

# Field Guide

to Landscape Assessments of the United States





State, federal, and non-governmental organizations (NGOs) are investing significant resources to conduct landscape-scale assessments of the location, condition, and vulnerability of renewable natural resources. These assessments provide critical information on contiguous landscapes (e.g., ecoregions, watersheds, habitats, communities) that can be vital to a range of partners in developing landscape-scale management strategies and plans. They also provide important perspectives for subsequent finer scale management, assessment, and monitoring. A lack of awareness and coordination across these efforts reduces efficiency and diminishes the benefit of these individual assessments.

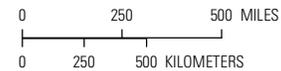
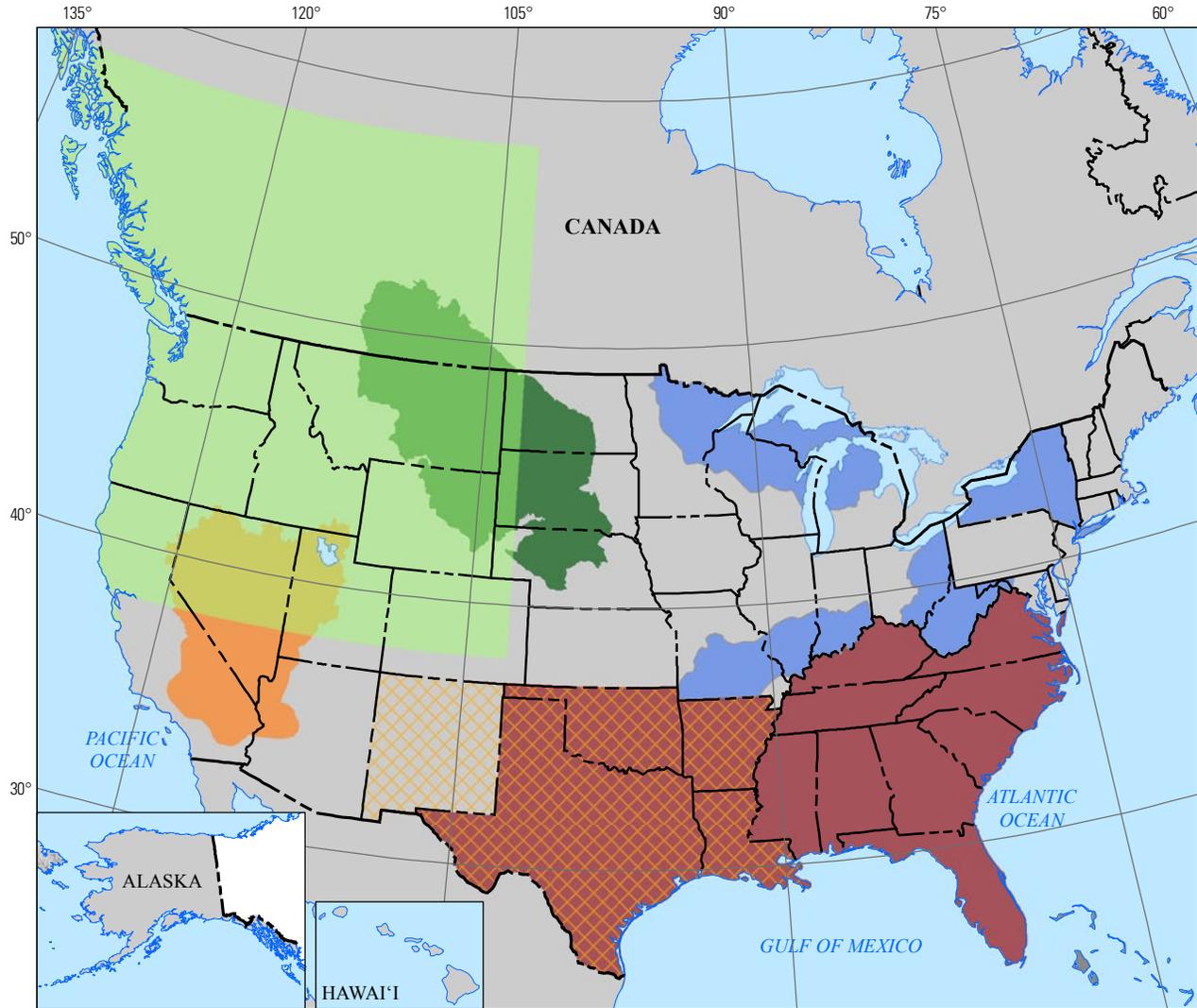
A multi-stakeholder group recognized the need for and value of collaboration among the authors of these assessments to enhance efficiency and utility and reduce duplication of efforts. This group, called the Crosswalk Team, is collaborating to develop information resources on landscape-scale renewable natural resource assessments. The team's purpose is to facilitate greater coordination and integration across assessments and improve access to data, which greatly benefits many landscape-scale efforts [e.g. Landscape Conservation Cooperatives (LCCs) and Collaborative Forest Landscape Restoration Projects].

To achieve its purpose, the team has outlined a phased approach to developing a field guide and database that articulates the concepts, approaches, contents, and terminology of the various assessments and "crosswalks" them through translation into a standard format for comparison to one another. As conceived, this crosswalk will not attempt to evaluate the validity of any particular assessment methodology or results. Rather, it will provide sufficient information for users to formulate their own opinions concerning opportunities for collaboration or application of assessment results.

### **Field Guide to Landscape Assessments of the United States**

The Field Guide to Landscape Assessments of the United States represents the culmination of the first phase of the crosswalk process. By design, this Field Guide is limited in scope to allow for quick and easy reference. It provides a snapshot of a small sampling of current assessments and uses a common format to improve understanding of similarities and differences in areas of interest, objectives, and resources assessed. The Field Guide does not provide an in-depth analysis of assessments and associated issues, nor does it answer all questions for each audience. It serves, however, as a collaborative tool for understanding existing assessments and as a foundation for future work. Contingent on funding and participation, the Crosswalk Team will build upon the existing Field Guide framework and further engage assessment practitioners to identify other information that would be of value for possible next phases of the crosswalk process, such as developing an interactive map of the assessments, peer-reviewed papers, and expanding the reach to Hawaii and Alaska.

# Index Map



## EXPLANATION

### Northwest

- Columbia Plateau Ecoregional Assessment
- Klamath Mountains Ecoregional Assessment
- Mill Creek Community Wildfire Protection Plan
- Pacific Northwest Coast Ecoregional Assessment
- From the Mountains to the Sea - Applying the Yale Framework in Western Washington
- Sheldon Hart Mountain National Wildlife Refuge Complex Assessment
- Pacific Northwest Climate Change Vulnerability Assessment
- Priority Habitats and Species Program

### Southwest

- Mojave Desert Ecosystem Program
- Central Basin and Range Rapid Ecoregional Assessment

### Southeast

- Southern Forest Futures Project

### South Central

- Regional Ecological Assessment Protocol

### North Central

- Aquatic, Riparian, and Wetland Assessment: Bighorn National Forest
- Ocean of Grass: Ecoregional Assessment of the U.S. Northern Great Plains

### Northeast

- New York Habitat Vulnerability Assessment
- Climate Change Response Framework Ecosystem Vulnerability Assessments

### National (not shown on map)

- West-Wide Climate Risk Assessment
- Natural Resource Condition Assessment
- Rapid Ecoregional Assessments
- The State of Climate Change Adaption
- Western Governors Crucial Habitat Assessment Tool
- The National Aquatic Resource Assessment
- The Nature Conservancy Ecoregional Assessments

# Contents

## Northwest

Columbia Plateau Ecoregional Assessment	8
Klamath Mountains Ecoregional Assessment	10
Mill Creek Community Wildfire Protection Plan	12
Pacific Northwest Coast Ecoregional Assessment	14
From the Mountains to the Sea – Applying the Yale Framework in Western Washington	16
Sheldon-Hart Mountain National Wildlife Refuge Complex Vulnerability Assessment	18
Pacific Northwest Climate Change Vulnerability Assessment	20
Priority Habitats and Species Program	22

## Southwest

Mojave Desert Ecosystem Program	24
Central Basin and Range Rapid Ecoregional Assessment	26

## North Central

Aquatic, Riparian, and Wetland Assessment: Bighorn National Forest	28
Ocean of Grass: Ecoregional Assessment of the U.S. Northern Great Plains	30

## Northeast

New York Habitat Vulnerability Assessment	32
Climate Change Response Framework Ecosystem Vulnerability Assessments	34

## Southeast

Southern Forest Futures Project	36
---------------------------------	----

## South Central

Regional Ecological Assessment Protocol	38
---	----

## National

West-Wide Climate Risk Assessment*	40
Natural Resource Condition Assessment*	42
Rapid Ecoregional Assessments*	44
The State of Climate Change Adaptation*	46
Western Governors' Crucial Habitat Assessment Tool*	48
The National Aquatic Resource Assessment*	50
The Nature Conservancy Ecoregional Assessments*	52

\* Denotes programmatic assessment

## Comparison Table

Assessment Name	Species	Ecosystems	Scenery	Climate Change	Biodiversity	Landscape Perspectives	Humans & Their Activities
<b>Northwest</b>							
Columbia Plateau Ecoregional Assessment		✓			✓	✓	✓
Klamath Mountains Ecoregional Assessment	✓	✓			✓		✓
Mill Creek Community Wildfire Protection Plan						✓	✓
Pacific Northwest Coast Ecoregional Assessment					✓		
From the Mountains to the Sea – Applying the Yale Framework in Western Washington	✓	✓		✓		✓	✓
Sheldon-Hart Mountain National Wildlife Refuge Complex Vulnerability Assessment	✓	✓		✓	✓	✓	✓
Pacific Northwest Climate Change Vulnerability Assessment	✓	✓		✓	✓		
Priority Habitats & Species Program	✓				✓		
<b>Southwest</b>							
Mojave Desert Ecosystem Program	✓	✓				✓	✓
Central Basin and Range Rapid Ecoregional Assessment	✓					✓	✓
<b>North Central</b>							
Aquatic, Riparian, and Wetland Assessment: Bighorn National Forest	✓	✓			✓	✓	✓
Ocean of Grass: Ecoregional Assessment of the U.S. Northern Great Plains	✓			✓	✓		✓
<b>Northeast</b>							
New York Habitat Vulnerability Assessment	✓			✓			
Climate Change Response Framework Ecosystem Vulnerability Assessment	✓	✓		✓		✓	

## Comparison Table Cont.

Assessment Name	Species	Ecosystems	Scenery	Climate Change	Biodiversity	Landscape Perspectives	Humans & Their Activities
<b>Southeast</b>							
Southern Forest Futures Project	✓			✓		✓	✓
<b>South Central</b>							
Regional Ecological Assessment Protocol	✓	✓	✓		✓	✓	✓
<b>National</b>							
West-wide Climate Risk Assessment		✓		✓			✓
Natural Resource Condition Assessment	✓	✓	✓	✓	✓	✓	✓
Rapid Ecoregional Assessments	✓			✓			✓
The State of Climate Change Adaptation	✓	✓			✓	✓	
Western Wildlife Crucial Habitat Assessment Tool	✓				✓	✓	
The National Aquatic Resource Assessment	✓	✓		✓	✓		✓
The Nature Conservancy Ecoregional Assessments		✓			✓	✓	✓

## Columbia Plateau Ecoregional Assessment

**Location:** The Columbia Plateau including the states of Oregon, Washington, Idaho, Nevada, California, Utah and Wyoming

**Status:** The assessment was completed May 2003.  
Products are available to view.

**Point of contact:** Dick Vanderschaaf, The Nature Conservancy (TNC)  
[dvanderschaaf@tnc.org](mailto:dvanderschaaf@tnc.org)

**Reference:**

- <http://east.tnc.org/east-file/6/Columbia-Plateau-Final-Assessment.pdf>
- [east.tnc.org/assessment/6](http://east.tnc.org/assessment/6)

### Who are the actors and roles associated with this assessment?

TNC led and managed the assessment; partners included U.S. Geological Survey (USGS), University of California, Bureau of Land Management (BLM), and United States Fish and Wildlife Service (USFWS). Funded by the Foster Foundation, Pacific Gas and Electric, TNC Headquarters Office, Western Regional Office and Field Offices, and IBM. Review provided by the University of California, Santa Barbara.

### Why is the assessment being conducted?

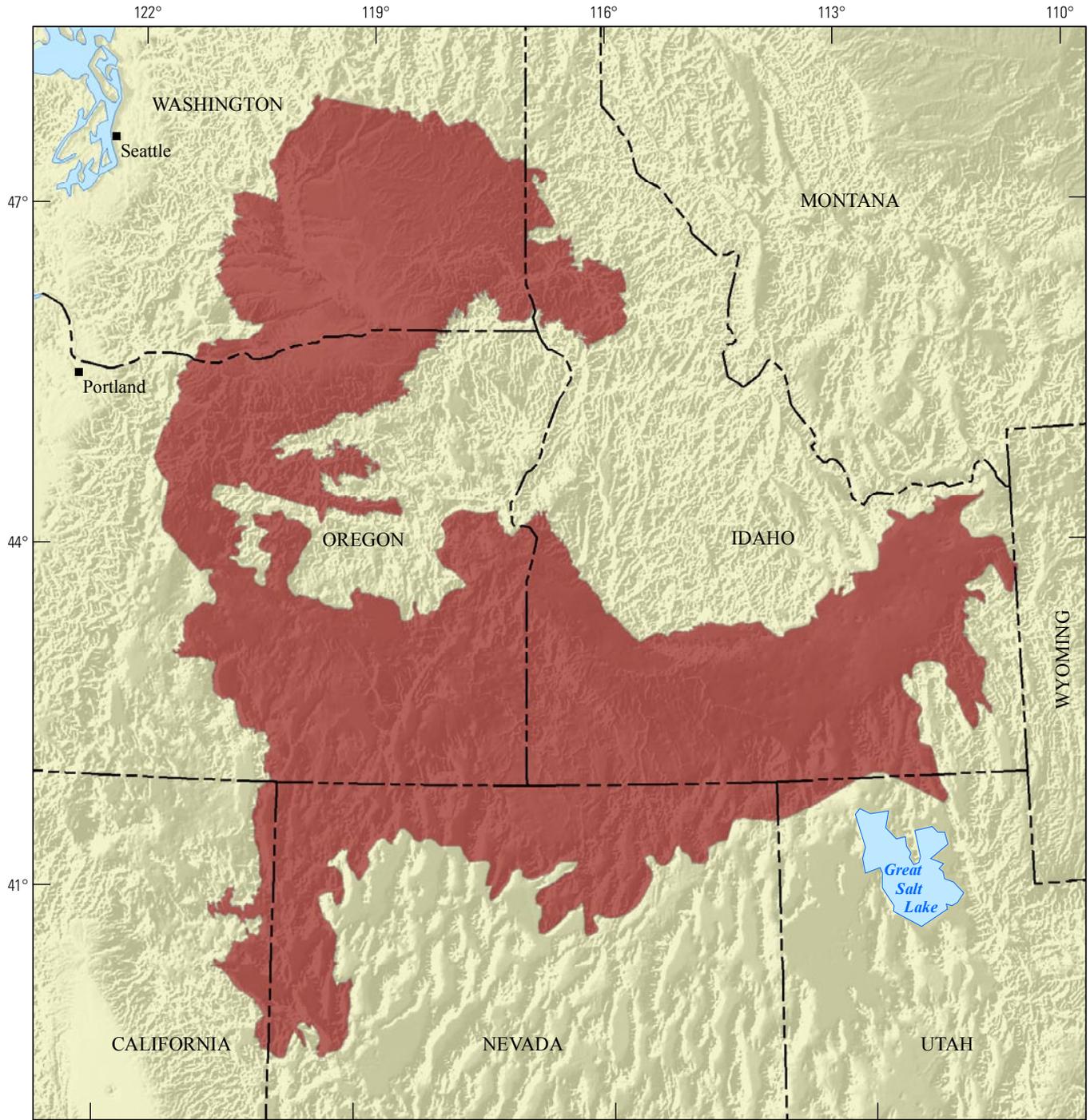
One of ten pilot projects that aims to integrate local, site specific conservation actions with regional scale planning across many sites with the aim of long-term survival of all viable native species and community types in the ecoregion. The three main goals are to: 1) identify a first iteration of a portfolio of conservation sites that collectively (and with appropriate conservation actions) could maintain all viable native species and natural communities within this ecoregion; 2) produce a companion conservation plan and report to provide additional context and guidance for use and implementation of the conservation portfolio; and 3) evaluate different approaches to identifying and designing ecoregion-scale conservation portfolios, to inform future ecoregional conservation efforts by TNC or others.

