

## A.8 AMERICAN PEREGRINE FALCON (*FALCO PEREGRINUS ANATUM*)

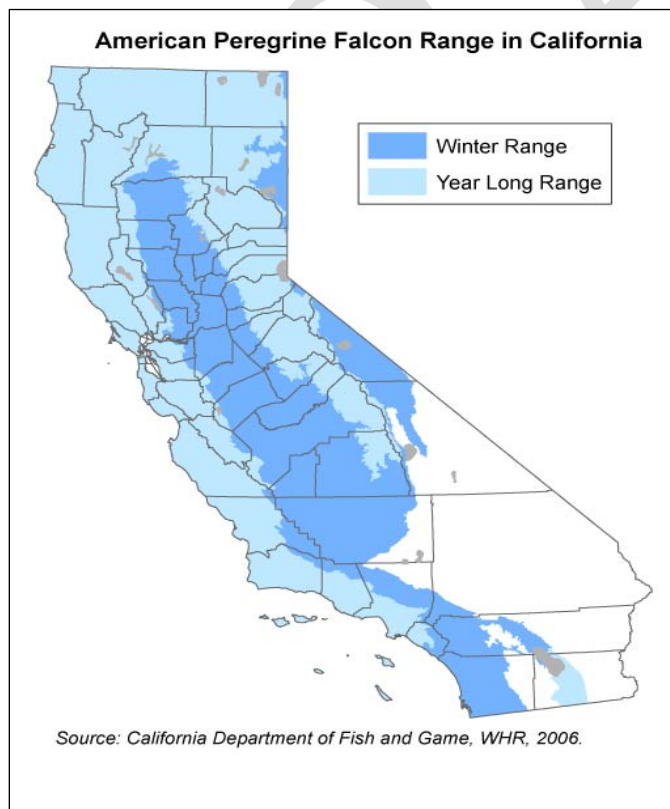
### A.8.1 Legal and Other Status

The American peregrine falcon (*Falco peregrinus anatum*) was listed by the California Fish and Game Commission in 1971 as an endangered species under the California Endangered Species Act. In 2009, the California Fish and Game Commission voted to remove the American peregrine falcon from California's endangered species list. This was the second delisting of a species by the California Fish and Game Commission. Despite species recovery that has warranted delisting, the peregrine falcon remains a state Fully Protected species.

The peregrine falcon was initially listed under the precursor to the federal Endangered Species Act in 1970 (35 FR 16047). Due to its recovery, the species was federally delisted by the U.S. Fish and Wildlife Service on August 25, 1999 (64 FR 46542). A post-delisting monitoring plan was implemented in 2003 (68 FR 67697), which requires monitoring every 3 years between 2003 and 2015 (USFWS 2003a).



photo courtesy USFWS



### A.8.2 Species Distribution and Status

#### A.8.2.1 Range and Status

The peregrine falcon has the most extensive natural distribution of any bird in the world, limited primarily by high elevations and extreme temperatures. It is found on all continents except Antarctica. There are three subspecies nesting in North America:

The Arctic peregrine falcon (*F. p. tundrius*) nests on the north slope of Alaska east across northern Canada to Greenland, and winters in Latin America. The Peale's peregrine falcon (*F. p. pealei*) is a year-round resident on the coasts of Washington, British Columbia, and Alaska

1 north to the Aleutian Islands. The American peregrine falcon nests in southern Alaska, Canada,  
2 the United States and northern Mexico (64 FR 46542, White et al. 2002) and is the only subspecies  
3 that breeds in California (Wheeler 2003).

