Report of the USAHA/AAVLD Committee on Aquaculture
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The Committee met on October 25, 2015 at the Rhode Island Convention Center in Providence, Rhode Island from [*enter time*]. There were 12 members and 20 guests present.

The meeting began at 12:30pm with the introduction by Lester Khoo.

Time-Specific Paper Title.
NA.

Presentations & Reports

1. **Title** Conserving the nature of America: An Agency introduction and role in disease/pathogen management
   Presenter:Dr. Joel Bader, United States Fish and Wildlife Service (USFWS)
   Summary of presentation:

Dr. Bader gave a presentation entitled as above with the aim to provide those present a better understanding of the USFWS. It is the federal resource agency tasked with conserving America's wildlife. It is housed within the Department of the Interior and has 11 different divisions including Law Enforcement (LE), Endangered Species, Migratory Birds, Refuges, Wildlife and Sport Fish Restoration, International Affairs, External Affairs, and Fish and Aquatic Conservation. Their National Fish Hatcheries system includes 70 hatcheries, 9 fish health centers, 7 Fish Technology Centers and the Aquatic Animal Drug Approval Partnership (AADAP) program. While USFWS does not have pathogen regulatory authority, they do have several tools to achieve their mission namely, science support, scientific leadership and expertise, partnerships (federal, states, tribes and non-governmental organizations) and in the most severe situations, specific regulatory authority to implement rules to protect the wildlife of the United States. He described the USFWS contributions to the National Aquatic Animal Health Plan. He also expounded on Aquatic Nuisance Task Force and how the agency ameliorates the threat of invasive species, the Lacey Act, how the Service lists injurious wildlife (and the use of listing injurious species and/or non-regulatory solutions to provide protection for America's wildlife), and the other Acts which provides the Service its authority.

The second part of his presentation was an update on the activities of the agency including:

A. National Aquatic Animal Health Plan(NAAHP) – Memorandum of Understanding (MOU – umbrella MOU and an export specific MOU) with the other agencies - the National Oceanic Atmospheric Administration and the United States Department of Agriculture. This was renewed for the next 5 years and better defines the roles of each agency in the plan (i.e. USDA-APHIS – aquacultured animals; NOAA – wild marine animals, USFWS- wild freshwater animals). The export specific MOU defines who has the authority to sign for the health certificates required for exports
B. Salamander chytrid fungus (Bsal - *Batrachochytrium salamandrivorans*)
   This pathogen is in Europe and not in the United States(US) as yet and the agency was petitioned to prevent its entry to the US. The service is evaluating which salamander species should be listed as injurious wildlife to prevent the risk of Bsal's introduction into the United States, and expects to complete and publish its evaluation this Fall. This injurious wildlife evaluation is considered a Director's priority and intend to regulated this issue through the Lacey Act this fiscal year.
C. Amphibian chytrid fungus (Bd)

The Service received a petition in 2009 from the Defenders of Wildlife to list amphibians as injurious wildlife unless they are certified as free of *Batrachochytrium dendrobatidis* which lead to the Service publishing a Notice of Inquiry in the Federal Register on September 17, 2010, to announce a request for information on the petition. The public information period closed on December 16, 2010. It received approximately 450 comments and has reviewed the information, as well as other information we acquired. However, the Service has prioritized completion of other injurious wildlife evaluations at this time, such as salamander chytrid fungus, because of the goal of preventing that fungus's entry into the United States.

D. Risk Screening

The Service has developed three rapid screening tools, known as Ecological Risk Screening Summaries, Fish Risk Assessment Model, and Risk Assessment Mapping Program to help determine which species pose a high, low, or uncertain risk of invasion. It allows the use the most current scientific methods and databases to quickly gather and more efficiently analyze data. The Service has already performed hundreds of ecological risk screenings on aquatic animal species. The Service is providing the public with some of the summaries that synthesize the results of the screenings. Some of the reports are available on our website, which was created to serve a partnership with industry and the Association of Fish and Wildlife Agencies relating to animals not known to be imported. An additional website is planned, which will include summaries for species being imported.

