

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

RIN 1018-AF04

Endangered and Threatened Wildlife and Plants; Final Rule To Remove the American Peregrine Falcon From the Federal List of Endangered and Threatened Wildlife, and To Remove the Similarity of Appearance Provision for Free-Flying Peregrines in the Conterminous United States

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), have determined that the American peregrine falcon (*Falco peregrinus anatum*) is no longer an endangered or threatened species pursuant to the Endangered Species Act of 1973, as amended (Act). This determination is based on available data indicating that this subspecies has recovered following restrictions on organochlorine pesticides in the United States and Canada, and following the implementation of successful management activities. This action will remove the American peregrine falcon (*Falco peregrinus anatum*) throughout its range as an endangered species from the Federal List of Endangered and Threatened Wildlife, thereby removing all protections provided by the Act. It also will remove the designation of "endangered due to similarity of appearance" for any free-flying peregrine falcons within the 48 conterminous United States. It will not affect protection provided to this species by the Migratory Bird Treaty Act (MBTA), the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), or state laws and regulations, nor will it affect the endangered listing status of the Eurasian peregrine falcon (*Falco peregrinus peregrinus*) under the Act.

EFFECTIVE DATE: August 25, 1999.

ADDRESSES: The administrative file for this rule is available for inspection, by appointment, during normal business hours at the U.S. Fish and Wildlife Service, Ventura Fish and Wildlife Office, 2493 Portola Road, Suite B, Ventura, California 93003 (telephone (805) 644-1766/facsimile 805/644-3958).

FOR FURTHER INFORMATION CONTACT: Robert Mesta at the above address for further information on the removal of

the peregrine falcon from the endangered species list.

SUPPLEMENTARY INFORMATION:**Background**

The peregrine falcon (*Falco peregrinus*) is a medium-sized raptor weighing approximately 1,000 grams (36 ounces) and having a wing span of 112 centimeters (44 inches). The adult peregrine falcon has a dark gray back and crown, dark bars or streaks on a pale chest and abdomen, and heavy malar (cheek) stripes on the face. Immature falcons are buff-colored in front and have dark brown backs; adults are white or buff in front and bluish-gray on their backs. Peregrines prey almost entirely on other birds, and occasionally on bats, caught in midair (Hickey and Anderson 1969).

The peregrine falcon has an almost worldwide distribution, with three subspecies recognized in North America (Brown and Amadon 1968). The Peale's falcon (*F. p. pealei*) is a year-round resident of the northwest Pacific coast from northern Washington through British Columbia to the Aleutian Islands. The Arctic peregrine falcon (*F. p. tundrius*) nests in the tundra of Alaska, Canada, and Greenland, and is typically a long-distance migrant, wintering as far south as South America. The American peregrine falcon (*F. p. anatum*) occurs throughout much of North America from the subarctic boreal forests of Alaska and Canada south to Mexico. The American peregrine falcon nests from central Alaska, central Yukon Territory, and northern Alberta and Saskatchewan, east to the Maritimes and south (excluding coastal areas north of the Columbia River in Washington and British Columbia) throughout western Canada and the United States to Baja California, Sonora, and the highlands of central Mexico (48 FR 8799). American peregrine falcons that nest in subarctic areas generally winter in South America, while those that nest at lower latitudes exhibit variable migratory behavior; some are nonmigratory (Yates *et al.* 1988).

Since the early 1970s, efforts to reestablish peregrine falcons in the eastern and midwestern United States have successfully returned this species to areas from which it was extirpated (See "Eastern United States" under "Peregrine Falcon Recovery"). Peregrine falcons are now found nesting in all States within their historical range east of the 100th meridian, except for Rhode Island, West Virginia, and Arkansas.

Peregrine falcons declined precipitously in North America following World War II (Kiff 1988). Research implicated organochlorine

pesticides, mainly 1,1,1-trichloro-2,2-bis(p-chlorophenyl)-ethane (DDT), applied in the United States and Canada during this same period, as causing the decline (for a review, see Risebrough and Peakall 1988). Use of these chemicals peaked in the 1950s and early 1960s and continued through the early 1970s. Organochlorines and their metabolites, including DDT and its principal metabolite DDE (1,1-dichloro-2,2-bis(p-chlorophenyl)-ethylene), aldrin, dieldrin, and others, are stable, persistent compounds that are stored in the fatty tissues of animals ingesting contaminated food (Fyfe *et al.* 1988).

Organochlorines can affect peregrine falcons either by causing direct mortality or by adversely affecting reproduction. Because mortality in wild birds is difficult to study, the effect of organochlorines on mortality is not as well known as the effects on reproduction. Organochlorines can adversely affect reproduction by causing egg breakage, addling, hatching failure, and abnormal reproductive behavior by the parent birds (Risebrough and Peakall 1988). DDE prevents normal calcium deposition during eggshell formation, resulting in thin-shelled eggs that are susceptible to breakage during incubation. In general, populations laying eggs with shells that averaged more than 17 percent thinner than pre-DDT eggs had such high rates of reproductive failure that the number of peregrine falcon pairs declined (Peakall and Kiff 1988).

During the period of DDT use in North America, eggshell thinning and nesting failures were widespread in peregrine falcons, and in some areas, successful reproduction virtually ceased (Hickey and Anderson 1969). As a result, there was a slow but drastic decline in the number of peregrine falcons in many areas of North America. The degree of exposure to these pesticides varied among regions, and peregrine falcon numbers in more contaminated areas suffered greater declines. Peregrine falcons that nested outside of agricultural and forested areas where DDT was heavily used were affected less, although some of these individuals were still exposed to DDT when wintering in areas of pesticide use. Presumably all peregrine falcon individuals have eaten some migratory prey containing organochlorines (for reviews, see Hickey and Anderson 1969; Kiff 1988; Peakall and Kiff 1988).

Peregrine falcons nesting in the agricultural and forested areas east of the Mississippi River in the United States and in eastern Canada south of the boreal forest were the most heavily contaminated and were essentially

extirpated by the mid-1960s (Berger *et al.* 1969). Peregrine falcons in the Great Plains states east of the Rocky Mountains and south of the boreal forest in Canada and the United States were also extirpated in the DDT-era (Cade 1975; Enderson *et al.* 1995). No active eyries (nests) were found in surveys of 133 formerly used peregrine falcon eyries in the latter part of the 1964 nesting season in the eastern United States and the Maritime Provinces in Canada (Berger *et al.* 1969). By 1975, there were only three peregrine falcon pairs in Alberta, and no other peregrine falcon pairs were found south of latitude 60 degrees North and east of the Rocky Mountains in Canada (Erickson *et al.* 1988).

West of the 100th meridian, peregrine falcons were significantly reduced; only 33 percent of historical nest sites in the Rocky Mountains were still occupied by 1965 (Enderson 1969). The peregrine falcon disappeared as a breeding species from southern California, and major declines also occurred in other parts of the western United States and in much of southern Canada and the Northwest Territories (Kiff 1988). In contrast, peregrine falcons in most areas of the Pacific coast of Alaska remained fairly stable during this period, due to their lower exposure to organochlorine pesticides. The exact degree of local declines in much of western North America remains somewhat speculative due to a lack of accurate pre-pesticide era census data. For example, in the southwestern United States and mainland Mexico, peregrine falcons were not censused until after the beginning of the use of organochlorines (Kiff 1988).

Previous Federal Actions

Population declines due to negative impacts of DDT and its metabolites on peregrine falcon reproduction and survival led us to list two of the three North American subspecies, the Arctic peregrine falcon and the American peregrine falcon, as endangered in 1970 under the Endangered Species Conservation Act of 1969 (Public Law 91-135, 83 Stat. 275). Arctic and American peregrine falcons were included in the United States' list of endangered foreign species on June 2, 1970 (35 FR 8491) under the Endangered Species Conservation Act of 1969, and the native list of endangered species on October 13, 1970 (35 FR 16047). Upon passage of the Endangered Species Act of 1973, as amended (Act) (16 U.S.C. 1531 *et seq.*), the native and foreign species lists were combined into a single list of endangered and threatened species. Both the American

and Arctic peregrine falcon subspecies were listed as endangered throughout their respective ranges. The Peale's peregrine falcon was not listed because it was reproducing at near normal levels with only traces of DDT.

On March 1, 1983, we published a proposed rule to (1) reclassify the Arctic peregrine falcon from endangered to threatened; (2) clarify the status of the American peregrine falcon (*Falco peregrinus anatum*) in some areas of its range; and (3) designate all free-flying peregrine falcons in the 48 conterminous United States as endangered under the similarity of appearance provisions of section 4(e) of the Act (48 FR 8796). A final rule was published on March 20, 1984 (49 FR 10520). Pursuant to the similarity of appearance provisions, species that are not considered to be endangered or threatened are treated as such for the purpose of providing protection to a species that is biologically endangered or threatened.

On June 12, 1991, we announced in the **Federal Register** a Notice of Status Review of American and Arctic peregrines (56 FR 26969). The Arctic peregrine was removed as a threatened species from the Federal List of Endangered and Threatened Wildlife on October 5, 1994 (59 FR 50796) but was still regulated under the Act in the lower 48 United States due to the similarity of appearance provision for all *Falco peregrinus* peregrine falcons. The similarity of appearance provision was maintained because the American peregrine falcon was still listed as endangered.

We published an Advanced Notice of a Proposal to Remove the American Peregrine Falcon from the Federal List of Endangered and Threatened Wildlife on June 30, 1995 (60 FR 34406). This was based on data indicating this subspecies was recovered following restrictions on the use of organochlorine pesticides in the United States and Canada and because of successful management activities, including the reintroduction of captive-bred and relocated wild hatchling peregrine falcons. Current data provides additional support for recovery of all North American peregrine falcons, including the American peregrine falcon subspecies. We published a proposed rule to remove the peregrine falcon in North America from the Federal List of Endangered and Threatened Wildlife on August 26, 1998, based on continuing data indicating this species was recovered (63 FR 45446).

The processing of this final rule conforms with our listing priority guidance published on May 8, 1998 (63

FR 25502). This guidance clarifies the order in which we will process rulemakings, giving highest priority to handling emergency situations (Tier 1) and second highest priority (Tier 2) to resolving the listing status of outstanding proposed listings, resolving the conservation status of candidate species, processing administrative findings on petitions to add species to the lists or reclassify species from threatened to endangered status, and delisting or reclassifying actions. The lowest priority actions, processing critical habitat designations, are in Tier 3. Processing of this final rule is a Tier 2 action.

Peregrine Falcon Recovery

Section 4(f) of the Act directs us to develop and implement recovery plans for listed species. In some cases, we appoint experts to recovery teams to assist in the writing of recovery plans. Between 1974 and 1975 we formed recovery teams consisting of Service, State, and other experts. In cooperation with us, these recovery teams produced four regional recovery plans: three for the American peregrine falcon (Alaska, Rocky Mountains/Southwest United States, and the Pacific Coast of the United States), and one for the peregrine falcon in the eastern United States. Although no United States recovery plans established recovery criteria for peregrine falcons nesting outside of the United States, the Canadian Wildlife Service published an *Anatum* Peregrine Falcon Recovery Plan (Erickson *et al.* 1988) establishing recovery criteria for American peregrine falcons in Canada. Recovery plans for peregrine falcons called for captive rearing and release of birds in several areas of North America. In the eastern United States, where peregrine falcons were extirpated, the initial recovery objective was to reestablish peregrine falcons through the release of offspring from a variety of wild stocks being held in captivity by falconers. The first experimental releases of captive-produced young occurred in 1974 and 1975 in the United States. Since then, approximately 6,000 falcons were released throughout its historic range in North America. These releases helped to re-establish breeding pairs in areas where the species was extirpated, and accelerated the recovery of the species.

Later, reintroduction was also pursued in eastern Canada using only *F. p. anatum* breeding stock from the boreal regions of the subspecies' range. All peregrine falcons released to augment wild populations in western North America west of the 100th meridian, where small numbers of

American peregrines survived the pesticide era, were derived from western *anatum* stock (Enderson *et al.* 1995).

