

Bald Eagle (*Haliaeetus leucocephalus*) Management in an Urban Wildfire Hazard Reduction Area: Challenges & Successes

Authors

David L. Riensche
(driensche@ebparks.org)
and Douglas A. Bell
(dbell@ebparks.org)

Co-authors

Mary Malec
and Harvey Wilson

ABSTRACT

The Bald eagle (*Haliaeetus leucocephalus*), is a charismatic member of only about 20 species that have been declared recovered and removed from the Endangered Species Act (ESA) of 1973. While being de-listed in 2007 from this fundamentally sound federal law designed to conserve biological diversity and prevent species extinction, they are

still protected by the Bald and Golden Eagle Protection Act, and are listed as a California Fully Protected and State Endangered Species. In February 2012, at Lake Chabot Regional Park, a near-urban reservoir located in Castro Valley, California, a pair of young bald eagles began building a nest in a eucalyptus grove just outside a fuel

treatment area. This event occurred while the East Bay Regional Park District was engaged in eucalyptus thinning to reduce the risk of wildfire along the urban-wildland interface. This presentation highlights the challenges and successes experienced while balancing eagle protection, working with regulatory agencies and other stakeholder

groups, establishing buffer areas, closing trails, creating public viewing points, implementing stop-work criteria, all while daily monitoring the eagles' behavior during active vegetation removal and chipping operations which eventually led to the pair fledging their single chick shortly after the Fourth of July.

STUDY AREA

Anthony Chabot and Lake Chabot Regional Parks, operated by the East Bay Regional Park District, are located east of Oakland and north of Castro Valley in Alameda County. The lake is well-stocked and is a popular Bay Area fishing destination. Both parks, with a combined total of more than 6,000 acres, are located along an urban-wildland interface and in 2012 were undergoing active fuel management activities including helicopter logging to reduce the risk of wildfire (Fig 1).

In February 2012, a young pair of bald eagles (male 5 years; female 4 years; based on plumage) was discovered building a nest in a eucalyptus grove within 409.5 m of an active fuel management area (Fig 1). At the time of nest discovery, hundreds of eucalyptus trees of $\leq 12"$ dbh had already been downed by hand crews using chain saws in the fuel treatment area, presumably while the eagles were nest building. Helicopter removal of downed timber was set to commence soon after we discovered the eagle nest (Fig 2). To allow fuels removal to move forward, we drafted an action plan to monitor disturbance to the eagles, and established a command and control structure with authority to stop work based on level of disturbance. This action plan was approved by the U.S. Fish and Wildlife Service and the California Department of Fish and Wildlife prior to the initiation of helicopter logging.

Surveys of the bald eagles were conducted using variable powered spotting scopes and binoculars from a remote observation point, available only by foot beneath a tree canopy, approximately 200 m from the nest (Fig 1). Staff and trained volunteers provided an important source of standardized information on eagle reproductive behaviors and responses to disturbance events. In this report, we define disturbance as either visual (line of site to helicopter) or noise (helicopter audible) as assessed by observer. All disturbances occurred ≥ 410 m but ≤ 792 m from the eagle nest. Eagle monitoring generally lasted 2.0 - 5.5 hours between 0630 to 2000 hours and typically involved one observer. To standardize the observational effort, eagle sensitivity is expressed as the number of minutes an eagle experienced a disturbance and exhibited one of the following response behavior ranges: body/head tilt-change in position, temporary agitation and vocalization, and flushing (Buehler et al. 1991e, McGarigal et al. 1991, Brown and Stevens 1997). All eagle activities were recorded during the watches as well as interactions with other avian species.

METHODS



Figure 1. Bald eagle nest site at Anthony Chabot and Lake Chabot Regional Parks, located east of Oakland and north of Castro Valley in Alameda County, California.



Figure 2. Helicopter flight operations over the Anthony Chabot Campground Fuels Unit 2 - AC013; images by Janet Gomes.

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Figure 3. A pair of young, adult bald eagles: female 4 years old (above left) nesting in a large eucalyptus tree along a secluded area of Lake Chabot shoreline, and the male approximately 5 years old (above right); images by Mary Malec.



