

# Preliminary observations of the feasibility and effectiveness of doing lethal barred owl control



Lowell Diller, Green Diamond Resource Company, Korbel, CA

Brian Woodbridge, USFWS, Yreka, CA

John (Jack) Dumbacher, California Academy of Sciences, San Francisco, CA

# Northern Barred Owl

(*Strix varia varia*)



- The barred owl is the primary threat to the long term persistence of the northern spotted owl.
- Some form of lethal control of BO's may be necessary in at least some portion of the NSO's range.
- Pilot study on lethal removal made possible through collection permit issued to Dr. John (Jack) P. Dumbacher, California Academy of Sciences

# Feasibility of Lethal Control

## Logistical considerations

- **Rely on territorial or predatory nature of owls to call them to you**
- **Remotely controlled amplifier and speaker with repertoire of recorded calls**
- **Decoy important to focus owl's attention**

Courtesy of  
Dennis Rock

A barred owl is perched on a horizontal tree branch in a dense forest. The owl has brown and white mottled feathers and is looking towards the camera. The background is filled with green foliage and other tree trunks.

**The first encounter is relatively easy – make it count!**

**With known territories, one person could remove 2-4 pairs/night**

Collected birds  
make good  
museum  
specimens



# What is the short-term spotted owl response to barred owl removal?



As part of Cal Academy's collections, barred owls were removed from 2 territories formerly occupied by spotted owls on KNF and 4 territories on GD

# GD individual case histories:

## Lower Salmon Creek

- Up to 3 NSO sites continuously occupied by NSO's from 1990-2006, but no reproduction since 1999 and sites centers highly unstable
- History of BO responses in the drainage since 1993, first pair confirmed in 2000 near Salmon Creek #2 & 3 NSO sites
- **May 25, 2006 – pair BO's collected**
- June 2, 2006 (first re-visit) – resident pair NSO at Salmon #2, nothing at Salmon #3
- June 14, 2006 – resident male NSO at Salmon #3
- July 17, 2006 – cohort female NSO at Salmon #3
- 2007 surveys:
  - Salmon # 2 occupied by NSO pair (male from #3 and #2 female)
  - Salmon #3 single BO response (3 March) and peripheral male NSO – nothing on final visits

# GD individual case histories:

## Lupton Creek # 1-3

- Continuously occupied by NSO's from 1990-1998, sporadic occupancy from 1999-2003 and sporadic responses 2004-2006
- History of BO responses in the drainage since 1998, first pair confirmed in 2004
- May 29, 2006 – male BO collected (female “escaped”) at Lupton #1
- June 7, 2006 (first re-visit) – female BO at Lupton #1
- June 26, 2006 – nothing detected at Lupton #1, new pair NSO's at Lupton #2 (first NSO occupancy since 1998)
- 2007 surveys:
  - Lupton #1 occupied by NSO pair – reproductive status unknown
  - Lupton #2 – no owls

# GD individual case histories:

## Mad River 7000

- Continuously occupied by NSO from 1990-2003
- Site unoccupied in 2004
- BO occupied site 2005-2006
- May 25, 2006 – pair BO's collected
- June 6, 2006 (first re-visit) – single male NSO responded near the site
- June 8, 2006 – new single unbanded S2 male NSO at the site
- September 13, 2006 – new female (S1?) seen with the male (H<sub>2</sub> response)
- 2007 surveys:
  - Site occupied by same NSO pair – not nesting

# GD individual case histories:

## Poverty Creek

- Continuously occupied by NSO from 1990-2003
- BO occupied site 2004-2006 – NSO's heard in the peripheral area but not resighted
- May 24, 2006 – pair BO's collected
- June 6, 2006 (first re-visit) – resident pair NSO's at the historical activity center/nest site ( $H_1$  response)
- 2007 surveys:
  - Site occupied by resident NSO pair – not nesting

# **What would it take to stabilize or reduce barred owl populations?**

**Simulated response of barred owl populations to various forms of lethal control**

Trent McDonald, WEST, Inc.

