

Bald Eagle and Peregrine Falcon Monitoring at Lake Sonoma:

An Evaluation of 2005 Efforts & Management Recommendations

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U.S. Army Corps of Engineers
South Pacific Division &
San Francisco District

Occasional Report
CESPD-PDS-O

August 2005

Eakle, Wade L.; Lishka, Joseph J; Kirven, Monte N; Garcia, Robert E. 2005. **Bald Eagle and Peregrine Falcon monitoring at Lake Sonoma: an evaluation of 2005 efforts and management recommendations.** CESPD-PDS-O Occasional Report. San Francisco, CA. U.S. Army Corps of Engineers, South Pacific Division. 10 pp.

Abstract

We monitored nesting Bald Eagles and Peregrine Falcons at Lake Sonoma, CA from January to July 2005. We made four visits to the Bald Eagle nesting area near the upper end of the Dry Creek arm on 27 January, 6 April, 18 May, and 24 June to determine occupancy, activity and productivity, with two young successfully fledging in late June. We made seven visits to the Peregrine Falcon nesting site on Mt. Alice in the Pritchett Peaks on 16 March, 27 April, 25 May, 7 and 24 June, and 11 and 27 July to determine occupancy, activity and productivity. The falcons apparently failed to hatch their first clutch of eggs in mid-April, recycled, hatched three and later fledged at least two young in late-July. We evaluated current raptor management practices and provide recommendations for continued monitoring and management in 2006.

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Cover photo: Adult Bald Eagle at 2004 nest. All photos and artwork by R. E. Garcia.

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Introduction

The conservation and management of threatened, endangered, and sensitive (TES) species of plants and wildlife and their habitats are major issues of concern on U.S. Army Corps of Engineers Civil Works water resources projects throughout the United States. The Corps of Engineers is required by law to manage and protect these species in accordance with the Endangered Species Act of 1973, as amended, and other Federal statutes such as the Migratory Bird Treaty Act of 1918 and the Bald Eagle Protection Act of 1940. The protection and maintenance of natural resources on Corps lands is essential for the continued use of these lands and waters for carrying out the Civil Works mission and ensuring compliance with environmental laws (Martin 2002).

Habitat restoration and management strategies for high-profile TES species are a current emphasis on Corps projects, including assessing the impacts of Civil Works activities and land use practices, improving existing habitat for protected species, and inventorying and monitoring TES species, including birds of prey or raptors (Martin 2002, Eakle and Lishka 2005).

As the national symbol of the United States, the Bald Eagle (*Haliaeetus leucocephalus*) is one of the best-known birds of prey in North America (Buehler 2000). When the Bald Eagle was first declared the nation's symbol in 1782, there might have been 250,000 to 500,000 eagles on the continent. In 1940, Congress passed the Bald Eagle Protection Act making it illegal to kill, harass, possess or sell Bald Eagles without a permit. Bald Eagles south of the 40th parallel were first officially declared an endangered species in March 1967 under the Endangered Species Protection Act of 1966, the law preceding the Endangered Species Act of 1973 (ESA).

By February 1978, when eagles were listed as threatened in five northern states and endangered in the remaining 43 under the ESA, there were probably fewer than 1,000 pairs breeding in the 48 coterminous states. However, by July 1995, Bald Eagle populations had recovered such that it was down-listed to threatened throughout the lower 48 states, and by July 1999 they had reached a fully recovered status and were proposed for de-listing by the U.S. Fish & Wildlife Service (USFWS), with removal from the protections afforded by the ESA.

In 2000, the USFWS estimated there were over 6,470 eagle pairs in the lower 48 states, and approximately 100,000 breeding pairs in Alaska and Canada. If the Bald Eagle is

eventually de-listed from the ESA, and certain protections no longer apply, eagles and their nests would still be protected by the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act.