Figure 4. In early July, the fledgling eagle takes his first whirl around Lake Chabot; image by Mary Malec.

DISCUSSION PRELIMINARY RESULTS

The sensitivity of raptors to disturbances varies among species, as well as individuals. Most raptors are especially sensitive to disturbances during the following three distinct nesting season phases:

1. Just prior to egg laying and start of incubation.
2. Beginning at hatching and concluding when the chick(s) are endothermic.
3. The last few days before young fledge.

The results presented (Table 1) show that the continued monitoring of the nest during all helicopter flight operations over the fuel treatment area AC013, indicate that the eagles tolerated the intensive helicopter work and continued with their activities uninterrupted, including nest construction, incubation, hatching, chick development and fledging.

Human activities can impact raptors in three basic ways: by causing mortality of eggs, young, or adults; by altering habitats; and by disrupting birds' normal behaviors. The effect and potential impacts of logging operations varies from species to species, regionally, and is dependent on the timber harvest method, and length of harvest rotation.

Bald eagles often nest in trees at the forest edge, near water, but hunt in other habitats (Snow 1973, Corr 1974, Gerrard et al. 1975, McEwan and Hirth 1979, Andrew and Mosher 1982). This trait has led some biologists to conclude that nesting bald eagles and an active timber industry in northern Florida were compatible if selected large trees were left to enhance eagle nesting habitat (McEwan and Hirth 1979). In southeastern Alaska, Corr (1974) concluded that the clear-cutting would not eliminate bald eagle nesting if a substantial fringe of shoreline timber remained intact. It was thought that if nest sites are left intact, logging may benefit species that nest at the forest edges but hunt primarily in meadows and fields because timber removal creates additional open space foraging areas. In California, a 0.5-mile radius (2,640 feet), direct-line-of-sight buffer zone, and helicopter-exclusion zone are typically required around any active bald eagle nest (CDF&G, EIS/EIR timber harvest guidelines). The U.S. Fish and Wildlife Service does not permit helicopter flights (except for biological survey) within 1,000 feet of a bald eagle nest. Our pair of bald eagles constructed their nest within 1,400 feet of the border of an active fuel treatment area.

Based on our observations, we conclude that by establishing buffer areas, closing trails, creating public viewing points, implementing stop-work criteria, while daily monitoring of eagle behaviors (during vegetation removal activities, helicopter and chipping operations) successful bald eagle reproduction at this location resulted (Fig 1).

Because of the wide range in bald eagle tolerance levels to human activities, further detailed research is needed to help shape management options that can accommodate the needs of individual, sensitive birds and balance other resource objectives.

Dates 2012	Phase of nesting season	Observation totals (minutes)	Responses to helicopter disturbance	Total Disturbance time (minutes)	Percentage of disturbance	
			Body/head position changes	Temporary agitation and vocalization	Flushing	
2/23	Nest construction	165	no	no	no	0
2/26	Nest construction	105	no	no	no	0
2/28	Nest construction	105	no	no	no	0
3/5	Nest construction	120	no	no	no	0
3/7	Incubation	180	no	no	no	0
3/15	Incubation	75	no	no	no	0
3/20	Incubation	75	no	no	no	0
3/21	Incubation	270	yes	no	no	5
3/22	Incubation	300	yes	no	no	2
3/23	Incubation	330	yes	yes	no	10
3/26	Incubation	435	yes	no	no	9
3/28	Incubation	330	yes	no	no	5
3/30	Incubation	210	yes	no	no	7
4/16	Incubation	90	no	no	no	0
4/18	Incubation	90	no	no	no	0
4/21	Hatch/Chick	90	no	no	no	0
5/6	Chick	120	no	no	no	0
5/23	Chick	90	no	no	no	0
7/5	Fledgling	90	no	no	no	0

Table 1. Sensitivity of bald eagles to helicopter operations within less than 0.5-mile radius (2,640 feet), direct-line-of-sight of nest.