

Mitigation for Natural Disturbance

The Board of Natural Resources (board) identified a series of principles to guide the development of a long-term conservation strategy preferred alternative. One of the principles stated that the preferred alternative should fully offset impacts and add additional conservation to cover uncertainty due to natural disturbance. The board developed the concept of “epsilon” to account for this additional mitigation. Under Alternative H, the adjusted acres of potential mitigation minus the adjusted acres of potential take represents epsilon.

Raphael and others (2016) assessed current natural disturbance rates of marbled murrelet habitat and reported that, between 1993 and 2012, 11,116 acres of “higher quality habitat” was lost to natural disturbances across all ownerships in Washington, including federal reserves. This loss represents about 0.72 percent of nesting habitat over 20 years, or about 0.36 percent habitat loss per decade across all ownerships due to natural disturbance (wildfire, windthrow, insects, and disease). The analysis by Raphael and others (2016) was done using a “Maxent” marbled murrelet habitat model that the Joint Agencies found to be reasonably consistent with the P-stage model (refer to Appendix E of the RDEIS). Davis and others (2016) studied natural disturbance rates of northern spotted owl habitat and found results similar to those reported by Raphael and other (2016) for habitat loss due to natural disturbance for all lands in western Washington.

As described in Chapter 3.2 of the FEIS, under climate change some disturbance rates are expected to increase, such as fire; some are expected to be unchanged, such as windthrow; and some are expected to change in location and intensity, such as beetle outbreaks. Based on these studies, DNR estimated that the natural disturbance rate of murrelet habitat may double by the end of the 50-year analysis period. Under this assumption, mitigation needs to exceed impact by approximately 395 adjusted acres to account for potential loss of habitat to natural disturbance. Every alternative except B meets this requirement.

For more information on how mitigation for natural disturbance was calculated for the HCP amendment, refer to Appendix C, Attachment C-5 of the HCP amendment. The HCP amendment is included as Appendix Q to this FEIS.

Literature Cited

Davis, R. J., B. Hollen, J. Hobson, J.E. Gower, and D. Keenum. 2016. Northwest Forest Plan—the First 20 years (1994–2013): Status and Trends of Northern Spotted Owl Habitats. Gen. Tech. Rep. PNW-GTR-929. U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station, Portland, Oregon.

Raphael, M.G., G.A. Falxa, D. Lynch, S.K. Nelson, S.F. Pearson, A.J. Shirk, and R.D. Young. 2016. Status and trend of nesting habitat for the Marbled Murrelet under the Northwest Forest Plan. Chapter 2, in Falxa, G.A. and M.G. Raphael (tech. eds.), 2016: Northwest Forest Plan—the first 20 years (1994-2013): Status and trend of Marbled Murrelet populations and nesting habitat. Gen.Tech. Rep. PNW-GTR-933. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 132 p.