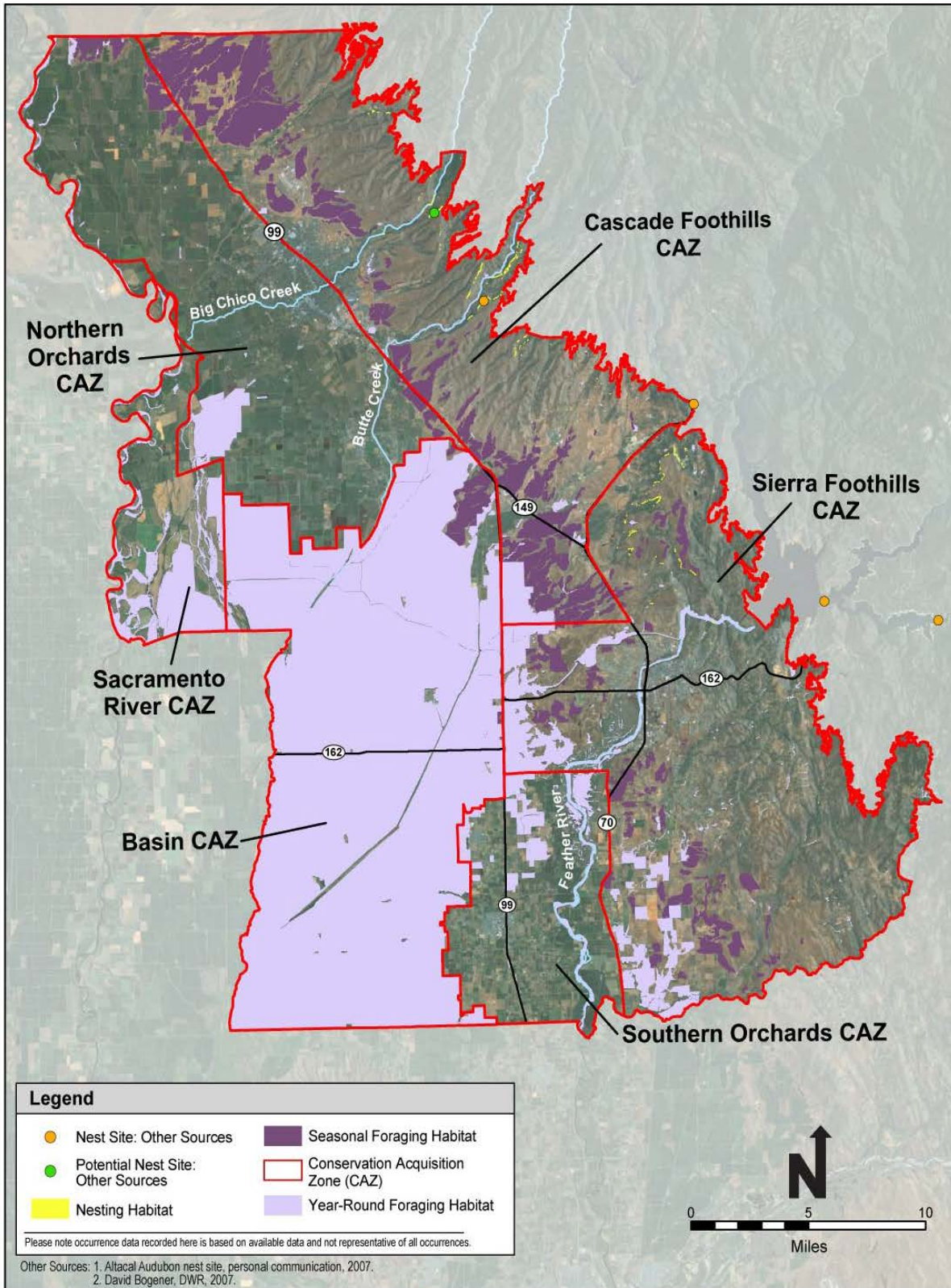
4 The American peregrine falcon occurs throughout much of North America, from the subarctic  
5 boreal forests of Alaska and Canada south to Mexico. It nests from central Alaska, central  
6 Yukon Territory, and northern Alberta and Saskatchewan, east to the Maritime Provinces, and  
7 south (excluding coastal areas north of the Columbia River in Washington and British Columbia)  
8 throughout western Canada and the United States to Baja California, Sonora, and the highlands  
9 of central Mexico (64 FR 46542). While distributed widely, it nests in low densities with an  
10 estimated historical population of approximately 4,000 breeding pairs (64 FR 46542, White et al.  
11 2002).

