



# National Climate Change and Wildlife Science Center

**C**limate changes will affect what creatures live where, what food is available and where suitable habitat conditions will prevail. A species' ability to adapt to changing conditions determines its long-term survival. Consequently, global warming could cause the decline of some species that physiologically cannot adjust to warmer temperatures, such as moose and trout. Among other species, global warming could interrupt life history events that are triggered by temperature or precipitation, such as migration or reproduction. And global warming will affect other species by destroying or altering essential habitat.

— Bipartisan Policy Center, 2008



## Background

Ongoing changes in the earth's climate, including changes in temperature, weather patterns, and precipitation, are expected to have significant effects on our nation's fish and wildlife resources. In comparison with other issues, however, relatively little scientific information exists on which to base the management of fish and wildlife in the face of climate change.

The U.S. Geological Survey (USGS), the science agency of the U.S. Department of the Interior, is meeting this challenge through the new **National Climate Change and Wildlife Science Center**.

The goals of the Center are to:

- Assess and synthesize current information on climate change, derived through scientific research and monitoring, to project future impacts on fish, wildlife, and habitats.
- Assist Federal agencies in developing adaptive management strategies to meet the challenges of managing fish and wildlife in a changing climate; and
- Create partnerships to identify priorities for research and monitoring, and to develop tools that managers can use to assist fish and wildlife in adapting to the effects of climate change on their habitats.



## Implementation

The USGS is working with partners and stakeholders to develop the National Climate Change and Wildlife Science Center to complement existing inventory and assessment programs related to fish and wildlife. This Center is being designed in consultation with Federal, State, and Tribal science and management agencies; non-governmental organizations; academic institutions; and others having an interest in conserving America's fish and wildlife resources.

In 2008, USGS initiated research under the auspices of the National Climate Change and Wildlife Science Center to address the priority information needs previously identified by Federal and State management agencies. Following a rigorous scientific review, climate change proposals that aligned most closely with fish and wildlife natural resource agency information needs were selected.

### National Climate Change and Wildlife Science Center research:

- Quantifying the influence of climate change on Rocky Mountain ungulate populations, migration and feedground use, and vegetation;
- Understanding the effects of stream temperature and flow changes on Atlantic salmon populations;
- Examining climate change as a challenge to bird conservation in the arid and semi-arid regions of North America;
- Projecting the effects of sea level rise on endangered species in San Francisco Bay tidal marshes; and
- Determining the potential influence of climate change on the persistence of native salmonids in the Northern Rocky Mountains.

The USGS will convene a 2008 workshop in partnership with the Ecological Society of America and The Wildlife Society to identify research needs and priorities, collaboration strategies, and a process and structure for managing the Center. This workshop will involve scientists and managers from Federal, State, Tribal, and local governments, nongovernmental organizations, academic institutions, and scientific societies.

Oversight for the National Climate Change and Wildlife Science Center is provided through the Interim Steering Committee with representation from Federal and State agencies responsible for the management of fish and wildlife and their habitats. The Committee includes representatives from the U.S. Fish and Wildlife Service, National Park Service, Bureau of Land Management, Bureau of Reclamation, the U.S. Environmental Protection Agency, U.S. Forest Service, National Oceanographic and Atmospheric Administration, National Aeronautics and Space Agency, Department of Defense, and State agencies. The Interim Steering Committee has already identified common priority needs and will use input from the workshop to:

- Establish long-term objectives for the Center.
- Recommend priorities for funding and coordinate across public and private entities to determine the most effective distribution of appropriated funds.
- Assess additional skills and program areas required to meet the long-term information needs of the conservation community and the public.
- Make recommendations for improving the ability of scientists from multiple agencies to share and maintain fish, wildlife, and ecosystem information.
- Work closely with the U.S. National Phenology Network; the Natural Resource Monitoring Partnership;



*“Alteration of habitat, disruption to migratory patterns, changes in predator-prey interactions, and the spread of invasive species and wildlife diseases represent a few of the ways in which an altered climate will disrupt fish and wildlife populations. The pressures of climate change only increase the need for pro-active conservation and management of fish and wildlife and their habitats to ensure their continued survival.”*

— Ed Parker, former president, Association of Fish and Wildlife Agencies



the National Biological Information Infrastructure, and others to integrate monitoring information from both the public and private sectors.

- Provide review and assessments of current climate change science in relation to how well it provides managers with information leading to effective options for addressing impacts of climate change on wildlife resources.

In 2009, the National Climate Change and Wildlife Science Center will support a program of internal and external research. The research will deliver the priority science information and decision-support needs identified at the workshop with a special emphasis on making information available at scales appropriate for fish and wildlife management.

### Future Steps

Collaboration among public and private scientists and managers will expand to include research and assessment of management options for a wide range of issues. Specific themes may include:

- Linking physical models with biotic models to predict the effects of climate change on biological resources;
- Enhancing landscape-scale monitoring efforts to include changes in habitats and their use by fish and wildlife, and changes in routes, timing of migration, and community structure;
- Determining which ecosystems and species are most vulnerable to climate change, and what solutions are available for conserving these species;
- Integrating research on habitat fragmentation with climate change projections to identify the need for creating movement corridors, translocating individuals of at-risk species, or assisting migration;
- Understanding how changes in water availability driven by climate affects aquatic species and systems; and
- Working with Federal, State, Tribal and other natural resource agencies and organizations to identify climate change adaptation strategies for fish and wildlife management and analyze the efficacy of management actions.

### For More Information

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