



Snapshot: Resilient Lands and Waters Initiative

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Introduction

As called for in the Administration's *Priority Agenda for Enhancing the Climate Resilience of America's Natural Resources*, Federal agencies worked with state, local, and tribal partners over the past six months to select a suite of geographic areas that will demonstrate the feasibility, practice, and benefits of landscape-scale management approaches toward building climate resilience through the use of existing, cooperative, inter-agency institutions and partnerships (see attached Q&A). These *Resilient Lands and Waters* represent a range of scales, geographies, and ecological stressors such as fire, sea-level rise, changing ocean conditions, and drought, and will focus on multiple community and ecosystem needs, such as coastal resilience, protecting drinking water for urban areas, improving wildlife habitat connectivity, and preventing threats like wildfire and invasive species.

The first set of *Resilient Landscape* partnerships (southwest Florida, Hawaii, Washington and the Great Lakes region) was announced by President Obama at the 2015 Earth Day event in the Everglades. Today's second tranche include three locations in California and Crown of the Continent, and all have strong state and local support. Each of these areas has committed to identify and map by October, 2016, initial priority areas for conservation, restoration, or other investments, to build resilience in vulnerable regions, enhance carbon storage capacity, and support management needs, and to follow upon those efforts by developing landscape-scale resilience strategies to assist in advance planning and management activities. Identifying such priority areas will benefit wildfire management, mitigation investments, restoration efforts, water and air quality, carbon storage, and community resilience.

The goal of the *Resilient Lands and Waters Initiative* is to put a national spotlight on these important efforts and demonstrate that by organizing at a landscape scale, Federal, state, tribal, and local partners are able to improve their ability to plan for the future and address climate impacts that respect no jurisdictional boundaries. By tracking the successes and lessons-learned from these efforts, this initiative will encourage the development of similar resilience efforts in other areas where such strategies may provide a path forward that advances conservation, restoration, and sustainable development in a rapidly changing environment.

NOTE: Selection as a Resilient Lands and Waters geographic area is not a formal designation that confers special legal or regulatory significance, but rather highlights the partnerships on the ground and builds upon the work of existing landscape-scale collaboratives nationwide in order to demonstrate and advance the resilience benefits of this type of approach to planning and management. As well, many of these areas provide enhanced opportunities for developing and demonstrating tools, much like the Western Governors Association's Crucial Habitat Assessment Tool, that help inform and guide investments and management across a landscape scale, increase certainty for development proponents, and increase the likelihood of success for conservation efforts. This initiative is a non-regulatory approach to planning in advance to enhance resilience.

California Headwaters Partnership (USFS*, CA*, DOI) *co-lead agency/entity

Identifying areas for restoration and conservation at a landscape scale to improve our water quantity and quality, promote healthy forests, and reduce wildfire risk

The California Headwaters contribute greatly to the state's water supply; for example, the Sierra-Cascade watersheds provide drinking water to 25 million people, almost two-thirds of the California population, and the majority of water for irrigated agriculture. The California Headwaters Partnership will take a watershed and landscape-level approach to restoration and will be jointly led by a state and federal planning committee: CA Natural Resources Agency (CNRA); CA Departments of Conservation, Fish and Wildlife (CDFW), Forestry and Fire Protection (CALFIRE), and Water Resources (CDWR); the CA Wildlife Conservation Board (CWCB); the Sierra Nevada Conservancy (SNC); the US Department of Agriculture (USDA) Forest Service (USFS) and Natural Resource Conservation Service (NRCS); and the US Department of Interior (DOI) Bureau of Land Management, Bureau of Reclamation (BOR), National Park Service, and Fish and Wildlife Service (FWS).



