

American badgers (*Taxidea taxus*) as a focal species for conservation planning in California

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CDFG/UCD WHC Resource Assessment Program Competitive Grant Project, 2004-2007

Outline

- Badger ecology
- Badger as a focal species
- Future plans



About badgers



- Mustelids
- 6 species worldwide
- Carnivorous-omnivorous
- Semi-fossorial



About American badgers

- *Taxidea taxus* (4 subspecies)
- Range across the western U.S., southern Canada, and northern Mexico
- Associated with grasslands, open habitats
- Semi-fossorial



About American badgers

- Females ~ 7 kg, males ~ 15 kg.
- 1-4 kits per year (avg. 2).
- Polygamous
- Delayed implanters
- Solitary
- Mainly carnivorous
- Eat burrowing rodents, lizards, birds and bird eggs



Resource Assessment Project 2004-2007

- Determine conservation status of badgers
 - Population distribution
 - Behavioral ecology
- Reassess listing status
- Badger as a focal species



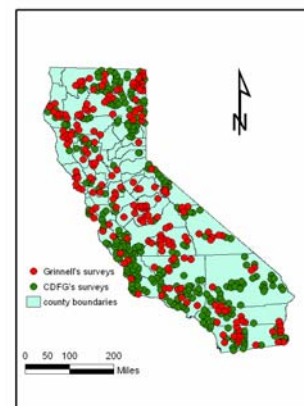
Badgers as a focal species

- Sensitive to human impact and development

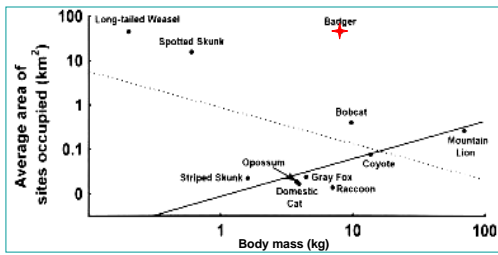


Has their range extent changed, and why?

- Joseph Grinnell: 1919-1924
- CDFG: ~1965-1985
- Land conversion may be association with decline in badger sightings
- Currently a SSC



Sensitive to fragmentation in southern California?



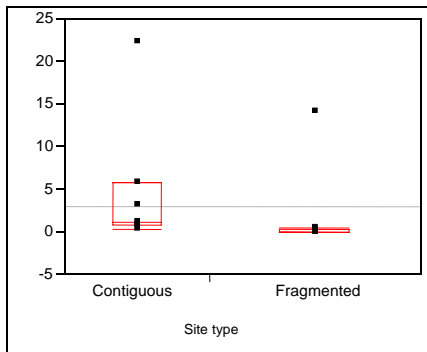
*Crooks 2002

Do they occur in fragmented habitat elsewhere?

- Grassland habitats
- Sierras and central coast
- 10 fragments, 7 contiguous
- 1 to 5 plots 0.5 km² each
- Recorded number and age of badger burrows



Higher indices in contiguous sites



Wilcoxon Rank Sum Test
 $Z = 2.64$
 $P = 0.008$

Future analysis:
Spatial factors

Badgers as a focal species?

- Sensitive to human impact and development
- Representative of the grassland community



Question 4: Do they occur with other sensitive species?

site	County	region	Fragmanted?	Badger presence	Burrowing Owl	San Joaquin Kit Fox
Carrizo	Kern	Cc	N	1	1	1
Mather	Sacramento	Sn	N	1	1	0
Montana	San Luis Obispo	Cc	N	1	1	0
Pacheco	Merced	Cc	N	1	1	0
Roberts	San Luis Obispo	Cc	N	1	1	0
Table	Fresno	Sn	N	1	0	0
Homer	Tulare	Sn	N	1	0	0
Ord	Monterey	Cc	Y	1	1	0
Lewis	Tulare	Sn	Y	1	0	0
Madonna	San Luis Obispo	Cc	Y	1	0	0
Sandridge	Kern	Sn	Y	1	0	0
Bishop	San Luis Obispo	cc	y	0	0	0
Herbert	Tulare	Sn	Y	0	0	0
Isly	San Luis Obispo	Cc	Y	0	0	0
Kaweah	Tulare	sn	Y	0	0	0
Southhills	San Luis Obispo	Cc	Y	0	0	0
Terrace	San Luis Obispo	Cc	Y	0	0	0

Badgers as a focal species?

