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FEATURE ARTICLES

LANDSCAPE-SCALE RELATIONSHIPS BETWEEN ABUNDANCE OF MARBLED MURRELETS AND DISTRIBUTION OF NESTING HABITAT

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Abstract. We used radar to count numbers of Marbled Murrelets (*Brachyramphus marmoratus*) flying inland within 10 river drainages on the Olympic Peninsula, Washington, during 1998–2000. We tested whether the numbers of murrelets entering drainages could be predicted from the amount and spatial configuration of low-elevation, late-seral forest (potential murrelet nesting habitat) within drainages. The maximal number of murrelet radar targets was positively correlated with the amount of late-seral forest in each of the three years sampled; this relationship persisted in 1999 and 2000 when controlling for drainage size. Murrelet radar counts were not correlated with the combined amounts of harvested, developed, and agricultural lands in any year. Numbers of murrelets increased as the amount of core area of late-seral forest and proximity of patches increased, and decreased with increasing amounts of edge of late-seral patches. Numbers were not correlated with the percent of late-seral forest, patch density, patch size, road density, or the overall diversity of all habitat types within landscapes. Neither the maximal nor the mean number of inbound Marbled Murrelets differed among years; the effect of year was small relative to the effect of habitat on murrelet numbers. Our results suggest that changes in the amount or distribution of nesting habitat should result in detectable changes in murrelet numbers at the scale of individual drainages. Thus, the amount and distribution of nesting habitat may play a role in the regulation of Marbled Murrelet populations, supporting the contention that providing nesting habitat is an effective conservation and restoration technique for this species.

Key words: Brachyramphus marmoratus, *fragmentation, Marbled Murrelet, monitoring, Olympic Peninsula, radar, river drainage.*