

Recent Golden Eagle Nest Surveys and Nesting History in Yolo, Solano, and San Luis Obispo Counties, California

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Presentation Objectives

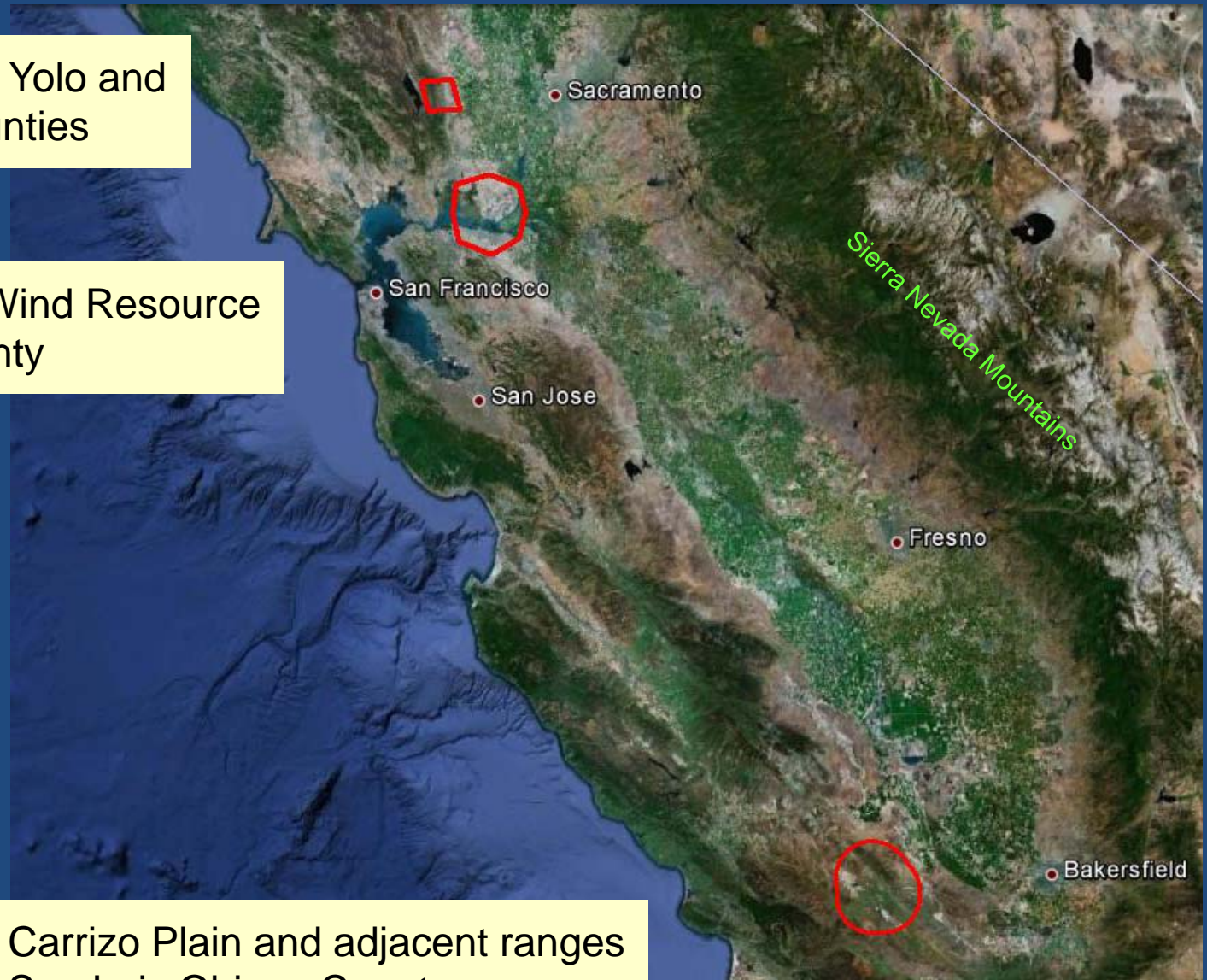
- Summarize recent surveys in three areas of west-central California that yielded information about nesting Golden Eagles
- Discuss nest-site and habitat characteristics
- Summarize productivity data where available
- Review known nesting histories

Study Areas

Ridges of w Yolo and
e Napa Counties

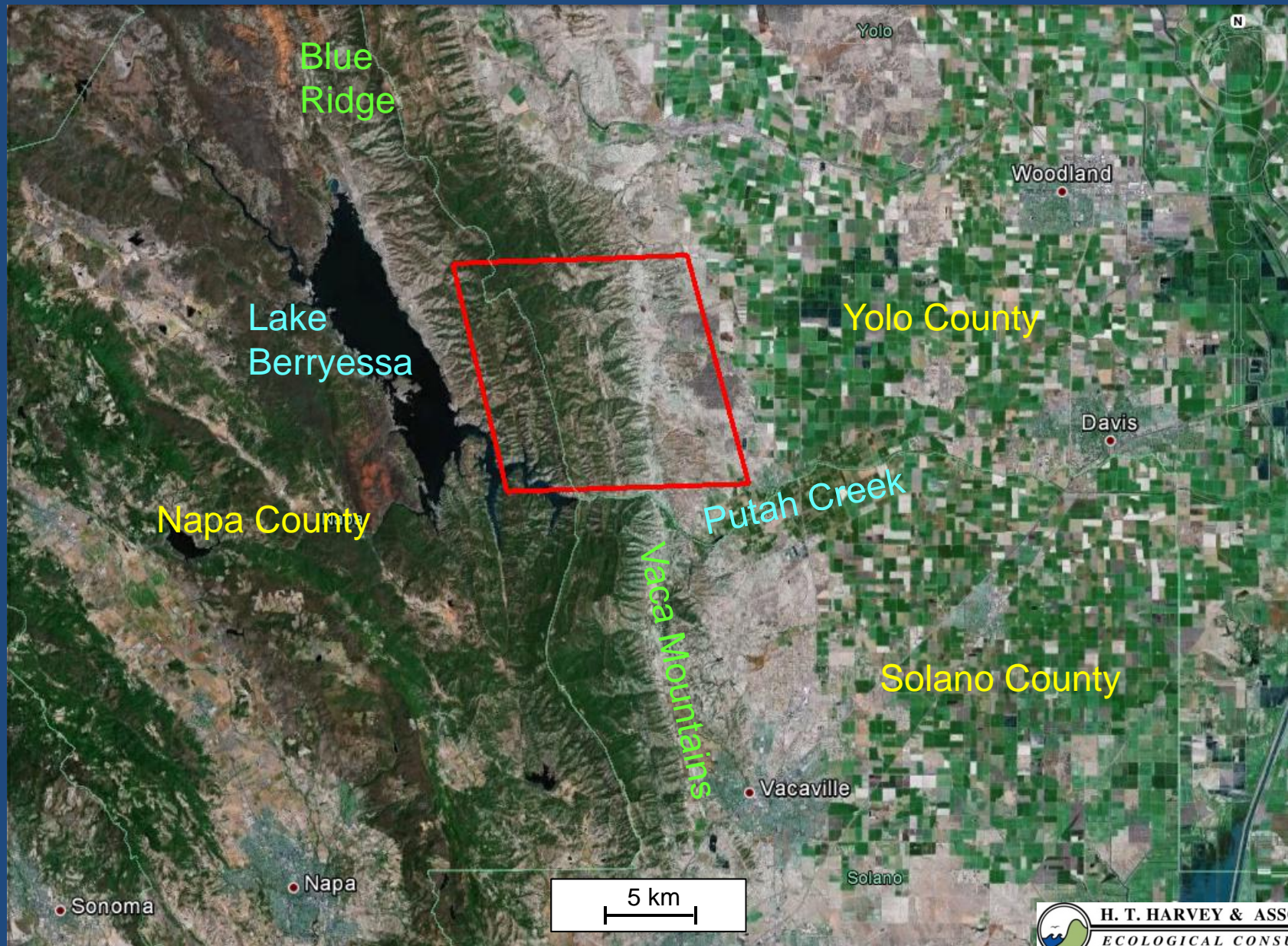
Montezuma Hills Wind Resource
Area, Solano County