The California Headwaters Partnership builds upon the many existing collaboratives, providing the opportunity to unify these efforts across the California Headwaters landscape. For example, the SNC and USFS recently launched the Sierra Nevada Watershed Improvement Program (WIP) across a large portion of the California Headwaters landscape to restore the health of California's primary watershed through coordinating funding and addressing policy barriers across "all lands." The WIP is organized to coordinate efforts to maximize opportunities connected to existing and future programs, for example, the California Water Action Plan (CNRA, CA Department of Food and Agriculture, CA Environmental Protection Agency), the National Cohesive Wildland Fire Management Strategy (USDA/DOI), and the Western Watershed Enhancement Program (BOR/USFS).

The planning committee agencies and its many partners and stakeholders have several ongoing activities in the region that will inform efforts. A number of active collaboratives are functioning in the Headwaters area, focusing on watershed and forest issues. Examples include: Landscape Conservation Cooperatives (LCC; DOI), Integrated Regional Watershed Management groups (CDWR and Roundtable of Regions), Collaborative Forest Landscape Restoration Program (CFLRP) projects (USFS), Resource Conservation Districts (RCDs), and many others. In addition, the California Forest Watershed Alliance, a group of state/national organizations, focuses on forest and watershed restoration, and includes the Rural County Representatives of CA, the Association of CA Water Agencies, the CA Forestry Association, The Nature Conservancy (TNC), and the CA Farm Bureau Federation. The Sierra Business Council also sponsors the Sierra Climate Adaptation and Mitigation Partnership (CAMP) which joins governmental, business, and community leaders in the Sierra with their counterparts in downstream communities to protect the reliability of water, energy, recreation, and other headwaters resources for urban population centers. Sierra CAMP is one of five such regional collaboratives supported by the Governor's Office of Planning and Research. Further, the Klamath Cascade Advisory Council focuses on watershed conservation and restoration across all lands and includes the Pacific Forest Trust, the CDFW, CALFIRE, USFS, FWS, NRCS, local RCDs, University of California Extension, SNC, industrial and non-industrial private landowners, consulting foresters, and county and business representatives.

The California Headwaters Partnership will build upon and unify these and other existing collaborative efforts to identify and map areas for conservation, restoration, increased drought resilience, and maintenance needs (for example, the Strategic Growth Council – California Biodiversity Council Integrated Regional Planning Initiative). All stakeholders and governments, including scores of Native American Tribes within the region, share in the desire to reduce the risk of wildfire and restore healthy forests in the headwaters of California. These efforts will provide the information needed to improve water quantity and quality, protect important wildlife habitat, and provide jobs to local communities. Some of the specific implementation goals that will be supported by this effort include:

- Restoring meadows through removal of invasive species and improvement of hydrologic function to enhance groundwater recharge; e.g., CDFW awarded \$6 million dollars in its first year of grants from state cap-and-trade revenues.
- Restoring stream channels and maintaining roads to reduce sediment, slow flood water, improve habitat, and increase groundwater recharge; e.g., California will implement a \$200 million instream flow program using 2014 water bond funds.
- Restoring forest health to improve snow and water capture and storage, enhance habitat function, and stabilize greenhouse gas emissions; e.g., CALFIRE will award \$42 million in grants for forestry projects designed to reduce greenhouse gas emissions.

- Preventing further forest fragmentation and degradation, for example through working forest conservation easement programs at CALFIRE, the CWCB, and several California land trusts.
- Enhancing forest resilience to reduce the risk of high severity wildfire and allow a more natural fire regime through reduction of uncharacteristic fuel loads; e.g., the USFS plans to reduce forest fuels on 20,000 acres per year in the 3 CFLRP projects.
- Strengthening collaborative actions to help maintain and develop the capacity of local communities and reduce wildfire risks to communities and natural resources.
- Improving fish and wildlife habitat health and function; e.g., an effort by a California LCC considered future environmental conditions in developing adaptation strategies and actions for ecosystems that will benefit species and habitats.