# Removal Simulations

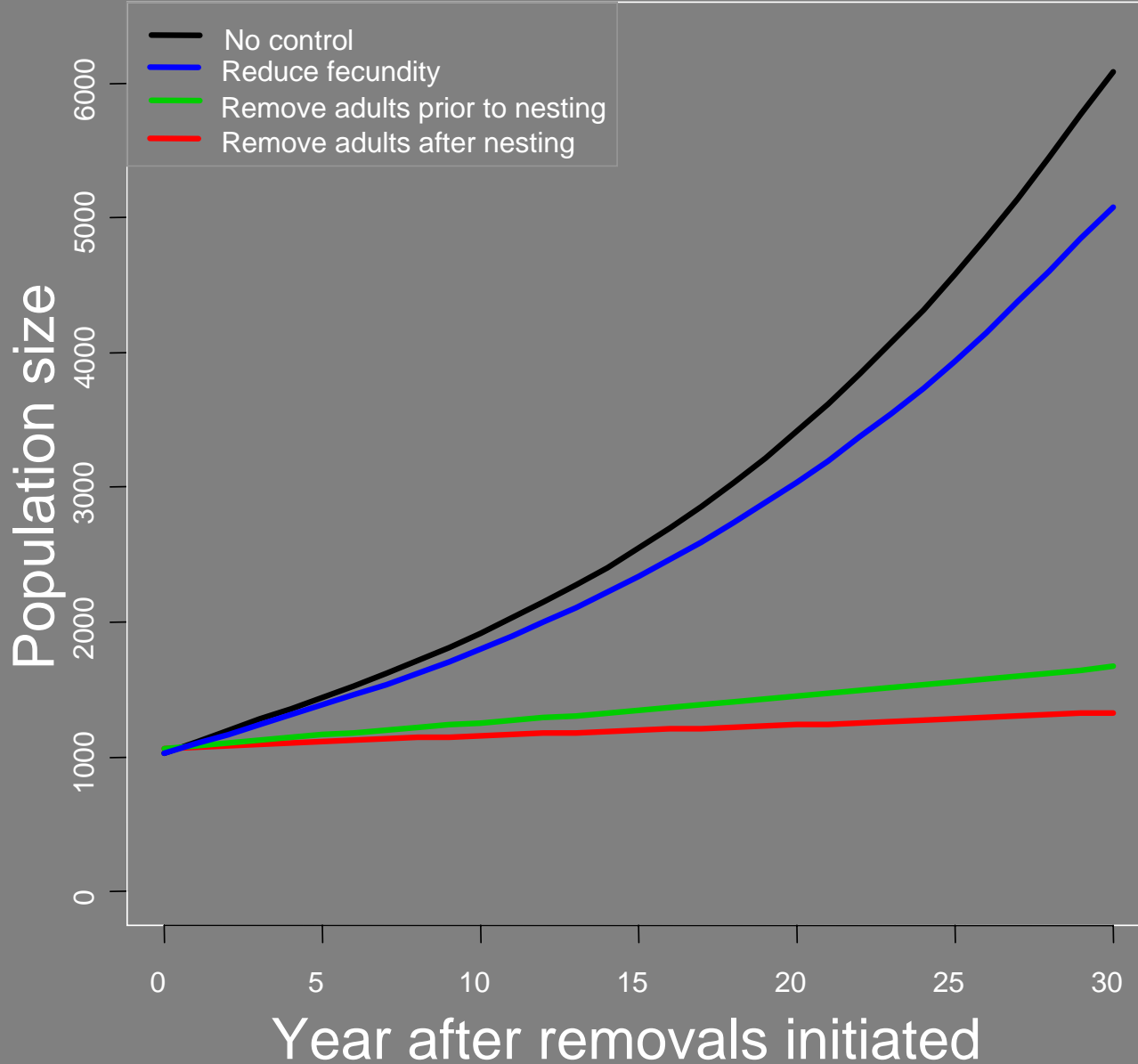
- Assume a large region with 1000 females ( $J = 200$ ,  $S1 = 200$ ,  $S2 = 200$ ,  $A = 400$ ) where emigration effects would be minimal
- Performed an iterative probabilistic simulation with default barred owl demographic population parameters
- Survival defaults
  - $\phi_j = 0.40$
  - $\phi_{s1} = 0.85$
  - $\phi_{s2} = 0.90$
  - $\phi_a = 0.90$

# Simulation continued

- Fecundity (# female young/female) defaults:
  - *mean* = 0.0 for J & S1; 0.5 for > S2 females (annual individual range 0-3)
  - multinomial distribution generated
    - $P_0 = 0.676$
    - $P_1 = 0.176$
    - $P_2 = 0.118$
    - $P_3 = 0.030$
- Ran the simulation 50 times with 4 different control scenarios – no control, X% non-juveniles removed before nesting, X% non-juveniles removed following nesting and X% reduction in fecundity (sterilization, destruction of clutch or etc.)

