
TNC: “Cool Green Science” Blog

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Science Features

Is Nature in Trouble in the United States?

A new study from Nature Conservancy scientists ups the ante for funding conservation efforts.

Story Highlights

- **New study: More than 50 percent of the original natural systems in the United States are now gone or highly altered.**
- **These changes are affecting nature and humans -- with effects ranging from destructive wildfires to reduced outdoor recreation.**
- **The solution: Smarter land management techniques and full funding of conservation initiatives.**

"How much change can nature sustain and still provide the benefits we depend on, like water filtration, recreational activities, forest products and much more?"

--Kori Blankenship, Nature Conservancy fire ecologist, LANDFIRE Program

How much trouble is nature in in the United States? **Much more than previously thought**, according to [a path-breaking new study by scientists at The Nature Conservancy](#) — at a time when federal funding for conservation is severely threatened:

- The study — [published in the journal PLoS One](#) — finds that more than 50% of the United States' original natural systems are either gone or highly altered.
- Some places are more impacted than others. Specifically, 33% of ecosystems in the lower 48 United States — from the forests of the Berkshire Mountains in Massachusetts to the Great Plains of the Midwest to the Great Basin of the U.S. West — are "critically endangered," meaning that more than half their vegetation has been lost or highly altered since first European settlement.

- And merely designating areas as “protected” has not always halted the degradation — more than 20 percent of the area within our public lands have “high levels of ecosystem alteration.”

Why should you care? Because not only are iconic U.S. species such as the desert tortoise, the Douglas fir tree and the sage grouse being affected — so are humans, with potential impacts on drinking water quality, increased frequency of wildfires, and outdoor recreation, among others.

“How much change can nature sustain and still provide the benefits we depend on, like water filtration, recreational activities, forest products and much more?” asks Kori Blankenship, Nature Conservancy fire ecologist and co-author of the study.

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From New England to California: A Portrait of Nature on the Defensive

The analysis is based on recent detailed satellite imagery of the lower 48 United States and how current vegetation compares to what's thought to be the nation's original vegetative condition. It's the first broad-scale study of its kind to assess the extent of ecosystem alteration in the United States.

The study builds on previous research that found 29% of lands in the lower 48 United States had been converted to urban land use and agriculture. The new research finds that **an additional 23% of the lower 48 has been highly altered from its condition before European settlement** — doubling the number of large natural systems (known as “ecoregions”) classified as “critically endangered” and “endangered” (see map). Among the specific findings:

- Large areas of deciduous forest — from New England to Appalachia — were found to be highly altered, including areas that urban residents in Boston, New York and Atlanta rely on for drinking water and forest products.
- The central United States has a host of critically endangered ecoregions, including much of the nation's prairies -- a huge problem for already stressed grassland birds such as prairie chickens and Henslow's sparrow.
- 35 of the 69 ecoregions in the United States increased by one or two risk categories, from Vermont and New York State's St. Lawrence-Champlain Valley to Washington State's Okanogan.
- Where fire suppression has altered vegetation and increased fuel loads, there is increased risk of unnatural megafires, especially in the West. Such fires destroy habitat, increase soil erosion and reduce water quality, in addition to threatening people's homes and lives.

What's causing this widespread degradation? Randy Swaty, Conservancy fire ecologist and lead author for the report, says it's a mix of factors — including suppression of natural fires (which are beneficial for many natural systems); biological invasions (from cheatgrass to pine beetles); and historic and current logging and livestock grazing practices.

“The initial results are worse than I expected for the forests of the eastern United States,” says Swaty. “The wildfires out West get a lot of attention, but the degradation of eastern forests could have profound effects on not just plants and animals, but the people who enjoy and depend on them.”

“Think of nature as a stock portfolio — we are always advised to diversify our portfolios to better protect against a range of risks,” he adds. “Many of our eastern forests have reduced numbers of species, potentially setting them up for the next exotic pest.”

Solutions: Smarter Management of the Nation's Lands

This range of threats means that increased attention and investment in managing the nation’s lands is needed to turn the tide, argue the study's authors. These actions include:

- Restoring the natural role of fire,
- Using improved forestry techniques that support native vegetation,
- Controlling the spread of invasive species, and
- Improved grazing practices.

“The best answer depends on where you are,” says Blankenship. “It ranges from sustainable forestry practices in the temperate rain forests of the West Coast to reducing exotic species in the Great Basin. And in the interior West, there is a great need for prescribed fire to restore dry forests where suppression of natural fires has created unnatural and potentially dangerous fuel conditions.”

“Protected areas require good stewardship,” she adds. “Our protected areas are subject to many of the same threats as non-protected areas.”

While none of these steps will be easy — after all, the degradation was not the work of a day — **Swaty and Blankenship remain hopeful conservation groups such as the Conservancy and federal and state land managers can tackle the problem.**

“Nature is resilient, we already have an incredible network of protected areas upon which to build in the United States, and people are adaptable,” says Blankenship. “The conservation need is great across the lower 48 United States — but we know enough to start taking action on our findings. Important federal efforts such as the **Collaborative Forest Landscape Restoration** program and the Integrated Resource Restoration budget proposal make necessary investments in improving the health of our lands for both people and nature.”

Help the Conservancy restore nature in the United States -- Use Your Outside Voice now!