NORTHERN SPOTTED OWL AND MARBLED MURRELET BRIEFING

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Wildlife Diversity Division

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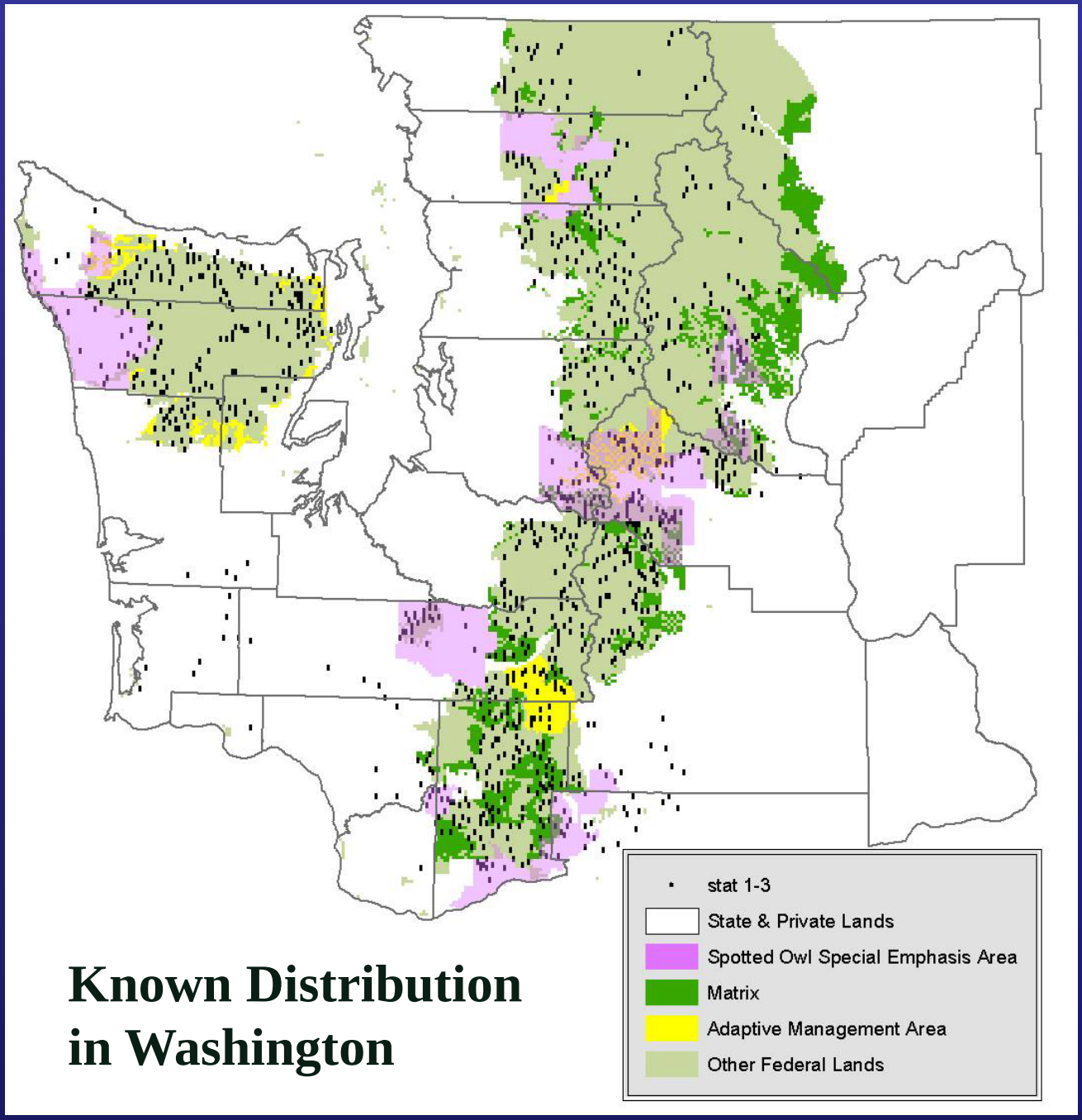
For Each Species:

- Distribution
- Natural History
- Listing Status
- Current Situation
- Ongoing & Future Conservation
- WDFW's Role
- Questions

The Spotted Owl in Washington

Washington Department of FISH and WILDLIFE

Joseph B. Buchanan
Wildlife Diversity Division



Known Distribution in Washington


Natural History

Habitat

- Nesting, roosting, foraging & dispersal
- Structurally complex mature and old forest
  - Large snags & downed wood, multiple canopy layers, moderate to high canopy closure
  - Mistletoe-infected trees in eastern Cascades

Home Range

- WA home ranges are largest documented
- Olympic Peninsula: median home range = 14,232 acres (~4,411 - 27,298 acres), or a 2.7-mile radius circle
- Cascade Range: 1.8-mile radius circle