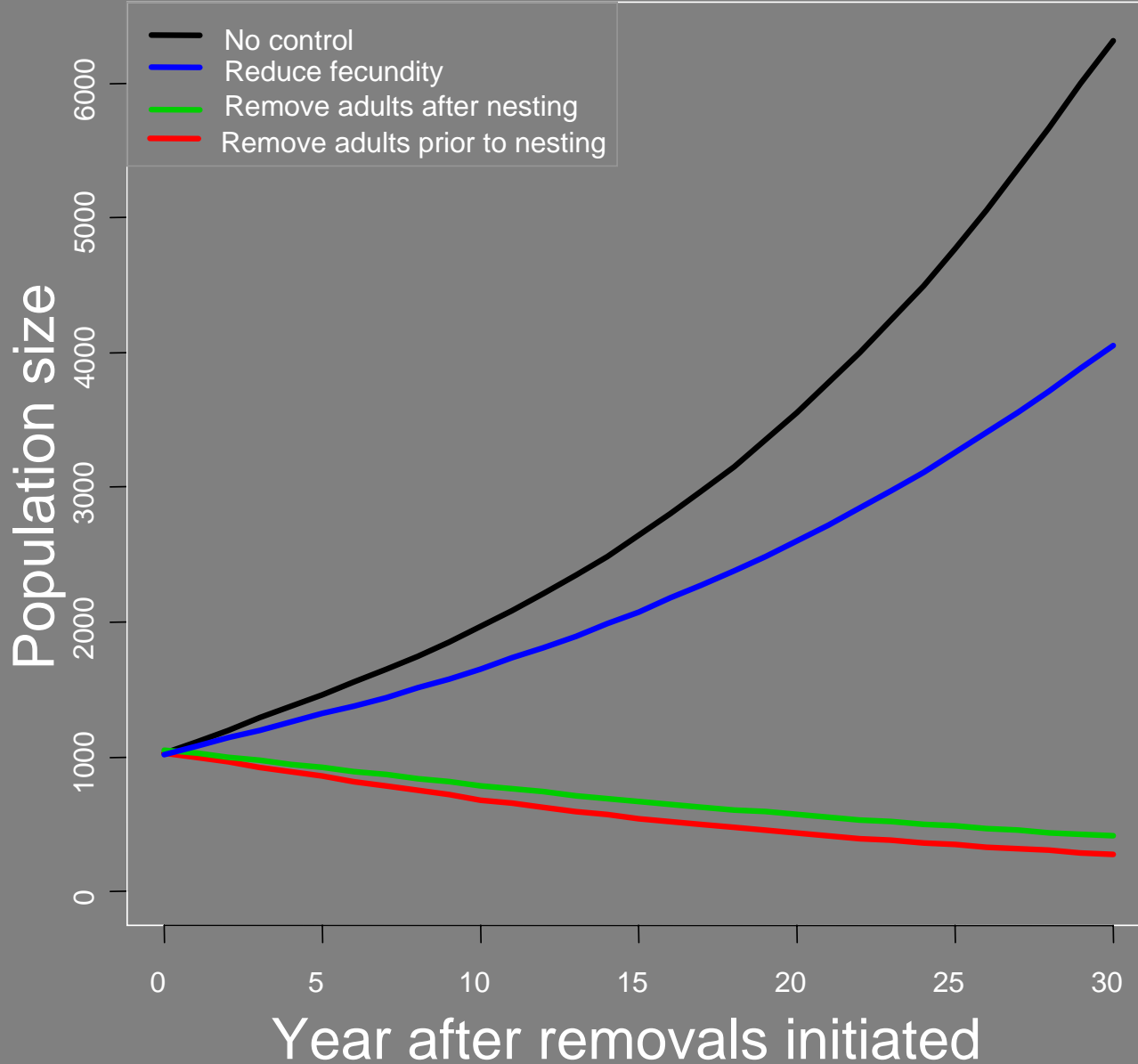
# 5% Annual Removal

Survival= 0.4 (J) 0.85 (S1) 0.9 (S2) 0.9 (A) Fecundity= 0 (J) 0 (S1) 0.5 (S2) 0.5 (A)



