



Information and Tools for Natural Resources Management in a Changing World

The Climate Change Challenge

Scientists agree that the **Earth's climate has already been disrupted irrevocably** by the accelerated release of greenhouse gases into the atmosphere. In fact, climate change is already well underway in the southwestern U.S.—perhaps more so than anywhere else in North America, outside the northernmost latitudes—and it is already affecting native plants, animals and habitats in ways we can see and measure. The challenge to the conservation community is to manage our forests, grasslands, deserts and rivers to **build resilience and to reduce the adverse impacts** of climate change.

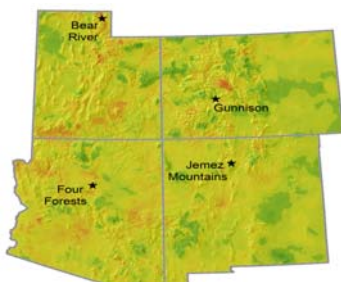
Now is the time to prepare for more change. Any action we take now to understand the local effects of climate change and to build ecosystem resilience will help us, over time, protect our natural areas and the clean water, clean air, and wildlife habitat they provide. The Nature Conservancy has joined with the Climate Assessment for the Southwest, National Center for Atmospheric Research, Western Water Assessment, Wildlife Conservation Society, USDA Forest Service, and the University of Washington to form the Southwest Climate Change Initiative (SWCCI). Our aim is to **provide information and tools to conservation practitioners for climate adaptation in vulnerable landscapes in Arizona, Colorado, New Mexico and Utah.**

Managing for Resilience and Change in the Southwestern United States

To meet our goal of informing and accelerating climate adaptation in the region, the SWCCI plans to:

- **Assess past and projected climate change and its effects on species, habitats and ecosystems.** This analysis, to be completed in late 2010, will assess past and projected changes in temperature and precipitation, and their effects on the region's natural diversity. Our final report will also make recommendations for climate-smart conservation in the region.
- **Establish demonstration projects at four vulnerable landscapes:** the Bear River Basin in Utah, the Four Forests Restoration Initiative area in Arizona, the Gunnison Basin in Colorado, and the Jemez Mountains in New Mexico. At each landscape, we are developing science-based vulnerability assessments and adaptation strategies; creating local partnerships that promote, facilitate, and help raise funds for adaptation action; and developing and promoting on-the-ground adaptation projects that will build resilience to rapid environmental change.
- **Document and share knowledge, tools, methods and lessons learned** within the region and with a global network of adaptation practitioners through Web and print publications and tools.

Interim Results at Demonstration Landscapes



The aim of each of four SWCCI landscape workshops – and the months of work that preceded and followed them – was to **build understanding of how climate change may affect ecosystems and identify strategies that natural resource managers can use to address rapid climate change.** Each workshop fostered dialogue between scientists and managers about how to adjust objectives and strategies for effectiveness in a warmer, world with more frequent and extreme droughts.

Each workshop raised awareness and understanding among stakeholders, and each produced a report that documented:

- ✓ Observed and projected regional and local changes in temperature, precipitation, hydrology, and extreme weather events.
- ✓ Observed and projected climate change effects on key species and habitats.
- ✓ Rapid vulnerability assessments for key species and habitats.
- ✓ Recommendations for “climate-smart” management objectives for key species and habitats.
- ✓ Lists of priority and “no-regrets” climate adaptation strategies: conservation activities that will produce benefits under multiple plausible climate scenarios.
- ✓ Opportunities for collaboration and funding to accelerate the pace of climate adaptation.

Next Steps: Action to build resilience to rapid change

Following up on the workshops, The Nature Conservancy is working with partners, including the US Forest Service, Colorado Division of Fish and Wildlife and local NGOs, to build resilience on the ground.

- ✓ In the **Jemez Mountains**, climate adaptation strategies have been integrated into the SW Jemez Strategy, a multi-year, multi-million dollar forest restoration project.
- ✓ In the **Gunnison Basin**, a new Gunnison Climate Working Group is helping member agencies make their work more “climate-smart.”
- ✓ Northern Arizona’s **Four Forest Restoration Initiative** is integrating climate science into its landscape-scale forest restoration plan.
- ✓ In the **Bear River Basin**, partners are working to sustain trout habitat as the climate warms and droughts become more frequent and severe.

Lessons Learned: What we’ve discovered that could be applied to other landscapes

- We know enough about climate change to take local action: Though there is uncertainty regarding the pace of climate change, the conservation community has enough information to act now to reduce the most likely adverse impacts.
- “Climate-smart conservation” means adjusting the pace, scale and sequencing of management activities: Many of the tools that managers use to restore and maintain ecosystems can contribute to climate change adaptation – but the scale, sequencing, priority and cost of these strategies will likely need to be adjusted if objectives are to be met.
- In some cases, current management objectives will be unattainable; we must be agile and adjust our sights: The large scope of ecological change expected under the most probable climate change scenarios means that some forest and watershed management objectives may need to be adjusted.
- Conservation organizations are already doing a lot to restore and maintain ecosystems—but climate change means we must do more, and do it smarter: Land management agencies may need to increase the scale, scope and pace of management interventions – and to reconsider where and how to make them –to prepare the landscape.
- To conserve ecosystems and species, we must understand how their environments are changing: More than ever, success will require that monitoring and adaptive management are integrated into landscape planning and management. In a changing environment for which there are no analogs in the historical record, ecosystems are bound to respond in unpredictable and surprising ways, calling for well-informed and nimble responses by managers.
- The workshops represent the beginning of a long-term process for understanding and responding to the challenge of climate adaptation for species, habitats and ecosystems. Workshops are good starting point, but more time, thought and energy will be required to build consensus for – and begin implementing – resilience-building strategies.

For More Information

For more information about the Southwest Climate Change Initiative, visit <http://nmconservation.org> or contact project director Patrick McCarthy at (505) 988-1542 ext. 217 or pmccarthy@tnc.org.