State Wildlife Action Plans & Fish and Wildlife Health

Learning Series #12

Date: November 15, 2023 **Time**: 2:00pm-3:30pm (ET)

Meeting Link: https://fishwildlife-org.zoom.us/j/84276539926?pwd=i0GEahhCYlioftAcJ7KAe9THwWn0wM.1

Meeting ID: 842 7653 9926 **Passcode**: 988817

One tap mobile: +13017158592,,84276539926#,,,,*988817#

Overview: The management of fish and wildlife diseases and links to human well-being is an ever-expanding challenge for fish and wildlife conservation professionals. Major impacts have already been documented for numerous fish and wildlife species in terrestrial, freshwater, and marine ecosystems. Ongoing diseases such as Chronic Wasting Disease, Whirling Disease, and White-nose Syndrome threaten wildlife populations and continue to occupy the time and efforts of fish and wildlife scientists and managers. There is also a growing awareness of the connections between environmental and wildlife health and the health of human communities. AFWA has led efforts such as the 2019 Fish and Wildlife Health Forum and 2023 President's Task Force on One Health to help promote engagement on these issues. There are many resources available to states that can assist with SWAP revisions related to fish, wildlife, and human health. This session will cover approaches that states can use as examples to develop their own actions.

MEETING AGENDA

Time (ET)	Topic	Speakers
2:00 PM	Welcome and Introductions (5 min)	Jason Goldberg, FWS; Mark Humpert, AFWA
2:05 PM	One Health 101 & How the US Fish and Wildlife Service can Help (10 min) AFWA's One Health Priorities (5 min) Key Fish and Wildlife Health Issues to Consider for your SWAP (10min) Strategies for Addressing Wildlife Health Issues in the Pennsylvania Wildlife Action Plan (10min)	Dr. Darby Murphy, Public Health Veterinarian, USFWS Mark Humpert, Director Conservation Initiatives, AFWA Dr. Jenn Ballard, State Wildlife Veterinarian/Assistant Chief, Arkansas Game & Fish Commission Dr. Andrew Di Salvo, PA Game Commission; Dr. Julie Ellis University of Pennsylvania PennVet Wildlife Futures Program

	Regional Fish & Wildlife Association Health Coordinators-Who we are, what we do (5 min) Q&A with Presenters (15 min)	Dr. Ellen Haynes, Southeast Fish and Wildlife Health Coordinator Jason Goldberg, FWS
3:00 PM	Breakout Groups (25 min)	
3:25 PM	Wrap-up	Jason Goldberg, USFWS
3:30 PM	Adjourn	

- Let us know if you have any topics you'd like to discuss at future SWAP sessions!

One Health 101 & How the US Fish and Wildlife Service can Help (10 min) (Dr. Darby Murphy, Public Health Veterinarian, USFWS_

- One Health has two definitions. One definition addresses philosophical definition of how animal, human and ecosystem health are interdependent and the other, an operational definition of how a One Health approach is accomplished. There are many definitions for One Health the definition shared on the slide is from the Quadripartite, One Health High Level Expert Panel (OHLLEP) comprised of the Food and Agriculture Organization of the United Nations (FAO), United Nations Environment Programme (UNEP), World Health Organization (WHO) and the World Organisation for Animal Health (WOAH). The four organizations are working together to mainstream One Health so that they are better prepared to prevent, predict, detect, and respond to global health threats and promote sustainable development.
- How do you take a One Health approach? Integration between the sectors and disciplines in the different areas of expertise in human, animal and environmental health and the communication, collaboration, coordination and capacity building between society and the sectors and
- disciplines that go into addressing One Health issues and achieving healthy ecosystem, healthy animals and healthy people. One Health issues are typically very complex, longstanding issues, with multiple perspectives on the cause of the issue and potential solutions, often working with diverse stakeholders where is challenging to align efforts, people are working from various areas of expertise, and are focusing on different mission areas, sometimes with competing objectives. Taking a One Health approach to complex issues, helps to align competing goals and objectives and come to a consensus on the best approach(es).
- AFWA President's Task Force on One Health Final Report published in September 2023. One Health seems like a new term, but the concept has been around for a while.
- SWAPs have 8 required Elements. One Health can be integrated into each of them. (See slides for details.)
    - For example, Element 1 (Species Distribution and Abundance) – Can work to understand direct and indirect disease and other health related impacts on species distribution and abundance. What staff have training and skills to keep functioning in managing diseases? Establish and keep up to date, a directory of staff knowledge, training and skills and maintaining a core number of staff within particular areas of expertise so your program can function as planned.
    - Element 2 – Location and condition of key habitats. We know most if not all ecosystems face ecosystem stressors which can impact wildlife, human and ecosystem health Define