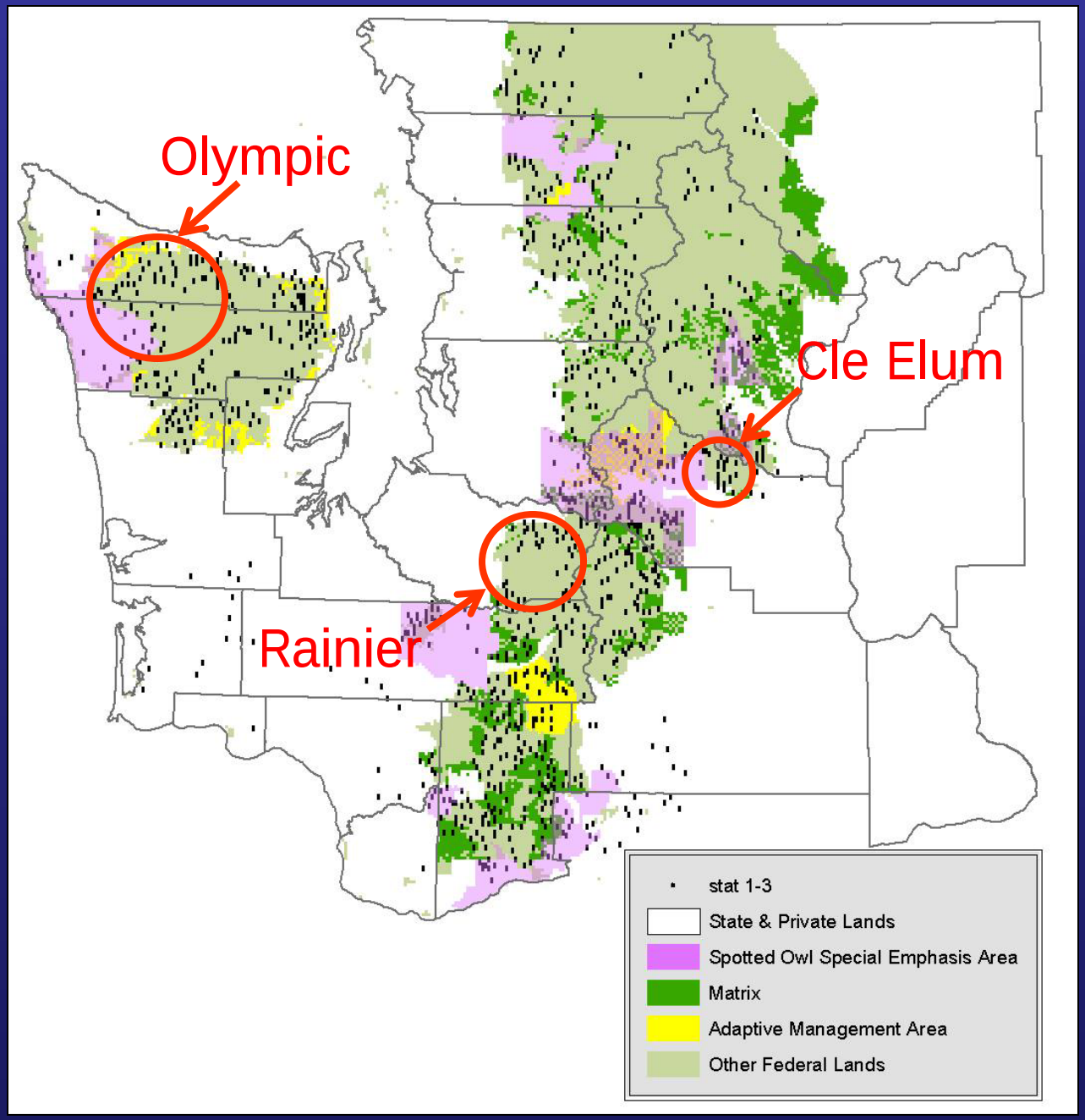
Listing Status

- 1988: designated as endangered by WA Fish & Wildlife Commission
- 1990: ESA listed as threatened
  - Loss & degradation of habitat

