

Burrowing Owls in the Pacific Northwest



Athene cunicularia

ESRM 350
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Overview

- 1) Introducing the Oddball Owl
- 2) Burrowing Owl Population Status
- 3) Why the Decline?
- 4) Conservation Outlook
- 5) Recommendations



Introducing: The Oddball Owl

- Only species of its genus in western hemisphere
- Only known fossorial owl in the world
 - Burrows usually dug by previous occupant
 - Can be several meters long, with numerous twists and turns
- Considered diurnal (comparatively)
- No other owl hangs out on the ground during the day!



Introducing: The Oddball Owl

- Predatory like other raptors
 - Invertebrates (esp. beetles) and small mammals; opportunistic
 - Important for pest control
- Diminutive
 - 7-11" tall
 - 20-24" wingspan
 - 5-8 oz.
- Eat or be eaten!
 - Subject to predation by native & nonnative animals
- Habitat: grassland, desert, shrub-steppe
 - Prefer less than 30% shrub cover
 - Low perches



*Paul A. Johnsgard (1988) - North American Owls Biology and Natural History

Introducing: The Oddball Owl



- “Tool”-user (dung)*
 - attract prey
 - acquire carotenoids?
 - control microclimate?
- At least 17 different vocalizations
- Mimicker - a bird in snake’s clothing?



*Levey, Duncan, & Levins, (2004) *Nature*

Burrowing Owl Population Status



- Overall species decline
 - Endangered or “of special concern” in a dozen states
 - Declining in most of its range**
- Pacific Northwest
 - Historically documented in western WA (early 1900s)*
 - WA State Status: Candidate for Listing

*Altman (2011) *Northwest Science*

**Dechant (1999) *Northern Prairie Wildlife Research Center*; Wellicome & Holroyd (2001) *J Raptor Research*

Burrowing Owl Population Status

- 1.5 – 3.1% annual rate of decline in WA state*
 - Over a 40-yr period = 45 – 72% overall decline
- 56% reduction in historic breeding range in WA**
- Long-term trend in N. America: Decline of 50-90%
 - Possible increases in Idaho (& South America)



*Sauer et al (2005) *USGS Wildlife Research Center*; Conway & Pardieck (2006) *Northwest Science*

**Wellcome & Holroyd (2001) *Raptor Research Report*; Conway et al. (2005) *Arizona Cooperative Fish & Wildlife Research Unit*

Burrowing Owl Population Status

Range vs Population Status

- Incredibly difficult to estimate

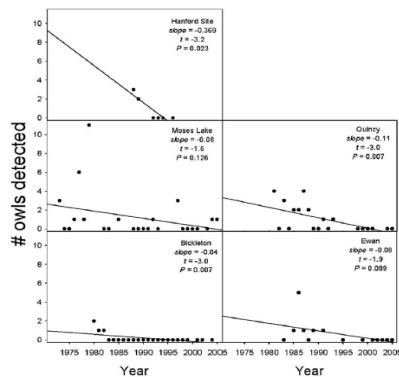


Figure 2. Number of burrowing owls detected per yr on the five North American Breeding Bird Survey routes in Washington that had a significant population trend or where owls were detected during 25 yrs (from U.S. Geological Survey 2006). Solid lines represent the slopes of simple linear regression, with number of owls detected as the response variable and year as the explanatory variable.

