collaboration and guidance on mollusk health management (VS Grassroots Project).
- Training: To target veterinary medical officers, export document examiners, and accredited veterinarians.
 - Professional Development Services training events – September 2014 – export training
 - Explore FADD training possibility in Ames, IA
 - National Veterinary Accreditation Program (NVAP) modules
 - Launch of module 14, titled “Evaluation of Aquatic Animals for Detection of Reportable Diseases and Pathogens.” Module covers the list of reportable aquatic animal diseases, common clinical signs of disease in finfish, crustaceans and mollusks and how to collect and where to send samples as part of a disease investigation.
 - Electronic internal and external resources
 - Focus on Fish health website: Additional development of factsheets.
 - APHIS aquaculture website: Provide updated material.
 - Aquatic Animal Health SharePoint site: Update and maintain.

Strategy 4 – Update National Aquatic Animal Health Plan (NAAHP)

- Begin discussions with NOAA-NMFS and USFWS on plan to update the NAAHP.

Strategy 5 – Diagnostic and Laboratory Infrastructure

- Continue effort of aquatic NAHLN component for ISA and VHS.
 - Review of SOPs by working group and review pilot progress.
- Provide proficiency testing panels for ISA and VHS.
- Conduct confirmatory testing of pre-licensing serials for aquaculture products (e.g., vaccines) and test new products.

Out Year Strategies and Activities

FY 2015-2016

- **Surveillance Strategy**
 - Complete ISA project in Pacific NW.
 - Analyze and report data.
 - Develop and implement a comprehensive and integrated surveillance strategy for specific commodity groups, one per year.
 - Start with commodities with significant trade activity such as salmonids and mollusks.
 - Establish partnerships where needed.
 - Conduct baseline health status (and surveillance needs) assessments.
 - Establish criteria for use of historical data and risk factor data.
 - Substantiate disease freedom claims where possible.
 - Determine which pathogens and regions require additional surveillance.
 - Prioritize current surveillance resources.
 - Initiate targeted surveillance.
 - Conduct focus group meeting(s) and site visit(s) to establish networks and objectives.
- **Aquaculture Health Code Strategy**
 - Continue code activities.
 - Develop program standards.
 - Review and update SOPs.
 - Model language for interstate movement requirements based on best available science.
 - Institute routine (every 2 years) health status assessments by commodity.
 - Address identified industry needs.
 - Continue participation in focus groups to strengthen partnerships and determine industry needs and APHIS' role to assist and support the industry.
- **NAAHP Strategy**
 - Continue and complete update of NAAHP.

- Conduct internal Performance of Veterinary Services (PVS) tool analysis to identify VS infrastructure gaps.
- Identify basic national and State biosecurity needs and gaps.
- Continue to work towards standardization of diagnostic test methods.
- **National Emergency Planning Strategy**
 - Develop national aquatic animal (e.g., finfish, mollusks and crustaceans) control and response plans, including:
 - Depopulation planning appropriate to species for disease management/control scenarios
 - Disposal procedures and processes applicable to the species, location, and disease or pest
 - Disinfection guidance focusing on specific agents for equipment/environments such as diver's gear, nets, water handling and biofilters, and hatcheries appropriate to the disease or pest of interest.
 - Engage with stakeholders to determine their planning and response needs with the intention of also developing continuity of business plans specific to each industry sector.
- **Diagnostic and Laboratory Infrastructure**
 - Continue NAHLN effort for aquatic pathogens.
 - Continue proficiency testing and new panels.
- **Education, Outreach and Training**
 - Develop emerging or exotic aquatic animal disease diagnostician training programs for FADDs to properly collect and handle diagnostic samples.
 - PDS training events.
 - Update NVAP modules 13 (Aquatic Animal Health Regulations and Certification) and 15 (Disease Prevention and Biosecurity in Aquaculture)
 - Explore new topics for aquaculture in NVAP.
 - Focus on Fish Health website: Draft additional factsheets, if needed.
 - Update electronic resources as appropriate (e.g., APHIS aquaculture website, aquatic animal SharePoint site, international regulations [iRegs]).

FY 2017-2018

- **Surveillance Strategy**
 - Continue to develop and implement a comprehensive and integrated surveillance strategy for specific commodity groups (baitfish, ornamentals, shrimp, other crustaceans, etc.).
 - Establish partnerships where needed.
 - Conduct baseline health status (and surveillance needs) assessments.
 - Establish criteria for use of historical data and risk factor data.
 - Substantiate disease freedom claims where possible.
 - Determine which pathogens and regions require additional surveillance.
 - Prioritize current surveillance resources.
 - Initiate targeted surveillance.

- Continue routine health assessments by commodity.
- **Aquaculture Health Code Strategy**
 - Continue outreach and discussion.
 - Review program standards.
 - Review and evaluate program.
 - Conduct industry assessment to identify needs for next 5 years.
- **NAAHP Strategy**
 - Review PVS tool output.
 - Continue to work towards standardization of diagnostic test methods.
 - Proficiency testing
 - Work with NOAA and USFWS to update the NAAHP MOU.
- **Emergency Planning**
 - Conduct exercises/drills on developed emergency plans.
- **Education, Outreach and Training**
 - Conduct NAHMS catfish study aquaculture trends study to identify new directions/groups/needs.
 - Hold PDS training events
 - Aquatic FADD course
 - Update electronic resources as appropriate (e.g., APHIS aquaculture website, Aquatic animal SharePoint site, international regulations [iRegs]).
 - Develop new NVAP module, as appropriate.

VI. Appendix 1: Acronyms

AAH	Aquatic Animal Health
AHPA	Animal Health Protection Act
APHIS	Animal and Plant Health Inspection Service
CIS	Comprehensive and Integrated Surveillance
CVB	Center for Veterinary Biologics
FADD	Foreign Animal Disease Diagnostician
IGP	Integrative Group Process
ISA	Infectious Salmon Anemia
MOU	Memorandum of Understanding
NAAHP	National Aquatic Animal Health Plan
NAHLN	National Animal Health Laboratory Network
NAHMS	National Animal Health Monitoring System
NAHRS	National Animal Health Reporting System
NMFS	National Marine Fisheries Service
NOAA	National Oceanographic and Atmospheric Administration
NVAP	National Veterinary Accreditation Program
NVSL	National Veterinary Services Laboratories
OIE	World Organization for Animal Health
PDS	Professional Development Staff
PVS	Performance of Veterinary Services
SOP	Standard Operating Procedure
SVC	Spring Viremia of Carp
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Service
VHS	Viral Hemorrhagic Septicemia
VMO	Veterinary Medical Officer
VS	Veterinary Services