Association of Fish and Wildlife Agencies Science Strategy

INTRODUCTION

The Association of Fish and Wildlife Agencies is the professional association that serves as the collective voice of North America's state, territorial, and provincial fish and wildlife agencies. The Association's Mission is to "support and advocate for state, provincial, and territorial authority for fish and wildlife conservation and assist those agencies in promoting science-based resource management in collaboration with public and private partners." The purpose of this Science Strategy is to articulate how science can be integrated into the conservation, management, and policy decision-making of the Association, working in partnership with our state, federal, non-governmental, academic, and private-sector partners and collaborators.

Strategic Direction

To enhance the delivery of sound, science-based resource management and conservation by AFWA and its partners:

* AFWA's Science Team (see Appendix) will focus on achieving the objectives for the Conservation Initiatives described in the 2015-2017 AFWA Strategic Plan through communication, coordination, and collaboration, both within AFWA and between our state, federal, provincial, academic, and private-sector conservation partners.

* The AFWA Science Advisor will be actively engaged in discussion and review of AFWA position papers, policy documents, and other public communications that involve science, scientific topics, or science policy. The Science Advisor will provide recommendations with input from other members of the Science Team or from external scientific expertise, as appropriate.

* Other members of the Science Team will also be engaged in review of position papers, policy documents, and other communications relevant to their area(s) of expertise and interest. The Science Advisor will facilitate and coordinate this review.

* AFWA's Science Team will explore the development of an online resource library, to contain electronic copies of new and existing AFWA reports and white papers on scientific topics that are relevant to the management of fish and wildlife resources by state and provincial agencies.

Our Vision for Science-Based Conservation and Management

AFWA's Science Team will work with our partners to create and enhance collaborative communities of conservation that promote the science-based conservation and management of North America's native fish, wildlife, and plant species and their habitats.

AFWA's Strategic Position: Between Science and Management

AFWA occupies a unique strategic position at the intersection of the traditional wildlife and fisheries management community, the broader natural resources conservation community, and the scientific community in the United States and Canada. AFWA's membership includes wildlife and natural resource management agencies at the state and federal levels in the United States and Canada, as well as many of the leading conservation organizations and scientific societies. Through its meetings and committee structure, AFWA provides regular opportunities for conservation groups and scientific organizations to connect directly with the state and federal fish and wildlife agencies which have the primary responsibility to manage fisheries, wildlife, and habitats across the United States and Canada. Because of its broad membership, AFWA can function effectively in coordinating and facilitating science-based partnerships such as the North American Bird Conservation Initiative, Partners in Amphibian and Reptile Conservation, and the Joint Implementation Working Group of the National Fish, Wildlife, and Plants Climate Adaptation Strategy.

Fulfilling AFWA's Strategic Plan

Through this Science Strategy, AFWA's science team and partners are committed to achieving the science-related objectives outlined in AFWA's 2015-2017 Strategic Plan:

* Improve coordination and integration of the best available fish and wildlife science into AFWA policy decisions and management actions.

* Support programs that deliver science to state fish and wildlife agencies.