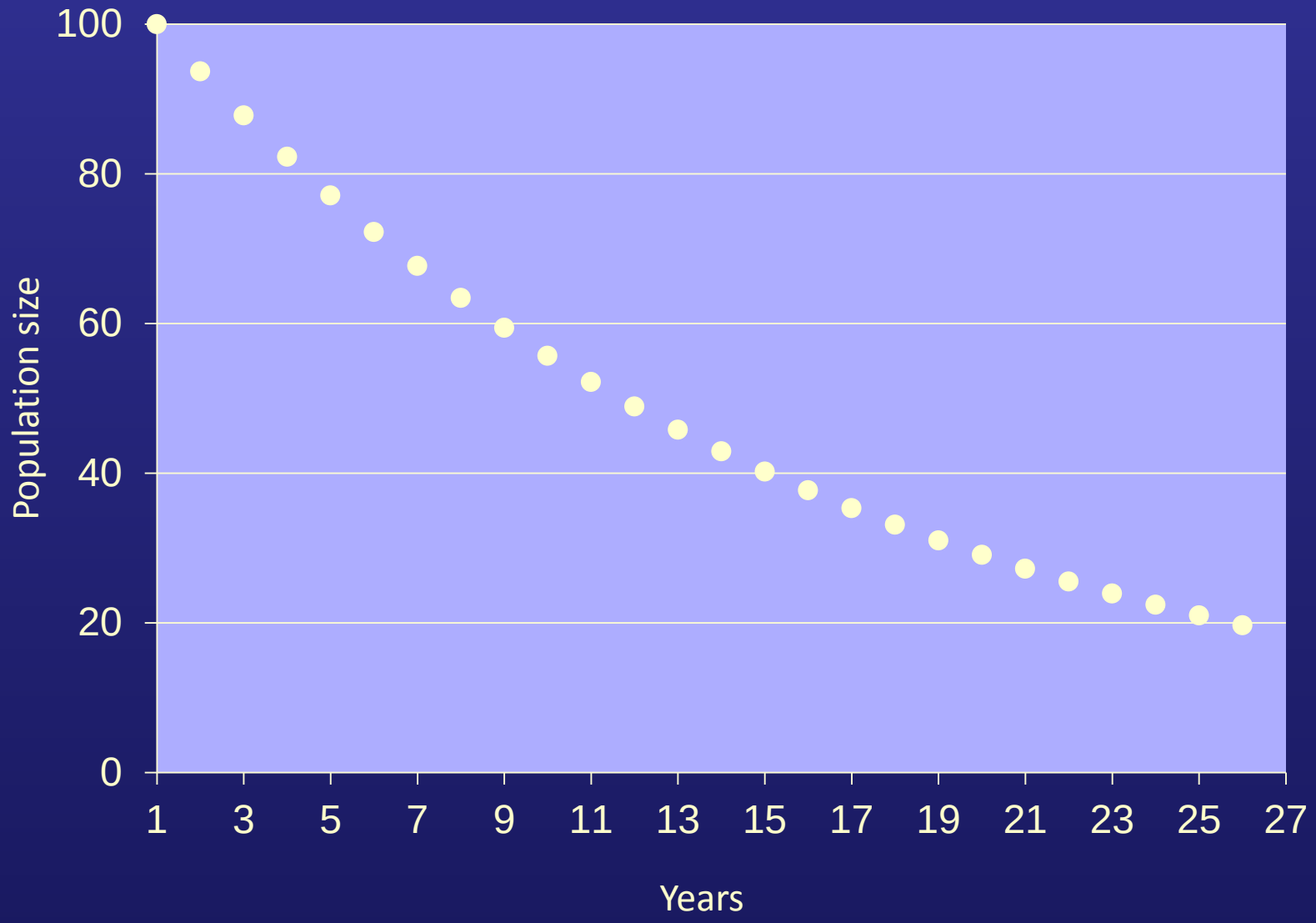

Current
Situation

Population Status

- NSO populations declining in 7 of 11 study areas range-wide (Forsman et al. 2011)
- Declines most substantial in WA and n. OR
- Three demography study areas in WA:
  - Cle Elum: rate of change = 0.937; - 6.3% / year
  - Olympic NP: rate of change = 0.957; - 4.3% / year
  - Rainier: rate of change = 0.929; - 7.1% / year


Olympic
Cle Elum
Rainier
stat 1-3
State & Private Lands
Spotted Owl Special Emphasis Area
Matrix
Adaptive Management Area
Other Federal Lands

Rate of change = 0.937 (-6.3%/yr)



Limiting Factors

- Habitat loss
  - Harvest
  - Fire
  - Windthrow
  - Insects/disease

- Other factors:
  - Barred Owls
  - Predation
  - Weather
  - Disease (e.g. West Nile Virus)

Habitat Management

- Federal Lands:

  Northwest Forest Plan, Critical Habitat, and Consulting with USFWS

- Private & State Lands:

  Habitat Conservation Plans, Forest Practices Rules

Habitat Loss in Washington

	Harvest	Wild-fire	Insect	Other	Total loss	% loss from 1993
Federal	33,000	55,700	35,700	9,400	133,800	-4.8
Non-Federal	271,100	6,800	10,700	0	288,600	-31.2
Total	304,100	62,500	46,400	9,400	422,400	-11.4

*Northwest Forest Plan 15 Year Report for NSO


Competition with
Barred Owls

Barred Owl Background

- Barred Owl arrived in 1960s; now occupy entire Northern Spotted Owl range

- Barred Owls:
  - Habitat & prey generalists
  - Much smaller home range
  - More productive
  - Greater dispersal ability
  - Larger & more aggressive

Barred Owl Removal Experiments

- U.S. Fish & Wildlife Service Environmental Impact Statement (2013)
- Study goals:
  - A better understanding of the impacts of Barred Owl on Spotted Owl populations.
  - Assess ability to reduce Barred Owl populations to a level (with maintenance control) that permits Spotted Owl population growth.
  - Allow for an estimate of the cost of Barred Owl removal.

Barred Owl Removals (cont.)

- 4-5 study areas, including one in WA (Cle Elum)
- Involves large landscapes
- Experiment design: treatment (removal) areas and control (no removal) areas
- Minimum 4 year duration
- Evaluate data; assess feasibility of other types of implementation (e.g. maintenance control)

The Future…

Forest health & fire risk management in the eastern Cascade Range need to be addressed, especially given climate change effects.

The Future…

- Conservation incentives for nonfederal lands (e.g., easements, mitigation banking, safe harbor agreements).

- Outcome of Barred Owl removal experiments should inform feasibility and cost of maintenance control.

WDFW's Role

- Periodic Status Review in progress
- Policy engagement on the Forest Practices Board and Northern Spotted Owl Implementation Team
- Modeling work to support incentives program
- Maintain statewide database of Spotted Owl locations
- Technical consultation (e.g. working groups)
- Review Forest Practice Applications
- Field research

