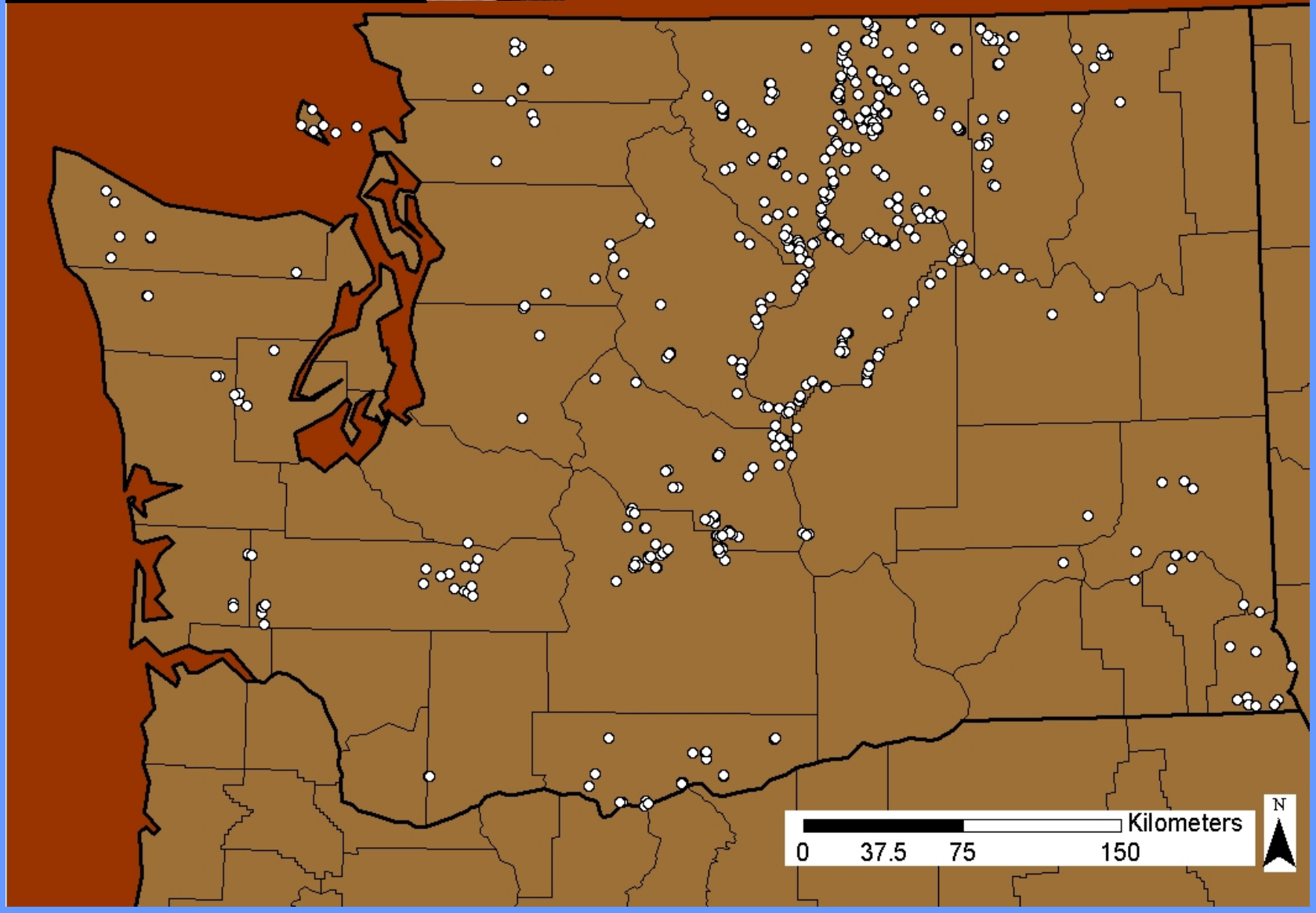