The most significant factor in the recovery of the peregrine falcon was the restriction placed on the use of organochlorine pesticides. Use of DDT was banned in Canada in 1970 and in the United States in 1972 (37 FR 13369). Restrictions that controlled the use of aldrin and dieldrin were imposed in the United States in 1974 (39 FR 37246). Since implementation of these restrictions, residues of the pesticides have significantly decreased in many regions where they were formerly used. Consequently, reproductive rates in most surviving peregrine falcon populations in North America improved, and numbers began to increase (Kiff 1988; Enderson *et al.* 1995).

In Alaska and northwest Canada, American peregrine falcon populations were locally depressed, but enough individuals survived the pesticide era to allow populations to expand without the need for release of captive-bred falcons. Likewise, in the southwestern United States, very few captive-bred birds were released, and populations recovered naturally following restrictions on the use of organochlorine pesticides. In southwest Canada, the northern Rocky Mountain States, and the Pacific Coast States, however, local populations were greatly depressed or extirpated, and over 3,400 young American peregrine falcons were released to promote recovery in those areas (Enderson *et al.* 1995).

American peregrine falcon population growth was noted in Alaska in the late 1970s (Ambrose *et al.* 1988b), and, by 1980, population growth was found in many other areas (Enderson *et al.* 1995). The rate of increase varied among regions of North America, undoubtedly influenced by variation in patterns of pesticide use, potential differences in the rate of pesticide degradation, and the degree to which local populations had declined. Populations in some portions of the range of American peregrine falcons, such as Alaska, northwest Canada, and southwestern United States, reached densities several years ago that suggested recovery was approaching completion (Ambrose *et al.* 1988b; Mossop 1988; Geoff Holroyd, Canadian Wildlife Service, *in litt.* 1993; Enderson *et al.* 1995). Residual organochlorine pesticide contamination continues to affect eggshells in some areas, such as portions of coastal California (Jarman 1994) and western Texas (Bonnie McKinney, Texas Parks and Wildlife Department, pers. comm.

1997), but these effects are localized. Despite these localized effects and the variation in the rate of increase among regions, local populations throughout North America have increased in size, and positive trends in nearly all areas suggest that an extensive recovery of American peregrine falcons has taken place.

Recovery Status

To aid in assessing peregrine falcon recovery, the current status was compared to specific recovery plan objectives for American peregrine falcons in (1) Alaska, (2) Canada, (3) the Pacific Coast, (4) the Rocky Mountains and the Southwest, and for the peregrine falcon in, and (5) the eastern United States. The current status of the subspecies in Mexico is discussed below, although no recovery plan or recovery objectives are established for Mexico.

Alaska

The Peregrine Falcon Recovery Plan, Alaska Population (Alaska Recovery Plan) (U.S. Fish and Wildlife Service 1982a) includes both Arctic and American peregrine falcons nesting in Alaska. The following discussion relates only to provisions regarding the American peregrine falcon, as the Arctic peregrine falcon was delisted on October 5, 1994 (59 FR 50796).

The Alaska Recovery Plan established recovery objectives based on four measurements for assessing the status of American peregrine falcons including population size, reproductive performance, pesticide residues in eggs, and eggshell thickness. The recovery objectives included:

- (1) 28 nesting pairs in 2 specified study areas (16 in upper Yukon and 12 in upper Tanana);
 - (2) An average of 1.8 young per territorial pair;
 - (3) Average organochlorine concentration in eggs of less than 5 parts per million (ppm) (wet weight basis DDE); and
 - (4) Eggshells no more than 10 percent thinner than pre-DDT era eggshells.
- The Alaska Recovery Plan suggested that these objectives be maintained in the specified study areas for 5 years before reclassifying from endangered to threatened status, and remain constant or improve for an additional 5 years before delisting.

Surveys were conducted in the upper Yukon and Tanana Rivers, for which historical population data were available, using consistent methodology from 1973 to the present so trends would be discernable. Surveys conducted between 1966 and 1998

along the upper Yukon River demonstrated increases in the number of occupied nesting territories from a low of 11 known pairs in 1973 to 46 pairs in 1998 (Ambrose *et al.* 1988b; Robert Ambrose, U.S. Fish and Wildlife Service, *in litt.* 1997a, 1999). Similarly, along the upper Tanana River, the number of occupied nesting territories increased from 2 in 1975 to 33 in 1998 (R. Ambrose, *in litt.* 1997a; 1999). The recovery objective of 28 occupied nesting territories in the two study areas was first achieved (post-DDT) in 1988, with 23 nesting territories on the Yukon River and 12 on the Tanana River. The number has increased steadily since that time to the current level of 79 occupied nesting territories in 1998, with 46 pairs on the Yukon River and 33 pairs on the Tanana River (R. Ambrose, *in litt.* 1999). Thus, the recovery objective of 28 occupied nesting territories was achieved and surpassed for 10 years. A minimum of 301 breeding pairs of American peregrine falcons currently nest in Alaska.

Productivity measured along the upper Yukon and Tanana Rivers fell to a low of about 1.0 young per territorial pair per year (yg/pr) in the late 1960s, but began to increase in the mid-1970s. By 1982, productivity exceeded the objective of 1.8 yg/pr, and varied between 1.6 and 3.0 yg/pr in the years since. Between 1994 and 1998, productivity averaged 2.0 yg/pr (sample size (N) = 362 nests/pairs). Overall, between 1982 and 1998, the Yukon River study area averaged 1.79 yg/pr, and the Tanana River study area averaged 1.85 yg/pr (R. Ambrose, *in litt.* 1999). It is expected that there are yearly variations in productivity, which most wildlife species experience. However, average productivity for the peregrine falcon was constant or improving, thus meeting the goal of at least 1.8 yg/pr over the last 10 years as recommended by the Alaska Recovery Plan.

Mean concentrations of DDE in peregrine falcon eggs in excess of 15–20 ppm are associated with nesting failure, whereas productivity is usually sufficient to maintain population size if residues average less than this concentration (Peakall *et al.* 1975, as cited in Peakall and Kiff 1988; Newton *et al.* 1989). In Alaska, average DDE residues in American peregrine falcons averaged 12.2 ppm from 1979 through 1984, 5.8 ppm from 1988 through 1991, and 3.5 ppm from 1993 through 1995 (R. Ambrose, *in litt.* 1997b). Current data suggest that the concentrations of less than 5 ppm DDE residue levels in peregrine falcon eggs have improved in the last 10 years (R. Ambrose *in litt.* 1997b). As a result of lowered DDE

concentrations, there was consistent population growth during that time.

In Alaska, eggshells were as much as 20–22 percent thinner than pre-DDT eggshells in the mid-1960s (Cade *et al.* 1988). By the early 1980s, shells were about 14 percent thinner than before the DDT era (Ambrose *et al.* 1988a). Eggshells averaged 13.0 percent thinner from 1979 through 1984, 13.1 percent thinner from 1988 through 1991, and 12.1 percent thinner from 1993 through 1995 (R. Ambrose, *in litt.* 1997b). The average thickness of pre-DDT American peregrine falcon eggs from Alaska is not precisely known, so current estimates of thinning could be inaccurate. While average eggshell thinning has not yet reached the level of 10 percent or less of the pre-DDT era, it has improved over the last 10 years. Also, reproduction was sufficient to allow consistent population growth since the late 1970s, and productivity has, on average, exceeded its stated recovery objective for 17 years.

In summary, based on the most current information (1998 survey and early 1990s contamination data), we conclude that goals underlying all four objectives were met or exceeded. On average, the number of pairs occupying nesting territories in the two study areas and productivity exceeded the recovery objectives for the past 17 years. Neither DDE residues in eggs nor eggshell thinning has prevented a dramatic population growth since the late 1970s.

Canada

The 1988 *Anatum* Peregrine Falcon Recovery Plan for Canada (Canadian Recovery Plan) (Erickson *et al.* 1988) categorized the historical range of the American peregrine falcon throughout Canada into three regions, which include the Western Mountains, Interior Plains, and the Eastern Seaboard and Great Lakes. These regions were subdivided into nine zones on the basis of historical population levels, habitat, political boundaries, and restoration needs. The zones are (1) Maritime, (2) Great Lakes, (3) Prairies, (4) Mackenzie River Valley, (5) Northern Mountains, (6) Southern Mountains, (7) Eastern Mackenzie Watershed, (8) Western Canadian Shield, and the (9) Eastern Canadian Shield. Coastal British Columbia was excluded from consideration in the Canadian Recovery Plan because that area is occupied by *F.p. pealei*.

The goal of the Canadian Recovery Plan was to increase the wild American peregrine falcon population in Canada so the subspecies is no longer considered endangered or threatened by the Committee on the Status of Endangered Wildlife in Canada. The

proposed objectives were (1) to establish by 1992 a minimum of 10 territorial American peregrine falcon pairs in each of Zones 1 to 6, and (2) to establish by 1997, in each of 5 of these 6 zones, a minimum of 10 pairs naturally fledging 15 (1.5 yg/pr) or more young annually, measured as a 5-year average beginning in 1993. No recovery objectives were established for Zones 7, 8, and 9. The Canadian Recovery Plan did not contain separate objectives for reclassification of the subspecies in Canada from its current endangered status to threatened.

Starting in 1990, the Canadian Wildlife Service has coordinated and published a national range-wide peregrine falcon population survey once every 5 years. The results of the 1995 national population survey were used in the following status summary of the American peregrine falcon in Canada (Ursula Banasch, Canadian Wildlife Service, *in litt.* 1997).

There were 98 known nest sites in Zones 1 and 2 (southern Ontario and Quebec, northern Great Lakes, Bay of Fundy and Labrador), and surveys located 64 pairs. There were 98 known nest sites in Zone 3 (Manitoba, Saskatchewan and Alberta), and surveys located 41 pairs. There were 117 known nest sites in Zone 4 (eastern N.W. Territories), and surveys located 83 pairs. There were 125 known nest sites in Zone 5 (Yukon), and surveys located 113 pairs. There were 50 known nest sites in Zone 6 (Interior British Columbia), and surveys located 18 pairs. The total known number of pairs for all six zones in 1995 was 319, with minimum objectives achieved for every recovery zone.

The only comprehensive range-wide productivity surveys available to us were the national population surveys coordinated by the Canadian Wildlife Service in 1990 and 1995 (U. Banasch, *in litt.* 1997; Holroyd and Banasch 1996). Surveys conducted in the intervening years were not nationally coordinated, and therefore not complete. Thus, we used the combined average annual productivity data collected in the 1990 and 1995 surveys to address this recovery objective.

In Zones 1 and 2, average productivity was 1.7 yg/pr (N=104 nests). In Zone 3, average productivity was 1.5 yg/pr (N=55). In Zone 4, average productivity was 2.0 yg/pr (N=171). In Zone 5, average productivity was 1.8 yg/pr (N=626). No productivity data were available for Zone 6. The 2-year average annual productivity for the Canadian population of American peregrine falcons was 1.8 yg/pr.

Although the Canadian Recovery Plan did not identify recovery objectives for

pesticide residue or eggshell thinning levels, 205 eggs and 62 samples from 28 specimens of peregrine falcons were collected in Canada between 1965 and 1987 to assess organochlorine residue concentrations. In all three subspecies (*F.p. anatum*, *F.p. tundrius*, *F.p. pealei*), the proportion of specimens having residue concentrations above established critical values (concentration at which egg failure occurs, which varies among organochlorine contaminants) had decreased and was inversely correlated with improvements in the reproductive success of the population (Peakall *et al.* 1990).

In summary, the Canadian Recovery Plan identified two objectives to determine recovery for the American peregrine falcon population in Canada. Based on current available information, both objectives were met. The total number of pairs for all six zones in 1995 was 319, with minimum objectives achieved for every recovery zone. This count exceeds the total recovery objective of 60 pairs by 259 pairs. The average annual productivity data for 1990 and 1995 either met or exceeded objectives in five of the six zones with an average annual productivity of 1.8 yg/pr for the American peregrine falcon population in Canada.

