Abstract

Using the low-level aerial survey method to identify Marbled Murrelet nesting habitat

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Identifying and managing nesting habitat for the threatened Marbled Murrelet (*Brachyramphus marmoratus*) is difficult because it nests secretively, high in the canopies of large, old conifers of the Pacific Northwest. In British Columbia, low-level surveying from a helicopter is now a recommended standard method of assessing forested landscapes for key microhabitat features—such as availability of potential platforms and developed moss pads for nests, foliage cover above the nest, and accessibility—that are not distinguishable on air photos, satellite images, or forest cover maps. Using a sample of 111 nest sites and 139 random sites within forests greater than 140 years old and distributed across three study areas in south coastal British Columbia, we confirmed the effectiveness of the aerial survey method for classifying overall habitat quality of murrelet nesting habitat. The minimum map units were 3-ha patches. Overall, 40% of the 111 nest sites were in patches classed as Very High, 36% were in High, 15% were in Moderate, 6% were in Low, and 3% were in Very Low. Our ranking of habitat quality was most strongly influenced by estimates of platform availability and moss development. Using an information-theoretic approach, we identified that the Resource Selection Function scores of nest patches improved as elevation decreased, slope grade increased, and the proportion of emergent and canopy trees with mossy pads increased. We also confirmed that study area location affected the strength of model application. Our findings support the potential utility of the low-level aerial survey method for identifying or confirming Marbled Murrelet nesting habitat for land-management purposes.

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