### What are the primary elements being analyzed in the assessment?

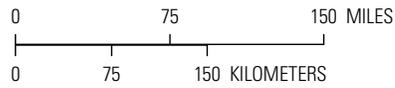
- Geographic setting
- Species
- Ownership patterns
- Regional economy
- Principal threats
- Extent of conservation
- Conservancy experience
- Ecosystems
- Humans and their activities
- Landscape perspectives
- Biodiversity



# Columbia Plateau Eco-regional Assessment Map



North America Shaded Relief derived from GTOPO30, a global digital elevation model with a horizontal grid spacing of 30 arc seconds (approximately 1 kilometer).



## EXPLANATION

Columbia Plateau Eco-regional Assessment

# Klamath Mountains Eco-regional Assessment

**Location:** Klamath Mountain ecoregion in northwestern California and southwestern Oregon

**Status:** The assessment was completed in 2004. Products are available to view.

**Point of contact:** Dick Vanderschaaf, TNC [dvanderschaaf@tnc.org](mailto:dvanderschaaf@tnc.org)

**Reference:** [east.tnc.org/assessment/5](http://east.tnc.org/assessment/5)

## Who are the actors and roles associated with this assessment?

TNC California and Oregon field offices led and managed the assessment with in-kind support from the Western Science Conservation Center. TNC National and California and Oregon field offices provided the funding. Rebecca Wahl provided review.

## Why is the assessment being conducted?

The assessment is to align with TNC mission. The goal for the Klamath Mountains ecoregion conservation assessment is to identify the suite of conservation sites and strategies that will ensure the long-term survival of all viable native plant and animal species and natural communities in the ecoregion.

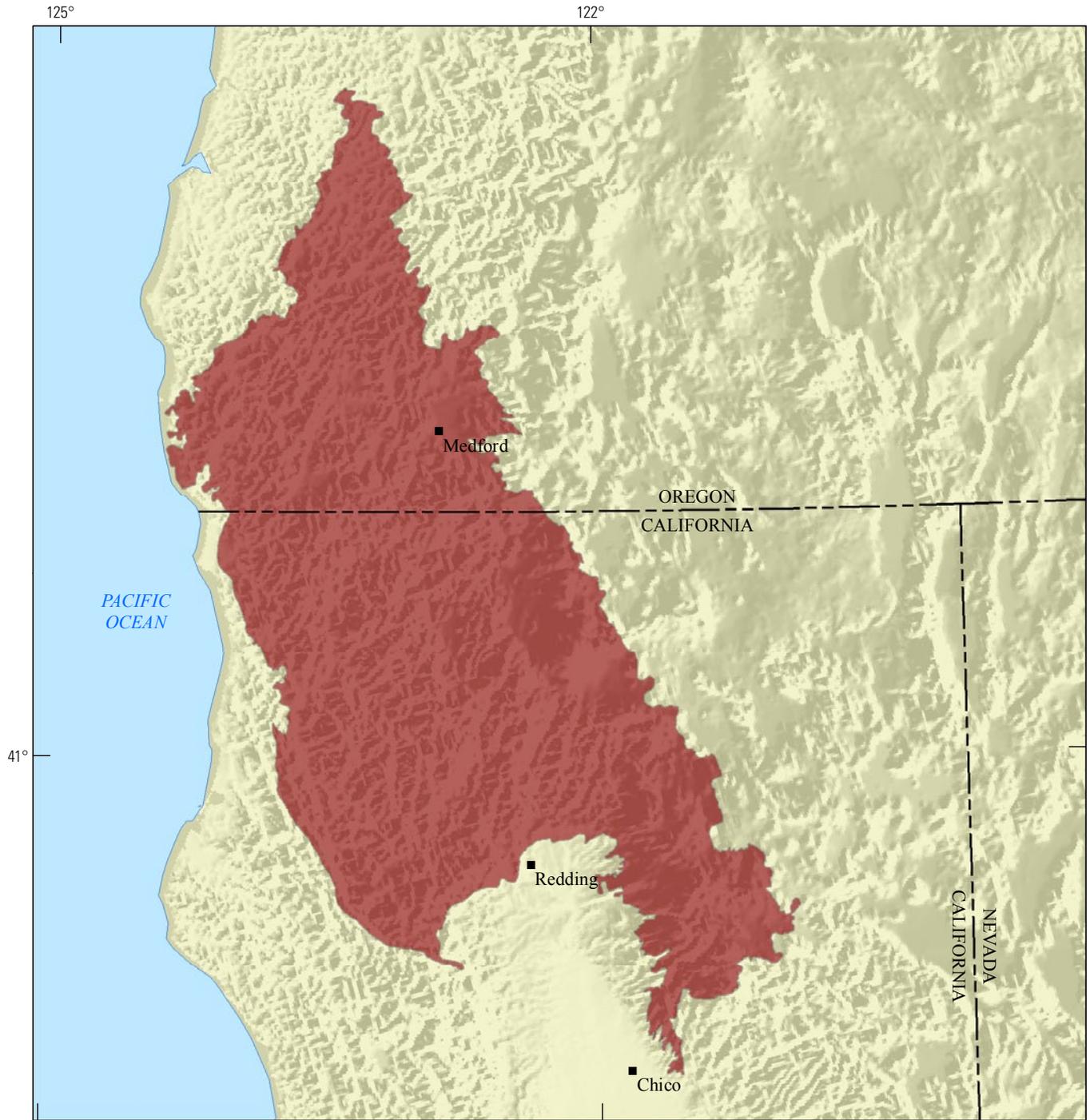
## What are the primary elements being analyzed in the assessment?

Both aquatic and terrestrial conservation targets for plant and animal species.

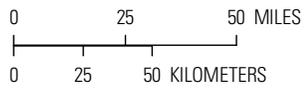
- Species
- Biodiversity
- Ecosystems
- Humans and their activities



# Klamath Mountains Ecoregional Assessment Map



North America Shaded Relief derived from GTOPO30, a global digital elevation model with a horizontal grid spacing of 30 arc seconds (approximately 1 kilometer).



## EXPLANATION

 Klamath Mountains Ecoregional Assessment

# Mill Creek Community Wildfire Protection Plan

**Location:** Mill Creek and surrounding drainages in Oregon and Washington; the tributaries that supply Walla Walla water

**Status:** The assessment was completed in 2008. Products are available to view.

**Point of contact:** Hal Thomas, City of Walla Walla, Washington

[hthomas@ci.walla-walla.wa.us](mailto:hthomas@ci.walla-walla.wa.us)

**Reference:** [www.dnr.wa.gov/Publications/rp\\_burn\\_cwppwallawalla.pdf](http://www.dnr.wa.gov/Publications/rp_burn_cwppwallawalla.pdf)

## Who are the actors and roles associated with this assessment?

The City of Walla Walla, Washington conducted, managed, and funded the assessment. Review was provided by the City of Walla Walla, the Oregon and Washington Departments of Forestry, and Emergency Management Services.

## Why is the assessment being conducted?

Completed to meet the guidance in the National Fire Plan and Healthy Forest Restoration Act of 2003 (HR 1904). It was also completed so that the city, county and fire districts of Walla Walla would be eligible for federal funding.

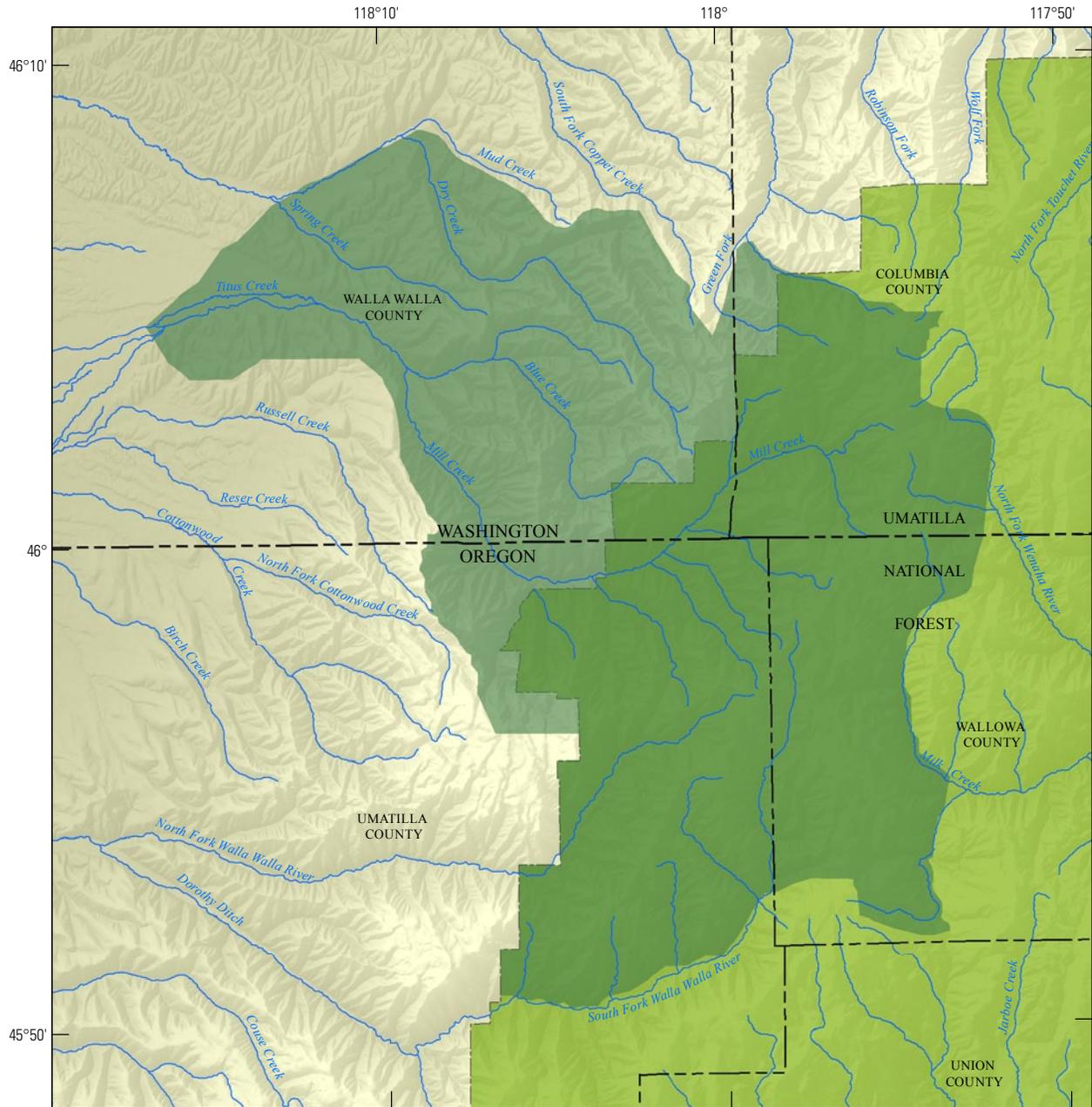
## What are the primary elements being analyzed in the assessment?

Wildfire risk assessment and mitigation and preparedness strategies.

- Landscape perspectives
- Humans and their activities



# Mill Creek Community Wildfire Protection Plan Map



Shaded Relief of the Contiguous United States derived from the U.S. Geological Survey's 1 Arc Second National Elevation Dataset (NED) dataset.



## EXPLANATION

Mill Creek community wildfire protection plan area



## Pacific Northwest Coast Ecoregional Assessment

**Location:** Pacific Northwest Coast in the U.S. and Canada. Oregon, Washington, Vancouver Coast and Shelf Marine ecoregions in the U.S. and Canada

**Status:** The assessment was completed in 2006. Products are available to view.

**Point of contact:** Dick Vanderschaaf, TNC [dvanderschaaf@tnc.org](mailto:dvanderschaaf@tnc.org)

**Reference:** [east.tnc.org/assessment/1](http://east.tnc.org/assessment/1)

### Who are the actors and roles associated with this assessment?

TNC, Washington Department of Fish and Wildlife, TNC of Canada, and NatureServe are conducting and/or managing the assessment. Funding provided by grants from Washington and Oregon Department of Fish and Wildlife and National Oceanic and Atmospheric Administration. Internal review by TNC.

### Why is the assessment being conducted?

Inform land managers planning. The purpose of the Pacific Northwest Coast ecoregional conservation assessment was to identify an efficient suite of conservation sites that will contribute toward the long-term survival of all viable native plant and animal species and natural communities in the ecoregion.

### What are the primary elements being analyzed in the assessment?

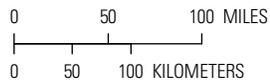
- Biodiversity – plants, animals, plant communities, ecological systems, freshwater systems and marine habitats



# Pacific Northwest Coast Ecoregional Assessment Map



SRTM Shaded Relief North West derived from the Global Digital Elevation Model data sets from the U.S. Geological Survey's EROS Data Center. The resolution is 90 meters.



## EXPLANATION

 Pacific Northwest Coast ecoregional assessment area

# From the Mountains to the Sea – Applying the Yale Framework in Western Washington

**Location:** Washington State  
Extent: Puget Sound lowlands

**Status:** The assessment is complete. Products are available to view.

**Point of contact:** Jessi Kershner, EcoAdapt [jessi@ecoadapt.org](mailto:jessi@ecoadapt.org), 206-696-6856

**Reference:**

- [www.ecoadapt.org](http://www.ecoadapt.org)
- [yale.databasin.org/pages/ecoadapt](http://yale.databasin.org/pages/ecoadapt)

## Who are the actors and roles associated with this assessment?

EcoAdapt and the Geos Institute conducted the assessment. Doris Duke Charitable Foundation, Wilburforce Foundation, and The Kresge Foundation provided funding for the assessment. EcoAdapt managed the assessment and the Yale Science Panel and an expert panel reviewed it. Federal, NGO, and state practitioners are participating in the assessment.