Pacific Coast

To reclassify the American peregrine falcon from endangered to threatened, the Pacific Coast Recovery Plan (Pacific Population Plan) (U.S. Fish and Wildlife Service 1982b) recommended that 122 pairs be established in a specified distribution spanning California, Washington, Oregon, and Nevada. The distribution goals were based on 22 management units distributed throughout the historic range of the Pacific Coast peregrine falcon population. For each management unit, the population must achieve a specified minimum number of active pairs before downlisting can be considered. The Pacific Population Plan also recommended that with attainment of 185 wild, self-sustaining pairs (California 120, Oregon 30, Washington 30, and Nevada 5 pairs) and an average productivity of 1.5 yg/pr for a 5-year period, the subspecies could be considered for delisting. Since this final rule addresses the delisting of the peregrine falcon, only the latter two objectives are discussed in this section. The Pacific Population Plan defined a "self-sustaining" population as one whose natural productivity without human management is equal to or greater than its mortality.

By 1976, no American peregrine falcons were found at 14 historical nest sites in Washington, and Oregon had also lost most of its peregrine falcons. In addition, only 1 or 2 pairs remained on the California coast, with no more than 10 nest sites known to be occupied in the entire State (Cade 1994). A steadily increasing number of American peregrine falcon pairs breeding in Washington, Oregon, and Nevada was indicated by surveys from 1991 through 1998. Known pairs in Washington increased from 17 to 45, in Oregon from 23 to 51, and in Nevada from 3 to 6 (Gary Herron, Nevada Division of Wildlife, pers. comm. 1997; Martin Nugent, Oregon Department of Fish and Wildlife, *in litt.* 1999; David Anderson, Washington Department of Fish and Game, *in litt.* 1997). The number of American peregrine falcons in California increased from an estimated low of 5 to 10 breeding pairs in the early 1970s (Herman 1971), to a minimum of 167 occupied sites in 1998 (Janet Linthicum, Santa Cruz Predatory Bird Research Group, *in litt.* 1999). The increase in California was concurrent with the restriction of DDT and management that included the release of over 750 American peregrine falcons, including captive-reared and relocated wild hatchlings, through 1997 (Walton 1997). Recovery of American peregrine falcons in some areas of California, however, was impeded by continuing elevated DDT levels (Jarman 1994; Walton 1997).

The recovery of the peregrine falcon could be the result of a lower than expected first-year mortality of released birds from the augmentation program, which accelerated the growth of the Pacific population (Brian Walton, Santa Cruz Predatory Bird Research Group, pers. comm. 1997). As a result, intensive human management has essentially ended, and the release of captive-bred American peregrine falcons was suspended in Nevada in 1989, in California in 1992 (although the relocation of wild hatchlings continues), and in Oregon and Washington in 1995. Based on available information, the first recovery objective was met; a minimum known population of 270 pairs exceeds the delisting goal of 185 by 85 pairs. Also, the distribution goals for the Pacific Coast population was met in all four States. Surveys conducted from 1991 through 1998 demonstrate a steadily increasing number of American peregrine falcon pairs, indicating that natural productivity is greater than mortality in this recovery region.

Productivity measured in Washington between 1993 and 1998 ranged from 1.3 to 1.8 yg/pr, with an average of 1.5 yg/

pr (N=204) (D. Anderson, *in litt.* 1999). In Oregon, productivity between 1993 and 1998 ranged from 0.8 to 1.9 yg/pr, with an average of 1.3 yg/pr (N=178) (M. Nugent, *in litt.* 1997; David Peterson, U.S. Fish and Wildlife Service, *in litt.* 1999). Between 1993 and 1998, productivity in California ranged from 1.4 to 1.7 yg/pr (N=523), with an average of 1.6 yg/pr (J. Linthicum *in litt.* 1999). No productivity data were available for Nevada.

Productivity, an important measure of population health, can be difficult to determine in wide-ranging species nesting in remote landscapes that are often difficult to access. However, available data indicate that the average productivity from 1993 through 1998 in Washington, Oregon and California was 1.5 yg/pr (D. Anderson, *in litt.* 1999; M. Nugent, *in litt.* 1997; David Peterson, U.S. Fish and Wildlife Service, *in litt.* 1999; J. Linthicum *in litt.* 1999). Therefore, we consider this objective to be met.

The Pacific Population Plan did not identify recovery objectives for pesticide residue or eggshell thinning levels. However, organochlorine residues and eggshell thinning were measured in California starting in the early 1970s. Jarman (1994) reported DDE concentrations in 105 peregrine eggs collected from California from 1987 to 1992, and 11 eggs from Oregon from 1990 through 1993. Data collected in nine study regions in California (Jarman 1994) indicated the highest concentrations of DDE were found in California eggs from the Channel Islands and mid-coast with 21 and 13 ppm, respectively. The southern coast and San Francisco regions had the lowest concentrations of 5.5 and 4.3 ppm, respectively. The DDE concentrations in eggs collected along the coast of California (between San Francisco Bay and 34° N) did not decrease between 1969 and 1992 (Jarman 1994). Eggs from Oregon contained DDE levels of 10 ppm.

Eggshells from coastal California continued to show thinning. In northern and central coastal California, eggshells collected between 1975 and 1995 averaged 17.7 and 19.1 percent thinner than pre-DDT era, respectively (J. Linthicum, *in litt.* 1996). In northern interior California, where 104 of the 186 sites were active at least once from 1975–1993, eggshells averaged 15.6 percent thinner than pre-DDT era shells (J. Linthicum, *in litt.* 1996). Eggshells collected on the Channel Islands off the southern coast of California in 1992–1995 averaged 19.4 percent thinner than those collected in California prior to 1947 (J. Linthicum, *in litt.* 1996). In montane California, the average was 15

percent thinner than normal, and in the southern interior (coastal mountains) the average was 17.9 percent thinner than normal (J. Linthicum, *in litt.* 1996). Urban pairs experienced eggshell thinning averaging 8.7 percent in the San Francisco area and 10.9 percent in the Los Angeles/Orange County area. A summary of 633 clutch mean measurements representing 1,237 samples of one or more eggshells collected between 1975 and 1995 from the historical range of the American peregrine falcon in California averaged 16.1 percent thinner (J. Linthicum, *in litt.* 1996). However, current reproduction indicates an expanding population in most areas despite high organochlorine residue concentrations and associated eggshell thinning in some areas of the Pacific population.

Rocky Mountain/Southwest

The American Peregrine Falcon Rocky Mountain/Southwest Population Recovery Plan (U.S. Fish and Wildlife Service 1984) established three objectives for delisting, including (1) increasing the *Falco peregrinus anatum* population in the Rocky Mountain/Southwest region to a minimum of 183 breeding pairs and the following distribution: Arizona (46), Colorado (31), Idaho (17), Montana (20), Nebraska (1), New Mexico (23), North Dakota (1), South Dakota (1), Texas (8), Utah (21), and Wyoming (14); (2) sustaining a long-term average production of 1.25 yg/pr without manipulation by 1995; and (3) observing eggshell thinning of no more than 10 percent from the pre-DDT era for a 5-year span.

The prairie States of North Dakota, South Dakota, Nebraska, Kansas, and Oklahoma contain little peregrine falcon habitat, and historical data are incomplete. No recovery goals for a specific number of peregrine falcon pairs were set for Kansas or Oklahoma; nesting peregrine falcons are not known from Oklahoma. Currently, South Dakota, Nebraska and Kansas each have one peregrine falcon pair (Mark Martell, The Raptor Center, pers. comm. 1998; Tordoff *et al.* 1997); no peregrine falcon pairs are currently known to occur in North Dakota or Oklahoma.

The Rocky Mountain/Southwest population of the American peregrine falcon has made a profound comeback since the late 1970s when surveys showed no occupied nest sites in Idaho, Montana, or Wyoming and few pairs in Colorado, New Mexico, and the Colorado Plateau, including parts of southern Utah and Arizona (Cade 1994). Surveys conducted from 1991 through 1998 indicated that the number of American peregrine falcon pairs in the

Rocky Mountain/Southwest population is steadily increasing. In 1991, this population supported 367 known pairs; in 1998 the number of pairs increased to 535 (Robert Mesta, U.S. Fish and Wildlife Service, *in litt.* 1999). Surveys conducted from 1992 through 1998 showed that, with the exception of North Dakota, all States within the Rocky Mountain/Southwest population have met or exceeded their specific delisting goals for breeding pairs.

The current minimum known number of peregrine falcon pairs for each State include Arizona 159, Colorado 89, Idaho 17, Montana 18, Nebraska 1, New Mexico 32, North Dakota 0, South Dakota 1, Texas 11, Utah 164, Wyoming 42, and Kansas 1 (Greg Beatty, Arizona Game and Fish Department, *in litt.* 1997; James Anderson, Western Peregrine Falcon Recovery Team, pers. comm. 1999; Dennis Flath, Montana Department of Fish and Parks, *in litt.* 1999; Frank Howe, Utah Division of Wildlife Resources, *in litt.* 1999; Levine *et al.* 1998; McKinney 1994; B. McKinney, pers. comm. 1999; Robert Oakleaf, Wyoming Game and Fish Department, *in litt.* 1999; Sator O. Williams III, New Mexico Department of Game and Fish, *in litt.* 1999). The current Rocky Mountain/Southwest population is 535, which surpasses the objective of 183 by 352 pairs.

In Arizona, productivity from 1989 through 1997 ranged from 0.9 to 1.8 yg/yr, with an average productivity of 1.1 yg/pr (N=294). Recent average productivity (1994–1997) is 0.9 yg/pr (N=194) (Ward and Siemens 1995; G. Beatty, *in litt.* 1997).

In 1973, 1974, and 1975, productivity in Colorado was 0.2 (N=11), 1.9 (N=8), and 0.7 yg/pr (N=8), respectively, reflecting the irregular and generally poor productivity typical of the 1970s (Platt and Anderson 1988). Long term productivity measured in Colorado from 1985 through 1998 ranged from 1.2 to 1.9 yg/pr, with an average of 1.6 yg/pr (N=753) (Gerry Craig, Colorado Division of Wildlife, *in litt.* 1999; J.H. Anderson, pers. comm. 1999). Recent productivity from 1994 through 1998, averaged 1.6 yg/pr (N=395) (G. Craig, *in litt.* 1999).

In Idaho, productivity recorded from 1989 through 1998 ranged from 0 to 2.5 yg/pr, with an average of 1.6 yg/pr for this 10-year period (N=120). Recent productivity from 1994 through 1998 averaged 1.4 yg/pr (N=75) (Levine *et al.* 1998). In Montana, productivity between 1984 and 1998 ranged from 0.3 to 3.0 yg/pr, with an average of 1.7 yg/pr for the 15-year period (N=137). Recent productivity from 1994 through 1998 averaged 1.5 yg/pr (N=91) (D. Flath, *in litt.* 1999). In Nebraska,

productivity between 1992 and 1998 for a single pair ranged from 0 to 5.0 yg/pr, with an average of 1.7 yg/pr for the 7-year period (N=7) (Lloyd Kiff, The Peregrine Fund, *in litt.* 1997; Tordoff *et al.* 1998).

For the period 1986 through 1998, New Mexico experienced a 12-year average productivity of 1.6 yg/pr (N=278). Recent productivity from 1995 through 1998 averaged 1.4 yg/pr (N=131) (S. Williams, *in litt.* 1997, 1999). In Texas, long term productivity recorded from 1975 through 1998 ranged from 0 to 2.3 yg/pr, with an average of 0.9 yg/pr (N=185) for the 23-year period. Recent productivity from 1994 through 1998 averaged 0.5 yg/pr (N=69) (McKinney 1994; B. McKinney, pers. comm. 1999).

In Utah, between 1985 and 1987, productivity averaged 0.8 yg/pr (N=117). From 1991 through 1996, productivity ranged from 0.9 to 2.0 yg/pr, with an average of 1.3 yg/pr (N=629) for the 6-year period (Bunnell 1994; F. Howe, *in litt.* 1997). In Wyoming, productivity between 1984 and 1998 ranged from 0.9 to 3.0 yg/pr, with an average of 1.7 yg/pr (N=282) for the 15-year period. Recent productivity between 1994 and 1998 averaged 1.8 yg/pr (N=179) (Joe White, Wyoming Game and Fish Department, *in litt.* 1995; R. Oakleaf, *in litt.* 1999).