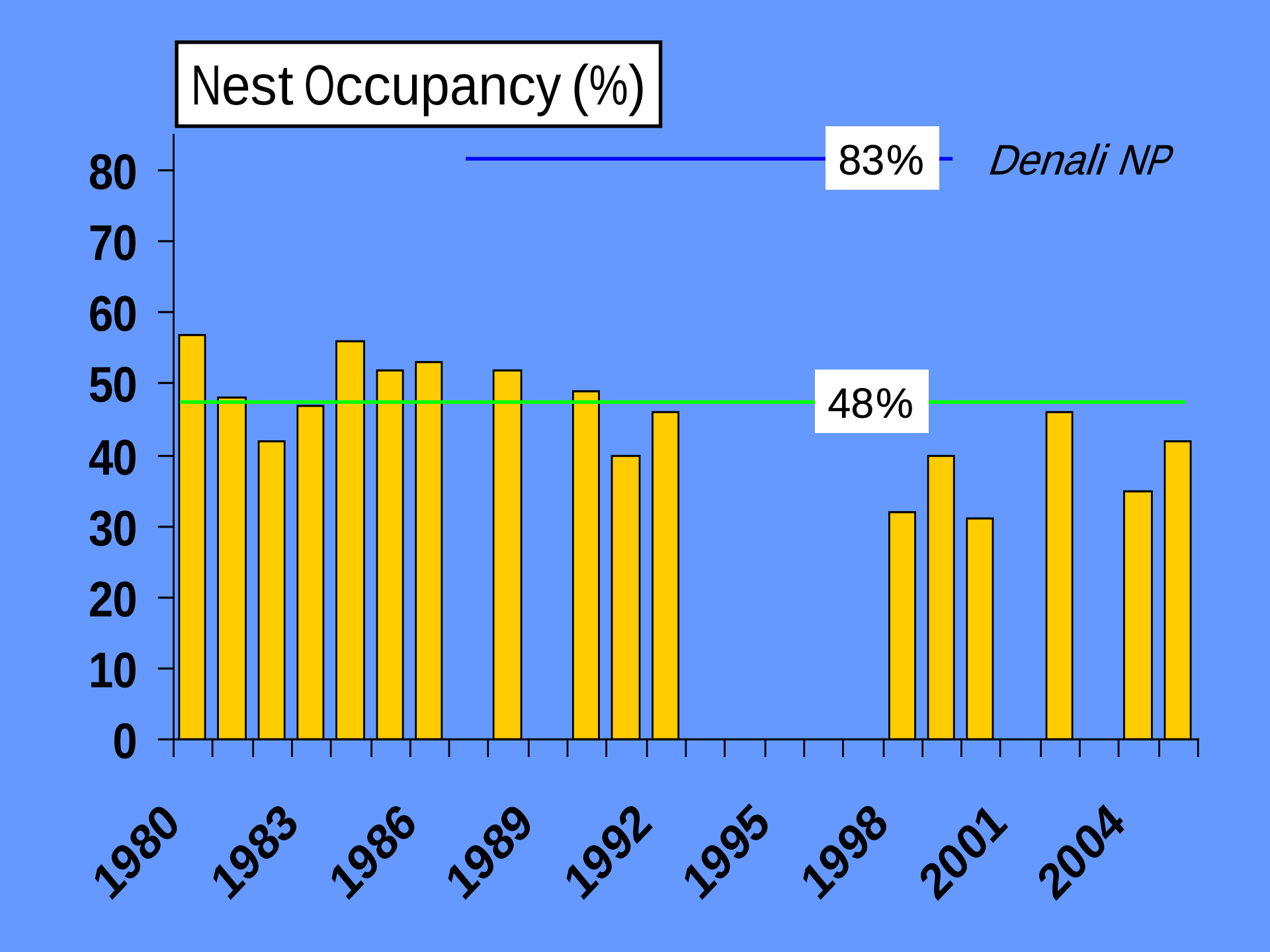
Golden Eagles and Lead Toxins

