RMPs for Western Oregon

Northern Spotted Owl
and
Northern Spotted Owl Critical Habitat

Basis of the NSO analyses

- Clearly-defined, science-based criteria
- Landscape-level contributions
- Locations of “large habitat block” development
- Forecasting NSO population responses to alternative management scenarios
- Expert review

Basis of the NSO analyses

- NSO Working Group
  - BLM: Jena DeJuilio, Craig Ducey, Joe Graham, Eric Greenquist, Bruce Hollen, Carolina Hooper, Rex McGraw, Arthur Miller
  - U.S. Fish and Wildlife Service: Betsy Glenn, Jim Thrailkill, Brendan White
  - U.S. Forest Service: Ray Davis
  - Environmental Protection Agency: Nathan Schumaker
  - Humboldt State University: Jeff Dunk
  - Natural Resource Geospatial: Dave LaPlante
- Internal reviews
- Westside BLM biologists' review
- Independent scientists: Marty Raphael, Bruce Marcot, Peter Singleton

Basis of the NSO analyses

Relative Habitat Suitability Surfaces

- RHS score 0-100 for each 30 × 30 m pixel
- Based on biotic and abiotic variables
- Reflects how NSOs select and use habitat
- Original to the BLM
- Range-wide, all land ownerships
- Change at decadal increments, 2013 - 2063
- BLM-administered lands:
  - Based on Woodstock covariates
  - Incorporate ingrowth, treatment and wildfire
  - Vary by alternative
- All other lands:
  - Based on USFS GNN/CVS covariates
  - Incorporate ingrowth, timber harvest and wildfire
  - Do not vary by alternative

Basis of the NSO analyses

1990 Interagency Scientific Committee

- Conservation Need 1
- Conservation Need 2

U.S. Fish and Wildlife Service (2004 Courtney Report; 2006 Meta-analysis)

- Conservation Need 3
- Conservation Need 4

2011 NSO Revised Recovery Plan

- Recovery Action 6
- Recovery Action 10
- Recovery Action 12
- Recovery Action 32

2012 NSO Critical Habitat *Final Rule*

- Special management considerations or protections
  - Four for the moist forest
  - Eight for the dry forest

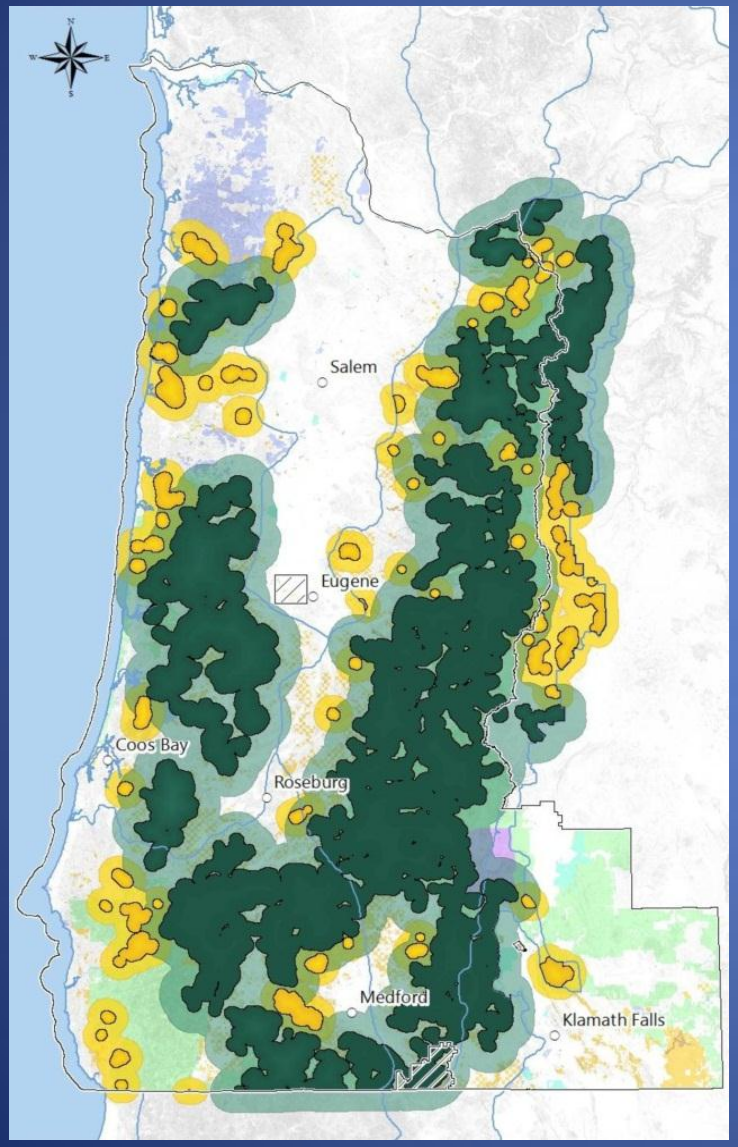
Conservation Need 1

Large blocks of nesting, roosting and foraging habitat that support clusters of reproducing owls, are distributed across a variety of ecological conditions, and are spaced to facilitate owl movement between the blocks

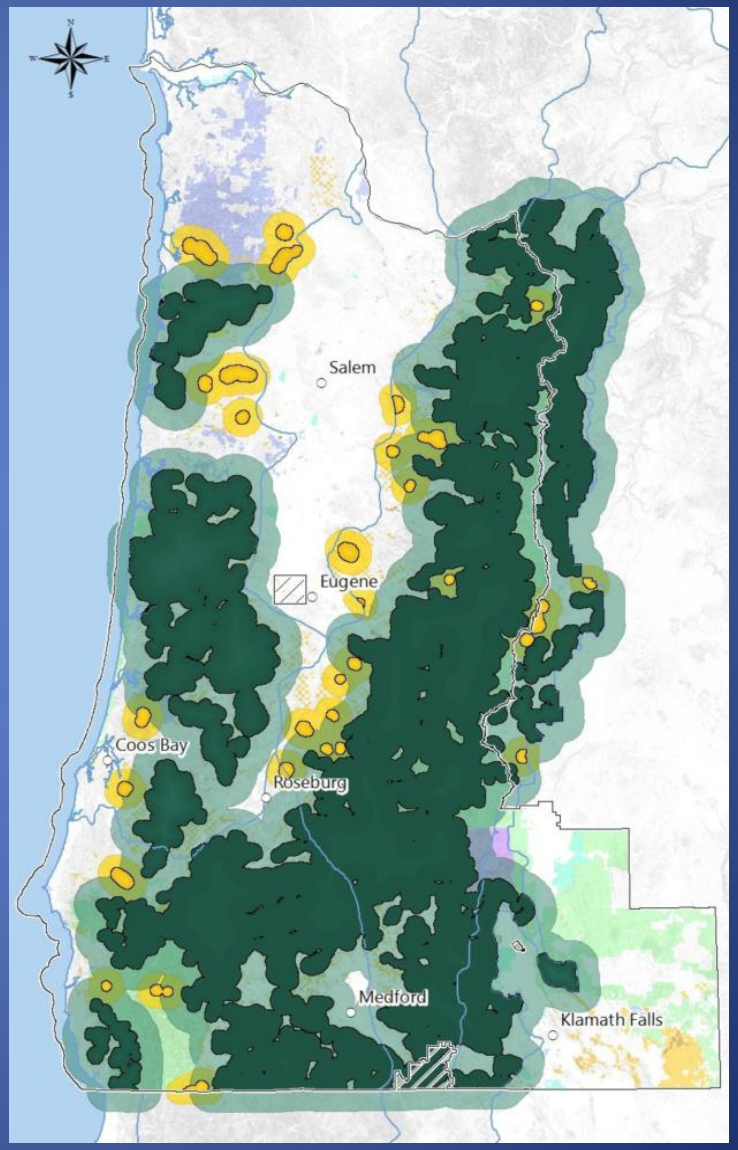
- Cluster: ≥ 25 NSO nesting pairs that support each other demographically
- Large block of NRF: capable of supporting ≥ 25 NSO nesting pairs
- Small block of NRF: capable of supporting 1 – 24 NSO nesting pairs.
- Variety of ecological conditions: Physiographic Provinces
- Spaced to facilitate owl movement: ≤ 12 miles; ≤ 7 miles

No Harvest Reference Analysis

2013



2063



Conclusions for Conservation Need 1

- The different Late-successional Reserve designs make similar contributions to the development of large habitat blocks over time.
  - No Action is based on the NWFP LSR and MLSA network, plus riparian reserves.
  - Alternative D is based on reserving older forest stands and stands associated with the 2,465 known and historic northern spotted owl sites on BLM-administered lands.
  - All other alternatives are based on delineations of those BLM-administered lands that best contribute to large block development.
- All alternatives reserve those lands necessary to support large habitat blocks, properly spaced, in all ecological conditions.
- Once those lands are reserved, reserving additional lands provides little added support to the development and spacing of large habitat blocks.
- Under all alternatives, the BLM would contribute to a western Oregon landscape that meets Conservation Need 1.

Conservation Need 2

Habitat conditions within and surrounding large blocks of nesting, roosting and foraging habitat that facilitate owl movement between the blocks and ensure the survival of dispersing owls

- Demographic support; population stability
- Genetic interchange; vigor
- Survival until owls can establish a nest territory

Conservation Need 2

Habitat conditions within and surrounding large blocks of nesting, roosting and foraging habitat that facilitate owl movement between the blocks and ensure the survival of dispersing owls

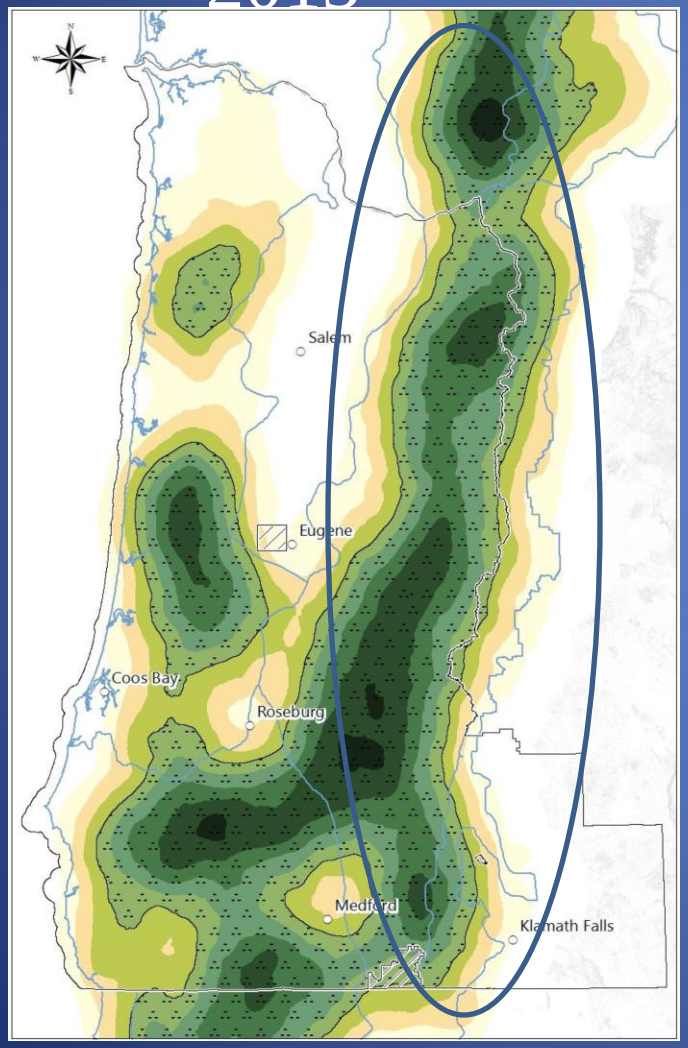
- BLM's contributions to
  - Dispersal-capable lands (based on habitat structure and juxtaposition)
  - Dispersal flux (based on simulated owl movement and survival)

Dispersal-capable lands

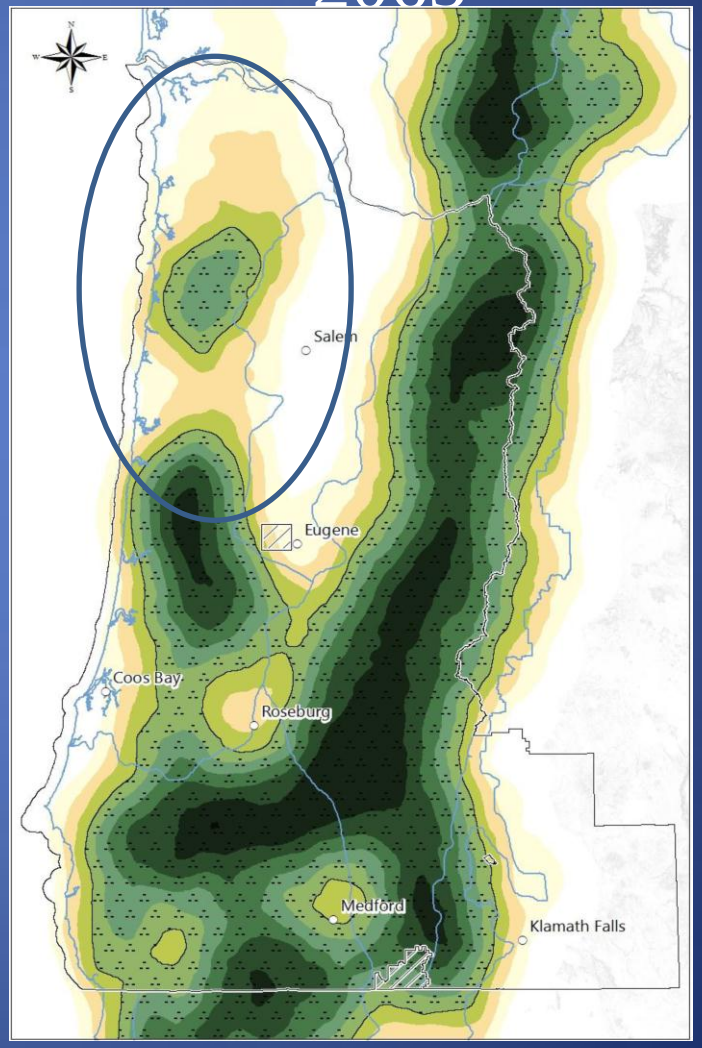
- Interagency Scientific Committee definition of dispersal habitat:
  - Mean trunk diameter ≥ 11 inches DBH
  - Canopy closure ≥ 40 percent
- Methods developed by Davis and Dugger (2011)
  - 40 percent habitat within a 15.5-mile radius circle
- Marcot *et al*. (2012:202) found "The various combinations of size and spacing of habitat clusters that produced at least 35–40% of the landscape in habitat seemed adequate to provide for successful NSO dispersal and recolonization."