Carrizo Plain and adjacent ranges
San Luis Obispo County



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Yolo / Napa County Study Area



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Yolo / Napa County Surveys

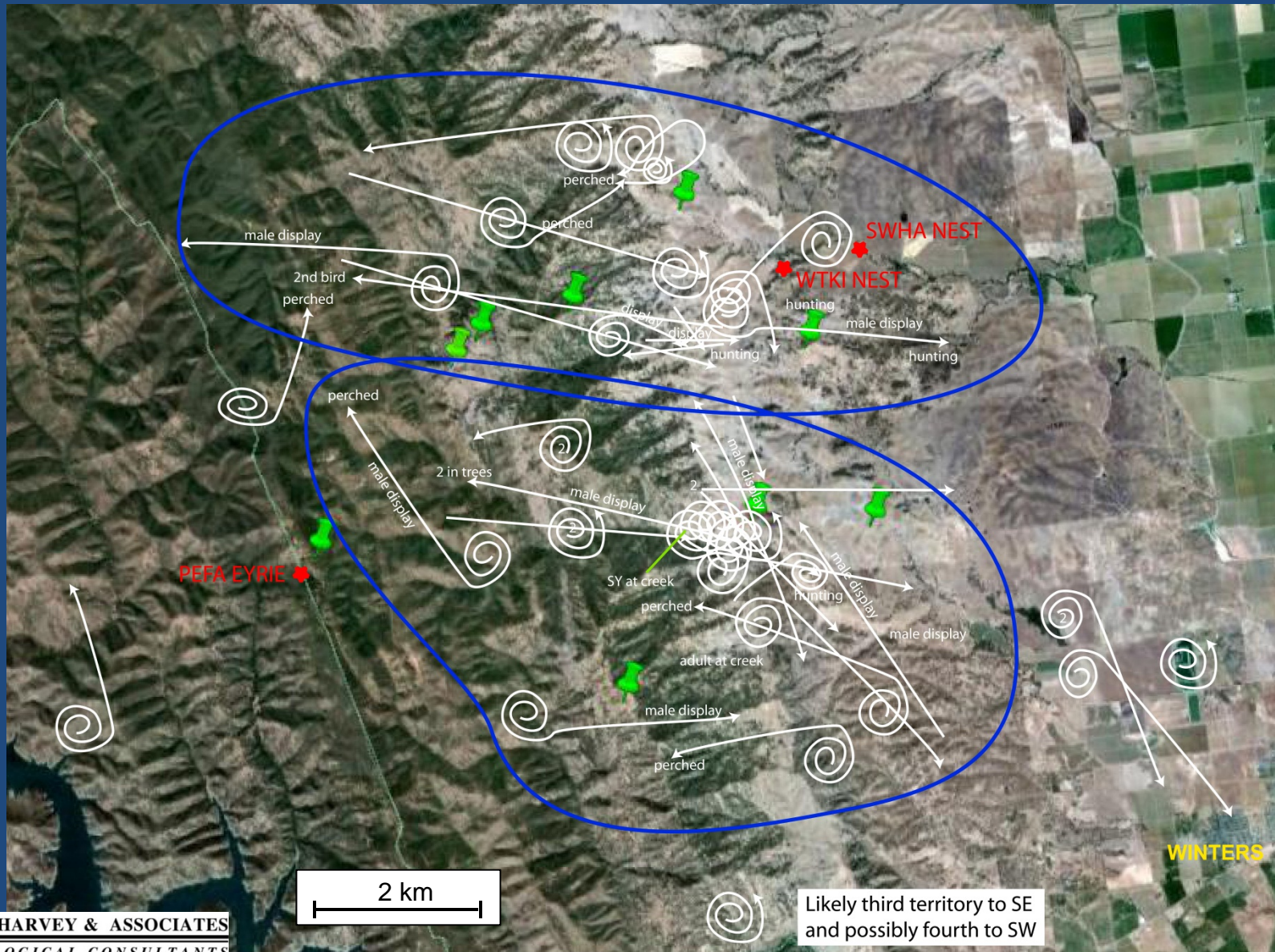
- ▶ Raptor migration and general activity surveys from several ridgetop and adjacent foothill locations
- ▶ 15 days for 2 - 7 hours: 4 April – 13 May 2011
- ▶ Detailed mapping of occurrence locations and flight paths enabled general delineation of Golden Eagle nesting territories
- ▶ No eagle nest sites specifically located