12 The species declined precipitously in North America following World War II, a decline  
13 attributed largely to organochlorine pesticides, mainly DDT (dichlorodiphenyltrichloroethane),  
14 applied in the United States, Canada, and Mexico. During the 1940s, 1950s, and 1960s, eggshell  
15 thinning and nesting failures (a result of ingesting prey contaminated with DDE, a metabolite of  
16 DDT, which prevents normal calcium deposition during eggshell formation) were widespread in  
17 Peregrine falcons, and in some areas, successful reproduction virtually ceased. As a result, there  
18 was a slow but drastic decline in the number of peregrine falcons in most areas of its range in  
19 North America. By 1975, there was no reported breeding in the eastern population and only 324  
20 known nesting pairs in the west (64 FR 46542, White et al. 2002, Wheeler 2003).

21 As a result of this decline, the species was listed as endangered on June 2, 1970, under the  
22 precursor of the Endangered Species Act (35 FR 16047). Following restrictions on  
23 organochlorine pesticides in the United States and Canada, and implementation of various  
24 management actions, including the release of approximately 6,000 captive-reared falcons,  
25 recovery goals were substantially exceeded in some areas, resulting in the federal delisting of the  
26 species in 1999 (64 FR 46542).

27 Post-delisting monitoring results continue to indicate recovery of the species. Estimates of  
28 territory occupancy, nest success, and productivity were above the target values that were set in  
29 the post-delisting monitoring plan for those nesting parameters (USFWS 2003b). Data collected  
30 during 2003 indicate that there were 3,005 nesting pairs of American peregrine falcons in the  
31 United States, Canada, and Mexico in 2003, compared to approximately 1,750 pairs at the time  
32 of delisting.

33 Prior to the 1940s, approximately 200 breeding pairs were thought to occur in California;  
34 however, only limited accurate information was available. By the mid-1970s, only two pairs  
35 were known to breed in the state. Since the implementation of recovery efforts, 271 active  
36 breeding sites have been documented. Surveys conducted in 2006 by the Santa Cruz Predatory  
37 Research Group revealed that of the 236 sites visited, 167 had at least one adult present and 154  
38 were confirmed to have an active pair present ([www2.ucsc.edu/scpbrg/pefacensus.htm](http://www2.ucsc.edu/scpbrg/pefacensus.htm)).



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2 **Figure A-8. American Peregrine Falcon Modeled Habitat and Recorded Occurrences**

## 1 **A.8.2.2 Distribution and Status in the Plan Area**

2 While there are no reports of peregrine falcon in Butte County in the California Natural Diversity  
3 Database (CNDDB 2007; see Figure A-8), peregrine falcons are known to occur, and possibly  
4 breed, along the eastern edge or just east of the eastern Plan Area boundary. A relatively  
5 substantial amount of peregrine falcon activity has been reported by state agencies and local  
6 experts from within the Plan Area. Altacal Audubon Society reports a breeding pair in upper  
7 Butte Creek Canyon, as well as recent activity in the Upper Bidwell Park area and on a  
8 suspension bridge across Lake Oroville. The California Department of Fish and Game (DFG)  
9 reports a nest site along the southern bluffs of Upper Bidwell Park. DFG also reports activity  
10 along the western bluffs of DFG’s Table Mountain Ecological Reserve. The California  
11 Department of Water Resources (DWR) reports nest sites on three of the four bridges over Lake  
12 Oroville. These and other reports of peregrine falcon activity will be refined and updated  
13 through additional contact with local biologists.

## 14 **A.8.3 Habitat Requirements and Special Considerations**

### 15 **A.8.3.1 Nesting**

16 Nesting habitat is variable throughout the species’ range. Throughout the species range,  
17 including California, most traditional sites are associated with cliffs and generally open  
18 landscapes for foraging. Often associated with water, nests are often situated along rivers, lakes,  
19 or coastal shorelines. Cliff sites range from 26 to 1,312 feet (8 to 400 meters [m]) high with  
20 most between 164 to 656 feet (50 to 200 m) (Bond 1946). A variety of atypical sites in artificial  
21 habitats have been reported, particularly for reintroduced pairs since the 1970s, including towers,  
22 buildings, and bridges, sometimes in urban environments (Bell et al. 1996, Cade et al. 1996).  
23 Trees and abandoned nests of other raptors are also occasionally used. Nest sites have been  
24 reported to occur at more than 9,842 feet (3,000 m), but most are below 3,936 (1,200 m) (White  
25 et al. 2002, Wheeler 2003).