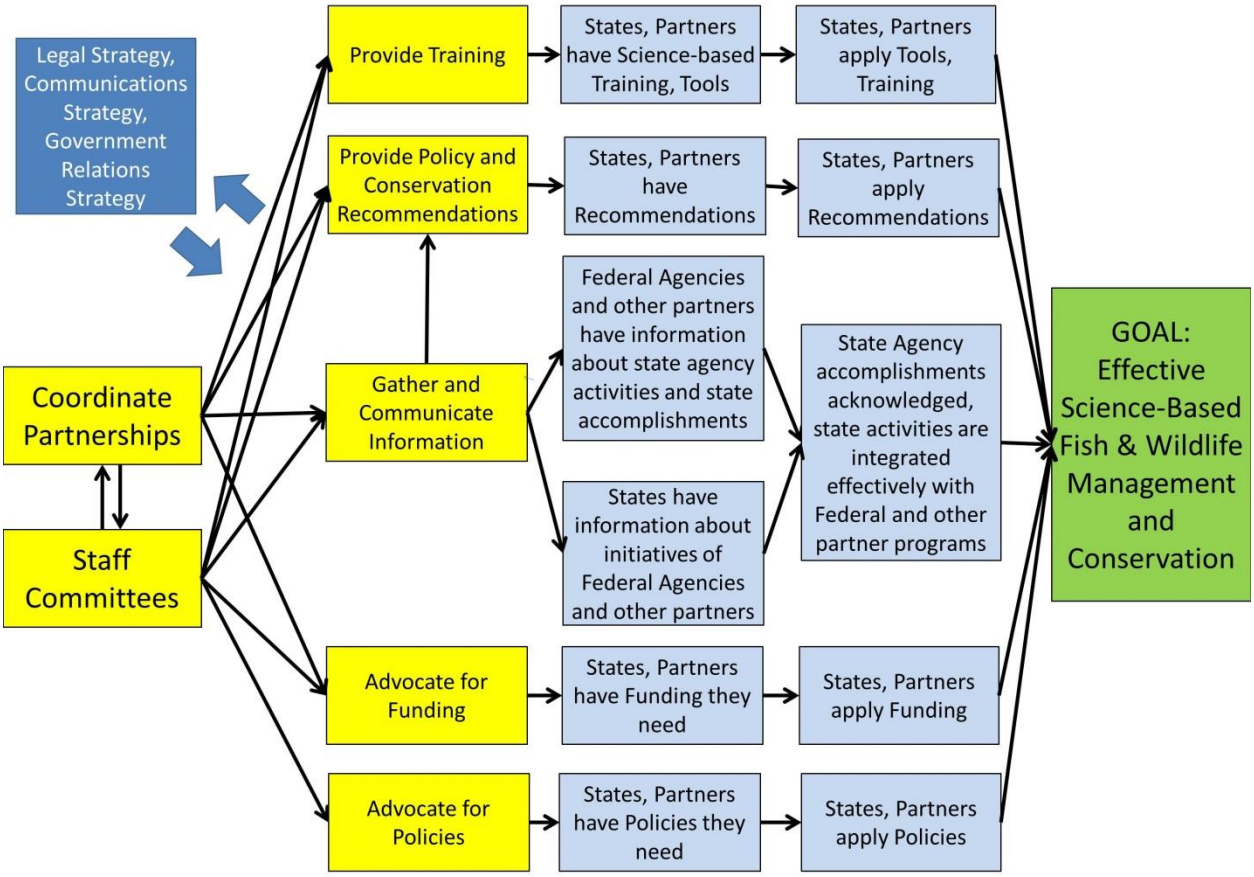
* Facilitate conservation-based partnerships and science-based practices with businesses, landowners, forestry, agricultural and tribal/aboriginal communities, and NGOs.

* Build broad-based partnerships between business, industry, conservation groups, and agencies to support systems of conservation for the implementation of State Wildlife Action Plans.

* Facilitate member involvement in landscape, regional, national and international conservation initiatives such as Joint Ventures, Landscape Conservation Cooperatives, Flyway Councils, regional associations of fish and wildlife agencies, Fish Habitat Partnerships, North American Bird Conservation Initiative, Southern Wings, Partners in Amphibian and Reptile Conservation, and the National Fish, Wildlife and Plants Climate Adaptation Strategy.

STRATEGIC APPLICATIONS OF SCIENCE

The following diagram or "results chain" shows how the activities of the Science Team interact with each other, and with AFWA's Legal, Government Relations and Communications Strategies.



In this diagram, yellow boxes indicate activities conducted by Science Team members; light blue boxes indicate intermediate steps (both outputs and outcomes) of those activities; green boxes indicate the goal of the strategy; and dark blue boxes indicate other strategies of the Association.

