

Golden Eagle Surveys, Habitat Characteristics, and Nest Monitoring in Del Norte and Humboldt Counties, CA

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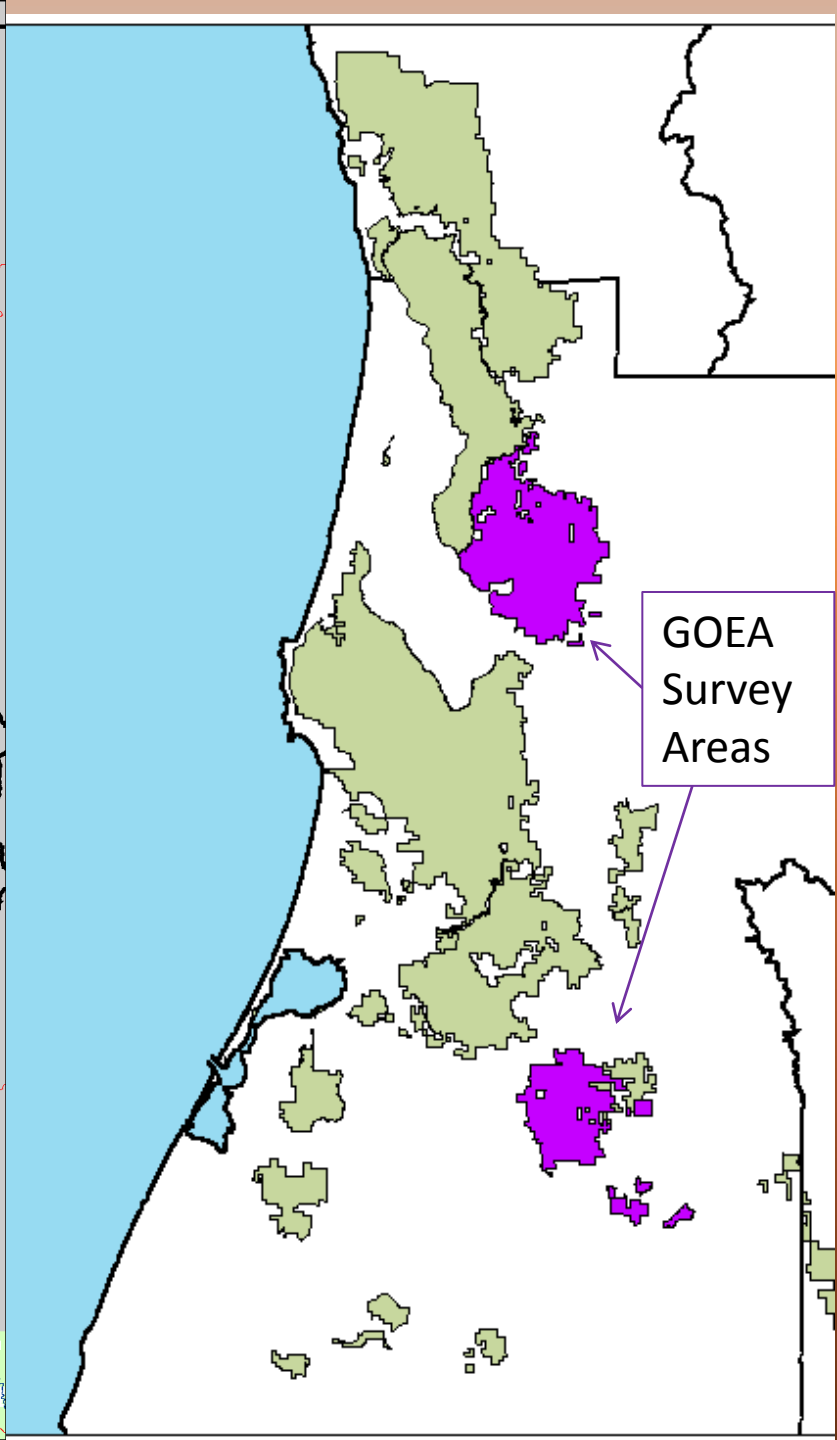
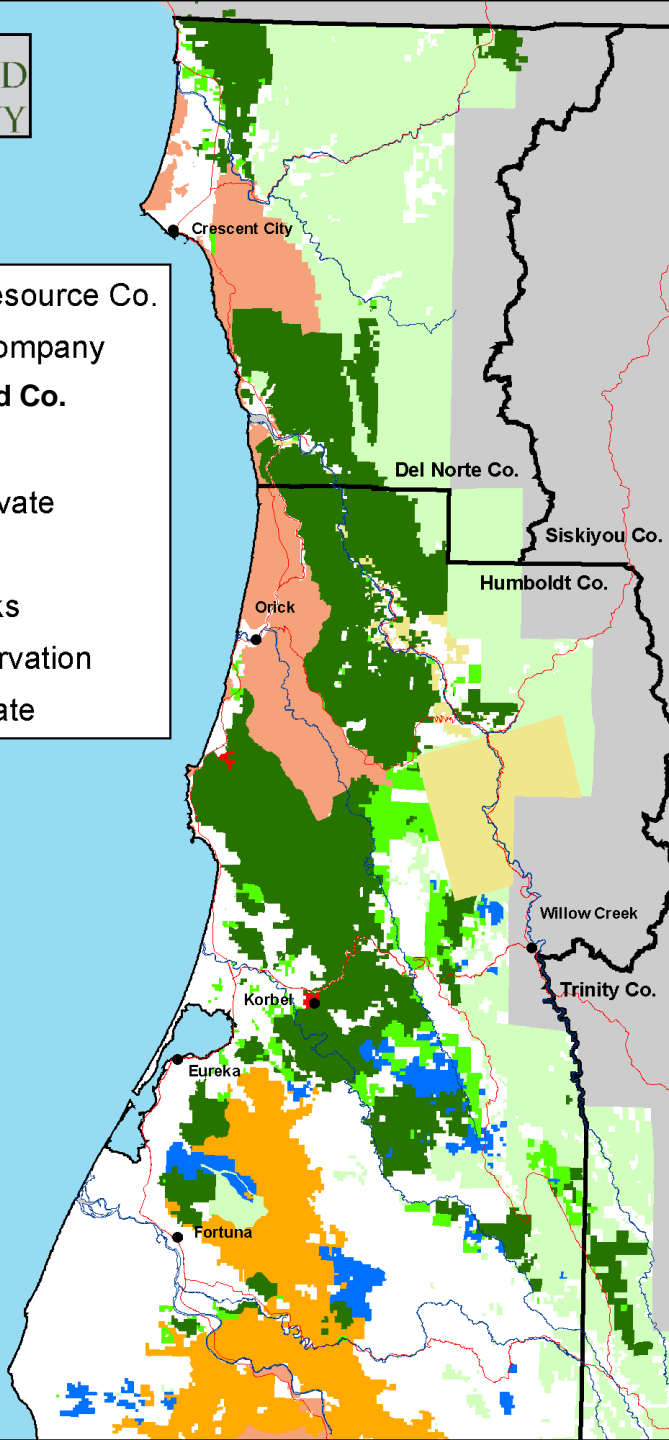
Overview of Presentation

- Study Areas: Humboldt Redwood and Green Diamond lands in Humboldt and Del Norte Counties
- Green Diamond surveys
- Results of HRC surveys 2001 - 2005
- HRC habitat analysis
- Current surveys and monitoring
- Results and Conclusions



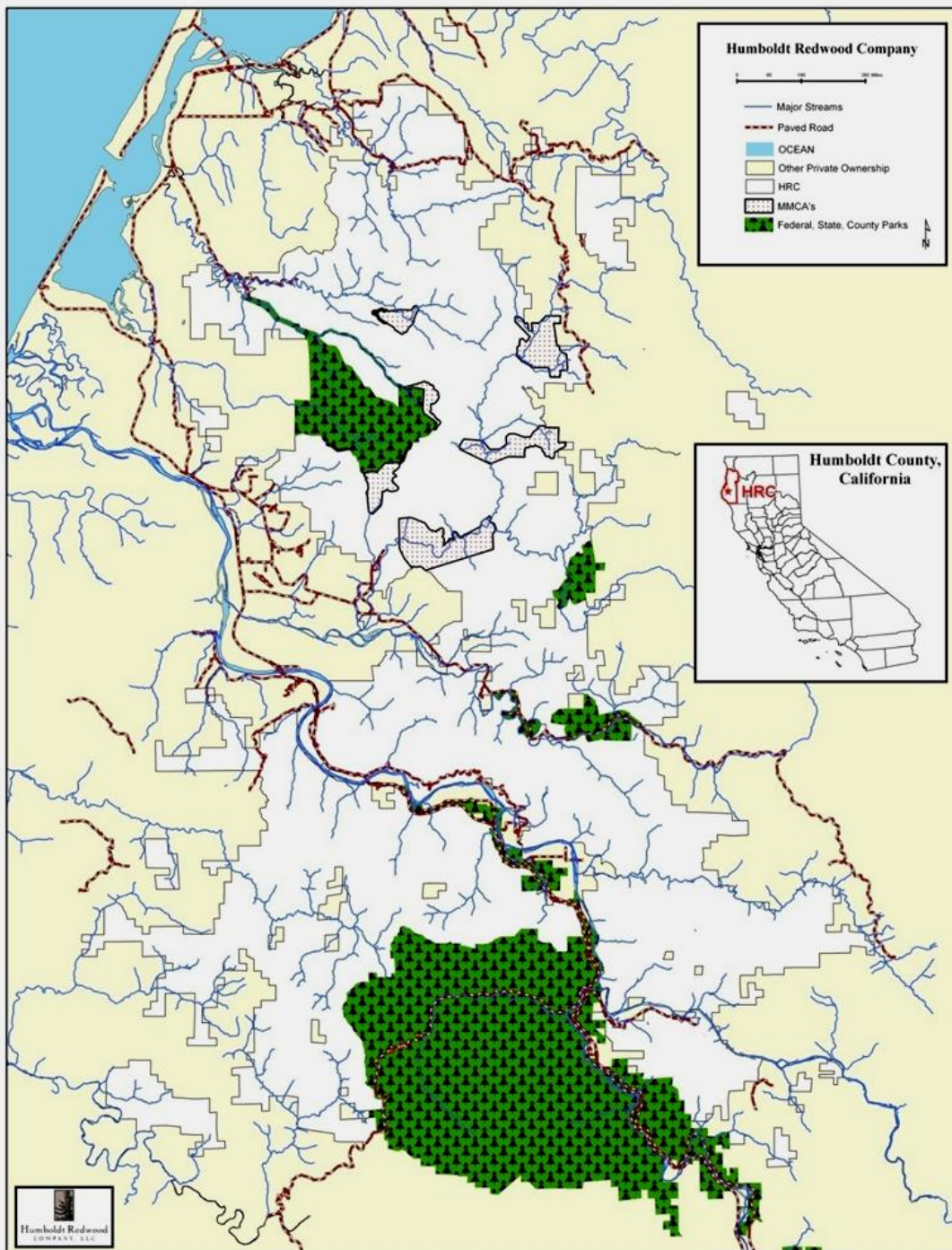
Golden Eagle: (*Aquila chrysaetos*)