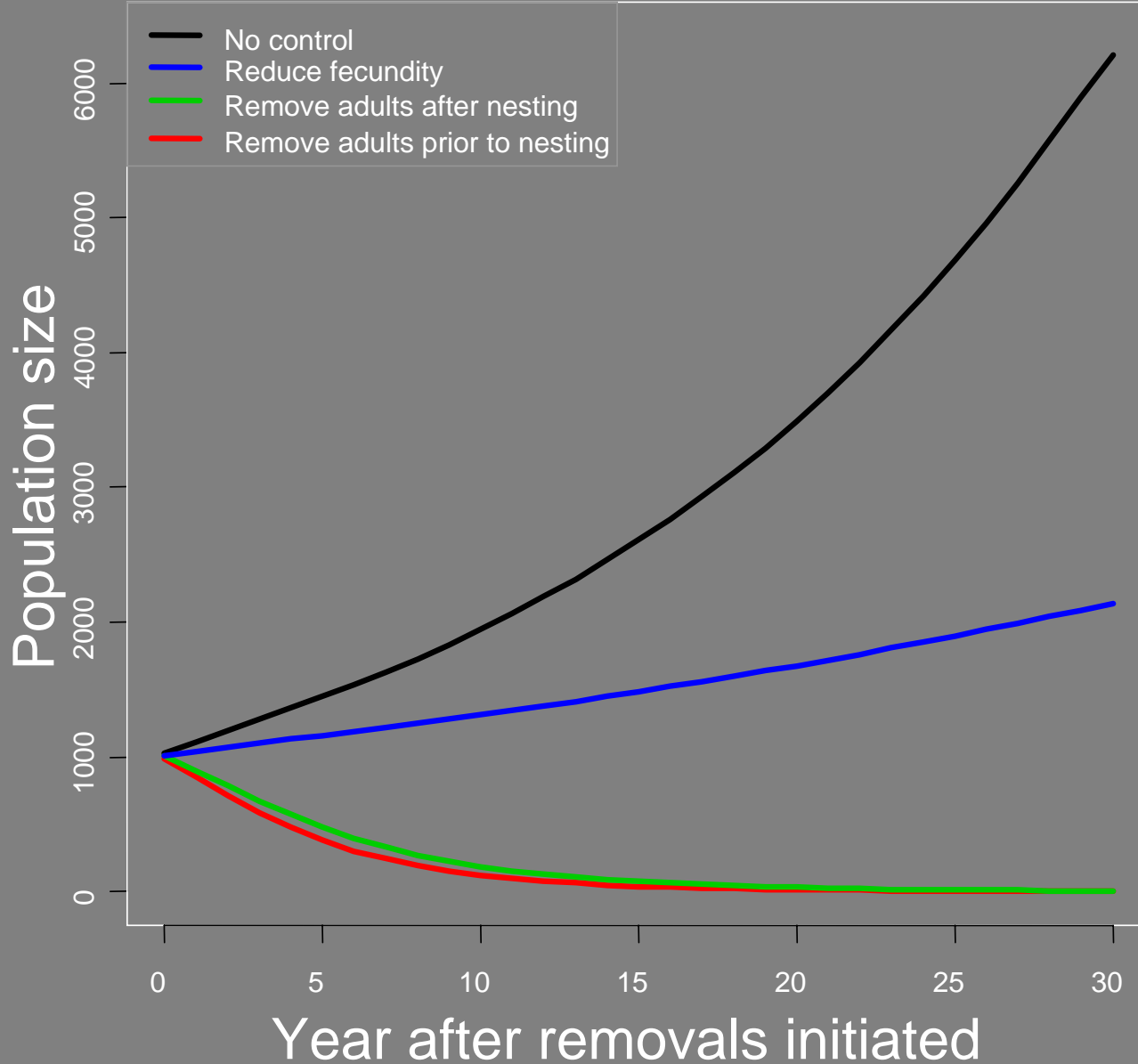
# 10% Annual Removal

Survival= 0.4 (J) 0.85 (S1) 0.9 (S2) 0.9 (A) Fecundity= 0 (J) 0 (S1) 0.5 (S2) 0.5 (A)