Bald Eagles have been observed year-round at Lake Sonoma, CA. In March 2001, an active nest and breeding pair was discovered and Corps park rangers began informal monitoring. Each subsequent year a breeding pair has been observed in the nesting area, laying and hatching two eggs each season. In 2001 and 2002, at least one of the young eagles successfully fledged, and was observed later in the summer. In 2003 and 2004 two eaglets fledged each year and were later observed flying together on the lake (Eakle and Lishka 2005).

Another well known, high profile TES species is the Peregrine Falcon (*Falco peregrinus*), now a symbol of North America's recovering threatened and endangered wildlife. The falcon is found almost worldwide, mostly along mountain ranges, river valleys, and coastlines. They typically nest in scrapes or depressions dug in gravel on a cliff ledge, and feed primarily on other birds such as songbirds, shorebirds, and ducks (USFWS 2000).

In 1970, the American (*F. p. anatum*) and Arctic (*F. p. tundrius*) subspecies of Peregrine Falcon were listed as endangered. Following restrictions on the use of the pesticide DDT and other recovery efforts, the Arctic Peregrine Falcon was delisted in October 1994, followed by the American Peregrine Falcon in August 1999, marking one of the most dramatic endangered species success stories.

Peregrine Falcons have been reported nesting on Mt. Alice in the Pritchett Peaks near Lake Sonoma since possibly before 1979. The breeding area, also known as the Warm Springs Dam Nest Site, was closely monitored from 1979-92, and actively manipulated with fostered young from 1982-88. From 1993-97 the nesting site was less closely monitored, and no monitoring took place from 1998-2004 (Eakle and Lishka 2005).

Herein, we report on our efforts to systematically monitor both nesting Bald Eagles and Peregrine Falcons at Lake Sonoma in 2005, and provide management recommendations for 2006 and beyond.

Methods

Breeding survey methods followed Jackman and Jenkins (2004) for monitoring existing Bald Eagle nest sites and Cade *et al.* (1996) for monitoring existing Peregrine Falcon nest sites.

The California Department of Fish & Game recommends that known Bald Eagle nests be checked at least three times during the breeding season to determine occupancy, activity, and success. Corps park rangers provided logistical support (vehicles and boats) to reach the eagle and falcon nesting areas. Three to four observers climbed by foot to positions overlooking and affording open views of the eagle nests at distances >100 m.

Observations were made with binoculars and spotting scopes, generally between 0800-1200 PST/PDT, regardless of weather conditions.

Linthicum (in Cade *et al.* 1996) recommends that Peregrine Falcon breeding areas be checked at least twice during the nesting season to determine reproductive success. Methods for observing nesting falcons on Mt. Alice were similar to those employed for Bald Eagles, except that viewing distances were >200 m, and made from an unpaved fire access road.

Results and Discussion

Bald Eagle

27 January – One adult Bald Eagle observed perched on the nesting tree used in 2004 (see cover photo). The breeding area is considered occupied for 2005. We observed an adult Bald Eagle chasing an Osprey (*Pandion haliaetus*) with prey near the park visitor's center.

6 April – Two adult Bald Eagles were observed in the breeding area, including the adult female brooding two eaglets, approximately 1-week old, in the alternate nest last used in 2001. We observed the male eagle make a prey delivery to the nest. The breeding area is considered active for 2005. We also observed an occupied Osprey nesting area near the Bald Eagle breeding area, and what appears to be a Golden Eagle (*Aquila chrysaetos*) nest in a Gray Pine (*Pinus sabiniana*) close to Warm Springs Dam.



Figure 1 – Adult Osprey on nest.



Figure 2 – Adult Bald Eagle at nest with young.

18 May – One adult eagle, likely the female, observed in the nest with two eaglets, approximately 7-weeks old. Also, two sub-adult Bald Eagles were observed flying over the lake, likely 2-3 years age based on plumage.

24 June – The nest was checked early in the morning and found to be empty. Later, two young eagles were observed on the far side of the lake perched on a snag and log. The area below the nesting tree was searched for prey remains, then both fledglings were observed by boat perched and flying along the lakeshore, with one adult Bald Eagle,

likely the female, perched nearby. The breeding area is considered successful for 2005. We later observed an Osprey chasing an adult Bald Eagle, likely the male.