-  Green Diamond Resource Co.
-  Simpson Timber Company
-  Humboldt Redwood Co.
-  Sierra Pacific Ind
-  Other Industrial Private
-  USFS/BLM
-  National/State Parks
-  Hoopa/Yurok Reservation
-  Non-Industrial Private



Humboldt Redwood Company




- Approximately 210,000 Acres of Managed Forestlands
- Primarily Coastal Redwood and Douglas-fir Forests
- NE, SE, and SW portions are DF/Hardwood with Prairies
- Important Habitat for Threatened and Endangered Species

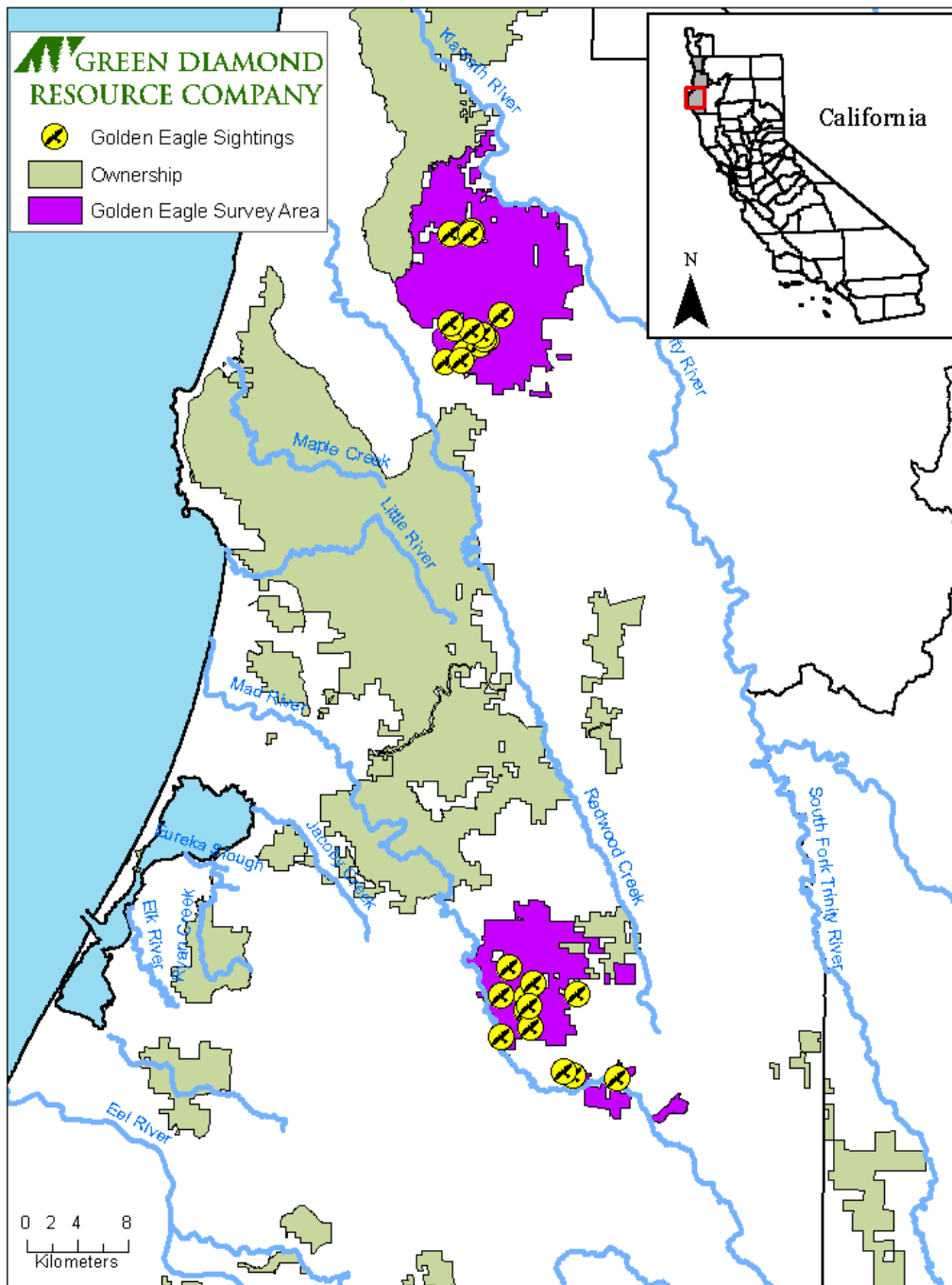


Green Diamond: Golden Eagle Survey Protocol for Timber Harvesting Plans

- Surveys conducted prior to operations in areas with potential nesting habitat or sightings
- Breeding season is January 15 – April 15
- Fixed survey points established around units
- Each point surveyed 3 times during the breeding season with one survey conducted after April 1
- 3 hour surveys, 5 days apart
- Ground searches required if eagles seen frequently perching and roosting or if nesting behavior is observed
- Must receive written approval from DFG prior to operations where golden eagle surveys are required

 **GREEN DIAMOND
RESOURCE COMPANY**

-  Golden Eagle Sightings
-  Ownership
-  Golden Eagle Survey Area



Summary of Golden Eagle Surveys: Bald Hills Survey Area

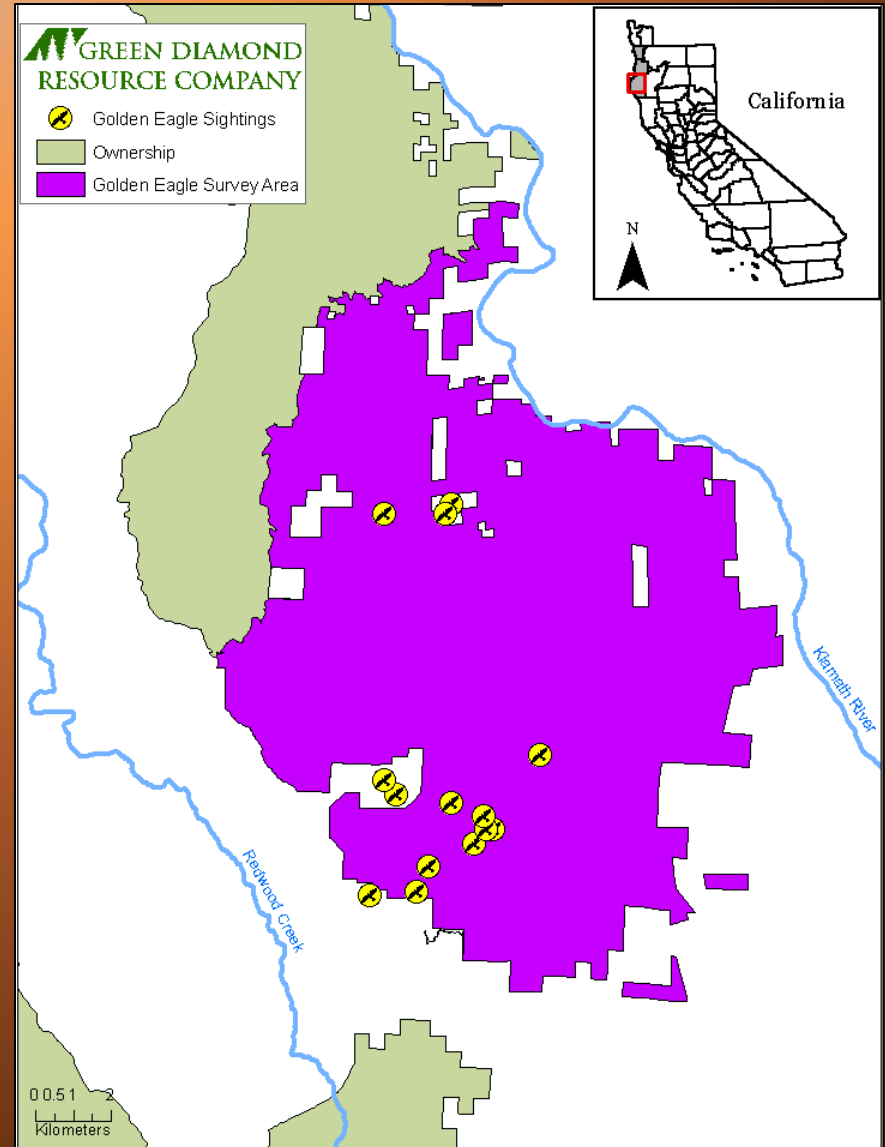
Bald Hills Area THP Surveys

Survey Year	Adults	Subadults	Juvenile	Unknown Age
2002	2	0	0	0
2003	2	0	0	0
2004	1	0	0	0
2008	1	0	0	0
2009	2	0	0	0
2010	2	0	0	0
2012	1	0	0	0