Yolo / Napa County Habitat



Ridgetops at 500-700 m; valley floor at ~100 m elevation

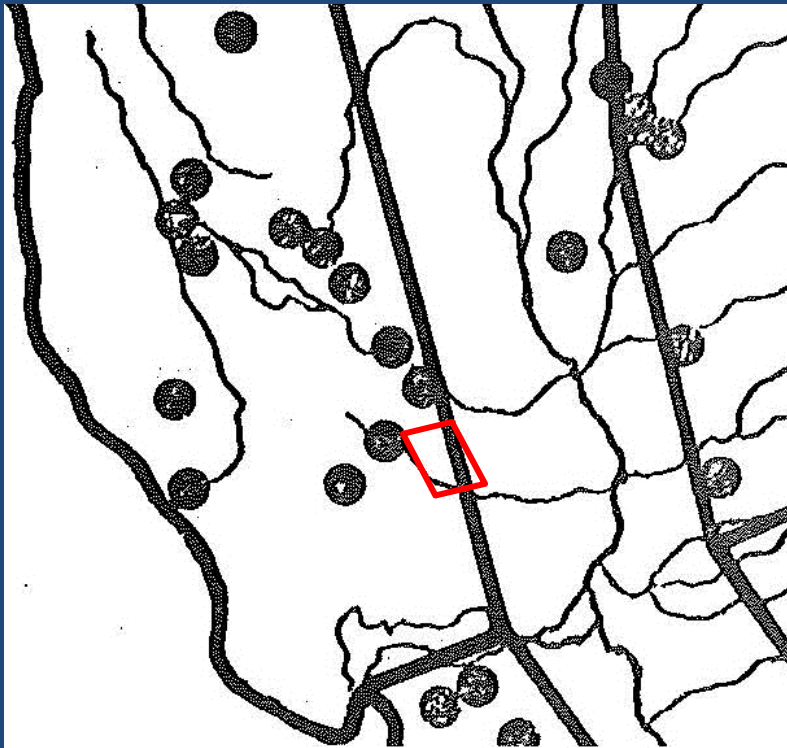
Yolo / Napa County Territory Mapping



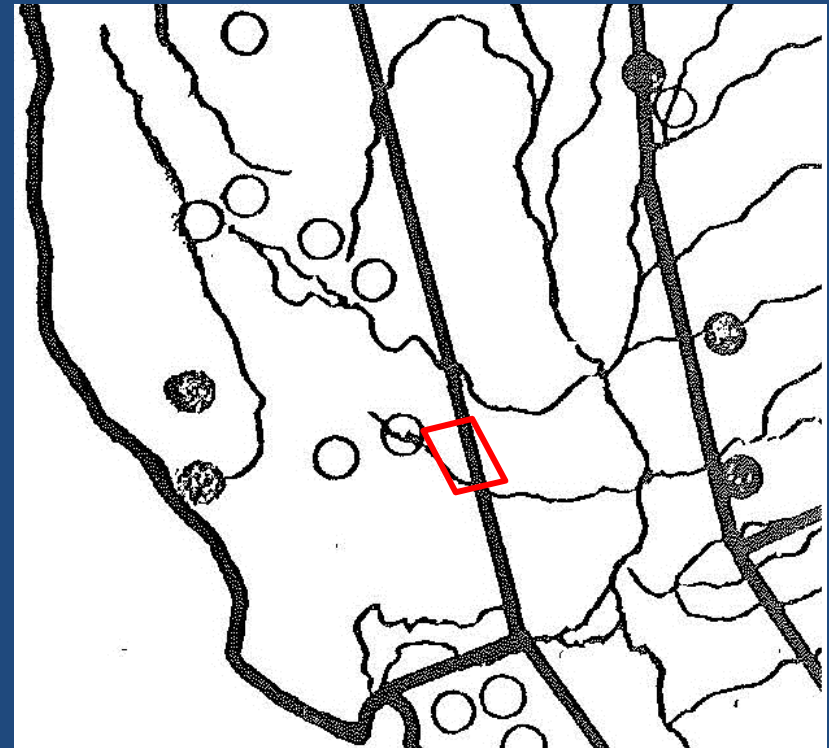
Yolo / Napa County Nesting History

Thelander. 1974. Nesting Territory Utilization by Golden Eagles in California during 1974. CA Dept. Fish & Game