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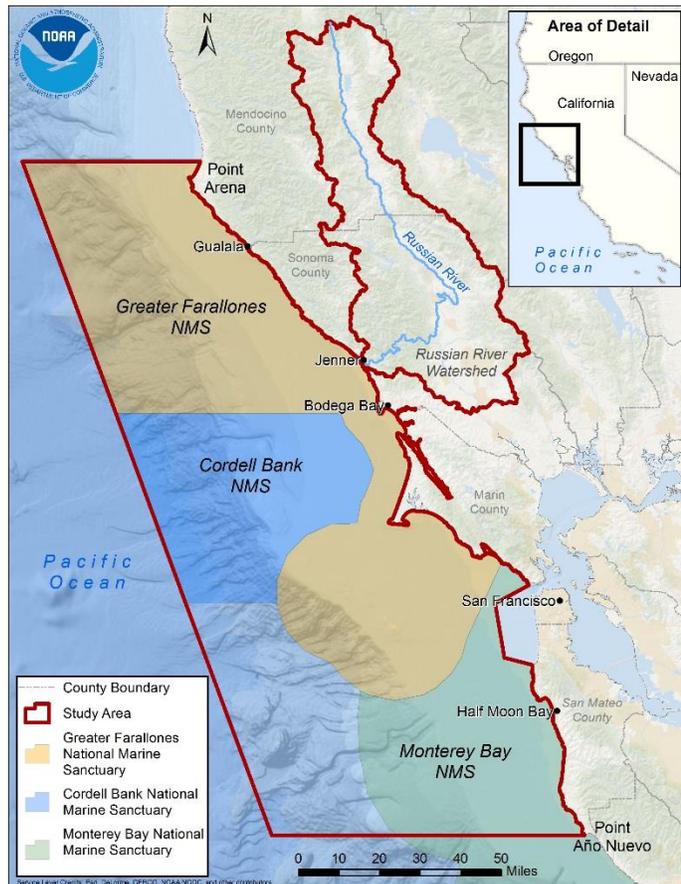
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California’s North-Central Coast and Russian River Watershed (NOAA*, USACE & BLM) *lead agency/entity

Informing coastal and marine resource management, watershed restoration, and optimizing flood control and water supply reliability for users and the environment

A suite of activities is underway in the North-Central California outer coast and the Russian River watershed to enhance the climate resilience of this landscape. In both the Russian River estuary and outer coast, NOAA and USGS are developing the [Coastal Storm Modeling System](#) and “[Our Coast, Our Future](#)” decision-support tool which will provide sea level rise scenarios for local, state, and federal partners to help identify natural resource and infrastructure vulnerabilities, update Local Coastal Plans, and inform coastal and estuarine natural resource planning and management. In addition, partners will collaborate to identify and map priority areas for conservation, restoration, water resilience and management actions.

Along the outer coast, NOAA’s Greater Farallones National Marine Sanctuary (GFNMS) is leading an effort in partnership with the California LCC, US Department of the Interior Bureau of Land Management, National Park Service, local NGOs, and others to develop California’s first comprehensive, prioritized adaptation implementation plan for the coast and ocean. This plan can serve as a model within California and along coastlines globally. The team recently finalized a [Vulnerability Assessment](#) report detailing the process, methodology, and results from a climate vulnerability assessment of 44 focal resources (species, habitats, and ecosystem services) in the study region. Based on the results of the report, the team will develop and prioritize adaptive management recommendations for the region’s management agencies in response to the most impactful climate drivers identified in the vulnerability assessment report, including sea level rise, ocean acidification, precipitation, wave action, and upwelling (which influences sea surface temperature, salinity, dissolved oxygen, currents, mixing and stratification).



In the Russian River watershed, federal, state and local partners are all working to provide data and tools to enhance resilience to climate and extreme events. For example, NOAA, the Sonoma County Water Agency, the U.S. Geological Survey (USGS), Bureau of Reclamation, California Department of Water Resources and Scripps Institution of Oceanography are working closely with the US Army Corps of Engineers to develop actionable science and methods to support Forecast-Informed Reservoir Operations (FIRO). The FIRO research will include using Lake Mendocino as a pilot to determine whether more sophisticated hydro-meteorological forecasting data can be used to better inform water management decisions in a manner which reflects current and forecasted conditions. The research is projected to be a five year effort.