Bald Hills Area Incidental Sightings

Survey Year	Adults	Subadults	Juvenile	Unknown Age
1999	0	0	0	1
2000	0	0	0	1
2007	1	0	2	0

- Areas of relatively concentrated activity
- No nests observed



Summary of Golden Eagle Surveys: Upper Mad River Survey Area

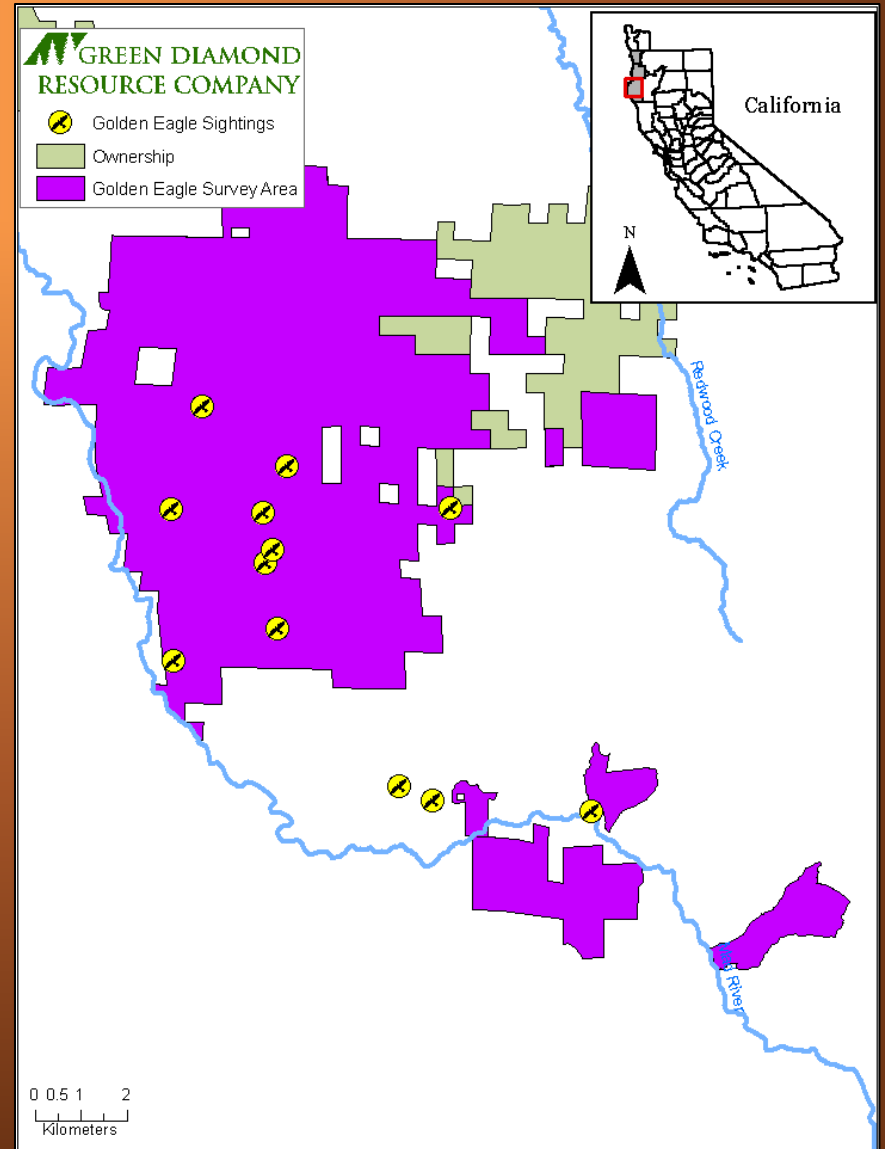
Upper Mad River Area THP Surveys

Survey Year	Adults	Subadults	Juvenile	Unknown Age
1994	0	0	0	2
1996	0	0	0	1
2004	2	0	0	0
2009	0	0	0	0
2010	0	0	0	1
2011	1	3	0	0
2012	0	0	0	0

Upper Mad River Area Incidental Sightings

Survey Year	Adults	Subadults	Juvenile	Unknown Age
1998	0	0	0	1
1999	0	0	0	1
2001	1	0	0	1

- Scattered observations
- Again, no nests observed



Green Diamond: Conclusion

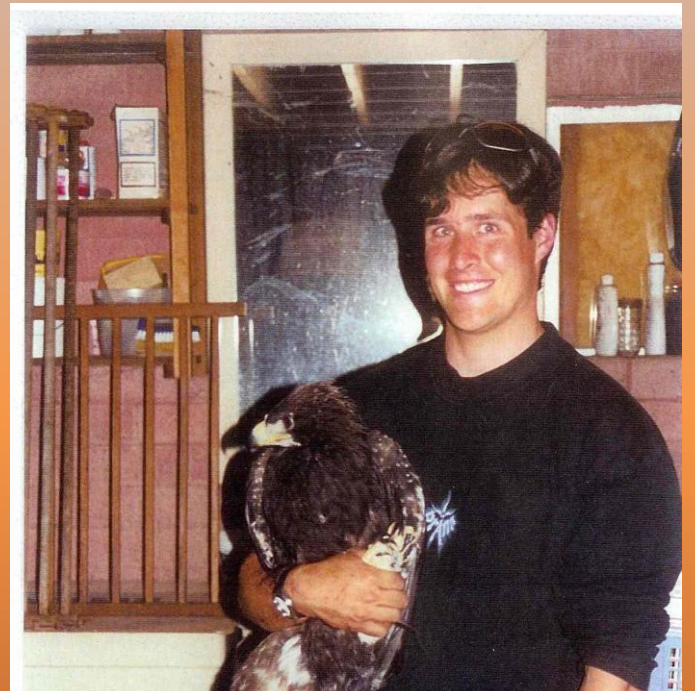
Overall Summary for Golden Eagle Surveys near Timber Harvest Plans

	Bald Hills Area	Upper Mad River Area	Total
Survey Years	7	7	7
# Surveys	35	34	69
Adults	7	3	10
Subadults	0	3	3
Juveniles	0	0	0
Unknown Age	0	4	4

- No Golden Eagle nests identified on Green Diamond
Ownership to date
- Green Diamond lands generally lacking in open prairie habitat
- Potential Issues with protocol?
 - Earlier surveys needed to observe courtship and/or nest building?
 - Continually updating protocol in cooperation with DFG



2003 9 28



2003 8 28

Humboldt Redwood Survey Protocol for Timber Operations

- Critical period 15 January to 1 September
- Fixed points used to survey THP units and 0.5 mile – 1.0 mile buffer
- Survey prior to operations, 3 times during critical period, at least 7 days apart
- Survey each station for at least 3 hours
- One visit between 15 January and 28 February
- One visit between 1 March and 15 April
- At least one survey after 15 April

Golden Eagle Survey History on HRC

- 2001 - 2005 = over 3,000 hours of surveys
- Intensive ground stand searches: 9,307 ha (23,268 ac)
- Focused ocular surveys: 34,803 ha (87,008 ac)



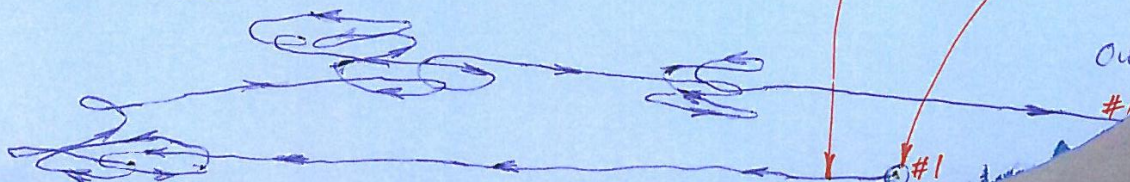
Photo #1

Flight path is approximate and is shown simpler than actual to avoid confusion, but the basics are here.