26 The placement and orientation of nests is variable depending on climactic and habitat features.  
27 Most cliff sites are nearly vertical and provide protection from mammalian predators. Cliff sites  
28 that offer updrafts are generally preferred, likely due to accessibility to and from the site.  
29 Thermoregulation may also be a key factor related to maximizing solar radiation while providing  
30 cover during extreme temperatures (White et al. 2002, Wheeler et al. 2003).

31 Cliff nests are typically on ledges and in small shallow caves. Eggs are laid in “scrapes,” which  
32 are shallow indentations the adults scratch out with their talons in the soft earth on the floor of  
33 their nest site (64 FR 46542).

### 34 **A.8.3.2 Foraging**

35 Nest sites are usually selected based on available foraging opportunities. Foraging habitat  
36 consists of open water (e.g., lakes, reservoirs, estuaries, rivers, and oceans), marshes, mudflats,

1 and tidal zones where shorebirds and other water birds congregate, or pasturelands with potholes  
2 or vernal pools that provide habitat for waterfowl and other water birds. Urban nesting falcons  
3 may forage within the urban environment on rock doves or other urbanized species.

#### 4 **A.8.4 Life History**

##### 5 **A.8.4.1 Seasonal Patterns**

6 American peregrine falcons that nest in subarctic areas generally winter in South America and  
7 may migrate through California during the fall and spring months. Those that nest at lower  
8 latitudes, including California, exhibit variable migratory behavior; some do not migrate. In  
9 northern California, some breeding pairs remain at or in the vicinity of the nest year-round, while  
10 others migrate locally to more favorable winter foraging habitats (White et al. 2002, Wheeler  
11 2003).

##### 12 **A.8.4.2 Reproduction**

13 Peregrine falcons exhibit a high degree of mate and site fidelity. In Northern California,  
14 courtship generally begins in February/March and eggs are typically laid in late April to early  
15 May. From three to five eggs are laid and incubated by the female and male for 33 to 37 days.  
16 Hatching occurs from late May to early June and fledging occurs 35 to 42 days after hatching.  
17 Fledglings usually remain dependent on the adults for an additional 6 to 15 weeks, at which time  
18 they become independent (White et al. 2002, Wheeler 2003).

##### 19 **A.8.4.3 Foraging Behavior and Diet**

20 American peregrine falcon forages almost exclusively on birds. Hunting either aerially or from a  
21 perch, avian prey are mainly captured in flight, often using a long-distance high-speed pursuit  
22 with angled or vertical dives. The diet consists of birds ranging from small passerines to  
23 medium-sized waterfowl. In addition to shorebirds, grebes, ducks, and other water bird species,  
24 rock doves, starlings, other songbirds, bats, and occasionally other small mammals are taken  
25 (Wheeler 2003). The peregrine falcon is also known to take insects. In many areas,  
26 Columbiforms comprise the largest component of their diet (Sherrod 1978).

##### 27 **A.8.4.4 Foraging Ranges**

28 Foraging range is largely a function of prey availability and is thus highly variable. DFG (1989)  
29 reports that peregrine falcons in California have been reported to travel more than 12 miles (19.3  
30 kilometers [km]) from the nest to hunt. Enderson and Kirven (1983) reported an average  
31 foraging distance of 3 miles (5 km) in the northern California study area. Zeiner (1990) reports  
32 home range sizes in California averaging 125 square miles (324 sq km), which is generally  
33 consistent with Enderson and Craig (1997) who reported a range of 138 to 408 square miles (358  
34 to 1,058 sq km) in Colorado.

## 1 **A.8.5 Threats**

2 While the effects of organochlorides persist to some extent and may continue to pose  
3 reproductive problems, the risk is significantly reduced since the banning of DDT.