In all, priorities for the Russian River watershed include: 1) Rebuilding endangered coho and threatened Chinook and steelhead stocks to sustainable levels through habitat protection and restoration; 2) Improving frost, rainfall, and river forecasts in the Russian River watershed through improved data collection and modeling; and 3) Increasing community and ecosystem resilience to flooding and drought through improved planning and water management strategies.

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Crown of the Continent (NPS*, Montana, Alberta, British Columbia, USFS, USGS, & EPA) *lead agency/entity

Practicing environmental stewardship and securing ecosystem resilience across boundaries and borders

The Crown of the Continent ecosystem (CCE) is one of North America’s most ecologically rich and jurisdictionally fragmented ecosystems. Encompassing 18 million acres across the Rocky Mountains of Montana, Alberta and British Columbia, the ecosystem is challenged by climate change, invasive species, energy development, increased and diversifying recreational use, intensified demands for resource use and extraction, expanded urban and rural development and the growth of infrastructure required to support all these.

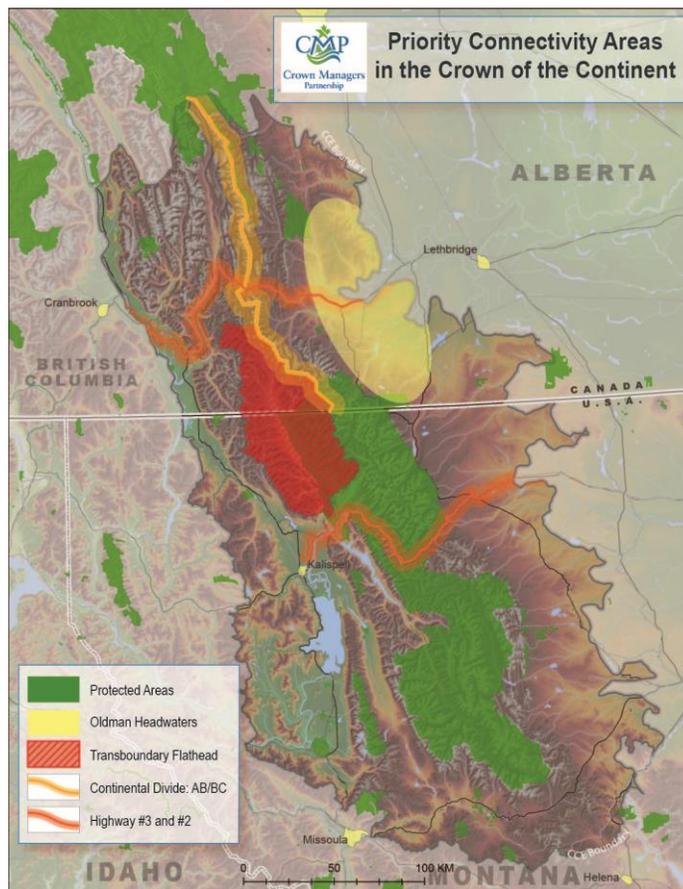
The Crown Managers Partnership (CMP) is a group of state, federal and provincial agencies, universities, tribes and first nations in Montana, Alberta and British Columbia who formed to address and practice collaborative environmental stewardship with stakeholders to secure ecosystem health and resilience across boundaries and borders. The CMP

developed the Large Landscape Conservation Initiative (LLCI). This is a long-term program that focuses on key landscape scale resources threatened by landscape scale stressors. The initiative seeks to secure desired outcomes for key priority species (bull trout, whitebark pine, grizzly bear), and priority landscape processes (water quality/quantity, air quality, fire). **Landscape – scale stressors** that affect these species and processes, either individually or cumulatively are: 1) **Climate change** 2) **Invasive species** and 3) **Land use**.