GOEA departed perch @ 1033 Hrs

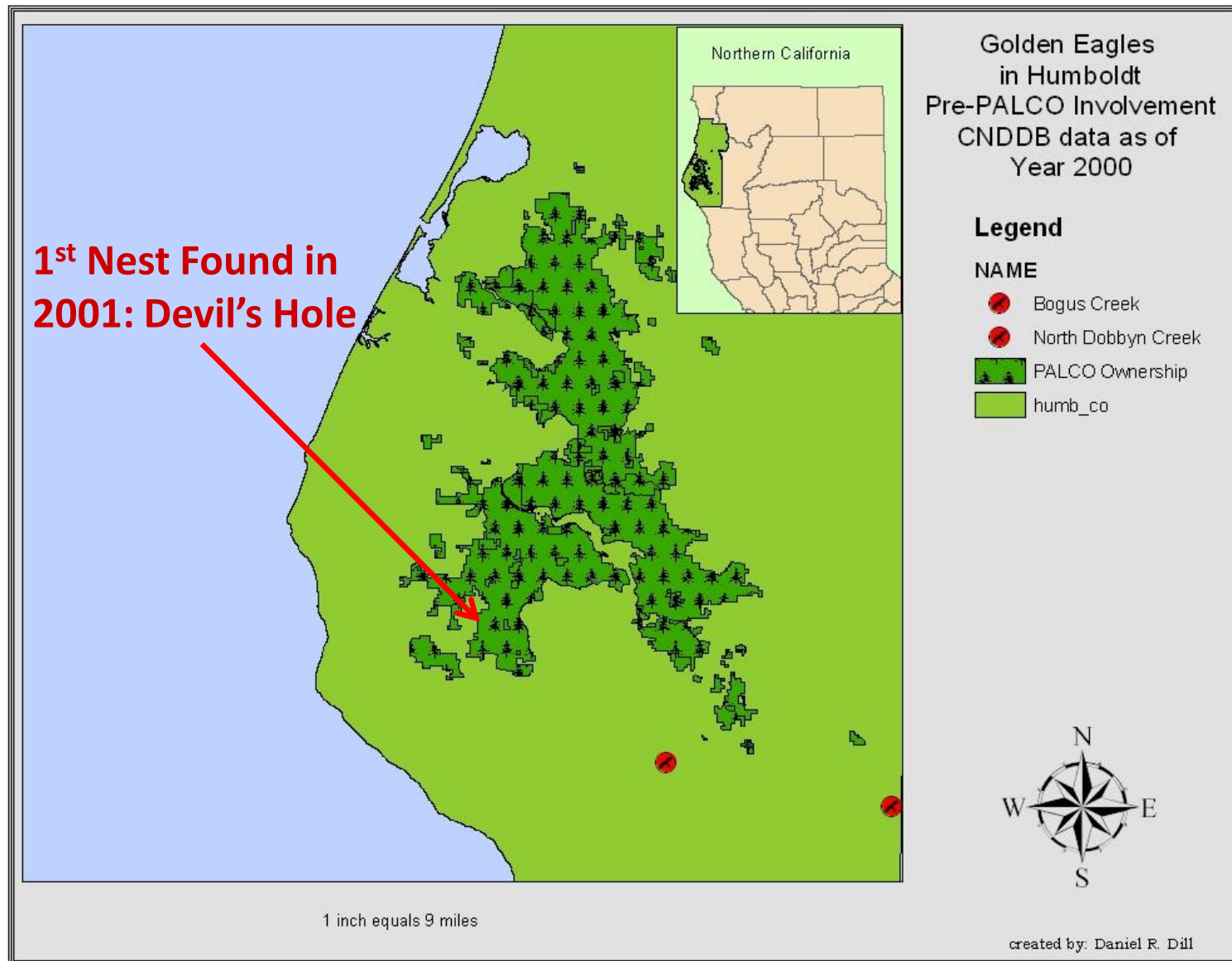
Initial contact w/perched GOEA @ 1021 Hrs

Out of view #1 @ 1038 Hrs

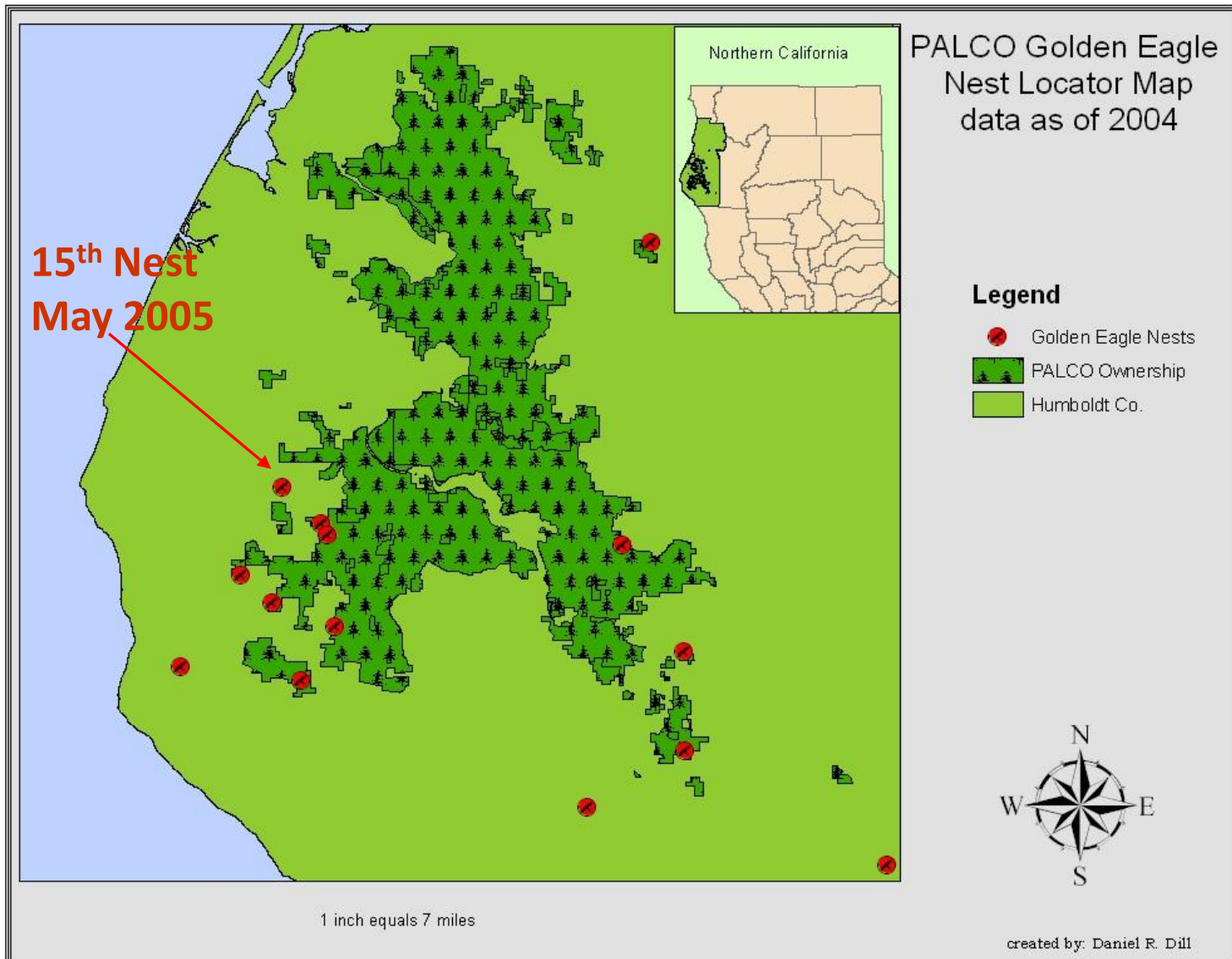


began circling out here.

3 GOEA Nests Known in Humboldt as of 2001

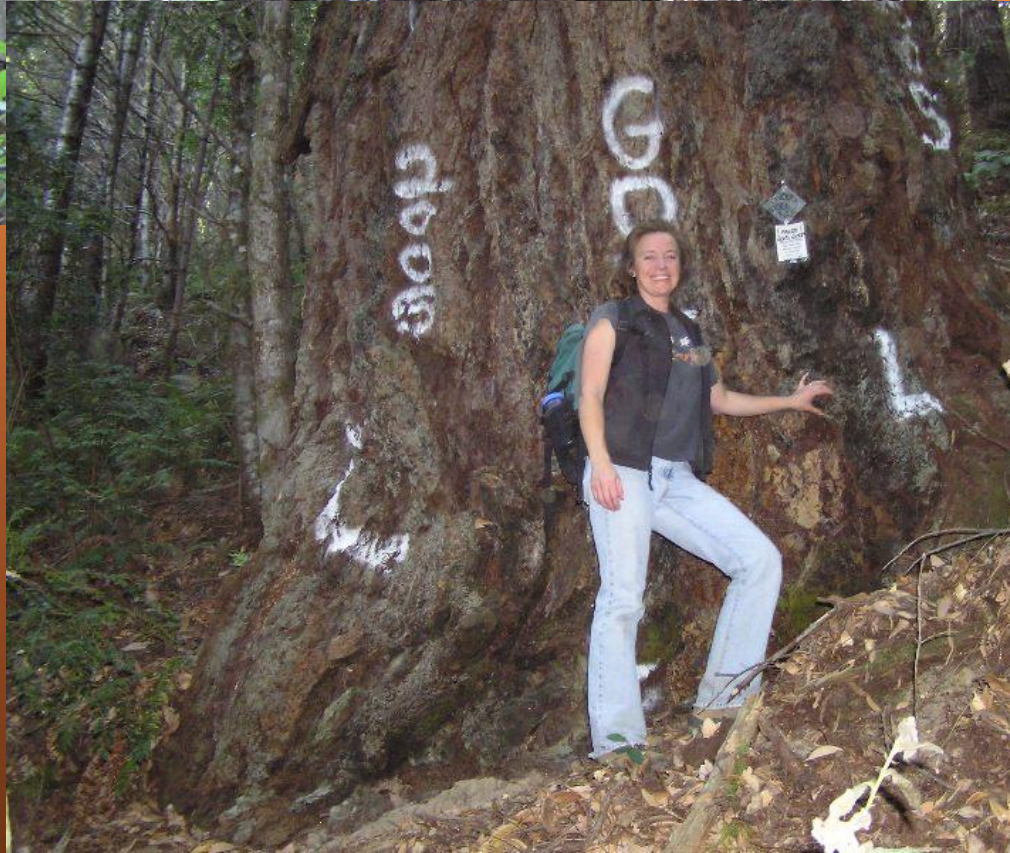
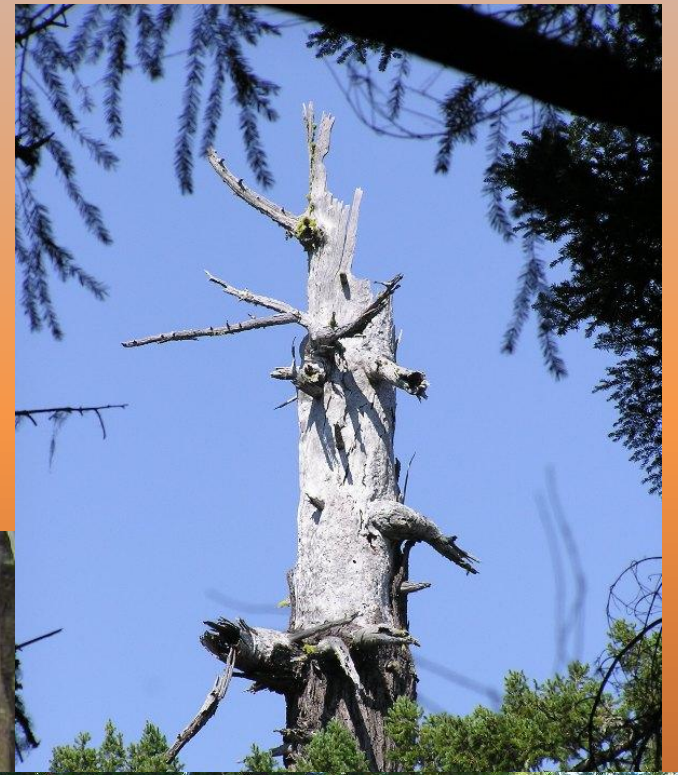


