

Landscape Conservation Cooperatives

Better Conservation through Partnerships in the Pacific Region

Climate Impacts

The warming trend in the western United States in the 21st century is predicted to be much greater than what occurred during the 20th century. Average warming is predicted to increase by 3°F (1.5°C) by the 2030s and 5°F (3°C) by the 2050s.

Snowpack, a critical western water supply, has already changed dramatically in many areas. For example, average snowpack in the Cascade Mountains has declined by 25% over the last 50 years, with another 21% decline predicted by 2040.

Invasive species, such as the pine beetle, have expanded their range and are predicted to kill millions of acres of forest over the next few decades. Habitats will be directly destroyed or placed in a position of greater risk of loss due to wildfire and other forms of disturbance.

Sea level rise will alter or destroy thousands of acres of coastal and estuarine habitats for migratory birds, fish and marine mammals. Islands in the Pacific Ocean will disappear, and irreplaceable coral reefs will be lost.



The Conservation Challenge

Climate change is one of the greatest environmental and conservation challenges of the 21st century. The impacts of climate change are already beginning to strengthen many other existing threats and stressors to fish and wildlife and their habitats. Impacts include rising average sea level, widespread melting of snow and ice, changes in precipitation patterns, greater risks of forest fires, ocean acidification, expanded spread of invasive species, and increased flooding rates.

Dealing with these challenges will involve an unprecedented level of collaboration between public and private conservation interests.

The complexity and scale of the impacts associated with climate change requires a landscape level approach to conservation planning. A partnership, such as a landscape conservation cooperative (LCC), is an effective way to bring together the resources to research a problem, develop a response strategy, and identify and pool the skills, abilities and funding needed to take action.

Landscape Conservation Cooperatives

LCCs are science-based partnerships between Federal agencies, States, Tribes, non-governmental organizations (NGOs), universities, and other organizations within a defined geographic area. They are designed to inform individual and collective resource management needs to address climate change and other environmental stressors within and across large, connected natural areas.

The principal functions of LCCs are to provide applied scientific information and technical assistance to better understand species and habitat responses to climate change and other ecological process changes (e.g., fire, invasive species). LCCs do not replace partner responsibilities or supersede any agency decision-making authority. They also do not reduce the value and role of existing partnerships. Rather, LCCs will provide the scientific basis needed to help inform the development of strategic, landscape-scale conservation.

LCCs will be guided by a partnership that will provide direction and identify the priority science needed to address management issues. LCCs will provide a shared science capacity and will give all partners access to the same scientific information. This common knowledge base will allow agencies and organizations to work together to identify and develop conservation actions that will help us all prepare for and respond to the growing threats from climate change.



LCC borders have been loosely defined by bird conservation areas and ecoregions within a national and international geographic framework. Eventually, there will be a total of 21 LCCs across the United States, Canada and Mexico. Nine LCCs are beginning in 2010.



Oregon Coast - Roy Lowe USFWS

The North Pacific LCC

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North Pacific LCC marine, estuarine, freshwater, and terrestrial habitats support a rich diversity of species and habitats. They have cultural significance to Native Americans throughout the region. Marine and coastal island habitats are essential to seabirds, shorebirds and other Pacific Flyway migratory species. Highly productive nearshore marine ecosystems are key to sustaining healthy populations of marine mammals, Pacific salmon, forage fish, and shellfish. Forested habitats in the Pacific Coast ranges support many resident and migratory bird species of conservation concern, including the marbled murrelet, spotted owl, dusky

Canada goose, and Queen Charlotte goshawk. Prairie habitats are host to numerous species of imperiled plants, birds, mammals and butterflies.

Partners in the North Pacific LCC include agencies and organizations that have identified conservation as a priority. The North Pacific LCC will be guided by these partners and the many well established partnerships in this area, including the Pacific Coast Joint Venture, Puget Sound Partnership, North American Salmon Stronghold, and Alaska Coastal Rainforest Center, all which will provide a strong basis for developing this LCC.



Banana slug USFWS

The Great Northern LCC

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Extensive sagesteppe, tall mountains, productive wetlands, and important river basins, including the Columbia, Upper Missouri, and Yellowstone, are home to the diverse plants and animals of the Great Northern LCC. Unlike many areas of the country, this region contains relatively large, intact habitats and communities of plants and animals with important conservation and restoration opportunities. The region is home to Glacier, North Cascades, Grand Teton, and Yellowstone national parks; numerous national forests; and many nationally designated wilderness or refuge areas. Key migratory fish are bull trout, Pacific lamprey, salmon, and steelhead. Additional species with conservation needs include grizzly bear, gray wolf, lynx, sage-grouse, trumpeter swan, burrowing owl, willow

flycatcher, and Columbia spotted frog. This area represents a diversity of plant and animal species that have important cultural significance to Native Americans throughout the region.

The Great Northern LCC will include a variety of science and management partners. It will complement many existing conservation partnerships such as the Interagency Grizzly Bear Committee, Columbia Basin Federal Caucus, Western Governors' Association Wildlife Corridors Initiative, Columbia Basin Fish and Wildlife Program, and the Intermountain West Joint Venture. These landscape-level conservation partnerships have a long and successful history.



