

**LCC Staff Meeting March 26, 2012
NFWPCA Strategy Attachment 1**

**National Fish, Wildlife, and Plants Climate Adaptation Strategy:
Implications for the LCCs**

The Strategy identifies things that the LCC Staff can and may already work on, encourage, or support (via funding and providing capacity, etc.), as well as things that the LCC itself can achieve or promote (via the partners in individual LCCs collectively and individually working within and across their organizations). Here, we have tried to highlight abbreviated elements of the Strategy that point to potential roles or opportunities for the LCC Staff.

GOAL 1: Conserve habitat to support healthy fish, wildlife and plant (FWP) populations and ecosystem functions in a changing climate.

Strategy 1.1: Identify areas for an ecologically-connected network of terrestrial, freshwater, coastal, and marine conservation areas that are likely to be resilient to climate change (CC) and to support a broad range of FWP under changed conditions.

Actions:

- 1.1.1: Identify and map high priority areas for conservation using information on species distributions, habitat classification, land cover, and geophysical settings
- 1.1.2: Identify and prioritize for consideration areas currently experiencing rapid climate impacts
- 1.1.4: Establish and maintain a comprehensive, inter-jurisdictional inventory of current conservation areas and candidate high priority conservation areas in order to coordinate future conservation efforts

Strategy 1.4: Conserve, restore, and as appropriate and practicable, establish new ecological connections among conservation areas to facilitate fish, wildlife, and plant migration, range shifts, and other transitions caused by CC.

Actions:

- 1.4.1: Identify species with special connectivity needs
- 1.4.2: Assess and prioritize critical connectivity gaps and needs across current conservation areas, including areas likely to serve as refugia.
- 1.4.5: Assess existing barriers or structures that impede movement and dispersal within and among habitats to increase natural ecosystem resilience to CC, and where necessary, consider the redesign or mitigation of these structures.

GOAL 2: Manage species and habitats to protect ecosystem functions and provide sustainable cultural, subsistence, recreational, and commercial use in a changing climate.

Strategy 2.1: Update current or develop new species, habitat, and land and water management plans, programs and practices to consider CC and support adaptation.

Actions:

- 2.1.1: Incorporate CC considerations into existing and new management plans and practices using the best available science regarding projected CCs and trends, vulnerability and risk assessments, and scenario planning.
- 2.1.3: Identify species and habitats particularly vulnerable to transition under CC and develop management strategies and approaches for adaptation.

GOAL 3: Enhance capacity for effective management in a changing climate.

Strategy 3.1: Increase the CC awareness and capacity of natural resource managers and enhance their professional capacity to design, implement, and evaluate FWP adaptation programs.

Actions:

- 3.1.1: Build on existing needs assessments to identify gaps in CC knowledge and technical capacity among natural resource professionals.
- 3.1.2: Build on existing training courses and work with professional societies, academicians, technical experts, and natural resource agency training professionals to address key needs, augment adaptation training opportunities, and develop curricula and delivery systems for natural resource professionals and decision makers.
- 3.1.3: Develop training on the use of existing and emerging tools for managing under uncertainty.

Strategy 3.2: Facilitate a coordinated response to CC at landscape, regional, national, and international scales across state, federal, and tribal natural resource agencies and private conservation organizations.

Actions:

- 3.2.1: Use regional venues such as LCCs to collaborate across jurisdictions and develop conservation goals and landscape/seascape scale plans capable of sustaining FWP.
- 3.2.2: Identify and address conflicting management objectives within and among federal, state, and tribal conservation agencies and private landowners, and seek to align policies and approaches wherever possible.
- 3.2.3: Integrate individual agency and state CC adaptation programs and State Wildlife Action Plans with other regional conservation efforts such as the National Fish Habitat Action Plan (NFHAP), LCCs, JVs, and the Northeast AFWA regional application of State Wildlife Grant funds to foster collaboration.

- 3.2.4: Collaborate with tribal governments and native peoples to integrate traditional ecological knowledge and principles into climate adaptation plans and decision-making.
- 3.2.5: Engage with international neighbors to help adapt to and mitigate CC impacts in shared trans-boundary areas and for common migratory species.
- 3.2.6: Foster interaction among landowners, local experts, and specialists to identify opportunities for adaptation and to share resources and expertise that otherwise would not be available to many small landowners.

GOAL 4: Support adaptive management in a changing climate through integrated observation and monitoring and use of decision support tools.

Strategy 4.1: Support, coordinate, and develop distributed but integrated inventory, monitoring, observation, and information systems to detect and describe climate impacts on FWP and ecosystems.

Actions:

- 4.1.1: Use available long term monitoring programs at appropriate scales (local to international) as baselines for population and migration changes that could be effected by CC.
- 4.1.2: Develop consensus standards and protocols that enable multi-partner use and data discovery, as well as interoperability of databases and analysis tools related to FWP observation, inventory, and monitoring.
- 4.1.3: Conduct a gap analysis of existing observation networks, indicators, monitoring, and geospatial data to define priorities.
- 4.1.4: Work through existing distributed efforts (e.g., NCA, National Estuarine Research Reserve System, State Natural Heritage Programs, National Wildlife Refuge System) to support integrated national observation and information systems.
- 4.1.5: Expand and develop as necessary networks of places for integrated CC inventory, monitoring, research, and education.
- 4.1.6: Use existing or define new indicators at appropriate scales that can be used to monitor the response of FWP and ecosystems to CC.
- 4.1.7: Develop, refine, and implement monitoring protocols that provide key information needed for managing and conserving species and ecosystems in a changing climate.
- 4.1.8: Promote a collaborative approach to acquire, process, archive, and disseminate essential geospatial and satellite-based remote sensing data products needed for regional-scale monitoring and land management.