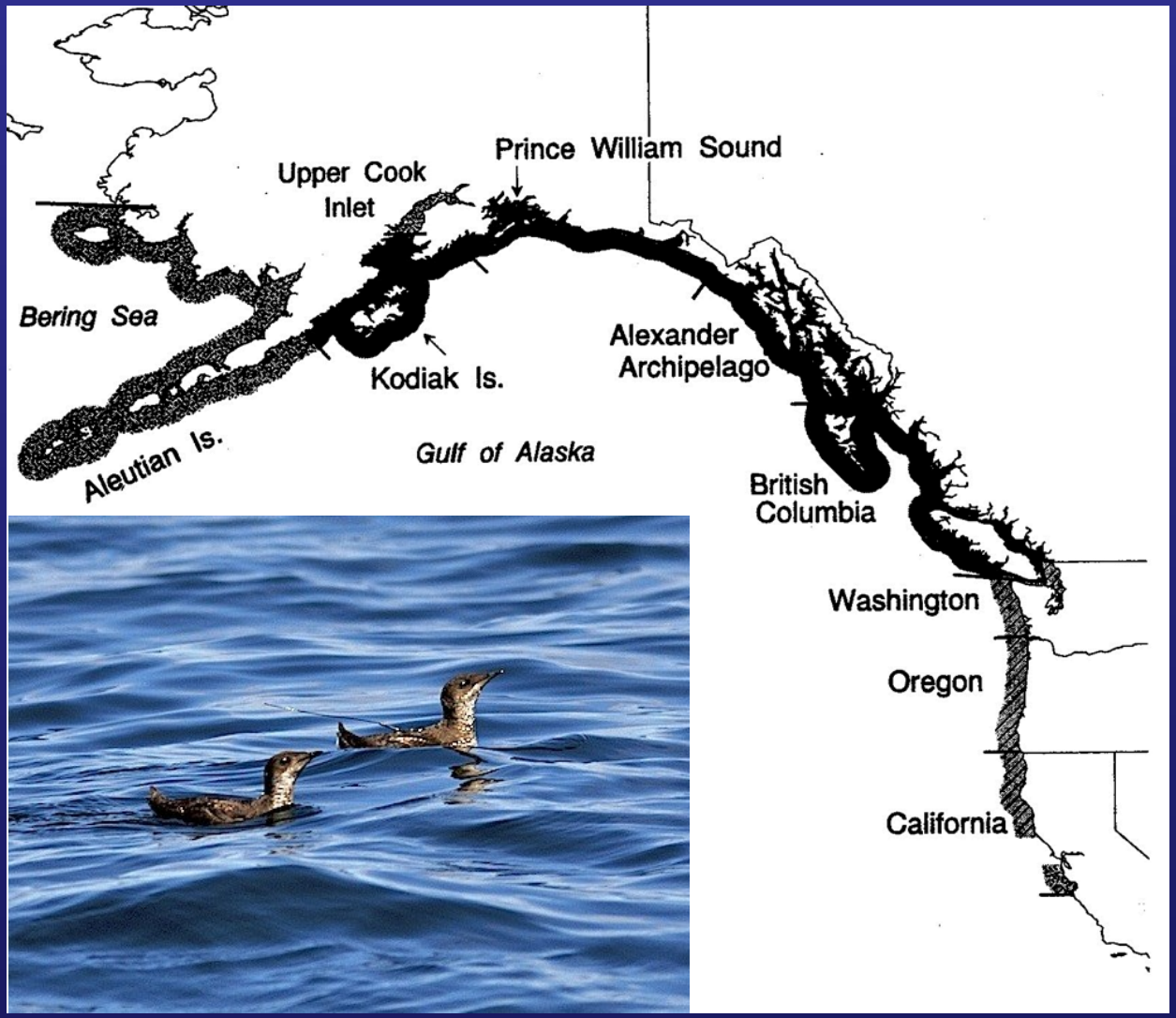

Questions?
Photographs: Jared Hobbs, Tracy Fleming, Lauren Burnes

Marbled Murrelets in Washington

Steve Desimone

Washington Department of FISH and WILDLIFE

Range of Marbled Murrelet



Natural History

- Robin–sized seabird (Alcidae)
- Lives in 2 worlds; majority at sea
- Forages for small fish (herring, anchovy, juv. rockfish, sand lance) within the near-shore zone out to ~3-5 miles
- Nests inland on limbs of old and mature conifer trees

Natural History

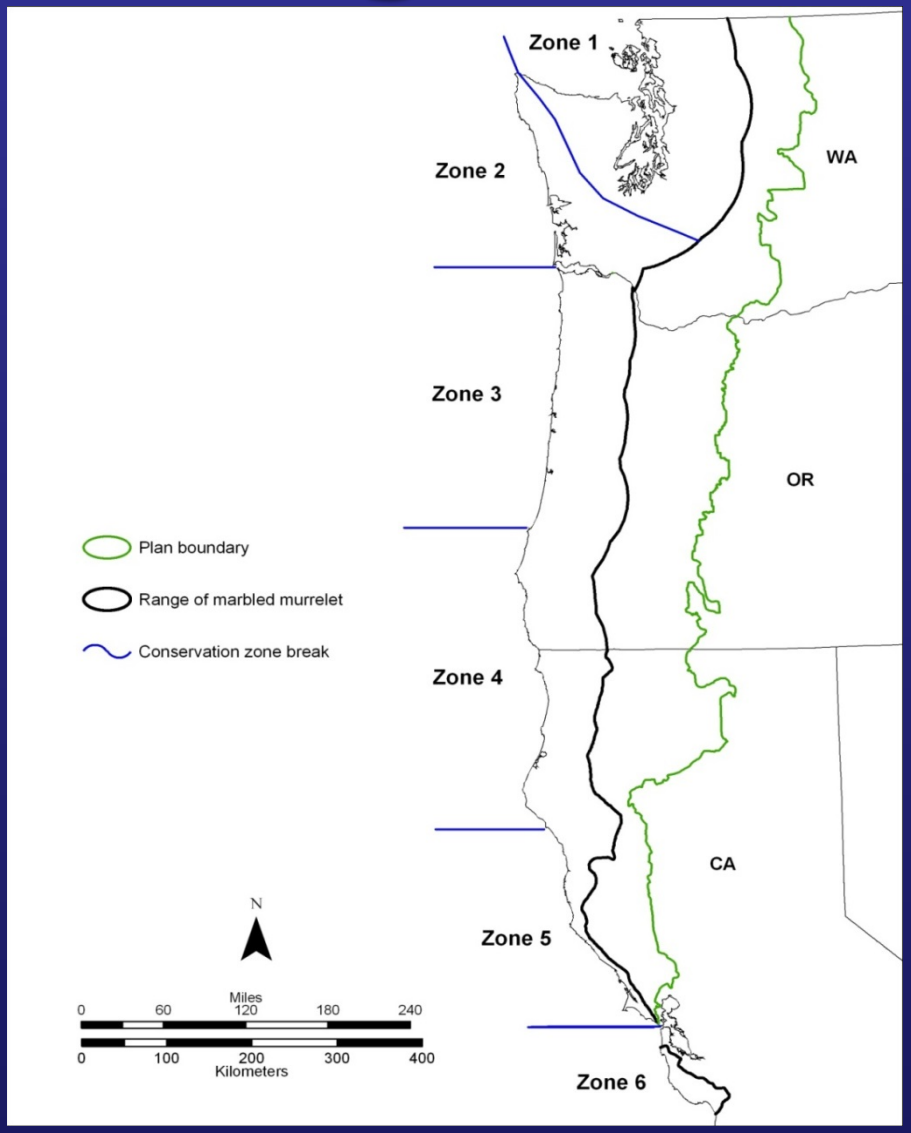
- Cryptically-colored and fast-flying
- In spring/summer silently visits nesting stands before/during dawn and at dusk
- High fidelity to nest areas
- 1 large egg per clutch
- Known nest sites to 37 miles inland; behaviors associated with nesting recorded up to 55 miles inland