No Harvest Reference Analysis
Dispersal-capable Lands

2013

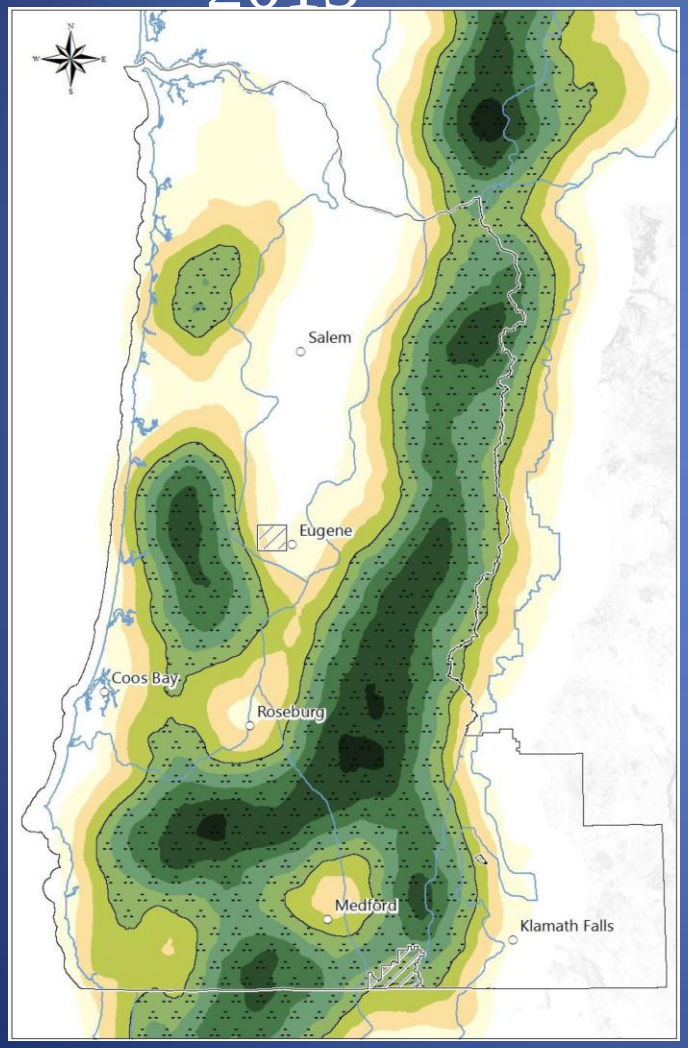


2063

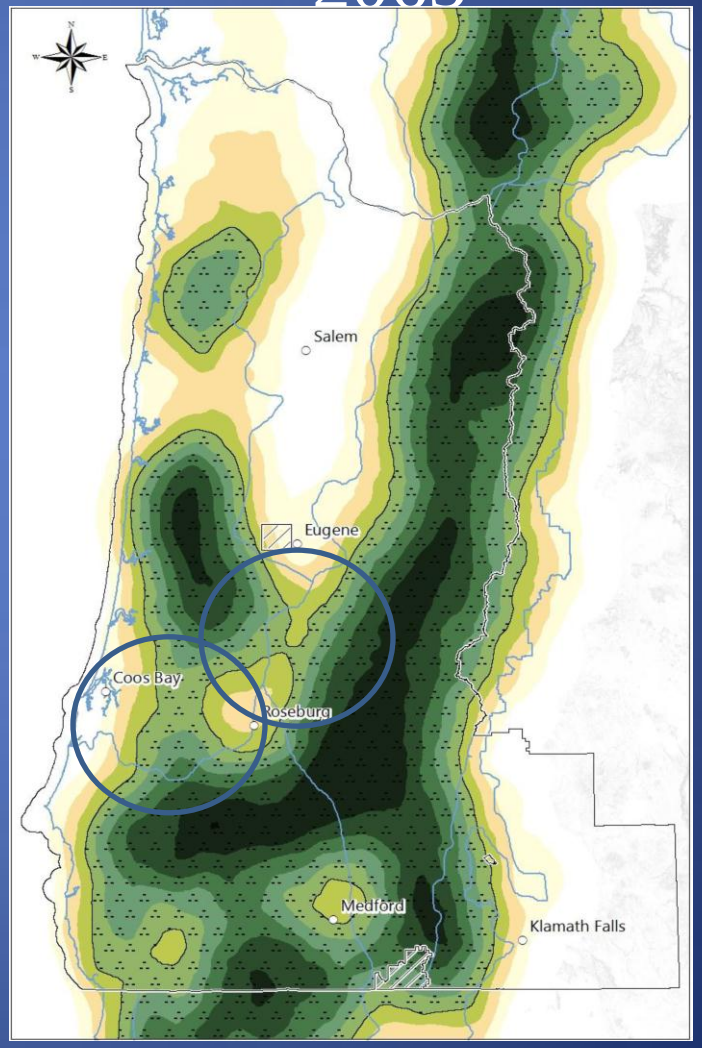


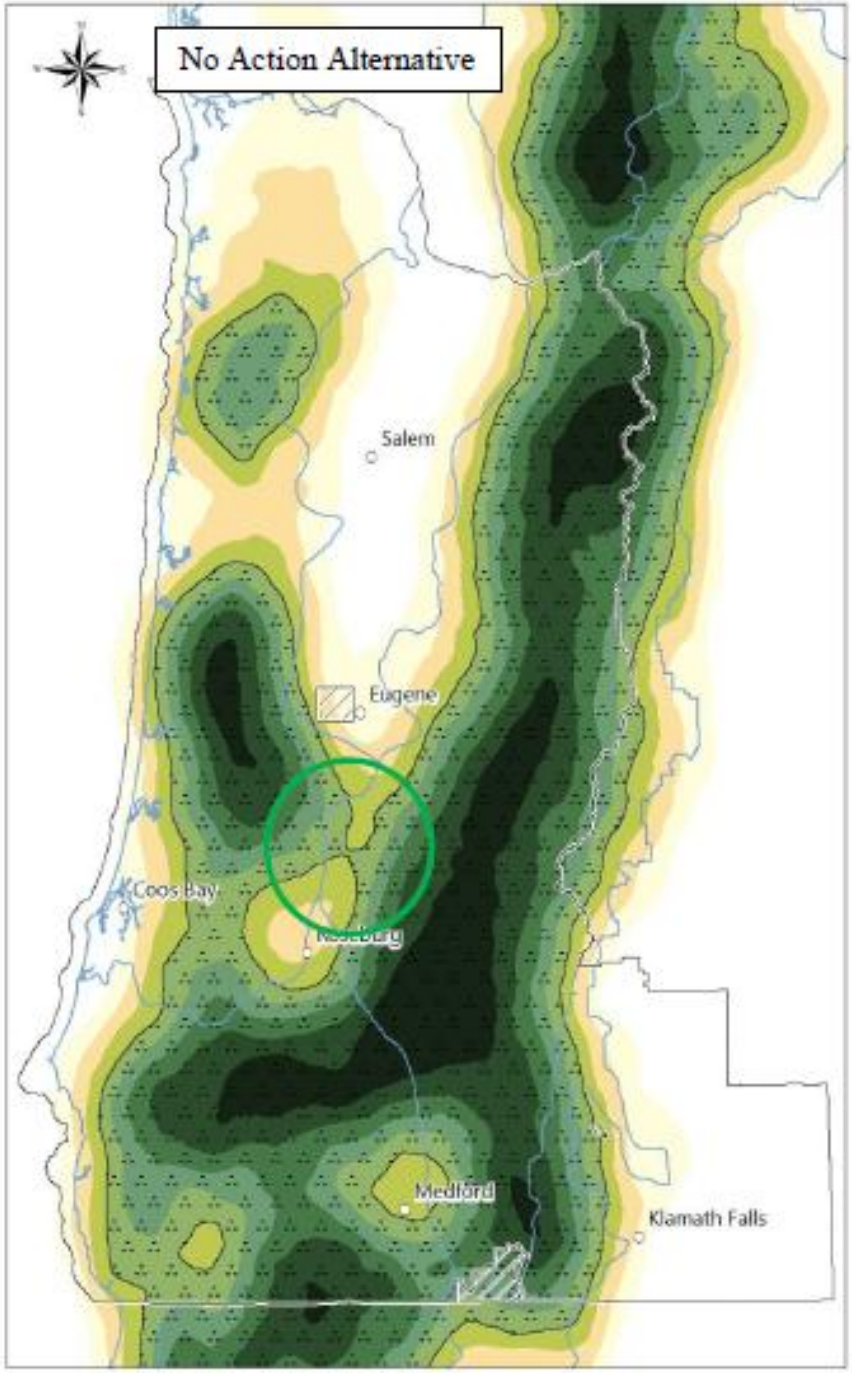
No Harvest Reference Analysis
Dispersal-capable Lands