In Kansas, productivity between 1993 and 1998 ranged from 0 to 3.0 yg/pr, with an average of 1.0 yg/pr (N=6) for the 4-year period (L. Kiff, *in litt.* 1997; Tordoff *et al.* 1998). In 1998, the first pair of peregrine falcons were located in South Dakota; they produced no young.

Although Texas and Arizona have exceeded their goals for number of pairs, current productivity is below the goal of 1.25 yg/pr and below their long term productivity averages by 44 and 18 percent respectively. Heavy metal contamination, particularly mercury, in adults and nestlings may be depressing productivity in Texas (Andrew Sansom, Texas Parks and Wildlife Department, *in litt.* 1995). Residual mercury contamination from mines operated along the Rio Grande River in the early 1900s is the suspected cause (B. McKinney, pers. comm. 1997). The current productivity level in Arizona is not fully understood, but may be a continuation of the variability exhibited in productivity between 1989 and 1995 (Garrison and Spencer 1996; Bruce Taubert, Arizona Game and Fish Department, pers. comm. 1999).

Kansas and South Dakota are two more States that currently have not met the productivity goal of 1.25 yg/pr. Kansas has had only one peregrine

falcon pair since 1992, and breeding is sporadic each year.

Average productivity for the 11 States supporting breeding populations is 1.3 yg/pr, exceeding the goal of 1.25 yg/pr goal. Even though Texas, Kansas, South Dakota and Arizona currently have not met the productivity goal, productivity throughout the Rocky Mountain/Southwest region is more than sufficient for recruitment to exceed mortality, so dramatic population growth has resulted.

In Arizona, eggshells collected between 1978 and 1983 averaged 14.2 percent thinner, and 20 eggshell replicates collected from 1989 through 1994 averaged 13 percent thinner, than pre-DDT era eggshells (Ellis *et al.* 1989, Ward and Siemens 1995). In Colorado and New Mexico, shells from 260 eggs laid between 1977 and 1985 averaged 12 percent thinner than pre-DDT eggshells (Anderson *et al.* 1988). In another analysis of eggs from New Mexico, eggshells collected in 1977 averaged 20 percent thinner than pre-DDT eggshells, but in 1985 averaged only 14 percent thinner (Ponton *et al.* 1988). Eggshells collected in Colorado from 1973 through 1997 were as much as 25.1 percent thinner and at least 6.0 percent thinner than pre-DDT eggshells, with an average thinning of 13.5 percent. Only Colorado has achieved the objective for eggshell thickness. Sampling in Colorado in 1990, 1991, 1992, 1993, and 1994 produced measurements of 10.6, 11.7, 8.6, 8.1, and 6.0 percent thinning respectively, with an average annual mean of 9.0 percent thinning for this period (G. Craig, *in litt.* 1995). Although the recovery objective was not met in other States in the region, there is a general trend toward thicker eggshells in measurements taken since the mid-1970s (L. Kiff, pers. comm. 1995).

The Rocky Mountain/Southwest Recovery Plan did not identify a recovery objective for pesticide residue levels. However, organochlorine pesticide residues in American peregrine falcon eggs measured in Colorado and New Mexico between 1973 and 1979 averaged 26 ppm DDE, but the average declined to 15 ppm by 1980–1983 (Anderson *et al.* 1988). The average DDE concentration in 5 eggs collected in Colorado from 1986 through 1989 was 11 ppm (Jarman *et al.* 1993).

In summary, the first recovery objective in the Rocky Mountain/Southwest Recovery Plan was met; the current population of 535 pairs exceeds the goal of 183 pairs by 352 pairs. These pairs are distributed throughout the Rocky Mountain/Southwest States, meeting or exceeding the population goals in 10 of the 13 States in this

region. The second objective of sustaining a long-term average production of 1.25 yg/pr without manipulation by 1995 was met by all Rocky Mountain/Southwest States that have breeding American peregrine falcons except Texas, Kansas, South Dakota, and Arizona. By the mid-1980s the practice of fostering young into active nests was terminated, therefore, the long-term average productivity this recovery region has experienced was accomplished without nest manipulation. The current reproductive level in the 11 States with breeding populations is 1.3 yg/pr, exceeding the second objective of 1.25 yg/pr. Therefore, we consider the intent of this objective met. Based on the degree of recovery achieved, the third objective, that average eggshell thinning be no more than 10 percent from the pre-DDT era average for 5 years, appears to be conservative. The increase in numbers of American peregrine falcons indicates the subspecies has recovered without the necessity of reaching this specific recovery objective.

Eastern United States

The eastern peregrine population has a unique history and complex status under the Act. As stated previously, peregrine falcons were extirpated in the eastern United States and southeastern Canada by the mid-1960s. In 1974, shortly after the passage of the Act, the National Audubon Society sponsored a meeting of experts in peregrine biology, including representatives from the Service, to address the conservation of the species in North America (U.S. Fish and Wildlife Service 1991). This sparked the beginning of an effort to reestablish the peregrine in the eastern United States through the introduction of offspring from parents of multiple subspecies. Peregrine falcons were raised in captivity from parent subspecies then listed as endangered (*Falco peregrinus anatum*, *F. p. tundrius*, *F. p. peregrinus*), unlisted subspecies (*F. p. pealei*, *F. p. brookei*, etc.), and combinations of these subspecies. The first experimental releases of captive-produced young in the eastern States occurred in 1974 and 1975 (Cade 1994). These and future releases, coordinated by the Service, State fish and wildlife agencies, and representatives of The Peregrine Fund, demonstrated that hacking, the practice of retaining and feeding young captive-bred birds in partial captivity until they learn to fly and hunt on their own, was an effective method of introducing captive-bred peregrines to the wild (U.S. Fish and Wildlife Service 1991).

In 1978, we issued a policy statement confirming support for the use of North American peregrines to establish an eastern peregrine falcon population, supported with endangered species funds, and the use of peregrines from other geographic areas for specific research purposes. The policy applied only to peregrine falcons in the east (Keith M. Schreiner, U.S. Fish and Wildlife Service, *in litt.* 1978).

Thus, notwithstanding the similarity of appearance designation, we have continued to fully support the restoration of the eastern peregrine falcon under the 1991 revised Peregrine Falcon Eastern Population Recovery Plan. We have given the eastern peregrine falcon equal consideration with the American peregrine falcon with respect to recovery.

The Peregrine Falcon Eastern Population Recovery Plan (Eastern Plan), first published in 1979, and revised in 1985 and 1991 (U.S. Fish and Wildlife Service 1991), addressed the recovery of the peregrine falcon in the Eastern United States, a population re-established beginning in 1974 and 1975 by releasing captive-bred peregrine falcons of mixed genetic heritage. The recovery plan established two recovery objectives (1) establish a minimum of 20–25 nesting pairs in each of 5 recovery units and sustained them for a minimum of 3 years; and (2) an overall minimum of 175,200 pairs demonstrating successful, sustained nesting. The five recovery units are (1) Mid-Atlantic Coast, (2) Northern New York and New England, (3) Southern Appalachians, (4) Great Lakes, and (5) Southern New England/Central Appalachians.

The first recovery objective is nearly achieved, with three of the five recovery units (Mid-Atlantic Coast, Northern New York and New England, and Great Lakes) surpassing 20 to 25 nesting pairs of peregrine falcons for 3 years. The Mid-Atlantic Coast unit had 65 pairs fledging 110 young in 1998 and averaged 62 pairs and 90 fledglings annually from 1996 through 1998. The Northern New York and New England unit had 50 pairs fledging 70 young in 1998 and averaged 47 pairs and 61 fledglings annually from 1996 through 1998. The Great Lakes unit had 44 pairs fledging 95 young in 1998 and averaged 40 pairs and 74 fledglings from 1996 through 1998. The Southern Appalachians unit had 14 pairs fledging seven young in 1998, and averaged 11 pairs fledging 14 young from 1996 through 1998. The Southern New England and Central Appalachians unit had 20 pairs fledging 26 young in 1998 and averaged 15 pairs fledging 22 young

from 1996 through 1998 (L. Kiff, *in litt.* 1997; David Flemming, U.S. Fish and Wildlife Service, *in litt.* 1997; Mike Amaral, U.S. Fish and Wildlife Service, *in litt.* 1999). In 1998, there was a total of 193 pairs counted in the five eastern State recovery units, which was the upper minimum recovery level of the Eastern Plan. The recovery goal, however, was probably met in 1997, because up to 10 percent of territorial pairs in any given year are believed to escape detection and are not counted (Cade *et al.* 1988). Importantly, the number of territorial pairs recorded in the eastern peregrine falcon recovery area has increased an average of 10 percent annually for the past 7 years (1992–1998). Equally important is that the productivity of these pairs during the same 7-year period has averaged 1.5 yg/pr, thus demonstrating sustained successful nesting.

As of 1998, there were at least 32 nesting peregrine pairs in six midwestern States, which is outside the recovery area delineated in the 1991 Eastern Plan. The birds are nesting successfully in a larger area than was believed likely in 1991. Peregrine falcons now found in midwestern States are the result of captive-reared and released birds, and others that probably came from the peregrine falcons released in the eastern States. However, there appears to be a zone of no nesting in the northeastern Great Plains that separates the western American peregrine falcons from the introduced eastern peregrine falcons (Chuck Kjos, U.S. Fish and Wildlife Service, pers. comm. 1997). There are now more than 225 pairs of peregrine falcons in the midwestern and eastern States where peregrine falcons were extirpated.

Mexico

None of the existing recovery plans written for peregrine falcons in North America established recovery criteria for birds that nest in Mexico. There is very little historical or recent information on peregrine falcons in Mexico to accurately assess their current status in Mexico.

Porter *et al.* (1988) reported 42 known nesting territories on the western side of the Baja California Peninsula. From 1966 through 1971, only three pairs occurred in this region and none were found in 1976 (Porter *et al.* 1988), indicating a substantial decline had occurred by the mid-1970s. Most of these territories apparently were checked since that time, but seven pairs were located between 1985 and 1992 in areas not occupied in previous years (Massey and Palacios 1994).

In 1993, three active American peregrine falcon nests were discovered in Ojo de Liebre (Scammon's Lagoon) on the western side of the Baja California Peninsula in an area without historical nesting records (Castellanos *et al.* 1994). The central west coast of the Baja California Peninsula was an important breeding area with a historical population of about 13 pairs (Banks 1969). Between 1980 and 1994, Castellanos *et al.* (1997) conducted breeding surveys of American peregrine falcons in this area of the coast and found 10 nesting pairs. Castellanos *et al.* (1997) studied the reproductive success of three pairs in 1993 and five pairs in 1994 located at Ojo de Liebre and San Ignacio Lagoons. An average of three eggs, 1.8 nestlings, and 1.6 fledglings were produced per nest. This productivity appears to be within the range of normal productivity for healthy populations (Cade *et al.* 1988). These observations suggest some recent recovery on the west coast of the Baja California Peninsula.

On the western (Gulf of California) side of mainland Mexico, Porter *et al.* (1988) reported 23 historical nest sites. A number of new nest sites were found in this area between 1966 and 1984, increasing the number of known nest sites to 51. Territory occupancy averaged about 82 percent between 1967 and 1971 and 77 percent between 1971 through 1975, indicating that territory occupancy in that area never declined as significantly as on the west side of the Baja California Peninsula. Porter and Jenkins (1988) believed that the number of occupied territories in the Gulf area increased after 1967 following a reduction in DDE residues in prey.

Between 1989 and 1997, Robert Mesta, (*in litt.* 1997) found three pairs of American peregrine falcons, one pair on the Rio Aros and two on the Rio Yaqui, Sonora. Hunt *et al.* (1988) found 14 occupied nesting territories in the highlands of northeast Mexico in 1982. In this area and adjacent west Texas, territory occupancy averaged about 70 percent during 1973–1985.

Most of what is known about productivity and pesticide residues in Mexico comes from the western mainland near the Gulf of California. Porter *et al.* (1988) found that territory productivity along the Gulf of California between 1965 and 1984 was "somewhat less than normal," and five addled eggs collected between 1976 and 1984 averaged 12.8 ppm DDE with a range of 2.4 to 25.0 ppm (Porter and Jenkins 1988). DDE residues in prey in the Gulf area declined from the 1960s to the 1980s, and this decline correlated with increases in productivity and the

number of breeding pairs (Porter and Jenkins 1988). Some prey, however, still contained high pesticide residues, and reproduction appeared to be affected by organochlorine at three of 15 nests examined (Porter and Jenkins 1988).