Terrestrial Vocalizations

- Keer
- Whistle
- Groan/grunt

Status & Listings

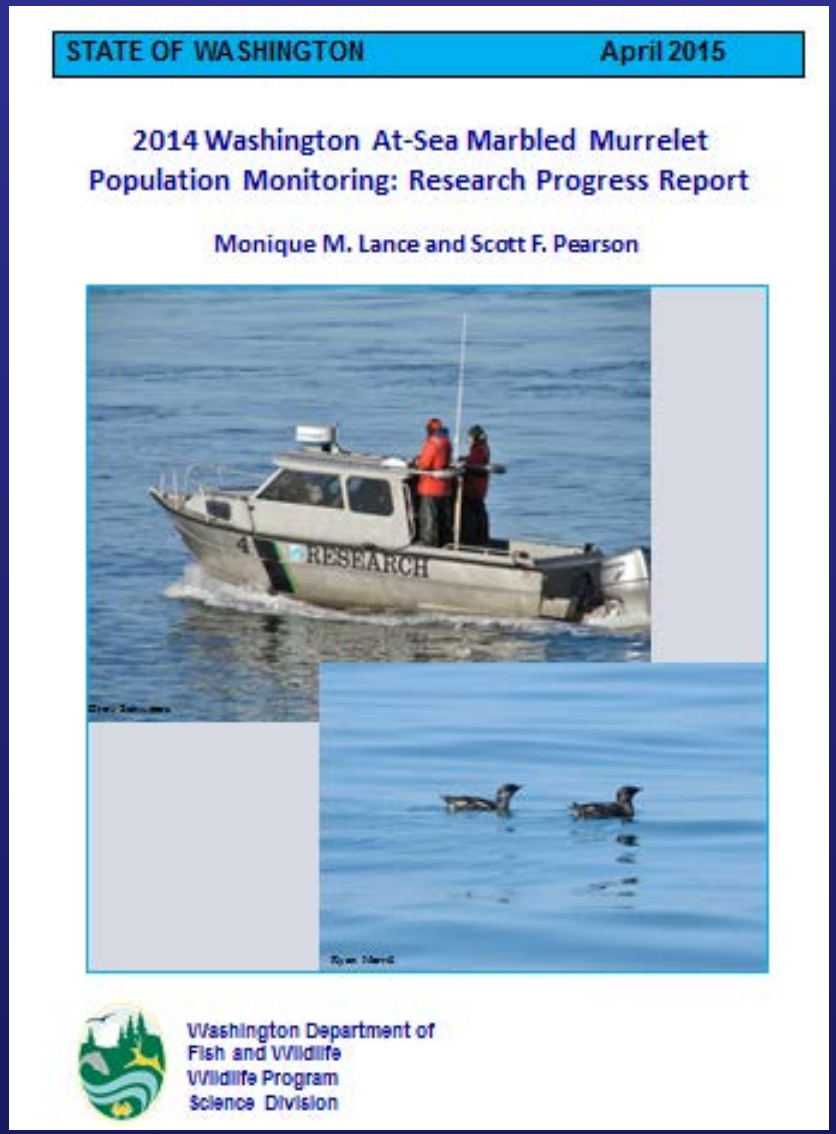
- Federally Threatened in WA, OR & CA since 1992
- Distinct Population Segment, confirmed with genetic evidence
- Primary cause of decline was loss and modification of old forest nesting habitat
- Other causes include low juvenile recruitment, chemical pollution, bycatch mortalities



Status & Listings

- Listed as State Threatened in 1993 by the F&W Commission
- USFWS designated ~3.8 million acres of federal, state, and private land as critical habitat in 1996
- Federal Recovery Plan in 1997

