# Radar as a tool for monitoring Marbled Murrelet populations at interior sites on Northern Vancouver Island

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Radar surveys are becoming a standard method for estimating Marbled Murrelet (Brachyramphus marmoratus) populations and determining the importance of watersheds for murrelets along coastal British Columbia and the Pacific Northwest. Abundance indices derived from radar, due to their low among-day variability, can provide useful data for long-term population monitoring. Marine surveillance radar (5 – 10 kW) was used to inventory murrelet populations at both coastal and interior sites on northern Vancouver Island, British Columbia. This project is part of a multi-level management program for Tree Farm Licence 37 that also includes reconnaissance and site-specific habitat assessments, dawn audio-visual surveys and long-term habitat conservation. The radar component of the project is designed to monitor long-term population trends at the landscape level as part of a program to evaluate the effectiveness of the habitat conservation strategy. There were 1149 radar detections of Marbled Murrelets from 25 morning surveys at 19 locations in 2002, and 5502 radar detections from 32 morning surveys at 17 locations in 2003. Included in the 2003 totals are 9 surveys conducted at 5 different sites where two radar units were operated simultaneously to compare detection rates between an untilted 2 m long scanner and a modified scanner with its waveguide tilted upwards approximately 250. Depending on the site, the tilted scanner was able to record between 28 and 916% more murrelet detections compared to the untilted scanner. Inland radar surveys were highly variable and typically had less detections compared to coastal radar surveys. The percentage of detections of 2 or more birds flying close together (pairs) varied greatly among different sites (0 to 47%) but averaged only 7%. Since statistical power is related to sample size, we proposed to continue surveys at sites with the largest number of detections using a radar unit with a tilted scanner.