NATIONAL *fish, wildlife & plants*
CLIMATE ADAPTATION STRATEGY

Shared solutions to protect shared values

taking action

Across the country, government agencies, partners and stakeholders are taking action to prepare for and respond to the impacts of a changing climate on the nation's valuable natural resources and the people who depend on them. The ***National Fish, Wildlife and Plants Climate Adaptation Strategy*** is a comprehensive, multi-partner framework for effective steps that can be taken over the next five to 10 years based on climate change projections for the next century. This ***Taking Action*** report describes 50 projects that demonstrate implementation of a variety of actions recommended by the Strategy. The diverse adaptation work highlighted in this report is part of a larger collective effort by a wide range of partners to safeguard the nation's fish, wildlife, plants, and the communities and economies that depend on them in a changing climate.

STRATEGY VISION

Ecological systems will sustain healthy, diverse, and abundant populations of fish, wildlife and plants. Those systems will continue to provide valuable cultural, economic and environmental benefits in a world impacted by global climate change.

TAKING ACTION

The intent of this report is to provide examples of how the Strategy is being implemented through collaborative adaptation projects on the ground; to demonstrate to both conservation practitioners and public decision makers the strong role they can play in adaptation; and to inspire and encourage stakeholders, managers, and the public to join the effort.

Please visit **www.wildlifeadaptationstrategy.gov**

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taking action
a progress report | 2014

How is *Taking Action* structured?

The seven major goals identified by the Strategy to help fish, wildlife, plants and ecosystems cope with the impacts of climate change. These goals serve as the seven chapters of the *Taking Action* report.

Goal 1
Conserve habitat to support healthy ÿsh, wildlife and plant populations and ecosystem functions in a changing climate.

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

Goal 3
Enhance capacity for e°ective management in a changing climate.

Goal 4
Support adaptive management in a changing climate through integrated observation and monitoring and improved decision support tools.

Goal 5
Increase knowledge and information on impacts and responses of ÿsh, wildlife and plants to a changing climate.

Goal 6
Increase awareness and motivate action to safeguard ÿsh, wildlife and plants in a changing climate.

Goal 7
Reduce non-climate stressors to help ÿsh, wildlife, plants, and ecosystems adapt to a changing climate.

BLM NM930 / SEEDS OF SUCCESS / MIKE HOWARD

What are the case studies?

Taking Action features 50 case studies that illustrate actions recommended by the National Fish, Wildlife, and Plants Climate Adaptation Strategy. The example case study below appears in *Taking Action* as an example of managing a habitat to protect ecosystem function (Goal 2).

☑ Planting Future Forests in Northern Minnesota

Northern forests in the Great Lakes region are entering an era of compromised conditions due to climate change. Harvesting practices over the past century have converted the forests to more low diversity, even-aged stands of trees, leaving forests vulnerable to emerging stressors. Forest-dependent wildlife, most notably migratory songbirds, have experienced associated declines.

Traditionally, restoration goals have focused almost entirely on reintroducing historically abundant boreal conifers into the landscape. Recent research shows that warmer, drier conditions over the coming decades are likely to undermine these current restoration efforts. Th s project focuses on new climate informed strategies that favor diverse suites of tree species best suited to thrive under changing climate conditions through an adaptation forestry approach, or a combination of management and planting that increases complexity.

Adaptation forestry departs signifi antly from previous restoration efforts. The strategy is based on current and future modeled range maps for trees and emphasizes within-range plantings of tree species anticipated to thrive under warmer, drier conditions. Species of emphasis are all native, but are uncommon due to the legacy of past harvesting practices, past climate conditions, and dispersal limitations. Although suited to new conditions, without management intervention these species are unlikely to realize the full extent of their ranges as the rate of climate change outpaces their ability to disperse.

NANCY A. JOHNSON PHOTOGRAPHY

Forest Ecologist Mark White installs a mesh cage around a newly planted oak seedling to protect it from deer browsing.

In October 2012, partners began implementing adaptation forestry practices at 12 sites totaling 2,000 acres in northeastern Minnesota. A total of 88,000 climate-adapted native trees are scheduled to be planted by November 2014, including red oak, bur oak, and white pine from two different seed sources. The performance of seedlings of different species and origin under different conditions created by contrasting silvicultural treatments will be compared across four distinct forest plant communities. The goal is to explicitly test the effectiveness of adaptation forestry for transition to future suites of climate-adapted species.

