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OBSERVATIONS OF A PAIR OF NESTING COOPER'S HAWKS IN SAN FRANCISCO, CALIFORNIA

Increasing attention has been focused on raptor species that nest in urban environments (L. Oliphant and E. Haug 1985, *J. Raptor Research* 19:56–59; P. Bloom et al. 1993, *J. Wildl. Manage.* 57:258–265; C.M. White 1994, *Studies in Avian Biology* 15:161–172; R.N. Rosenfield et al. 1995, *J. Raptor Research* 29:1–4). In this letter, we report observations of nesting Cooper's hawks (*Accipiter cooperii*) in San Francisco, California. To our knowledge, this is the first nest record for the species in the city and county of San Francisco, California.

The breeding territory was located in the Fort Funston National Recreation Area, located on the immediate Pacific coast in the southwestern region of San Francisco. This area is a unit within the Golden Gate National Recreation Area and is administered by the U.S. Park Service, Department of Interior. Vegetation in the area consists primarily of exotic species, occurring as patchy stands of eucalyptus (*Eucalyptus spp.*) or Monterey cypress (*Cupressus macrocarpa*) interspersed with open sand dunes dominated by sea fig (*Carpobrotus aequilaterus*). Several paved paths dissect the area, which receives extensive human use primarily in the form of dog walkers, hikers and tourists. Literally scores of unleashed dogs and walkers inundated the immediate nest area daily.

Adult Cooper's hawks were sporadically observed in this area from May–July 1994. During September 1994 a stick nest was observed in a eucalyptus tree approximately 8 m from a heavily-used paved path. Prey remains, whitewash and molted Cooper's hawk feathers at the base of the nest tree and fresh down present around the rim of the nest suggested a pair of Cooper's hawks attempted to nest during the 1994 breeding season. The nest was located 9.4 m above the ground in a 41 cm diameter at breast height eucalyptus tree. The nest tree was located in a mixed stand of eucalyptus and cypress that was approximately 200 m long and 50 m wide.

On 24 March 1995, Cooper's hawks were first observed in the area when an adult male was seen pursuing flocks of Brewer's blackbirds (*Euphagus cyanocephalus*) and rock doves (*Columba livia*) over a paved parking lot located approximately 300 m south of the 1994 nest stand. A second-yr female carrying a stick flew into the nest stand. A stick nest was observed in a eucalyptus tree approximately 90 m south of the 1994 nest tree. The nest tree was located within a few meters of both a popular picnic table and a heavily-used path. On 4 April, the female was observed incubating in this nest. On the morning of 23 April, neither the female nor male was found in the nest stand area, the nest had fallen out of the tree and several egg shell fragments were located at the base of the tree. Although we could not determine the cause of the nest failure, we suspect that the nest may have blown out of the tree. The nest appeared to be poorly constructed and was situated on a bluff along the immediate coast overlooking the Pacific Ocean, an area regularly buffeted by strong onshore winds.

On 27 April, the pair was observed in the immediate vicinity of the 1994 nest site. A copulation was observed at this nest site on 29 April following a prey delivery by the male. On 7 May, the female was observed feeding at a plucking post and the male was perched on the rim of the nest. Another copulation was observed on 9 May following another prey delivery. Egg laying and incubation were estimated to have been initiated on 9–11 May. Hatching was estimated to have occurred on 12–15 June. On 17 June, the female was observed feeding nestlings and on 24 August, a single fledgling was seen perched near the nest. The fledgling apparently dispersed soon after this date and was not observed on subsequent visits.

Limited observations of prey deliveries and prey remains resulted in identification of six prey species: five birds, Brewer's blackbird, rock dove, mourning dove (*Zenaidura macroura*), scrub jay (*Aphelocoma coerulescens*), American robin (*Turdus migratorius*), and one mammal (an unknown sciurid).

Our observations showed that this pair of Cooper's hawks was able to exploit a breeding territory with a high degree of human activity. Limited food observations indicated that these hawks preyed on both introduced and native species that are common within the urban environment of San Francisco. Further, they were able to use an introduced nonnative tree species for nesting. Eucalyptus trees are widely distributed throughout western California in both urban and natural environments and are commonly used by raptors such as red-shouldered hawks (*Buteo lineatus*),

red-tailed hawks (*B. jamaicensis*), and great horned owls (*Bubo virginianus*). Great horned owls also nest in eucalyptus trees within the city of San Francisco (J.J. Keane pers. observ.).