management areas with a history of disease outbreaks in wildlife and further defining whether they are zoonotic and potential risks to human and domestic animal health.

- Element 3- Working with partners to develop a protocol for monitoring morbidity and mortality events, conducting targeted surveillance efforts and working with others to develop and maintain strategic plans regarding surveillance and management of wildlife diseases, especially those shared between wildlife, domestic animals and humans. Many disease events are rarely entirely natural, and disease is affected by many factors.
- Element 4 – Establish goals and objectives for addressing priority areas. When capture is required for surveillance or research, consider disease risk assessments before translocating animals and having biosafety (for personnel health and safety) and biosecurity plans (to not move diseases or invasive species for example from one place to another).
  Are there preventive health measures that can be implemented?
  Habitat restoration (e.g., Nature-based restoration solutions); Monitoring for changes water quality and quantity?
  Do you have established disease contingency plans in case of a disease outbreak? Regular wildlife disease and emergency response trainings? Or a needs assessment of what trainings will be helpful for staff in order to accomplish your goals?
- Element 5 – Use a One Health approach to monitoring species and habitats with partners. Consider working with partners on disease monitoring such as researchers (e.g., social scientists), on understanding different methods for disease monitoring with various partners (e.g., citizen science programs, surveys,) and how to interpret the data.
  Develop and update policies, guidance, best management practices that can help you to have consistent protocols established.
- Element 6 – Do you need shorter timeframes, ongoing reviews, or outcome evaluations – this can help to guide you based on identified gaps in knowledge or an assessment of needs resulting from evaluations.
- Element 7 – Maintain partnerships to ensure a well-functioning community of practice to help facilitate rapid and effective communications. Develop and/or update preparedness, communication, and response plans and actions and work with partners on integrating emergencies that involve wildlife health into established incident/emergency response networks (for example, networks that may already be established in your state for issues focused on public health or environmental health emergencies or disasters.
- Element 8 – Working with others, having established communication plans. Ensure public participation in informing wildlife management decisions and wildlife disease surveillance and response efforts – (e.g., surveys, citizen science, volunteering, education programs, commenting on proposed rules)
  Establish communications plans/frameworks to aid in emergency preparedness (e.g. wildlife disease events) and facilitate communications with diverse audiences.
  Collaborate with and/or hire communications specialists an/or social scientists to understand direct and indirect impacts of wildlife and ecosystem health on different populations, address controversial proposals and gain public support.

- FWS can help with developing voluntary guidance for incorporating One Health guidance, similar to the climate change guidance.
- Coordinate with President's Task Force.
- Help assemble a working group.
- Facilitate connections with environmental, agricultural, and public health counterparts.

- Five AFWA Regional Fish and Wildlife Health Coordinator positions have been established and these positions are also resources that you can reach out to for assistance on wildlife health and One Health related topics

AFWA's One Health Priorities (5 min) (Mark Humpert, Director Conservation Initiatives, AFWA)

- AFWA has been working on this issue for about 15 years. Executive Committee developed a white paper, leading to Executive Recommendations addressing several issues. Approved in September. https://www.fishwildlife.org/application/files/4316/9634/8212/Presidents_Task_Force_on_One_Health-_FINAL_REPORT.pdf
- Next step is for AFWA to stand up a One Health Committee. This will complement the Fish Health Committee. AFWA felt a separate One Health Committee was needed. Will likely meet at the North American for the first time next March.
- We have resources to support you.