Surveyed Sites



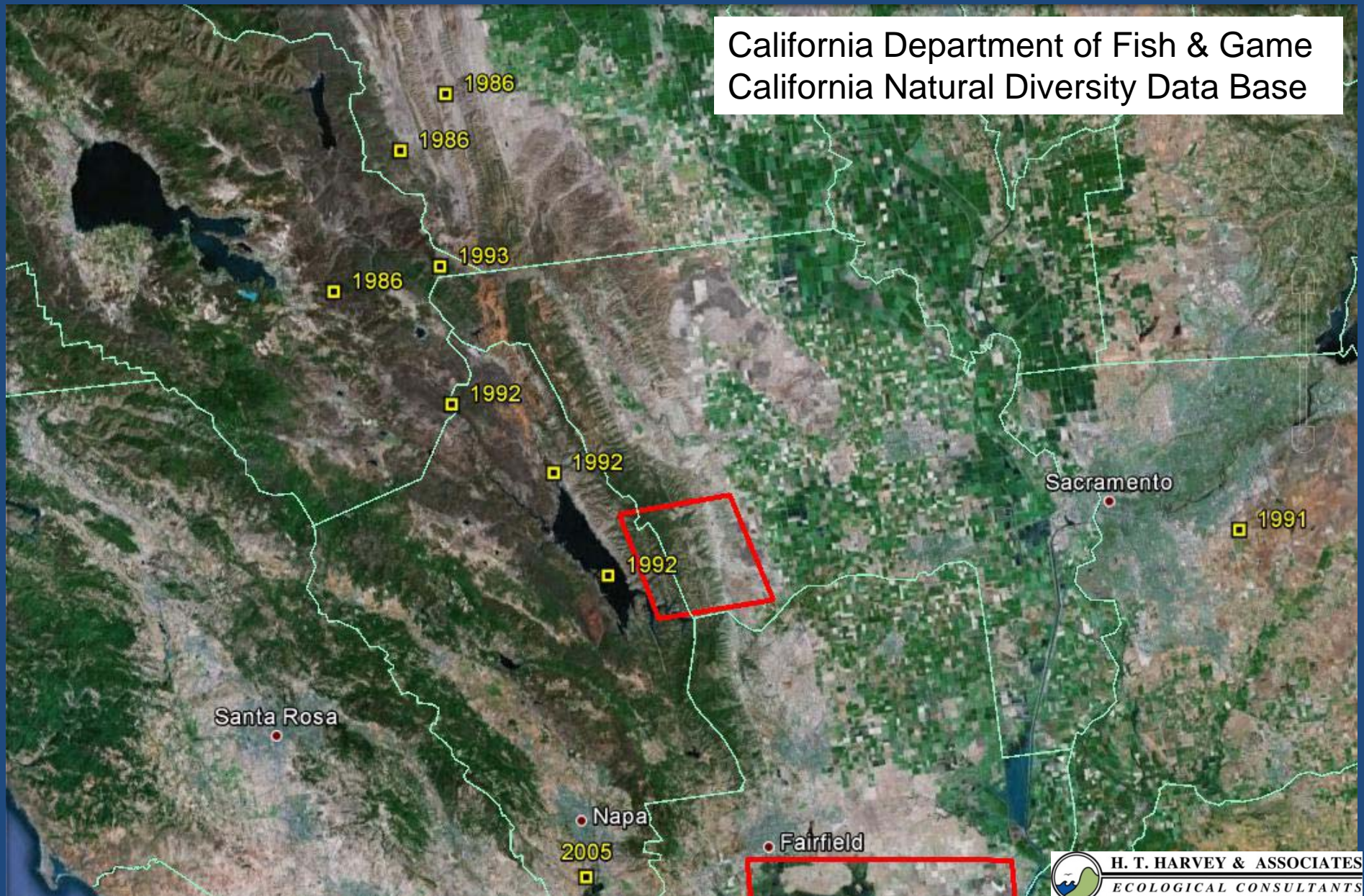
Occupied Sites



○ approximate recent study area location

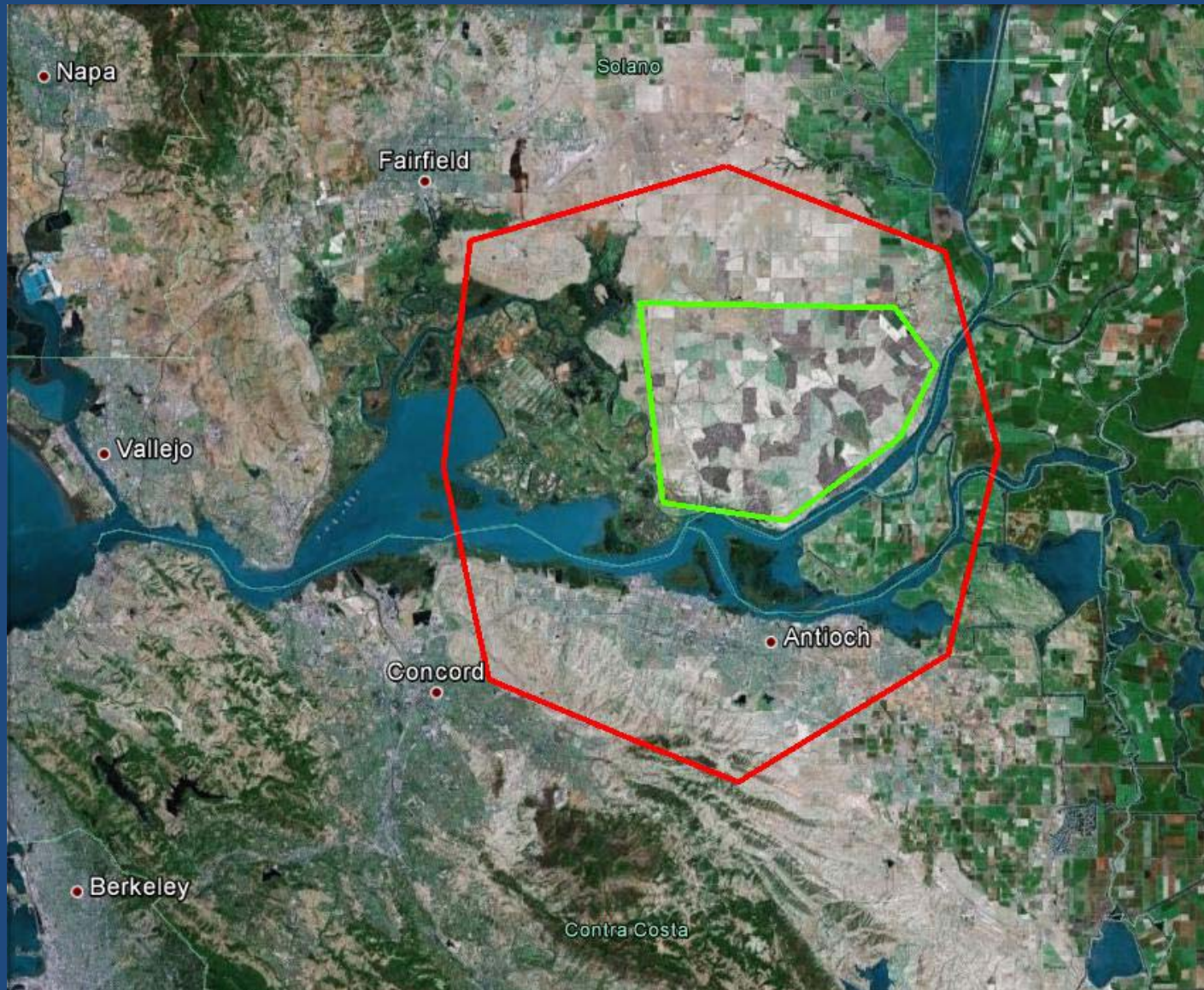
Yolo / Napa County Nesting History

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Montezuma Hills WRA Study Area



Wind
Resource
Area
(~40,300 acres)

Nest
Survey
Area
2011
(~10-mile radius)

Montezuma Hills Surveys

- Active wind-energy area since early 1990s
- Major on-going expansion/repowering since 2004
- Projected 2013 generating capacity of 970+ MW
- Raptor nest surveys conducted intermittently and at variable geographic scales since 1988
- Some knowledge of Golden Eagle nesting on WRA annually 1981-1996 and most years in 2000s
- Broader 5-10 mile radius surveys conducted in 2007 and 2011

Montezuma Hills Habitat



Former Callahan eagle nest site



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Montezuma Hills Nest Surveys

➤ 1980/1990s - mostly confined to WRA

Howell & Noone 1992 – US Windpower final report

Orloff & Flannery 1992 – CEC tri-county study

Howell 1997 – SMUD final report

Callahan nest site active on WRA most years 1988-1996

➤ 2000s - mostly confined to WRA

Curry & Kerlinger 2004 – Hamilton Ranch report

Kerlinger et al. 2005 – Shiloh I risk assessment report

Kerlinger et al. 2006 – High Winds final report

Kerlinger et al. 2006 – Shiloh II preconstruction report

Kerlinger et al. 2011 – Shiloh IV assessment report

Two other nesting areas documented on WRA

➤ Late 2000s - extend 5-10 miles beyond WRA

Hunt et al. 2007 – Curry & Kerlinger report

Jackman & Hunt 2011 – Collinsville report

Five other nesting areas documented outside WRA

Montezuma Hills Recent Nesting History

▲ HT Harvey & Associates 2012

- First active nest on WRA since 2007
- 1.2 miles SSW of former Callahan nest site
- 0.6 mi to operating turbine; <0.5 mi from active construction
- Incubated for 2-3 weeks then abandoned
- Pair still in general area as of November – feeding on abundant sheep carcasses