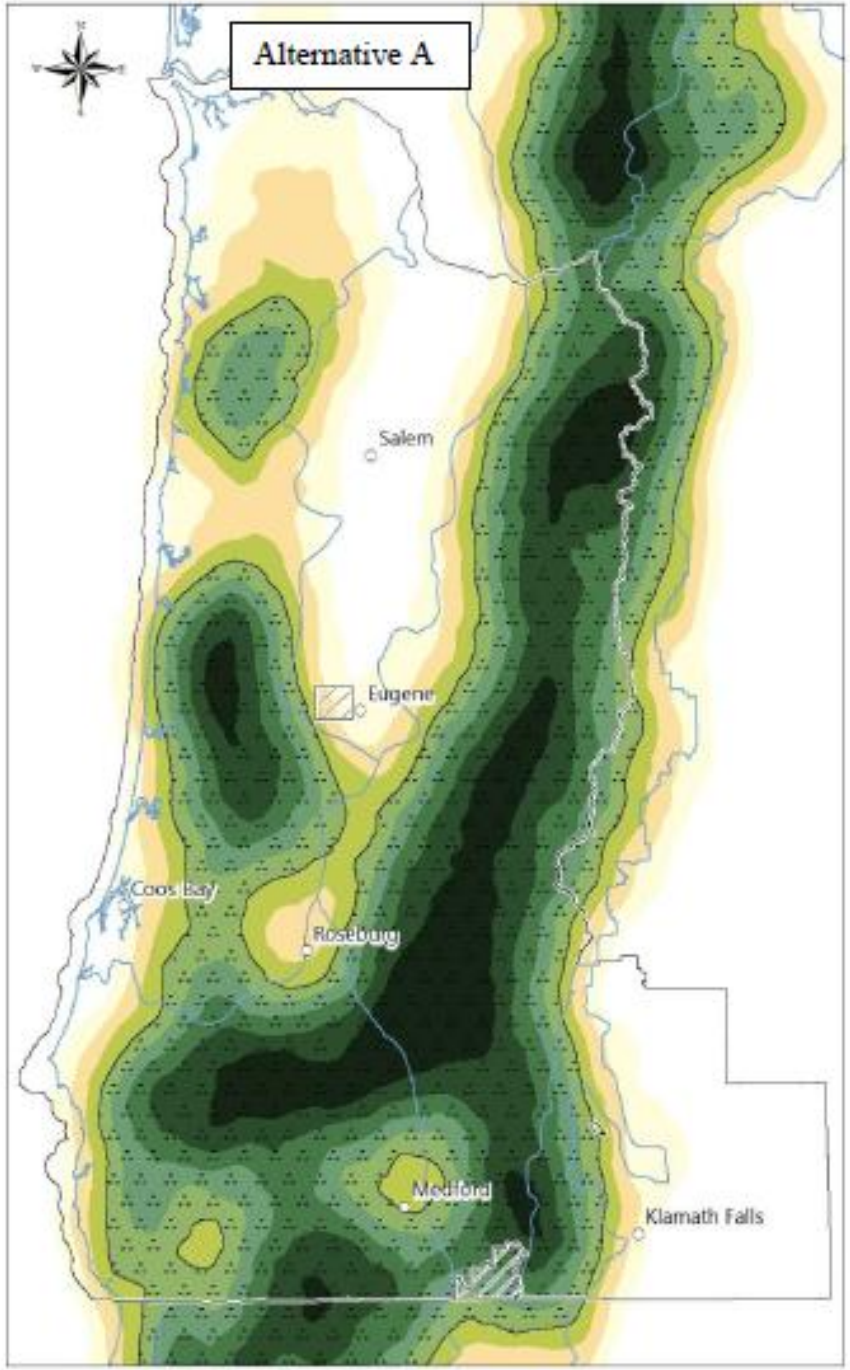
2013



2063

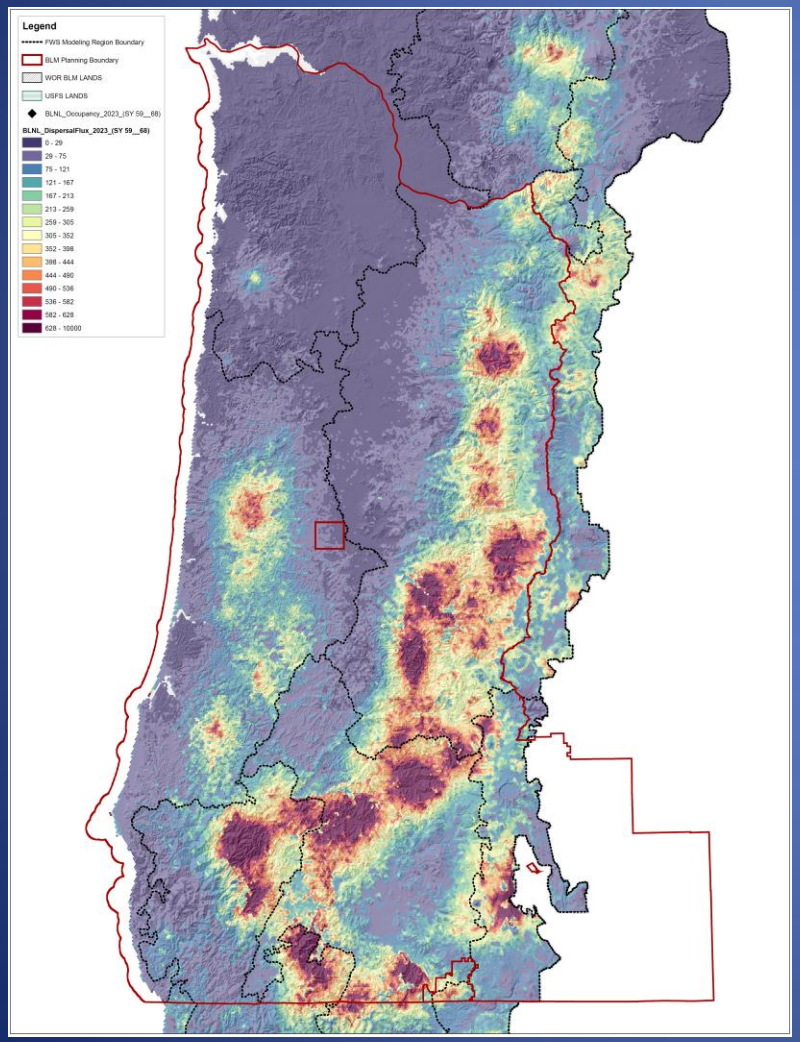



No Action Alternative
Salem
Eugene
Coos Bay
Roseburg
Medford
Klamath Falls

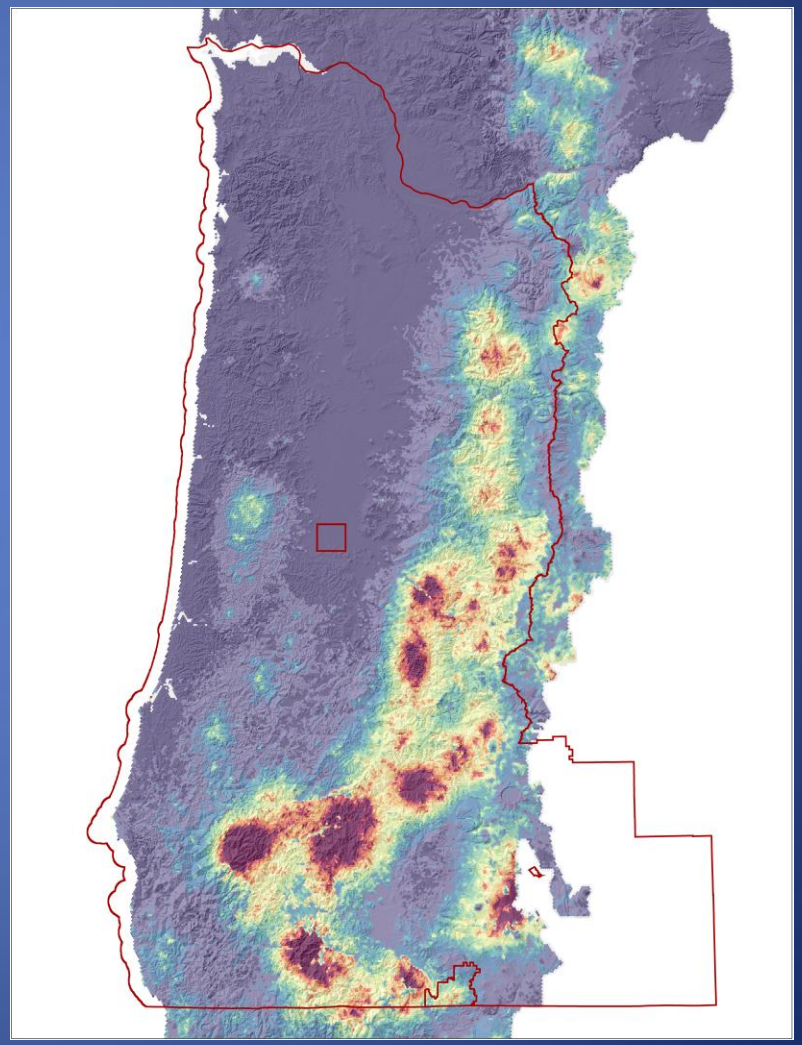

Alternative A
Salem
Eugene
Coos Bay
Roseburg
Medford
Klamath Falls

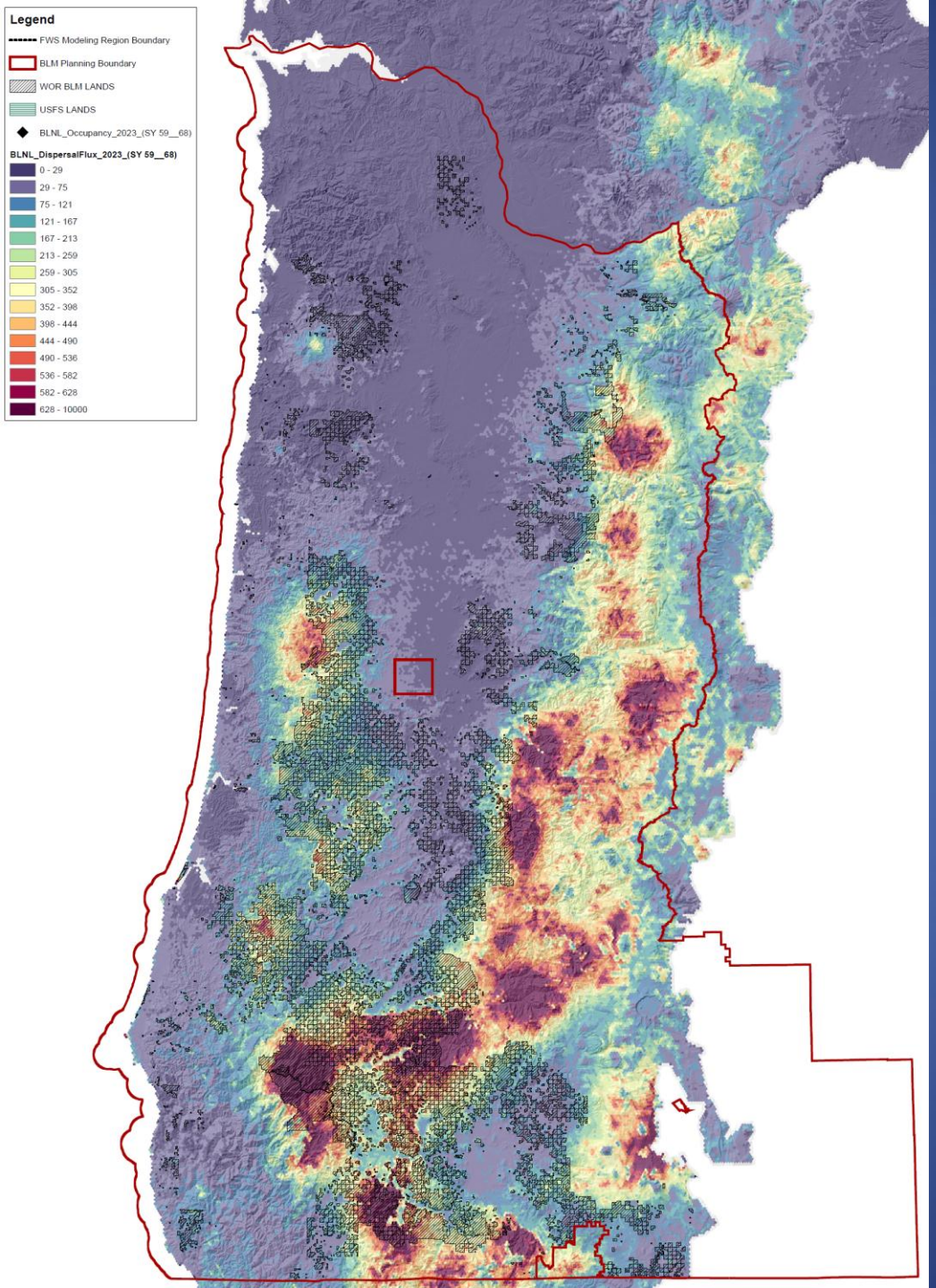
No Harvest Reference Analysis
Dispersal Flux

2013 -2023



2053 - 2063




Legend
FWS Modeling Region Boundary
BLM Planning Boundary
WOR BLM LANDS
USFS LANDS
BLNL_Occupancy_2023_(SY 59__68)
BLNL_DispersalFlux_2023_(SY 59__68)
0 - 29
29 - 75
75 - 121
121 - 167
167 - 213
213 - 259
259 - 305
305 - 352
352 - 398
398 - 444
444 - 490
490 - 536
536 - 582
582 - 628
628 - 10000

Conclusions for Conservation Need 2

- The No Action alternative, Sub-alternative B and Alternative D would better support east-west northern spotted owl dispersal-capability between the Oregon Coast Range and Oregon Western Cascades provinces then would the other alternatives and comparable to the full capability of BLM-administered lands determined by the No Timber Harvest reference analysis
- In its *final rule* on critical habitat, the U.S. Fish and Wildlife Service identified east-west connectivity through this area as essential to the conservation of the northern spotted owl
- BLM-administered lands make important contributions to regional movement and survival in the southern Coast Range and Klamath provinces.

Conservation Need 4

In areas of significant population decline, sustain the full range of survival and recovery options for the northern spotted owl in light of significant uncertainty.

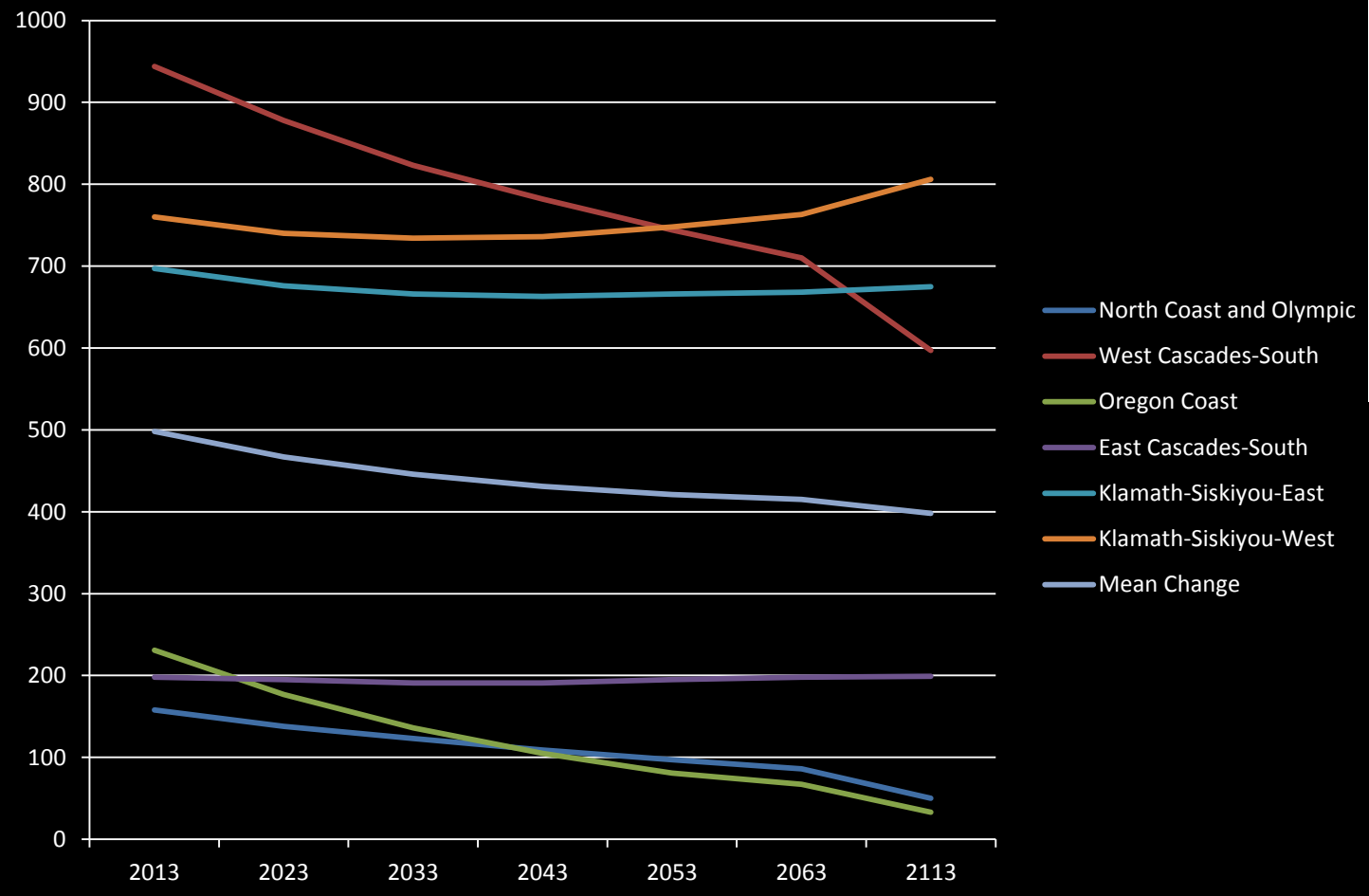
- U.S. Fish and Wildlife Service's 2006 species review identified threats:
  - Continued habitat loss
  - Barred owls

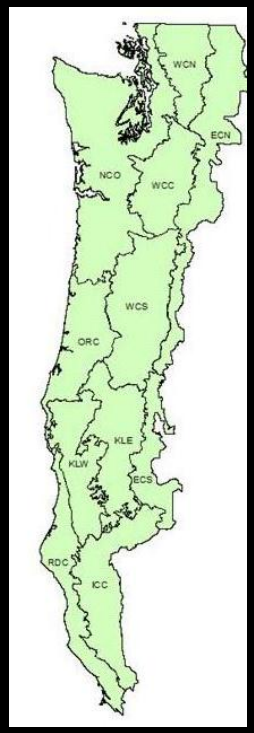
HexSim – simulate range-wide NSO population responses to a landscape of changing habitat and barred owl competition