Hunt *et al.* (1988) found that only five of 14 pairs produced young in northeast Mexico in 1982. Hunt *et al.* (1988) reported significant DDE residues in peregrine falcon prey species in western Texas in the mid 1980s, but prey species in Mexico were not sampled.

In summary, there was little research on the distribution, numbers, and status of American peregrine falcons in Mexico, and most research took place in the Baja California Peninsula and the Gulf of California regions. Numbers on the west coast of the Baja California Peninsula declined significantly (Porter *et al.* 1988), but observations suggest that numbers may have increased in recent years (Massey and Palacios 1994; Castellanos *et al.* 1994; and Castellanos *et al.* 1997). In the Gulf of California area, territory occupancy never was known to drop below 77 percent (Porter *et al.* 1988), and it increased in the 1970s and 1980s (Porter and Jenkins 1988).

No information on population trends for American peregrine falcons in Mexico is available. However, the status of the Mexican population may be similar to that of the population occupying similar habitat in nearby Arizona (G. Hunt, pers. comm. 1997). Exposure to organochlorine-based pesticides by Mexico nesting populations continues to be a concern. In 1997, as part of the North American Agreement for Environmental Cooperation, a parallel agreement to the North American Free Trade Agreement between the United States, Canada, and Mexico, the Commission for Environmental Cooperation (CEC) established a North American Regional Action Plan (NARA) on DDT. Mexico, a member nation of the CEC, proposes a phased reduction of DDT (Philip Johnson, U.S. Fish and Wildlife Service, pers. comm. 1999). Specific goals of this reduction are: (1) Reduce the use of DDT for malaria control in Mexico by 80 percent in 5 years (beginning in 1997); (2) eliminate the illegal use of DDT in agriculture in Mexico; (3) develop a cooperative approach to minimize movement of malaria-infected mosquitos across borders and reduce the illegal importation of DDT; and (4) advance global controls on DDT production, export and use.

Adverse effects of organochlorine pesticides in the environment remains an international concern for peregrine falcons nesting in Mexico, and for

peregrine falcons wintering in or migrating through Latin America. By undertaking the steps proposed in the NARA, the United States, Canada, and Mexico are committing to ongoing cooperative activities and yearly reporting on progress made on these initiatives and objectives. Annual reports will be submitted to the North American Working Group for the Sound Management of Chemicals and subsequently disseminated to the Council of the Commission for Environmental Cooperation and the public.

Summary of Peregrine Falcon Recovery

Five regional peregrine falcon recovery plans, four for American peregrine falcons in Canada and the western United States, and one for the eastern United States introduced peregrine falcon population, were written to guide recovery efforts and establish criteria to be used in measuring recovery. These recovery plans included objectives for population size and reproductive performance. Only two of the recovery plans included specific objectives that applied to pesticide residues in eggs and eggshell thinning. The combined breeding population size goal for the four American peregrine falcon recovery plans is 456 pairs. Currently, a minimum of 1,425 pairs occupy the range of the American peregrine falcon in Alaska, Canada, and the western United States. There are 193 peregrine falcon pairs in the five recovery units included in the Eastern Plan, and an additional 32 peregrine falcon pairs occur in midwestern States in areas not included in the Eastern Plan recovery units. In 1998, the total known breeding population of peregrine falcons was 1,650 pairs in the United States and Canada.

Productivity is an important measure of population health, and each of the four American peregrine falcon recovery regions met or exceeded their respective productivity goals, as did the eastern peregrine population.

Other objectives, including those for pesticide residues in eggs and the degree to which eggshells are thinner than pre-pesticide era eggshells, vary among the plans. In the case of eggshell thinning, current measurements obtained in some areas fall short of recovery objectives. Eggshell thinning was originally suggested by recovery teams as an indicator of whether organochlorine contamination was preventing species recovery. Despite the failure of populations in localized areas to meet recovery objectives, overall, populations of American peregrine

falcons have increased considerably. This increase continues to occur even after reintroduction efforts were curtailed. The consistent and geographically widespread trends in increasing population size demonstrate

that current levels of reproductive failure, pesticide residues, and eggshell thinning still affecting American peregrine falcons in some areas have not prevented recovery of the subspecies in North America.

Table 1 summarizes the recovery plan goals for each of the regions and Canada, as well as the current recovery status.

TABLE 1.—AMERICAN PEREGRINE FALCON RECOVERY PLAN GOALS AND CURRENT (1998) RECOVERY STATUS.

Recovery plan	Delisting goal	Current status	Comments/degree to which delisting goals are met
Alaska:			
Pairs	28 pairs in study areas.	79 pairs in study areas.	Exceeded goal by 51 pairs in study areas. Approximately 301 pairs known State-wide.
Productivity (young/pair)	1.8 yg/pr	1.9 yg/pr	Exceeded goal.
DDT (parts per million)	less than 5 ppm	3.5 ppm	Exceeded goal.
Eggshell thinning	less than 10 percent.	12.1 percent	Goal not met, but has not prevented recovery; goal probably too conservative.
Canada:			
Pairs	60 pairs (10 each in 6 zones).	319 pairs	Exceeded goal by 259 pairs.
Productivity	1.5 yg/pr	1.8 yg/pr	Exceeded goal.
Pacific Coast:			
Pairs	185 pairs	270 pairs	Exceeded goal by 85 pairs.
Productivity	1.5 yg/pr	1.5 yg/pr	Goal met.
Rocky Mountain/Southwest:			
Pairs	183 pairs	535 pairs	Exceeded goal by 352 pairs.
Productivity	1.25 yg/pr	1.3 yg/pr	Exceeded goal.
Eggshell thinning	less than 10 percent.	Goal measured by only a few States; cannot be assessed.
Eastern/Great Lakes:			
Pairs	175–200 pairs (with no fewer than 20–25 in each of 5 recovery zones).	193 pairs	Exceeded goal in 3 zones; goals in other 2 zones probably were met; an additional 32 peregrine falcon pairs occur in several Mid-western States not included under the Eastern Plan.

Summary of Issues and Recommendations

In the August 26, 1998, proposed rule (63 FR 45446), we requested that all interested parties provide information and comments on the status of and proposal to delist the American peregrine falcon. Announcements of the proposed rule were sent to Federal, State, county, and city-elected officials, Federal and State agencies, interested private citizens, and local area newspapers and radio stations. We provided the governments of Canada and Mexico with the proposed rule, and both countries responded with comments. We held public hearings on December 3, 1998, in Wisconsin and December 8, 1998, in New Hampshire. In addition, we solicited formal scientific peer review of the proposal in accordance with our July 1, 1994, Interagency Cooperative Policy for Peer Review in Endangered Species Act Activities (59 FR 34270). We requested three individuals, who possess expertise in peregrine falcon biology, to review the proposed rule by the close of the comment period. All three individuals responded to our request and their

comments were incorporated into this final rule.

We considered all comments, including oral testimony at the public hearings. We received a total of 29 oral comments and 893 comment letters from 49 States, and the District of Columbia, Canada, Mexico, Germany, Bali, four Federal agencies, 27 State resource agencies, 305 falconry associations or individual falconers, and 40 conservation organizations. Of the comments received, 633 supported the proposal to delist, 266 opposed the proposal, 11 supported downlisting, and 12 letters duplicated comments from individuals who previously provided oral comments.

Because many respondents offered similar comments, those comments of a similar nature are grouped. These comments, and our responses, are presented below.

Issue 1: In the Midwest, delisting will result in less cooperation by building owners and managers to protect peregrine falcons nesting on their buildings.

Our Response: Currently, 28 States in the midwestern and eastern United States support nesting peregrine falcons. Approximately 87 percent of the

midwestern pairs and 33 percent of the eastern pairs are nesting on manmade structures: bridges, buildings and smokestacks (Martell and McNicoll 1999). Currently, there are 117 nests on nest boxes or trays in 19 States and the District of Columbia. Should delisting the peregrine falcon act as a disincentive for owners and managers to protect nesting peregrine falcons on their buildings, the long-term security of this urban population could be threatened (Martell and McNicoll 1999).

Between January and March of 1999, 75 people with information on 95 of the 117 nest sites were asked if delisting would affect their current management strategies. Responses were overwhelmingly in favor of continuing to manage for the presence of nesting pairs for some of the following reasons: pigeon control, good public relations, positive effect on building employees, and good environmental stewardship (Martell and McNicoll 1999). Survey results do not suggest that delisting of the peregrine falcon would result in widespread removal of nest boxes and trays or discouragement of nesting on manmade structures. Furthermore, the survey found the public widely appreciated and accommodated

peregrines at the manmade structures on which they nest (Martell and McNicoll 1999).

Issue 2: Disturbance due to recreational rock climbing poses a threat to nesting peregrine falcons.

Our Response: The increasing popularity of rock climbing throughout North America, particularly in the northeast, is becoming a serious problem for land managers trying to protect nesting peregrine falcons. Unlike the western landscape that provides rock climbers with more and larger cliffs and thus some alternatives to conflicts with nesting peregrine falcons, the smaller and limited cliffs of the northeast present fewer alternatives to peregrine/climber conflicts.

The peregrine falcon will still be protected by the MBTA. Additional protection is provided by other laws such as the National Forest Management Act (16 U.S.C. 1600) and the Federal Land Management and Policy Act (43 U.S.C. 1701). These continued protections are adequate to address this threat. See Factor D under Summary of Factors Affecting the Species.

In addition, we are aware of several very effective raptor management plans that were cooperatively developed by land managers, representatives of the climbing community, and other interested parties (plans that contain effective public education components). Some examples include plans developed by the Prescott National Forest in Arizona, Yosemite National Park in California, Adirondack State Park in New York, Zion National Park in Utah, Smith Rock State Park in Oregon, the Nantahala National Forest in North Carolina, and the Colorado National Monument in Colorado. All of these plans include seasonal rock climbing restrictions to prevent disturbance of raptor nests from rock climbing activities. The development of more of these partnerships is essential to the preservation of the peregrine falcon and the sport of rock climbing. Organizations like the Access Fund which represent the climbing community have continued to express a strong desire to work with both private and public land managers to resolve any conflicts originating from the use of cliffs by climbers.

Issue 3: The Act's section 6 funds currently being used by States to support peregrine falcon monitoring programs will not be available once the peregrine is delisted.

Our Response: We are authorized through the Secretary of the Interior to provide grants to States to assist in monitoring the status of recovered species pursuant to section 4(g) under

section 6 of the Act. Existing and future Federal assistance in the form of section 6 funding to States for conservation work will not be affected by the delisting, as long as States continue to identify monitoring peregrine falcons as a high priority.

Issue 4: The data do not support delisting the American peregrine falcon throughout its range in the United States. The Service should consider downlisting the American peregrine falcon to threatened rather than delisting.

Our Response: Recent data show improvements in numbers of breeding pairs of peregrine falcons and productivity (Refer to Table 1, "Recovery Status," and "Summary of Peregrine Falcon Recovery"), and demonstrate that goals set for numbers and productivity for the American peregrine falcon recovery plans were met or exceeded. The combined population size goal for the four American peregrine falcon recovery plans is 456 pairs. Currently, a minimum of 1,425 known pairs occupy sites in Alaska, Canada, and the western United States, and a number of additional pairs have probably gone undetected. Overall average productivity goals in all four American peregrine falcon recovery plans, using productivity as a recovery criterion, were met or exceeded.

Only the Alaska recovery plan set a goal for DDT levels, and only two recovery plans (Alaska and Rocky Mountain/Southwest) specified objectives for eggshell thinning. The Alaska Recovery Plan set a delisting goal of less than 5 ppm DDT and less than 10 percent eggshell thinning. Recent data for American peregrine falcon eggs in Alaska indicate DDT levels at less than 3.5 ppm, exceeding that goal, and eggshell thinning is at 12.1 percent. Measurements for eggshell thinning were not consistently taken in the Rocky Mountain/Southwest States. Colorado has met the recovery plan eggshell thinning goal of less than 10 percent; the average of the annual means for 1990–1994 was 9.0 percent. Data for other States show a general trend toward thicker eggshells since the mid-1970s (refer to Rocky Mountain/Southwest section under Recovery Status).

