

Continued decline of the northern spotted owl associated with the invasive barred owl, habitat loss

December 10 2015

Northern spotted owl populations are declining in all parts of their range in the Pacific Northwest, according to research published in *The Condor*. Based on data from 11 study areas across Washington, Oregon and northern California, a rangewide decline of nearly 4 percent per year was estimated from 1985 to 2013.

Researchers found evidence that the invasive barred owl is playing a pivotal role in the continued decline of spotted owls, although habitat loss and climate variation were also important in some parts of the species range. Barred owls compete with spotted owls for space, food and habitat.

This research indicated that since monitoring began spotted owl populations declined 55-77 percent in Washington, 31-68 percent in Oregon and 32-55 percent in California. In addition, population declines are now occurring on study areas in southern Oregon and northern California that were previously experiencing little to no detectable decline through 2009.

Dr. Katie Dugger, a research biologist at the USGS Oregon Cooperative Fish and Wildlife Research Unit, Oregon State University and lead author on the report, said that "This study provides strong evidence that barred owls are negatively affecting spotted owl populations. The presence of barred owls was associated with decreasing spotted owl

survival rates in some study areas and spotted owls were disappearing from many of their historical breeding territories as those areas were invaded by barred owls."

The exception was a small area in California where barred owl removals began in 2009, and where long-term population declines were only 9 percent. Spotted owl populations and survival rates have increased on the latter area since the removal of barred owls started. However, further research on barred owl removal is required in other parts of the spotted owl's range—especially in Washington, where barred owl numbers have been high for a long time.

Additionally, said Dugger, "The amount of suitable habitat required by spotted owls for nesting and roosting is important because spotted owl survival, colonization of empty territories, and number of young produced tends to be higher in areas with larger amounts of suitable habitat, at least on some study areas."

Relationships between spotted owl populations and climate was complex and variable, but rangewide, the study results suggested that survival of young spotted owls and their ability to become part of the breeding population increased when winters were drier. This may become a factor in population numbers in the future, given climate change predictions for the Pacific Northwest include warmer, wetter winters.

The collaborative team of 37 researchers analyzed data from 11 study areas that represented 9 percent of the spotted owl range. During the study, field crews monitored how many owls inhabited different territories, and the yearly survival and reproductive success of banded spotted owls. "This type of collaborative research focused on specific management and conservation objectives provides important information for resource managers and policy decision-makers who manage public resources," said Eric Forsman, a coauthor on the study at

the USDA Forest Service, Pacific Northwest Research Station.

The paper, "The effects of habitat, climate and [barred owls](#) on long-term demography of northern spotted owls," was published in *The Condor: Ornithological Applications* and authored by Katie M. Dugger, USGS, Oregon Cooperative Fish and Wildlife Research Unit, Oregon State University Department of Fisheries and Wildlife; Eric D. Forsman, USDA Forest Service, Pacific Northwest Research Station; Alan B. Franklin, USDA APHIS National Wildlife Research Center; Raymond Davis, USDA Forest Service, Pacific Northwest Region, and 33 others.

Although they do occur in young forests in some areas, northern [spotted owls](#) are strongly associated with old forest in most of their range. The U.S. Fish and Wildlife Service listed the [northern spotted owl](#) as threatened in 1990 because of the declines in old-growth forest habitat throughout its range in Washington, Oregon and northern California.

More information: www.aoucospubs.org/toc/cond/118/1

Provided by United States Geological Survey

Citation: Continued decline of the northern spotted owl associated with the invasive barred owl, habitat loss (2015, December 10) retrieved 13 March 2024 from <https://phys.org/news/2015-12-decline-northern-owl-invasive-barred.html>

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