- Population response
- Extinction risk
- Source analysis

WCN
ECN
NCO
WCC
WCS
ORC
KLE
KLW
ECS
RDC
ICC

No Harvest Reference Analysis
Population Change



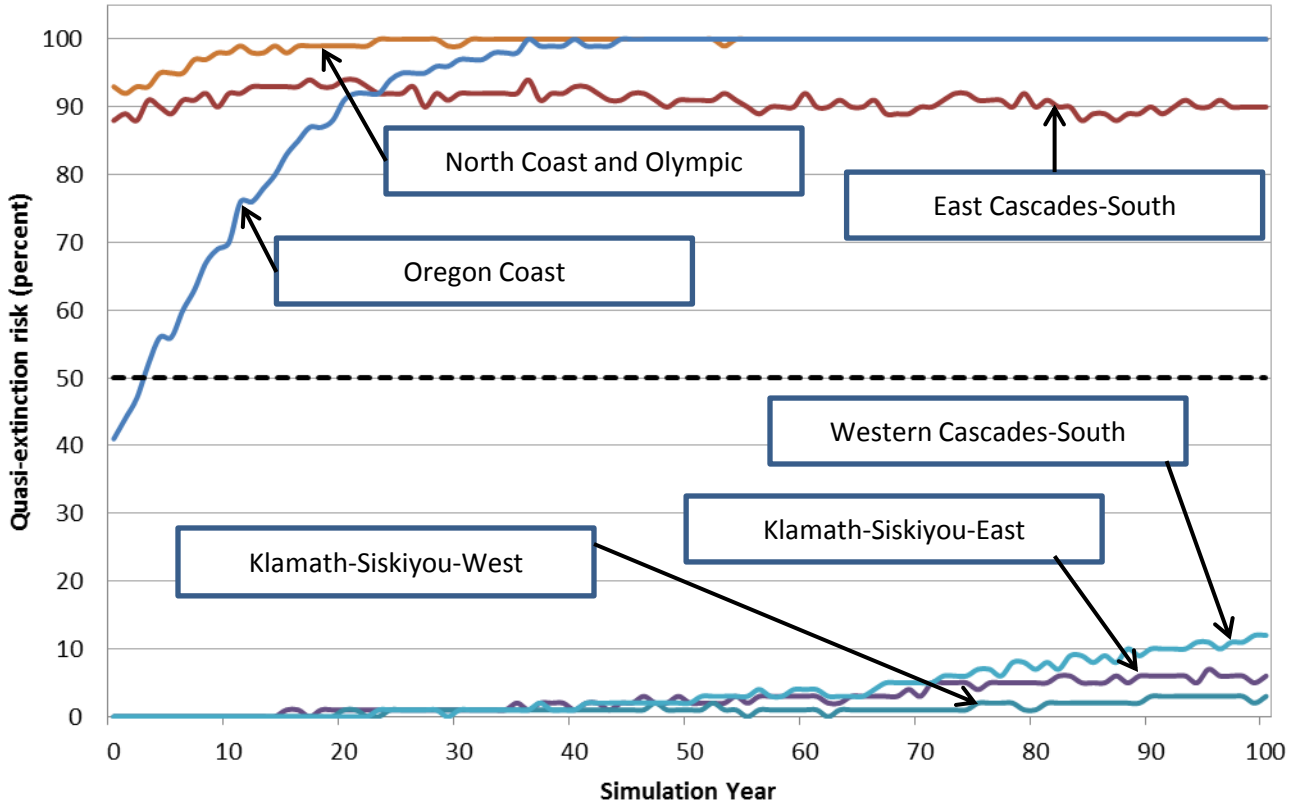


No Harvest Reference Analysis
Population Risk

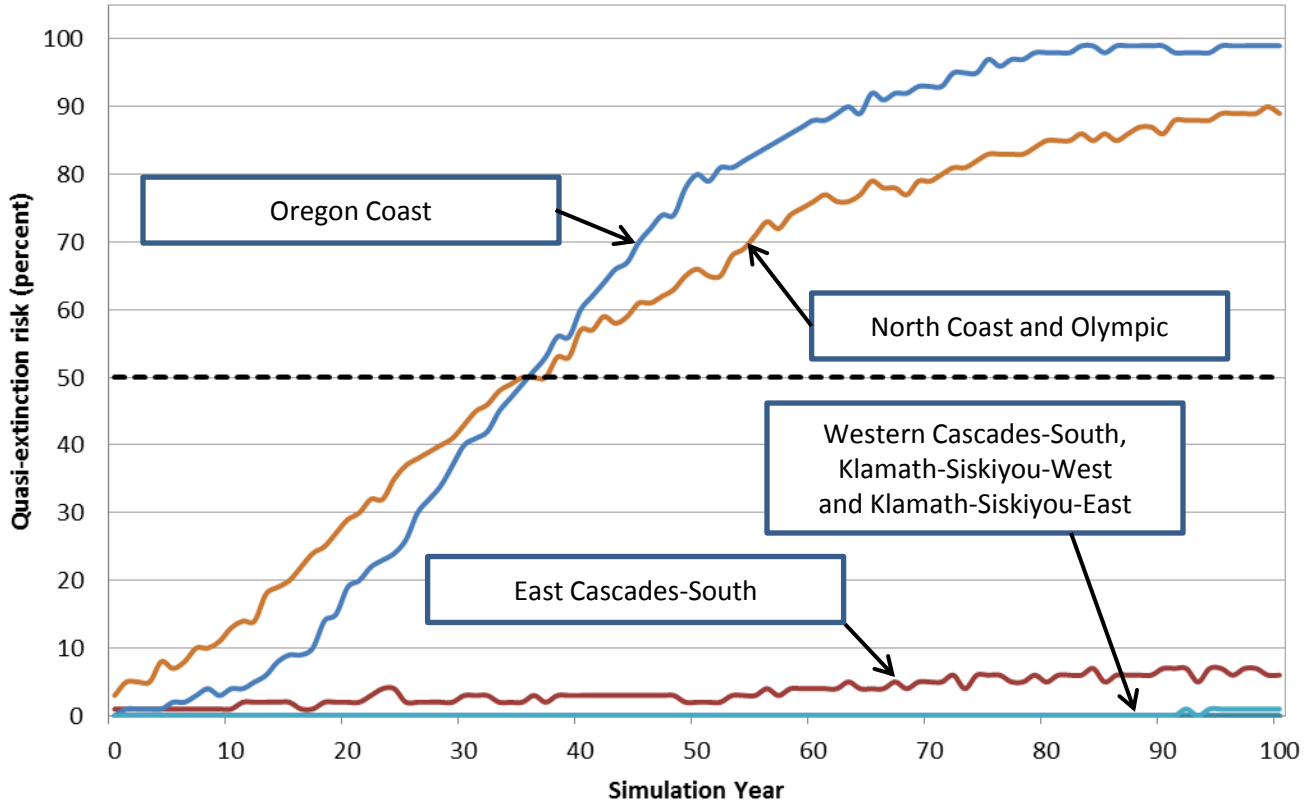
- HexSim not designed to fully account for small population processes
- Simulates females that reproduce probabilistically
- Allee effect* can make results unreliable
- Population risk: 250 females
- Extirpation risk: 100 females

*The reduced vigor of a population due to small population processes, such as genetic inbreeding, reduced female-male encounter rates or greater vulnerabilities to stochastic events

No Harvest Reference Analysis
Population Risk;
Probability of a Population of 250 Females

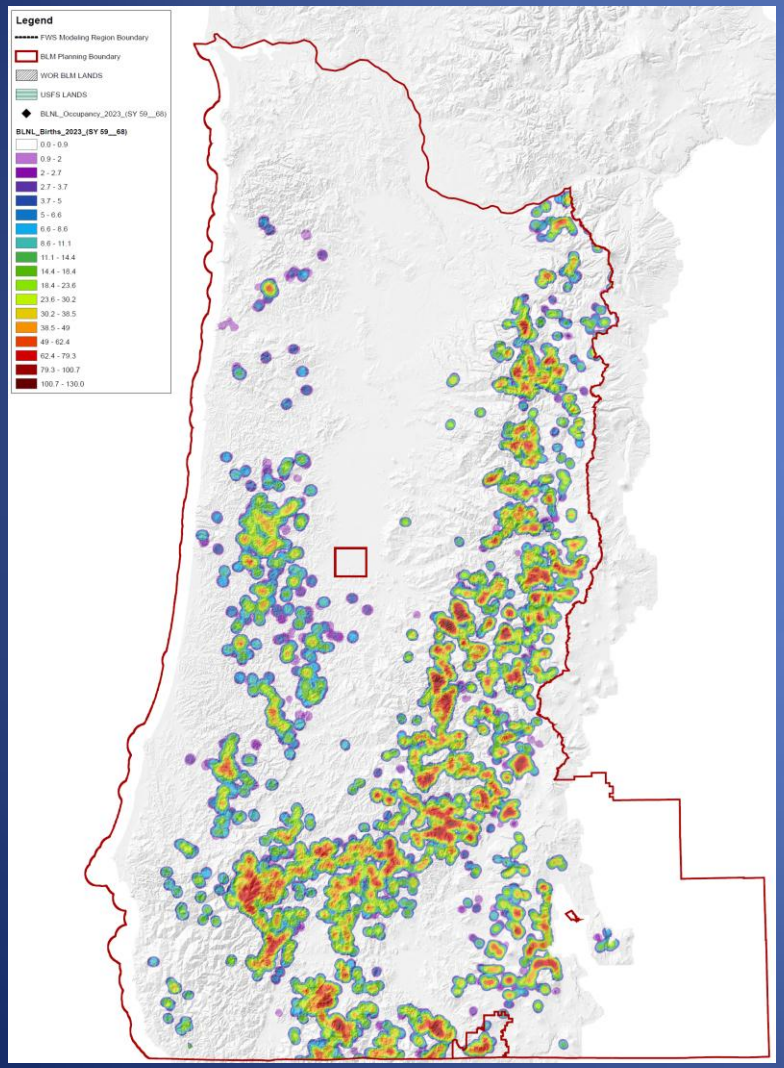


No Harvest Reference Analysis
Extirpation Risk;
Probability of a Population of 100 Females

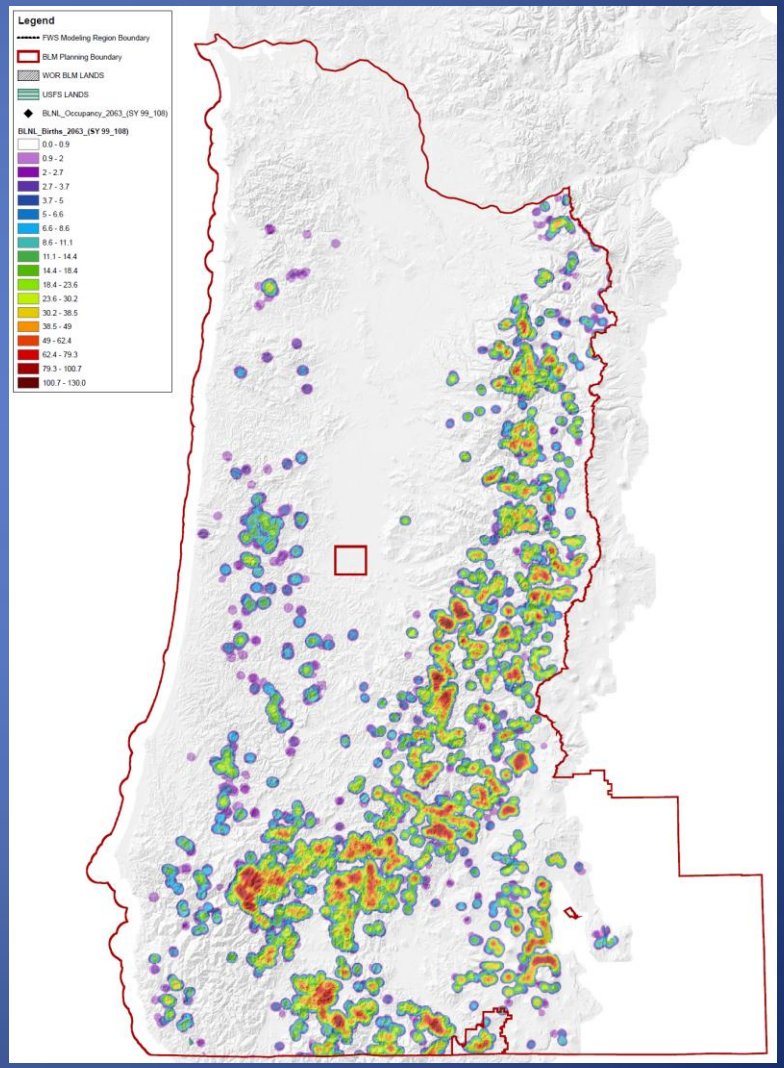


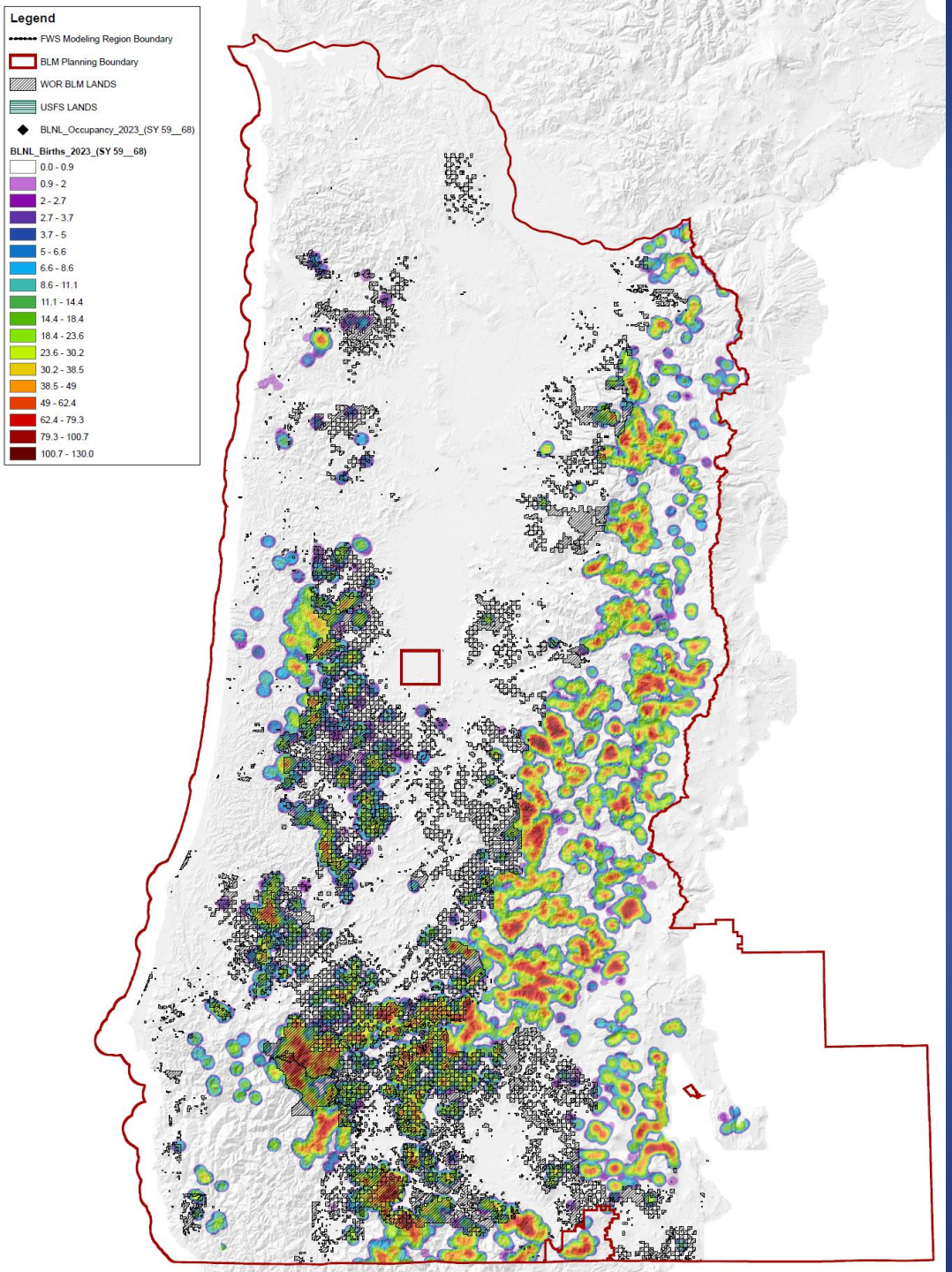
No Harvest Reference Analysis
Source Analysis