More reports will be published as they are finalized. Many of these reports are for species that are not yet in trade or in the wild in the United States. If importers are contemplating using these species, these reports can provide the live-animal-industry and the public with technical assistance as to whether the species would pose a high or low risk of invasiveness. Thus, industry could make an informed decision to refrain from importing high-risk species. Knowledge of both low- and high-risk species will provide industry, States, and consumers with valuable knowledge for deciding which species are more responsible choices to acquire and use. In addition, State natural resource and conservation agencies can use the summaries to aid their management decisions for potentially invasive species and to work with industry on their own agreements for risky species in their jurisdictions.

The National Aquaculture Association has expressed concern with some aspects of the screening process. Based on those concerns, the Service has pursued and completed peer review per OMB policies for influential science. In June 2013, the Service signed a Memorandum of Understanding with the Pet Industry Joint Advisory Council (PIJAC) and Association of Fish and Wildlife Agencies (AFWA) to help prevent future ecological invasions caused by trade in live animals. It is expect that other parties to join the MOU.The MOU focuses on aquatic, nonnative species not yet in trade in the U.S. and, therefore, should not affect the current economic status of the trade industry. The Service will provide technical assistance to the industry characterizing imported aquatic animals with their risk potential as invasive species. The Service also welcomes risk assessment for particular species of concern from partners and stakeholders. The Service is working with States, industry, and others through the Invasive Species Committee of the Association of Fish and Wildlife Agencies. Given numerous requests from aquacultural interests to States regarding the potential importation of African Longfin Eel (*Anguilla mossambica*), this committee is currently evaluating this species.

E. Legislation Modernizing Injurious Wildlife

While control and management of invasive species is vital, prevention is widely viewed as the most cost-effective means to avoid and minimize harm. The Service views the injurious wildlife provision of the Lacey Act is one of the strongest tools available to the Department of the Interior to manage the risks of invasive species within the trade pathway. Previous Congresses have introduced bills that would amend the injurious wildlife provisions of the Lacey Act, such as S. 1153 in the Senate and H.R. 996 in the House of Representatives in the 113th Congress. Earlier sessions of Congress have also introduced legislation, showing the interest by Members in this issue. S. 1153 would have significantly amended the injurious wildlife listing process, and would have given the Secretary of the Interior additional authorities to prevent the importation of, and interstate commerce in, wildlife pathogens and harmful parasites. In testifying about the bill at a hearing on July 16, 2014, Fish and Wildlife

Service Deputy Director Guertin indicated support for the intent and purpose of the bill. However, Deputy Director Guertin raised concerns about provisions that would undermine Fish and Wildlife Service's ability to implement and enforce the law's prohibitions on importation and interstate transport of injurious wildlife, such as a broadening of exemptions under newly created Injurious I and II categories for listing wildlife. Legislation may be introduced in this session of Congress but the Service has not received any updates on the status of an updated bill that could be introduced into this Congressional session.

F. Categorical Exclusion (CatEx) under National Environmental Protection Act (NEPA) for the injurious wildlife listing under the Lacey Act:
The CatEx will allow the Service to list species more efficiently by allowing the Service to expedite the environmental review process for proposals that typically do not require more resource-intensive Environmnental Assessments (EAs) or Environmental Impact Statements (EISs). Branch of Aquatic Invasive Species (BAIS) published the proposed CatEx in the Federal Register in July 2013, reviewed and addressed the more than 5,000 public comments, and composed a draft final notice. The Service, coordinating through the Department, has received approval from the Council on Environmental Quality for the new categorical exclusion under NEPA for future injurious wildlife listings. The Service will publish a final notice in the *Federal Register* that the new categorical exclusion takes effect upon publication. Target to the *Federal Register* is by late October.