Photos by Robert Shields

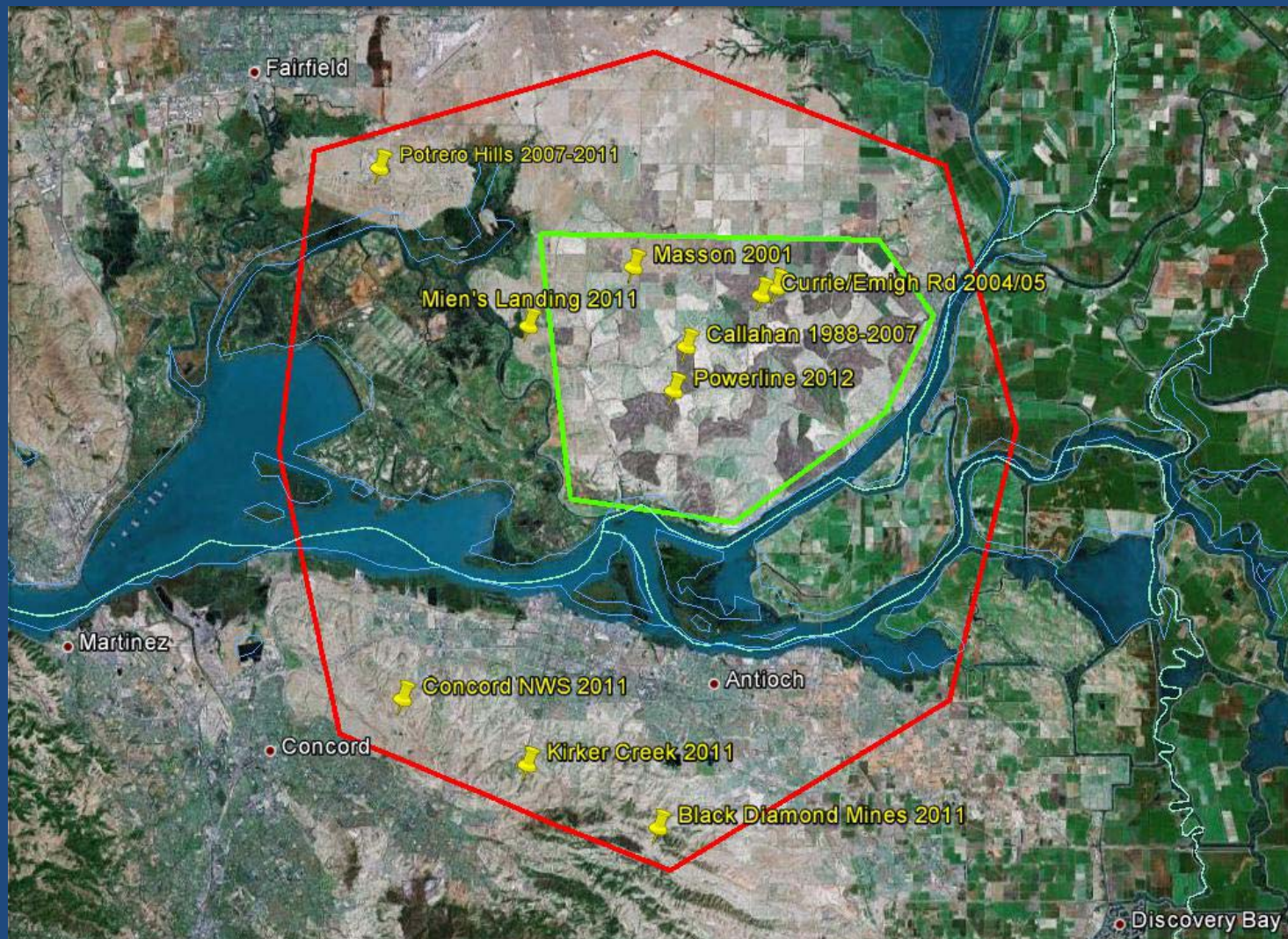
Montezuma Hills WRA Nesting History

Territory

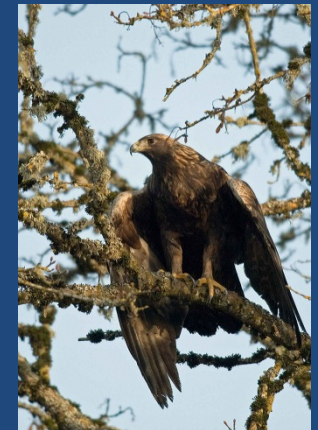
Year	Callahan	Masson	Emigh / Currie Road		Mien's Landing	Powerline
			East	West		
1988-91	Active	RT / GO	-	-	?	-
1993-96	Active	RT / GO?	-	-	?	-
2001	Inact?	Active?	-	SWHA	?	-
2004	Fledged	Inact	Failed	GHOW	?	-
2005	Failed	Inact	Gone	Failed	?	-
2007	Fledged	Inact	Gone	RTHA	-	-
2009	SWHA	Inact	Gone	RTHA	?	-
2010	SWHA	Inact	Gone	RTHA	?	-
2011	Gone	Inact	Gone	RTHA?	Fledged	-
2012	Gone	?	?	?	?	Failed



Montezuma Hills Area Nest Sites



Mostly in
eucalyptus
trees

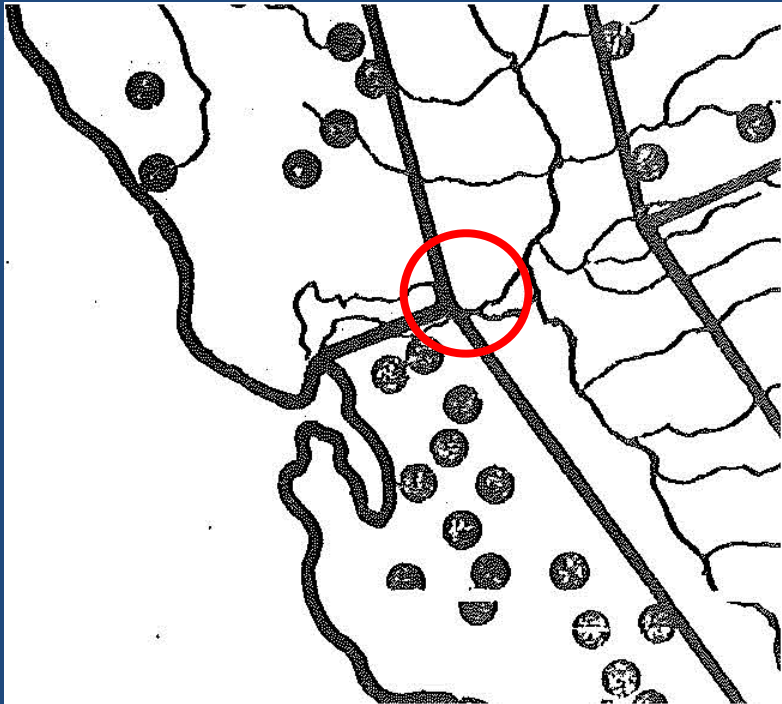


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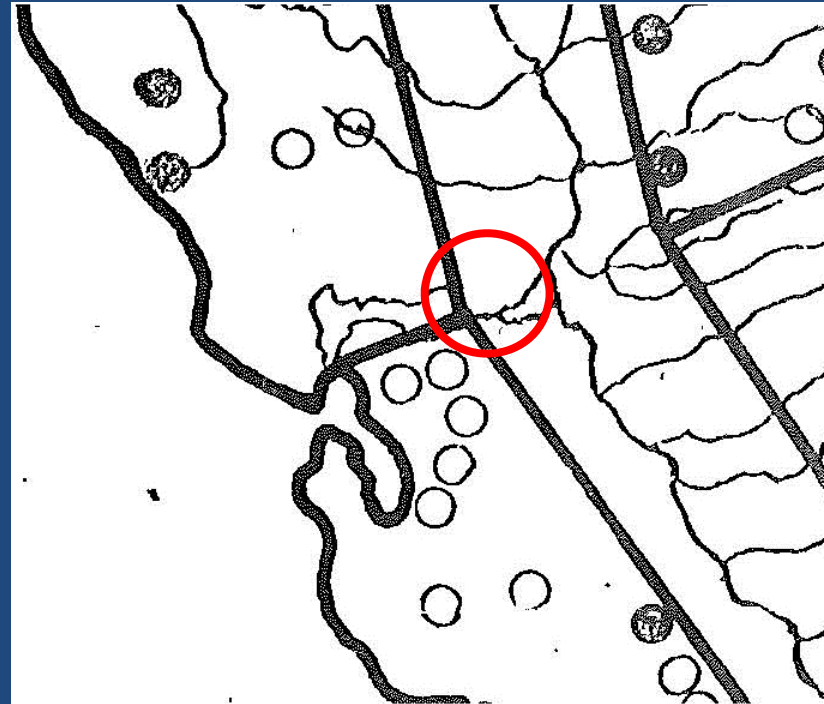
Montezuma Hills Vicinity Nesting History