Surveys Identified 12 Additional Nests by 2005 (15 total)



HRC Standard Nest Protection Measures

- ☀ A 0.5-mile seasonal restriction buffer during the critical period for ground-based operations
- ☀ A 1.0-mile seasonal restriction buffer during the critical period for helicopter operations
- ☀ No operations within the seasonal restriction buffers during the critical period unless CDFG approves
- ☀ Outside the critical period, a 300-foot radius buffer around known nest sites shall be established in which any screen, perch, or replacement nest trees are marked for retention
- ☀ All seasonal and nest tree buffers may be altered given site-specific topographic or other characteristics, with CDFG concurrence
- ☀ Hauling on existing roads within seasonal buffers that normally receive use during the critical period is permitted

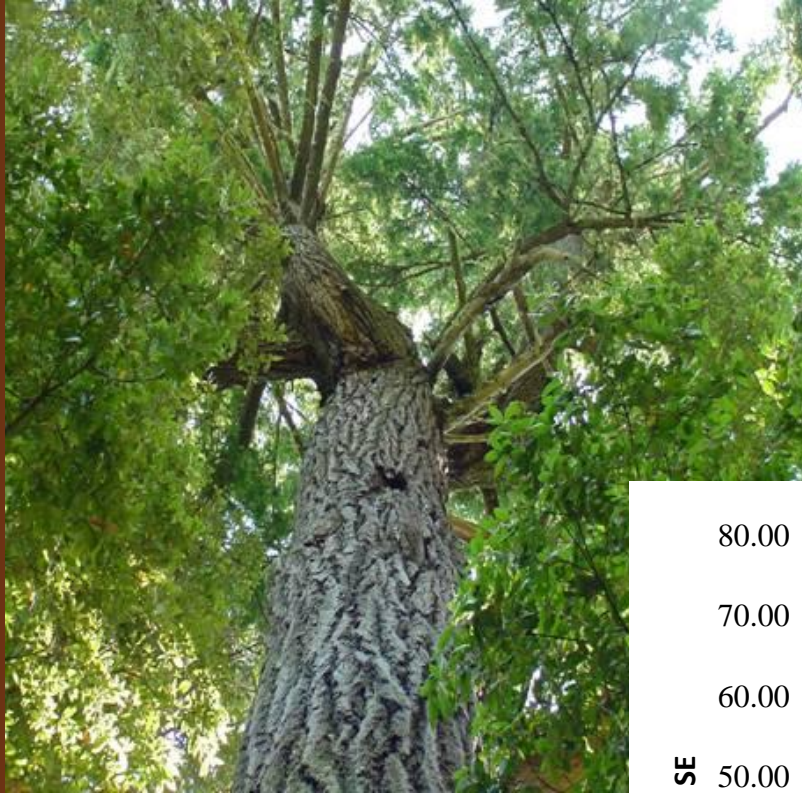


Nest and Landscape Habitat Analysis

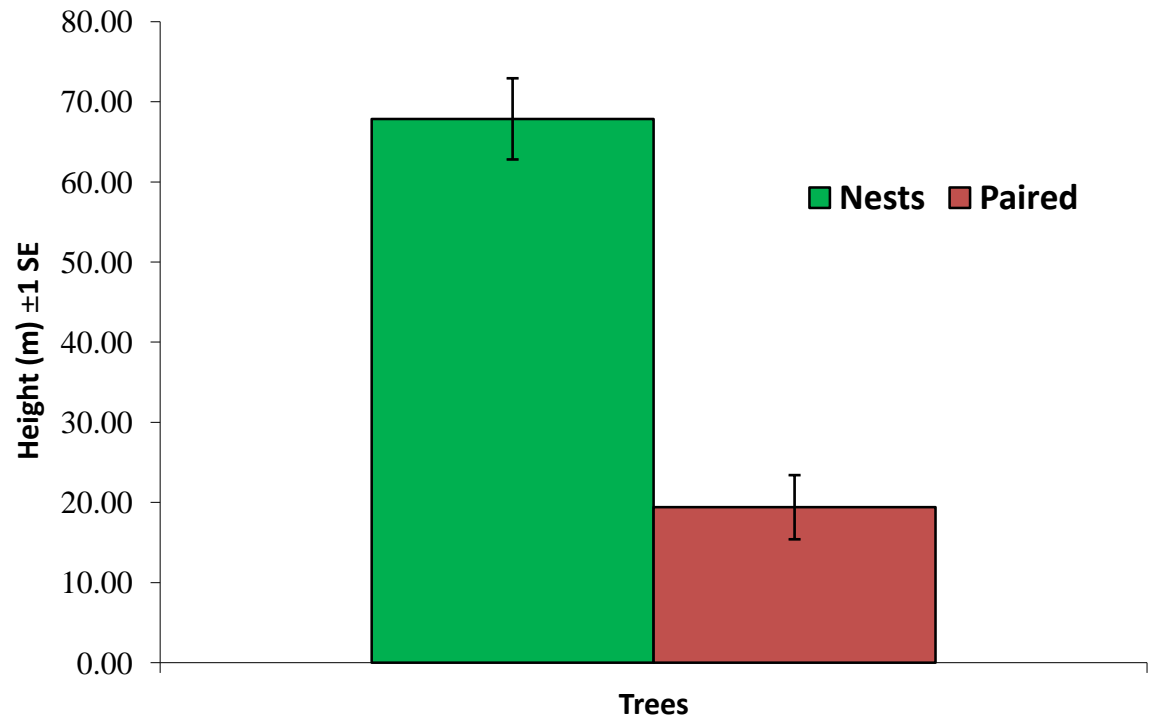
- Sample was 8 nests on HRC
- All nests are in Douglas-fir trees
- 16m, 0.85 km, 1.6 km, and 3.0 km radii analysis areas were evaluated
- Comparison of foraging habitat vs. other habitats