G. Multi-species proposed rule:
BAIS has prepared a multi-species proposed rule to list 10 freshwater fish (Amur sleeper, crucian carp, Eurasian minnow, European perch, Nile perch, Prussian carp, roach, stone moroko, wels catfish, and zander) and 1 crayfish (yabby) as injurious species. All species have a high climate match in parts of the United States, a history of invasiveness outside their native ranges, and, with one exception (zander in Spiritwood Lake, North Dakota), are not currently found in U.S. ecosystems. The Ecological Risk Screening Summaries to obtain climate-matching and other information. This is the first rule the Service is proposing since it has signed a Memorandum of Understanding with Pet Industry Joint Advisory Council (PIJAC) and Association of Fish and Wildlife Agencies (AFWA) in 2013, which outlines an agreement regarding the voluntary refrain from importation of species not yet in trade in the United States. The draft rule, environmental assessment, and economic analysis are under review with the Service. The USFWS anticipates being able to publish a proposed rule for public comment and peer review by end of October 2015. Publication of a final rule is expected in 2016.

H. Large Constrictor Snake final rule litigation:
In 2010, BAIS published a proposed rule to list nine species of large constrictor snakes as injurious species. In 2012, four species were listed (Burmese and two other pythons, plus the yellow anaconda). In 2014, the Service reopened the comment period on the five remaining constrictor snakes (reticulated python, green anaconda, Beni anaconda, DeSchauensee's anaconda, and boa constrictor). In March, the Service published the final rule to list the reticulated python and the three anacondas, but withdrew the proposal to list the boa. As soon as the second final rule published, the plaintiffs, the United States Association of Reptile Keepers (USARK), for the lawsuit against the first final rule filed an amendment to add the four newly listed species to their challenge. On May 12, 2015, the U.S. District Court for the District of Columbia (Judge Randolph Moss) granted USARK's motion for a preliminary injunction finding that the plaintiffs were likely to prevail on the merits of the case that the Service lacks authority to prohibit interstate transport of species listed as injurious wildlife under Title 18 of the Lacey Act. Department of Justice's decision to appeal is pending. In the meantime, specific members of USARK may transport two species of large constrictors listed in 2015, the reticulated python and green anaconda, across state lines in the Continental U.S. except into Florida and Texas.

The complete text (pdf of his presentation) of this presentation is included at the end of the report.

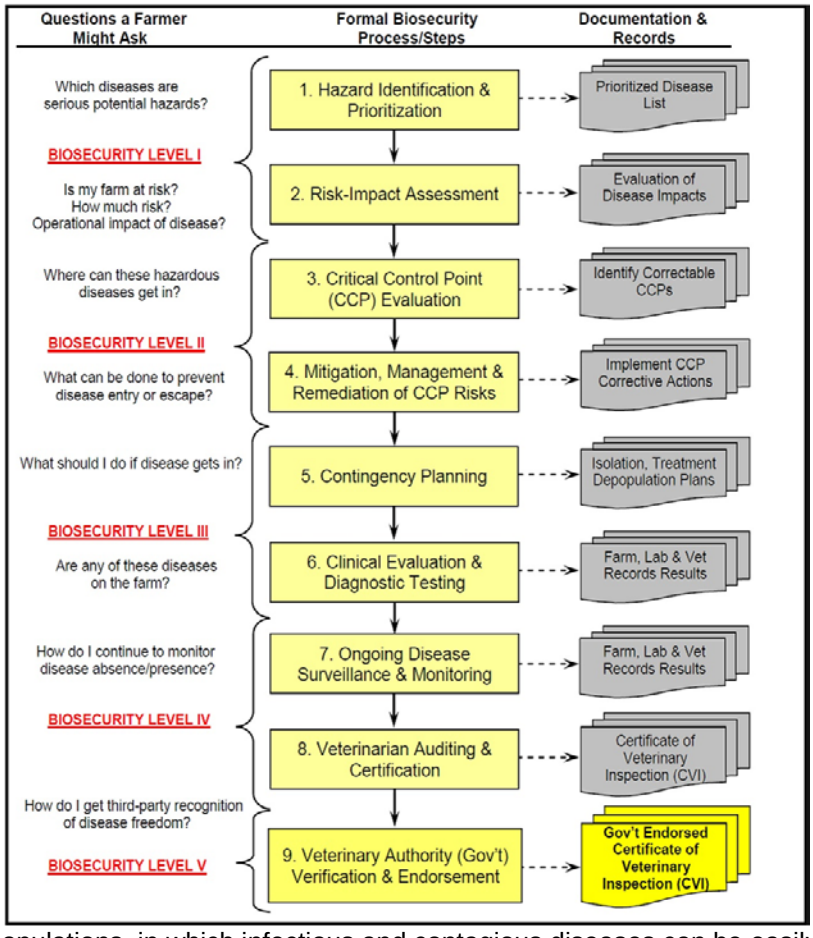
2. **Title Practical Approaches to implementing Aquaculture Biosecurity Programs and Meeting OIE Standards and Regulations**
Presenter::Dr. David Scarfe, Aquatic Veterinary Associates