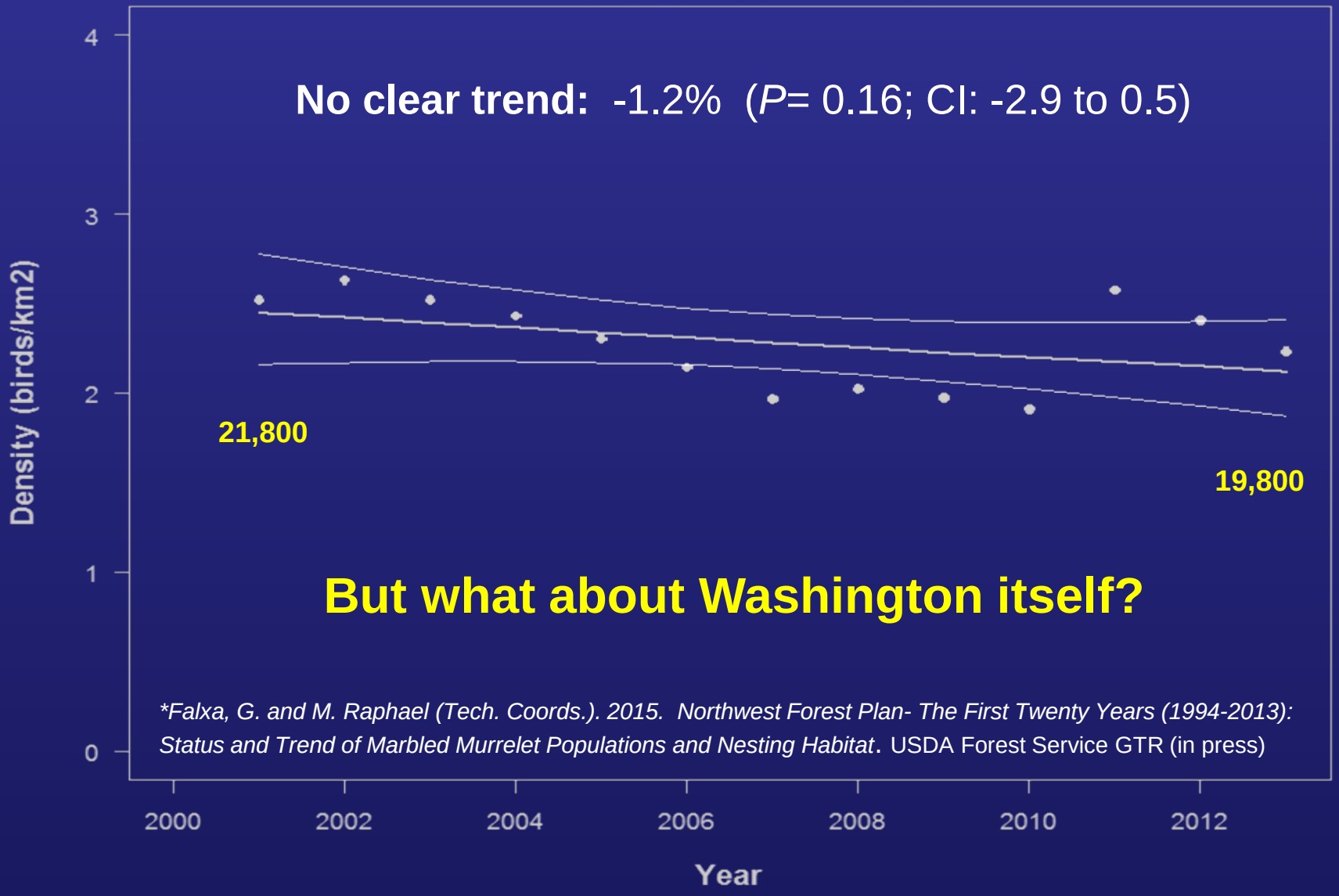
Population Monitoring



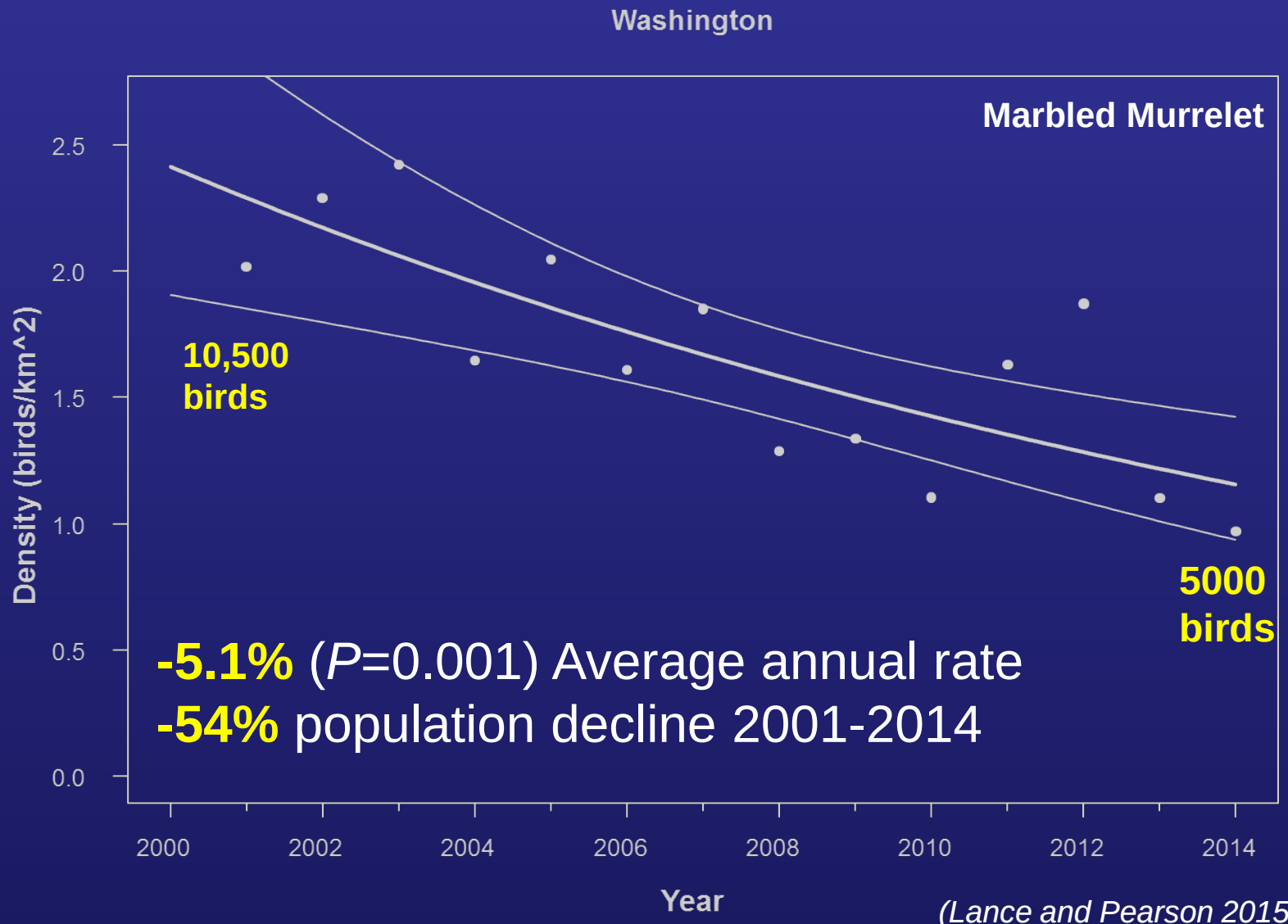
- Difficult to see and locate birds in vast forest tracts
- Highest density in marine environment during June-July breeding
- Standardized “At-Sea” transect surveys conducted since 2000: WDFW (lead), USFS, USFWS

Population Trend for WA, OR & CA

At–sea estimate



Washington Density Trend: Declining



(Lance and Pearson 2015)

POPULATION: Annual Trend

(2000/01 to 2013, With 95% Confidence Intervals)