Three of 5 peregrine falcon recovery units in the eastern United States have met recovery goals, and 193 pairs documented in 1998 indicate the overall recovery goal of 175–200 pairs was met. In addition, another 32 pairs are nesting in areas of the Midwest outside the recovery units specified in the Eastern

Plan but nevertheless contribute to overall restoration goals.

We believe that the species has essentially achieved the goals established for recovery and, in many areas, has exceeded the goals. We believe the available information supports full delisting of the species throughout its range, and the species clearly is not in danger of extinction, is not likely to become endangered within the foreseeable future throughout a significant portion of its range, and warrants full delisting.

Issue 5: American peregrine falcons should not be delisted because they are not restored throughout the historical range.

Our Response: We have determined the American peregrine falcon has recovered throughout its historical range. Restoration of the American peregrine falcon within every area throughout its historical range is not required by the Act, is not required for recovery, nor was it a goal of any of the recovery plans. Generally, the goal of a recovery program is to restore the species to a point at which protection under the Act is no longer required. To be recovered, a species must not be endangered with extinction, or be likely to become endangered within the foreseeable future. Although a few, localized areas have not quite met their numerical recovery goals, the overall status of the American peregrine falcon has improved significantly such that it is considered recovered and warrants delisting. As a species recovers in numbers and populations expand, more of the historical range can be re-occupied where appropriate habitat remains.

Issue 6: There are gaps in the scientific knowledge about American peregrine falcon biology. A population viability analysis was not done, and genetic diversity, viable population size, population dynamics, and long-term stability of populations have not been determined.

Our Response: A complete understanding of the biology of a species is not required to determine a species' conservation status under the Act. Population viability analyses are important tools for attempting to quantify threats to a species, particularly those facing loss and fragmentation of habitat, and the consequences of conservation actions, as well as aiding in identifying critical factors for study, management, and monitoring. These analyses are not always essential, however, to determine when a species has achieved recovery, particularly in the case of the American peregrine falcon. It is evident that

recovery of this subspecies was largely achieved by eliminating the use of DDT and by successful management activities, including the reintroduction of captive-bred American peregrine falcons. Recovery goals established for the species were met or exceeded, with few exceptions.

Issue 7: Organochlorine pesticides still persist within the breeding range of the American peregrine falcon and continue to depress natural productivity.

Our Response: We recognize that although the peregrine falcon has made a dramatic recovery throughout its historical range in the United States, the presence of environmental contaminants is still affecting the productivity of certain regional populations. Eggs collected on the eastern shore of Virginia and Maryland had slightly elevated levels of DDE, dieldrin, and mercury, which was associated with reproductive problems (U.S. Fish and Wildlife Service 1994). On the Channel Islands in California, particularly Catalina, populations are still affected by organochlorine residues and eggshell thinning (Jarman 1994). In west Texas, heavy metal contamination, particularly mercury may be depressing productivity (A. Sansom, *in litt.* 1995). Residual mercury from mines operated along the Rio Grande River in the early 1900s is the suspected source of this contamination (B. McKinney, pers. comm. 1997). We recognize the possible threat that environmental contaminants pose to the sustained recovery of this species and therefore, will include a contaminant monitoring component in the post-delisting monitoring plan. Refer to Factor E under Summary of Factors Affecting the Species, for an in-depth discussion of contaminants. See also our response to issue 8.

Issue 8: The continued unrestricted use of organochlorine pesticides in Latin America places the American peregrine falcon at risk of contamination while on migration and on its wintering grounds.

Our Response: Comparisons of blood samples collected during fall and spring migration indicate that, although migrant peregrine falcons are known to accumulate pesticides while wintering in Latin America, DDE residues in the blood taken from female peregrine falcons captured during spring migration at Padre Island, Texas decreased between 1978 and 1994 below levels that would affect reproduction (Henny *et al.* 1996). Despite the use of organochlorines in Latin America, the American peregrine falcon has recovered over its historical range, and Arctic peregrine falcons,

which also winter in Latin America, were delisted due to their recovery. Refer to Factor E under Summary of Factors Affecting the Species for an in-depth discussion. The North American Working Group for the Sound Management of Chemicals promotes a regional perspective that encourages the active involvement of Central and South American countries in the implementation of the North American Regional Action Plan on DDT, and is facilitating international cooperation on combating malaria in these regions without the continued use of organochlorine pesticides. This effort could eventually eliminate or reduce one source of DDT in Central and South American countries.

Issue 9: The take of American peregrine falcons for falconry after its delisting will create an additional threat to the subspecies.

Our Response: Delisting the American peregrine falcon will not affect the protection given to all migratory bird species, including the peregrine falcon, under the MBTA. The regulations issued pursuant to the MBTA allow for issuance of permits to take raptors for falconry and other purposes provided the taking will not threaten wildlife populations (50 CFR 21.28 and 13.21(b)). Currently we are working with State wildlife agencies to develop biological criteria and two management plans to govern the issuance of permits for take of peregrine falcons to ensure the taking does not negatively impact wild populations, particularly those in need of further restoration. The first management plan will deal with the take of eyas (nestling) peregrines. A second management plan will deal with the take of passage (migrating first-year) peregrines. The management plans will include criteria for harvest, implementation criteria, and procedures for evaluating effects of the harvest. They will pertain to the take of all wild peregrine falcons in the U.S., including the American peregrine falcon, and will apply to all falconry, raptor propagation, and scientific collecting permits. Take will not be permitted under the MBTA until the draft management plans undergo public review, are approved, finalized, and published in the **Federal Register**. Some exceptions may be made on a case-by-case basis for scientific purposes. The effects of take for all purposes will be assessed during the monitoring period following delisting. Refer to Factor D under the Summary of Factors Affecting the Species section and the Effects of This Rule section for further information.

Issue 10: The Canadian Wildlife Service has expressed concern that

American peregrine falcons breeding in Canada but migrating to or through the United States will be taken for falconry purposes.

Our Response: Canada's recovery program for American peregrine falcons is still in progress and the Canadian government is concerned that any take of American peregrines migrating from Canada could impact recovery. We are working with the governments of Canada and Greenland in considering the appropriateness of harvest of peregrines migrating through the United States. If take of these passage birds is approved, it would be designed to avoid take of American peregrines originating in Canada and instead target the more abundant Arctic peregrines from northern Alaska, Canada, and Greenland.

Issue 11: The Service cannot consider delisting the American peregrine falcon until all recovery goals in the four existing recovery plans for this subspecies are met or exceeded.

Our Response: Section 4(f) of the Act directs us to develop and implement recovery plans for species of animals or plants listed as endangered or threatened. Recovery is the process by which the decline of an endangered or threatened species is arrested or reversed and threats to its survival are neutralized so that long-term survival in nature can be ensured. The goal of this process is the maintenance of secure, self-sustaining wild populations of species with the minimum investment of resources. One of the main purposes of the recovery plan is to enumerate goals (guidelines) that will help us to determine when recovery for a particular species is achieved. Meeting or exceeding all of the specific recovery goals for a listed species is not required by the Act before delisting can occur.

We determine whether recovery is achieved based on a species' performance relative to the goals set in its recovery plan and the best available scientific information. A species is considered recovered when it is no longer in danger of extinction (i.e., endangered), or likely to become endangered within the foreseeable future throughout all or a significant portion of its range (i.e., threatened). The American peregrine falcon has either met, exceeded, or is very close to meeting the recovery goals set for this subspecies throughout its range. We believe that the intent of all the objectives are met and that the recovery of the subspecies justifies delisting.

Issue 12: The eastern peregrine falcon population has not met the recovery goals set forth in the Eastern Recovery

Plan and, therefore, should remain on the endangered species list.

Our Response: The eastern peregrine falcon population is protected only due to the similarity of appearance to *F. p. anatum*, which has protected individual eastern peregrine falcons from direct take. Thus, their status with respect to recovery has no direct impact on the decision to delist the American peregrine falcon. Nevertheless, we have supported and still fully support the restoration of this population.

Data through 1998 on the status of the eastern peregrine falcon population indicate that the intent of the recovery goals set for this population are met. The recovery plan established 2 recovery objectives including (1) a minimum of 20–25 nesting pairs in each of 5 recovery units which are established and sustained for a minimum of 3 years, and (2) an overall minimum of 175–200 pairs demonstrating successful, sustained nesting. Three of the five recovery units (Mid-Atlantic Coast, Northern New York and New England, and Great Lakes) have surpassed the nesting pair goal for 3 years. The Southern Appalachians and Southern New England/Central Appalachians units may not yet have achieved the goals established for the number of breeding pairs for those areas. However, the overall minimum of 175–200 successful pairs in the eastern region was achieved, and over the past 6 years (1992–1998), the number of territorial pairs has increased an average of 10 percent annually. There are now at least 193 pairs of peregrine falcons in the eastern States where falcons were extirpated, and pairs are successfully nesting throughout a greater range than was anticipated. We believe the intent of the recovery objectives are satisfied and that recovery of the peregrine in the eastern United States is sufficiently established. Refer to the Recovery Status section for additional discussion on this subject.

Issue 13: The status of the American peregrine falcon in Mexico was not adequately addressed.

Our Response: While population status and trends for falcons nesting in Mexico are not well known, American peregrine falcon populations in the United States and Canada, including those migrating to and from Latin America, have met or exceeded their criteria for delisting. Restoration of the American peregrine falcon within every area throughout its historical range is not required by the Act, nor is it required for recovery. Mexico's proposed phased reduction of DDT under the North American Regional Action Plan will make a significant

contribution toward increasing peregrine falcon populations in Mexico. Refer to the Mexico section under Recovery Status for additional discussion on this subject.

Issue 14: The Service's delisting proposal is not supported by an adequate scientific review.

Our Response: The proposed rule to remove the peregrine falcon in North America from the Federal List of Endangered and Threatened Wildlife received reviews from a variety of scientific institutions and individual scientists. Two examples are the Ornithological Council and the Raptor Research Foundation. The Ornithological Council consists of nine leading scientific ornithological societies: the American Ornithologists' Union, Association of Field Ornithologists, Consejo Internacional para la Preservación de las Aves, Cooper Ornithological Society, Colonial Waterbird Society, Pacific Seabird Group, Raptor Research Foundation, Society of Caribbean Ornithology, and Wilson Ornithological Society. Together it has a membership of approximately 6,500 ornithologists. One of its primary missions is to provide scientific information about birds to legislators, regulatory agencies, industry decision makers, conservation organizations and others, and to promote the use of scientific information in the making of policies that affect birds.

The task of evaluating the proposed rule on behalf of the Ornithological Council was accepted by a committee of Raptor Research Foundation scientists. The Raptor Research Foundation is a scientific society that represents professional raptor scientists and managers throughout North America and around the world. This committee of raptor scientists reviewed the available data and submitted a report that was endorsed by both the Ornithological Council and the Raptor Research Foundation as their position on the proposed rule. This report underwent peer review and was published in the Wildlife Society Bulletin (Millsap *et al.*, 1998, WSB 26(3); 522–538). While expressing some concern about the status of the eastern peregrine population, the authors concurred with our position that the peregrine falcon warranted delisting range-wide.

Issue 15: Recovery plans used to evaluate the recovery of the peregrine falcon are out of date and need to be revised to reflect more accurate contemporary goals and the Service should not misrepresent the goals in the current plans.

Our Response: As addressed in our response to Issue 11, section 4(f) of the Act directs us to develop and implement recovery plans for species of animals or plants listed as endangered or threatened. Recovery is the process by which the decline of an endangered or threatened species is arrested or reversed and threats to its survival are neutralized so that long-term survival in nature can be ensured. One of the main purposes of the recovery plan is to enumerate goals (guidelines) that will help us to determine when recovery of a particular species is achieved. Meeting or exceeding all of the specific recovery goals for a listed species before it can be delisted is not required by the Act. Section 4 of the Act and regulations (50 CFR Part 424) promulgated to implement the listing provisions of the Act, establish the procedures for listing, reclassifying, and delisting species. We may list a species if one or more of the five factors described in section 4(a)(1) of the Act threatens the continued existence of the species. A species may be delisted, according to 50 CFR 424.11(d), if the best scientific and commercial data available substantiate that the species is neither endangered or threatened because of (1) extinction, (2) recovery, or (3) the original data for classification of the species were in error. We have determined that substantial peregrine falcon recovery has taken place, and none of the five factors addressed in section 4(a)(1) of the Act is currently negatively affecting the peregrine falcon to the degree that the species is endangered or threatened.

