

Northwest Forest Plan (NWFP) Interagency Regional Monitoring, 20 Year Report Status and Trend of Northern Spotted Owl Habitat

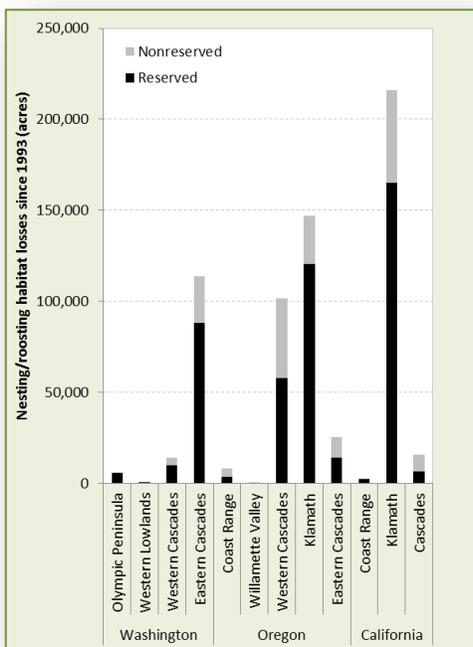
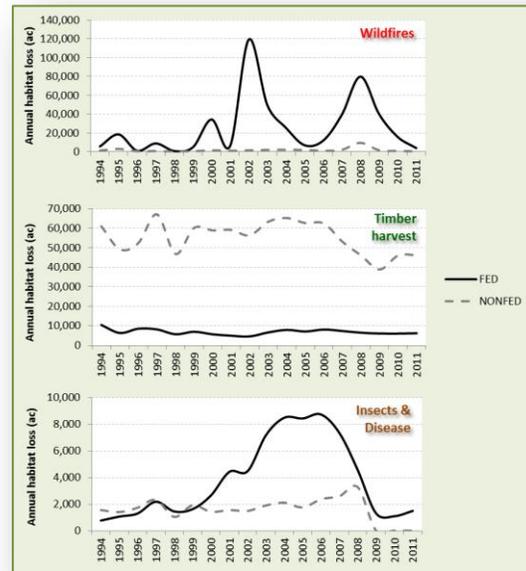
Raymond Davis, module lead
May 13, 2015

Objective

To periodically monitor the effectiveness of Northwest Forest Plan (NWFP) in arresting the downward trends in northern spotted owl habitats since its implementation in 1994. Monitoring assesses changes in amount and distribution of spotted owl habitats on federal lands by evaluating four major topics: (1) the proportion of nesting/roosting and dispersal habitat; (2) trends in amount and distribution of nesting/roosting habitat, particularly in large, reserved blocks; (3) trends in amount and distribution of dispersal habitat outside of the large, reserved blocks; and (4) primary factors leading to loss and fragmentation of nesting/roosting and dispersal habitat?