Washington Department of FISH and WILDLIFE

Jim Watson and Bob Davies

Background




Nest Occupancy (%)
83%
Denali NP
48%
80
70
60
50
40
30
20
10
0
1980
1983
1986
1989
1992
1995
1998
2001
2004

Lead??

Lead toxicosis from ingestion of spent ammunition established as cause of death for:

- Golden Eagle
- Bald Eagle
- Stellar's Sea Eagle
- White Tailed Eagle
- Spanish Imperial Eagle
- CA condors, vultures

For golden eagles, lead toxicosis established as cause of death in:

- Western Canadian Provinces
- Montana
- Idaho
- California

WA Golden Eagles 1998-2000 (Stauber and Talcott):

- 6 of 10 died of lead toxicosis

OR Golden Eagles 1999-2008 (Thompkins):

- 37 of 45 tested
- 21>0.10 ppm blood lead
- 5 with significant lead toxicosis

Residents or migrants??

Lead sources??

Is lead affecting eagle survival to the point of limiting the golden eagle population in Washington?

Goal and Objectives

Assess presence and degree of lead in the nesting population of golden eagles in WA

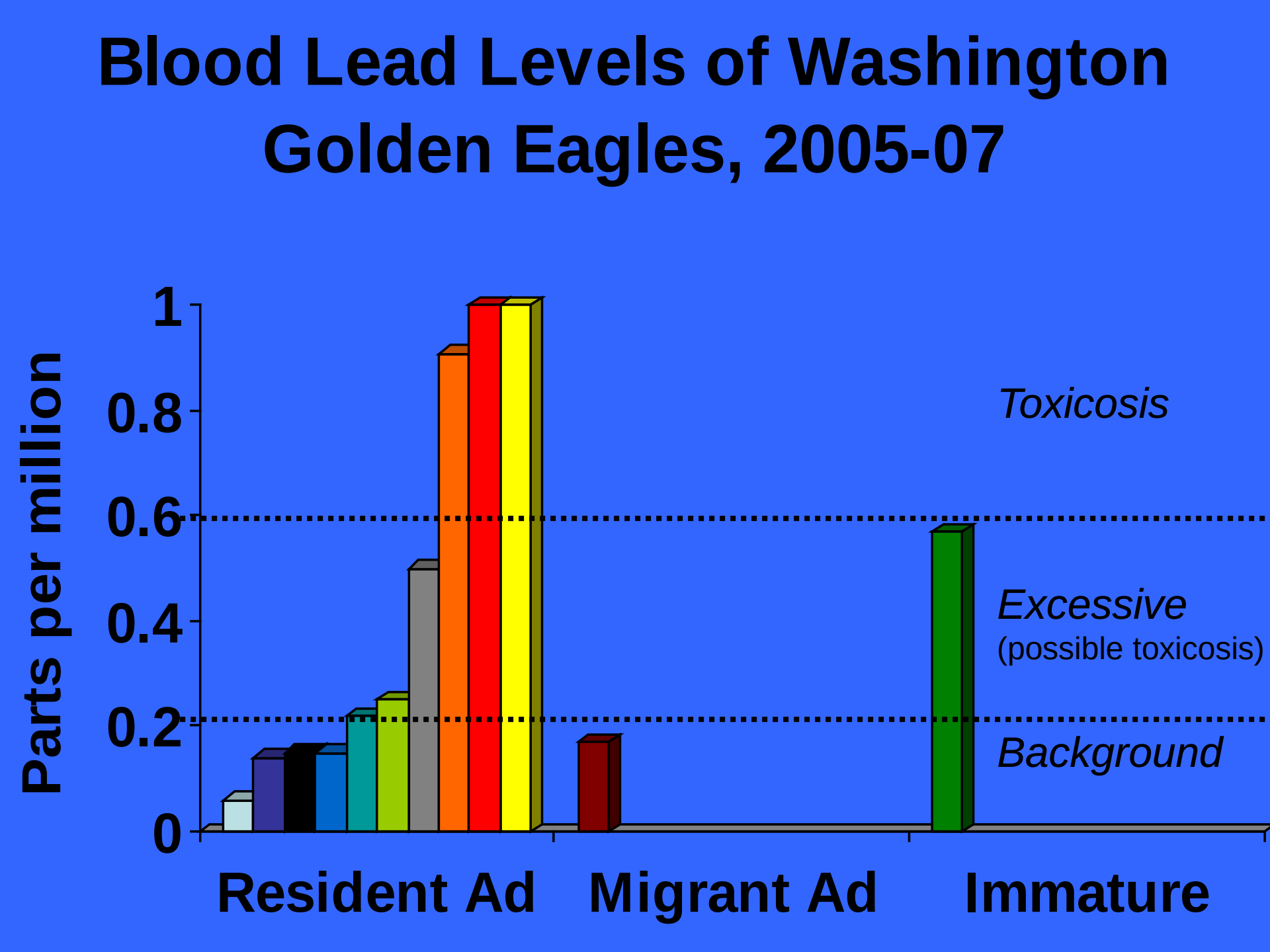
- ✓Sample and determine lead levels in resident adult eagles
- ✓Monitor movements of eagles to assess residency status and determine ranging behavior