2013 -2023

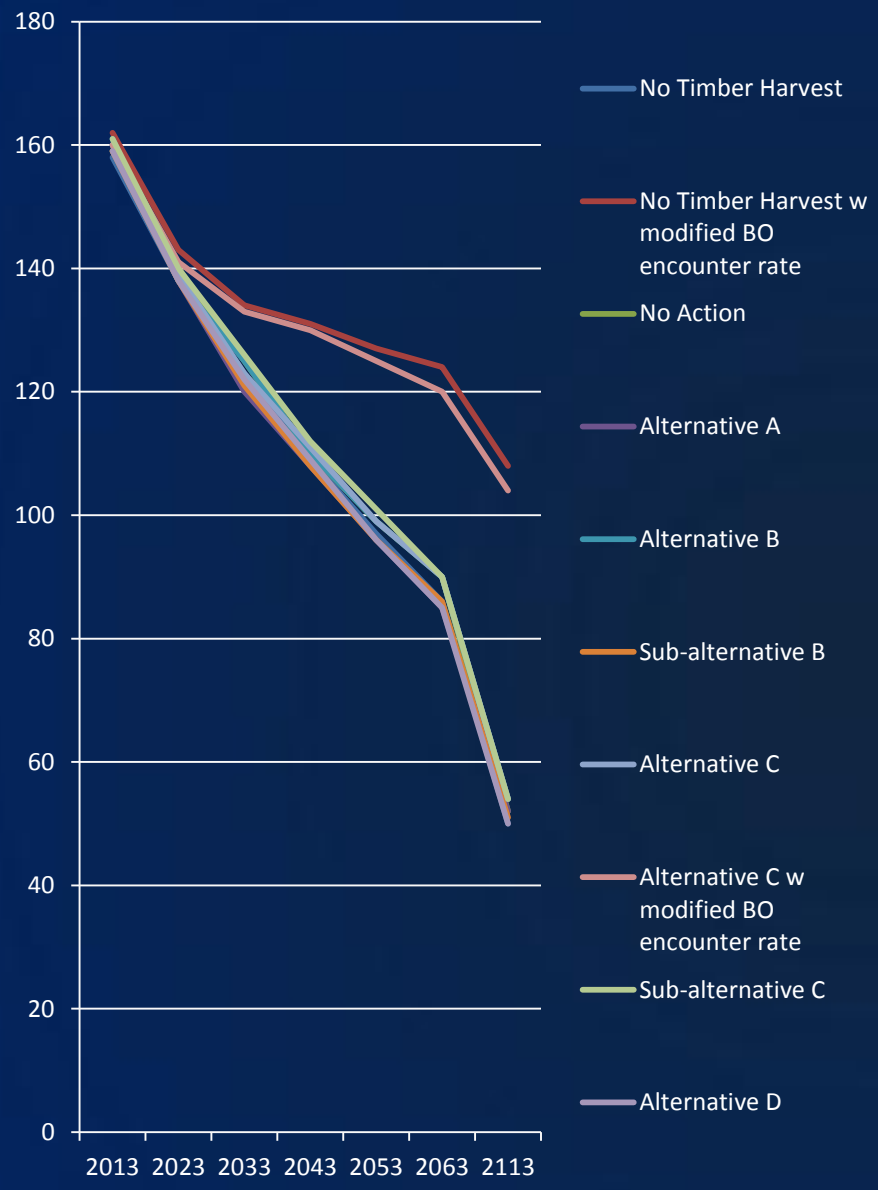


2053-2063

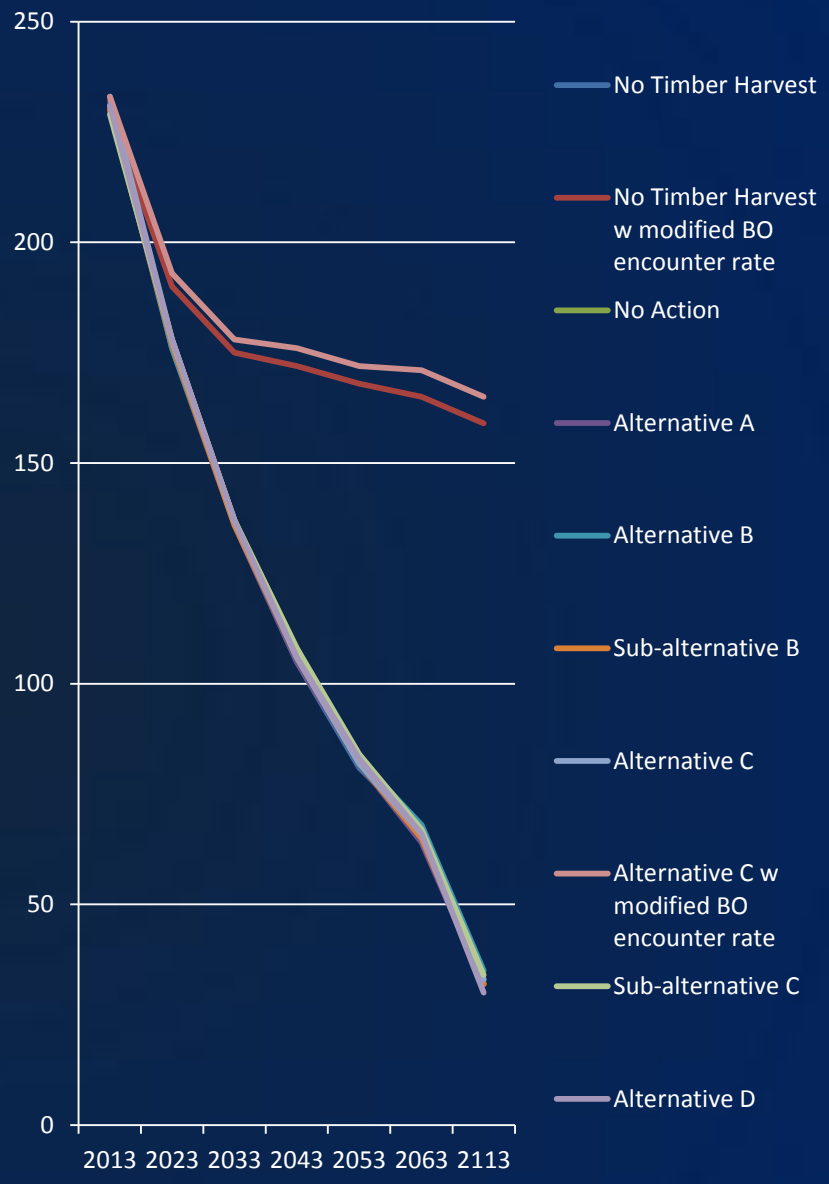



Legend
FWS Modeling Region Boundary
BLM Planning Boundary
WOR BLM LANDS
USFS LANDS
BLNL_Occupancy_2023_(SY 59__68)
BLNL_Births_2023_(SY 59__68)
0.0 - 0.9
0.9 - 2
2 - 2.7
2.7 - 3.7
3.7 - 5
5 - 6.6
6.6 - 8.6
8.6 - 11.1
11.1 - 14.4
14.4 - 18.4
18.4 - 23.6
23.6 - 30.2
30.2 - 38.5
38.5 - 49
49 - 62.4
62.4 - 79.3
79.3 - 100.7
100.7 - 130.0

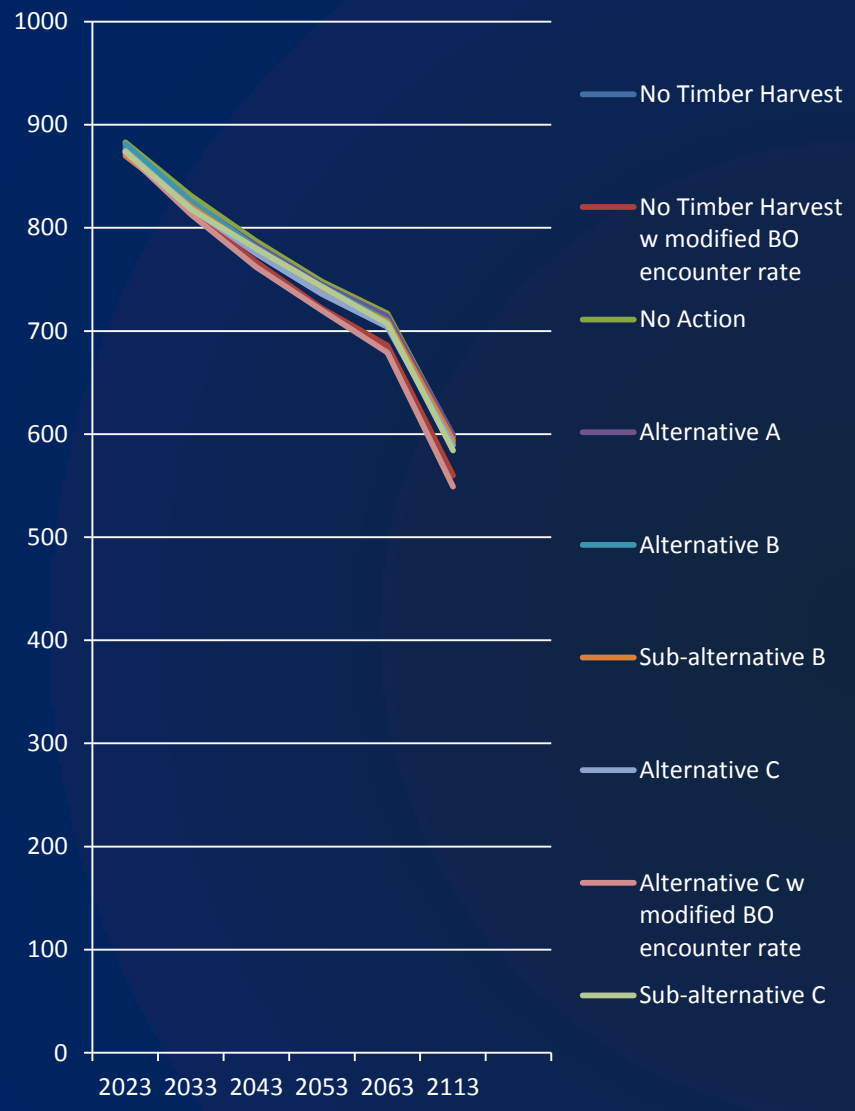
Population change by modeling region by alternative