This is the first confirmed nest record for Cooper's hawk in San Francisco, California. Observations of Cooper's hawks during the breeding season in other parts of San Francisco, particularly Golden Gate Park and the Presidio (Golden Gate National Recreation Area), suggest the presence of additional nesting pairs in the city. Given the widespread habitat modifications associated with a population growth rate of approximately 600,000 people per year in California (T. Palmer 1993, California's threatened environment, Island Press, Covelo, CA U.S.A.), further study of these Cooper's hawks could provide valuable information related to Cooper's hawk management and conservation.—**Nadia Sureda, RR3 Box 17A, Vermillion, SD 57069 U.S.A. and John J. Keane, Department of Avian Sciences, University of California, Davis, CA 95616 U.S.A.** Present address for Keane: Stanislaus National Forest, 19777 Greenley Road, Sonora, CA 95370 U.S.A.

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PRESENCE OF BREEDING NORTHERN GOSHAWKS IN THE COAST RANGE OF OREGON

Northern goshawks (*Accipiter gentilis*) nests have been found in all forested areas of Oregon except the Coast Ranges of the western portion of the state (R.T. Reynolds et al. 1982, *J. Wildl. Manage.* 46:124–138, T. Schommer and G. Silovsky 1994, USDA For. Ser. Status Rep. Pac. Northwest Reg. Off., Portland, OR U.S.A., and S. DeStefano et al. 1994, *Studies Avian Biol.* 16:88–91). Although goshawks have been observed in the Coast Ranges during the breeding season and at other times of the year (S. DeStefano unpubl. data), breeding activity has never been observed there.

On 7 and 20 June 1995, we observed two occupied northern goshawk nests in the Coast Ranges of Oregon (44°11'N, 123°36'W and 44°16'N, 123°26'W). A straight-line distance between the two nests was 16.1 km. The nests were discovered during surveys for northern spotted owls (*Strix occidentalis caurina*) in the Eugene Bureau of Land Management District, Oregon. Vegetation in this area is dominated by forests of Douglas-fir (*Pseudotsuga menziesii*) and western hemlock (*Tsuga heterophylla*).

Adult goshawks responded with "alarm calls" to our imitations of spotted owl calls during daytime surveys. We then played recorded goshawk calls to find the goshawks and their nests. Each goshawk nest was located within 150 m of an historic owl nest tree/activity area. We observed three young at the first nest and two young at the second. We estimated the first brood to be 9–12 d and the second brood at >40 d of age (C.W. Boal 1994, *Studies Avian Biol.* 16:32–40). Two of the three nestlings in the first brood eventually died of unknown causes. The first mortality occurred at 16–19 d of age and the second occurred when the nestling was 35 d old.

The dbh (diameter at breast height) of both Douglas-fir nest trees were smaller (33.5 and 33.0 cm) than those used by goshawks in other areas of Oregon (T. Schommer and G. Silovsky 1994, USDA For. Ser. Status Rep. Pac. Northwest Reg. Off., Portland, OR U.S.A.). One nest tree was alive and the other was a Class I snag (dead, but retaining its branches) (C.R. Maser et al. 1979, pages 78–93 in J.W. Thomas, Ed., USDA For. Ser. Agric. Handbook 553). However, nest height (8.1 and 20.9 m) was similar to nests located in other areas of Oregon (T. Schommer and G. Silovsky 1994, USDA For. Ser. Status Rep. Pac. Northwest Reg. Off., Portland, OR U.S.A.). Nests were constructed of sticks, lichens, moss and Douglas-fir needles, but were different shapes. The first nest was "cuplike" whereas the second nest was more "platform" in shape. The weathered appearance of both nests suggested that they were >1 year old. We located an alternate nest structure in the nest stand of the second nest, suggesting that the territory may not be ephemeral (B. Woodbridge and P.J. Detrich 1994, *Studies Avian Biol.* 16:83–87).

Nest stands were similar in both size (11 and 16 ha) and structure. Forest fires and selective timber harvest occurred in the nest stands 50–60 yr ago, accounting for the smaller trees (28–52.9 cm dbh) in the stands and a component of large overstory trees (53+ cm dbh) in the stands. These "young" stands also contained an open understory, residual components of down woody debris and snags.

The Coast Ranges of Oregon appear to have all of the structural types of habitat with which breeding goshawks are associated (R.T. Reynolds et al. 1982, *J. Wildl. Manage.* 46:124–138). Despite a decade of annual surveys for spotted owls and other forest breeding birds, the relative absence of breeding goshawks in the Coast Ranges is well-documented. It is not clear why goshawks breed at such low densities in the Coast Ranges when compared to other areas of the Pacific Northwest.