## Why is the assessment being conducted?

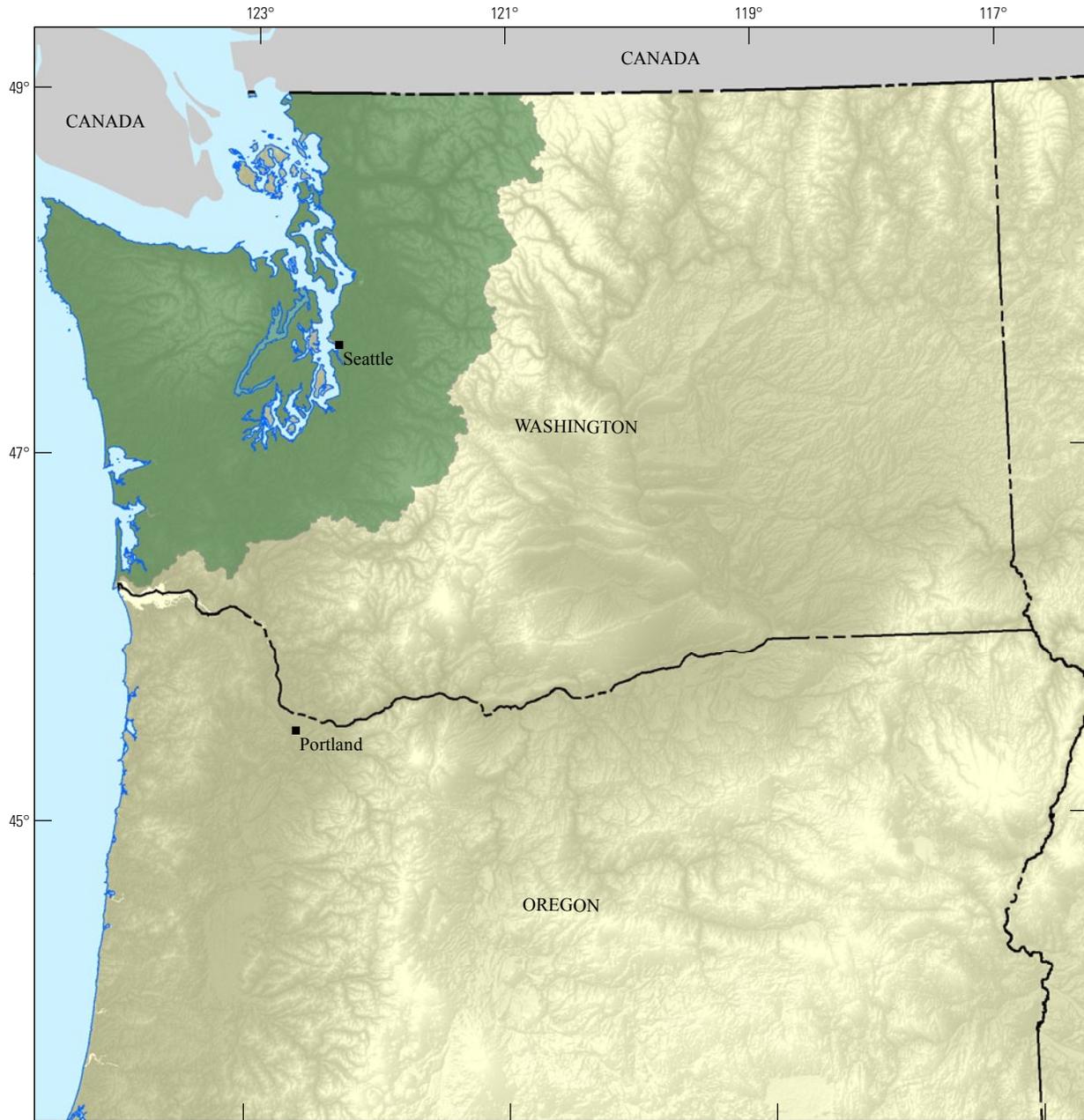
To provide context for planning efforts and to assist planners and management in the Puget Sound region visualize watersheds likely to be more or less impacted by changing climate conditions. They will use the information collected to evaluate the vulnerability of current planning efforts to climate change and inform the development of adaptation strategies.

## What are the primary elements being analyzed in the assessment?

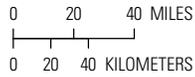
- Species
- Ecosystems
- Humans and their activities
- Landscape perspectives
- Climate change



# From the Mountains to the Sea Assessment Map



Shaded Relief of the Contiguous United States derived from the U.S. Geological Survey's 1 Arc Second National Elevation Dataset (NED) dataset.



## EXPLANATION

 From the Mountains to the Sea assessment



# Sheldon-Hart Mountain National Wildlife Refuge Complex (NWRC) Vulnerability Assessment

**Location:** Sheldon-Hart Mountain NWRC in northwest Nevada and southeast Oregon

**Status:** The assessment is underway and is in the process of incorporating peer review. Final completion date and availability of products is still to be determined.

**Point of contact:** John Schmerfeld, USFWS  
[John\\_Schmerfeld@fws.gov](mailto:John_Schmerfeld@fws.gov), 703-358-2332

**Reference:**

- [www.fws.gov/sheldonhartmtn](http://www.fws.gov/sheldonhartmtn)
- [www.fws.gov/refuges/whm/refugeResourceVulnerabilityAssessments.html](http://www.fws.gov/refuges/whm/refugeResourceVulnerabilityAssessments.html)

## Who are the actors and roles associated with this assessment?

USFWS provided funding for this Refuge Vulnerability Assessment (RVA) for the Sheldon and Hart Mountain National Antelope Refuge Complex (Refuges). The RVA work and draft report were prepared by specialists at NatureServe and they worked with specialists from the Oregon Biodiversity Information Center. Staff from the refuges provided technical and policy information. The USFWS Washington Office staff of the Refuge Management program and independent peer reviews currently are overseeing peer review of the final report of the RVA.

## Why is the assessment being conducted?

The assessment was a pilot effort by the USFWS to explore how to incorporate consideration of climate change and other conditions that need to be assessed when preparing or updating Comprehensive Conservation Plans and associated Environmental Impact Statements for areas within the National Wildlife Refuge System.

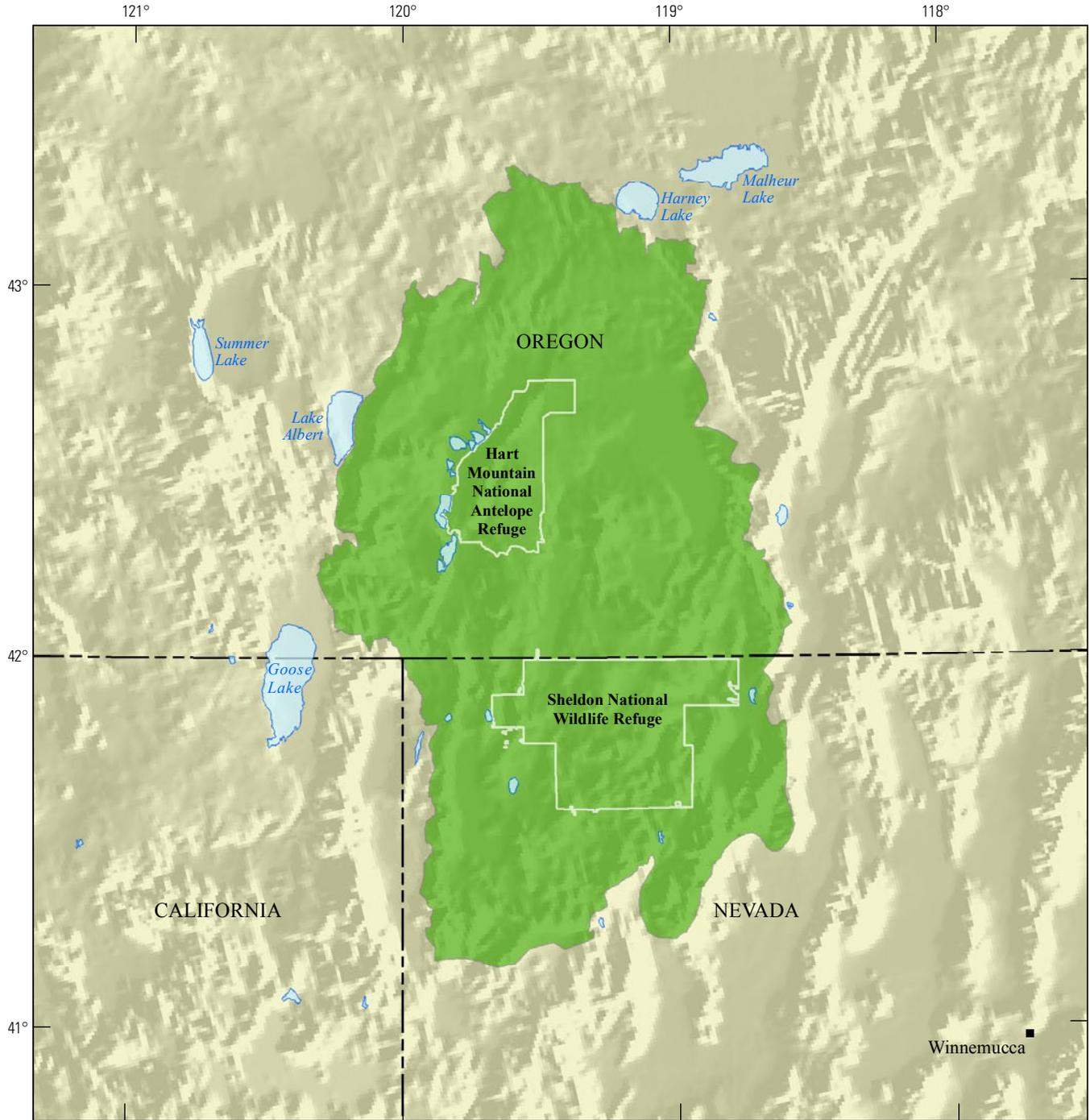
- Agency focus

## What are the primary elements being analyzed in the assessment?

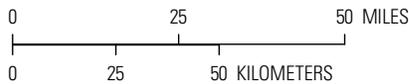
The RVA includes an assessment of stressors (including climate change effects) on resources over multiple timeframes and proposes mitigation and adaptation strategies based on the outputs. Four snapshots in time were assessed to gauge stressor effects on priority resources starting with a Baseline Scenario (year 2010) and progressing to 2025, 2060, and 2100. The assessment characterizes the regulatory framework, the biological resources and mission-critical infrastructure, and stressors affecting or expected to affect refuge objectives. The condition of priority resources (species, ecological systems, and infrastructure) on the Refuge Complex was spatially analyzed under the 2010 and 2025 scenarios using the NatureServe Vista software extension for ArcGIS. A subset of the priority resources were assessed for two time horizons, 2060 and 2100, primarily using the Vegetation Dynamics Development Tool that produces generalized spatial outputs. The change in the resources' relative proportions on the landscape under potential climate change was also assessed using a separate climate model. Two management scenarios were assessed for the 2060 and 2100 scenarios, both with and without climate change.

- Species
- Biodiversity
- Ecosystems
- Landscape perspectives
- Humans and their activities
- Climate change

# Sheldon-Hart Mountain NWRC Vulnerability Assessment Map



North America Shaded Relief derived from GTOPO30, a global digital elevation model with a horizontal grid spacing of 30 arc seconds (approximately 1 kilometer).



## EXPLANATION

- Sheldon-Hart Mountain NWRC Vulnerability Assessment boundary



# Pacific Northwest Climate Change Vulnerability Assessment

**Location:** Pacific Northwest, extending beyond the borders of Washington, Oregon, and Idaho and into British Columbia and Alberta, Canada.

**Status:** The assessment is underway and ongoing. Estimated completion date is Spring 2014. Some products are available to view. All products will eventually be available for use.

**Point of contact:** Josh Lawler, University of Washington  
[jlawler@u.washington.edu](mailto:jlawler@u.washington.edu), 206-685-4367

**Reference:** [www.climatevulnerability.org](http://www.climatevulnerability.org)

## Who are the actors and roles associated with this assessment?

Josh Lawler, Michael Case and Elizabeth Gray, TNC lead the assessment. This project is a collaboration among researchers, managers, and planners at the University of Washington, USGS, TNC, National Park Service (NPS), USFS, the Washington Department of Fish and Wildlife, the University of Idaho, the National Wildlife Federation, the Oregon Department of Fish and Wildlife, and Idaho Fish and Game. Funding has been provided by USGS, TNC, NPS, and National Wildlife Federation (NWF). Federal and state agencies as well as NGOs and others who participate in the assessment.

## Why is the assessment being conducted?

To provide information to conservation planners and policy makers at NGOs and federal and state agencies. This assessment will provide resource managers and decision makers with some of the most basic and important information about how species and ecological systems will likely respond to climate change. It will also allow researchers to answer important scientific questions regarding the potential impacts of climate change on natural resources.

## What are the primary elements being analyzed in the assessment?

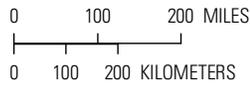
- Species
- Biodiversity
- Ecosystems
- Climate change



# Pacific Northwest Climate Change Vulnerability Assessment Map



SRTM Shaded Relief North West derived from the Global Digital Elevation Model data sets from the U.S. Geological Survey's EROS Data Center. The resolution is 90 meters.



## EXPLANATION

 Pacific Northwest Climate Change Vulnerability Assessment

## Priority Habitats and Species (PHS) Program

**Location:** Washington State

**Status:** Assessment is complete, but data are updated periodically (approximately every couple of years).

**Point of contact:** Margen Carlson  
[margen.carlson@dfw.wa.gov](mailto:margen.carlson@dfw.wa.gov), 360-902-2229

**Reference:** [wdfw.wa.gov/conservation/phs](http://wdfw.wa.gov/conservation/phs)

### Who are the actors and roles associated with this assessment?

Josh Lawler, Michael Case and Elizabeth Gray, TNC lead the assessment. This project is a collaboration among researchers, managers, and planners at the University of Washington, USGS, TNC, National Park Service (NPS), USFS, the Washington Department of Fish and Wildlife (WDFW), the University of Idaho, the National Wildlife Federation, the Oregon Department of Fish and Wildlife, and Idaho Fish and Game. Funding has been provided by USGS, TNC, NPS, and National Wildlife Federation (NWF). Federal and state agencies as well as NGOs and others who participate in the assessment.