Low Nest Success is a Major Concern

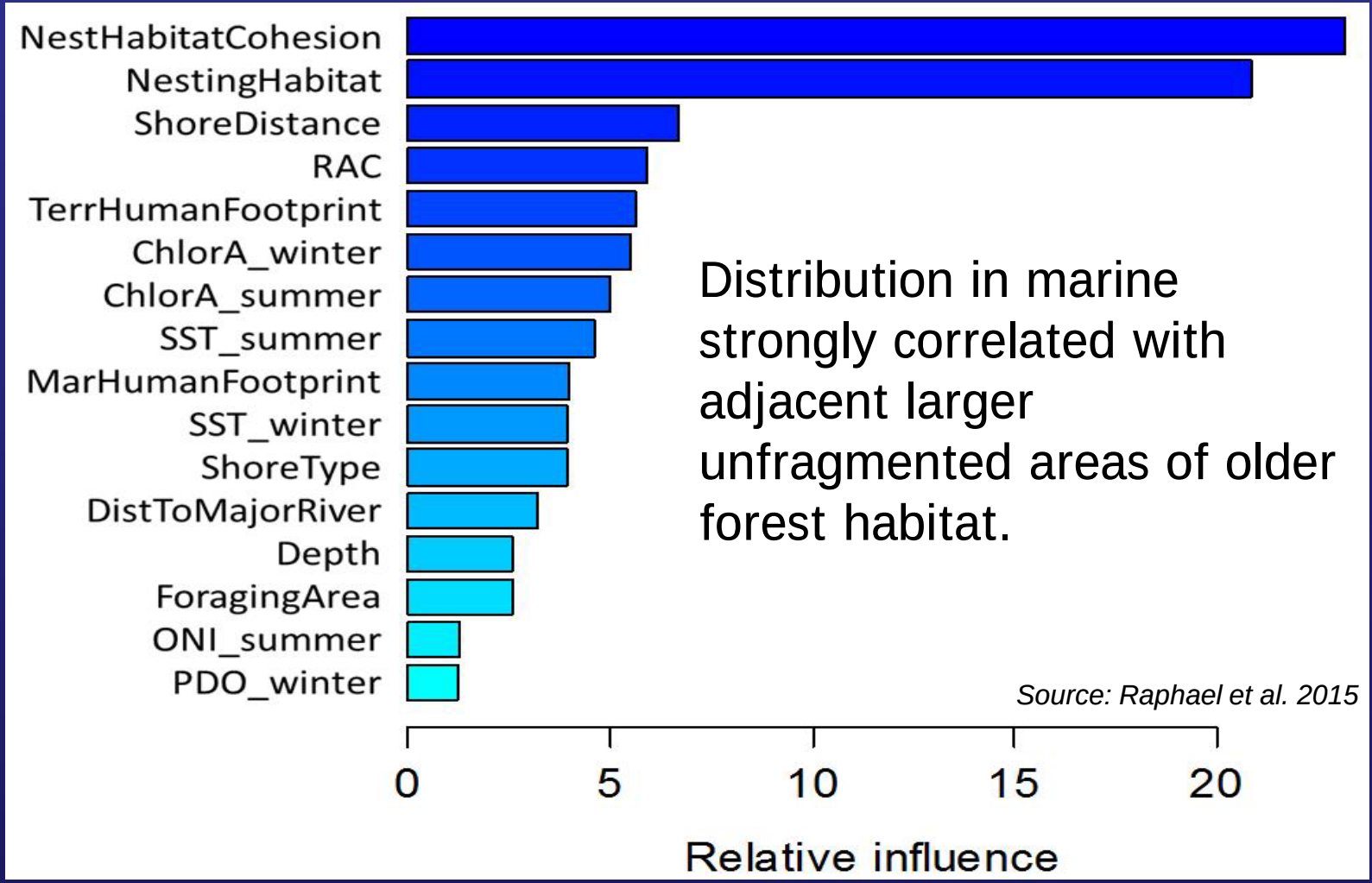
- Nest success influenced by:
  - Forest structure of nest stand
  - Human disturbance
  - Fragmentation of habitat
- Marine prey availability
- Energetic cost of food delivery

Terrestrial and Marine Influences

- 2 studies: different focus, similar conclusion

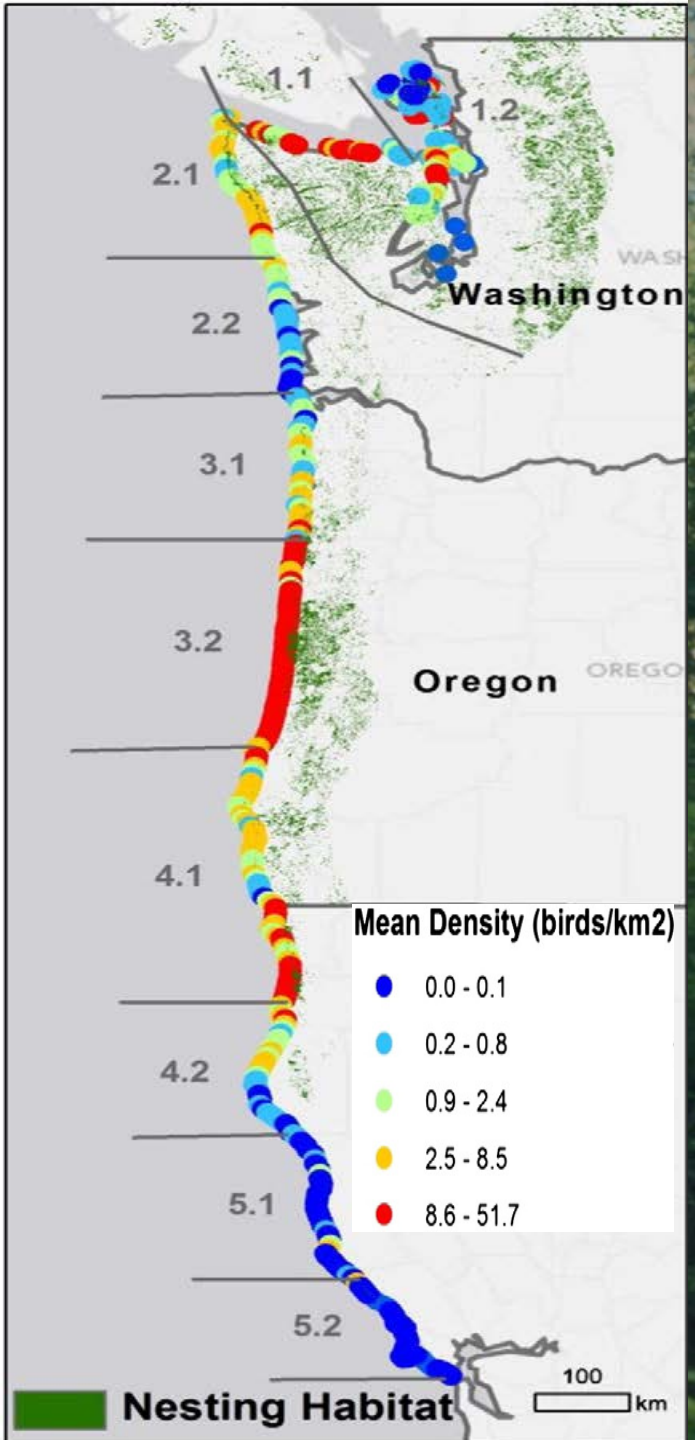
- Relative effect of nesting habitat on marine murrelet locations
  - Raphael et al. (2002)- Terrestrial survey
  - Raphael et al. (2015)- Marine incorporated

Larger terrestrial habitat blocks have most influence on murrelet location



Distribution in marine strongly correlated with adjacent larger unfragmented areas of older forest habitat.

