



Landscape Science to Inform Fish & Wildlife Management

Cross-cutting research to understand the implications of landscape change on fish and wildlife habitats and inform planning and decision-making.

BACKGROUND

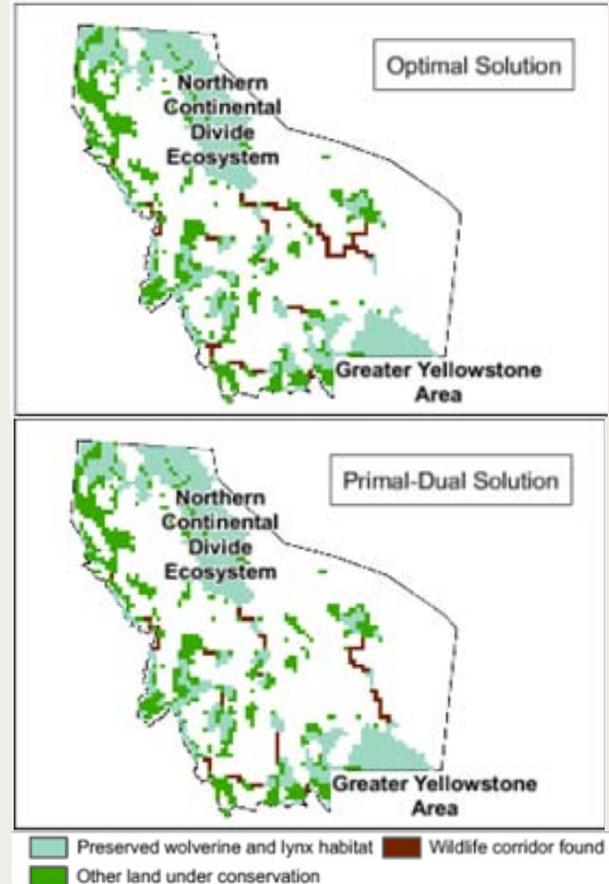
Landscape Science at the US Forest Service cuts across many research disciplines to: integrate and provide information about landscape processes across land ownerships; understand the drivers and implications of landscape change on fish and wildlife habitats, populations, and other valued resources; and produce needed spatial data and decisions support tools for evaluating outcomes of alternative management actions. Landscape Science guides decision-making and planning by ensuring appropriate geographic context at the multiple, nested scales at which managers must make decisions. Landscape Science highlights when, where, and how partnerships and collaborations are indispensable to achieving shared objectives in broad-scale restoration, climate change adaptation, fire management, and open space conservation.

HIGHLIGHTED RESEARCH

Landscape Science supports fish and wildlife management:

Forest Service scientists and partners combined years of wildlife genetic data with economic variables, such as land values, to develop models for optimizing the design of wildlife corridors that meet the needs of multiple animal species. These models are complex and layered, so scientists are translating them into decision support tools that land managers can use to make the most efficient and effective decision for protecting contemporary and future landscapes.

To improve assessments and monitoring of aquatic biodiversity at large watershed scales, Forest Service scientists developed a new protocol and tools for genetic inventories of fish and amphibians. Application of this approach through the multistate PacFish/InFish Biological Opinion Effectiveness Monitoring Network resulted in identification of seven new fish species, mapping of range wide genetic patterns of the federally sensitive westslope cutthroat trout, and completion of the first statistically robust and spatially explicit whole-basin surveys of native and invasive nonnative fishes in the Northern Rockies.



The wolverine and Canada lynx, both species of conservation concern in Montana, inhabit similar areas. Forest service scientists are developing models that provide economically feasible corridor solutions for multiple species.

MORE INFORMATION:

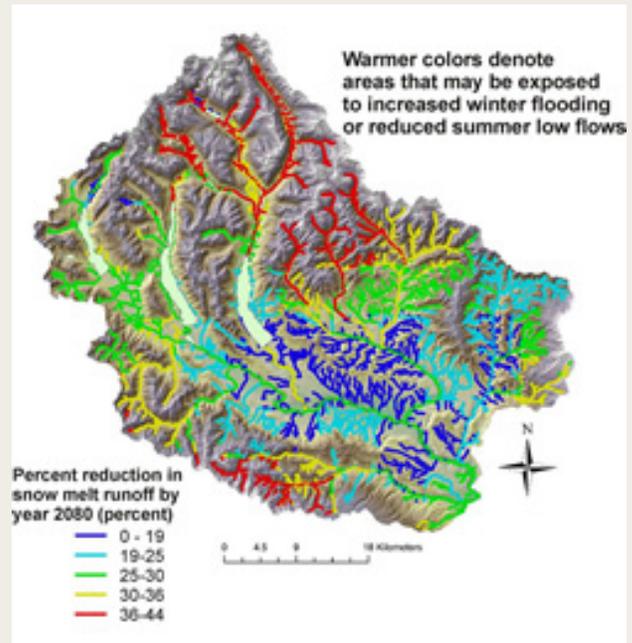
For more information, visit the website <http://1.usa.gov/ZdAqn4> or contact Amy Daniels, Landscape Science National Program Lead, adaniels02@fs.fed.us; Katherine Smith, Fisheries Research National Program Lead, klsmith@fs.fed.us; or Monica Tomosy, Wildlife Research National Program Lead, mstomosy@fs.fed.us