Implementing Coordinated Conservation Initiatives: AFWA's Internal Science Capacity

AFWA has a number of individuals with scientific training on staff, including a small group of scientific professionals known collectively as the "Science Team." Together, the members of this team fulfill a variety of important functions. A large part of the team's efforts are conducted in support of Goal #3 of AFWA's Strategic Plan, Coordinated Conservation Initiatives. Specifically:

- Coordinate and facilitate coordinated conservation partnerships and initiatives between state, federal, and non-governmental organizations to increase communication, collaboration, and efficiency in advancing mutual goals of science-based conservation.
- Coordinate and integrate the best available fish and wildlife science into AFWA policy decisions and management actions.
- Provide advance notice to the AFWA leadership and membership of new and emerging conservation issues, problems, and solutions being discussed in the scientific community, and promote discussion of these topics in the wildlife management and conservation communities.
- Inform internal decision-making in cases where scientific information is relevant to a decision being made by the Association's staff and leadership. The Science Team is available to provide relevant, best-available information about scientific topics to the leadership of AFWA. Such information might include data about status and trends of species and habitats, data and analyses of new and known threats to wildlife and habitats, information about the known effectiveness of conservation and management interventions, and findings from human dimensions research.
- Support efforts of the state and provincial fish and wildlife agencies to build internal and external scientific capacity. The Science Team helps to coordinate key science-based partnerships for state and provincial fish and wildlife agencies, and advocates for programs that deliver scientific information in support of the activities of the state and provincial fish and wildlife agencies, including cross-border and landscape-scale conservation activities.
- Communicate information about science-based conservation and management activities of the state and provincial fish and wildlife agencies to broader audiences, including the broader community of scientific researchers, the broader wildlife management and conservation communities, and the broader interested public.
- Staff the committees of the Association that address science and research topics directly, or that involve thematic areas which have been identified as priorities by the Science Team.

How Science Can Inform Decision-Making

Scientific information and the scientific process can be used to inform decisions on many different levels within AFWA and its partner organizations. Several of the most important means by which AFWA staff can apply science to their work include:

- Predictively and Proactively – We use our science networks, scientific modeling studies and new scientific advances to anticipate new issues and problems, and to evaluate possible management strategies for addressing emerging problems while they remain small and localized, before a crisis develops.
- Responsively – We seek to disseminate and apply scientific knowledge in order to better understand the scale, scope, and possible management responses to the most pressing large-scale issues facing wildlife such as climate change, invasive species, and energy development.

- Cooperatively – We work through and with existing networks and partnerships of state, federal, tribal, provincial, academic, and private-sector agencies and organizations in all of our science-based work.
- Adaptively – We strive to respond adaptively to challenges facing the fish and wildlife conservation and management communities. We evaluate our work and the activities that we coordinate with our partners, in order to learn from our successes and our mistakes.

Proactive Applications of Predictive Science

Science provides us with a set of tools that we can use to make predictions about possible future conditions of fish and wildlife populations, their habitats, threats and stressors, and the outcomes of conservation activities. These predictions, along with early detections and observations, can provide managers and conservationists with an advance warning of potential problems, allowing time to develop a thoughtful and constructive response. Members of AFWA's Science Team therefore pay particularly close attention to reports emerging from the scientific community and our scientific partners that provide us with insights into future conditions of wildlife populations and habitats. Some of our key sources of advance information include:

- Informal or formal communications through our networks of scientific and conservation partners, which often provide us with advance notice of the latest scientific discoveries and the potential application of these new discoveries to various management questions.
- Modeling studies that project future changes in species population status, habitat condition, threat extent, and similar variables, based on information about current and/or recent conditions and reasonable assumptions about future conditions.
- Reports of early detections of new or important phenomena, such as the presence of a new invasive species or a new pathogen, which are detected and analyzed using scientific methodology.
- Reports of early detections of declines or population recovery in species, particularly species that are priorities for state and provincial fish and wildlife agencies.
- Meta-analyses of the scientific literature that comprehensively document the effects of certain threats or stressors on fish, wildlife, and plant populations and habitats, and outline the types of impacts that might be expected in the future from these threats and stressors.
- Dissemination of state, federal, and academic research on decision-support tools and predictive models.
- Use of decision support processes to help state, federal, academic, NGO and other partners to address challenges of prioritization of resources and conservation actions.

