Chapter 5: Marbled Murrelet

Speaker: Martin G. Raphael, Emeritus Scientist, PNW Research Station
Authors

- Martin G. Raphael, Emeritus Scientist, PNW Research Station
- Gary Falxa, US Fish and Wildlife Service, CA (retired)
- Alan Burger, University of Victoria, BC Canada
Nests in trees, feeds in seas
Distribution of nesting habitat

Marbled Murrelet Nesting Habitat (2012)

Murrelet Habitat Suitability
Below threshold
- Habitat capable

Above threshold
- Class 3 (moderately high suitability)
- Class 4 (highest suitability)

- Not habitat capable
- NWFP Inland Zones

Physiographic provinces
1. Washington Olympic Peninsula
2. Washington Western Lowlands
3. Washington Western Cascades
4. Washington Eastern Cascades
5. Oregon Western Cascades
6. Oregon Coast Range
7. Oregon Willamette Valley
8. Oregon Klamath
9. California Klamath
10. California Coast Range

0 60 120 180 240 300 Miles
Key Findings: Population density and distribution

- Highly variable across range
- Highest numbers offshore of nesting habitat
Key Findings: Population trend

![Graph showing population trend by zone](image)

- Key Findings:
  - Population trend by zone:
    - Zone 1: %Annual change
    - Zone 2: %Annual change
    - Zone 3: %Annual change
    - Zone 4: %Annual change
    - Zone 5: %Annual change

- Analysis:
  - Overall trend analysis
  - Zone-specific analysis

- Conclusion:
  - Implications for policy and management
  - Recommendations for future research
Habitat loss from 1993 to 2012 by zone

![Graph showing habitat loss from 1993 to 2012 by zone](image)
Habitat loss, Federal and Nonfederal

On Federal Lands:
• 2% Loss
• Due to fire

On Nonfederal Lands:
• 27% Loss
• Due to harvest
Limiting factors: Is it the seas or the trees?

<table>
<thead>
<tr>
<th>Component</th>
<th>% Influence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trees</td>
<td>55.3</td>
</tr>
<tr>
<td>Seas</td>
<td>33.3</td>
</tr>
</tbody>
</table>
Key Uncertainties

- Future nesting habitat
- Factors affecting rate of nest depredation
- Foraging habitat and prey biomass
- Drivers of annual population change
- Climate change
Conclusions

- Conservation of nesting habitat seems to be key to murrelet conservation
- So far, NWFP reserve system is protecting nesting habitat
- NWFP goal to conserve murrelets by maintaining (short-term), and increasing (long term) nesting habitat remains valid