### Why is the assessment being conducted?

The PHS Program fulfills one of the most fundamental responsibilities of Washington Department of Fish and Wildlife -- to provide comprehensive information on important fish, wildlife, and habitat resources in Washington. PHS is the principal means by which WDFW provides fish, wildlife, and habitat information to local governments, state and federal agencies, private landowners and consultants, and tribal biologists to protect habitat in land use planning. PHS information is used:

- to screen state permits and State Environmental Policy Act reviews;
- by a majority of cities and counties to meet the requirements of the Growth Management Act;
- to develop Habitat Conservation Plans;
- by state, federal, and tribal governments for landscape-level planning and ecosystem management; and
- for statewide oil spill prevention planning and response.

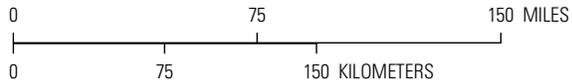
### What are the primary elements being analyzed in the assessment?

- Habitats and species

# Priority Habit and Species Program



North America Shaded Relief derived from GTOPO30, a global digital elevation model with a horizontal grid spacing of 30 arc seconds (approximately 1 kilometer).



## EXPLANATION

 Priority Habitats and Species (PHS) Program

## Mojave Desert Ecosystem Program (MDEP)

**Location:** The Mojave Desert Ecoregion: California, Nevada, Utah and Arizona

**Status:** The assessment is underway and ongoing. Products are available to view.

**Point of contact:** Fon Allan Duke, MDEP [fduke@mojavedata.gov](mailto:fduke@mojavedata.gov), 760-252-6161

**Reference:** [www.mojavedata.gov](http://www.mojavedata.gov)

### Who are the actors and roles associated with this assessment?

The U.S. Army, Fort Irwin is managing and reviewing the assessment which is being conducted by Fon Allan Duke, Program Manager for MDEP and the U.S. Department of Defense (DoD) coordinator for the Desert Manager Group. The assessment is funded by the DoD (U.S. Army, Marines and Air Force) and BLM.

### Why is the assessment being conducted?

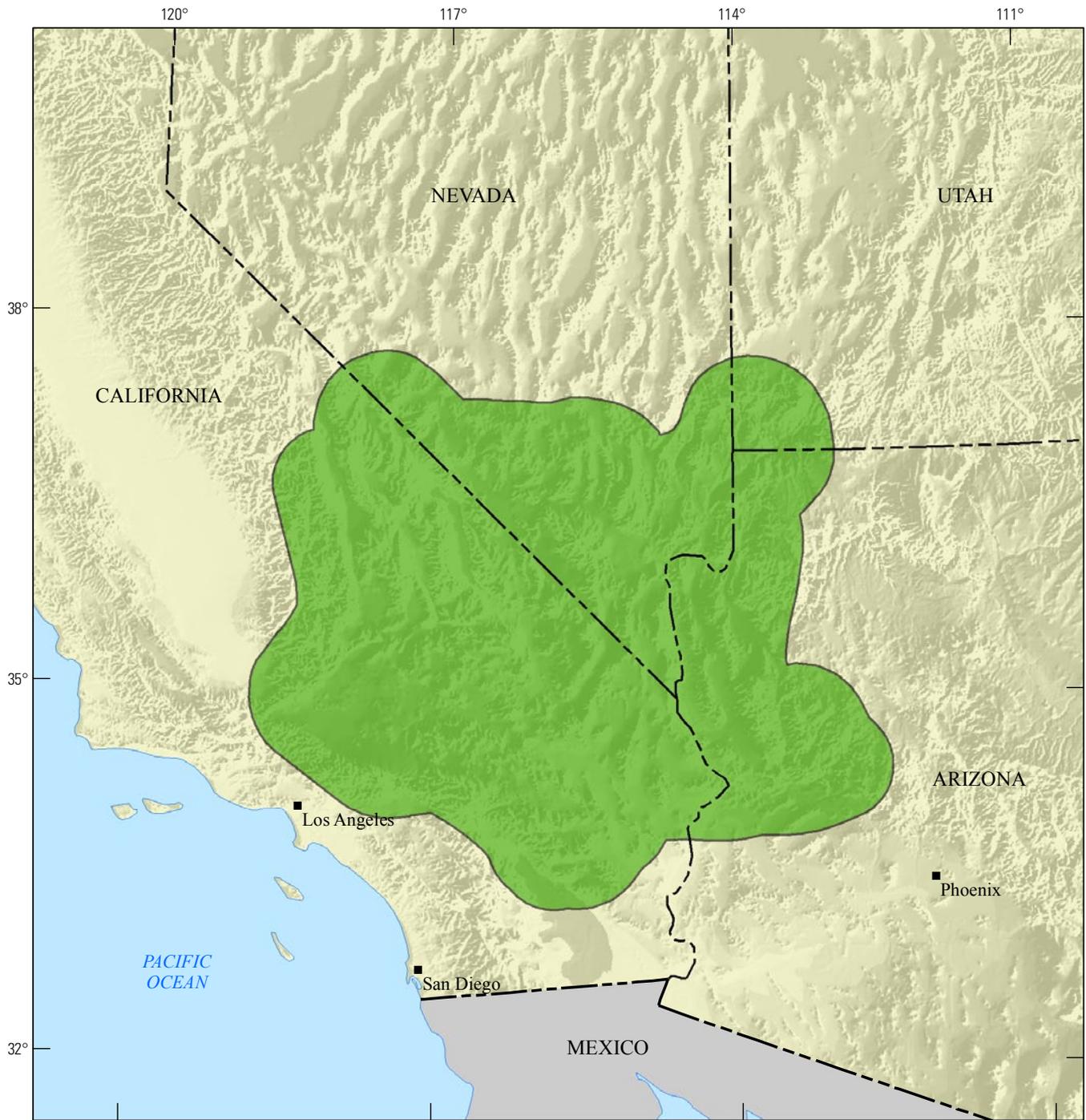
To support collaboration across a number of agencies at the federal, state and local level who all share a common interest in land management within the Mojave Ecoregion.

### What are the primary elements being analyzed in the assessment?

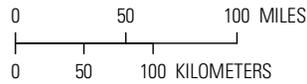
- Endangered species
- Human effects upon the landscape
- Species
- Ecosystems
- Humans and their activities



# Mojave Desert Ecosystem Program Map



North America Shaded Relief derived from GTOPO30, a global digital elevation model with a horizontal grid spacing of 30 arc seconds (approximately 1 kilometer).



## EXPLANATION

 Mojave Desert Ecosystem Program boundary



## Central Basin and Range Rapid Ecoregional Assessment (REA)

**Location:** Ecoregion-scale analysis centered in the Great Basin of Nevada, and adjacent California and Utah. Central Basin and Range ecoregion: 120,000 square miles

**Status:** The assessment was completed in 2012 with ongoing updates. Products are available to view.

**Point of contact:** Sandra Brewer, BLM [sbrewer@blm.gov](mailto:sbrewer@blm.gov), 775-861-6626

**Reference:** [www.blm.gov/wo/st/en/prog/more/Landscape\\_Approach/reas/cbasinrange.html](http://www.blm.gov/wo/st/en/prog/more/Landscape_Approach/reas/cbasinrange.html)

### Who are the actors and roles associated with this assessment?

NatureServe is conducting the assessment with an expert team, under contract to BLM and guided by a multi-agency Assessment Management team (AMT). BLM is providing funding for the assessment. All parties will review the assessment with USGS in charge of peer review. Federal, state and NGOs participate in the assessment.

### Why is this assessment being conducted?

The purpose of the REAs is to improve the understanding of the ecological values, conditions, and trends within ecoregions and how conditions may be altered by ongoing environmental changes and land use demands. The REAs:

- Identify and answer important management questions;
- Document key resource values, which are referred to as conservation elements, with a focus on regionally-significant terrestrial habitats, aquatic habitats, and species of concern;
- Describe influences from four environmental change agents: climate change, wildfire, invasive species, and development;
- Assess the collective effects of projected trends;
- Identify and map key opportunities for resource conservation, restoration, and development;
- Identify science gaps and data needs; and
- Provide a baseline to evaluate and guide future management actions.

### What are the primary elements being analyzed in the assessment?

#### Conservation Elements

Conservation elements are resources of conservation concern within an ecoregion. This REA will assess the current status and forecast the future condition of two basic types of conservation elements:

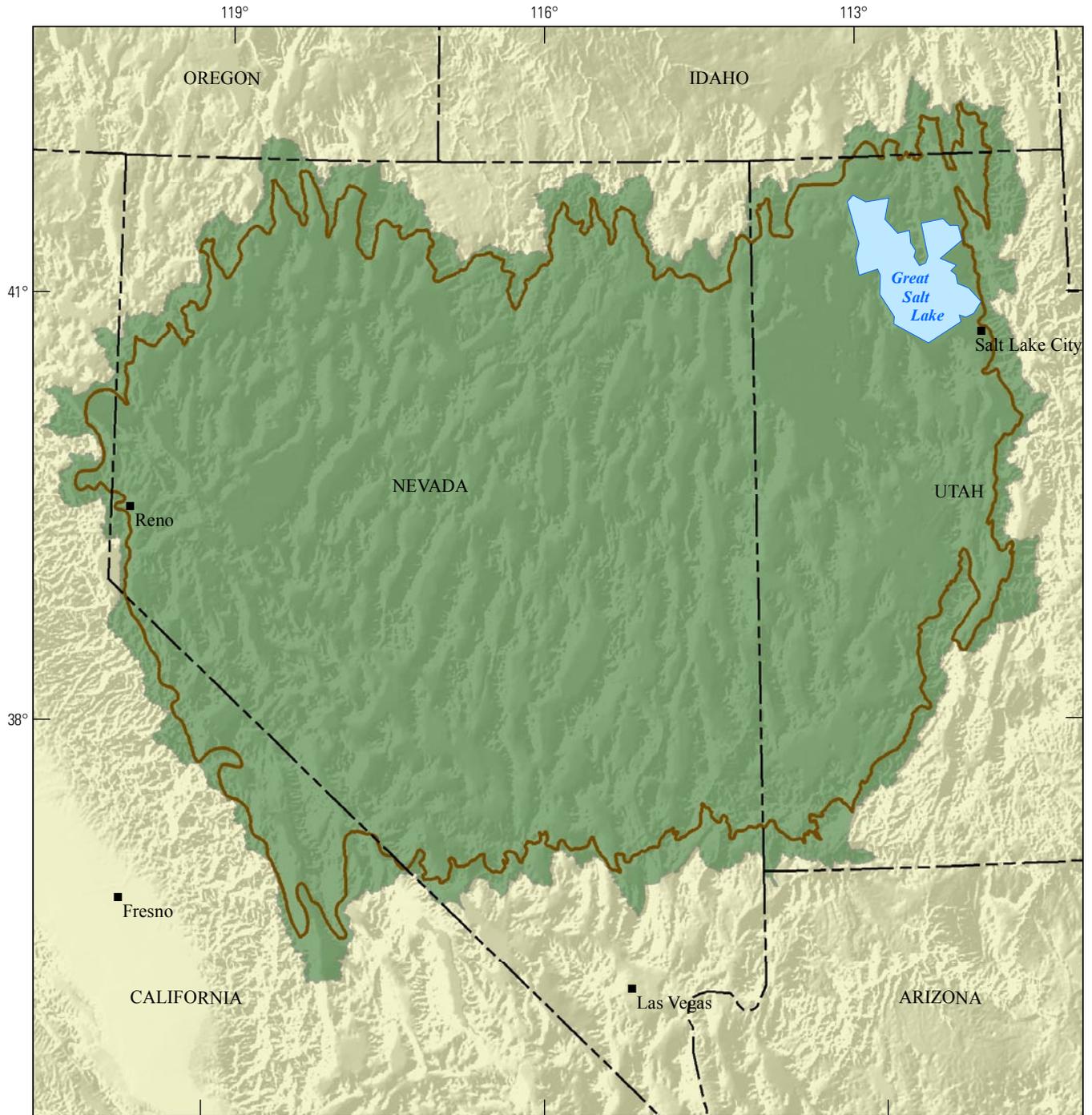
- “Coarse-filter” conservation elements, which are broad vegetation assemblages within the ecoregion; and
- “Fine-filter” conservation elements, which are representative, important, or vulnerable plant and animal species.

A full list and explanation of the conservation elements can be found in the Phase 1 Task 1 Memo. In brief, the coarse-filter includes 26 terrestrial and aquatic ecological system types and communities, nested within four ecosystem categories, which represent the predominant ecological pattern and dynamics of the ecoregion. The four broad ecosystem categories are Basin Dryland ecosystems, Basin Wet ecosystems, Montane Dryland ecosystems, and Montane Wet ecosystems.

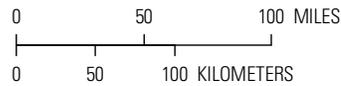
#### Change Agents

Change agents are disturbances on the landscape that can influence ecosystem health. They can have natural causes, such as wildfire; human causes, such as energy development; and often result from the synergistic interaction of both, such as climate change. A key purpose of this REA is to understand the influences of significant, widespread change agents on the natural resources (represented by the conservation elements discussed above) of the Central Basin and Range Ecoregion.

# Central Basin and Range Rapid Ecoregional Assessment Map



North America Shaded Relief derived from GTOPO30, a global digital elevation model with a horizontal grid spacing of 30 arc seconds (approximately 1 kilometer).



## EXPLANATION

-  Analysis Extent of REA
-  Central Basin and Range Ecoregion

## Aquatic, Riparian, and Wetland Assessment: Bighorn National Forest

**Location:** Bighorn National Forest, Bighorn Mountains, Northern Wyoming. Based on 4th and 6th Hydrologic Unit Codes (HUCs).

**Status:** The assessment is complete. Products are available to view.

**Point of contact:** David Winters, USFS [dwinters@fs.fed.us](mailto:dwinters@fs.fed.us), 303-238-4943

**Reference:** <http://www.fs.fed.us/r2/projects/scp/arw/>

### Who are the actors and roles associated with this assessment?

USFS funded, managed, and published it in-house with a peer reviewed conceptual approach paper.

### Why is the assessment being conducted?

To provide a defensible approach at quantifying the form and function of aquatic, riparian and wetland ecosystems, as well as anthropogenic influences.