Key Fish and Wildlife Health Issues to Consider for your SWAP (10min) (Dr. Jenn Ballard, State Wildlife Veterinarian/Assistant Chief, Arkansas Game & Fish Commission)

- I help F&W managers incorporate health into their work.
- Define Health
    - Freedom from disease is not a plausible standard. Health is a much broader concept than disease.
    - Managing for disease response will always be a reactive process. Managing for health is an opportunity to be proactive.
    - Health is an illusion. The concept of health is a dynamic human construct. What really exists a population of animals with a spectrum of physiological states.
    - Saying a population is unhealthy or not sets arbitrary thresholds, which will be different depending on perspective. It's okay to use this concept as long as we select biologically relevant thresholds.
    - Health is resilience. We've been doing resilience for a long time.
- Ways to Measure Health
    - Health and Resilience are multifactorial.
    - We can measure factors that will influence health, such as resource availability, population/social structure, stress, genetics, toxin or pathogen exposure.
    - Alternatively, we can measure factors that reflect health such as body condition, organ function, immune activity, active infection, parasite loads, reproduction, and causes of mortality.
    - Note: toxins, pathogens and parasites influence health but are not the sum total of evaluating it.
- Health and Your SWAP
    - We have a series of steps for incorporating health into a SWAP
        - Identify species and populations of interest – You're already doing this!
        - Critically evaluate potential threats – you're already doing this, but you might consider broadening the lens to include other threats (i.e., disease, stress, etc)

        - Identify likely health outcomes. After you've identified the treats in step two, evaluate how those threats will manifest in the health of the population.
        - Use targeted surveillance worked to measure the issues and manifestations you predict
    - Doing wildlife health is not a fishing trip. It's not about surveying for every possible pathogen and disease. Wildlife health doesn't have to mean more work – we can be strategic about how we measure it.
    - Don't just measure problems – use health as a measure of success. We can compare the health of populations before and after taking action or between sites. Demonstrating improved health, demonstrates conservation success.
- But what about pathogens? A Lens for Disease
    - The Disease Triad – Disease comes from a three-way interaction of Host, Environment, and Pathogen. If we need to manage a disease, we can look at these interactions and intervene with any of the three to break the cycle.
    - 3 Categories of Pathogens
        - Neutral – Don't cause overt disease or decline in populations. Studying has value, but often lesser priority.
        - Opportunistic – Neutral pathogens can become opportunistic. These pathogens emerge as the result of other problems. To address these, address the underlying issues.
        - Primary – These diseases are significant threats with the potential to drive population declines. Consider the ecology of a disease to determine if it's likely to be a primary concern.
- Wildlife Health in One Health
    - One Health often sounds like an add-on – more work to do. But in reality, we're already doing it when we do the work of conservation. When we restore ecosystems and manage for healthy fish and wildlife populations, there are collateral benefits for environmental, livestock, and public health. One health is an opportunity to present our work from a new angle and lean into those non-traditional benefits/successes, thereby increasing our relevance, relationships, and resources.

Strategies for Addressing Wildlife Health Issues in the Pennsylvania Wildlife Action Plan (10min) (Dr. Andrew Di Salvo, PA Game Commission; Dr. Julie Ellis University of Pennsylvania PennVet Wildlife Futures Program)

- PA Wildlife Action Plan (WAP) is managed by two agencies, Game Commission and Fish and Boat Commission.
- Wildlife Futures Program is a partnership between PennVet at the University of Pennsylvania and the PA Game Commission that is aimed at strengthening the resilience of the Commonwealth's 480 species of birds and mammals.
- Limited disease information in 2015-25 WAP. Summarized known diseases, focus on WNS, chytrid, Ranavirus, and fungal dermatitis. In the future, we want to address what we know and look to the horizon for emerging threats and how we can prepare (e.g., surveillance, monitoring). Planning for a more robust approach to get a more accurate accounting for diseases that do or may impact SGCN.
- We're primarily focused on pathogen side, but recognizing other issues exist in One Health.
- Working to integrate Wildlife Health Priorities into the next WAP.