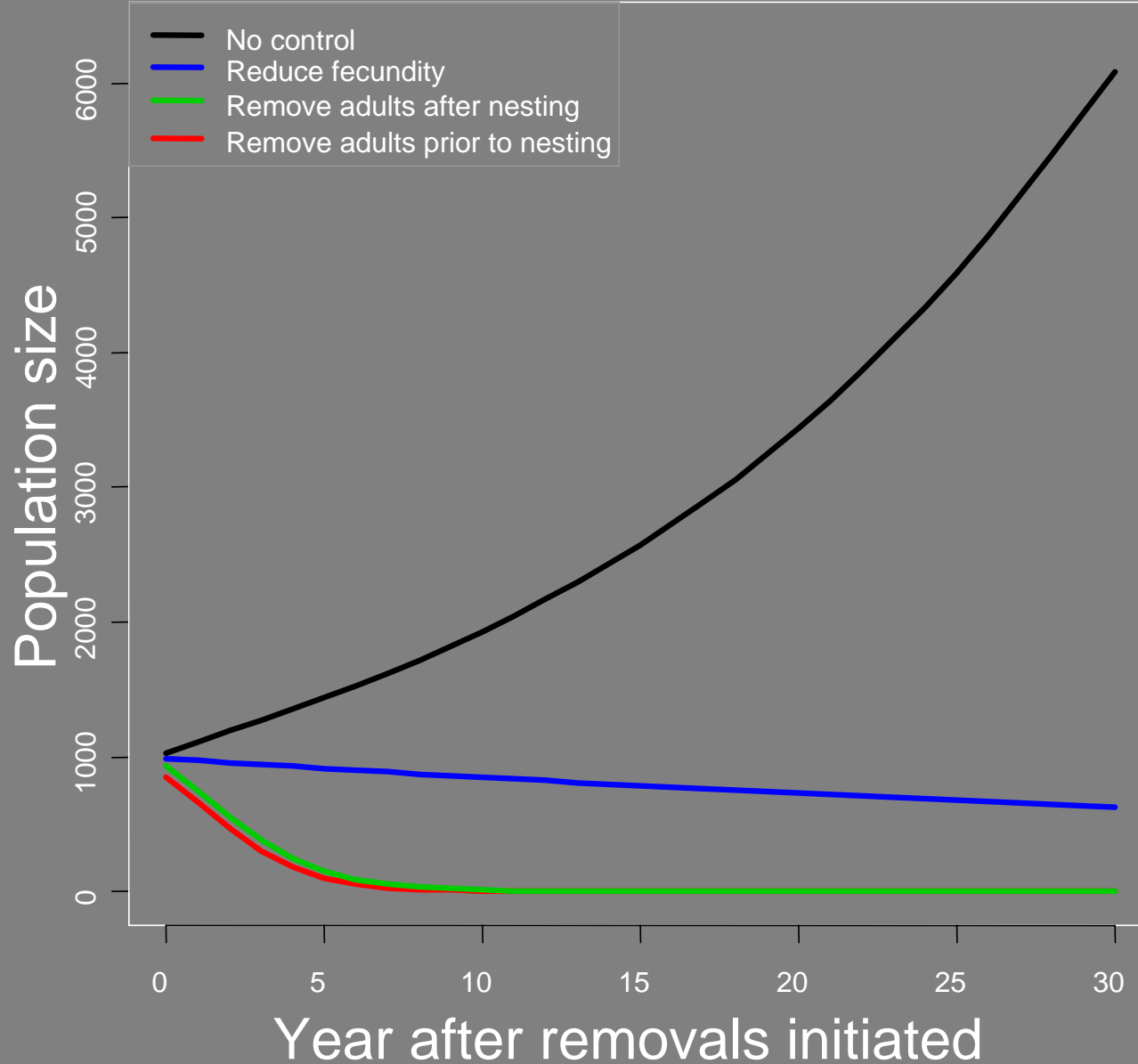
# 25% Annual Removal

Survival= 0.4 (J) 0.85 (S1) 0.9 (S2) 0.9 (A) Fecundity= 0 (J) 0 (S1) 0.5 (S2) 0.5 (A)



# 50% Annual Removal

Survival= 0.4 (J) 0.85 (S1) 0.9 (S2) 0.9 (A) Fecundity= 0 (J) 0 (S1) 0.5 (S2) 0.5 (A)



# Conclusions

Notwithstanding political and social issues:

- Territorial nature of barred owls makes them relatively easy to remove – they come to you.
- Increasing adult mortality has the greatest effect on the population
- Some evidence that spotted owls rapidly recolonize sites “lost” to barred owls
- Removal of adult barred owls prior to the nesting season has the greatest population effect and provides immediate potential to recolonize the site by spotted owls