

Monitoring for population trend and cause of population change in Marbled Murrelets

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We describe a simulation study to explore monitoring methods for Marbled Murrelets (MaMu) in British Columbia to address two general questions: 1) are MaMu being conserved coast-wide; and 2) can comparisons of population trend in different areas be used to evaluate the effectiveness of particular conservation tools, such as Protected Areas or other reserves. The ability to detect trends in MaMu numbers is essential to monitoring their recovery under the Species At Risk Act. Identifying the cause of any detected change in numbers is also necessary if managers are to respond efficiently to those changes once detected. Our study addressed ocean as well as onshore habitats and employed the experimental removal of habitat to attribute the cause of change in numbers to habitat loss onshore versus environmental variation at sea. Our work shows that to identify and manage causes of population change in MaMu correctly and efficiently, we must employ experimental adaptive management and monitoring designs pioneered by fisheries biologists to study the effects of watershed development and environmental change on salmonid populations in BC.