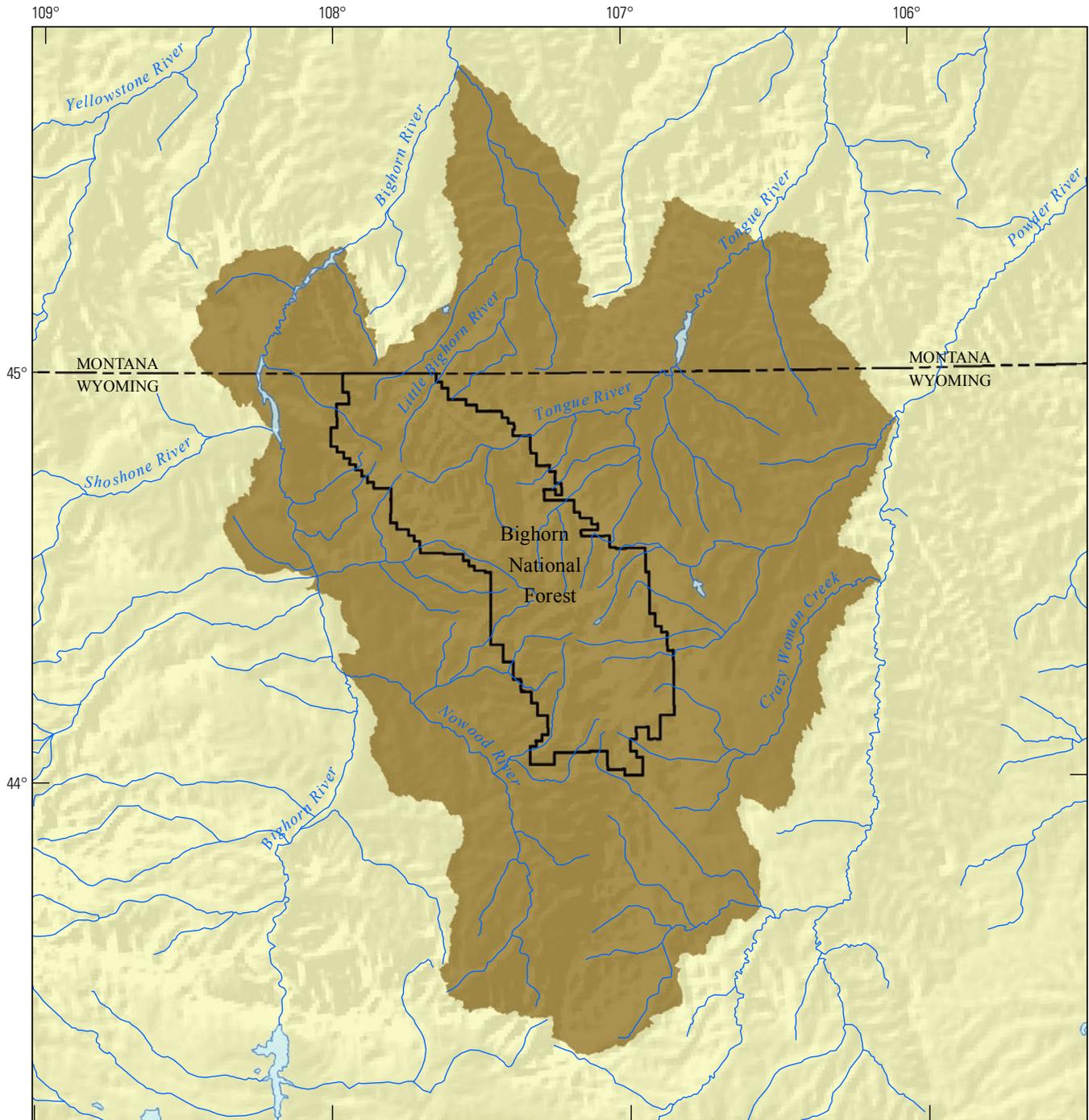
### What are the primary elements being analyzed in the assessment?

Ecological characteristics (drivers) that provide the structure and composition of aquatic, riparian and wetland ecosystems. Quantify by sixth level HUC over 22 different anthropogenic activities.

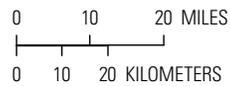
- Species
- Biodiversity
- Ecosystems
- Landscape perspectives
- Humans and their activities



# Bighorn National Forest Assessment Map

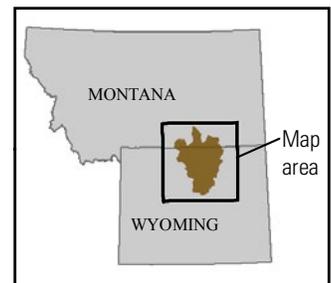


North America Shaded Relief derived from GTOPO30, a global digital elevation model with a horizontal grid spacing of 30 arc seconds (approximately 1 kilometer).



## EXPLANATION

 Aquatic, Riparian, and Wetland Assessment:  
Big Horn National Forest assessment area



# Ocean of Grass: Ecoregional Assessment of the U.S. Northern Great Plains

**Location:** U.S. Northern Great Plains Ecoregion

**Status:** The assessment is ongoing. Products are available to view.

**Point of contact:** Sarah Olimb, World Wildlife Fund (WWF) [sarah.olimb@wwfus.org](mailto:sarah.olimb@wwfus.org), 406-581-3552

**Reference:** [worldwildlife.org/places/northern-great-plains](http://worldwildlife.org/places/northern-great-plains)

## Who are the actors and roles associated with this assessment?

WWF and Northern Plains Conservation Network are conducting the assessment. WWF is managing it. Members of the Northern Plains Conservation Network and experts in the ecoregion are reviewing the assessment.

## Why is the assessment being conducted?

This is an update of a 2004 ecoregional assessment by the WWF and the Northern Plains Conservation Network (<http://worldwildlife.org/places/northern-great-plains>). The 2012 edition refreshed and expanded the assessment to reflect current conservation status and needs of the Northern Great Plains Ecoregion using updated and/or previously unavailable data on land cover, species distribution, threats, and opportunities.

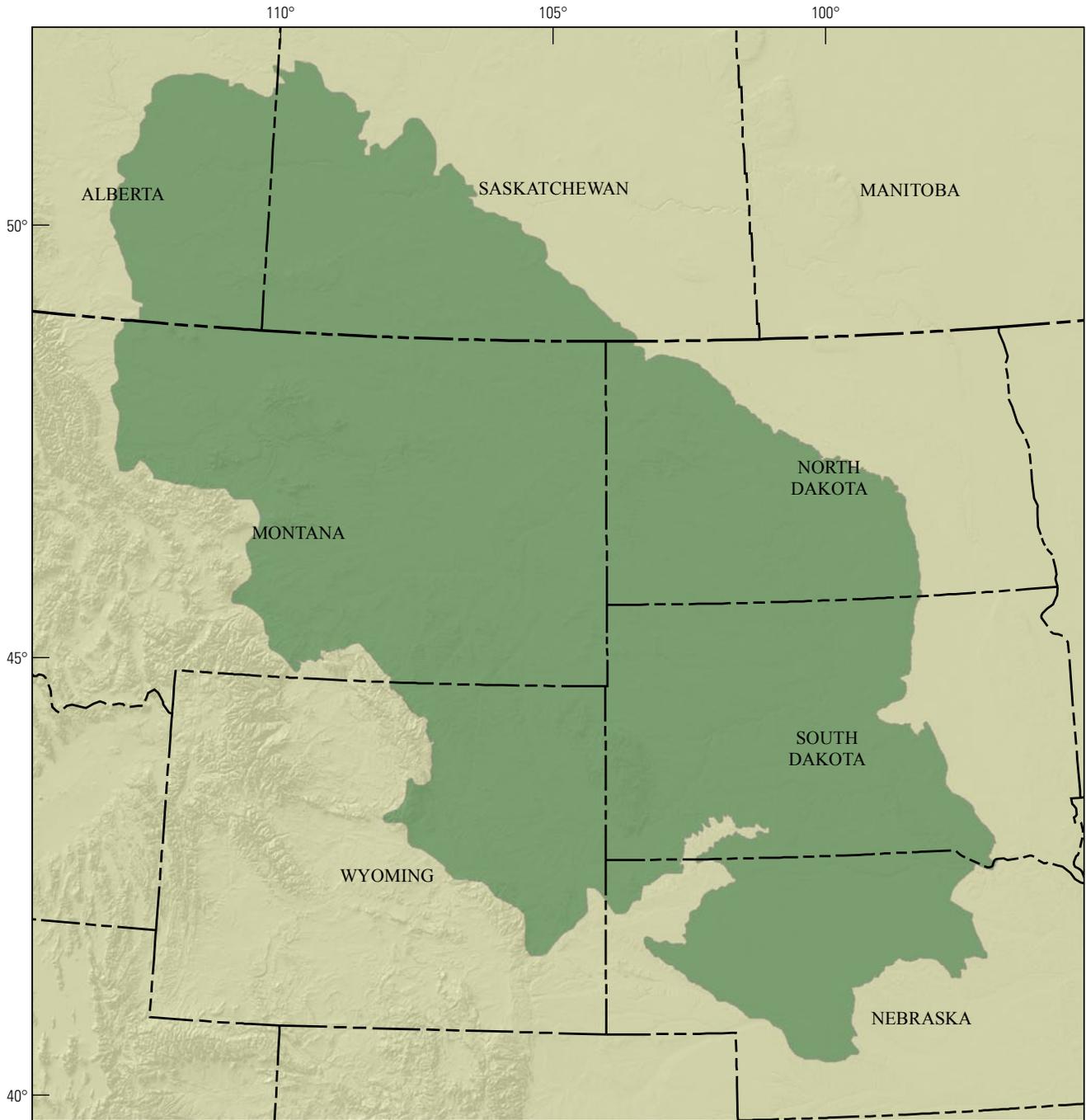
## What are the primary elements being analyzed in the assessment?

The assessment includes datasets in the following categories: landcover, species distribution, demographics, threats (industry, fragmentation, disease, climate change, etc.) and opportunities (wind energy siting, protected areas, etc.). Data layers are viewable in the Northern Plains Conservation Network Interactive webmap, available here: <http://www.npcn.net/npcnWebmap/index.html>.

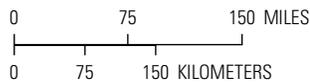
- Species biodiversity
- Ecosystems
- Humans and their activities
- Climate change



# U.S. Northern Great Plains Assessment Map



SRTM Shaded Relief North West derived from the Global Digital Elevation Model data sets from the U.S. Geological Survey's EROS Data Center. The resolution is 90 meters.



## EXPLANATION

 Northern Great Plains Ecoregion

## New York Habitat Vulnerability Assessment

**Location:** New York statewide assessment 14 formation-level habitats covering 65-70% of habitat cover across the state.

**Point of contact:** Hector Galbraith, Manomet Center for Conservation Sciences  
[hg2@myfairpoint.net](mailto:hg2@myfairpoint.net), 802-258-4836

### **Who are the actors and roles associated with this assessment?**

Conducted by Hector Galbraith from Manomet Center for Conservation Sciences is conducting the assessment. The assessment receives funding from the NWF with additional support from the Duke Charitable Trust. George Gay, Sr. Program Manager, NWF, Wildlife Conservation Chris Hilke, Program Manager, NWF Climate Adaptation.

Dan Rosenblatt, New York Department of Environmental Conservation (NY DEC), Wildlife Diversity Section Head and various other staff from NY DEC Division of Fish, Wildlife, and Marine Resources are involved in reviewing the assessment.

### **Why is the assessment being conducted?**

The work was conducted as a foundation for incorporating climate change considerations into the State Wildlife Action Plan revision due in 2015. The habitat vulnerability assessment is utilized in conjunction with a New York Species Vulnerability Assessment of 119 Species of Greatest Conservation Need conducted by the New York Heritage Bureau in 2011. This assessment identified which habitats and species will be most vulnerable to climate change. The data collected will inform both the update as well as other conservation work across the state.

### **What are the primary elements being analyzed in the assessment?**

The work consists of a habitat vulnerability assessment. Habitats include: Acadian Appalachian (AA) Tundra, AA Montane Spruce-Fir, Northern Hardwood Forest, Wet Meadow Shrub Swamp, Central Oak-Hickory Forests, Boreal-Laurentian Bog, Pitch Pine Barrens, White Cedar Forests, and Freshwater Marsh among others. The assessment does not include an analysis of marine systems or coastal habitats.

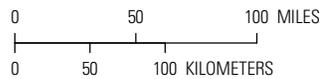
The assessment focuses on the impacts of climate change to New York habitats over the course of the next century given a defined set of climate assumptions under a doubling and tripling of greenhouse gas emissions scenarios.

The assessment incorporates interactions of fundamental non-climate stressors with climate impacts into the modeling process.

# New York Habitat Vulnerability Assessment Map



North America Shaded Relief derived from GTOPO30, a global digital elevation model with a horizontal grid spacing of 30 arc seconds (approximately 1 kilometer).



## EXPLANATION

 New York habitat vulnerability assessment

## Climate Change Response Framework Ecosystem Vulnerability Assessments

**Location:** Midwest and Mid-Atlantic. Five assessments focus on forest vulnerability to climate change within an area covering over 133 million acres in nine states (Minnesota, Wisconsin, Michigan, Missouri, Illinois, Indiana, Ohio, West Virginia, Maryland), with analysis areas defined by a combination of state boundaries and the USFS' hierarchy of ecological units (212, 221, 223).

**Status:** One assessment in northern Wisconsin is complete. Five additional assessments are underway, with expected completion in Fall 2012 (Northwoods, Central Hardwoods), and Summer 2013 (Central Appalachians). Products are available to view.

**Point of contact:** Chris Swanston, USFS [cswanston@fs.fed.us](mailto:cswanston@fs.fed.us), 906-482-6303 x20

**Reference:**

- [www.forestadaptation.org](http://www.forestadaptation.org)
- [www.forestadaptation.org/partners](http://www.forestadaptation.org/partners)
- [www.nrs.fs.fed.us/pubs/38255](http://www.nrs.fs.fed.us/pubs/38255)

### Who are the actors and roles associated with this assessment?

The Northern Institute of Applied Climate Science is managing and conducting the assessments in close collaboration with scientists and land managers from the USFS, other federal agencies, Tribes, state agencies, and universities. Funding is provided primarily by the USFS, with additional funding from the DOI (Department of Interior) Upper Midwest Great Lakes and Gulf Coastal Plains and Ozarks Landscape Conservation Cooperatives. Other partner organizations provide significant in-kind contributions. The assessments will be published as USFS General Technical Reports after formal review from USFS and more than 60 additional scientists.