By asking our partners for advance notice of key findings and discoveries, and by remaining alert to publications on high priority topics for the state and provincial fish and wildlife agencies, we can help to serve as the "eyes and ears" or the "early detection system" for the most critical scientific information for AFWA's members and partners.

Applying Science in AFWA Policy-Making

Science can help us to evaluate topical areas and issues that come up during the course of our normal work at AFWA. We propose new and more strategic roles for AFWA's Science Advisor and Science Team in providing information about urgent issues and topics to AFWA leadership in a timely manner. When urgent situations related to the science or practice of fish and wildlife management come to the attention of AFWA's leadership, AFWA's Science Advisor and Science Team will be available to evaluate the issue from a scientific perspective, identifying areas of agreement within the scientific community and areas where there are uncertainty and debate. A more in-depth review by one or more members of the Science Team may also be indicated if the issue is particularly important to one or more states or if the issue is particularly contentious.

Scientific Criteria for Selecting Our Areas of Focus

Another way that we can become more strategic is to identify "filter criteria" that we can use in discussing whether or not we wish to engage in a new area of work, or whether or not we wish to continue working in a particular area. The scientific literature on decision-making in conservation agencies and organizations and processes such as Structured Decision-Making can provide us with guidance in selecting these criteria. Some of the key "filter criteria" for our work include:

- Is there a need for AFWA involvement?
- Will our activities benefit the AFWA membership broadly, including the states and our federal partners?
- Should/Can AFWA play a coordinating role?
- Do we have the right expertise and is that expertise additive?
- Can we "move the needle" in this area, with available resources and staff?
- Is this activity the best use of our limited resources, including time?
- Are additional resources available, or likely to become available, for the effort?

These questions can help us identify those specific activities, topics, and thematic areas that are most likely to offer the greatest potential of bringing significant benefits to our partners, to the broader natural resources management community, and to fish, wildlife, and plant species.

WHAT WE DO

Our Activities

Working individually, in collaboration with each other, and in broader partnerships, the members of AFWA's Science Team:

PROMOTE the application of sound science in wildlife management. We collaborate internally and with partners to develop science-based guidance documents for conservation action, management, and monitoring; work to bridge communication gaps between the scientific researcher and the wildlife manager; and recognize outstanding achievement in science-based wildlife management (as shown through our NABCI, PARC, JIWG, TWW and AFWA awards).

COORDINATE partnerships that strengthen communication between state and federal agencies as well as NGOs, that help to advance national and international conservation priorities through a focus on science-based conservation, including Partners in Amphibian and Reptile Conservation, the Joint Implementation Working Group for the National Fish, Wildlife and Plants Climate Adaptation Strategy, the North American Bird Conservation Initiative, and the Teaming With Wildlife Coalition.

BUILD the capacity of state and provincial fish and wildlife agencies to conduct and access the science needed for their management decision-making. We staff AFWA committees that help to build science capacity of state and provincial fish and wildlife agencies, encourage the use of Structured Decision Making and similar science-based approaches to decision-making by our partners and collaborators, support the integration of science into State Wildlife Action Plans and other key management documents, work to obtain online journal access for state fish and wildlife agencies; organize and facilitate webinars on science-related topics of broad interest, and develop recommendations or model guidance for enhancing state authority; and work with the National Conservation Training Center and other partners to develop courses and training materials that are relevant to state managers (e.g. Climate Academy).

ADVOCATE for programs or policies that provide scientific support to our state and provincial agencies and their conservation partners, e. g.: State and Tribal Wildlife Grants and the Blue Ribbon Panel on Sustaining America's Diverse Fish and Wildlife Resources, State Wildlife Action Plans, and the USGS Cooperative Fish and Wildlife Research Units.

COMMISSION scientific projects and scientific reports in order to meet the needs of our state and provincial agencies and conservation partners, such as the State of the Birds Report, Joint Implementation Working Group Reports, reports on state activities, Conservation Business Plans, species conservation action plans, and Rapid Response Plans for diseases or invasive species.