Table 1 - Bald Eagle productivity at Lake Sonoma, CA 2001-2005.

<u>Year</u>	<u>Status</u>	<u>Productivity</u>
2001	Active	1
2002	Active	1
2003	Active	2
2004	Active	2
2005	Active	2

Peregrine Falcon

16 March – Two adult falcons were observed on the cliff, including courtship behaviors (mutual ledge displays). The site is probably close to egg laying based on the female’s lethargy and is considered occupied for 2005. An adult Barn Owl (*Tyto alba*) was observed in the pothole used by the falcons in 1991.

27 April – Both adults were observed at the cliff, but no eggs or young seen. The nesting effort has probably failed, possibly due to weather, and the pair may be recycling based on observed female lethargy. Several young Barn Owls were observed in the pothole.

25 May – Both adult falcons observed, including the female apparently incubating on the nest ledge, likely on a second clutch of eggs. An immature peregrine was heard and observed on the cliff, but neither adult responded. This bird could be recently fledged from another nearby breeding area. Several young Barn Owls were visible in the pothole.

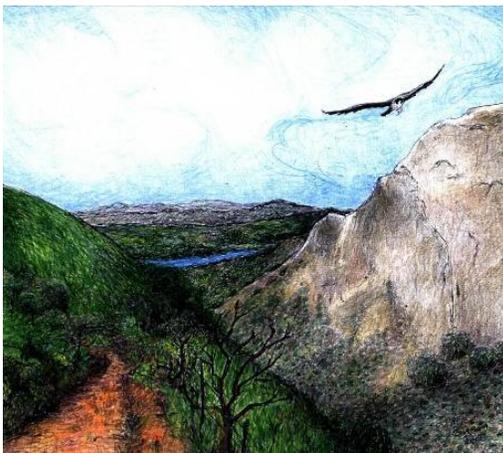


Figure 3 – Peregrine in flight over Mt. Alice.



Figure 4 – Mt. Alice nesting cliff, Lake Sonoma, CA.

7 June – Both adult falcons, and what appeared to be an incubation exchange, were observed on the nesting cliff. Two eggs were observed after the male left the ledge and before the female settled into an incubation position. The breeding area is considered active for 2005. Five young Barn Owls of various ages were observed in the pothole.

24 June – A low, heavy fog prevented the direct observation of the cliff face. However, falcon vocalizations were heard on three separate occasions, suggesting one or more of the adults present on the nesting ledge.

11 July – En route to Mt. Alice observed a White-tailed Kite (*Elanus caeruleus*) and five large Mule Deer (Black-tailed, *Odocoileus hemionus*) bucks in the dam borrow area. Observed three peregrine nestlings on the cliff ledge, approximately 30-days old based on plumage development. We also observed the adult female falcon on the cliff ledge. All three nestlings are exposed to direct sun on the nest ledge in the morning hours with minimal or no shade due to no extensive rock overhang, which could present an over-heating problem during a normal summer. There could be some opportunities to physically enhance the nesting ledge during the non-nesting season to provide an overhang, and protection from rain and direct sun. The pothole where the Barn Owls nested was empty, so they probably fledged. On the return to park headquarters, observed an adult Golden Eagle (likely a female by size) flying over the suspected eagle nest in a Gray Pine, down slope from the road and nearer the dam. This nest should be investigated for use in 2006.

27 July – En route to Mt. Alice observed a Bobcat (*Lynx rufus*) on the access road in the borrow area. Observed two recently fledged (<7-days) falcons at Mt. Alice and heard what we believe was the third fledgling in a tree at the base of the cliff. It appears all three young falcons have successfully fledged and will likely stay around the nesting cliff for another 2-weeks or so. Park Ranger Joe Lishka checked the site on 29 July, observing two fledglings actively flying and vocalizing, but no adults.



Figure 5 – Young Barn Owls in pothole.



Figure 6 – Possible Golden Eagle nest in Gray Pine.