Strategy 4.2: Identify, develop, and employ decision support tools for managing under uncertainty (e.g., vulnerability and risk assessments, scenario planning, strategic habitat conservation approaches, and adaptive management evaluation systems) via dialogue with scientists, managers (of natural resources and other sectors), and stakeholders.

Actions:

- 4.2.2: Engage scientists, resource managers, and stakeholders in CC scenario planning processes, including identification of a set of plausible future scenarios associated with climate

phenomena likely to significantly impact FWP.

- 4.2.3: Define national standards / criteria to identify most vulnerable FWP and ecosystems.
- 4.2.4: Conduct vulnerability and risk assessments for priority species (threatened and endangered, of greatest conservation need, of socioeconomic and cultural significance).
- 4.2.5: Synthesize vulnerability assessments across jurisdictions to provide regional assessments.
- 4.2.6: Identify actions that can be implemented by a variety of sectors and are beneficial given a range of climate futures and desired future conditions (e.g., “no regrets” options).
- 4.2.7: Ensure the availability of and provide guidance for decision support tools that assist federal, state, local, and tribal resource managers and planners.
- 4.2.8: Use observation, information, assessment, and decision support systems to monitor and determine the effectiveness of specific management actions to analyze the potential for maladaptation and adapt management approaches appropriately.

GOAL 5: Increase knowledge and information on impacts and responses of fish, wildlife and plants to a changing climate.

Strategy 5.1: Identify knowledge gaps and define research priorities via a collaborative process among federal, state, and tribal resource managers and research scientists working with the National Science Foundation (NSF), USGCRP, NCA, USDA Extension, Cooperative Ecosystem Study Units (CESUs), CSCs, LCCs, JVs, and RISAs.

Actions:

- 5.1.1: Increase coordination and communication between resource managers and researchers through existing forums (e.g., CSCs, LCCs, JVs, RISAs) to ensure research is connected to management needs.
- 5.1.2: Bring managers and scientists together to prioritize research needs that address resource management objectives under CC.
- 5.1.3: Encourage agencies with scientific assets and expertise to participate in and contribute to regional dialogues about actions needed to meet management-driven science needs.
- 5.1.4: Participate in research planning for relevant programs of agencies and intergovernmental forums to ensure inclusion of research relevant to missions of agencies and resource managers.
- 5.1.5: Based on priority conservation needs identified by resource managers, develop a national research agenda identifying key high level questions for which more fundamental research is needed to enable development of applications or decision support tools; and facilitate consultation among major science funding agencies to incorporate into funding opportunities and work plans.
- 5.1.6: Prioritize research on questions relevant to managers of near-term risk environments or highly vulnerable species.

Strategy 5.3: Advance understanding of CC impacts and species and ecosystem responses through modeling.

Actions:

- 5.3.1: Define the suite of physical and biological variables and ecological processes for which predictive models are needed via a collaborative process among state, federal, and tribal resource managers, scientists, and model developers.
- 5.3.2: Improve modeling of CC impacts on vulnerable species, including projected future distributions and the probability of persistence.
- 5.3.3: Develop models that integrate the potential effects of climate and non-climate stressors on vulnerable species.

GOAL 6: Increase awareness and motivate action to safeguard FWP in a changing climate.

Strategy 6.2: Engage the public through targeted education and outreach efforts and stewardship opportunities.

Actions:

- 6.2.3: Make research and monitoring information regarding climate impacts to species and natural systems accessible to the public and other partners.

Strategy 6.3: Coordinate CC communication efforts across jurisdictions.

Actions:

- 6.3.1: Develop, implement, and strengthen existing communication efforts among federal agencies, states, and tribes to increase awareness of the impacts and responses to CC.
- 6.3.2: Engage employees from multiple agencies in key CC issues by expanding existing forums for information sharing and idea exchange like the LCCs, and create new forums and channels as needed.
- 6.3.3: Provide access to tools that promote improved collaboration, interactive dialogue, and resource sharing to minimize duplication of effort across jurisdictions.

GOAL 7: Reduce non-climate stressors to help FWP and ecosystems adapt to a changing climate.

Strategy 7.1: Slow and reverse habitat loss and fragmentation.

Actions:

- 7.1.1: Work with local land-use planners to identify shared interests and potential conflicts in reducing and reversing habitat fragmentation and loss through comprehensive planning and zoning.
- 7.1.4: Work with local and regional water management agencies to evaluate historical water quantities and base flows and develop water management options to protect or restore aquatic habitats.

Strategy 7.2: Slow, mitigate, and reverse where feasible ecosystem degradation from anthropogenic sources through land/ocean-use planning, water resource planning, pollution abatement, and the implementation of best management practices.

Actions:

— 7.2.1: Work with local and regional land-use, water resource, and coastal and marine spatial planners to identify potentially conflicting needs and opportunities to minimize ecosystem degradation resulting from development and land and water use.

Strategy 7.3: Use, evaluate, and as necessary, improve existing programs to prevent, control, and eradicate invasive species and manage pathogens.

Actions:

— 7.3.2: Develop national standards for collecting and reporting invasive species data to facilitate information sharing and management response.

— 7.3.3: Apply risk assessment and scenario planning to identify actions and prioritize responses to invasive species that pose the greatest threats to natural ecosystems.

— 7.3.5: Assess risks and vulnerability to identify high priority areas and/or species for monitoring of invasive species and success of control methods.