COLLABORATE with scientific professional societies, federal advisory committees, and joint task forces to increase participation and engagement with state and provincial fish and wildlife agencies:

Scientific Societies including The Wildlife Society, American Fisheries Society, Society for Conservation Biology, Ecological Society of America, and Society for the Study of Amphibians and Reptiles.

Federal Advisory Committees including the Aquatic Nuisance Species Task Force, Invasive Species Advisory Council, and the Advisory Committee on Climate Change and Natural Resource Science.

Joint Task Forces including Federal Aid, Endangered Species, and the proposed Joint Task Force on the Landscape Conservation Cooperatives.

COMMUNICATE the results of scientific studies to our state and provincial agencies and their conservation partners in a timely manner, through venues such as the Climate Change Round-Up, Climate Change Committee webinars, Fish and Wildlife and Energy webinars and trainings, USGS-AFWA Fish and Wildlife Health webinar series, AFWA-ARMI-PARC webinar series, Wildlife Diversity Program Manager updates and conference calls, State Wildlife Action Plan updates, Teaming With Wildlife Wild Call.

COMMUNICATE the science-based activities of state and provincial fish and wildlife agencies to the broader scientific community and the general public via scientific and professional trade journals, popular media, and other outlets, including *The Wildlife Professional, Fisheries,* popular media (e.g. *New York Times*), contributions to books, scientific journal publications, and AFWA and agency publications (e.g. white papers and grey literature).

PROMOTE information and data management systems that facilitate scientific collaboration and data standardization, including support for programs such as the Avian Knowledge Network, Avian Conservation Assessment Database, Natural Heritage Databases, Crucial Habitat Assessment Tools and the Center for Habitat and Wildlife Analyses, Wildlife Health Information Sharing Partnership Event Reporting System, and the Global Ranavirus Reporting System.

SUPPORT projects and programs that encourage conservation of fish and wildlife species and their habitats at landscape, regional, national, and international scales.

Our Thematic Areas

AFWA's Science Team currently focuses our attention on the following thematic areas, which are listed in alphabetical order. Each of these areas includes a portfolio of current activities, which are assigned to one or more AFWA staff members. We have also developed aspirational goals for each area, in order to guide and focus our work, which are expressed in the thematic "vision statements" below.

Amphibians and Reptiles

Current Activities: Through workshops, meetings and technical assistance, the Association provides support and capacity to the state agencies as they plan, prioritize and implement amphibian and reptile conservation actions identified in the State Wildlife Action Plans; identify and address research and conservation needs; and examine, update and/or revise laws and regulations pertaining to the uses of amphibians and reptiles. In addition, the Association is engaged in the national coordination of Partners in Amphibian and Reptile Conservation (PARC), a public-private partnership of state and federal agencies, NGOs, academia, industry, zoos, and other partners.

Associated Committee: Amphibian and Reptile Subcommittee.

Vision: North America's amphibian and reptile species and their habitats become an integral and natural part of all conservation, management, and regulatory discussions and decisions.

Birds

Current Activities: Coordinate the North American Bird Conservation Initiative (NABCI), a 28 member partnership of state and federal agencies, as well as NGOs and other national-level bird partnerships. NABCI's goal is to deliver the full spectrum of bird conservation through regionally-based, biologically-driven, landscape-oriented partnerships. Through NABCI, focus on advancing national and international bird conservation communication, monitoring, integration with human dimensions, partnerships, conservation on private and working lands, and policy. In addition, support state-based bird conservation through webinars on topics of interest to state non-game bird biologists and communication about opportunities for states to advance bird conservation and tell the state story.

Associated Committee: Bird Conservation Committee.

Vision: Broad, diverse partnerships work together to support healthy populations of North American birds that are valued for generations to come.

Climate Change

Current Activities: Coordinate the Joint Implementation Working Group of the National Fish, Wildlife, and Plants Climate Adaptation Strategy and facilitates partnership between NGOs, federal, state, and tribal agencies on climate adaptation. Staff the Climate Change Committee with the goal of increasing knowledge on climate adaptation across the states. Communicate new and emerging research/news in climate adaptation science. Support implementation of NCTC's Climate Academy.