Partners
- The Nature Conservancy
- Conservation Partners Legacy Fund
- Doris Duke Charitable Foundation
- Lake County
- Minnesota Department of Natural Resources
- Minnesota Forest Resources Council
- Northern Institute of Applied Climate Science
- Sustainable Forests Education Cooperative
- Saint Louis County
- University of Minnesota, Duluth
- University of Wisconsin, Madison
- U.S. Forest Service
- Wildlife Conservation Society

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Case Studies Featured in *Taking Action*

taking action

Goal 1

Conserve habitat to support healthy fish, wildlife, and plant populations and ecosystem functions in a changing climate

Strategy 1.1

Yakima River Basin Integrated Plan

Central Appalachians Essential Forests and Key Connectors

Strategy 1.2

Landscape Scale Conservation in the White-Moose

Protecting Coldwater Fish in Minnesota

Strategy 1.3

Improving Salmon Habitat on the Upper Quinault River

Snapshot: Saving Hotter and Dryer Ciénaga Habitat

Albemarle-Pamlico Adaptation Project

Snapshot: Partners for Fish and Wildlife Program in the Mountain Prairie Region

Strategy 1.4

Taunton Mill River Restoration

Snapshot: Promoting Aquatic Connectivity and Fish Passage

Restoring Access to Salmon Habitats

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

Managing Yellowstone Cutthroat Trout under Climate Change

Strategy 2.2

Assessing Brook Trout Vulnerability to Inform Management in Wisconsin

Snapshot: Lower Keys Marsh Rabbit Adaptive Management

Planting Future Forests in Northern Minnesota

Snapshot: Climate Change and Assisted Migration

Strategy 2.3

Northwestern Tribal Forest Improvement

Snapshot: Sagebrush Conservation for Greater Sage-Grouse

Goal 3

Enhance capacity for effective management in a changing climate

Strategy 3.1

Online Climate Courses for Natural Resource Managers

Snapshot: Planning for Climate Change on the National Wildlife Refuge System

Snapshot: Interpreting Climate Change

Strategy 3.2

Landscape Conservation Cooperatives

Snapshot: Pacific Islands Climate Change Cooperative

Traditional Gathering Calendar

Snapshot: North Cascadia

Strategy 3.3

Executive Order 13653

Strategy 3.4

Climate Change and the State Wildlife Grants

Goal 4

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

Strategy 4.1

Developing Baseline Data to Respond to Coastal Change

Strategy 4.2

Gulf Coast Climate Vulnerability

Snapshot: Sea Turtle Vulnerability Assessment

Vulnerability Assessment of California Vegetative Communities

Alternative Futures for Florida Keys

Goal 5

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

Strategy 5.1

Climate Science Centers and the NCCWSC

Regional Integrated Sciences and Assessments

USDA Regional Climate Hubs

Strategy 5.2

Studying Coral Adaptations

Strategy 5.3

Pacific Coast Sea-Level Rise Modeling

Modeling for Virginia's Wildlife Action Plan

Habitat Modeling for Wintering Black Ducks

Birds of the North Pacifi

Goal 6

Increase awareness and motivate action to safeguard fish, wildlife, and plants in a changing climate

Strategy 6.1

Pacific Northwest Tribal Climate Change Project

Strategy 6.2

National Climate Change Wayside Project

Maine Fishermen's Climate Roundtable

Engaging Youth with Climate Change

Strategy 6.3

Snapshot: Climate-Smart Conservation

Goal 7

Reduce non-climate stressors to help fish, wildlife, plants, and ecosystems adapt to a changing climate

Strategy 7.1

Snapshot: Bureau of Land Management Regional Mitigation Strategy

Strategy 7.2

Promoting Healthy Watersheds

Strategy 7.3

Strengthening Resiliency in Sierra Nevada Meadows

Snapshot: Vessel Discharge Standards to Reduce Invasive Species

Heightened Awareness for Emerging Pathogens

Strategy 7.4

Snapshot: Bycatch Reduction Engineering Program (BREP)