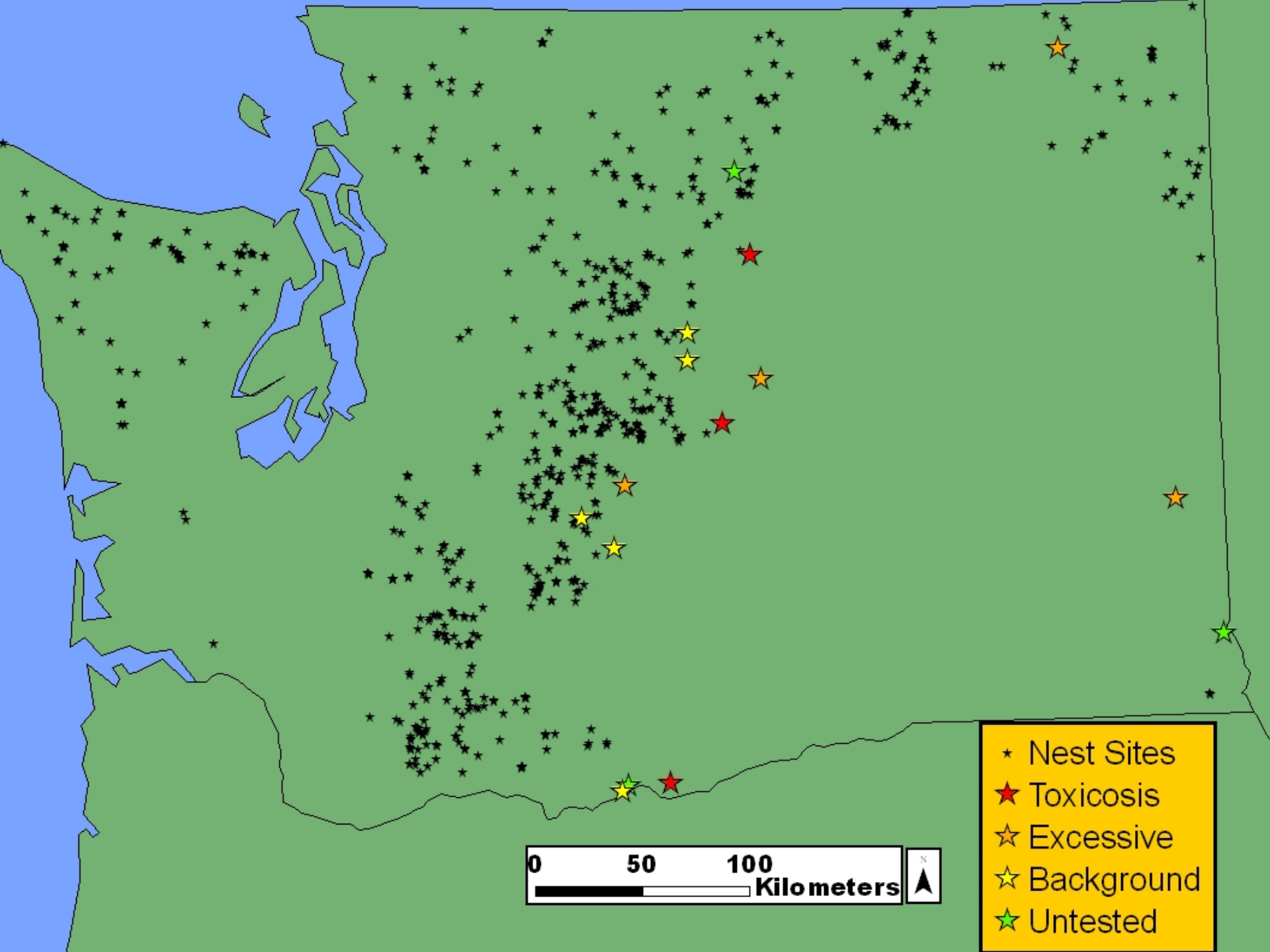
Methods

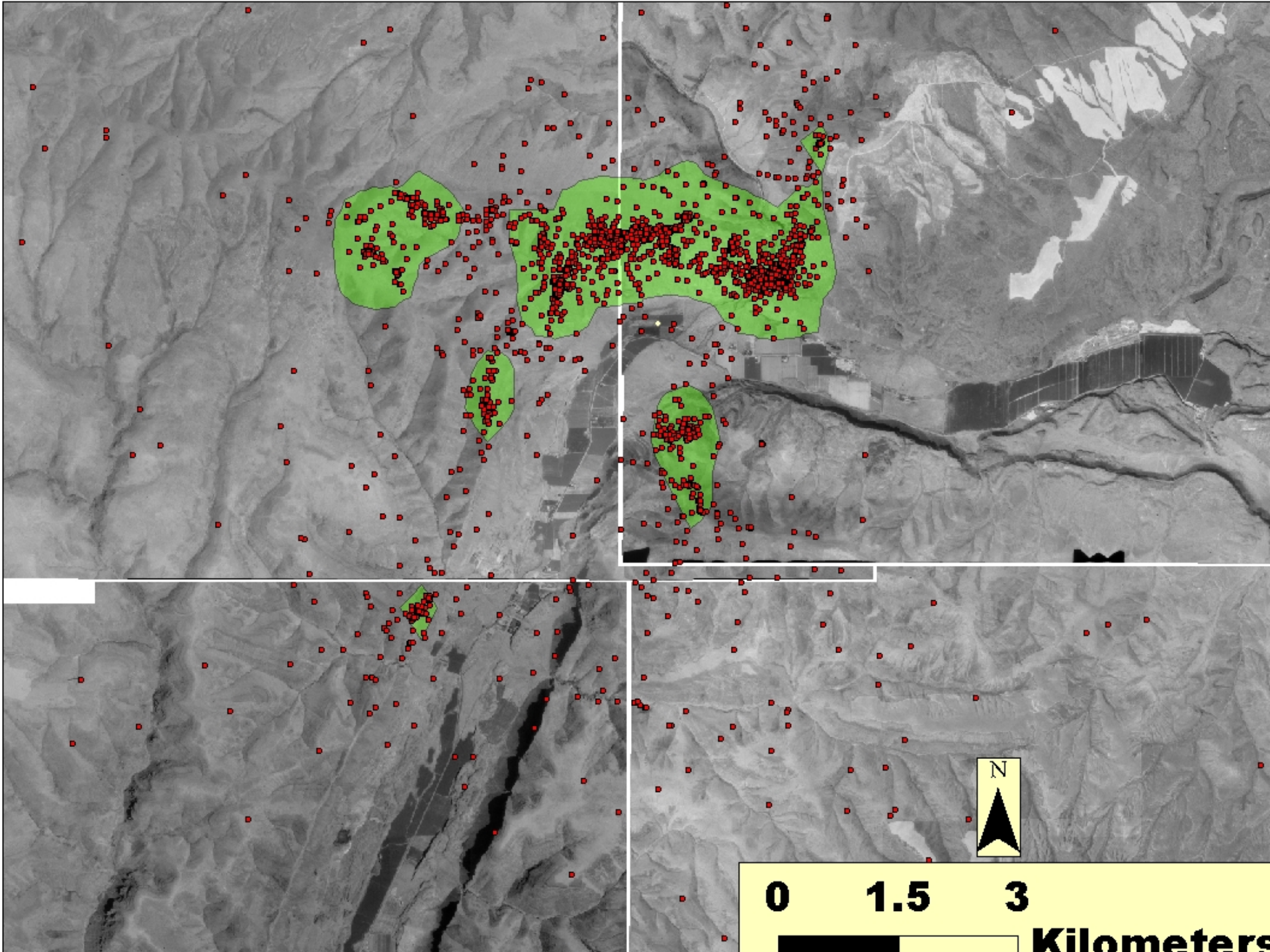
Preliminary Results

- ✓15 eagles sampled from 2005-08 (including 1 immature)
- ✓12 analyzed thus far with low to background levels of mercury, DDE, and selenium
- ✓Seven of 12 eagles from w/ excessive levels of lead