Associated Committee: Climate Change Committee.

Vision: State agencies consider future climate throughout the conservation planning and decision making process using best available climate science.

Fish and Wildlife Health

Current Activities: Support activities of the AFWA Fish and Wildlife Health Committee, including regular communications, state-federal webinar series, and development and implementation of an annual work plan. Advocate for improvements to national systems for characterizing, diagnosing, and treating wildlife disease. Advocate for funding for key programs and laboratories that deliver much-needed wildlife disease scientific capacity to the states and partners.

Associated Committees: Fish and Wildlife Health Committee, Drug Approval Working Group, Lead and Fish and Wildlife Health Working Group.

Vision: Federal and state agencies work effectively and efficiently to characterize, diagnose, and treat fish and wildlife disease outbreaks, with adequate funding and capacity to successfully address current disease challenges and prevent future outbreaks.

Invasive Species

Current Activities: Provide a national forum for coordinated action among state and federal agencies on invasive species issues. The committee provides a foundation for development of strategic approaches to invasive species management, which includes identifying and advocating for funding and policy needs, prioritizing invasive species threats and coordinating with federal and industry partners to address opportunities for risk assessments and cooperation towards improved state authority for addressing invasive species.

Associated Committee: Invasive Species Committee

Vision: State, federal, and provincial agencies have sufficient capacity, funding, and legal authorities to effectively address the invasive species challenge.

Science Coordination

Current Activities: Coordinate joint efforts involving states and other science partners from federal agencies, academia, the NGO sector, and business and industry. Host an annual science coordination meeting bringing together state and federal agency partners to discuss priority topics for the coming year. Communicate scientific and conservation accomplishments of states to the broader scientific community.

Associated Committee: Science and Research Committee.

Vision: States are able to fulfill their role as effective stewards and managers of the nation's biological diversity because they have ready access to the scientific information that they need for management and conservation, delivered in near-real-time via user-friendly tools that integrate across multiple data sources and perform complex analytical tasks quickly and efficiently.

Fish and Wildlife and Energy

Current Activities: Delivery of wildlife and energy workshops that educate states, regional associations, and key conservation partners, enabling them to effectively manage new energy developments in their states and jurisdictions.

Associated Committees: Energy and Wildlife Policy Committee, Oil, Gas, and Minerals Subcommittee, Wind, Solar, and Transmission Subcommittee.

Vision: States and partners have the tools, training, and information that they need to effectively manage the effects of energy development on fish and wildlife populations and their habitats.

Wildlife Diversity

Current Activities: Support state Wildlife Diversity Program managers through regular communication, an annual meeting and development of an annual work plan. Advocate for funding for the State and Tribal Wildlife Grants program, support the national Teaming With Wildlife coalition. Conduct outreach on State Wildlife Action Plans and work for dedicated and sustained funding to conserve all fish and wildlife.

Associated Committee: Teaming With Wildlife Committee.

Vision: Federal policies and funding enhance state efforts to proactively conserve all fish and wildlife.

Wildlife Resource Policy

Current Activities: Support information exchange, discussion and policy decisions on topics of broad, general importance to the Association such as aircraft and wildlife strikes, deer culling, bear diversionary feeding, Monarch butterfly conservation, and so forth.

Associated Committee: Wildlife Resource Policy Committee.

Vision: AFWA member organizations have a forum in which they can address policy issues that fall outside of the scope of other AFWA committees.

Appendix

Members of AFWA's Science Team, as of September, 2016

Kathy Boydston, Wildlife and Energy Program Manager

Mark Humpert, Director, Conservation Initiatives

Jonathan Mawdsley, Ph.D., Science Advisor

Priya Nanjappa, Program Manager, Amphibians and Reptile and Invasive Species

Davia Palmeri, Climate Change Coordinator

Judith Scarl, Ph.D., Bird Conservation Program Manager