Summary of presentation:

The abstract of Dr. Scarfe's presentation is as below:

Facing progressively increasing risks and impacts of disease on aquaculture productions in all countries, over more than a decade at numerous conferences, symposia and workshops, a large number of individuals have discussed and debated what procedure that should be incorporated into biosecurity programs. A key feature has been determining which procedures will meet International Standards (i.e. processes and procedures in OIE Codes & Manuals) and National regulations. In balancing these requirements with practical approaches that aquaculture producers can implement, and are effective and useful for all stakeholders around the world (from producers to governmental regulators), the following were recognized as priorities for all biosecurity programs:

a) be practical and economic;
b) focus only on infectious and contagious diseases;
c) include procedures that address disease prevention, control and eradication in definable epidemiological units;
d) be based on well-established, sound scientific-justifiable veterinary procedures;
e) incorporate internationally accepted standards in the OIE Code and Manual; and,
f) involve public-private partnerships and collaboration between producers, aquatic veterinarians and paraveterinary professionals, and governmental regulators.



In focusing on these principles, the International Aquatic Veterinary Biosecurity Consortium (IAVBC) has tested the procedures in Figure 1 with stakeholders at several conferences and workshops in Norway, South Africa, Chile, and elsewhere, that involve an integrated approach for developing, implementing, auditing and certifying effective aquaculture biosecurity program. At the core of a biosecurity program is defining an epidemiologic unit (EpiUnit), a well-defined geographical population of animals, on which all biosecurity steps or processes will be implemented.

Figure 1. Integrated steps for developing, implementing, auditing and certifying an effective biosecurity program intended to prevent, control and possibly eradicate disease in any epidemiological unit (a defined population of animals, separated to some degree from other populations, in which infectious and contagious diseases can be easily transmitted – e.g. a tank/pond, farm, state/province, zone, region or country).

The complete text (pdf of his presentation) of this presentation is included at the end of the report.

3. **Title:** Aquaculture/ Aquatic Animal Health Program
Presenter: Dr. Kathleen Hartman, United States Department of Agriculture – Animal and Plant Inspection Service, Veterinary Services (USDA-APHIS-VS)

Summary of presentation:
Dr. Hartman provided the update on the activities of the USDA-APHIS-VS as well as providing those in attendance information on the Commercial Aquatic Health Program Standards.

As part of the update, she spoke of the 5 year business plan for that is updated yearly which can be view on the web (https://www.aphis.usda.gov/animal_health/downloads/vsbp/5_year_business_plan_aquaculture.pdf.) The highlights of the activities included the renewal of the MOUs with USFWS and NOAA. The agency is commitment to the NAAPH has been reinvigorated with the signing of the MOUs. The agency has completed Phase 1 of integrating aquatics into the National Animal Health Laboratory Network (NAHLN) and the details of which was provided by Dr. Christina Loiacono who presented after Dr. Hartman. Dr. Hartman provided updates of the efforts of Import/Export Division who have completed the pilot of the Veterinary Export Health Certificate System (VEHCS). This includes an almost completely electronic certificate of export of ornamental fish to Canada and there are ongoing discussions for completely electronic certificates. She reported that the Surveillance Collaboration Services – Core One database structure for aquatic animal entries has been completed. Also completed is the Comprehensive and Integrated Surveillance (CIS) plan for aquaculture and elements of plan have been incorporated into the CAHPS. Sample collection for the multi-agency Infectious Salmon Anemia Virus surveillance in the Pacific Northwest and all tests are negative. She also reported on the efforts of Dr. Lori Gustafson (Center for Epidemiology and Animal Health) and Dr. Christa Speekman (Import/Export) who worked with the East Coast Shellfish Management to try to integrate shellfish into CAHPS. She also reported on the collaboration with University of Arkansas-Pine Bluff (UAPB) on aquaculture-agriculture economics project. A graduate student under Dr. Carole Engle a bait/sport fish survey to determine the economic burden of these bait/sport fish producers from 13 states for interstate commerce. The results of this will be published in December and will be reported at Aquaculture America 2016. There are thoughts of utilizing a similar type survey for salmon and trout producers. She then provided details on CAHPS including