Examples of work underway under the LLCI are:

Addressing Climate Risks

The Crown is warming at 2-3 times the rate of the global average, and by 2030, glaciers are no longer predicted to exist in Glacier National Park, one of the core, protected areas within the CCE. However, there is strong science to support the Crown of the Continent as a “resilient landscape” with respect to the both vulnerability and resilience to climate change. Working with stakeholders the CMP convened workshops on Climate Change Adaptation (Missoula, MT,



March 2014) and identified the following management targets in the CCE affected by the risks and uncertainties from climate change; 1) Aquatic Invasive Species (AIS), 2) Whitebark pine, 3) Cold-adapted native salmonid species, 4) Invasive plants, 5) Fire, and 6) Meso-carnivores. Additional efforts are underway to build awareness regarding drought preparedness and improve drought resilience.

Climate Change Adaptation (Native Salmonids and Invasive Plants)

To date, two events have been held designed to develop consensus on applied management actions, while considering climate change scenarios for the Crown. The first workshop, on native salmonids was held in Kalispell, MT. Nov 2014. Pilot projects with partners were identified and are being prioritized for westslope cutthroat and bull trout. Their purpose is to increase resilience, secure and restore critical habitat and protect native (non-hybridized) populations. A second Forum on invasive plants was held March 2015 in Lethbridge, AB. Again, working with partners, a coordinated and structured regional approach is being developed to assure effective trans-boundary management and control of invasive plants in the Crown. Future workshops on Whitebark pine, fire and meso-carnivores are pending.

Landscape Connectivity

Agency managers in Montana, Alberta and British Columbia, have collectively identified priority conservation areas to secure terrestrial connectivity for priority fish and wildlife species across the scale of the Crown. Agencies, local communities and NGOs are working together to implement projects involving highway crossings, address land fragmentation and secure functional trans-boundary wildlife connectivity.

Aquatic Invasive Species

Aquatic Invasive Species (AIS) are one of the greatest threats to the Crown ecosystem. Over the last three years the CMP, with multi-jurisdictional partner support, including the Great Northern Conservation Cooperative, have developed a robust AIS program for the CCE., The objectives are to keep new invaders out of the CCE through a crown wide fully coordinated, perimeter defense, early detection, rapid response and education and awareness program A pilot using AIS detection dogs at inspection stations in AB and MT was successfully launched in 2014.

On this large regional trans-boundary landscape, the CMP is inspired by the vision that underpinned the establishment of Waterton-Glacier International Peace Park – the environment doesn't respect borders, shared resources require shared management, and Americans and Canadians can work as one to conserve our shared heritage for posterity. *We aim to make the boundaries and borders invisible and to bequeath to the future a Crown where cold, clean water flows from the Rockies, wildlife moves freely across the landscape, native trout migrate to their historical spawning areas, hikers breath fresh mountain air, endangered species find a safe refuge, and native landscapes continuously and sustainably provide valued ecosystem services -- regulating climate, recycling nutrients, storing carbon and recharging groundwater*

Next Steps

Over the past 5-6 years, the CMP successfully merged a substantial transboundary data set between the state of Montana, federal lands in both Canada and the U.S., and the Provinces of

Alberta and British Columbia, Canada, within the bounds of the Crown ecosystem. This database provides baseline information for future monitoring efforts, and includes geospatial data on roads, population density, density dwelling, streams and watersheds, land cover, fire and insects. Three workgroups are currently underway focused on aquatic invasive species, climate change adaptation strategies for invasive plants, and adaptation strategies for native salmonids. The teams' priorities are to to update and analyze data sets (including human modifications, and landscape change and connectivity) to further support delineation of priority areas and map-based strategies for collaborative conservation actions.

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PARTNER LIST

These partner organizations have collaborated in the development of these Resilient Lands and Waters Initiative. These organizations will be in dialogue to develop more explicit strategies, maps and programs of work for these Resilient Lands and Waters within 18 months as laid out in the Climate and Natural Resources Priority Agenda (https://www.whitehouse.gov/sites/default/files/docs/enhancing_climate_resilience_of_american_natural_resources.pdf).

1) California Headwaters

This project welcomes partnerships with state, local, tribal, agricultural, conservation, environmental, and other stakeholder groups.