Nest Tree Height



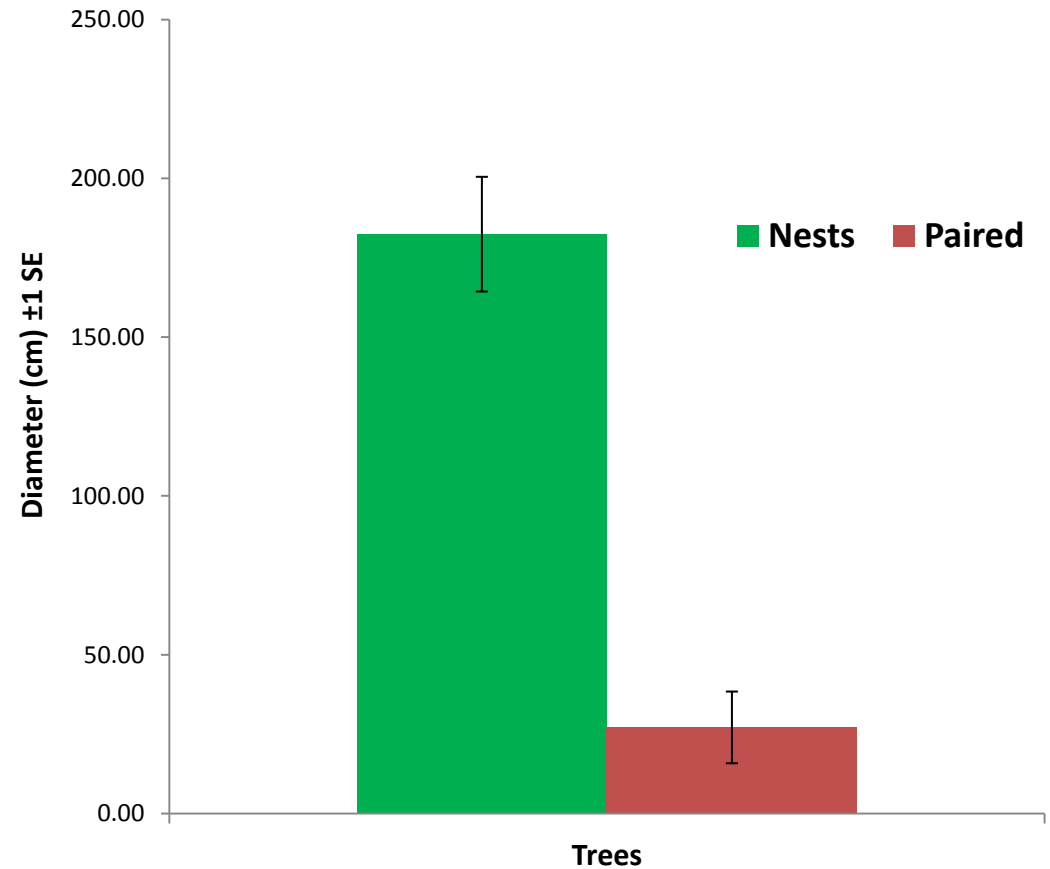
- Range: 51m to 80m
- Mean = 68m (~ 223 ft)





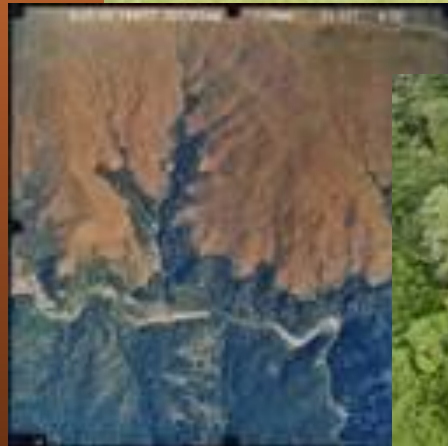
Nest Tree Diameter

- Range: 147 cm to 244 cm (59 – 98 in)
- Mean = 182 cm (~ 72 in)

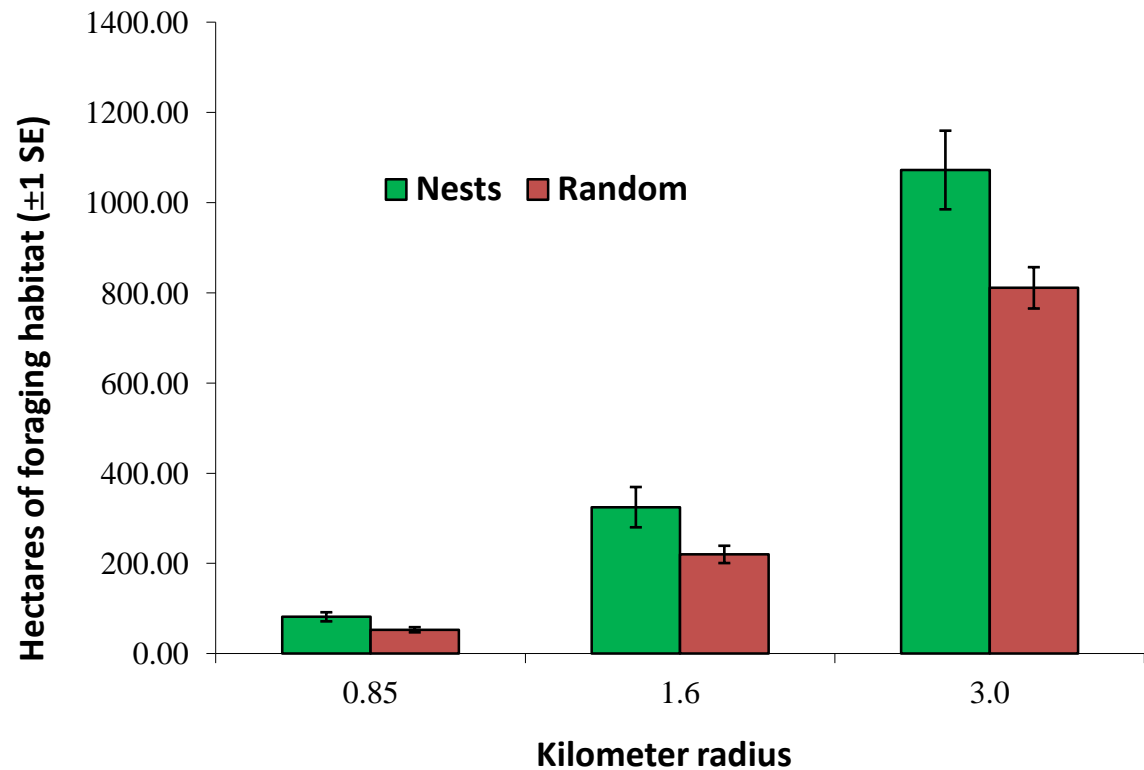
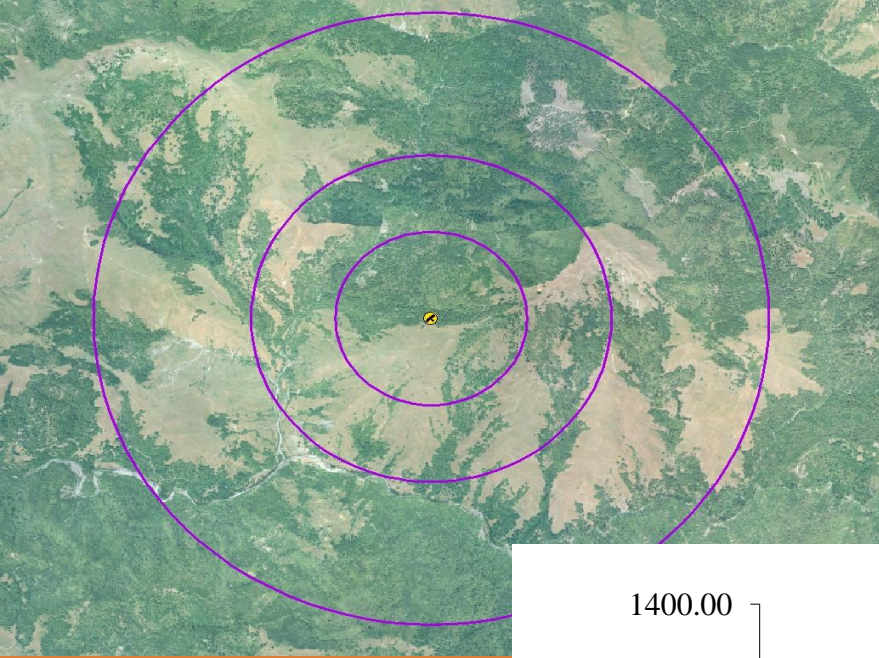


Suitable Foraging Habitat within 3.0 km (1.8 mi) Radius

- Range:
 - 794 ha – 1393 ha
(1985 – 3483 ac)
- Mean:
 - 1072 ha (2680 ac)