Table 2 - Peregrine Falcon productivity at Lake Sonoma, CA 1979-2005¹.

<u>Year</u>	<u>Status</u>	<u>Productivity</u>
1979	Active	2
1980	Active	1
1981	Active	3
1982 ²	Active	2
1983	Active	2
1984	Active	2
1985	Active	1
1986	Active	2
1987	Active	2
1988	Active	2
1989	Active	2
1990	Active	0
1991	Active	2
1992	Active	0
1993	No data	
1994	Active	2
1995	No data	
1996	Active	2
1997	Active, no other data	
1998	No data	
1999	No data	
2000	No data	
2001	No data	
2002	No data	
2003	No data	
2004	No data	
2005	Active	2 ³

¹1979-2003 data provided by J. Linthicum, Predatory Bird Research Group, UC Santa Cruz, CA.

²1982-1988 the nest site was manipulated and young fostered (See Eakle and Lishka 2005).

³Two nestlings confirmed fledged, and possibly a 3rd.

Management Recommendations

Bald Eagle and Peregrine Falcon monitoring should be accomplished in 2006 using similar methods as those employed in 2005, and should be expanded to include nesting Ospreys.

Since Bald Eagles were sighted at various locations on the lake in 2005, from near the visitor's center to upstream of the nesting area, it may be prudent to identify and describe important foraging locations and other use areas within the project area. Adult eagles could be followed by boat as they depart the nesting area at first light to foraging locations, and/or boat searches of the entire lake could be conducted to find eagles in hunting perches, and then observing behaviors and movements by maintaining visual contact (Jackman and Jenkins 2004).

The monitoring plan for Peregrine Falcons indicates 2006 will be the next official monitoring year (after 2003), so Corps participation with this nationwide effort at Lake Sonoma, as well as other Corps lands across the county, will be critical to collect data on territory occupancy, nest success and productivity as described in the plan (USFWS 2003). To effectively participate, high-quality optical equipment should be purchased for Corps park rangers to use, including binoculars (10x40), spotting scopes and tripods.

In 1980 staff from the Santa Cruz Predatory Bird Research Group enlarged the Peregrine Falcon nesting ledge used in 1979-80 to increase depth and height. Nest ledge management had been a successful method for increasing productivity at specific cliffs in earlier work conducted in California. The enlargement included excavations that increased roof height, width of the ledge area where the nestlings exercised, and depth of the ledge and nesting scrape. The ledge was used again for nesting in 1982.

The nesting ledge used by the falcons in 2005 was also used in 1984 and 1986-88, and may have been used in years when no monitoring took place (1998-2004). The pothole occupied by Barn Owls in 2005 was used by the falcons for nesting in 1983, 1989 and 1991, and has served as a food cache. Several other ledges on the cliff have also been used by the falcons for nesting over the years.

If the 2005 nesting ledge is used again in 2006, more frequent and longer duration observations during the nestling stage should be completed to evaluate the need for ledge enhancement, providing shade for the growing young, and reducing heat stress (Marti 2002).

The entire lake shoreline should be surveyed by boat for Osprey nests in the fall or winter 2005, and locations mapped for monitoring in 2006 (Eakle and Lishka 2005).

The possible Golden Eagle nest near Warm Springs Dam should be investigated and evaluated for recent use (e.g., prey remains collected; see Eakle and Grubb 1986). The area should also be searched for alternate nests (see Grubb and Eakle 1987 for methods).

Finally, the Friends of Lake Sonoma should be approached with examples of artwork created by Robert Garcia for the possible production of posters or postcards, which could be offered for sale at the park visitor's center. Proceeds from the sales could be used to purchase optical and other necessary equipment for future raptor monitoring and management activities at the lake.

Acknowledgments

We greatly appreciate the logistical aid provided by park staff at Lake Sonoma. In particular, our work would not have been possible without the support and encouragement provided by Perry R. Crowley, Park Manager at Lake Sonoma, and Derrick T. Dunlap, Michael A. Dillabough and LTC Philip T. Feir with the San Francisco District.

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