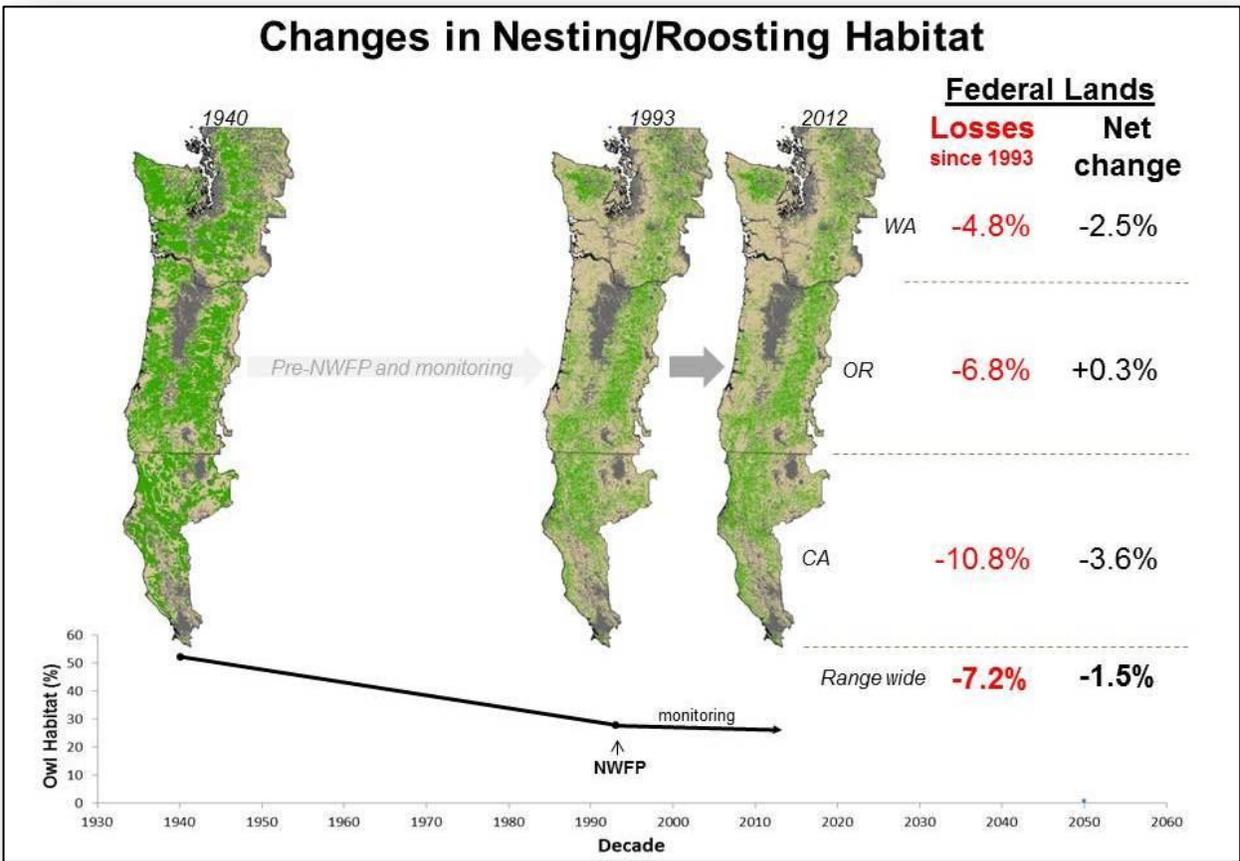
Methods and New Science

Nesting/roosting habitat monitoring uses species distribution modeling methods, owl pair locations, and remotely-sensed forest vegetation data to produce “bookend” habitat maps (1993 and 2012). These bookend maps were analyzed for differences to estimate amount and distribution of nesting/roosting habitat losses, gains, and net change. We then used remotely sensed forest vegetation disturbance (change detection) data to determine the causes for habitat losses. Our habitat mapping continues to improve with new technologies and new forest inventory plot data. Change detection mapping has also improved, and now provides an annual time series of forest disturbances for entire NWFP area.



Key Results

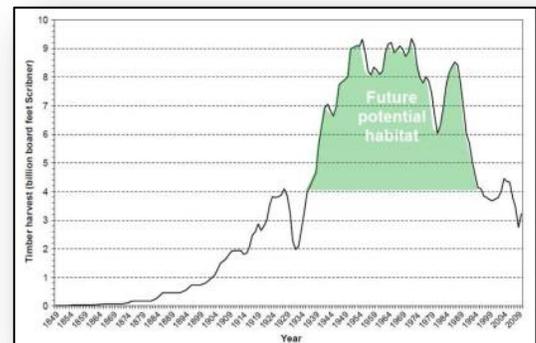
After two decades, nesting/roosting habitat on federal lands decreased from 9.09 million ac in 1993, to 8.95 (-1.5%). However, there are areas where recruitment and net gain of new habitat appears to be occurring (for example, Siuslaw National Forest). Dispersal habitat, which includes younger forests, on federal lands increased from 15.38 to 15.73 million ac (+2.2%). However, due to loss of habitat on adjacent and surrounding nonfederal lands, the dispersal-capable landscape has decreased by about 5% in area. Range wide, the rate of habitat loss from wildfires was about what was expected when the NWFP was written, but higher in fire prone portions of the range. Habitat loss on federal lands from timber harvesting was about 25% of what was anticipated. Insects are having a minor effect on direct habitat loss and mostly in the eastern Cascades of Washington.



Management Considerations and Next Steps

The net 1.5% decrease of nesting/roosting habitat on federal lands occurred despite 7.2% in gross losses from wildfire of 474,300 ac (-5.2%), 116,100 ac from timber harvest (-1.3%), and 59,800 ac from insects or other causes (-0.7%), indicating that forest succession is resulting in habitat recruitment that has compensated for some of these losses from disturbances. Large wildfires continue to be the leading cause for loss of northern spotted owl habitats on federal lands. Most of these fire-related losses have occurred within the network of large reserves that were designed for the protection and restoration of habitat for long-term northern spotted owl conservation.

Most remaining nesting/roosting habitat now occurs on federally managed lands. The NWFP expected habitat to improve in the federally reserved network within 50 to 100 years. After 20 years, it is still in decline; but, given the timber harvesting history on federal lands (see graph to the right) we will likely see habitat increase over the next few decades as old timber harvest units develop back into suitable habitat. This assumption may be challenged by climate change. While the anticipated habitat loss rate from wildfire has played out at the range scale (2.5% per decade), loss rates in fire prone portions of the range exceeded this (3.9-7.4% per decade). Climate change is expected to expand the area of fire prone landscapes and we already have observed an increased frequency of large wildfires this century. Most of these large wildfires and resulting habitat losses have occurred in the federally reserved land use allocations. Monitoring future trends of both wildfire and habitat will be important.



Oregon timber harvest between 1849–2010 from Gale et al. (2012). The green shaded area has the potential to become future habitat by the middle to later part of this century.