Nest plots contained significantly (31%) more foraging habitat than random plots





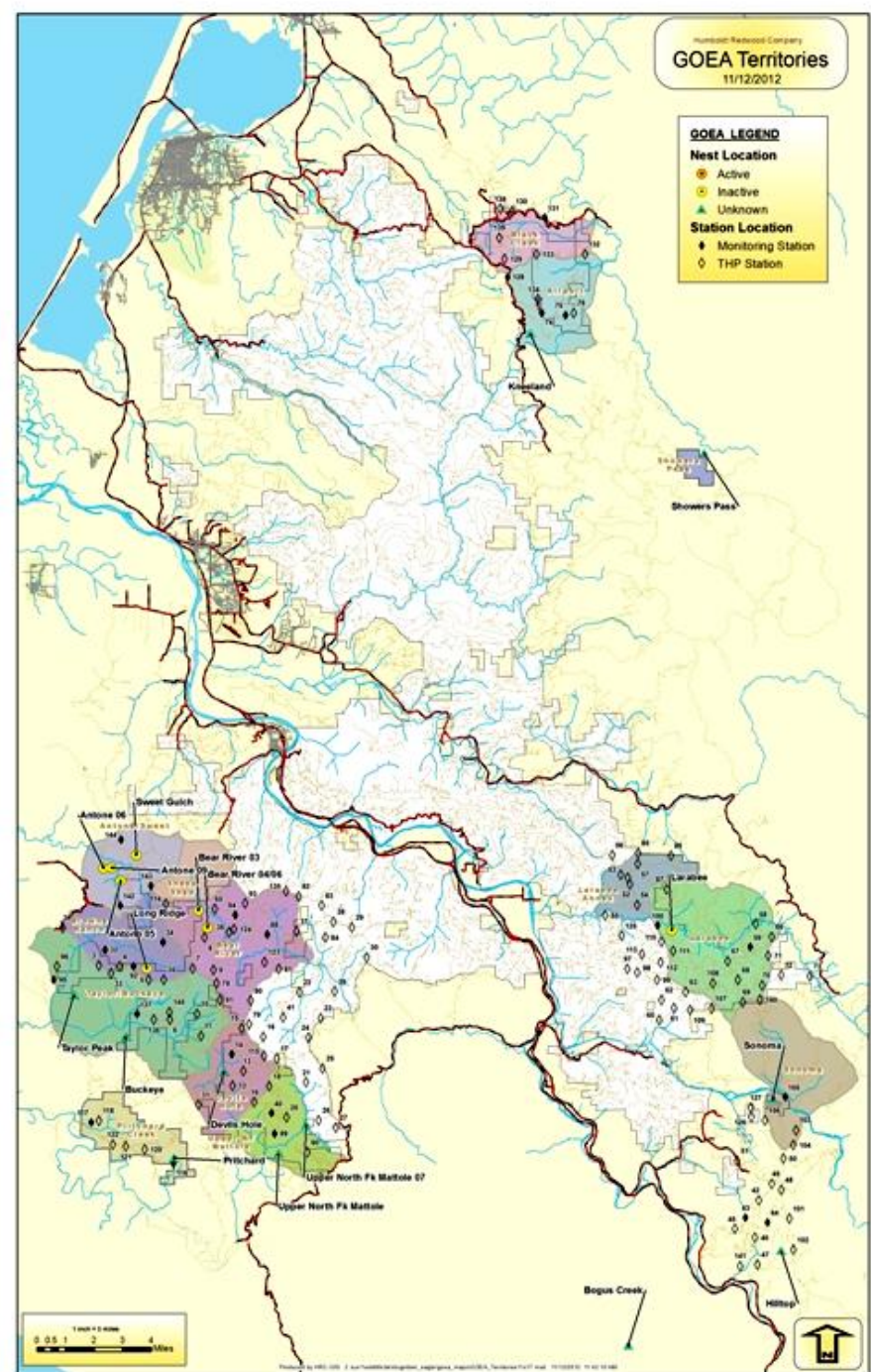
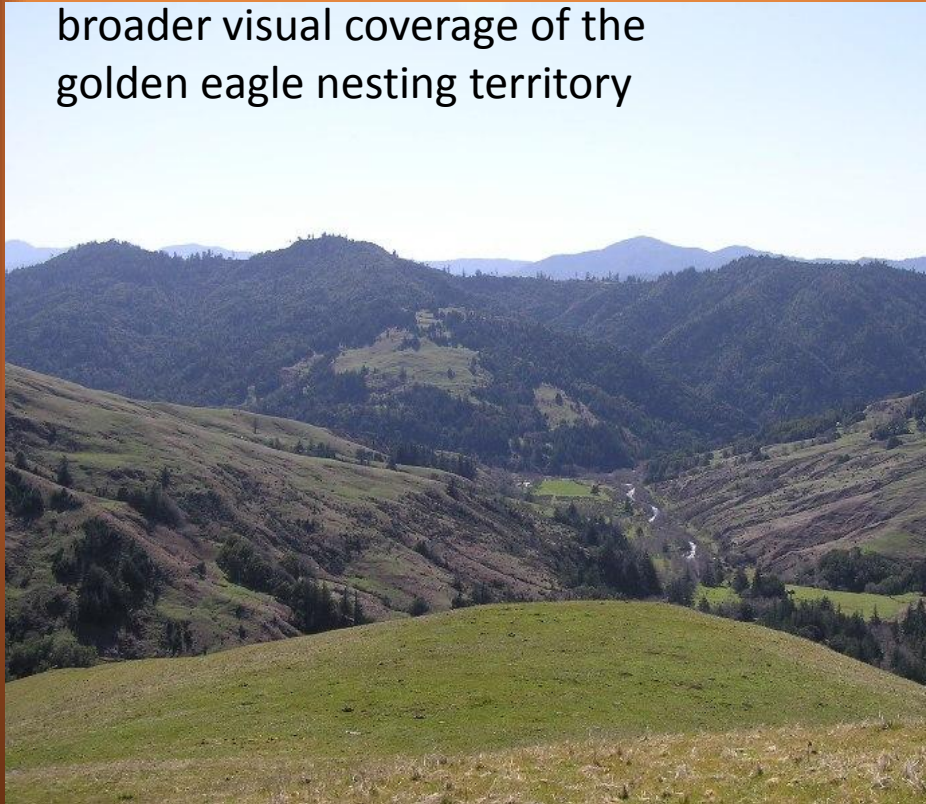
Conclusions of Habitat Analysis:

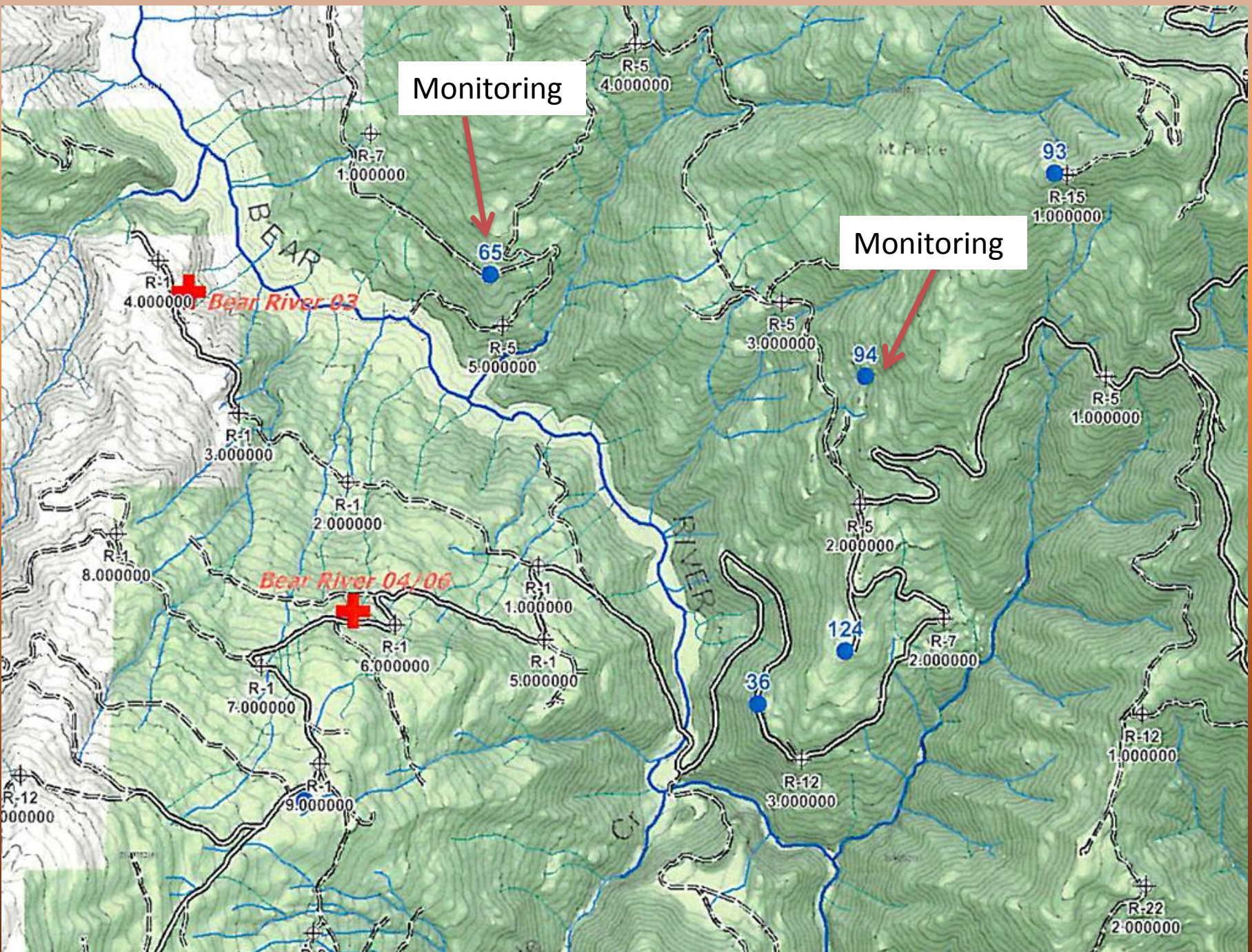
Golden Eagles Selected:

- Large, predominant Douglas-firs for nest trees
- Nest territory with abundant foraging habitat
- Findings aided refinement of survey area and effort

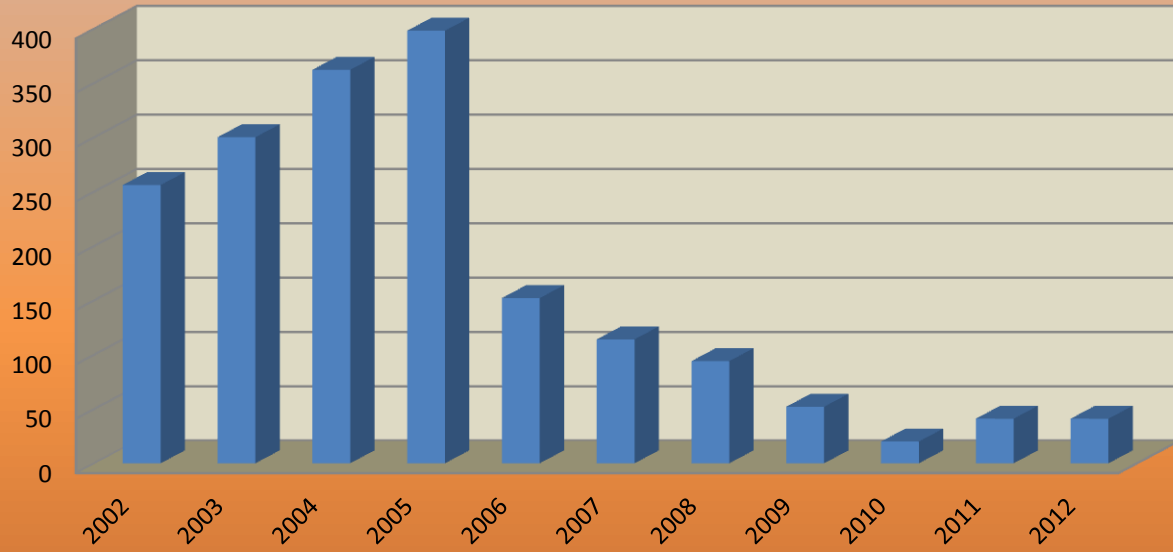
Current Survey Areas and Methods

- Updated Protocol in 2006
- Survey each year prior to operations
- THP stations provide visual coverage of the THP units, landings, and other affected areas
- Monitoring stations provide broader visual coverage of the golden eagle nesting territory