Canadian Rockies - ©Phil Zrimsek



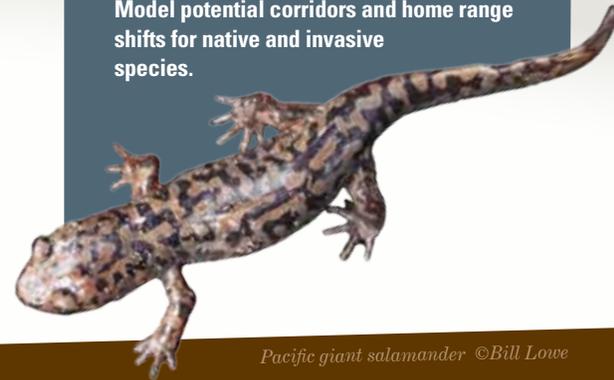
LCC Products

Apply climate models to predict local effects on fish, wildlife, plants and their habitats;

Provide access to data and analyses of species and habitats, within and across geographic area boundaries;

Assess vulnerability of fish, wildlife, plants, and their habitats to the impacts of climate change; and

Model potential corridors and home range shifts for native and invasive species.



Pacific giant salamander ©Bill Lowe

The Great Basin LCC

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Dominated by high-altitude desert, the Great Basin LCC includes a mosaic of diverse shrublands, grasslands, and forests, incised with rare but critical aquatic oases. Extensive areas of sagebrush support pronghorn, pygmy rabbits, and sage-grouse. Juniper and pine woodlands are home to elk, small mammals, and many migratory birds, and rivers and streams are havens for native fish such as the Bonneville cutthroat trout, mottled sculpin, and speckled dace. Because of the general arid character of this LCC and its relatively simpler ecology, climate change, combined with invasive species, wildfire, and traditional and modern land uses, may present particularly intense and extensive future challenges.

The Great Basin region already has partnerships underway that capitalize on landscape-scale biological planning and conservation design, including the Intermountain West Joint Venture, Great Basin Restoration Initiative, and Desert Fish Habitat Partnership. The Nature Conservancy, Cooperative Sagebrush Initiative, Great Basin Environmental Program, and others are also actively involved in landscape level planning efforts. Regionally-based climate change research programs are underway, including those sponsored by the Great Basin Research and Management Partnership, Great Basin Cooperative Ecosystem Studies Unit, USDA Forest Service, and the United States Geological Survey.



Sage grouse ©Dave Renwald

LCC Function

Although LCCs are integral to climate adaptation efforts, they are not climate-centric. LCCs provide science support for designing conservation actions that address a variety of broad-scale challenges, including water scarcity, habitat fragmentation, spread of invasive species, and wildlife disease – all of which are accelerated by a changing climate.

The Pacific Islands Climate Change Cooperative

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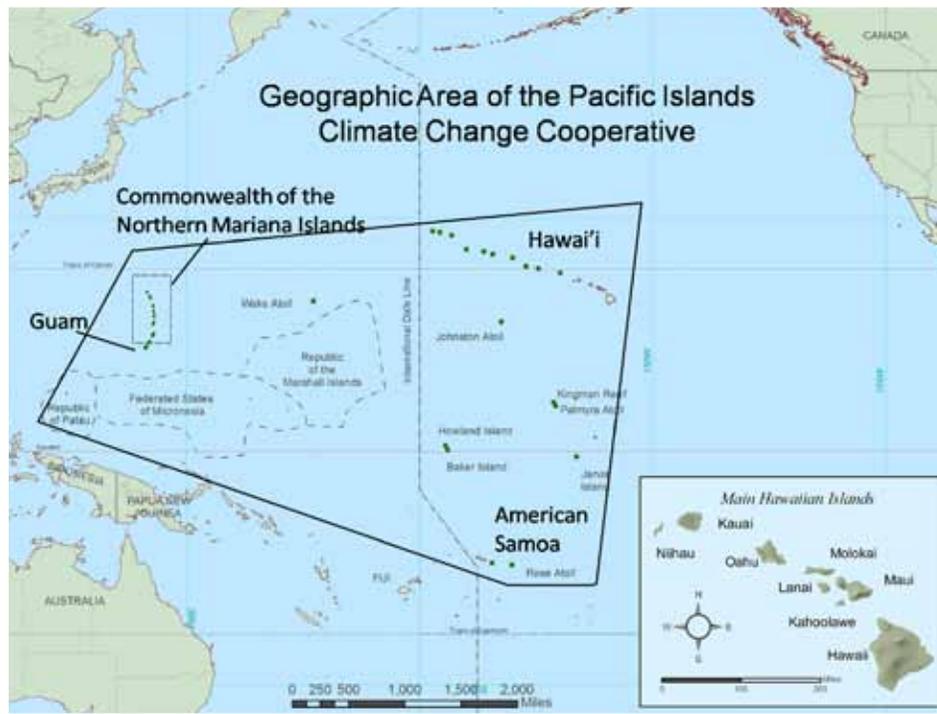
Human-caused changes in climate, ocean chemistry, and sea level will shape the Pacific and its islands in unprecedented ways. Anticipated impacts include changes in rainfall and freshwater availability, increases in wildlife diseases, extinction of many rainforest species, degradation of coral reefs, and loss of low-lying islands. These changes will strongly affect island cultures and the natural resources they depend upon.

At risk are thousands of unique island plant and animal species, including 410 on the Federal Endangered Species list. A network of protected areas, including 22 National Wildlife Refuges, 10 National Parks, 4 Marine National Monuments, and local and private conservation lands, provide refuge for many species. For these species to flourish into the future, resource managers and the public need to know how ecological changes are likely to unfold, and what conservation actions will best perpetuate the unique natural resources of the Pacific Islands.



Hawaiian Monk Seal - ©Chad Podoski

To help fill this need, the Hawai'i Conservation Alliance (HCA) is facilitating establishment of the Pacific Islands Climate Change Cooperative (PICCC). The HCA's long-established conservation leadership role provides a solid foundation for the PICCC to rapidly engage conservation managers, researchers, and the broader community in Hawai'i and the Pacific Island region.



Rose Island - Phil Colla USFWS

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