Source: Raphael et al. 2015

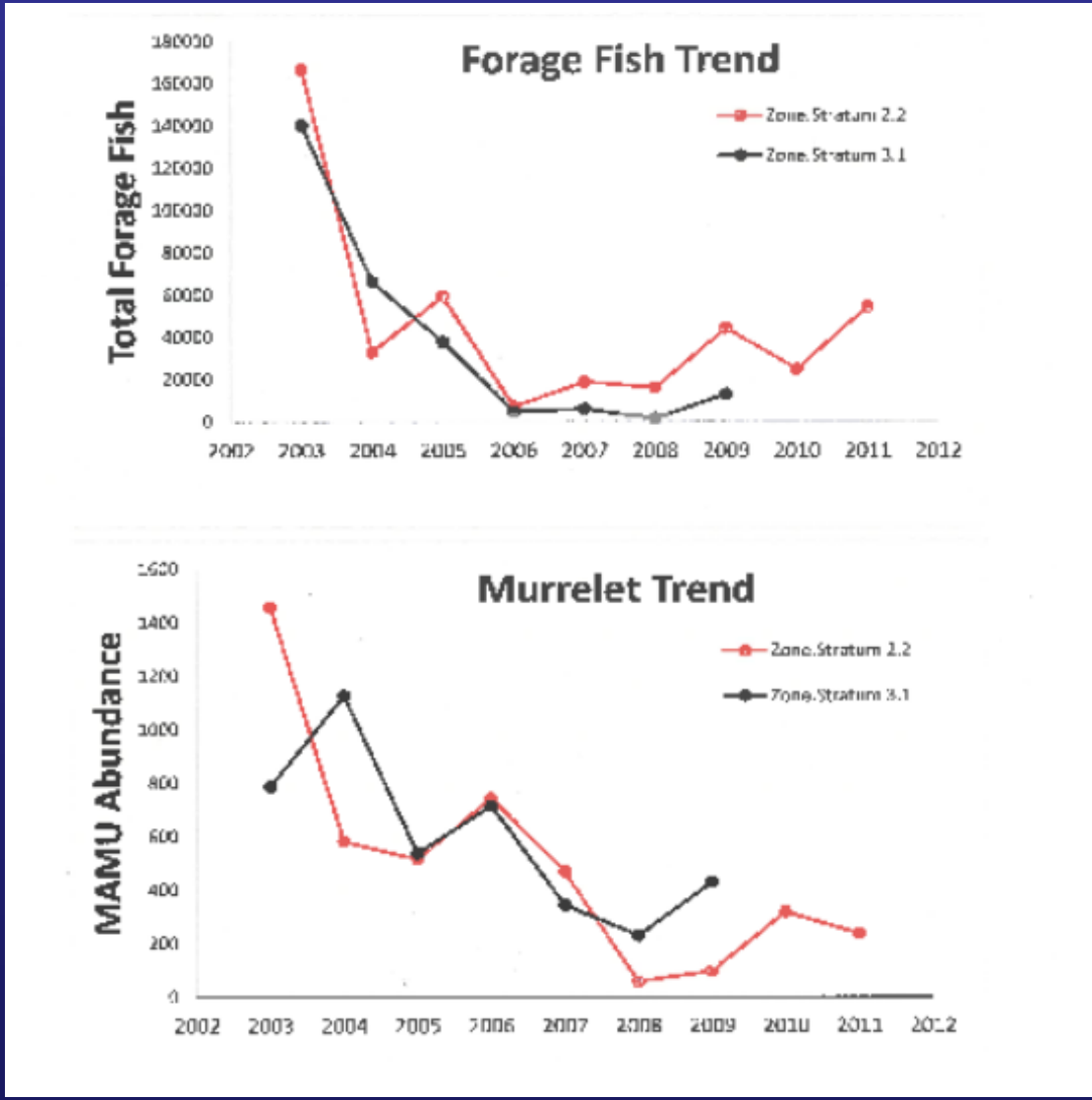


Highest densities offshore of reserved federal lands throughout the NWFP area

- **WA- Olympic NF and Park**
- **OR- National Forest**
- **CA- Redwood Parks**
- **Other federal Critical Habitat (e.g., BLM)**

map: Raphael et al. 2015

Forage Fish at Mouth of Columbia River



Habitat Management

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- Private & State Lands:

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Forest Habitat Change in WA

NW Forest Plan* estimate

1993 baseline to 2012

Habitat loss	- 418,400 acres (27%)
Habitat gains	+212,700
Net habitat change	**-205,700 acres**

-13.3% over 20 years

Loss of higher quality habitat may not be balanced by gains of new lower quality habitat

**(Falxa and Raphael 2015)*

Future Outlook and Needs

- Research funding needed to investigate low reproduction, forage fish availability and improve “land-sea” models
- Minimize future nesting habitat loss
- Future habitat (mostly federal reserves) expected in <50 yrs
- Methods needed to assess process and timing of nesting habitat development in 2nd growth

WDFW's Role

- At-sea monitoring & research
- Periodic Status Review in progress
- Consult with partner agencies on Habitat Conservation Plans, Safe Harbor Agreements and Forest Practices Applications
- Survey Review
- Maintain State-wide Database


Questions?
Photo by Nick Hatch