Issue 16: Post-delisting monitoring for at least 5 years is essential.

Our Response: We agree. Section 4(g)(1) of the Act requires the Secretary to implement a system, in cooperation with the States, to monitor for not less than 5 years the status of all species which have recovered to the point that protection of the Act is no longer required (section 4(g)). If it becomes evident during the course of the post-delisting monitoring that the species again requires the protection of the Act, it would be relisted.

Summary of Factors Affecting the Species

Section 4 of the Act and regulations (50 CFR Part 424) promulgated to implement the listing provisions of the Act, set forth the procedures for listing, reclassifying, and delisting species on the Federal lists. We may list a species if one or more of the five factors described in section 4(a)(1) of the Act threatens the continued existence of the species. A species may be delisted, according to 50 CFR 424.11(d), if the

best scientific and commercial data available substantiate that the species is neither endangered or threatened because of (1) extinction, (2) recovery, or (3) the original data for classification of the species were in error.

After a thorough review of all available information, we have determined that substantial peregrine falcon recovery has taken place since the early 1980s. We determined that none of the five factors addressed in section 4(a)(1) of the Act, and discussed below, is currently affecting the species, including the American peregrine falcon subspecies and introduced peregrine falcon populations, such that the species is no longer endangered (in danger of extinction throughout all or a significant portion of its range) or threatened (likely to become endangered in the foreseeable future throughout all or a significant portion of its range). These factors and their application to the peregrine falcon in North America are as follows:

A. The Present or Threatened Destruction, Modification, or Curtailment of Its Habitat or Range

Peregrine falcons occupy a variety of habitat types and nest from the boreal forest region of Alaska and Canada, through much of Canada and the western United States, south to parts of central and western Mexico. Nesting habitat includes cliffs and bluffs in boreal forests, coastal cliffs and islands, urban skyscrapers and other structures, and cliffs and buttes in southwestern deserts. In some breeding areas, such as the southern United States, some or all of the birds remain year-round on their nesting territories. In other breeding areas, particularly in high latitudes, many or all of the individuals are highly migratory; these individuals occupy a number of regions and habitat types throughout the year as they nest, migrate to and from wintering areas, and occupy their wintering ranges. Due to the extensive geographic distribution of the peregrine falcon, the wide variety of habitat types in which the species nests, and the immense area that some of the more migratory individuals occupy during a year, the peregrine falcon occupies an extremely broad array of areas and habitats throughout its range. As a result, the degree to which peregrine falcons were affected by human-caused habitat modification varies widely by region, habitat type, and individual falcons within the population.

As the human population has grown in North America, the rate of habitat alteration has unquestionably increased. Certainly some peregrine falcon habitat

was destroyed, such as the many wetlands drained in recent years that were previously used by peregrine falcons for foraging or as migratory staging areas during spring and fall. But peregrine falcons have colonized many cities in North America due to the abundance of nest sites on buildings and the abundance of prey, such as rock doves (*Columba livia*), that thrive in urban areas. Therefore, some forms of habitat modification have negatively affected peregrine falcons while other forms have benefited them. It would be burdensome to estimate the net, overall effect of habitat modification on the species throughout North America.

Although the rate of habitat modification in North America has increased in recent decades, the number of American peregrine falcons occupying the region has increased substantially since the late 1970s or early 1980s. In several parts of their range, including parts of Alaska, the Yukon and Northwest Territories, California, and the southwestern United States, the number of breeding pairs has increased rapidly in recent years, and some local populations now occur at very high densities (R. Ambrose, pers. comm. 1997; G. Holroyd, pers. comm. 1997; Enderson *et al.* 1995). Because these rapid population growth rates and high densities were achieved despite habitat modification in North America, we conclude that habitat modification or destruction was not a limiting factor in peregrine recovery. It does not currently threaten the existence of the American peregrine falcon nor is it likely to in the foreseeable future.

B. Overutilization for Commercial, Recreational, Scientific, or Educational Purposes

Delisting the peregrine falcon will not result in overutilization because the delisting will not affect protection provided the peregrine falcon by the MBTA. The take of all migratory birds, including peregrine falcons, is governed by the MBTA's regulations on the taking of migratory birds for educational, scientific, and recreational purposes and requiring harvest be limited to levels that prevent overutilization (See Factor D).

C. Disease or Predation

Peregrine falcons are susceptible to a number of diseases and parasites such as tapeworms, mites, ticks, botulism, fowl pox, and viral encephalitis (U.S. Fish and Wildlife Service 1982b; Trainer (1969) as cited in U.S. Fish and Wildlife Service 1984). However, these organisms are not known to affect the peregrine falcon at the population level.

Mammals and other raptors are known to prey on peregrine falcons, including such species as the great horned owl (*Bubo virginianus*), red-tailed hawk (*Buteo jamaicensis*), raccoon (*Procyon lotor*), and coyote (*Canis latrans*) (U.S. Fish and Wildlife Service 1982b, 1984). For example, great horned owls are natural predators of peregrine falcons (U.S. Fish and Wildlife Service 1991) and are possibly responsible for the slow recovery of peregrine falcons in the two northern recovery areas in the reestablished eastern population (M. Amaral *in litt.* 1995). Great horned owl predation was not documented as a significant cause of the decline in peregrine falcons and has not affected the species' overall recovery.

Golden eagles (*Aquila chrysaetos*) are also known to prey on young peregrine falcons. Barbara Behan (U.S. Fish and Wildlife Service, pers. comm. 1999) witnessed a golden eagle prey on young peregrine falcons at a hack site in Colorado, stooping and footing one of the falcons, and leaving the area with it in its talons. The same eagle, or another, returned numerous times over the next several days, and the other four falcons disappeared in that time, despite efforts by the hack site attendants to scare the eagles away from the site.

Though the peregrine falcon is occasionally preyed upon, this factor is not known to affect the peregrine falcon at the population level.

D. The Inadequacy of Existing Regulatory Mechanisms

Protection from take and commerce for the peregrine falcons under the Endangered Species Act will be removed upon delisting. However, peregrine falcons are still protected by the MBTA. Section 704 of the MBTA states that the Secretary of the Interior is authorized and directed to determine if, and by what means, the take of migratory birds is allowed and to adopt suitable regulations permitting and governing the take. In adopting regulations, the Secretary is to consider such factors as distribution and abundance to ensure that take is compatible with the protection of the species.

The MBTA and its implementing regulations (50 CFR Parts 20 and 21) prohibit take, possession, import, export, transport, selling, purchase, barter, or offering for sale, purchase or barter, any migratory bird, their eggs, parts, and nests, except as authorized under a valid permit (50 CFR 21.11). Regulations at 50 CFR 21.28 and 21.30 authorize the issuance of permits to take, possess, transport and engage in

commerce with raptors for falconry and for propagation. Other regulations authorize the issuance of permits for scientific collecting (50 CFR 21.23), special purposes such as rehabilitation or education (50 CFR 21.27), and depredation (50 CFR 21.41). Prior to issuance of these permits, meeting certain criteria is required, including a requirement that the issuance will not threaten a wildlife population (50 CFR 13.21(b)(4)). In cooperation with State wildlife agencies we will develop draft biological criteria for management of take of wild peregrines under the MBTA. The resulting management plans will include biological criteria for take, implementation criteria, and procedures for evaluating the effects of the taking. It will pertain to the take of peregrines in the United States for falconry and other purposes. With limited exceptions, take will not be permitted under MBTA until the draft management plans undergo public review, are approved, finalized, and published in the **Federal Register**. In addition to considering the effect on wild populations, issuance of raptor propagation permits requires that we consider whether suitable captive stock is available and whether wild stock is needed to enhance the genetic variability of captive stock (50 CFR 21.30(c)(4)).

These existing regulatory provisions will adequately protect against excessive take of peregrine falcons. If necessary, protective measures could be expanded by promulgation of a regulation under the MBTA. We have both the legal authority and the obligation to regulate take of peregrines under the MBTA (see additional discussion of the MBTA in the Effects of this Rule section below).

In the absence of habitat protection under the Act, there are no other existing Federal laws that specifically protect the habitat of this species (see "Critical Habitat"). However, loss of habitat was not identified as a threat to the species and was not a factor identified as contributing to the species' listing.

An important regulatory mechanism affecting peregrine falcons is the requirement that pesticides be registered with the Environmental Protection Agency (EPA). Under the authority of the Federal Insecticide, Fungicide, and Rodenticide Act (7 U.S.C. 136), the EPA requires environmental testing of all new pesticides. Testing the effects of pesticides on representative wildlife species prior to pesticide registration is specifically required. This protection from effects of pesticides are not altered by delisting the peregrine falcon.

On July 1, 1975, peregrine falcons were included in Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora. This treaty was established to prevent international trade that may be detrimental to the survival of plants and animals. Generally, both import and export permits are required by the importing and exporting countries before an Appendix I species may be shipped, and Appendix I species may not be imported for primarily commercial purposes. Although CITES does not itself regulate take or domestic trade, CITES permits may not be issued if the export will be detrimental to the survival of the species or if the specimens were not legally acquired. This protection is not be altered by delisting the peregrine falcon under the Act.

Peregrine falcons are still afforded some protection by land management agencies under laws such as the National Forest Management Act (16 U.S.C. 1600) and the Federal Land Management and Policy Act (43 U.S.C. 1701). National Forest Management Act regulations specify that "fish and wildlife habitat shall be managed to maintain viable populations of existing native and desired non-native vertebrate species in the planning area." (36 CFR 219.19). Guidelines for each planning area must provide for a diversity of plant and animal communities based on the suitability of a specific land area. United States Forest Service regional foresters are responsible for identifying sensitive species occurring within their Region. Sensitive species are those that may require special management emphasis to ensure their viability and to preclude trends toward endangerment that would result in the need for Federal listing. The delisting of the peregrine falcon will require Federal land managers to consider the need for designating the peregrine falcon as a sensitive species to ensure that forest management activities do not contribute to a need for relisting. The Federal Land Policy and Management Act requires that public lands be managed to protect the quality of scientific, ecological, and environmental qualities, among others, and to preserve and protect certain lands in their natural condition to provide food and habitat for fish and wildlife.

Federal delisting of the peregrine falcon will not remove the peregrine falcon from State threatened and endangered species lists, or suspend any other legal protections provided by State law. States may have more restrictive laws protecting wildlife, including restrictions on use for falconry, and may

retain State threatened or endangered status for the peregrine falcon (see 50 CFR 21.28). Depending on the biological status, States generally list peregrine falcons as endangered, threatened, critically imperiled or as a species of concern. Currently, the peregrine falcon is State-listed in 38 of the 40 States that have nesting pairs. The two States that do not have the species listed—Colorado and Arizona—removed the peregrine falcon from their lists due to its recovery in those States. However, both will continue to regulate take for falconry and other purposes. In many States, falconry is administered cooperatively by the Service and the States.

E. Other Natural or Manmade Factors Affecting Its Continued Existence

Egg collecting, shooting, harvest for falconry, habitat destruction, climate change, and the extinction of passenger pigeons were all considered as possible factors causing or contributing to the decline in peregrine falcon populations in North America; however, no evidence supports any of these factors as causing the widespread reproductive failure and population decline that occurred. In contrast, an overwhelming body of evidence has accumulated showing that organochlorine pesticides affected survival and reproductive performance sufficiently to cause the decline. There currently is no question within the scientific community that contamination with organochlorines was the principal cause for the drastic declines and extirpations in peregrine falcon populations that took place in most parts of North America (Kiff 1988).