### Why is the assessment being conducted?

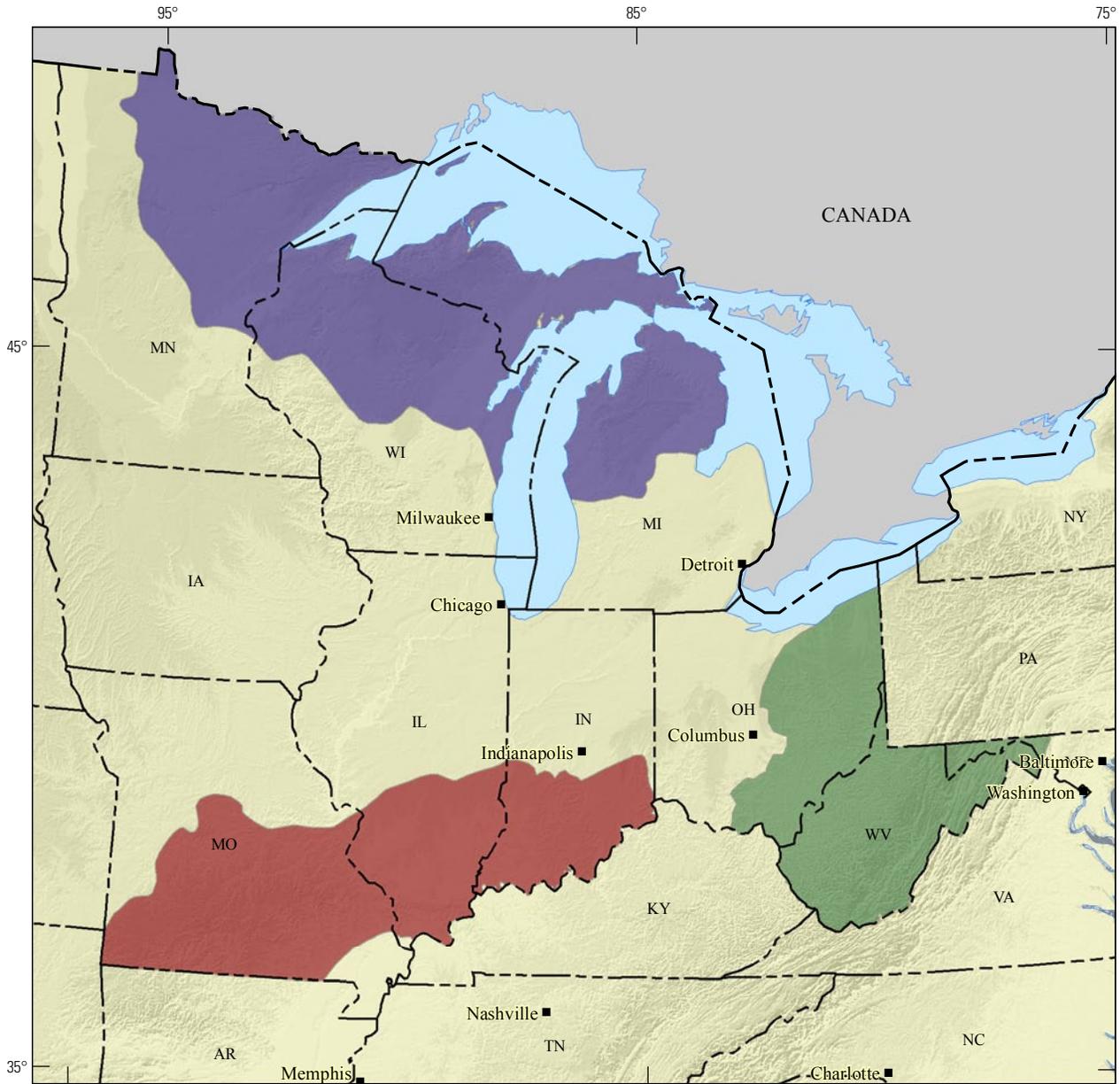
To address the immense challenge of integrating the uncertainties of a changing climate into forest management decisions that span wide spatial and temporal scales. The vulnerability assessments are designed to deliver credible and relevant information about climate change and impacts to forest managers. They are a fundamental part of the Climate Change Response Framework, an integrated set of tools, partnerships, and actions to support climate smart conservation and forest management. The Framework is flexible enough to be adapted to a wide variety of ownership types, so it allows for a coordinated "all lands" response to climate change. Within the USFS, these assessments and related tools directly assist 11 national forests in meeting goals in the USFS-wide Climate Change Roadmap and Performance Scorecard, and will serve as an input into future land management plan revisions.

### What are the primary elements being analyzed in the assessment?

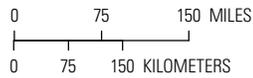
Climate change effects on tree species are assessed using a combination of process and statistical models under multiple scenarios and time periods. Forested ecosystems are assessed using model results and expert elicitation using the same climate change scenarios and time periods. The effects of climate change on both elements are put in context of current stressors and management regimes across the assessment area.

- Species
- Ecosystems
- Climate change
- Landscape perspectives

# Climate Change Response Assessment Map



North America Shaded Relief derived from GTOPO30, a global digital elevation model with a horizontal grid spacing of 30 arc seconds (approximately 1 kilometer).



## EXPLANATION

- Central Appalachians
- Central Hardwoods
- Northwoods

## Southern Forest Futures Project

**Location:** Southern U.S. - all lands within the Southern Region

**Status:** The assessment is underway and is expected to be completed in 2013. Products are available for view.

**Point of contact:** Dave Wear, USFS, [dwear@fs.fed.us](mailto:dwear@fs.fed.us), 919-523-5035

**Reference:** [www.srs.fs.usda.gov/futures/reports/draft/summary\\_report.pdf](http://www.srs.fs.usda.gov/futures/reports/draft/summary_report.pdf)

### Who are the actors and roles associated with this assessment?

USFS (Southern Research Station and Region 8) and federal, state and university partners are conducting and reviewing the assessment. USFS is funding and managing it.

### Why is the assessment being conducted?

The reasons are varied but they all revolve around one notion: that knowing more about how the future might unfold can improve decisions that have long-term consequences. This report summarizes the findings of the Southern Forest Futures Project, an effort to anticipate the future and to analyze what the interaction of future changes might mean for the forests of the South and the services they provide in the region's 13 states. To do so, USFS explores a labyrinth of driving factors, forest outcomes, and human implications to sketch out how the landscape of the South might change in the future. This summary consolidates the findings of 17 detailed analyses on specific forecasts and natural resource issues and synthesizes them into a set of key findings. For example, knowing more about future land use changes and timber markets can guide timber investment decisions. Knowing more about the intersection of anticipated urbanization, intensive forestry, and imperiled species can guide forest conservation policy and investments. Additionally, knowing more about the potential development of fiber markets can improve bioenergy policies. Consequently, the intended audiences are natural resource decision makers and professionals (managers and policy analysts), and members of the broader public who care about natural resource sustainability and policy. A subsequent phase of this effort will be to develop management and restoration implications for the various forest types and sub-regions in the South.

### What are the primary elements being analyzed in the assessment?

*Social/economic linkages*—How will alternative futures be affected by changing demographics and values, and how will these futures alter certain social and economic benefits in the South?

*Wildlife and forest communities*—How might changes in forest environmental and social conditions affect terrestrial wildlife (birds, mammals, reptiles, and amphibians), their habitats, and forest vegetation communities in the South?

*Water*—What roles do forests and forested wetlands play in producing and protecting water resources in the South and how might future land-management and land-use changes affect these roles?

*Taxes*—How might taxation influence retention and management of forest land in the South?

*Climate change*—How might the environmental conditions associated with climate change affect forest ecosystem health and productivity?

*Fire*—How will fire behavior and fire risk change over time, and what are the likely effects on communities and people?

*Forest ownership change*—Describe recent and anticipated changes in forest ownership in the South and the implications of these changes for forest ecosystem conditions, management, and productivity

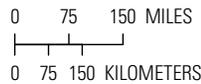
*Invasive species*—How will invasive plants, insects, and diseases likely affect southern forests and related ecosystems in the future?

*Bioenergy*—What would be the likely effects of the emergence of a mature bioenergy market on southern forests, forest owners, and traditional forest product markets?

# Southern Forest Futures Map



North America Shaded Relief derived from GTOPO30, a global digital elevation model with a horizontal grid spacing of 30 arc seconds (approximately 1 kilometer).



## EXPLANATION

 **USDA Forest Service Southern Region**

### Regional Ecological Assessment Protocol (REAP)

**Location:** Arkansas, Louisiana, New Mexico, Oklahoma, and Texas

**Status:** The assessment is complete.

**Point of contact:** Sharon Osowski, [osowski.sharon@epa.gov](mailto:osowski.sharon@epa.gov), 214-665-7506

**Reference:** [edg.epa.gov/Data/R6/REAP/r6reap\\_rarity.zip](http://edg.epa.gov/Data/R6/REAP/r6reap_rarity.zip)  
[edg.epa.gov/Data/R6/REAP/r6reap\\_sustainability.zip](http://edg.epa.gov/Data/R6/REAP/r6reap_sustainability.zip)  
[edg.epa.gov/Data/R6/REAP/r6reap\\_diversity.zip](http://edg.epa.gov/Data/R6/REAP/r6reap_diversity.zip)  
[edg.epa.gov/Data/R6/REAP/r6reap\\_composite.zip](http://edg.epa.gov/Data/R6/REAP/r6reap_composite.zip)

#### Who are the actors and roles associated with this assessment?

The U.S. EPA and Federal Highway Administration.

#### Why is the assessment being conducted?

Building and strengthening collaborative partnerships that exist within the state of Texas from the pilot project and by branching out to adjacent states.

- Developing a regional ecosystem framework for the South Central U.S. using Bailey ecoregion sections, data overlays and calculations, and reporting the methods and results in a publicly available report and data file.
- Using REAP methodology to assess effects by identifying “hotspots” of ecological importance.
- Establishing and prioritizing opportunities for avoidance of potential impacts rather than compensation for impacts that have already occurred.

#### What are the primary elements being analyzed in the assessment?

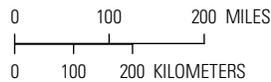
Climate change impacts to water resource availability and management.

- Species
- Ecosystems
- Scenery
- Biodiversity
- Landscape perspectives
- Humans and their activities

# Regional Ecological Assessment Protocol



SRTM Shaded Relief North West derived from the Global Digital Elevation Model data sets from the U.S. Geological Survey's EROS Data Center. The resolution is 90 meters.



## EXPLANATION

Regional Ecological Assessment Protocol (REAP)

## West-Wide Climate Risk Assessment

**Location:** Eight major reclamation river basins in the Western U.S. including Colorado, Columbia, Klamath, Missouri, Upper Rio Grande and Pecos, Sacramento - San Joaquin, and Truckee - Carson River Basins

**Status:** The assessment is ongoing and the first report was completed April 2011. New reports will be completed every five years with technical reports being completed in between. Products are available to view.

**Point of contact:** Seshagirao Vaddey, Bureau of Reclamation (BOR)  
[svaddey@usbr.gov](mailto:svaddey@usbr.gov), 720-201-1325

**Reference:** [www.usbr.gov/WaterSMART/wcra/index.html](http://www.usbr.gov/WaterSMART/wcra/index.html)

### Who are the actors and roles associated with this assessment?

The DOI, BOR is the sole actor and performs all roles.

### Why is the assessment being conducted?

Legislatively required by the SECURE Water Act to provide baseline information for vulnerability assessments (basin studies).

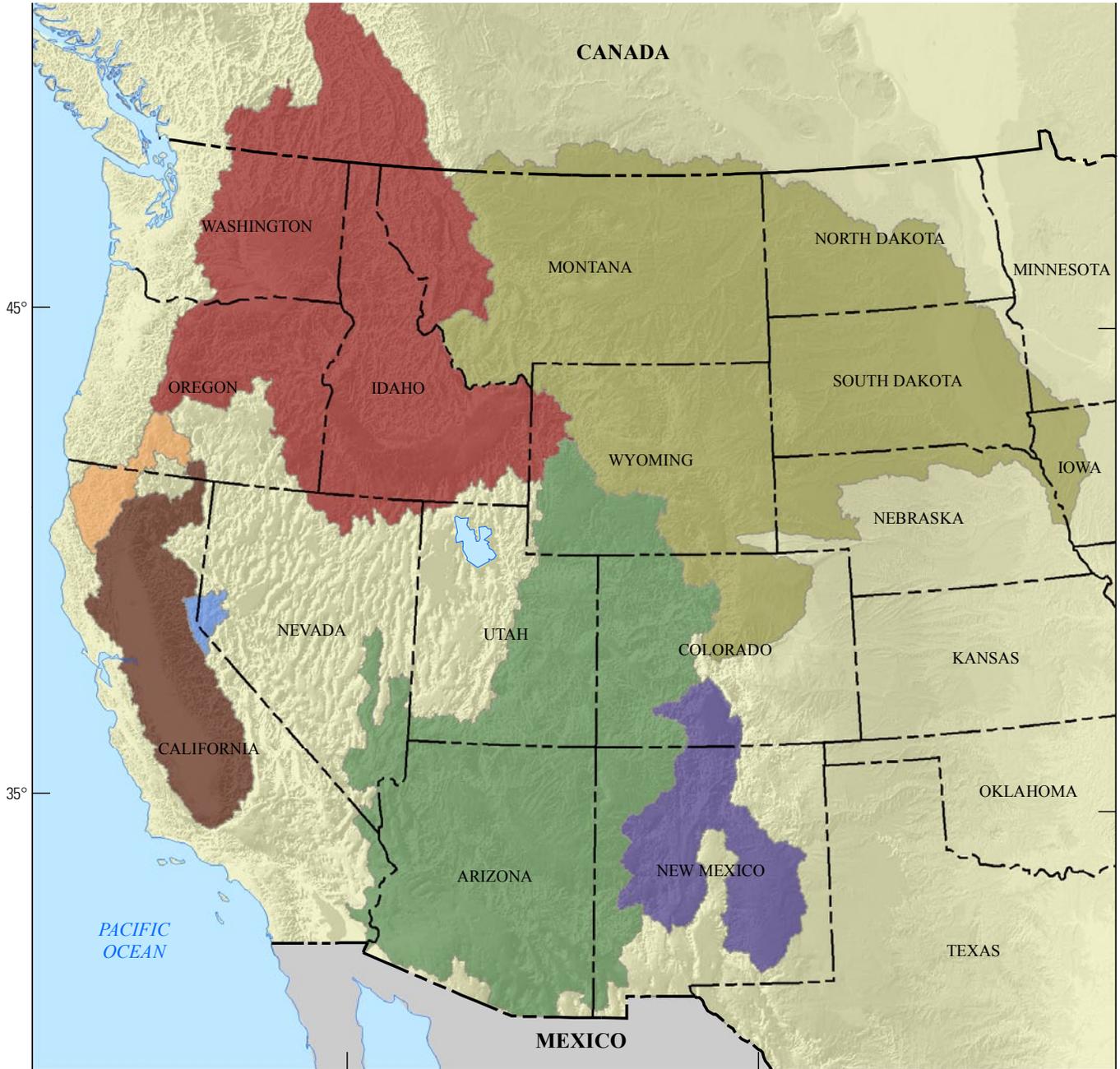
### What are the primary elements being analyzed in the assessment?

Climate change impacts to water resource availability and management.

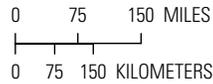
- Ecosystems
- Climate change
- Humans and their activities



# West-Wide Climate Risk Assessment Map



North America Shaded Relief derived from GTOPO30, a global digital elevation model with a horizontal grid spacing of 30 arc seconds (approximately 1 kilometer).



## EXPLANATION

- |  |   |
|--|---|
|  Colorado River Basin |  Upper Rio Grande and Pecos River Basins |
|  Columbia River Basin |  Sacramento - San Joaquin River Basin    |
|  Klamath River Basin  |  Truckee - Carson River Basin            |
|  Missouri River Basin |   |

## Natural Resource Condition Assessment (NRCA)

**Location:** All natural resource parks in the NPS (~300) – Lower 48, Alaska, Hawaii, Guam, American Samoa, Puerto Rico, U.S. Virgin Islands. The extent varies, but each NRCA includes the park and some measure of surrounding landscape.

**Status:** At present, NRCAs have been completed for 54 parks, are at varying stages of completion for 98 others, and are just getting underway for 16 additional parks in 2012. Products are available to view.

