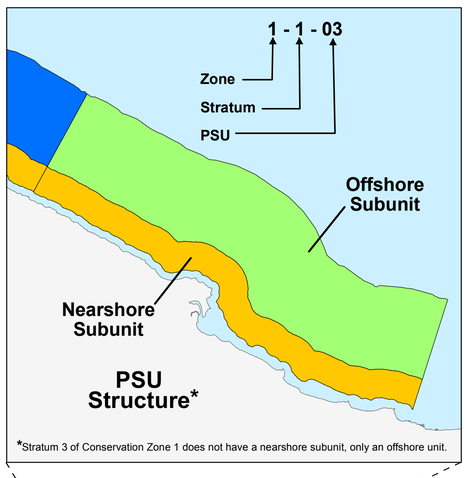
Average Estimated Population Density* of Marbled Murrelet by Primary Sampling Unit (PSU) for Washington

*Based upon at-sea population surveys performed for the Northwest Forest Plan Effectiveness Monitoring Program, using all years of available data from the 2009 to 2014 period.



Average Estimated Density*

- Less than 1
- 1 to 3
- 3 to 5
- 5 to 15
- More than 15

*Density values represent the average estimated population (in number of birds) per square kilometer across all survey years by PSU subunit.

Other map symbols

- City or town
- Major road
- River
- Lake or reservoir
- Federal land
- Marbled Murrelet Zone

NOTE: not all PSUs were included in the sampling design for Conservation Zone 1. Only those PSUs that were surveyed for the NWFP Effectiveness Monitoring program are shown here.

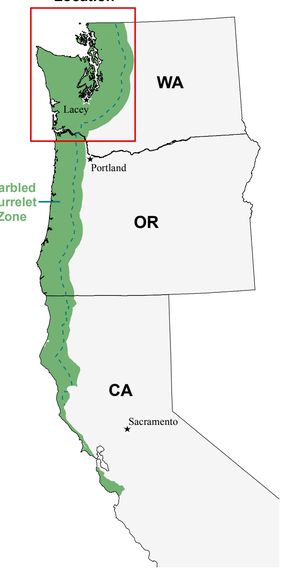
Zone 1

Zone 2

Conservation Zone 2

Conservation Zone 3

Map Location



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NOTE: The information in this figure is provided only to illustrate general patterns of marbled murrelet distribution within the areas sampled, and should not be used for other analyses. The sampling program was designed to monitor density at the conservation zone scale. The PSU density estimates shown are average at-sea densities over the time period indicated. These density estimates may have large confidence intervals, which are not shown. For additional information, refer to the following publications:

M. Raphael et al. 2007. Regional Population Monitoring of the Marbled Murrelet: Field and Analytical Methods. PNW-GTR-716

Falxa, G.A.; Raphael, M.G., tech. eds. *In press*. Northwest Forest Plan—The first 20 years (1994–2013): status and trend of marbled murrelet populations and nesting habitat. Gen. Tech. Rep. PNW-GTR-927. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. xx p

Program information, including links to these and other relevant publications, can be found at:

http://www.reo.gov/monitoring/mm-overview.shtml

PLEASE CITE AS:

Marbled Murrelet Effectiveness Monitoring Module, 2015. Northwest Forest Plan Interagency Regional Monitoring Program, Portland, OR.