Thelander. 1974. Nesting Territory Utilization by Golden Eagles in California during 1974. CA Dept. Fish & Game

Surveyed Sites

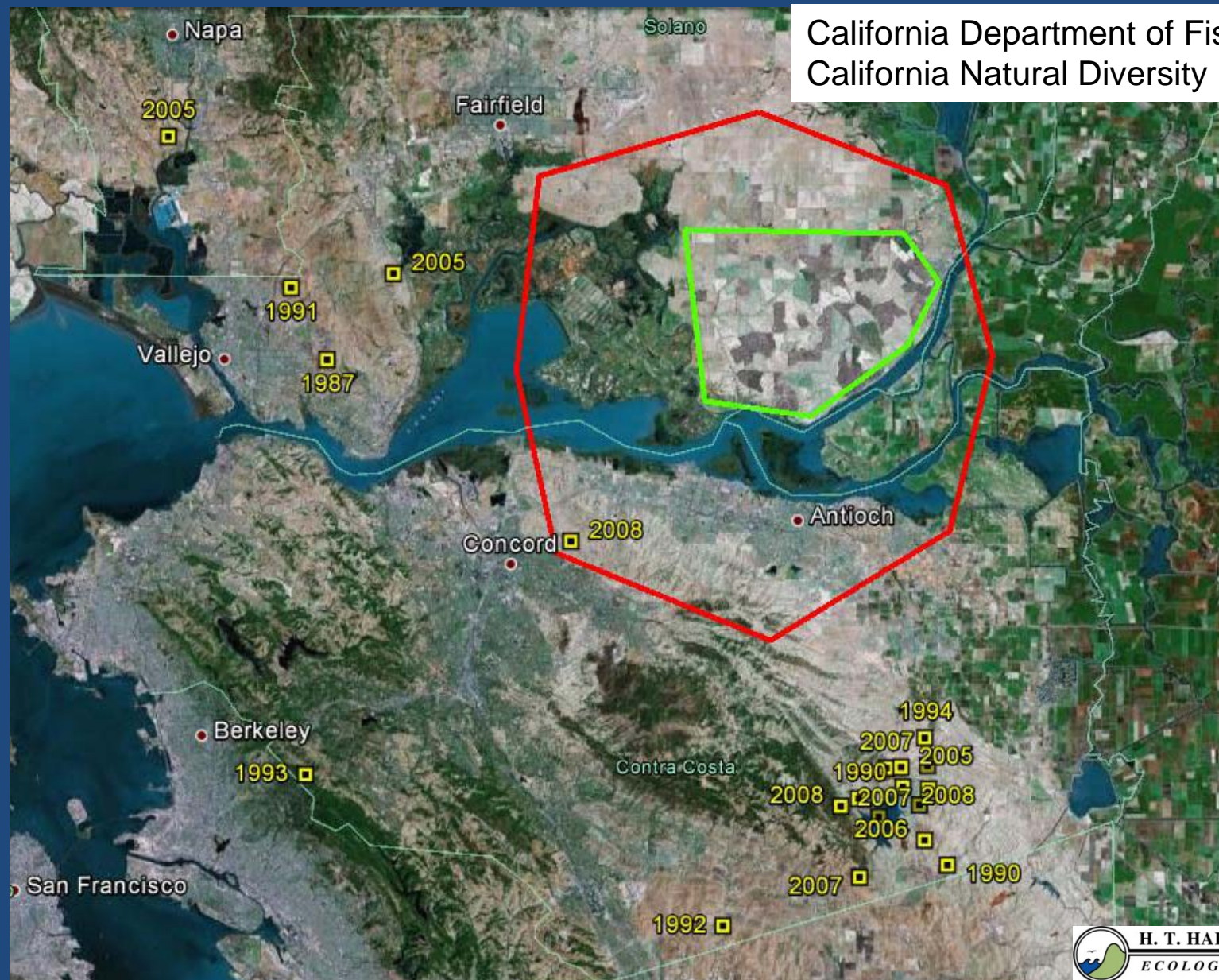


Occupied Sites



 approximate study area location

Montezuma Hills Vicinity Nesting History

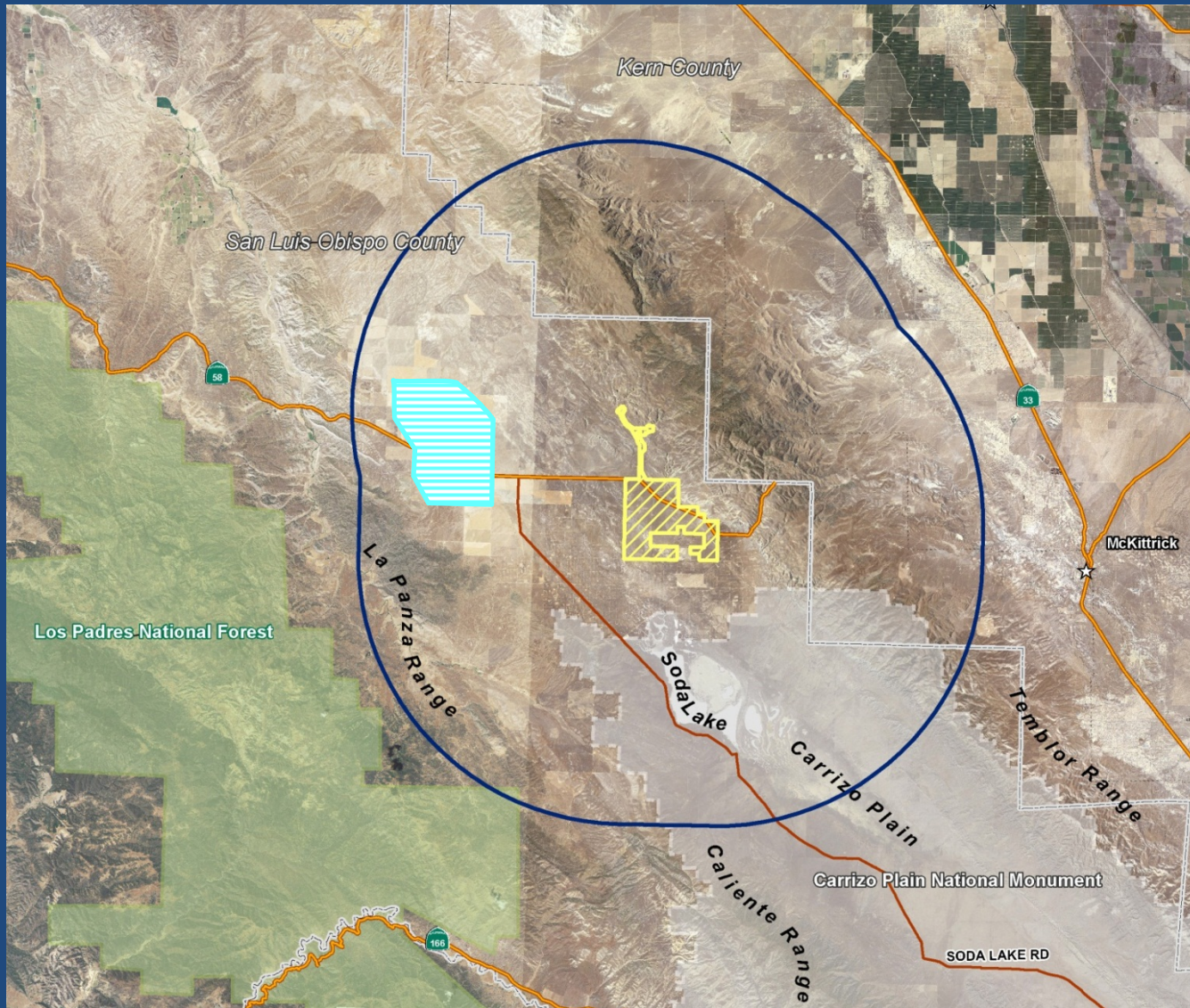





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Carrizo Plain Study Area



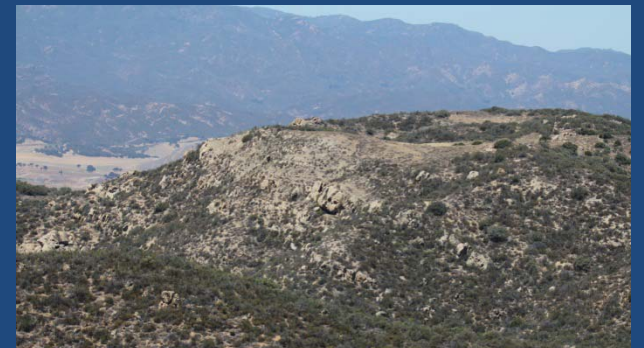
-  California Valley Solar Ranch
-  Topaz Solar Farm
-  CVSR 10-mile radius survey area



Carrizo Plain Surveys

- Two photovoltaic solar facilities under construction will encompass several thousand acres of primarily disturbed ag fields and annual grassland
- Brian Latta 2010: initial survey for USFWS covering 10-mile radius around both projects
- H. T. Harvey & Associates 2012: first annual survey of 5-year sequence covering 10-mile radius around California Valley Solar Ranch (CVSR)
- 2 - 4 helicopter survey rounds per year

Carrizo Plain Habitat



Eastern ranges to 1200 m, western ranges to 1,000 m,