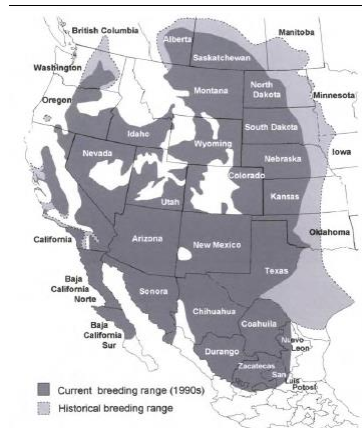
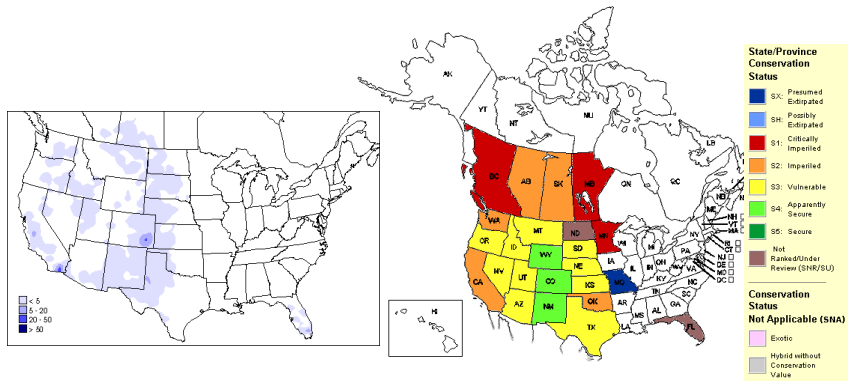


Figure 3. Reduction in burrowing owl range (modified from Wellcome and Holroyd 2001).

Burrowing Owl Population Status



Breeding distribution of the burrowing owl in the US & Canada (Breeding Bird Survey)

Burrowing owl breeding status by state and province (NatureServe)

Breeding Bird Survey data, 1985-1991. Scale represents average number of individuals detected per route per year. Map from Price, J., S. Droege, and A. Price. 1995. The summer atlas of North American birds.

Ridgely, R.S., T.F. Allnutt, T. Brooks, D.K. McNicol, D.W. Mehlman, B.E. Young, and J.R. Zook. 2003. Digital Distribution Maps of the Birds of the Western Hemisphere, version 1.0. NatureServe, Arlington, Virginia, USA.

Why the Decline?

Primarily Habitat Loss & Fragmentation:

- Loss of shrub-steppe & (native) grassland habitat
- Agricultural development
- Existing burrow destruction
- Rapid development in the Tri-City region



Why the Decline?

Other Causes:

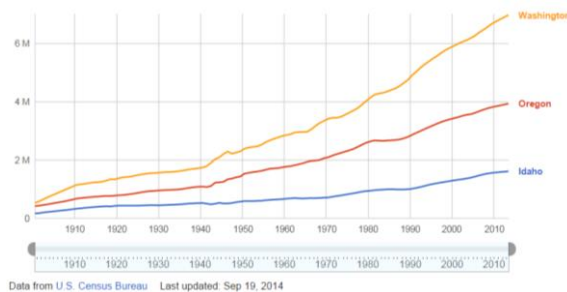
- Eradication of burrowing mammals by humans
- Insecticide use on agricultural land
 - Directly poisons owls & reduces prey availability
- Excessive predation (dogs, cats, food-subsidized native predators)
- Vehicle collisions



Why the Decline?



Human Population Growth in the PNW



- If population growth in the Pacific Northwest continues at the same trajectory as the last half-century, it will swell from ~15 million to 85 million by 2100*

*Oregon State University - Pacific Northwest 2100 Project

Conservation Outlook

Issues

- Lack of data
- Conflicting interests
- Nest mostly on private land in WA
- No official recovery plan – no mandate
- Contradictory opinions: Agricultural vs. (Sub)urban Areas
 - Higher breeding density & nest success in agricultural areas, but lower natal recruitment & return of adults*



*Conway et al (2006) *J Field Ornithology*

Conservation Outlook

Assets

- Largely generalist in foraging habits
 - Limiting factor: nest-site availability
- Relatively tolerant of human presence
- High visibility & “charismatic”
- *Can* live in agricultural areas...
 - Pesticide use must be limited
 - Nest burrows must be protected
- Amenable to artificial burrows



Recommendations

- Determine population abundance and distribution
 - Standardized, state-wide surveys
- Protect existing burrows *and* burrowing mammal habitat
- Create artificial burrows
- Education & outreach



- Broader scale:
Address human
population growth

Discussion

- What constitutes a positive outlook?
 - Scientific evidence points to continued decline for most sensitive species
 - Humans want to “feel good”...mutually exclusive perspectives?
- Should we focus on species with “the most bang for our buck”?
- Ecosystem perspective versus the IUCN Redlist
- Visibility bias