- Objectives
    - Identify priority health threats.
    - Determine health surveillance priorities.
    - Present population and habitat management strategies
- Defining the Scope of Work – "Health Threat"
    - Organisms, toxins, and chemical pollutants. Climate change threats will be addressed separately, though they will note observed climatic changes and considerations for wildlife health.
- Approach
    - Identify and convene project working and advisory groups
    - Develop and conduct a survey of states, wildlife health programs, and other relevant groups
    - Conduct a literature review.
    - Summarize, prioritize, and perform gap analysis.
    - Draft wildlife health section.
- Progress
    - Started process recently. Working group with Wildlife Futures personnel and students.
    - Advisory Group will meet – PA Game Commission, PA Fish and Boat Commission, NEAFWA, USFWS Wildlife Health Office
    - Developing survey. We plan to share results with all participants.
- Literature Review is part of this analysis.

Regional Fish & Wildlife Association Health Coordinators-Who we are, what we do (5 min) (Dr. Ellen Haynes, Southeast Regional Wildlife Health Coordinator)

- USFWS funds 5 positions: 4 Regional Associations + Tribal Nations. AFWA also has a Fish and Wildlife Health Coordinator
    - Been around for 5 – 18 months, so fairly new!
- Several objectives
    - Primary POCs for the regional associations on fish and wildlife health issues
    - Support Regional F&W Associations.
    - Support AFWA's Fish and Wildlife Health Coordinator.
    - Improve communications and collaborations among partners.
    - Build effective relationships with fish and wildlife health programs.
    - Support multi-agency grant applications to fund fish and wildlife health research and training.
    - Identify F&W health needs of individual state fish and wildlife agencies and develop strategies to address those needs.
- Several activities
    - Monthly meetings to support multi-regional collaboration.
    - Assisting with creation of updated Toolkit for National F&W Health Initiative.
    - Coordinating USDA-APHIS-led SARS-CoV-2 testing in white-tailed deer.
    - Supporting regional technical committees.
    - Creating information resources.
    - Wildlife health consulting.
    - Building state wildlife agency capacity through training and grant writing.
- Contact us!

Bsal (Kerry Wixed, AFWA Invasive Species and Reptile and Amphibian Coordinator)

- While Bsal has not been detected in North America yet, this fungus is particularly concerning for given the high diversity of salamanders present here. Bsal is a parthogenic chytrid fungus that infects amphibians. It attacks the skin and if often fatal. Salamanders and newts are believed to be the most susceptible, but recent studies have also shown anurans like Cuban treefrogs can carry and succumb to the fungus.
- There has been a large effort to build understanding of species susceptibility through lab-based experiments. So far, 55 species have been tested and 76% - including newts, mole salamanders, lungless salamanders and frogs - became infected with Bsal and 35 % developed disease and experienced mortality in the lab.
- While these groups that we have listed here appear the most susceptible to Bsal induced disease.
- But the important take home here is that multiple NA species - including salamanders AND frogs are likely at risk and can be infected and affected negatively by the pathogen. Included on this slide is a risk map from a 2021 USGS study. Another important take home is that we have been preparing for Bsal introduction for the last 10 years which can facilitate proactive risk management and planning.
- AFWA compiled a number of resources to include in SWAPs, if interested, and have a brief survey out with state herpetologists now to find out if they are interested in particular products relating to Bsal to include in their SWAPs. Please check out the QR code for more info and/or contact Kerry Wixted with AFWA. (kwixted@fishwildlife.org)
- Bsal Resources: https://wakelet.com/i/invite?code=7eqdkywo