4 Other potential threats to nesting peregrine falcons include urbanization resulting in the loss of  
5 foraging habitats and disturbance to nest sites; illegal shooting, egg collecting, and falconry  
6 activities; and collision with vehicles, utility lines, and other structures.

7 While the extent of peregrine falcon activity reported from the Plan Area has certainly increased  
8 since the beginning of recovery efforts, development activities and land use changes could  
9 potentially pose a threat to this local population. Urbanization of bluffs and ridges could alter  
10 available habitat or increase levels of human disturbance. Loss of wetland habitats within the  
11 Plan Area and the resulting reduction of available waterbird prey could affect foraging  
12 opportunities for peregrine falcon.

## 13 **A.8.6 Relevant Conservation Efforts**

14 The widespread use of organochloride pesticides, especially DDT, was a primary cause of the  
15 decline in peregrine falcon populations (USFWS 1982). This threat has been reduced since the  
16 banning of DDT. The peregrine falcon is a covered species or a proposed covered species in  
17 several regional conservation plans in the Central Valley region of California. These include the  
18 South Sacramento County Habitat Conservation Plan, the Placer County Conservation Plan, and  
19 the Yolo County Natural Heritage Program Plan.

## 20 **A.8.7 Species Habitat Suitability Model**

### 21 ***A.8.7.1 Nesting Habitat***

22 Peregrine falcon nesting habitat includes cliff faces and rock outcrops with a minimum slope of  
23 50 degrees.

### 24 ***A.8.7.2 Assumptions***

25 The only available breeding habitat for peregrine falcons within the Plan Area occurs on cliffs  
26 along the eastern edge of the Plan Area, where there are two known nest sites in the Plan Area,  
27 and three known nest sites east of the Plan Area boundary. Most peregrine falcon cliff nest sites  
28 are nearly vertical and are between 50 and 200 meters high (164 to 656 feet) (Bond 1946, White  
29 et al. 2002). Due to limited availability of higher resolution digital elevation model (DEM) data  
30 for the Plan Area, it was not possible to capture all of the cliff features as described above.  
31 However, using a 10-meter DEM with a slope threshold of 50 degrees, cross-referenced against  
32 USGS (1 to 24,000) topographic maps, the model captures a good spatial representation of  
33 peregrine falcon cliff breeding habitat in the Plan Area.

### 1 **A.8.7.3 Seasonal Foraging Habitat**

2 Peregrine falcon seasonal foraging habitat is defined as grassland with vernal swale complex,  
3 and vernal pools or altered vernal pools contained by grassland with vernal swale complex  
4 within the entire Plan Area.

### 5 **A.8.7.4 Assumptions**

6 Peregrine falcons prey on waterfowl, shorebirds, and other birds that may use vernal pools.  
7 Vernal pools typically fill during November and dry by May. For purposes of this model, all  
8 suitable foraging habitat within the Plan Area is assumed to be within the foraging range of  
9 peregrine falcons nesting along the eastern edge of the Plan Area (DFG 1989).

### 10 **A.8.7.5 Year-Round Foraging Habitat**

11 Peregrine falcon year-round foraging habitat includes managed wetland, emergent wetland, rice,  
12 and open water land cover types within the entire Plan Area.

### 13 **A.8.7.6 Assumptions**

14 Peregrine falcons occupy the Plan Area during the winter season, which extends approximately  
15 from October through February and during the breeding season, which extends approximately  
16 from March through September. The land cover types that support year-round foraging habitat  
17 are those which provide year-round habitat for wetland-associated birds (e.g., waterfowl,  
18 shorebirds) that are important peregrine falcon prey species.

## 19 **A.8.8 Recovery Plan Goals**

20 This species has been delisted by both USFWS and DFG. Banning the use of DDT improved the  
21 nesting success of wild peregrine falcons. Recovery of the species was also aided by captive  
22 breeding and reintroduction efforts. Current recovery tasks include the continued measuring of  
23 pesticide levels and the monitoring of peregrine falcon nesting success.

## 24 **A.8.9 References**

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