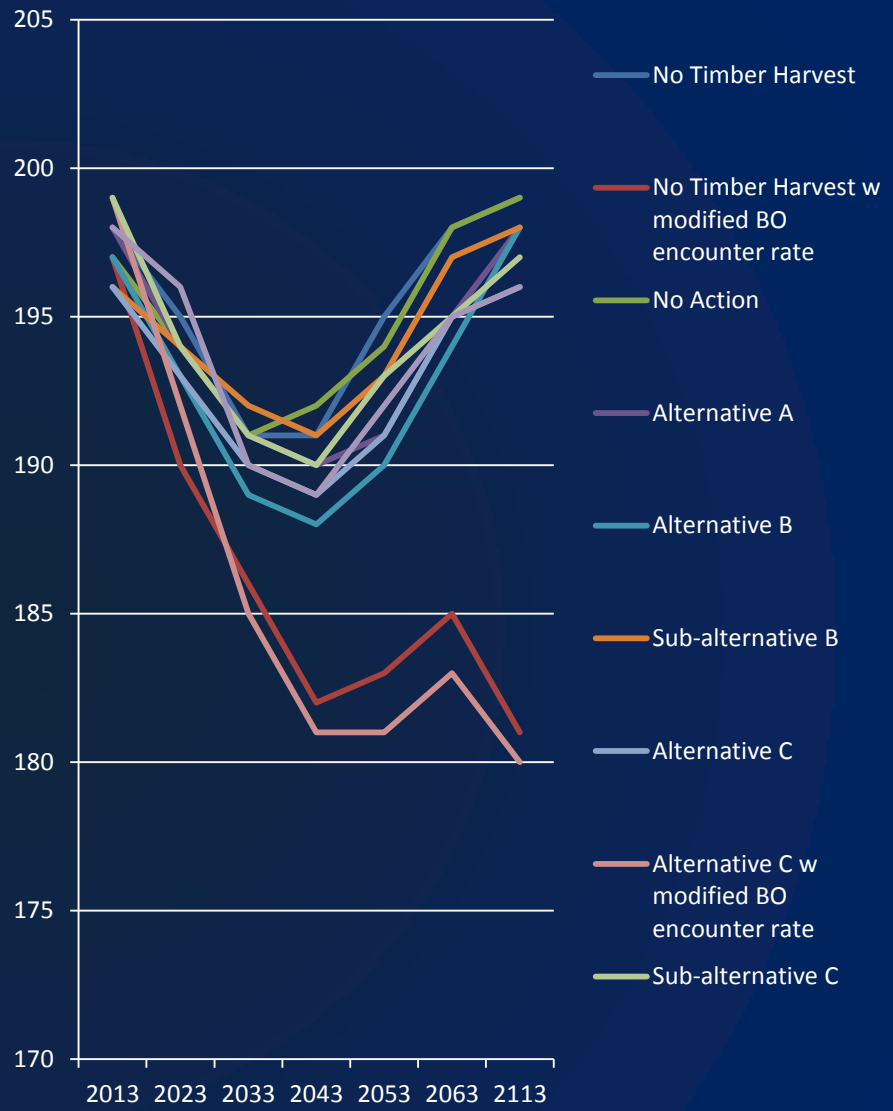
North Coast and Olympic



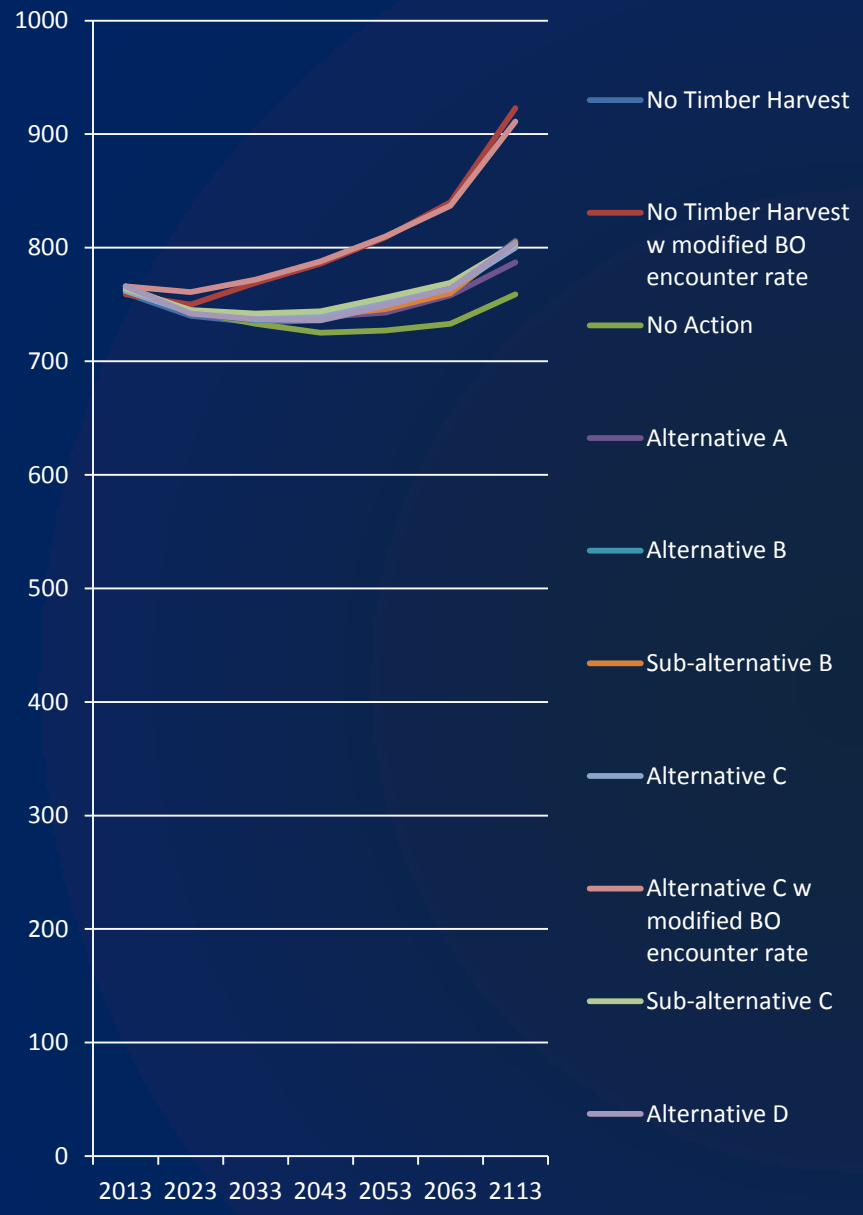
Coast Range



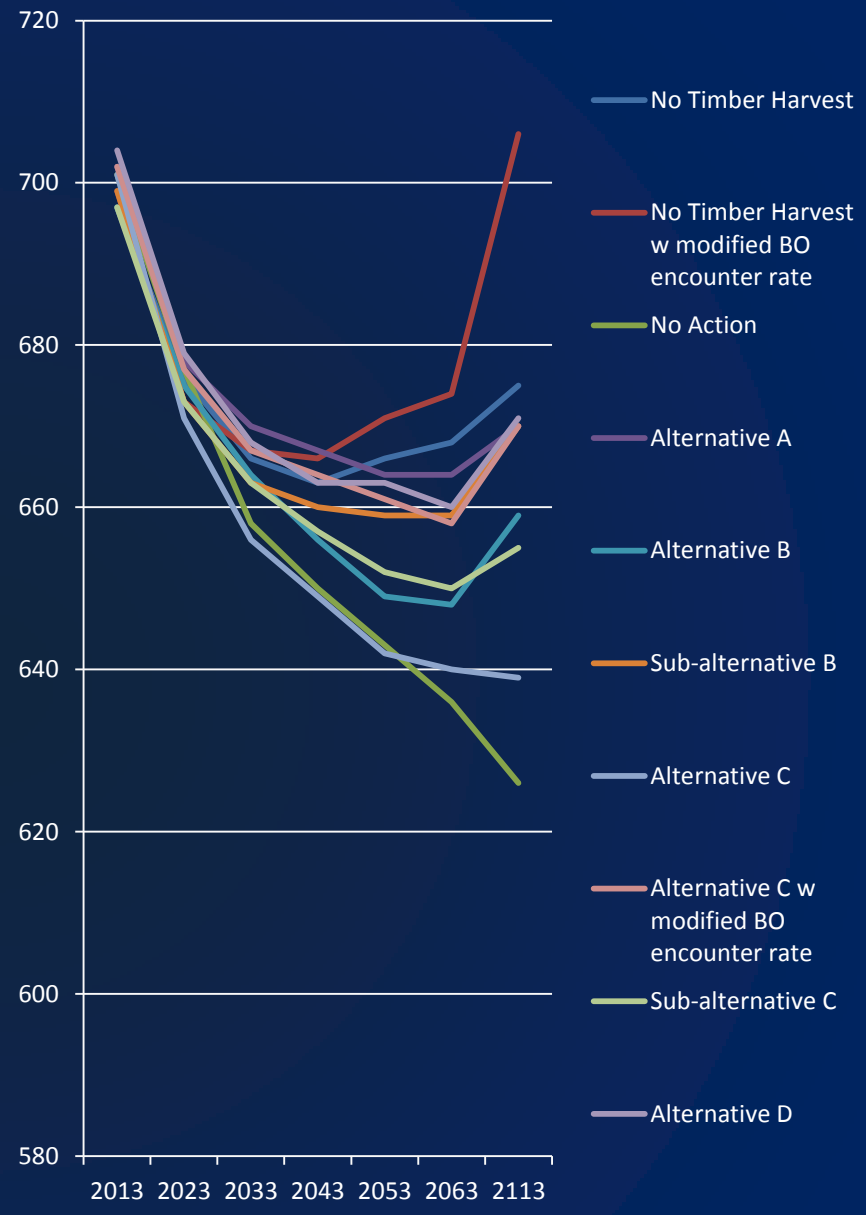
West Cascades-South



East Cascades-South



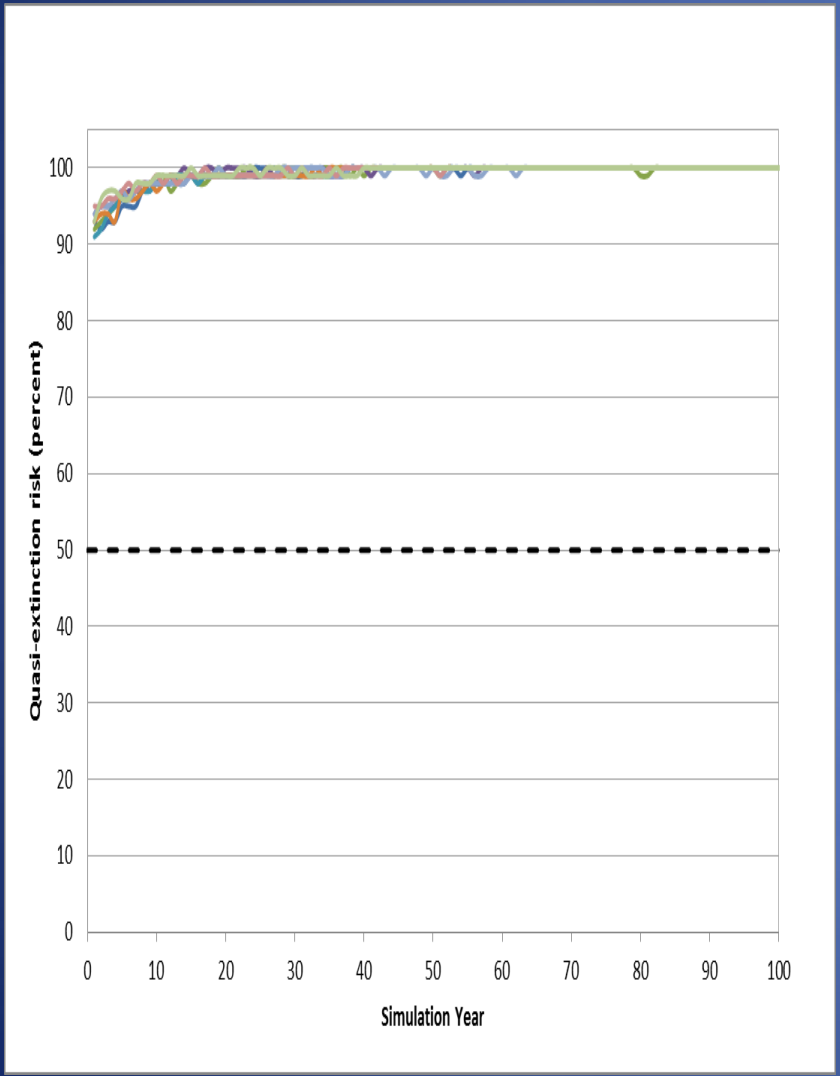
Klamath-Siskyou-West

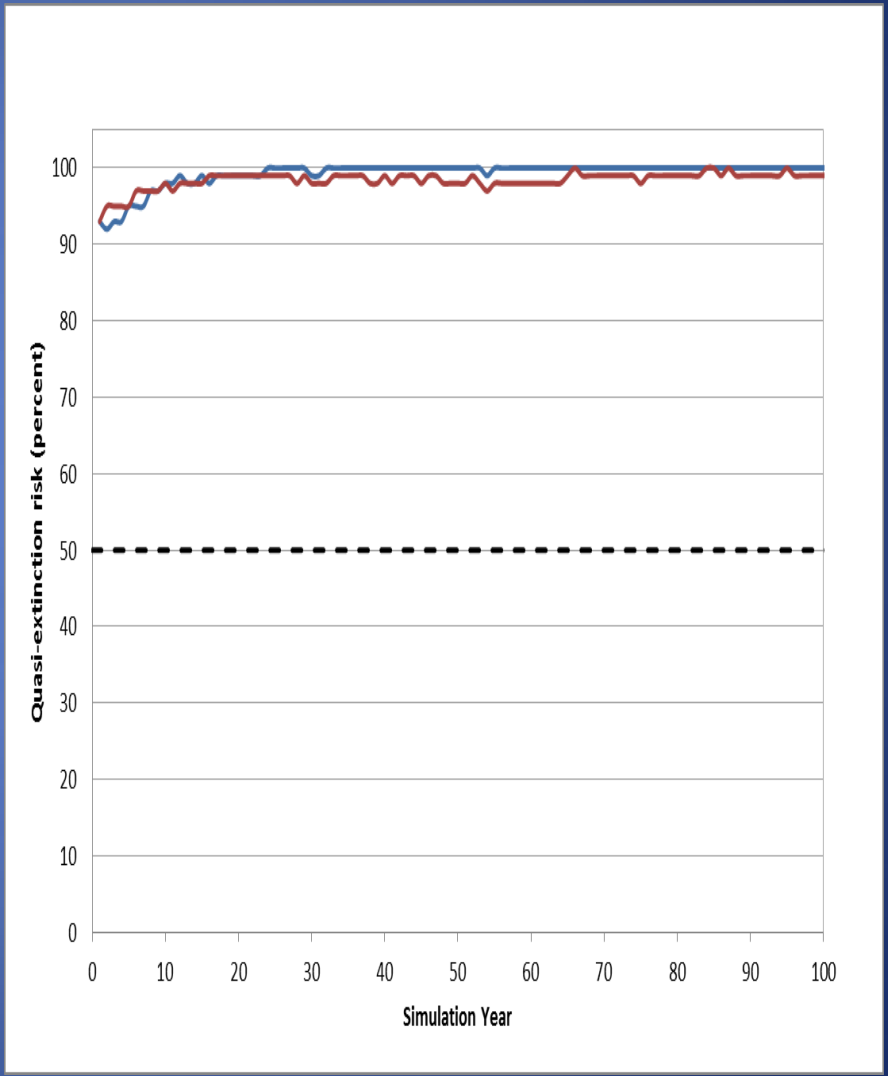


Klamath-Siskyou-East

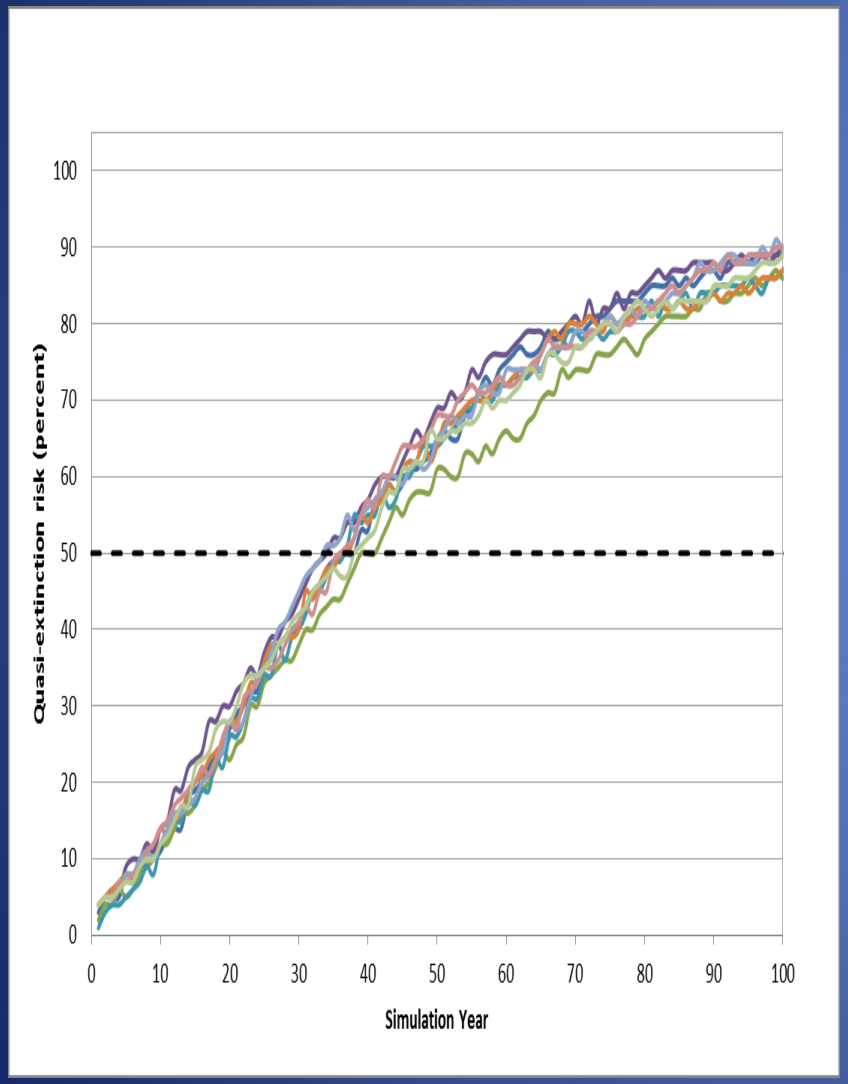
Population risk by modeling region by alternative

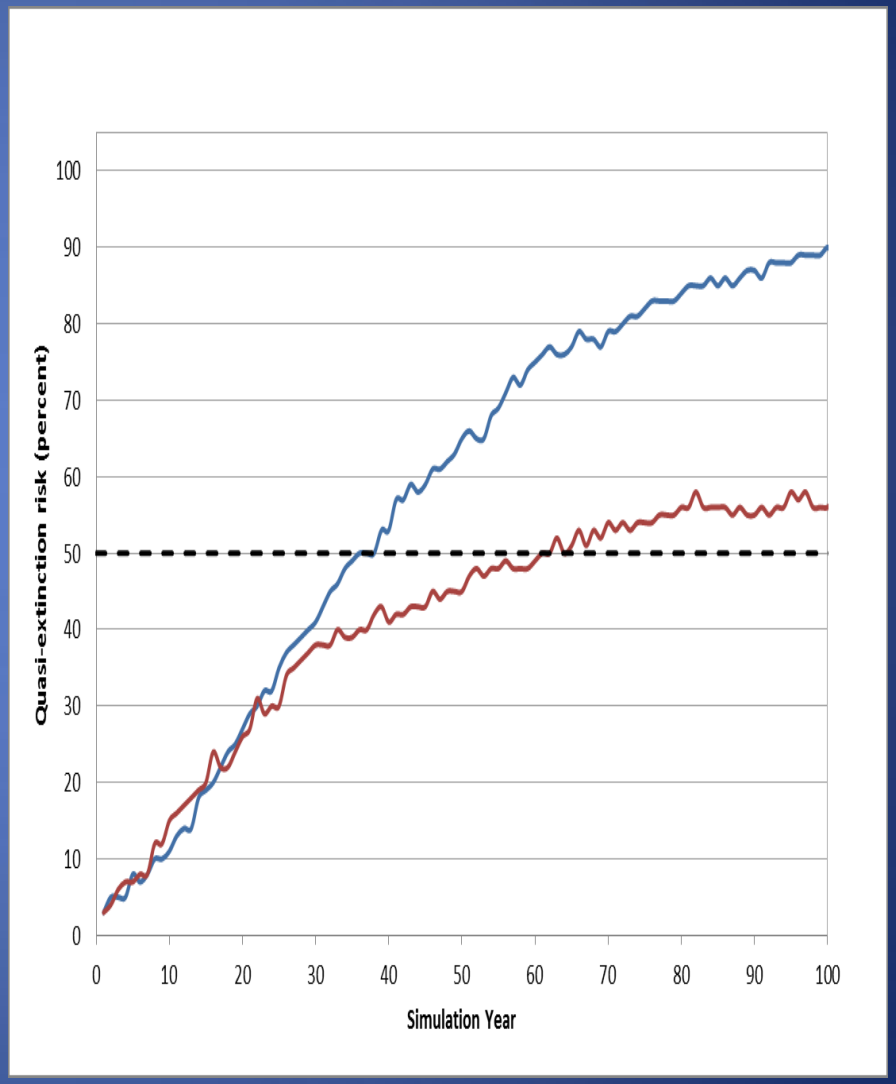
Population risk
North Coast and Olympic Modeling Region





Extirpation risk
North Coast and Olympic Modeling Region





Extirpation risk
North Coast and Olympic Modeling Region

Year that the northern spotted owl population reached a 50-percent probability of declining to 100 females, based on 500 stochastic simulations.