Valley floor at ~600 m elevation

Carrizo Plain Survey Results

▲ Latta 2010

- Two survey rounds in early and late May
- 22 nest sites comprising 12 occupied territories
- 9 nests produced 14 4-8 week old chicks
- 2 other nests may have failed early
- 9 nests in trees, 8 on transmission towers, 5 on cliffs



Carrizo Plain Survey Results

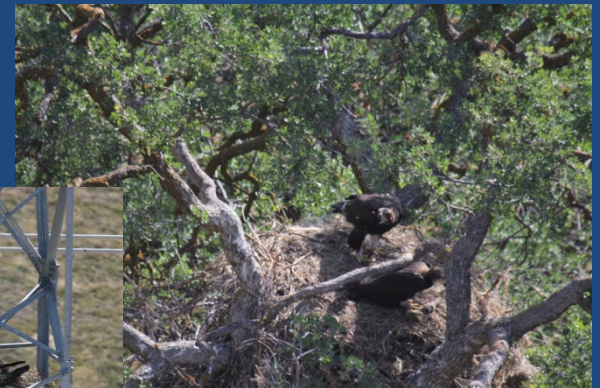
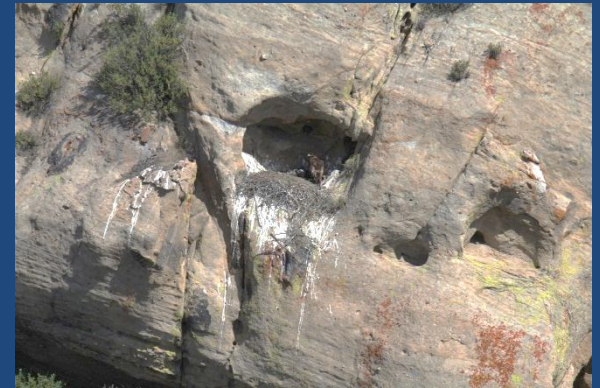
▲ H. T. Harvey & Associates 2012

- Resurveyed all but one of Latta's territories
- 25 nest sites comprising 16 occupied territories
- 2 former nests no longer present
- 13 nests in trees (9 oaks, 4 cottonwoods), 8 on transmission towers, 4 on cliffs/outcrops
- 14 nest starts (eggs laid) confirmed
- 2-3 failures: 1 incubation, 1 early brood-rearing, and 1 possible late brood-rearing
- 18-19 fledglings = 1.4-1.5 per nest start

High productivity both years!



Carrizo Plain Nest Sites



Carrizo Plain Nesting Territories

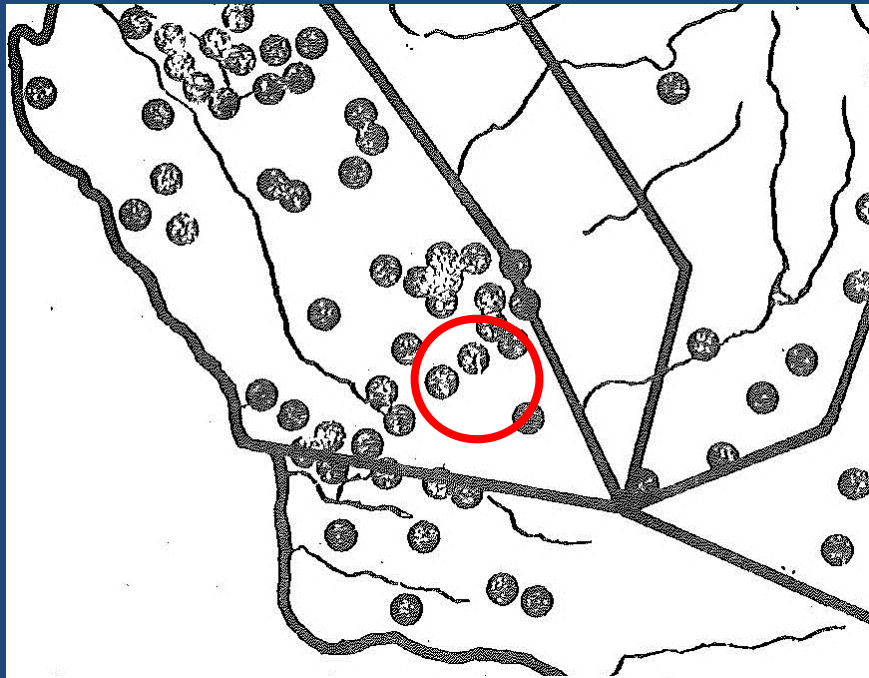
Study site map showing nest
locations not available for
public posting.