Although the use of all organochlorine pesticides causing reproductive failure in peregrine falcons was restricted in the United States and Canada in the early 1970s, their use continues in some areas of Latin America. It was shown, by comparing blood samples collected during fall and spring migration, that migrant peregrine falcons accumulate organochlorines while wintering in Latin America (Henny *et al.* 1982). Henny *et al.* (1996) demonstrated that DDE residues in the blood taken from female peregrine falcons captured during spring migration at Padre Island, Texas decreased between 1978 and 1994. In second-year peregrines, residues dropped from 1.43 ppm between 1978 and 1979 to only 0.25 ppm in 1994 and from 0.88 to 0.41 ppm for older peregrines; these levels are well below those that would affect reproduction (Henny *et al.* 1996).

The widespread reproductive failure and population decline of peregrine

falcons in North America coincided with the period of heavy organochlorine use in the United States. Although there was not an immediate lowering of pesticide residues in eggs following restrictions on the use of organochlorines north of Mexico (Enderson *et al.* 1995), residues gradually declined following the restrictions (Ambrose *et al.* 1988b; Enderson *et al.* 1988; Peakall *et al.* 1990), and most surviving populations began to increase in size thereafter. Despite the continued use of organochlorines in Latin America, populations of American peregrine falcons in North America have recovered substantially in recent years. In fact, Arctic peregrine falcons that winter predominantly in Latin America recovered to the point that the subspecies was removed from the Federal List of Threatened and Endangered Wildlife on October 4, 1994 (59 FR 50796).

Additionally, some of the avian prey used during the nesting season by peregrine falcons throughout North America also winter in Latin America. Many of these prey return to their nesting areas with pesticide residues accumulated during the winter (Fyfe *et al.* 1990). Peregrine falcons preying upon these birds during the summer are further exposed to Latin American pesticides. Overall, pesticide use in Latin America does not appear to have adversely affected reproductive success in American peregrine falcon populations in North America.

We recognize that certain populations of American peregrine falcons have recovered to a lesser degree, and that in some of these populations organochlorine residues are still high and reproductive rates remain lower than normal. Populations on the Channel Islands off southern California are still affected by high organochlorine residues and eggshell thinning (Jarman 1994). This is a localized threat, and the result of using offshore islands as DDT disposal areas during the 1940s. Despite the residual effects of organochlorines on the Channel Islands, this population is continuing to increase, although some of the increase could be the result of the release of a significant number of captive-bred young or dispersal from other areas where recovery is greater (B. Walton, pers. comm. 1997). Based on published values in the literature, detected concentrations of DDT in peregrine falcon eggs collected in New Jersey were sufficient to impact reproduction. Productivity and eggshell thinning data, however, did not support a conclusion of reproductive impairment due to DDT contamination

(U.S. Fish and Wildlife Service and New Jersey Department of Environmental Protection 1997). Jarman (1994) suggested that these locally higher egg residues result from a local source of DDT or DDE. As a result, the effects are localized, and the observations do not reflect the current status of peregrine falcons as a whole. In recent years, numbers of peregrine falcons have increased significantly throughout their historical range despite the effects of localized organochlorine residues.

Similarly, American peregrine falcons in southwest Canada have not recovered as well as in most other regions of North America. Despite the release of several hundred captive-bred young in the prairie Provinces and western Canada (Holroyd and Banasch 1990), the number of pairs occupying territories is still well below the number of known historical nest sites (G. Holroyd, *in litt.* 1993). In southern Canada, including the prairie region, the proportion of reintroduced young that entered the breeding population was considerably lower than in the United States (Peakall 1990; Enderson *et al.* 1995). The factor or factors causing this lower recruitment rate remain unknown, but survivorship of peregrine falcons released into this area may be lower than in adjacent portions of the subspecies' range. Pesticide residues in American peregrine falcon eggs do not appear to be higher in southwest Canada than in the United States (Peakall *et al.* 1990). Therefore, higher residual organochlorine contamination is apparently not responsible, and the number of pairs occupying this region continues to increase.

Exposure to organochlorine pesticides caused drastic population declines in peregrine falcons. Following restrictions on the use of organochlorines in the United States and Canada, residues in eggs declined and reproduction rates improved. Improved reproduction, combined with the release of thousands of captive-reared young and relocated wild hatchlings, allowed the American peregrine falcon to recover and peregrine falcons to be successfully reestablished in those areas of the historical range from which the species was extirpated. Pesticide residues, reproductive rates, and the rate of recovery have varied among regions within the vast range of this species. In some areas, such as the Channel Islands off the southern coast of California, the lingering effects of DDT have caused reproductive rates to remain low. Local source contamination may even cause continued reproductive problems in the Channel Islands. In southwest Canada, the rate of recovery, or onset of

recovery, apparently lagged behind most other areas, but recent trends suggest that historical nest sites will continue to be gradually re-colonized.

The peregrine falcon has recovered throughout its historical range. Although the recovery is slow in a few parts of the historical range, these areas represent a small portion of the species' overall range. Furthermore, evidence collected in recent years shows that a combination of lingering residues of organochlorines in North America and contamination resulting from the continued use of organochlorines in Latin America has not prevented a widespread and substantial recovery of peregrine falcons, as numbers of peregrine falcons continue to increase. We conclude, therefore, that the continued existence of the American peregrine falcon is no longer threatened by exposure to organochlorine pesticides.

In summary, due to the reduction in the effects of pesticides and widespread positive trends in population size, we have determined that the American peregrine falcon has recovered and is no longer endangered with extinction, or likely to become endangered within the foreseeable future throughout all or a significant portion of its range. We considered the alternative of downlisting the species, but recent data show improvements in breeding pair numbers and productivity, demonstrating that the delisting goals set for the American peregrine falcon in recovery plans were met or exceeded. We believe this available information supports the full delisting of the species throughout its range. Therefore, we are removing the peregrine falcon from the Federal List of Endangered and Threatened Wildlife, thus, removing endangered status for the American peregrine falcon throughout its range, and the similarity of appearance provision for all free-flying peregrine falcons within the 48 conterminous United States.

In accordance with 5 U.S.C. 553(d), we have determined that this rule relieves an existing restriction and good cause exists to make the effective date of this rule immediate. Delay in implementation of this delisting would cost government agencies staff time and monies conducting formal section 7 consultation on actions which may affect species no longer in need of the protections under the Act. Relieving the existing restriction associated with this listed species will enable Federal agencies to minimize any further delays in project planning and implementation for actions that may affect peregrine falcons.

Effects of This Rule

This final rule will affect the protection afforded to North American peregrine falcons under the Act. It will not affect the status of the Eurasian peregrine falcon (*F. p. peregrinus*), currently listed under the Act as endangered wherever it occurs. The endangered designation under the Act for the American peregrine falcon will be removed and the designation of endangered due to similarity of appearance for all free-flying peregrine falcons found within the 48 conterminous United States, including the Arctic and Peale's peregrine falcons, and the reestablished eastern and midwestern populations, will be removed. Therefore, taking, interstate commerce, import, and export of North American peregrine falcons will no longer be prohibited under the Act. In addition, Federal agencies will no longer be required to consult with the Service under section 7 of the Act in the event activities they authorize, fund or carry out adversely affect peregrine falcons. However, as previously discussed, removal of the protection of the Act will not affect the protection afforded all peregrine falcons under the MBTA.

The take and use of peregrine falcons must comply with appropriate State regulations. State regulations applying to falconry vary among States and are subject to change over time. The applicable State regulations may be more but not less restrictive than Federal regulations.

This rule will not affect the peregrine falcon's Appendix I status under CITES, and CITES permits will still be required to import and export peregrine falcons to and from the United States. CITES permits will not be granted if the export will be detrimental to the survival of the species or if the falcon was not legally acquired.

Critical Habitat

Critical habitat for the American peregrine falcon includes five areas in northern California (50 CFR 17.95). The Act defines critical habitat as "specific areas within the geographical area occupied by the species, at the time it is listed on which are found those physical or biological features essential to the conservation of the species and which may require special management considerations or protection." Since critical habitat can be designated only for species listed as endangered or threatened under the Act, all currently designated American peregrine falcon critical habitat will be removed upon publication of this final rule.

Monitoring

Section 4(g)(1) of the Act requires us to monitor a species for at least 5 years after delisting. A monitoring plan was provided in the proposed delisting rule on August 26, 1998 (63 FR 45446). We are currently developing a revised monitoring plan which will be made available for public review in the **Federal Register** in the near future.

Take for Falconry and Other Purposes

Wild American and Arctic peregrine falcons were unavailable for falconry and raptor propagation in the contiguous United States since these two subspecies of peregrine falcons were listed under the Act in 1970. In Alaska, the Arctic peregrine became available for take in 1994 when it was delisted, but take of this subspecies was still restricted in the contiguous United States pursuant to the similarity of appearance provision of the Act. Take of Peale's peregrines also was restricted in the contiguous United States since 1984 pursuant to the similarity of appearance provisions of the Act.

With this delisting, which removes protection of the Act, regulation and management of peregrine falcons in the United States will fall primarily under the MBTA and State regulations. In anticipation of delisting, we are working with the State wildlife agencies to develop draft biological criteria for management of take of peregrines. These criteria will serve as the basis for discussions with authorities in Canada and Greenland to identify appropriate limits for take of passage birds. We will then prepare environmental assessments on the management of nestlings and passage birds and solicit public comment. The resulting management plans will include biological criteria for harvest, implementation criteria, and procedures for evaluating the harvest. One objective of the plans is to allow a level of take that does not compromise continuing restoration of peregrine falcons in North America. We expect to complete the management plan for nestlings by the Spring of 2000, and the management plan for passage birds by the Fall of 2000. Take of peregrine falcons in the conterminous United States is not permitted under the MBTA until the management plans undergo public review and are finalized, approved, and published in the **Federal Register**. Some permit exceptions may be made for scientific research. In Alaska, take of American peregrine falcons is not permitted but take of Peale's and Arctic peregrines may be authorized.

Executive Order 12866

This rule was not reviewed by the Office of Management and Budget under Executive Order 12866.

Paperwork Reduction Act

Office of Management and Budget (OMB) regulations at 5 CFR 1320, which implement provisions of the Paperwork Reduction Act, require that interested members of the public and affected agencies have an opportunity to comment on agency information collection and recordkeeping activities (see 5 CFR 1320.8(d)). We cannot conduct or sponsor, and a person is not required to respond to a collection of information, unless we are in possession of a current OMB Control Number. We intend to collect information from the public during the post-delisting monitoring period. A description of the information that will be collected was provided in the proposed delisting rule. We are revising the monitoring plan that was described in the proposed delisting rule, and will obtain a revised OMB Control Number for, and request public comment on, the revised monitoring plan in the **Federal Register** in the near future.

National Environmental Policy Act

We have determined that an environmental assessment or environmental impact statement, as defined under the authority of the National Environmental Policy Act of 1969, need not be prepared in connection with regulations adopted pursuant to section 4(a) of the Endangered Species Act of 1973, as amended. We published a notice outlining our reasons for this determination in the **Federal Register** on October 25, 1983 (48 FR 49244).

References Cited

A list of all references cited herein is available upon request from the Ventura Fish and Wildlife Office (see **ADDRESSES** section).

Author

The primary author of this proposed rule is Robert Mesta, U.S. Fish and Wildlife Service, Ventura Fish and Wildlife Office (see **ADDRESSES** section).

List of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, Transportation.

Regulation Promulgation

For the reasons set out in the preamble, we hereby amend part 17, subchapter B of chapter I, Title 50 of the

Code of Federal Regulations, as set forth below:

PART 17—[AMENDED]

1. The authority citation for part 17 continues to read as follows:

Authority: 16 U.S.C. 1361–1407; 16 U.S.C. 1531–1544; 16 U.S.C. 4201–4245; Pub. L. 99–625, 100 Stat. 3500; unless otherwise noted.

§ 17.11 [Amended]

2. Section 17.11(h) is amended by removing the entries for “Falcon, American peregrine, *Falco peregrinus anatum*” and “Falcon, peregrine, *Falco peregrinus*” under “BIRDS” from the List of Endangered and Threatened Wildlife.

§ 17.95 [Amended]

3. Section 17.95(b) is amended by removing the critical habitat entry for “American Peregrine Falcon.”

Dated: August 17, 1999.

Jamie Rappaport Clark,

Director, U. S. Fish and Wildlife Service.

[FR Doc. 99–21959 Filed 8–20–99; 8:45 am]

BILLING CODE 4310–55–P