- Sensitive to human impact and development
- Representative of the grassland community
- Wide-ranging carnivore; spatial factors important



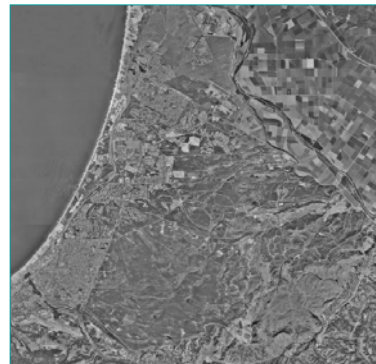
Movements and mortality

- Movements vary...
 $2 \text{ km}^2 \rightarrow >200 \text{ km}^2$
 \downarrow
 100 km dispersal
- Mortality
 - Coyotes
 - Roads
 - High for juveniles



...in California??

Fort Ord Study



What do badgers want (spatial/habitat requirements)?



10 badgers

- 6 females, 4 males

- Radio-locations (at night): 1/animal/week
- Den locations (day): 1/week
- Continuous tracking (night) in 4-8 hr sessions
- Battery life of ~2 years



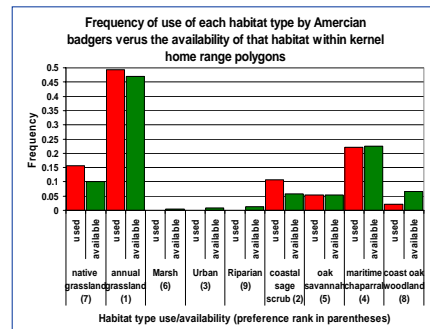
Results: Ranging behavior

- Home range sizes of 2.81 to 20.85 km²
- Males ranges larger than females
- Males and related females overlapped



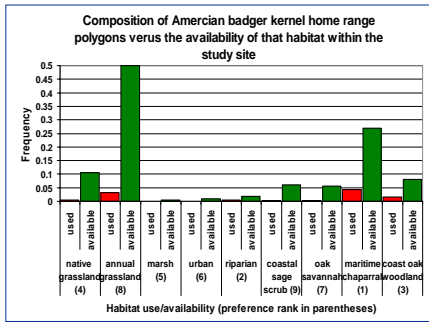
Habitat preferences within home range

1. Annual grassland
2. Coastal sage scrub
3. Urban boundary
4. Maritime chaparral
5. Oak savanna
6. Marsh
7. Native grassland
8. Coastal oak woodland
9. Riparian



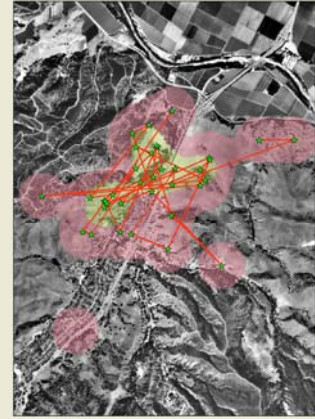
Habitat preferences within the site

1. Maritime chaparral
2. Riparian
3. Coastal oak woodland
4. Native grassland
5. Marsh
6. Urban boundary
7. Oak savanna
8. Annual grassland
9. Coastal sage scrub



Movement paths

- Up to 2 km/night
- Will cross busy road
- Perhaps follow linear landscape features?
- Or don't follow them at all.



Future plans

- Behavior-specific habitat preferences
- Continue to collect sighting reports
- Add to CWHR habitat model
- Assess methods of indexing badger populations
- Complete a Species Status Report for CDFG in May



Project support

- CDFG/UC Davis Wildlife Health Center Resource Assessment Program
- American Museum of Natural History
- American Wildlife Research Foundation
- The Western Section of the Wildlife Society
- American Society of Mammalogists
- The Chuck Haugen Conservation Fund
- UC Davis Jastro-Shields Research Grant
- UC Davis Ecology Graduate Group



Cooperators

- Sierra Foothills Conservancy
- Sequoia Riverlands Trust
- Sacramento Valley Conservancy
- Pacheco State Park
- BLM Carrizo Plain Natl. Monument
- US Army National Guard Camp Roberts
- City of San Luis Obispo
- NPS Point Reyes National Seashore
- Big Sur Land Trust
- Las Palmas Development
- UCNRS
- BLM Fort Ord Project Office
- Avian & Exotics Veterinary Clinic



Thank you!

Field assistants

Gerriann Albers, John Clare, Johanna Davis, Bruce Delgado, Tanya Diamond, Jessica Dunlap, Mark Elbroch, Janel Fishpaw, Jessica Gist, Kimberley Greeson, Andrew Hida, Daniel Jackson, Tammy Jaki, Marina Kasa, Courtney McSherry, Mary Paul, Patt Quinn-Davis, Dairen Simpson, Alyssa Stark, Nicole Tauffest, Brett Williams, Topo



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Mike Murray
Steve Torres
Amy Wells