Most nests on east side of Temblor Range or in west-side
ranges in sparse oak woodland/grassland areas or on
transmission towers crossing open grassland

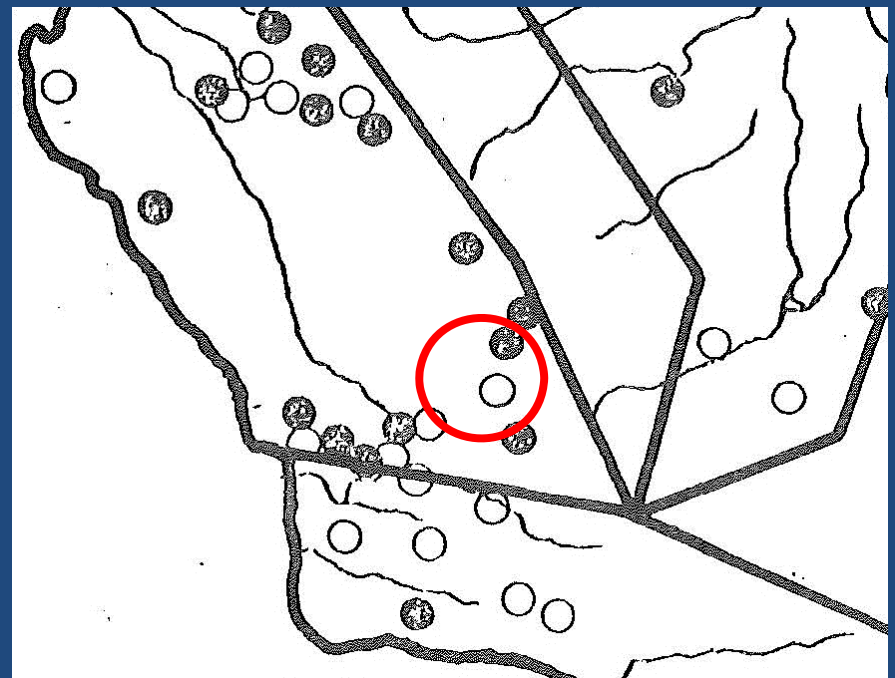
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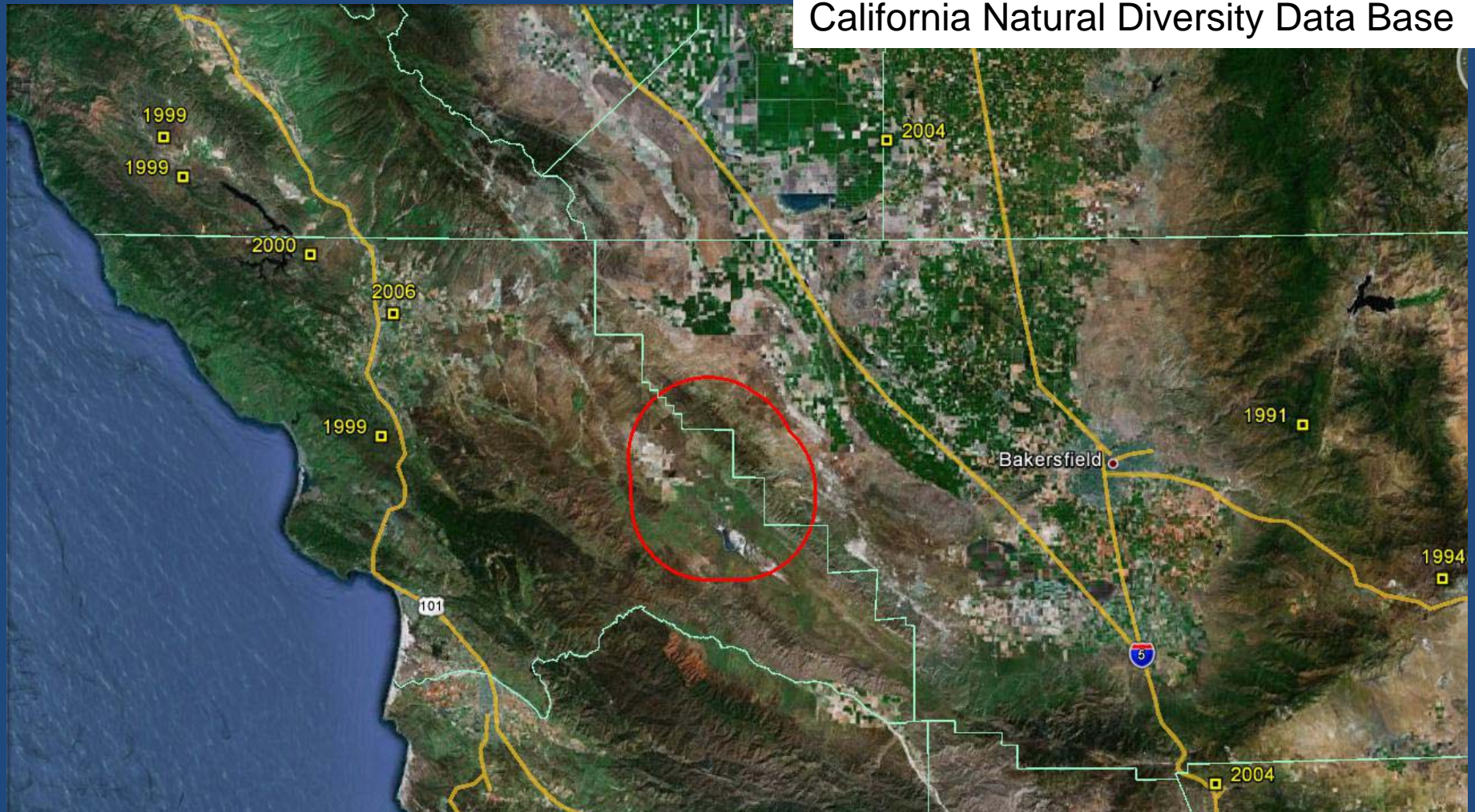
Occupied Sites



○ approximate CVSR study area location

Carrizo Plain Nesting History

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Conclusions and Relevant Future Efforts

▲ Yolo County

- Western ridges are an important historic and current nesting area for Golden Eagles
- No current plans to develop wind energy on study-area ridges
- 600 MW wind-energy facility being considered for Dunnigan Hills 25 km to NW
- No known eagle nesting in this area, but Swainson's Hawks commonly nest there



Conclusions and Relevant Future Efforts

▲ Solano County

- Montezuma Hills historically supported low density of nesting eagles
- Crop agriculture and wind facilities mostly incompatible with continued nesting in WRA, but resident / transient eagles often forage in area
- WRA nearly built out, unless expand to north
- Newer and some existing wind projects now faced with obtaining Golden Eagle take permits
- General avian activity surveys and ground-based monitoring of eagle nesting will continue in several areas for next 2-3 years



Conclusions and Relevant Future Efforts

▲ San Luis Obispo County

- No eagle nesting on Carrizo Plain itself except possibly on transmission lines
- Neighboring ranges and foothill oak woodlands support moderate density of nesting eagles – recently very productive
- No other solar facilities currently planned for Carrizo Plain, but others likely to north
- Eagle nesting surveys will continue annually through 2016 around CVSR to determine if loss of foraging habitat due to solar development influences local nesting population