Alternative	Simulation Year
No Action Alternative	38
Alternative A	33
Alternative B	36
Sub-alternative B	35
Alternative C	33
Sub-alternative C	35
Alternative D	37
No Harvest Reference Analysis	35
Supplemental No Harvest Reference Analysis	60

Population risk
Oregon Coast Modeling Region

Year that the northern spotted owl population reached a 50-percent probability of declining to 250 females, based on 500 stochastic simulations.

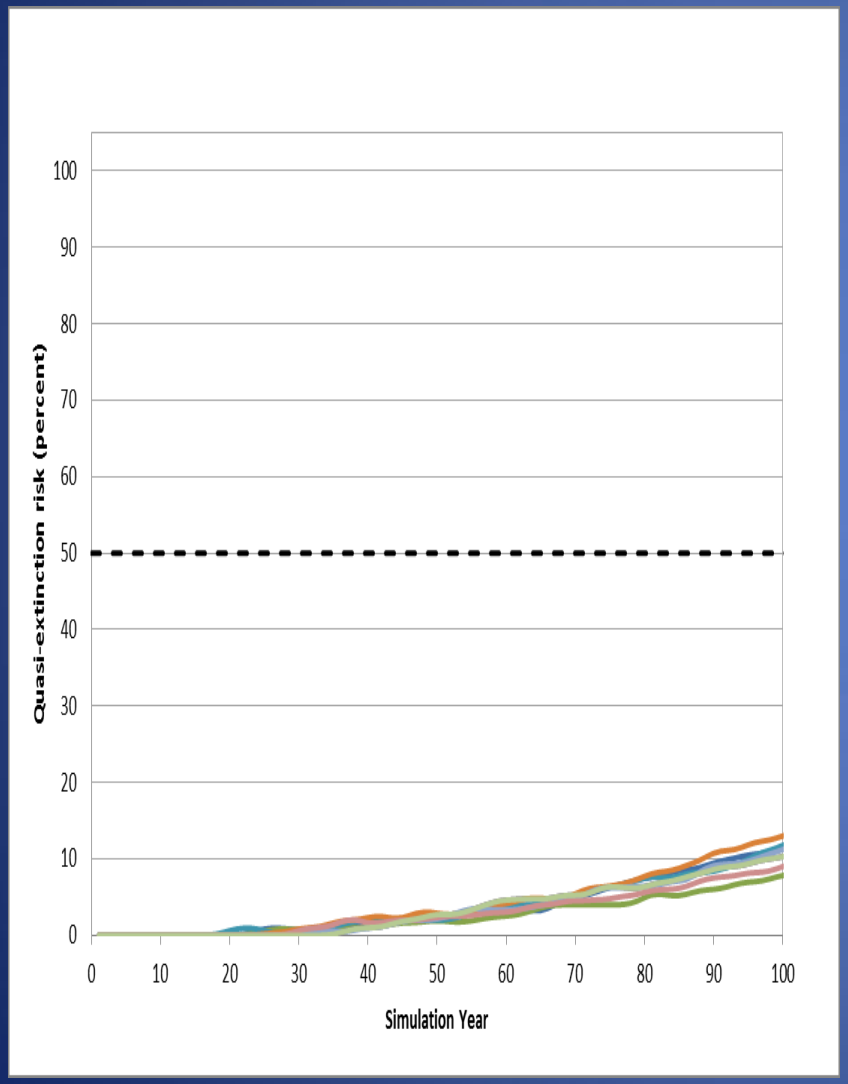
Alternative	Simulation Year
No Action Alternative	3
Alternative A	2
Alternative B	3
Sub-alternative B	2
Alternative C	3
Sub-alternative C	2
Alternative D	3
No Harvest Reference Analysis	3
Supplemental No Harvest Reference Analysis	2

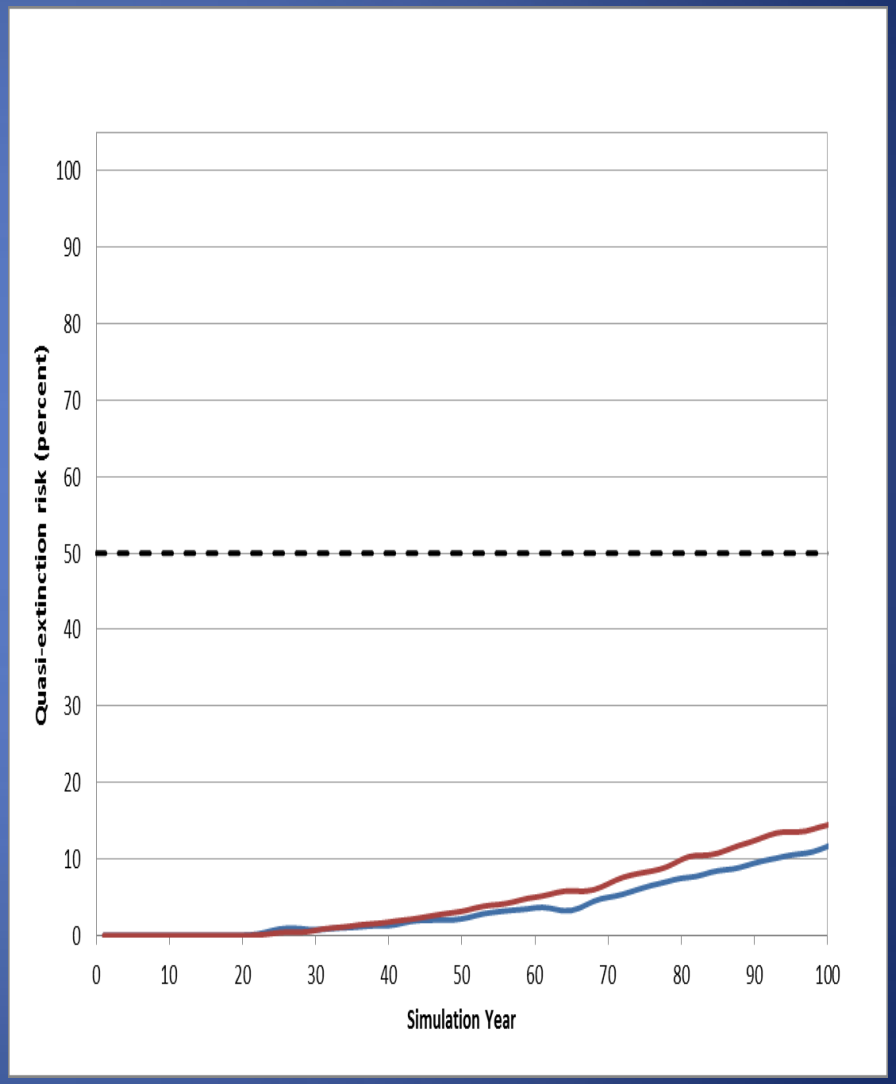
Extirpation risk
Oregon Coast Modeling Region

Year that the northern spotted owl population reached a 50-percent probability of declining to 100 females, based on 500 stochastic simulations.

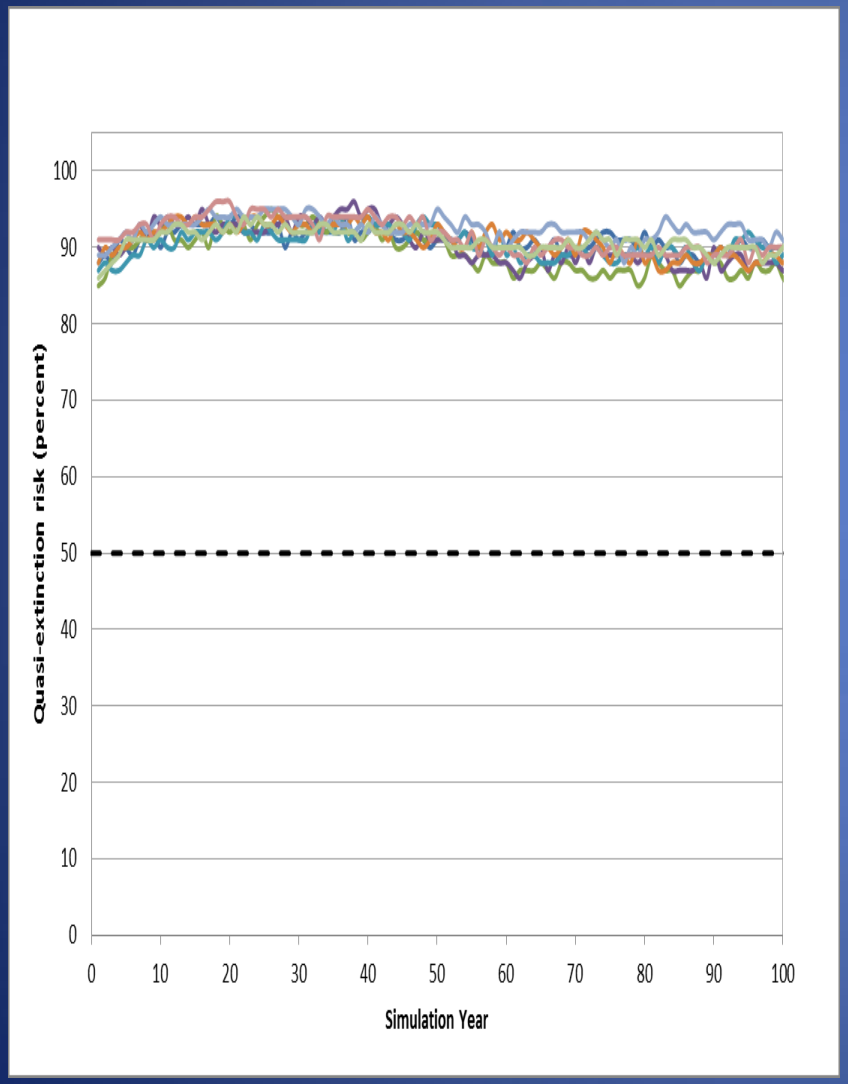
Alternative	Simulation Year
No Action Alternative	35
Alternative A	35
Alternative B	36
Sub-alternative B	35
Alternative C	33
Sub-alternative C	34
Alternative D	34
No Harvest Reference Analysis	36
Supplemental No Harvest Reference Analysis	> 100

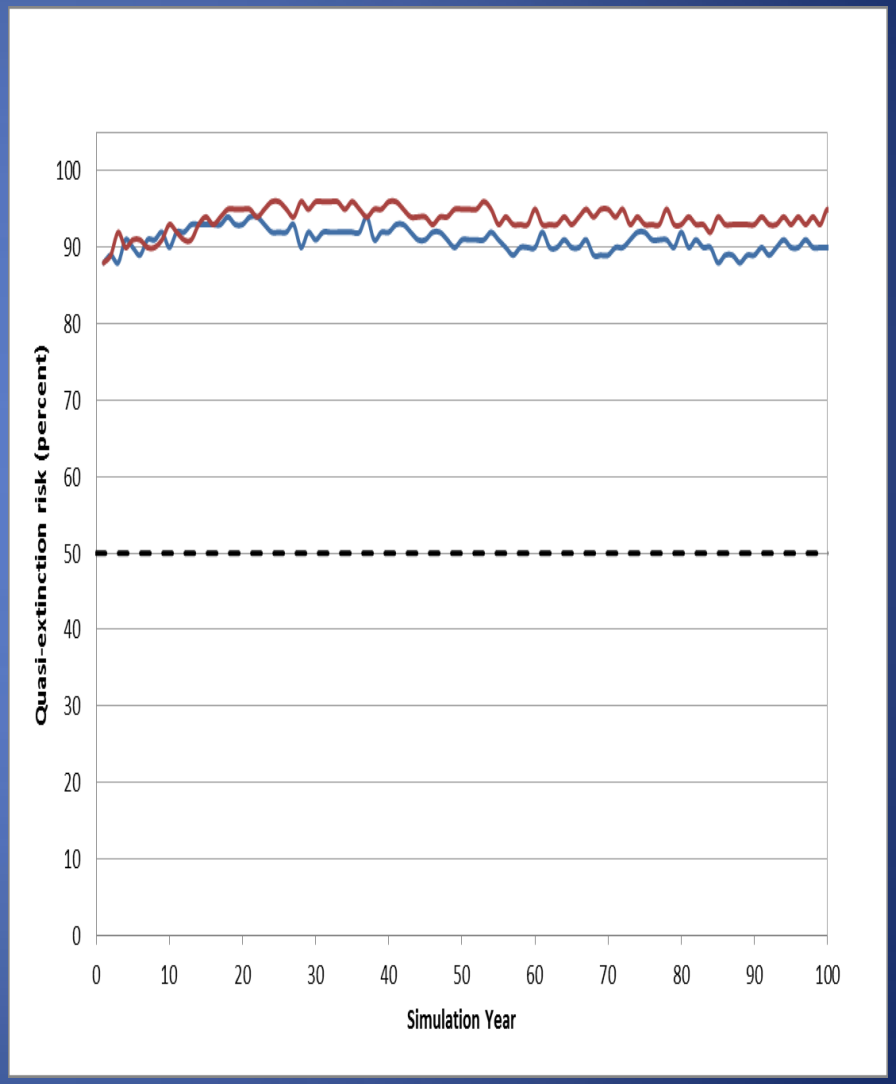
Population risk
West Cascades-South Modeling Region





Population risk
East Cascades-South Modeling Region



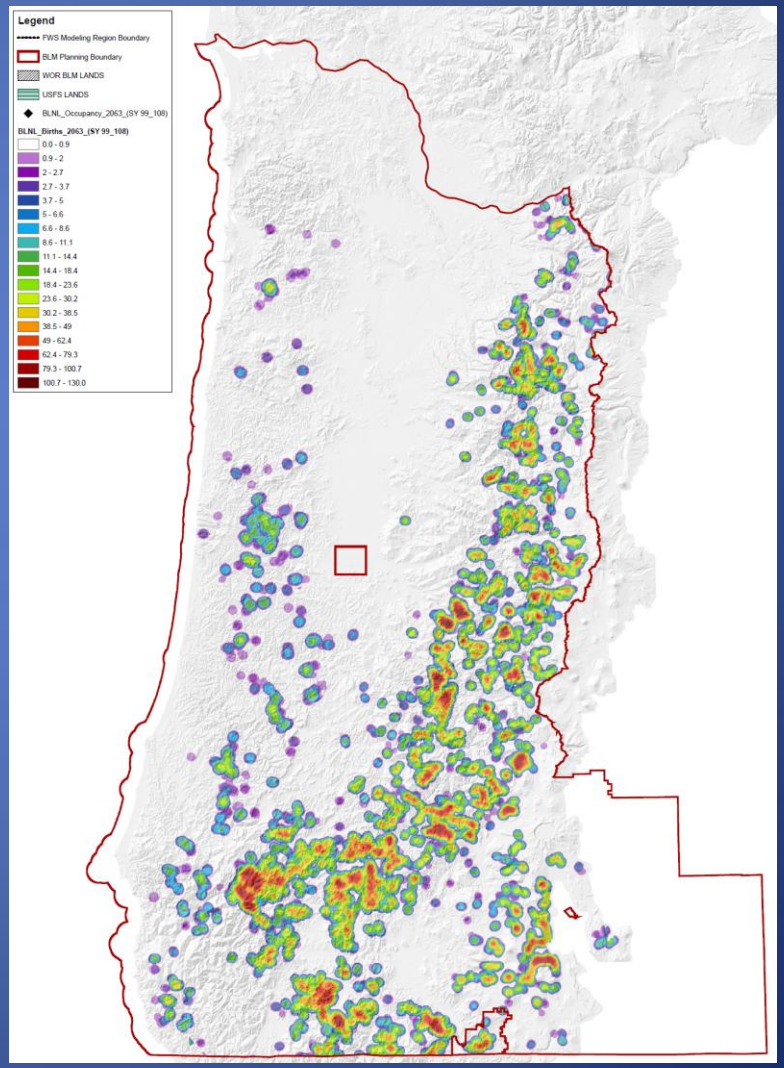


Population risk
Klamath-Siskyou East and West Modeling Regions

- < 5 percent probability of the population declining to 250 females within 50 years.