**Point of contact:** Jeff Albright, NPS [Jeff\\_Albright@nps.gov](mailto:Jeff_Albright@nps.gov), 970-225-3528

**Reference:** [nature.nps.gov/water/nrca/index.cfm](http://nature.nps.gov/water/nrca/index.cfm)

### Who are the actors and roles associated with this assessment?

NRCAs are conducted by a lead investigator (NPS staff person or a cooperator). The lead investigator works closely with the park, the park's Inventory and Monitoring network, other NPS staff (e.g., from the Washington Office-Support Office), and external collaborators/cooperators - usually based at universities. The park is always involved with: scoping of focal resources; finalizing the study plan; and review of completed product to ensure relevance and accuracy. The NRCAs are funded by the NPS, and managed by the Natural Resource Stewardship and Science Directorate of the NPS. The review includes both a management and science review. The management review is typically conducted by park and regional staff. The science review is typically provided by subject matter experts (in the NPS, other agencies, and academia).

### Why is the assessment being conducted?

Primarily to deliver existing scientific data and knowledge to park resource planning and condition reporting – for a subset of important resources and indicators that are chosen by the park.

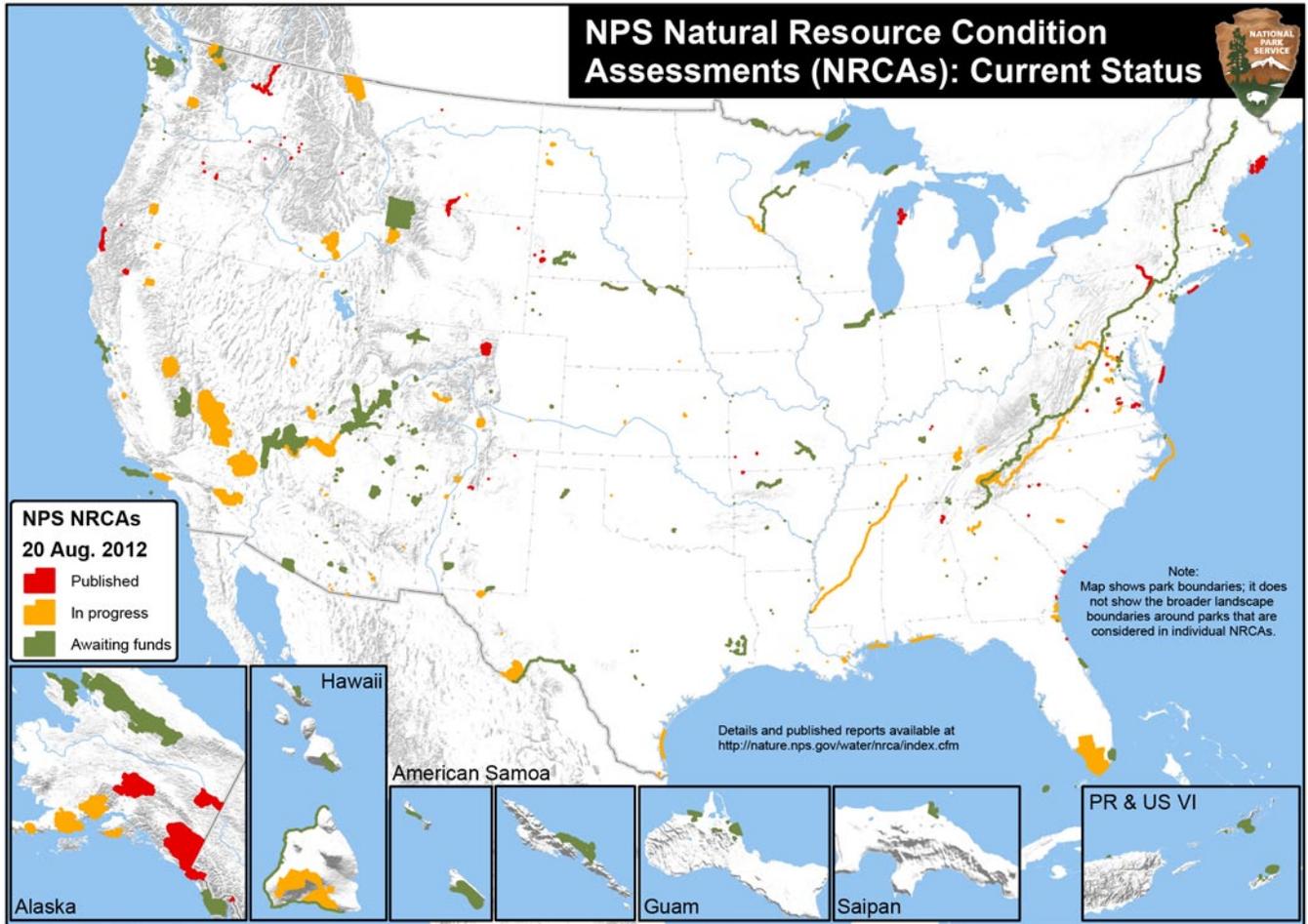
### What are the primary elements being analyzed in the assessment?

Natural resources identified by each park as important defining resources, usually but not always from enabling legislation. Although current condition reporting relative to logical forms of reference conditions and values is the primary objective, NRCAs also report on trends for any study indicators where the underlying data and methods support it. Resource condition influences are also addressed. This can include past activities or conditions that provide a helpful context for understanding current park resource conditions. It also includes present-day condition influences (threats and stressors) that are best interpreted at park, watershed, or landscape scales, though NRCAs do not judge or report on condition status per se for land areas and natural resources beyond the park's boundaries. Intensive cause and effect analyses of threats and stressors or development of detailed treatment options is outside the project scope.

- Species
- Ecosystems
- Scenery
- Climate change
- Biodiversity
- Landscape perspectives
- Humans and their activities



# Natural Resource Condition Assessment Map



## Rapid Ecoregional Assessments

**Location:** Western United States and Alaska. 14 assessments covering all or significant portions of 24 Omernick Level III ecoregions.

**Status:** The first REAs were completed in the fall of 2012. Products are available to view.

**Point of contact:** Travis Haby, BLM [thaby@BLM.gov](mailto:thaby@BLM.gov), 303-236-0537

**Reference:** [www.blm.gov/wo/st/en/prog/more/Landscape\\_Approach.html](http://www.blm.gov/wo/st/en/prog/more/Landscape_Approach.html)

### Who are the actors and roles associated with this assessment?

An Assessment Management Team (AMT) composed of federal and state managers and technical specialists from within the ecoregion oversees each REA. The AMT guides the assessment and oversees the work of the contractors who perform the technical data management and analysis tasks required by the REA. The contractors have been hired by the BLM for their special expertise in natural resource assessment and conservation planning. The BLM provides leadership, project management, and funding. All parties review the assessment with USGS in charge of a more formal peer review process.

### Why is the assessment being conducted?

The purpose of the REAs is to improve the understanding of ecological values, conditions, and trends within ecoregions and how conditions may be altered by ongoing environmental changes and land use demands. The REAs:

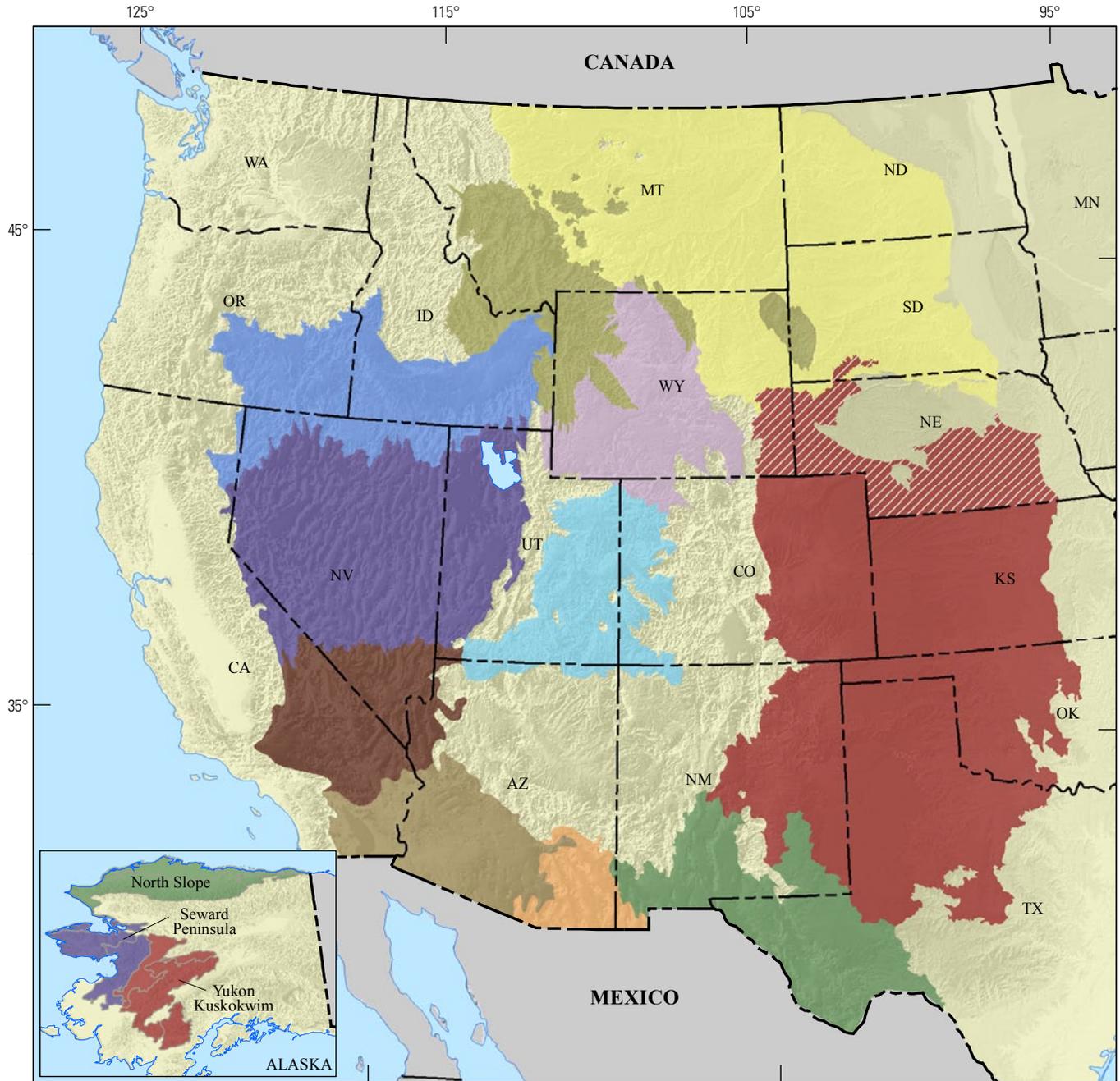
- Identify and answer important management questions
- Document key resource values, which are referred to as conservation elements, with a focus on regionally-significant terrestrial habitats, aquatic habitats, and species of concern
- Describe influences from four environmental change agents: climate change, wildfire, invasive species, and development
- Assess the collective effects of projected trends
- Identify and map key opportunities for resource conservation, restoration, and development
- Identify science gaps and data needs
- Provide a baseline to evaluate and guide future management actions

### What are the primary elements being analyzed in the assessment?

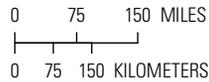
- Terrestrial and aquatic communities
- Native fish
- Wildlife
- Plants
- Climate change
- Invasive species
- Wild land fire
- Development (urban and industrial)



# Rapid Ecoregional Assessment Map



North America Shaded Relief derived from GTOPO30, a global digital elevation model with a horizontal grid spacing of 30 arc seconds (approximately 1 kilometer).



## EXPLANATION

- |                         |                           |   |
|-------------------------|---------------------------|---|
| Central Basin and Range | Middle Rockies            | Sonoran Desert                                    |
| Chihuahuan Desert       | Mojave Basin and Range    | Southern High Plains (hatched where not assessed) |
| Colorado Plateau        | Northern Great Basin      | Wyoming Basin                                     |
| Madrean                 | Northwestern Great Plains |   |

# The State of Climate Change Adaptation

**Location:** Marine and coastal North America, Western U.S. states and Canadian provinces and territories, and Great Lakes region

**Status:** The assessment is underway and ongoing. Products are available to view.

**Point of contact:** Rachel Gregg, EcoAdapt [Rachel@EcoAdapt.org](mailto:Rachel@EcoAdapt.org), (206) 226-9186

**Reference:** [www.EcoAdapt.org](http://www.EcoAdapt.org)

## Who are the actors and roles associated with this assessment?

EcoAdapt is currently conducting and managing the assessment. The Gordon and Betty Moore Foundation (marine and coastal North America), the Wilburforce Foundation (western U.S. states and Canada), and the Mott Foundation (Great Lakes Region) provide funding for the assessment. EcoAdapt has had multiple peer reviewers that are experts in climate change and/or adaptation to review the assessment.