Discussion

- Are you able to share your survey questions once you finalize them? Also, Montana has submitted a grant to do a similar disease literature review process. Can you share your email? I'd love to ask some follow-up questions if we get the grant and move forward with our disease project. Thanks!
    - Yes! And would love to chat! jellis04@upenn.edu
- Kim – We submitted a grant to explore diseases in Montana. Are there other funding sources that you recommend for us to address capacity.
    - Julie – We don't have funding specific to the project. We're leveraging staff with Wildlife Futures and working with students.
    - Students – vet schools – offer great opportunities to get work done inexpensively to lay a foundation for the more intense work to follow.

Breakout Groups Discussion Trigger Questions (No breakout due to time)

- What are the barriers to better incorporating fish and wildlife health into your SWAP? Are there any in particular where you think AFWA can make a difference?
    - SD – We don't have a vet school. Some states don't have the specific resources that others do. Darby's presentation gave us great ideas with specific recommendations that we can follow-up. Our barrier is the usual – lack of expertise to dig into this kind of topic.
        - Tricia Fry said we're here as a resource. A lot of you are already doing these kind of activities, and that work can be highlighted.
        - Julie – We're happy to share information on the process.

        - Andrew – A lot of aspects of wildlife resiliency are often addressed already in WAP. A lot of elements go to wildlife health.
- For Julie – How are you planning to incorporate literature search into WAP?
    - We'll prioritize and rank the information. We anticipate the summary will be bulky, it will need some refining.
- What conservation actions do you plan to include in your SWAP to address fish and wildlife health?

Links to Video and Notes from Past SWAP Learning Series and Tentative Future Topics

Date*	Topic (w/Recording Link)	Recording Password	Link to Notes
Wednesday, November 16, 2022	#1 Engaging Tribes and Indigenous People in State Wildlife Action Plans	0T?41Gz.	SWAP & Tribal Engagement Notes
Wednesday, December 14, 2022	#2 SWAPs and Climate Adaptation Guidance	XU.=69*j	SWAP & Climate Adaptation Notes
Wednesday, January 18, 2023	#3 State Wildlife Action Plans and Renewable Energy	=7NSqgQT	SWAP & Renewable Energy Notes
Wednesday, March 15, 2023	#4 Interactive data and tools for SWAP planning and implementation	+6@f9jQW	SWAP & NatureServe Notes
Wednesday, April 19, 2023	#5 Engaging Diverse Partners & Making your SWAP More Relevant	$p?=!g95	SWAP & Engaging Diverse Partners Notes
Wednesday, May 17, 2023	#6 Using the SWAP & Landscape Conservation Framework for Interjurisdictional Landscape Conservation	B=Jg^@8=	SWAP & Landscape Conservation
Wednesday, June 21, 2023	#7 Making Your SWAP RAWA-Ready	FnJane%1	Making SWAP RAWA-Ready
Wednesday, July 19, 2023	#8 Incorporating corridors into your SWAP	2r#+^rIa	Incorporating Corridors into SWAP
Wednesday, August 16, 2023	#9 Roundtable Discussion	LtnZ1x$V	SWAP Open Discussion
Wednesday, September 20, 2023	# 10 SWAPs, Federal Planning, and the U.S. Fish and Wildlife Service	3v4O08?X	
October 18, 2023	#11 SWAPs and Bat Conservation	?2W2UA*B	SWAP and Bat Conservation
November 15, 2023	#12 Incorporating Fish & Wildlife Health into your SWAP		

December 13th, 2023 (2nd Wed of Dec.)	#13 Tentative Topic-2023 Round-up on Lessons Learned & Open Forum		
January 17, 2024	#14 TBD		
February 21, 2024	#15 TBD		
* Note all SWAP Learning Series sessions will be held from 2:00pm-3:30pm ET unless otherwise indicated.			