2) California's North-Central Coast and the Russian River Watershed

Federal:

U.S. Army Corps of Engineers
NOAA National Marine Fisheries Service
NOAA Office of National Marine Sanctuaries
NOAA National Weather Service
NOAA Office of Oceanic and Atmospheric Research
NOAA Office of Coastal Management
NOAA Office of Program Planning and Integration
Federal Emergency Management Agency
U.S. Geological Survey
USDA Natural Resource Conservation Service (Sonoma and Mendocino Offices)
U.S. Fish and Wildlife Service
U.S. Fish and Wildlife Service – Landscape Conservation Cooperative
National Park Service
Bureau of Land Management
Bureau of Reclamation

State Agencies:

California Department of Fish and Wildlife
California Coastal Commission
California Coastal Conservancy
California Department of Parks and Recreation
Department of Water Resources
Sonoma Resource Conservation District
Gold Ridge Resource Conservation District
Mendocino Resource Conservation District
Ocean Protection Council

Local/County Agencies:

Sonoma County Water Agency

Sonoma County Permit and Resource Management District
Sonoma County Agricultural Preservation and Open Space District
Marin County Planning Agencies
Mendocino County Russian River Flood Control and Water Conservation Improvement District

Tribal

Dry Creek Rancheria Band of Pomo Indians

Universities:

UC Berkeley
UC Davis Cooperative Extension (Sonoma and Mendocino)
U.C. Davis Bodega Marine Laboratory
U.C. San Diego SCRIPPS Institution of Oceanography
Stanford University

Agriculture:

Sonoma County Wine Grape Commission
Sonoma and Mendocino County Farm Bureaus

NGOs:

Point Blue
Farallones Marine Sanctuary Association
EcoAdapt
Trout Unlimited
The Nature Conservancy
National Fish and Wildlife Foundation
Russian Riverkeeper
Center for Ecosystem Management and Restoration

3) Crown of the Continent

Crown Managers Partnership-Member Agencies

Alberta Cows and Fish
Alberta Environment and Sustainable Resource Development
Blood Tribe Land Management
Canadian Council on Invasive Species
Cardston County
City of Lethbridge
Confederated Salish and Kootenai Tribes
Department of Natural Resources and Conservation
Flathead Basin Commission
Flathead National Forest
National Park Service -Glacier National Park
Government of Alberta
Great Northern Landscape Conservation Cooperative
Lethbridge Northern Irrigation District

Lewis and Clark National Forest
MD of Pincher Creek
MD of Ranchland
Miistakis Institute of Calgary
Ministry Forests Lands and Natural Resources
Montana State University
Mount Royal University
Natural Resources Conservation Service
NPS, Rocky Mountain CESU
Parks Canada/Waterton Lakes National Park
Powell County Weed District/Blackfoot Challenge
Regional District of East Kootenay
Government of British Columbia
The Wilderness Society
U.S. Fish & Wildlife Service
U.S. Geological Survey
University of Alberta
University of Calgary
University of Lethbridge
University of Montana
US Fish & Wildlife Service
USFS, Region I Northern Region
USGS Northern Rocky Mountain Science Center
Blackfeet Tribe

Individuals/Businesses/Organizations

Blacktail Resources
Chimney Rock Bed and Breakfast
CoolPro Solutions Environmental Consulting
Land Wise
Working Dogs for Conservation
Burt Riggall Environmental Foundation
Canadian Parks and Wilderness Society - Southern Alberta
Castle Crown Wilderness Coalition
Center for Large Landscape Conservation
Crown of the Continent Conservation Initiative (CCCI)
Crown Roundtable
East Kootenay Invasive Plant Council
Five Valleys Land Trust/Heart of the Rockies
Flathead Lakers
Helen Schuler Nature Conservancy
Kresge Foundation
Nature Conservancy of Canada
Rocky Mountain Front Weed Round Table
The Nature Conservancy
Yellowstone to Yukon Conservation Initiative

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Wildlife Conservation Society
Wilburforce Foundation
Waterton Biosphere Reserve Association