Blood Lead Levels of Washington Golden Eagles, 2005-07




Nest Sites
Toxicosis
Excessive
Background
Untested
0
50
100
Kilometers
N


N
0
1.5
3
Kilometers

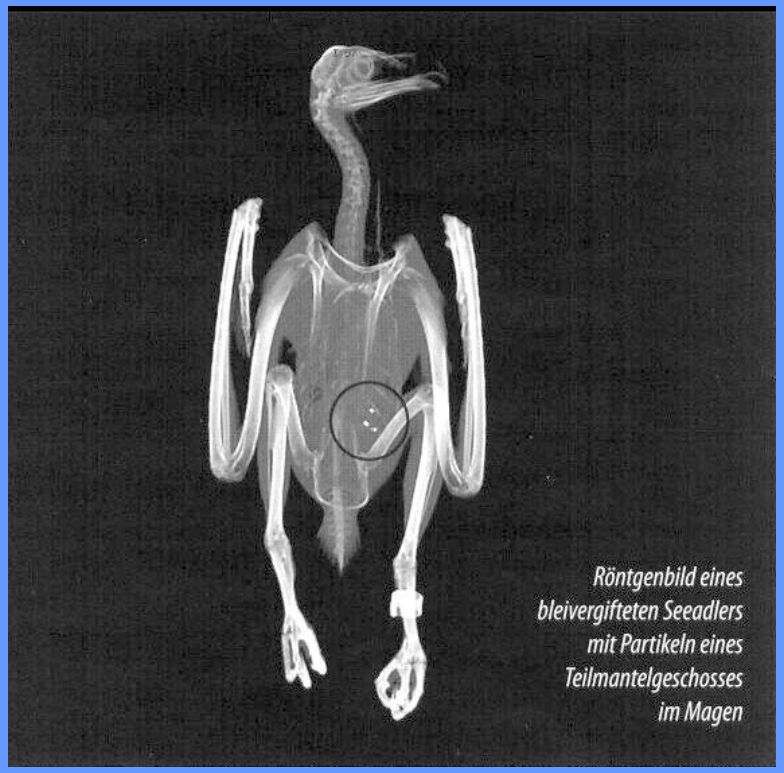
Summary

✓Significant lead contamination is present in 50% of sample of resident golden eagles in WA and is consistent with earlier reports of lead from incidental samples

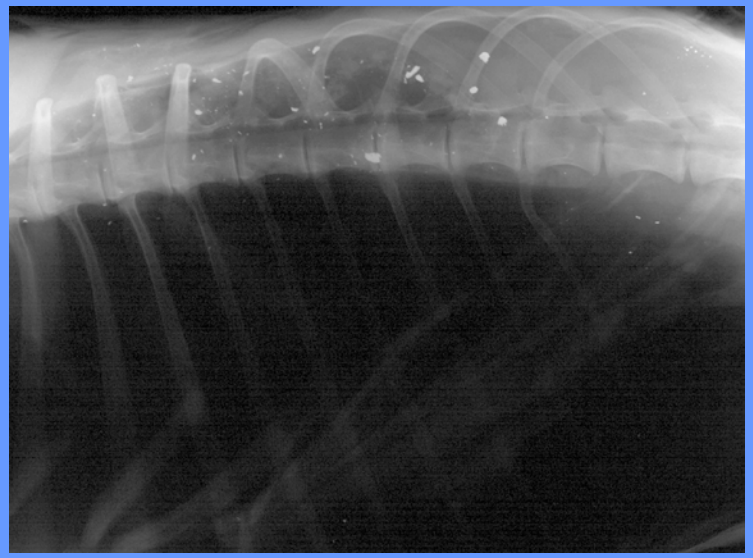
✓Resident adult eagles remain in Washington year-round on home ranges

Plan

- ✓**Continue blood sampling**
- ✓**Assess source(s) of lead contamination**
  - **Biomagnification through the food chain cannot account for toxic levels**
  - **Most likely source is direct contamination through consumed prey (i.e., spent ammunition in hunter-killed prey)**



Röntgenbild eines bleivergifteten Seeadlers mit Partikeln eines Teilmantelgeschosses im Magen



✓**Determine food habits**

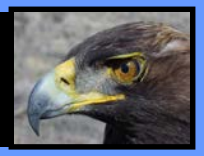
- **Blood lead represents snapshot of lead consumed up to 30 days prior to sampling (January-March)**

  feather lead represents lead consumed about 2 weeks after consumption

  bone lead represents chronic lead levels

✓**Determine prey isotopes from blood**

Acknowledgements



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