Source Analysis

Sources during the next 50 years would be driven entirely by NSO population responses

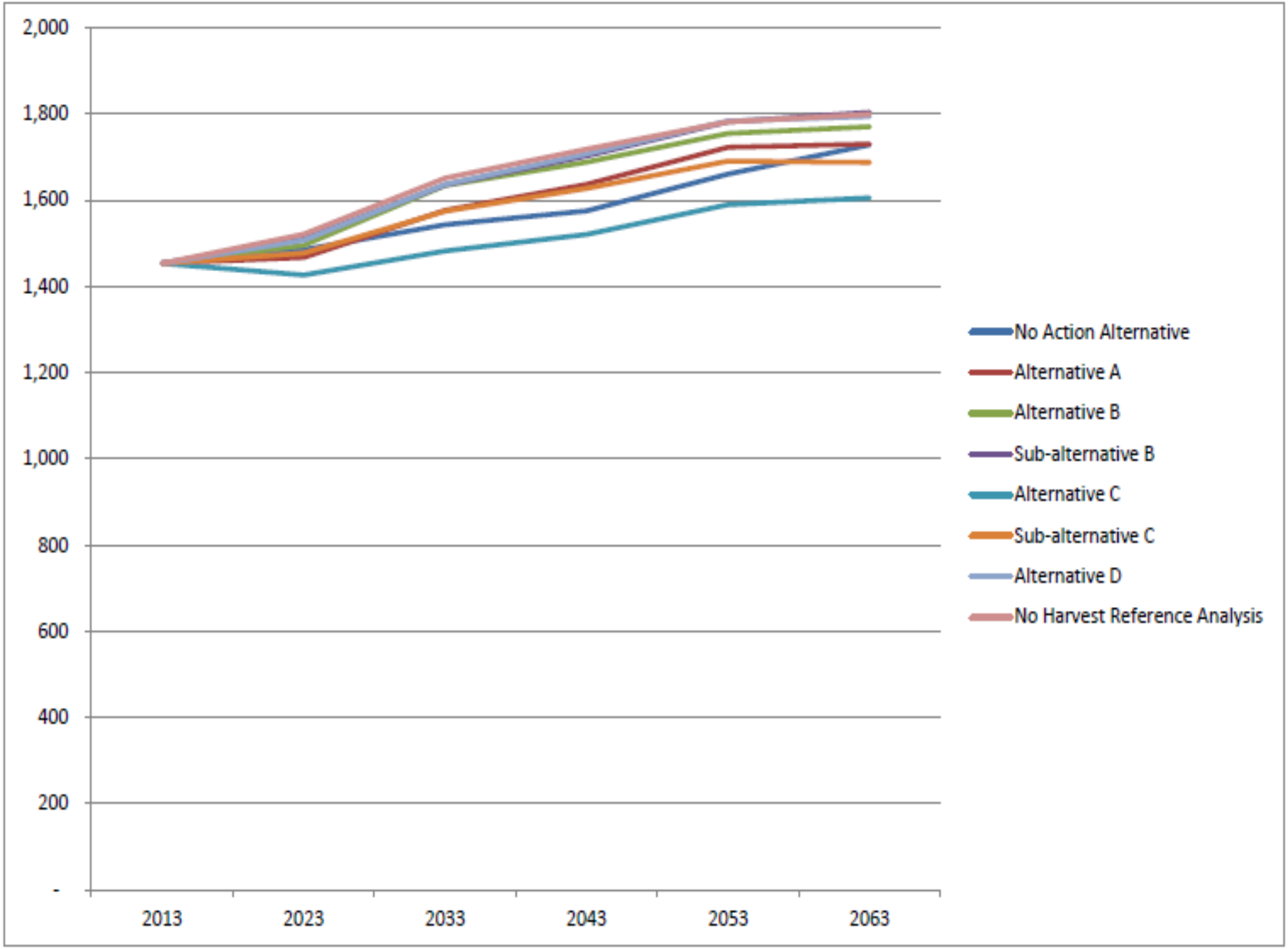


Recovery Action 10

"Recovery Action 10: Conserve spotted owl sites and high value spotted owl habitat to provide additional demographic support to the spotted owl population."

The *Revised Recovery Plan* defines "high value" northern spotted owl habitat as "older, multi-layered structurally complex forests" and "areas with current and historic use by spotted owls."

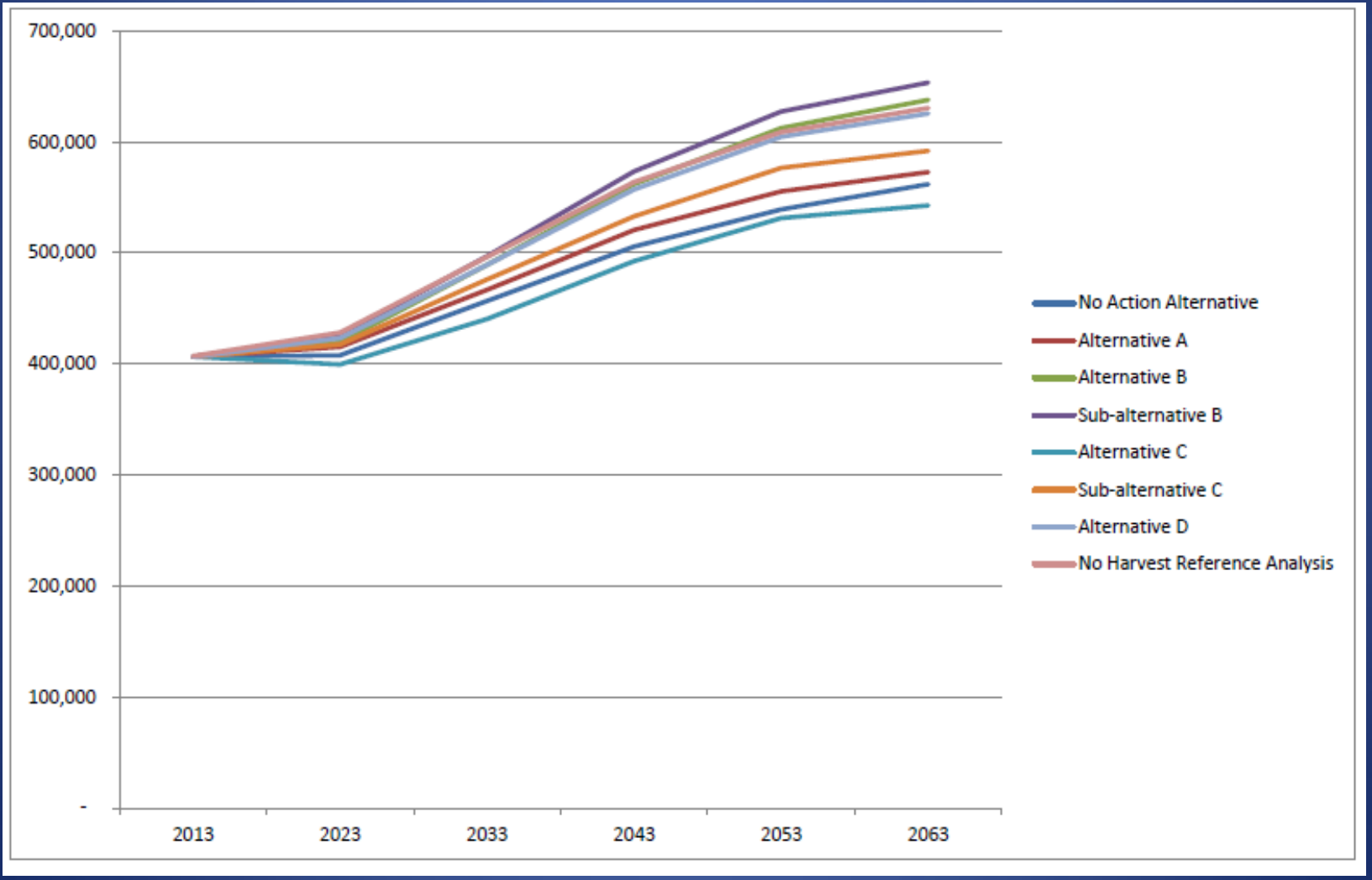
Redundancy between recovery actions 10 and 32 regarding "older, multi-layered structurally complex forests."


2,000
1,800
1,600
1,400
1,200
1,000
800
600
400
200
-
2013
2023
2033
2043
2053
2063
No Action Alternative
Alternative A
Alternative B
Sub-alternative B
Alternative C
Sub-alternative C
Alternative D
No Harvest Reference Analysis

Scenario	Percent of known sites at or above RA 10 thresholds in 50 years (currently 59 percent)
Sub-alternative B	73
Alternative D	73
No Timber Harvest reference analysis	73
Alternative B	72
Alternative A	70
No Action	70
Sub-alternative C	68
Alternative C	65

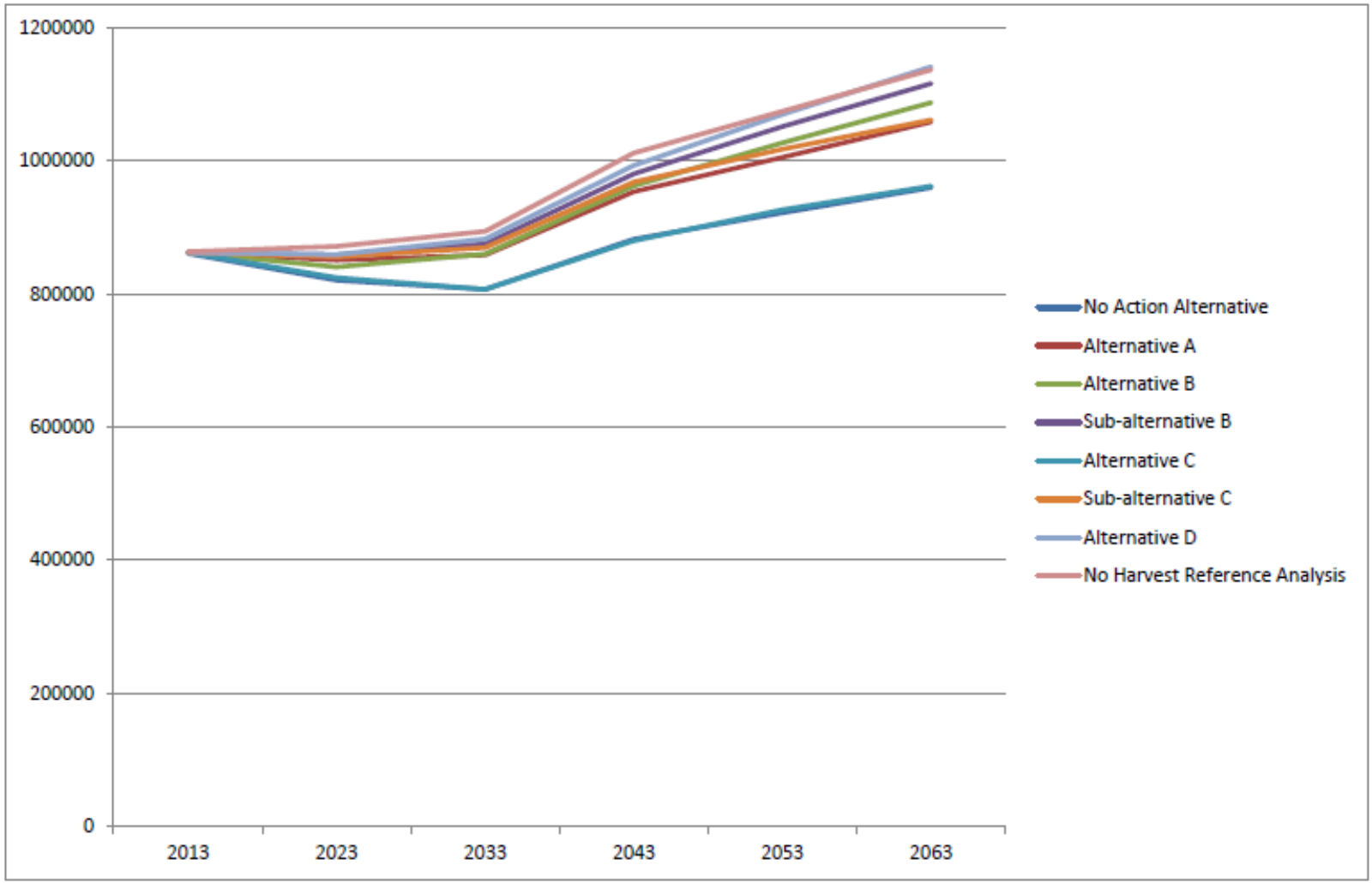
Recovery Action 32

change in acres of strongly-selected-for habitat
(12 percent of the landscape supports 72 percent of known sites)



Recovery Action 32

change in acres of Mature Multiple-Canopy and Structurally-Complex forest



Key points

- The NSO is under severe biological stress over significant portions of its range in western Oregon
  - Population and regional extirpation risks are expected to increase
  - Potential BLM contributions to NSO conservation are overwhelmed by the effects of competitive interactions between NSOs and barred owls and habitat conditions on other lands
- With respect to NSO habitat conditions, under all alternatives the BLM would contribute to a western Oregon landscape that meets the conservation needs of the NSO
- Within the scope of the BLM alternatives, the spatial arrangement of nesting-roosting habitat is most important
- The BLM has wide decision space in the western Cascades
- BLM decisions will most affect NSO conservation in:
  - Central Klamath and Coast Range provinces
  - Connectivity between provinces
- The BLM can more effectively implement NSO recovery plan actions through planning decisions than through individual management actions