HIGHLIGHTED RESEARCH CONTINUED:

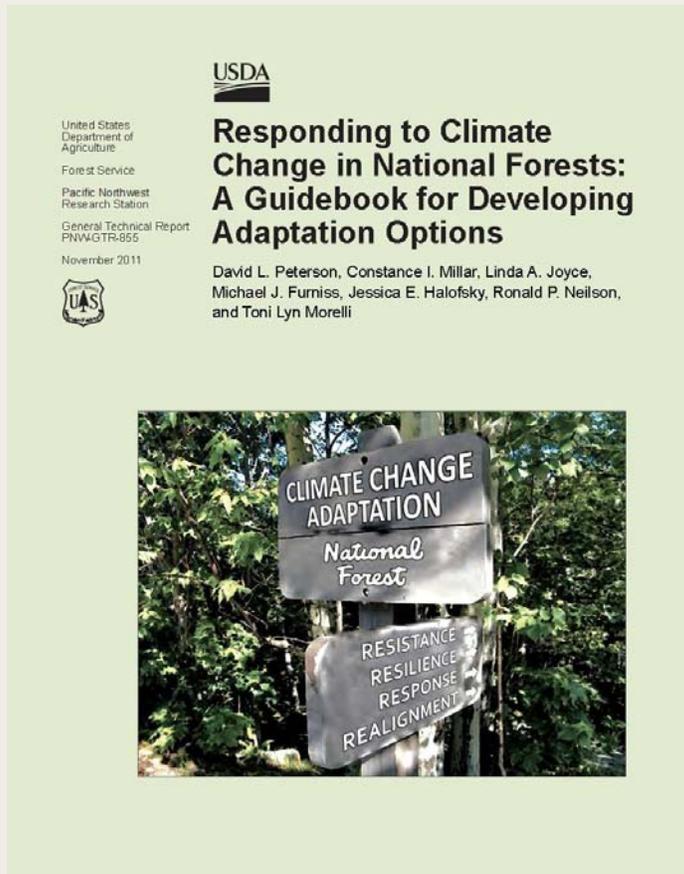
Decision support tools assist landscape scale decision-making:

To support watershed scale planning in the Pacific Northwest, Forest Service researchers and partners have made available an easy to use GIS based tool called “NetMap,” which features watershed attributes and processes such as fluvial geomorphology, fish habitat, erosion, watershed disturbance, road networks, wildfire, hydrology, large woody debris, and land use. NetMap provides customized watershed analyses at a fraction of the cost of current methods. The Willamette National Forest uses NetMap to prioritize road restoration and removal projects, and the Oregon Department of Forestry uses it to plan timber management.

A Forest Service forest planning tool – the Template for Assessing Climate Change Impacts and Management Options (TACCIMO) - provides a suite of web-based tools that enable users to review climate change forecasts, consider relevant literature-based science, and generate customized reports that assist with decision-making related to long-term forest sustainability. TACCIMO is being used to support Land and Resource Management Plan revision processes for several national forests in the eastern US and to develop a Vulnerability Assessment for the Sierra Nevada region.



Netmap creates a fish-eye view of potential climate impacts, such as this model for the Upper Yakima Basin in Washington, which predicts the areas of highest elevation to have the greatest reduction in snow-melt runoff by 2080.



This guidebook contains science-based principles, processes, and tools necessary to assist with developing adaptation options for national forest land objectives, including sustaining wildlife and fish habitat.

Climate science supporting resilient landscapes:

The Forest Service’s Resources Planning Act (RPA) Assessment provides a national snapshot of current forest and rangeland conditions across all landownerships in the US, identifies drivers of change for natural resource conditions, and projects the effects of those drivers on resource conditions 50 years into the future. The RPA Assessment includes analyses of forests, rangelands, wildlife and fish, biodiversity, water, outdoor recreation, wilderness, urban forests, and the effects of climate change on these resources. Two additional resources, the Southern Forest Futures and Northern Forest Futures assessments, build on RPA scenarios to provide managers with detailed regional scenarios of changes affecting natural resources.

A guidebook, *Responding to climate change in national forests: a guidebook for developing adaptation options*, condenses years of research on climate change adaptation into a project scale resource. This guidebook contains science-based principles, processes, and tools necessary to assist with developing adaptation options for national forest land objectives, including sustaining wildlife and fish habitat. Case studies on adaptation in national forests and national parks facilitate integration of climate change in resource management and planning and make the adaptation process more efficient.