

**Proposed “Conservation Alternative” for the
Marbled Murrelet Long-Term Conservation Strategy (LTCS)**

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Purpose of a Conservation Alternative: We have developed this alternative in an attempt to achieve the following *biological goals* for the marbled murrelet population in Washington State (as laid out in the 2008 Science Team Report and 1997 Recovery Plan).

1. A stable or increasing population for at least a 10-year period (USFWS 1997)
2. An increasing geographic distribution
3. A population that is resilient to disturbances (stochastic events)

Why is a Conservation Alternative needed?

The six Alternatives analyzed in DNR’s Draft Environmental Impact Statement (DEIS) for the LTCS are inadequate:

1. None of the DEIS Alternatives incorporates *all* of the best available science for recovering the murrelet population in Washington. Alt. F represents the best available science as of 2008 (Raphael et al. 2008), the other alternatives include only portions of Alt. F, and more recent science shows the disproportionate importance of non-federal lands to murrelet recovery (for example).
 - a. DNR-managed lands contain roughly 15% (~213,000 acres) of all existing murrelet habitat in the state, and this habitat is needed to serve as a temporal “bridge” to support the population over the next 30-50 years while it is most vulnerable to extirpation (Raphael et al. 2016). During this timeframe, large areas of habitat should become restored on federal lands (assuming continued implementation of the Northwest Forest Plan), though “it is uncertain whether their populations will persist to benefit from potential future increases in habitat suitability. *This underscores the need to arrest the loss of suitable habitat on all lands, especially on nonfederal lands and in the relatively near term (3-5 decades)*” (Raphael et al. 2016, emphasis added).
 - b. A recent radio-telemetry study revealed relatively long over-land commutes by breeding murrelets between their nests and marine waters. The authors concluded: “we also encourage measures to protect and enhance terrestrial nesting habitat closer to sea. *This will require protecting nesting habitat on state and private lands*, because the federal lands in Washington are already protected under the Northwest Forest Plan.” (Lorenz et al. 2016, emphasis added)
 - c. As of 2008, the Science Team under-emphasized murrelet conservation on DNR-managed lands along the Strait of Juan de Fuca. Since then the Straits have been identified as one of three regional “hotspots” with an exceptionally high density of murrelets and nesting habitat (Raphael et al. 2015). Compared with marine variables, nesting habitat attributes explained more of the variation in murrelet abundance, underscoring its greater importance to murrelet recovery.

- d. The most recent estimates (Raphael et al. In press) show there is currently less murrelet nesting habitat on DNR-managed lands than on other non-federal (mostly private) lands. Murrelet populations are likely still responding to past non-federal habitat loss (30% over the past 20 years), and a large proportion of existing habitat remains at risk of being lost on private lands under the current Forest Practices Rules. *“Conservation of the threatened murrelet is not possible if such losses continue at this rate into the future”* (Raphael et al. 2016, emphasis added).
2. All six LTCS alternatives currently under consideration allow the harvest of some amount of existing murrelet nesting habitat ranging from 25,440 acres (Alt. F) to 49,431 acres (Alt. B). Further habitat loss on DNR-managed lands at this time cannot be biologically justified for a number of reasons.
 - a. Some amount of murrelet habitat is projected to be lost or degraded due to climate-related disturbances. “Climate change is likely to increase threats to the marbled murrelet throughout its inland range, such as the projected drought-related fire, mortality, insects and disease, and increases in extreme flooding, landslides, and windthrow events in the next 10 to 30 years” (DEIS at 5-9). The generally warmer, drier climate predicted for the coastal spruce/hemlock zone of western Washington (Halofsky et al. 2011) could also hinder moss and epiphyte development and its ability to provide and sustain murrelet nesting platforms.
 - b. The restoration of low quality habitat over time does not adequately mitigate for the loss of higher-quality habitat that currently exists. Peery & Jones (2016) found that “acre-for-acre, murrelet population growth was most sensitive to changes in high-quality nesting habitat.” Washington’s murrelet population cannot afford further habitat losses in its imperiled state, or it may become functionally extirpated before future, low quality habitat is restored gradually over time. If murrelets become functionally extirpated from Washington, the lack of genetic flow and genetic variability will become a more significant threat to the persistence of the species at the range-wide scale (CA, OR, and WA).
 - c. Absent explicit population recovery criteria at the state or federal levels, the adopted LTCS Alternative could *preclude* murrelet recovery if it does not preserve enough existing and future habitat. Under these conditions, a precautionary approach is most appropriate.
 3. The range of habitat deferred from harvest in the DEIS Alternatives is too narrow. Numerous studies have shown a strong correlation between the murrelet population size and the area of adjacent nesting habitat, including the DEIS population viability analysis (see Raphael peer review). Currently, the DEIS Alternatives only differ by ~24,000 acres of habitat (164,000 to 188,000 acres total for Alt. B and F, respectively). It is possible for this range to increase to ~49,000 acres if all current habitat is deferred from harvest. After 50 years of implementation, the DEIS Alternatives will differ by ~55,000 acres of habitat (317,000 to 372,000 acres total for Alt. B and F, respectively). It is possible for this range to increase to ~491,000 acres if all current and future habitat is deferred from

harvest. Hence, DNR-managed lands have the capability to support a much larger murrelet population than has been modeled thus far.

4. Not all of the DEIS Alternatives adequately ameliorate the edge effects associated with habitat fragmentation. For example, two DEIS Alternatives (A and B) completely lack contiguous, blocked-up Conservation Areas (Marbled Murrelet Management Areas, Emphasis Areas, and/or Special Habitat Areas). In the Olympic Experimental State Forest (OESF), Marbled Murrelet Management Areas only have a 50% habitat target under Alt. F, which is insufficient for achieving their purpose of minimizing edge effects. Similarly, buffers on occupied sites of 0 to 100 meters (Alt. A-F) are too narrow to protect murrelet nests from predators, a suboptimal microclimate, and/or windthrow.
5. As of Dec. 2016, the marbled murrelet is now a state endangered species: “any wildlife species native to the state of Washington that is seriously threatened with extinction throughout all or a significant portion of its range within the state” (WAC 232-12-297). The DEIS Alternatives do not properly reflect this imperiled state, as evidenced by the ongoing population decline in the DEIS population viability model risk analysis (Peery & Jones 2016), and by the 44% smaller population size (from 2001-2015; Lance and Pearson 2016), making the population more susceptible to extinction vortices and stochastic events.

Components of the Conservation Alternative: Add the following Long-Term Forest Cover (LTFC) elements to Alt. F

1. All current and future habitat within the next 50 years ($P_{stage} \geq 0.25$)
2. All Emphasis Areas and Special Habitat Areas from Alt. E (collectively “Conservation Areas” when combined with MMMAs)
3. No-touch 150 m buffers around all occupied sites and old forest (OESF) as mapped by the 2008 Science Team
4. *Goal: to demonstrate there will be a sufficient area of non-habitat to harvest within first decade outside of Alt. G LTFC*

Adaptive Management under a Conservation Alternative: In 10 years, after implementation of the LTCS based on the Conservation Alternative, assess whether or not all three biological goals for the murrelet population have been met. If they have, then reconsider permitting incidental take (harvest of habitat) if all three biological goals can be maintained with the amount of habitat at that time (set baseline). If not, continue the moratorium on take and decadal assessments until the three biological goals are met and sustainable.

Action: Request that DNR analyze this Conservation Alternative in a Supplemental EIS before a preferred alternative is selected.