## Why is the assessment being conducted?

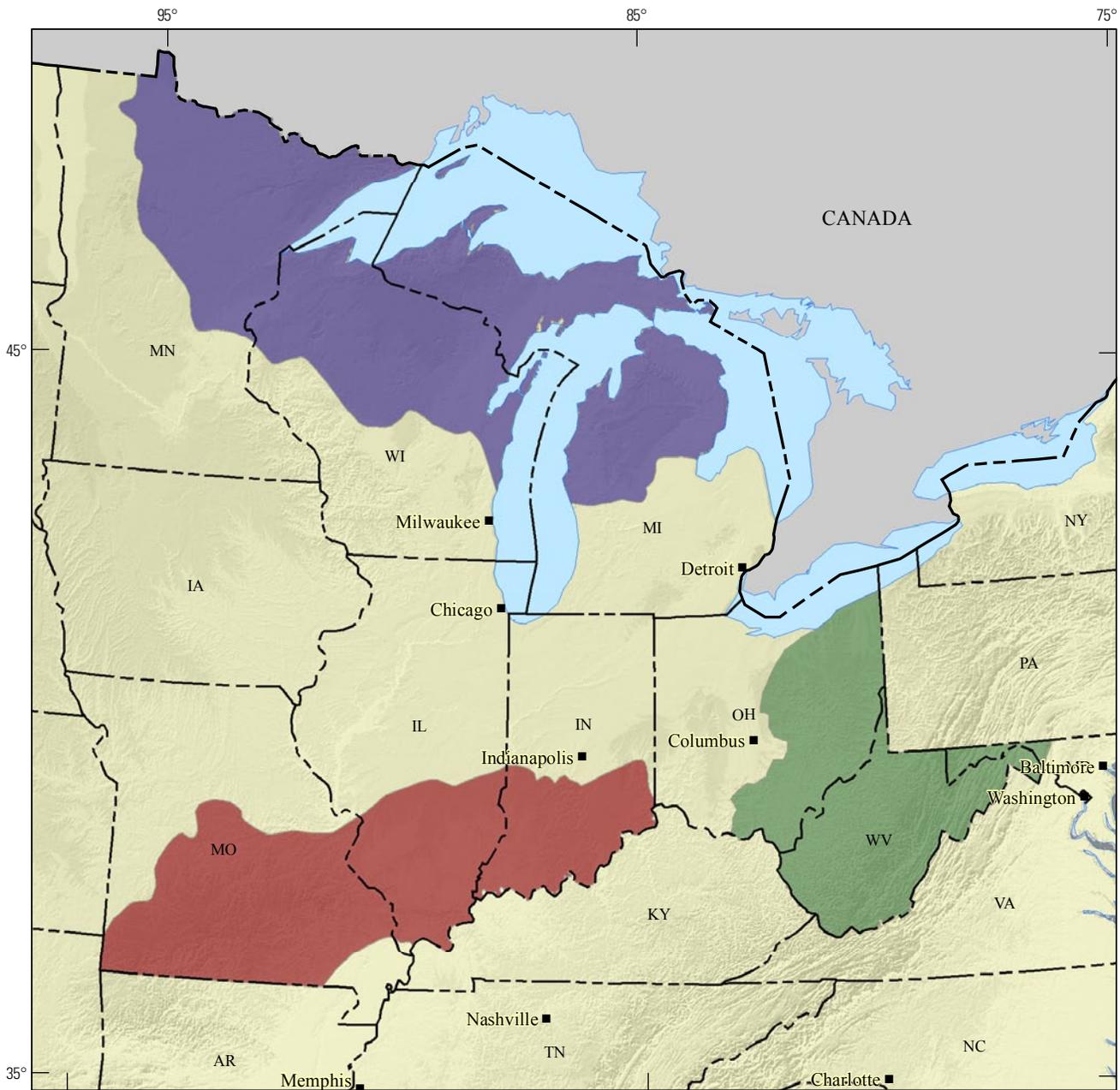
The State of Adaptation Program is one of four programs that help fulfill EcoAdapt's mission to make management and decision making climate-smart. Climate change adaptation is a nascent field and many managers are already dealing with the reality of climate change in their daily work. EcoAdapt's State of Adaptation Program is a research initiative designed to facilitate adaptation action by (1) providing real-life, practical case studies of adaptation projects and programs to catalyze creative thinking, and (2) by synthesizing information collected through interviews and surveys to further develop the field of study and action. Surveys have been conducted or are in progress for marine and coastal North America, freshwater Great Lakes region, and terrestrial U.S. and Canadian western states, provinces, and territories. EcoAdapt conducts surveys, identifies common barriers and trends, develops case studies, and uses all of the information collected for different products, including synthesis reports such as The State of Marine and Coastal Adaptation in North America and The State of Climate Change Adaptation in the Great Lakes Region, and share results through the Climate Adaptation Knowledge Exchange (CAKE, [www.cakex.org](http://www.cakex.org)).

## What are the primary elements being analyzed in the assessment?

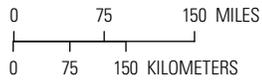
EcoAdapt examines climate change impacts in specific regions and on specific sectors, and examines the ways in which different practitioners are preparing for the challenges of climate change. For example:

- How a fishery manager is accounting for potential range shifts of commercially important species
  - How a city planner is preparing for sea level rise
  - How a water resources engineer is considering the effects of sea level rise and increasing salinization of wetlands
  - How a policy maker is considering legal designation of species that will likely experience acute effects of climate change
  - How a manager is evaluating the success of a particular adaptation project or program
- 
- Species
  - Biodiversity
  - Ecosystems
  - Landscape perspectives

# The State of Climate Change Adaptation Map



North America Shaded Relief derived from GTOPO30, a global digital elevation model with a horizontal grid spacing of 30 arc seconds (approximately 1 kilometer).



## EXPLANATION

- Central Appalachians
- Central Hardwoods
- Northwoods

## Western Governors' Crucial Habitat Assessment Tool (CHAT)

**Location:** Western U.S. and Alaska –17 States and western region-wide (all land ownership except tribal lands)

**Status:** A draft map of crucial habitat across the western states is available at [westgov.org](http://westgov.org). State-specific CHATs are already available in Arizona, California, Montana, Washington and Wyoming, and within the range of the lesser prairie chicken. The West-wide CHAT will launch in December 2013. Currently, states are working to refine methodology to create data layers to vet each state's crucial habitat layers, and to approve and knit those layers together in the West-wide CHAT. States will regularly update the scientific data in the CHAT system once the tool debuts.

**Point of contact:** Carlee Brown, [cbrown@westgov.org](mailto:cbrown@westgov.org), 720-897-4547

**Reference:** [www.westgov.org/initiatives/wildlife](http://www.westgov.org/initiatives/wildlife)

**Arizona** - HabiMap™ Arizona, Laura Canaca, Arizona Game & Fish

**California** - Areas of Conservation Emphasis (ACE-II), Tom Lupo, California Fish and Game

**Montana** - Crucial Areas Assessment and Planning System (CAPS), Lydia Bailey, Montana Fish, Wildlife and Parks

**Washington** - Priority Habitats and Species (PHS on the Web), Katie Knight, Washington Department of Fish and Wildlife

**Wyoming** - The Wyoming Interagency Spatial Database & Online Management (WISDOM) System, Kirk Nordyke, Wyoming Game and Fish Southern Great Plains,

**Southern Great Plains CHAT** - Specific to Lesser Prairie Chicken across range in Colorado, Kansas, New Mexico, Oklahoma and Texas, Michael Houts, University of Kansas.

### Who are the actors and roles associated with this assessment?

This is a collaborative project involving 17 Western states working through the Western Governors' Wildlife Council. The Wildlife Council, formed in 2008, is a panel of Governors' designees from the states in the Western Governors' Association (WGA). Funding is provided through public and private grants and in-kind contributions from states. Review is provided by the members of the Wildlife Council, a federal advisory group, and a stakeholder advisory group, and a federal advisory and stakeholder advisory group.

### Why is the assessment being conducted?

When complete, CHAT will be an easily accessible online system of maps displaying a relatively ranked classification of crucial wildlife habitat and corridors for multiple species. The system will provide information at a West-wide scale one square mile, but will also include CHATs for individual states, as they are available, to provide more state-specific information. The regional CHAT will provide an informed and regularly updated picture of priority areas for multiple terrestrial and aquatic habitats, including corridors, across the west.

Economic progress across the West depends on healthy wildlife populations as well as the successful completion of energy, transportation, land use and other large-scale development projects that must incorporate potential wildlife impacts into their planning. CHAT aims to bring greater certainty and predictability to those planning efforts by establishing a common starting point for discussing the intersection of development and wildlife. Regional compatibility of the information will make it most relevant for planning efforts that span multiple jurisdictions.

### What are the primary elements being analyzed in the assessment?

Crucial Habitat - the Western Governors' Wildlife Council has agreed to common definitions of crucial habitat and corridors for wildlife. The Wildlife Council issued guidelines to help each state prioritize habitat within its boundaries to meet its specific conservation objectives. The region-wide definitions, along with commonly applied methodologies, will also help achieve compatibility and consistency across state boundaries, to address certain discrepancies that may exist in identifying habitat and natural features along state borders.

- Species
- Biodiversity
- Landscape perspectives



## The National Aquatic Resource Assessment

**Location:** Across the continental United States. Special studies are carried out in Alaska, Hawaii and the territories. Some state-scale assessments.

**Status:** Ongoing assessments that will be repeated over time (each waterbody type every five years). Products are available to view.

**Point of contact:** Sarah Lehmann, U.S. Environmental Protection Agency (EPA)  
[Lehmann.sarah@epa.gov](mailto:Lehmann.sarah@epa.gov), 202-566-1379

**Reference:** Data are provided through EPA STORET data warehouse and can be accessed on-line at: [www.epa.gov/aquaticssurveys](http://www.epa.gov/aquaticssurveys).

### Who are the actors and roles associated with this assessment?

EPA and its state, tribal, and federal partners. Funded through the Monitoring Initiative under the Clean Water Act Section 106 grants. EPA manages the assessment in-conjunction with steering committees comprised of state, tribal, and other experts. EPA provides logistical support. Reviewed by EPA, states, tribes, other partners, and independent peer review panels.

### Why is the assessment being conducted?

To provide statistically-defensible assessments of water quality at the national scale. The National Aquatic Resource Surveys (NARS) use randomized sampling designs, core indicators, and consistent monitoring methods and lab protocols to:

- Track changes over time and advance our understanding of important regional and national patterns in water quality
- Foster collaboration on new methods, new indicators and new water quality research

### What are the primary elements being analyzed in the assessment?

The NARS is made up of assessments of four water resource types: the National Rivers and Streams Assessment, the National Lakes Assessment, the National Coastal Condition Assessment, and the National Wetlands Condition Assessment. These surveys are designed to assess and report on the ecological and recreational condition of our nation's water resources in a nationally consistent and scientifically defensible way to answer:

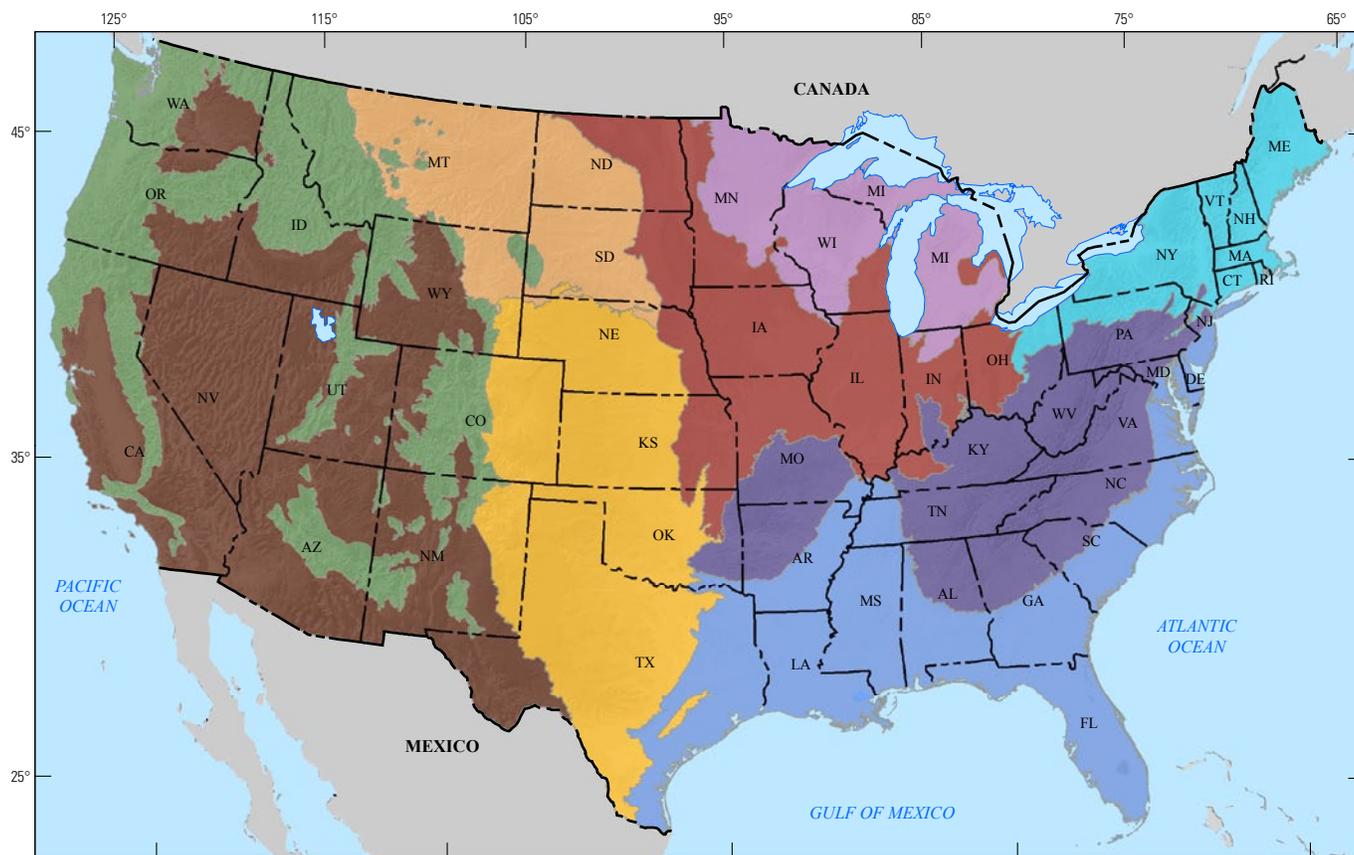
- What are the conditions of our nation's waters?
- What are the key problems affecting their quality and how wide spread are they?
- How are the conditions changing over time?

Each survey uses standardized field and lab methods and is designed to yield unbiased estimates of the condition of the whole water resource being studied (i.e., rivers and streams, lakes, wetlands, or coastal waters).

The NARS collect data on chemical, physical, biological and landscape attributes for more than 1,000 sites each summer. Examples of biological data include taxonomic information for macroinvertebrates, plants, fish, plankton, and diatoms.

- Species
- Ecosystems
- Climate change
- Biodiversity
- Humans and their activities

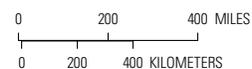
# The National Aquatic Resource Assessment Map



North America Shaded Relief derived from GTOPO30, a global digital elevation model with a horizontal grid spacing of 30 arc seconds (approximately 1 kilometer).

## EXPLANATION

- National Aquatic Resource Survey Ecoregions**
- Coastal Plains
  - Northern Appalachians
  - Northern Plains
  - Southern Plains
  - Temperate Plains
  - Upper Midwest
  - Western Mountains
  - Xeric
  - Southern Appalachians



# The Nature Conservancy Ecoregional Assessments

**Location:** In different ecoregions across the globe.

**Status:** TNC and its partners have completed over 150 ecoregional assessments around the world over the past 20 years. Products are available to view.

**Point of contact:** Joe Fargione, [jfargione@tnc.org](mailto:jfargione@tnc.org), 612-331-0745

**Reference:**

- <http://east.tnc.org/>
- <http://uspriorityareas.tnc.org>
- [www.conservationgateway.org/Files/Pages/ecoregional-assessment-to.aspx](http://www.conservationgateway.org/Files/Pages/ecoregional-assessment-to.aspx)

## Who are the actors and roles associated with this assessment?

TNC and various partners

- Ecoregional teams with strong leadership, and broad expertise in ecology, conservation biology, data analysis and management, and socioeconomic capacity.
- Key internal and external partners and stakeholders throughout the process.

## Why is the assessment being conducted?

To establish regional priorities and places for conservation action by TNC and partners. This vision for conservation success defines areas of biodiversity significance that strive to represent the full diversity of native species, natural communities, and ecosystems efficiently and in sufficient numbers and distribution patterns to sustain them for the long term.

## What are the primary elements being analyzed in the assessment?

### Ecological Systems (coarse filter)

- Capture many communities and species (including unknown and poorly studied)
- Landscape-scale patterns and processes

### Plant Communities (fine filter)

- Terrestrial plant associations [also Species aggregations, such as migratory stopover points.]

### Species (fine filter)

- Scarce, declining, threatened, “of concern”, endemic, wide ranging (umbrella), Keystone
- Ecosystems
- Biodiversity
- Landscape perspectives
- Humans and their activities

# Ecoregional Assessments



**EXPLANATION**  
■ TNC Ecoregional Assessments