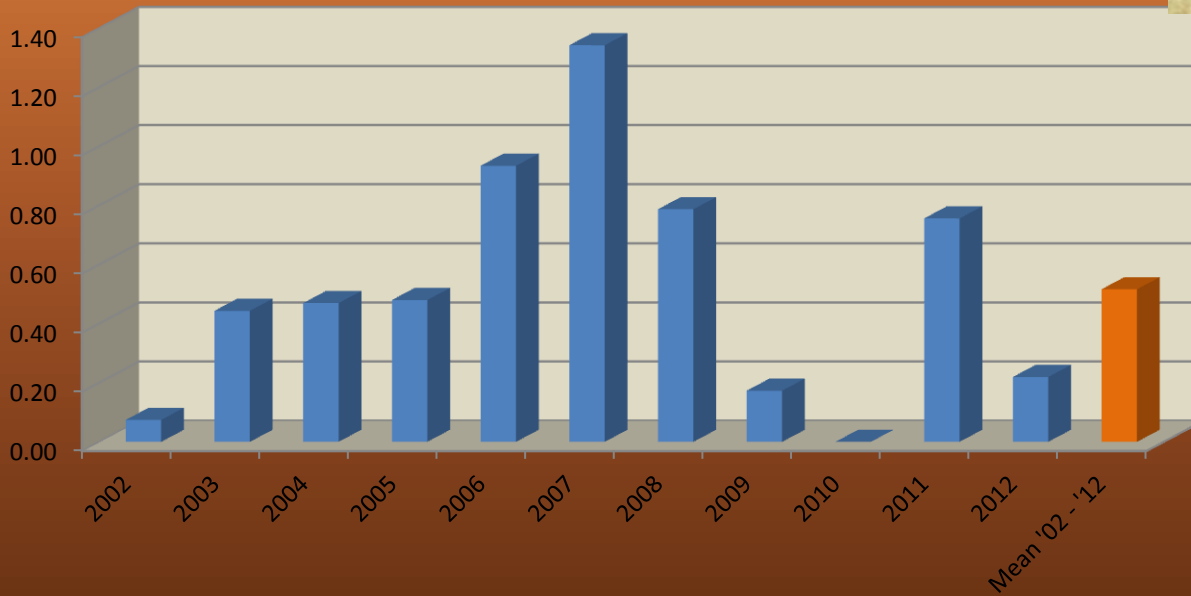




Surveys by Year 2002 - 2012



Observations Per Survey 2002 - 2012



Nest Monitoring

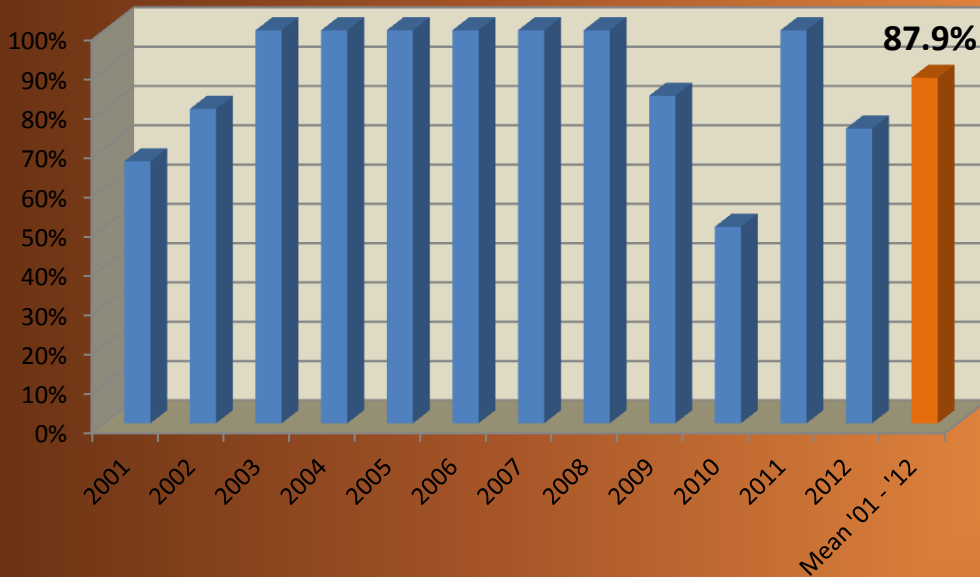
Currently up to 17 total nests, 10 of which are on HRC

Territory	Nests	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Airport	Kneeland			PU	PU	U	PF	PU	PU	PU	NS	NS	NS
Antone/Sweet	Sweet's Gulch			PN1J	NS	NC	NC	NC	NC	NC	NS	NC	NC
	Antone 05					PN1J	NC	NC	PU	PU	NS	PF	NC
	Antone 06						PF	PU	NC	NC	NS	NC	NC
Bear River	Bear River 04/06				PN1J	U	PF	PF	U	NC	NC	U	U
	Bear River 03			PN1J	NC	NC	NC	NC	NC	NC	NC	NC	NC
NF Mattole	Long Ridge		NC		PU	PU	PN1J	PU	PU	U	NS	NS	U
Devil's Hole	Devil's Hole	PN2J	U	PN1J	PU	NC	NC	PU	NC	NC	NS	NS	NS
	Upper NF Mattole					U	PF	NC	NC	NC	NS	NS	NS
	Upper NF Mattole 2007					NC	NC	PU	PU	PU	NS	NS	NS
Hilltop	Hilltop		PU	PU	PU	PU	PU	PN1J	NS	NS	NS	NS	NS
Larabee	Larabee	U	PN1J	U	PU	U	PU	PU	PU	U	PU	PU	PU
Pritchard	Pritchard	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Shower's Pass	Shower's Pass		PN1J	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Sonoma	Sonoma			PN1J	PNN	PU	PU	PU	NS	NS	NS	NS	NS
Taylor/Buckeye	Taylor Peak			PN1J	PU	U	PU	PU	PU	NS	NS	NS	NS
	Buckeye				PN1J	F	PN1J	PU	PU	NS	NS	NS	NS

➤ Nest monitoring is inconsistent due to manpower and location of operations.

➤ Eagles are often observed flying into stands on adjacent properties, out of sight, so there may be additional nesting activity that is not observed.

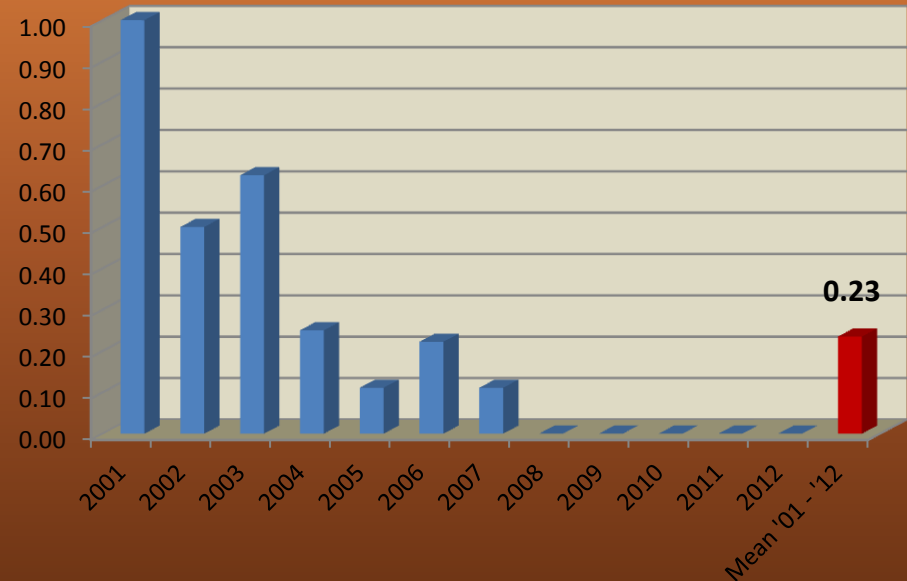
Percent of Territories Occupied



HRC Results



Reproductive Rate for Occupied Territories



- Territories occupied, but reproduction low or not observed.
- Disturbance?
- Abundance – availability of prey?
- Surveys not adequate when eagles choose to nest on adjacent landowner?



Looking Forward:

- Continue to survey for and protect golden eagle nests
- Add new nests into the habitat analysis
- Validate model on other lands in the region for accuracy and consistency
- Investigate prey abundance
- Maintain prairie habitat!



Thank you! Questions?

