THREATS

Past, Present, and Future

LISTING CONSIDERATIONS

- Loss of Habitat
- Overuse (exploitation of species)
- Disease or Predation
- Inadequacy of Existing Regulatory Mechanisms
- Other Factors (e.g., demographic trends, competition from Barred Owls)

HABITAT LOSS

1990 Status Review:

- **Identified as #1 threat to Northern Spotted Owl**

2004 Status Review:

- **Identified as #1 accomplishment for Conservation of Northern Spotted Owl since listing**

HABITAT LOSS

1990 Status Review:

- Many sources of habitat loss – timber harvest #1 source

2004 Status Review:

- Decline of timber harvest on Federally managed land – *Northwest Forest Plan*
- Past habitat loss could still have negative effects
- Continuing threat from insects (e.g., fuel for fire)
- Continuing threat from uncharacteristic stand replacing fires
- Increasing threat from sudden oak death

Suitable Habitat on Federal Lands

Habitat Trends	1990 Threat	2004 Threat
Habitat Harvest	Moderate/Severe	Decreased
Natural Disturbance	Significant In Some Areas	Same Or Increased
Non-Federal Lands	No Assurance	Increased Assurance

HABITAT LOSS
Key Uncertainties

1990 Status Review:

- **Causal Link Between Demographic Trends and Habitat Loss (general knowledge about owl habitat)**

2004 Status Review:

- **Causal Link between demographic parameters estimated and Habitat Conditions (much greater knowledge of owl habitat relationships)**
- **Trends in habitats on public and private lands**

HABITAT LOSS
Future Risk

2004 Status Review:

- Could not assess Private Land
- Possible increasing threat from fires and insects if other threats emerge as significant future threats such as
  - sudden oak death
  - barred owls

POPULATION DYNAMICS

- **Status Review 1990:**

  Two populations and Short Duration

- **Status Review 2004:**

  - Major accomplishments
  - 14 Studies, most of long duration
  - 12% of range of spotted owl
  - Coordinated Effort
  - Largest analysis of capture recapture data for a nongame species

GENERAL RESULTS POPULATION STUDIES

- **1990 Status Review:**

- Relatively Little information – relative abundance by province
- 2 studied populations declining

- **2004 Status Review:**

- Major accomplishments in analysis of population dynamics
- 14 extant major studies in range of NSO
- 7 Populations Declining
- 7 Stable or improving
- Original two study populations show improvement

THREATS
POPULATION TRENDS

- Lag Effects due to Past Habitat Loss?
- Effect of Unfavorable Weather?
- Effect of Barred Owls?
- Direct Loss of Habitat in Some Areas?
- Synergistic Effects?

BARRED OWLS

1990 Status Review: "a competitor with potential for adversely impacting spotted owl population levels"

2004 Status Review:

- BO Increasing throughout NSO range
- All suggestions in 1990 review confirmed
- BO use old forests and other forests
- Negative Correlative Effects on Survival on 3 Washington Demographic Areas

BARRED OWLS
Key Uncertainties

2004 Status Review:

- Single area of most disagreement among panel members
- All studies are correlative
- Ambiguity of data and processes

BARRED OWLS
Future Threats

2004 Status Review:

- Panel Unanimous this is a threat
- Disagreement centers on ultimate magnitude of threat
- Theory predicts competition
- Generalist vs. Specialist life history
- Rapid Spread and Increase in BO
- Correlative evidence of survival and occupancy effects

DISEASE

- **1990 Status Review:** no significant threat

- **2004 Status Review:**
  - West Nile Virus, currently unknown but may be significant future risk
  - Recently Arrived
  - No evidence of other disease or parasite threats (increased globalization predicts)

which factors are currently significant threats to NSO populations, or may pose such threats in the near-term future (5-10 years)

	Current	Future
Genetics		3
Introgression	1	
Barred Owl comp	7	5
Barred Owl hybrid		
Past Harvest	5	1
Current harvest	5	4
Fire	4	3
Windthrow		
Insects	2	1

which factors are currently significant threats to NSO populations, or may pose such threats in the near-term future (5-10 years)

	Current	Future
SOD	1	5
Fragmentation	1	2
WNV	2	7
Other Disease		2
Predation		
Weather	2	2
Demog isolation		5
Synergistic -interactions	5	4

THREATS SUMMARY

- Qualitatively, threats are different today
- Rate of habitat loss due to tree harvest greatly reduced
- Increased threat of Barred Owls
- Increased threat of disease

Late successional habitat is a limiting factor for NSO populations in significant parts of the subspecies' range

- Strongly supported 4
- Supported 2
- Weakly Supported 1
- Not supported
- N/A

Home ranges composed entirely of pristine old forest are optimal for spotted owls throughout the species' range

- **Strongly supported**
- **Supported**
- **Weakly Supported** **1**
- **Not supported** **6**
- **N/A**

In the redwood zone, NSO use significantly younger forests, whose structure resembles old-growth forests elsewhere

- Strongly supported 2
- Supported 4
- Weakly Supported
- Not supported
- N/A 1

In some areas, hardwoods are a significant component of habitat

- Strongly supported 4
- Supported 3
-
- Weakly Supported
-
- Not supported
- N/A

In the Klamath region, heterogeneous landscapes may favor higher demographic performance

- Strongly supported 3
- Supported 4
-
- Weakly Supported
-
- Not supported
- N/A

Elsewhere in California and southern Oregon, heterogeneous landscapes may favor higher demographic performance

- Strongly supported 2
- Supported 1
- Weakly Supported 1
- Not supported 3
- N/A

In other locations (e.g. Cascades) heterogeneous landscapes may favor higher demographic performance

- Strongly supported
- Supported 1
- Weakly Supported 2
- Not supported 4
- N/A