a. The concept of CAHPS (i.e. that is model framework for aquatic animal health; it implements portions of NAAPH; it is science based; it is needs based (voluntary); and is empowered and strengthen by partnerships with State, Tribal and Federal entities).
b. These standards will assist in:
    1. The culture and production of healthy animals for sale and trade;
    2. Demonstrating the health status of animal to minimize obstacles for animal movement which
    3. Increase trade for less production costs
c. Principles of CAHPS which are:
    1. Aquatic animal health team – which has the knowledge and skills and varies in composition depending on the needs of the individual producer; assists in the development of a site-specific health plan which is composed of 1. Communication plan, 2. Risk evaluation and Management plan; 3. Surveillance Plan, 4. Disease Management Plan and 5. Response plan
    2. Risk evaluation
        i. Identification and characterization
        ii. Management – mitigation
    3. Surveillance
        i. Defining the purpose and surveillance boundaries – i.e. establishing disease or pathogen status for establishment, compartment or zone
        ii. Types and strategies – it is observational, pathogen specific and risk based
    4. Investigation and Reporting which includes disease investigation based on the mortality/morbidity threshold set by the aquatic animal health team and including the reporting to appropriate authorities.
    5. Response – what to do when things do not go according to plan and to close the gaps
        i. Contingency planning
        ii. Continuity of business

iii. Pathogen and impact of pathogen – determine if need to treat, vaccinate or depopulate
iv. Debriefing

She also provided the reasoning behind CAHPS as well as the benefits of producers/stakeholders implementing the standards,

The complete text (pdf of her presentation) of this presentation is included at the end of the report.

4. Title Aquatic Pathogen Testing in NAHLN Laboratories Update
Presenter: Dr. Christina Loiacono, United States Department of Agriculture Animal Plant Health Inspection Service (USDA-APHIS)

Summary of presentation
Dr. Loiacono provided a brief review of the history of the National Animal Health Laboratory Network (NAHLN), its purpose and the partnership role between USDA (APHIS & National Institute of Food and Agriculture[NIFA]), the AAVLD, and the NAHLN laboratories. A review of the founding principles and features of NAHLN including quality standards, personnel competency, standardized protocols and equipment, biosafety/biosecurity considerations, security of electronic communications and reporting, and assessment of preparedness through scenario testing were covered. Several slides were shown which presented the state of NAHLN laboratories. The original 12 NAHLN laboratories were presented then compared to the current expanded number of NAHLN laboratories covering swine, avian, bovine and aquatic pathogens. Laboratories approved to test for ISAV and VHSV under the NAHLN were shown.

There was discussion of the NAHLN including a new structure covered in a 2012 concept paper put out by the NAHLN Coordinating Council. Several major changes were proposed including lab designations (level 1-3, affiliate, & specialty), reassessments (annual reassessment for funding distribution and number of labs per level/every 3 years full network assessment to update capacity and evaluate use of matrix). It is anticipated that implementation will occur in 2016 with checklist process with funding adjustments to be made in 2016 funding cycles. Under the NAHLN restructure, lab designations will have the following:

Level 1	Level 2	Level 3	Affiliate Lab	Private Lab	Reference
Large test capacity	Similar Level 1 reduced capacity	Surveillance testing	Publically funded	Specific, needed capability	Oversight
Fully accredited	Provisionally accredited		Occasion. perform NALHN rel. testing	Rel. w/ NAHLN lab & SAHO	Training
BSL3 facilities	No BSL requirements			Written, approved plan to avoid COI	SOP's
LIMS/messaging					Reference material
Trainers					Proficiency testing
Test dev & validation					

Under the new structure plan, there will be three phases: 1) NAHLN Methods Technical Working Group (MTWG) will review and approve the SOPs for ISAV and VHSV testing. Existing NAHLN laboratories will be invited to participate in Phase 1 by including ISA and VHS in their NAHLN testing capabilities, taking part in proficiency testing and reporting results as indicated in the SOPs. 2) The APHIS Aquatic Animal Health Program along with NAHLN will invite other Federal and State non-NAHLN laboratories (e.g., U.S. FWS Fish Health Laboratories) and private aquatic animal health testing laboratories to consider applying for NAHLN approval and test for the approved aquatic diseases using standardized requirements. 3) Aquatic animal pathogens identified in the National Aquatic Animal Health Plan and the recently developed Commercial Aquaculture Program Standards will be considered for addition to the NAHLN disease testing list. The NAHLN Coordinating Council will evaluate and approve these prior to being added to the aquatic animal pathogen group within the NAHLN scope. The NAHLN MTWG will review the associated SOPs.

The NAHLN laboratory qualification checklist for membership of a veterinary diagnostic laboratory will require an annual renewal along with an agreement to meet the requirements of the NAHLN including quality management, foreign animal disease (FAD) assays and investigations, sample handling,

communication and reporting, and administrative and financial requirements. The applicant will have to request any changes to the disease/agent approvals and obtain signatures needed from the state (SAHO, etc.) and federal representative (DD or AD). A list of current NAHLN labs was presented along with their specific request for aquatic pathogens (Infectious Salmon Anemia Virus[ISAV] & Viral Hemorrhagic Septicemia Virus [VHSV]) to be added to their disease programs.

A progress update was provided on each phase. Under Phase I, NAHLN Methods Technical Working Group and other aquatic subject matter experts reviewed and approved SOP's for ISAV and VHSV testing. Existing NAHLN labs were invited to participate in Phase I including ISA and VHS in their NAHLN testing capabilities. Proficiency tests have been provided which included working with the NAHLN for PT registration through the NAHLN portal along with identifying the need to lab to have permits for shipping PT virus. Data will be presented to the NAHLN Coordinating Council. Results were provided from the PT testing. 8 labs took part in ISAV PT (RT-real time PCR) with all passing successfully. 8 labs took part in the VHSV PT (VI) with 5 successfully passing and 3 working towards becoming PT'd. 11 labs took part in the VHSV PT (RT-real time PCR) with 8 successfully passing and 3 working towards becoming PT'd.

Under Phase II, there is pending implementation of the NAHLN restructure including the incorporation of Federal and state non-NAHLN labs (e.g. USFWS Fish Health Labs) and private aquatic animal health testing laboratories. Phase III will include more aquatic pathogen assays. The future of aquatic pathogen testing in NAHLN labs will include the expansion of membership including private labs (2016) as well as quality management training and more aquatic pathogen assays.

The complete text (pdf of her presentation) of this presentation is included at the end of the report.

[*If you are including the full text, indicate Name and content of presentation, followed by "thecomplete text of this presentation is included at the end of this report." Please include a copy of the paper.*]

Committee Business:
In response to the presentation on CAHP, a motion from the floor for a resolution to help in the implementation of this program was made by Dr. David Scarfe and was seconded by Dr. Anne Lichtenwalner. After discussion, the motion passed unanimously.

The committee also discussed the issue of which pathogens might be the added to the list of current pathogens to be included in NAHLN testing besides Infectious Salmon Anemia and Viral Hemorrhagic Septicemia. This included the process(s)/criteria by which these pathogens may be selected. Committee members are encouraged to provide feedback to Drs. Loiacono or Hartman or to the chair/co-chair.

OTHER NOTES: