K. Other

Under section 307(b)(1) of the Clean Air Act, petitions for judicial review of this action must be filed in the United States Court of Appeals for the appropriate circuit by May 4, 2004. Filing a petition for reconsideration by the Administrator of this final rule does not affect the finality of this rule for the purposes of judicial review nor does it extend the time within which a petition for judicial review may be filed, and shall not postpone the effectiveness of such rule or action. This action may not be challenged later in proceedings to enforce its requirements. (*See* section 307(b)(2).)

List of Subjects in 40 CFR Part 69

Environmental protection, Air pollution control.

Dated: February 27, 2004.

Michael O. Leavitt,

Administrator.

■ Part 69 of chapter I, title 40 of the Code of Federal Regulations is amended to read as follows:

PART 69—[AMENDED]

■ 1. The authority citation for part 69 continues to read as follows:

Authority: 42 U.S.C. 7545(c), (g), and (i), and 7625–1.

■ 2. Section 69.41 is amended by adding paragraph (h) to read as follows:

§ 69.41 New exemptions.

* * * * *

(h) Pursuant to section 325(a) of the Clean Air Act (CAA) and a petition submitted by the Governor of United States Virgin Islands on July 21, 2003, (''2003 Petition''), the Administrator of EPA conditionally exempts Virgin Islands Water and Power Authority (''VIWAPA'') from certain CAA requirements.

(1) A waiver of the requirement to obtain a PSD permit prior to construction is granted for the electric generating unit identified in the 2003 Petition as Unit 23, St. Krum Bay plant in St. Thomas with the following condition:

(i) Unit 23 shall not operate until a final PSD permit is received by VIWAPA for this unit;

(ii) Unit 23 shall not operate until it complies with all requirements of its PSD permit, including, if necessary, retrofitting with BACT;

(iii) If Unit 23 operates either prior to the issuance of a final PSD permit or without BACT equipment, Unit 23 shall be deemed in violation of this waiver and the CAA beginning on the date of commencement of construction of the unit.

(2) [Reserved]

[FR Doc. 04–4987 Filed 3–4–04; 8:45 am]

BILLING CODE 6560–50–P

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

RIN 1018–AI28

Endangered and Threatened Wildlife and Plants; Listing the San Miguel Island Fox, Santa Rosa Island Fox, Santa Cruz Island Fox, and Santa Catalina Island Fox as Endangered

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), determine endangered status pursuant to the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*), for four subspecies of island fox (*Urocyon littoralis*): San Miguel Island fox (*U. l. littoralis*), Santa Rosa Island fox (*U. l. santarosae*), Santa Cruz Island fox (*U. l. santacruzae*), and Santa Catalina Island fox (*U. l. catalinae*). This final rule extends the Federal protection and recovery provisions of the Act to these subspecies.

DATES: This final rule is effective April 5, 2004.

ADDRESSES: The complete 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, CA 93003.

FOR FURTHER INFORMATION CONTACT: Field Supervisor, U.S. Fish and Wildlife Service, Ventura Fish and Wildlife Office, at the address above (telephone 805/644–1766; facsimile 805/644–3958).

SUPPLEMENTARY INFORMATION:

Background

The island fox was first described as *Vulpes littoralis* by Baird in 1857 from the type locality of San Miguel Island, Santa Barbara County, California. Merriam (1888, in Hall and Kelson 1959) reclassified the island fox into the genus *Urocyon* and later described island foxes from Santa Catalina, San Clemente, and Santa Cruz Islands as three separate taxa (*U. catalinae, U. clementae,* and *U. littoralis santacruzae*) (Merriam 1903). Grinnell *et al.* (1937) revised Merriam's classification, placing foxes from all islands under the species *U. littoralis* and assigning each island population a subspecific designation (*U. l. catalinae* on Santa Catalina Island, *U. l. clementae* on San Clemente Island, *U. l. dickeyi* on San Nicolas Island, *U. l. littoralis* on San Miguel Island, *U. l. santacruzae* on Santa Cruz Island, and *U. l. santarosae* on Santa Rosa Island). Recent morphological and genetic studies support the division of the *U. littoralis* complex into six subspecies that are each limited in range to a single island (Gilbert *et al.* 1990; Wayne *et al.* 1991; Collins 1991a, 1993; Goldstein *et al.* 1999). Each subspecies is reproductively isolated from the others by a minimum of 5 kilometers (3 miles) of ocean waters. The island fox is closely related to the mainland gray fox, *U. cinereoargenteus,* but is smaller in size and darker in coloration (Moore and Collins 1995).

The island fox is a very small canid, weighing approximately 3 to 6 pounds (1.4 to 2.7 kilograms) and standing approximately 1 foot (0.3 meter) tall. The tail is conspicuously short. Dorsal coloration is grayish-white and black. The base of the ears and sides of the neck and limbs are cinnamon-rufous in color, and the underbelly is a dull white. Island foxes display sexual size dimorphism (males being larger and heavier than females) (Moore and Collins 1995).

Island foxes inhabit the six largest islands (San Miguel, Santa Rosa, Santa Cruz, San Nicolas, Santa Catalina, and San Clemente Islands) off the coast of southern California. Genetic evidence suggests that all island foxes are descended from one colonization event (Gilbert *et al.* 1990), possibly from chance overwater dispersal during which foxes rafted on floating debris (Moore and Collins 1995). Fossil evidence indicates that island foxes inhabited the northern Channel Islands (San Miguel, Santa Rosa, and Santa Cruz) between 10,000 to 16,000 years ago (Orr 1968). However, island foxes are thought to have existed on the northern Channel Islands even before that time, during a period when Santa Cruz, Santa Rosa, and San Miguel were one land mass referred to as ''Santarosae,'' last known to have been united 18,000 years ago (Johnson 1978, 1983). The island fox was thought to have reached the southern Channel Islands (San Nicolas, San Clemente, and Santa Catalina) much more recently (2,200 to 3,800 years ago), most likely introduced to these islands by Native Americans as pets or semidomesticates (Collins 1991a, b). However, island fox remains recently recovered from San Nicolas Island suggest this introduction

was earlier, approximately 5,200 years ago (Vellanoweth 1998).

Genetic evidence confirms the pattern of dispersal suggested by archeological and geological findings (Gilbert *et al.* 1990). The pattern of genetic relatedness supports the geological evidence of the sequence of isolation for each island, and each population, as rising sea levels separated Santarosae into the northern Channel Islands. Santa Cruz separated from the other northern Channel Islands first, about 11,500 years ago, followed by the separation of San Miguel and Santa Rosa about 9,500 years ago. Together with the fossil record, genetic evidence indicates that San Clemente was the first southern Channel Island colonized, probably by immigrants from San Miguel. Dispersal then occurred from San Clemente to San Nicolas and then Santa Catalina (Gilbert *et al.* 1990).

Island forms of species generally have less genetic variability than their mainland counterparts (Gill 1980), and island foxes are no exception. Mainland gray foxes are more variable both morphologically and genetically than island foxes (Wayne *et al.* 1991; Goldstein *et al.* 1999). The smaller the island size the lower the island fox population size and genetic variability seems to be. The smallest island fox populations, San Miguel and San Nicolas, show the least genetic variability, with San Nicolas having virtually no genetic variability, which is highly unusual among mammal populations. This lack of variability likely occurred as a result of a past population bottleneck (Gilbert *et al.* 1990; Goldstein *et al.* 1999); such a bottleneck occurred on San Nicolas Island in the mid-1970s (Laughrin 1980).

The diminutive island fox is the largest native carnivore on the Channel Islands. The island fox is a habitat generalist, occurring in valley and foothill grasslands, southern coastal dunes, coastal bluff, coastal sage scrub, maritime cactus scrub, island chaparral, southern coastal oak woodland, southern riparian woodland, Bishop (*Pinus muricata*) and Torrey pine (*Pinus torreyana*) forests, and coastal marsh habitats. Although foxes can be found in a wide variety of habitats on the islands, they prefer areas of diverse topography and vegetation (Von Bloeker 1967; Laughrin 1977; Moore and Collins 1995). Laughrin (1973, 1980) found woodland habitats to support higher densities of island foxes due to increased food availability, while Crooks and Van Vuren (1995) found island foxes to prefer fennel grasslands and avoid ravines and scrub oak (*Quercus* spp.) patches.

Island foxes are omnivores, taking a wide variety of seasonally available plants and animals (Collins and Laughrin 1979; Collins 1980; Kovach and Dow 1981; Moore and Collins 1995; Crowell 2001). Island foxes forage opportunistically on any food items encountered within their home range. Diet is determined largely by availability, which varies by habitat and island, as well on a seasonal and annual basis. Island foxes prey on native deer mice (*Peromyscus maniculatus*) and harvest mice (*Reithrodontomys megalotis catalinae*), as well as on introduced house mice (*Mus musculus*) and rats (*Rattus rattus* and *R. norvegicus*). Small mammals may be especially important prey during the breeding season, because they are large, energy-rich food items that adult foxes can bring back to their growing pups (Garcelon *et al.* 1999). In addition to small mammals, island foxes feed on ground-nesting birds such as horned larks (*Eremophila alpestris*), Catalina quail (*Callipepla californica catalinensis*), and western meadowlarks (*Sturnella neglecta*), and a wide variety of insect prey (Moore and Collins 1995). At certain times of the year, foxes feed heavily on orthopterans (*e.g.*, grasshoppers and crickets) (Crooks and VanVuren 1995), especially Jerusalem crickets (*Stenopelmatus fuscus*). Less common in the diet are amphibians, reptiles, and carrion of marine mammals (Collins and Laughrin 1979). Island foxes feed on a wide variety of native plants, including the fruits of manzanita (*Arctostaphylos* spp.), summer holly (*Comarostaphylis* spp.), toyon (*Heteromeles arbutifolia*), cactus (*Opuntia* spp.), island cherry (*Prunus ilicifolia*), sumac (*Rhus* spp.), rose (*Rosa* spp.), nightshade (*Solanum* spp.), and huckleberry (*Vaccinium* spp.) (Moore and Collins 1995). Fruiting shrubs do not occur on San Miguel Island, where island foxes rely more on the fruits of the lowgrowing sea-fig, *Carpobrotus chilensis*.

The island fox is a docile canid, exhibiting little fear of humans in many instances. Although primarily nocturnal, the island fox is more diurnal than the mainland gray fox (Collins and Laughrin 1979; Fausett 1993). Their more diurnal activity is thought to be a result of both the historical absence of large predators and freedom from human harassment on the islands (Laughrin 1977).

Mated island foxes maintain territories that are separate from the territories of other pairs (Crooks and Van Vuren 1996; Roemer *et al.* 2001a). Island fox home range size varies with sex, season, population density, landscape features, and habitat type (Laughrin 1977; Crooks and Van Vuren 1996; Thompson *et al.* 1998; Roemer *et al.* 2001a). Estimates of territory size range from 59 acres (ac) (24 hectares (ha)) in mixed habitat (Crooks and Van Vuren 1996) and 214 ac (87 ha) in grassland habitat (Roemer 1999) on Santa Cruz Island, to 190 ac (77 ha) in canyons on San Clemente Island (Thompson *et al.* 1998). Island fox territory configuration changes after the death and replacement of paired male foxes, but not after the death and replacement of paired females or juveniles, indicating that adult males are involved in territory formation and maintenance (Roemer *et al.* 2001a).

Although island foxes appear monogamous, copulations with individuals other than the mate are common and often result in offspring. Courtship activities occur from late January to early March; genetic evidence suggests that inbreeding avoidance occurs (Roemer *et al.* 2001a). Recent endocrine assays on fecal samples from San Miguel Island indicate that, unlike all other canids studied to date, island foxes are induced rather than spontaneous ovulators (Bauman *et al.* 2001), which means that female island foxes do not enter estrous unless males are present. Young are born from late April through May after a gestation period of approximately 50 days. Island foxes give birth to their young in simple dens, which are usually not excavated by the foxes themselves (Moore and Collins 1995). Rather, any available sheltered site (*e.g.*, brush pile, rock crevice, or hollow stump) is used (Laughrin 1977). Litter size ranges from one to five pups (Moore and Collins 1995). Laughrin (1977) found an average litter of 2.17 for 24 dens on Santa Cruz Island; this estimate likely reflected the number of pups weaned rather than born. The average size of 35 litters born in captivity since 1999 is 2.3 (Coonan *et al.* in prep.). Both island fox parents care for the young (Garcelon *et al.* 1999). By 2 months of age, young foxes spend most of the day outside the den and will remain with their parents throughout the summer. Some pups disperse from their birth territories by winter, although others may stay on their natal territories into their second year (Coonan 2003a). Island foxes can mate at the end of their first year (Collins and Laughrin 1979), although most breeding involves older animals. Coonan *et al.* (1998) found that only 16 percent of females under the age of 2 bred over a 5-year period, in contrast to 60 percent of older females.

Due to the low reproductive output of island foxes, survival of adults is the

most important factor influencing population growth rate (Roemer 1999; Roemer *et al.* 2001b, d). Compared with the gray fox, island fox populations are skewed toward older adults (Laughrin 1980; Garcelon 1988). Adult island foxes live an average of 4 to 6 years (Moore and Collins 1995), although this may be an underestimate (Coonan *et al.* 1998). Island foxes may live 8 to 10 years in captivity or in the wild in the absence of catastrophic mortality forces (Tim Coonan, National Park Service, in litt. 2002).

In the 1970s, island foxes were found at higher densities than any other canid species, likely due to the lack of competition and predation compared with the island foxes' mainland canid counterparts (Laughrin 1980). At the time of Laughrin's early studies, island fox populations were stable on all islands except Santa Catalina (Laughrin 1973). Pre-decline trapping on Santa Cruz Island in 1993 and 1994 reconfirmed that island foxes existed at high densities, with an average of 21.3 foxes per mi^2 (8.2 foxes per km^2) in 1994 (Roemer *et al.* 1994).

San Miguel, Santa Rosa, Santa Cruz, and Santa Catalina island foxes have experienced precipitous declines in the last 8 years (Coonan *et al.* 1998, 2000; Roemer 1999; Timm *et al.* 2000; Roemer *et al.* 2001b). The island fox population on San Nicolas Island has remained stable and the population on San Clemente appears to have experienced a gradual decline. Total island fox numbers rangewide have fallen from approximately 6,000 individuals in 1994 (Roemer *et al.* 1994) to fewer than 1,660 individuals in 2003 (Coonan 2003b). By 2001, island fox populations on San Miguel and Santa Cruz Islands had declined by an estimated 80 to 90 percent and were found to have a 50 percent chance of extinction over the next 5 to 10 years (Roemer 1999; Roemer *et al.* 2001b). During the period of decline, island fox population monitoring was not conducted on Santa Rosa Island; however, anecdotal observations and recent trapping efforts showed that a similar decline occurred for this subspecies as well (Roemer 1999; Coonan 2003a). Island fox populations on the northern Channel Islands are considered critically endangered and in need of immediate conservation action (Coonan *et al.* 1998; Roemer 1999; Roemer *et al.* 2001c). On Santa Catalina, island fox populations all but disappeared from the larger eastern portion of the island. This decline is attributed to a canine distemper outbreak that swept through the population in 1999 (Timm *et al.* 2000).

San Clemente and San Nicolas Islands have island fox populations estimated at approximately 595 and 614 individuals, respectively (D. Garcelon, unpublished data; Schmidt and Garcelon 2003). San Clemente Island has not experienced the sharp declines seen on other islands; however, 13 years of trapping data indicate that island fox densities have slowly declined since the early 1990s (Garcelon 1999; D. Garcelon, unpublished data). Populations of the San Nicolas Island fox appear to be stable. However, its small population size (Roemer *et al.* 1994), insular nature, lack of resistance to canine distemper and other diseases (Garcelon *et al.* 1992), high densities (Schmidt and Garcelon 2003), and low genetic variability (Wayne *et al.* 1991) increase the vulnerability of this subspecies (Roemer 1999). Protective measures have been put in place on these islands, such as reducing speed limits, educating island inhabitants and visitors, implementing a wildfire management plan, managing feral cat populations, administering canine distemper vaccinations, and removing all feral ungulates, to prevent further decline of these two subspecies. The statuses of these subspecies are discussed further in Issue 16 under our responses to public comments.

San Miguel Island Fox (Urocyon littoralis littoralis)

San Miguel Island is owned by the Department of the Navy but is managed by the National Park Service as part of the Channel Islands National Park through a series of memoranda of understanding between these agencies. The first quantitative surveys for island foxes on San Miguel Island were conducted by Laughrin in the early 1970s (Laughrin 1973). Trap efficiency was high (43 percent), and Laughrin concluded that island fox populations were stable at 7 foxes per square mile (mi^2) (2.7 foxes per square kilometer (km^2)), although this may be an underestimate. In the late 1970s, the island foxes on San Miguel had an average density of 12 foxes per mi^2 (4.6 foxes per km^2), for a total estimated population of 151 to 498 individuals (Collins and Laughrin 1979). Island foxes on San Miguel Island were not surveyed again until 1993, when the NPS instituted a long-term population study, which recorded an average density of 20 foxes per mi^2 (7.7 foxes per km^2) on two trapping grids and estimated the total population at more than 300 foxes (Roemer *et al.* 1994; Coonan *et al.* 1998). A third trapping grid was added the following year, and yielded island fox densities higher than previously recorded (41 foxes per mi^2 (15.8 foxes per km^2) in one study area), resulting in an island-wide estimate of 450 adults (Coonan *et al.* 1998). Annual populationmonitoring using capture-mark-recapture techniques documented a substantial decline in island fox populations on San Miguel Island between 1994 and 1999 (Coonan *et al.* 1998; Coonan *et al.* in review). During this time period, island fox populations dropped from an estimated 450 adults in 1994 (Coonan *et al.* 1998) to 15 foxes in 1999 (T. Coonan, unpublished data) as a result of predation by golden eagles.

In 1999, NPS captured 14 (4 males and 10 females) of the 15 remaining foxes from San Miguel Island to protect the subspecies from further losses from predation by golden eagles and to initiate a captive propagation program. The remaining island fox, a lone female, evaded capture efforts until September 2003, when she was captured and brought into captivity. Four years' captive breeding has increased the captive San Miguel Island fox population to 38 individuals.

Island foxes held in captivity are likely to be exposed to increased parasite loads due to artificial densities and unnaturally low mobility. On San Miguel Island, captive island foxes have been found to have high parasite loads of *Angiocaulus* spp., *Spirocerca* spp., and *Uncinaria* spp. (L. Munson, unpublished data; Sharon Patton, University of Tennessee, pers. comm. 2003). These parasites, thought to have had minor effects on the population in the past (see Coonan *et al.*, in review), may have significant effects on individual fox health due to the facilitation of their spread and density by the captive breeding situation. For example, fox handlers have reported high incidence of rectal bleeding in the captive San Miguel population, likely due to *Uncinaria* (a type of hookworm). Hookworms feed on the inner lining of the small intestine and cause loss of blood or hemorrhaging to the host, sometimes to the point of severe anemia and death. The NPS is working to address this threat by developing a treatment process for hookworm in coordination with the veterinary team of the Island Fox Conservation Working Group. Captive breeding programs to facilitate recovery are planned to continue for these four island fox subspecies. Therefore, exposure to increased parasitic loads will continue to be a threat.

Until September 2001, all captive San Miguel Island foxes were held in one breeding facility, putting the subspecies in danger of extinction due to a catastrophic event such as wildfire or

disease outbreak. The NPS moved half the captive foxes into a second breeding facility on San Miguel Island in October 2001 to minimize this risk (Coonan and Rutz 2002).

Santa Rosa Island Fox (Urocyon littoralis santarosae)

Santa Rosa Island is owned and managed by the NPS. The earliest island fox trapping study from Santa Rosa reported a trapping efficiency of 50 percent and a density of 11 foxes per mi^2 (4.2 foxes per km^2) (Laughrin 1973). Few population data have been collected on Santa Rosa Island foxes since Laughrin's studies. Although population monitoring was not conducted on Santa Rosa Island during the period of decline, trapping data collected in 1998 and 2000, as well as anecdotal evidence, suggested that Santa Rosa experienced a decline similar to those on Santa Cruz and San Miguel Islands (Roemer 1999; Roemer *et al.* 2001b). During 132 trap nights in 1998, trap success was 4.8 percent, and only 9 individuals were captured (Roemer 1999). Anecdotal sightings by park and ranch staff in the late 1990s became much less frequent than in previous years (Coonan 2003a).

Believing that fewer than 100 island foxes remained on Santa Rosa Island (T. Coonan, pers. comm. 1999), the NPS captured 14 adult foxes (5 males and 9 females) to initiate captive breeding in March 2000. The last known fox in the wild on Santa Rosa Island was brought into captivity in March 2001 (Coonan and Rutz 2002). Three years' captive breeding has increased the captive population to 56 (Coonan 2003b). As with San Miguel Island, approximately half the captive foxes were moved to a second facility in October 2001 (Coonan and Rutz 2002).

Deer (*Odocoileus hemionus*) and elk (*Cervus elaphus*) are present on Santa Rosa Island and assist in supporting breeding golden eagles, the main predator of island fox. Deer numbers in 2002 fluctuated between 424 and 686 deer (Schreiner *et al.* 2003), while approximately 601 elk remain on the island (Nathan Vail, *in litt.* 2003). Numbers of deer and elk are presently at their lowest numbers since the herds were established, as the result of a negotiated settlement agreement between the NPS and the commercial hunting operation managing the herds. The presence of these ungulates on the island likely facilitates the presence of golden eagles in two ways: (1) Deer fawns provide live prey for golden eagles as evidenced by prey remains found in nests (Coonan 2003a); and (2) carcasses of deer and elk from an annual hunt and subsequent cull provide golden eagles with a food source at a time of year where food resources are usually depleted. Through a settlement between the special use permittee and the NPS, deer and elk will be removed from the island by 2011, with populations slated for decrease beginning in 2008.

Santa Cruz Island Fox (Urocyon littoralis santacruzae)

The majority (75 percent) of Santa Cruz Island is owned by The Nature Conservancy, with the remaining 25 percent owned by NPS. Santa Cruz Island is the largest of the Channel Islands and has supported the highest known densities of island fox in the past (Laughrin 1973). Laughrin (1971) estimated the island fox population of Santa Cruz Island to be approximately 3,000 individuals. Average density between 1973 and 1977 was 20.4 foxes per mi^2 (7.9 foxes per km^2) (Laughrin 1980). Following Laughrin's studies, island fox populations on Santa Cruz Island were not surveyed again until 1993, when the average density was 21.2 foxes per mi^2 (8.2 foxes per km^2) (Roemer *et al.* 1994). Since that time, the population has decreased from an estimated 1,312 in 1993 to 133 individuals in 1999 (Roemer 1999; Roemer *et al.* 1994, 2001b). In 1998, trapping efficiency was low (2.9 percent), and island fox density ranged from 0.0 to 6.2 foxes per mi^2 (0.0 to 2.4 foxes per km^2), the lowest ever reported from Santa Cruz Island (Roemer 1999).

Population monitoring efforts in 2001 yielded captures of 75 individual foxes. Of these, 27 were outfitted with radio collars. The highest numbers of foxes were captured in the areas of relatively high cover. Five of the 27 radio-collared foxes died during 2001; their deaths were attributed to predation by golden eagles (David Garcelon, Institute for Wildlife Studies, pers. comm. 2001a). The Island Fox Conservation Working Group, a team of experts convened by the NPS to recommend appropriate recovery actions for the island fox, found that ''the existence of one pair of golden eagles on the island as of October 1, 2001, will warrant bringing foxes into captivity as the necessary conservative step in preserving the Santa Cruz Island fox population (Coonan 2001).'' Intensive trapping efforts to capture and relocate the remaining golden eagles in the spring and summer of 2001 resulted in three captures; however, four eagles remained on the island (B. Latta, pers. comm. 2001). Thus, the NPS and The Nature Conservancy (TNC) initiated captive breeding of island foxes on Santa Cruz Island in early 2002 (Coonan and Rutz 2003).

During 2002, 18 island foxes on Santa Cruz Island were captured and brought into captivity. One of these foxes gave birth to 5 pups, 3 of which were released back into the wild, bringing the total captive population to 20 by December 2002 (Coonan and Rutz 2003). An additional 10 pups born in 2003 brought the total captive population to 30 individuals.

Islandwide transect trapping in 2002 revealed that a minimum of 68 foxes were alive in the wild on Santa Cruz Island (D. Garcelon, unpublished data). Additional island foxes are expected to be present on the island, but the total number of island foxes in the wild is likely fewer than 100 (Schmidt and Garcelon 2003). Since December 2000, the Institute for Wildlife Studies has radio-tracked 53 individual foxes. Twenty of these foxes have died; 16 of the 20 mortalities were attributed to golden eagle predation based on physical evidence at the carcass recovery site (Institute for Wildlife Studies, unpublished data).

Annual survivorship of wild island foxes on Santa Cruz Island, as determined by ongoing radiotelemetry, was 61 percent in 2001 and 70 percent in 2002. Golden eagle trapping appears to have improved annual survivorship of island foxes, as the 2001 and 2002 survivorship is significantly higher than the 39 percent survivorship recorded during the island fox population decline. However, an island fox population model indicates that survivorship needs to be at least 80 percent in order for the populations to stabilize or increase (Roemer *et al.* in prep.).

Santa Cruz Island is currently occupied by a large feral pig (*Sus scrofa*) population (estimated at approximately 3,000 to 5,000 individuals), which facilitates the colonization of the island by golden eagles. TNC and the NPS are planning to begin an islandwide pig eradication program in spring 2004, which will take years to complete (NPS 2002).

Santa Catalina Island Fox (Urocyon littoralis catalinae)

Twelve percent of Catalina Island is in private ownership, while the remaining 88 percent is owned by the Catalina Island Conservancy. Santa Catalina Island has the largest human population, a large population of domestic dogs, and the highest degree of human activity and accessibility of the Channel Islands. Island fox numbers on Santa Catalina Island have fluctuated widely over the past 30 years. In

Laughrin's early 1970s studies, only 2 island foxes were trapped on Santa Catalina Island for a trap efficiency of 6 percent and an average estimated density of 0.3 fox per mi^2 (0.1 fox per km^2) (Laughrin 1973). This density was 37 percent lower than any other island during this study. The reason for past low island fox numbers on Santa Catalina Island is unknown; the available food and habitats are comparable to those on the other islands. Island fox numbers on Santa Catalina Island increased slightly between 1975 and 1977, with average estimated densities of 0.77 fox per mi^2 (0.29 fox per km^2) (Propst 1975) and 0.8 fox per mi^2 (0.30 fox per km^2) (Laughrin 1980). During 1989 and 1990, average density estimates increased, ranging from 6.7 to 33.1 foxes per mi^2 (2.6 to 12.8 foxes per km^2) (Garcelon *et al.* 1991). The Santa Catalina Island fox population increased to an estimated 1,342 foxes by 1994 (Roemer *et al.* 1994).

In 1999, the Santa Catalina Island fox population experienced a dramatic decline attributed to canine distemper, presumably introduced by domestic dogs, in the eastern portion of the island (Timm *et al.* 2000). Santa Catalina Island is separated into a large eastern side of 40,000 ac (16,190 ha) and a small western side of 8,000 ac (3,240 ha) by a narrow isthmus, which has apparently served as a barrier to the canine distemper virus. Anecdotal accounts of fox absence in the summer of 1999 resulted in renewed trapping efforts to ascertain the status of the species, and investigation of a potential disease-related decline. Two live foxes and one deceased fox recovered from the eastern portion of the island tested positive for canine distemper virus or had high antibody titers (a measure of concentration), constituting the first positive record of canine distemper in island foxes (Timm *et al.* 2000). Previous studies had found no evidence of canine distemper in Santa Catalina Island foxes (Garcelon *et al.* 1992). A trapping effort conducted during this time period resulted in a minimum population estimate of only 100 foxes for the year 2000 (Kohlmann *et al.* 2003), compared to an islandwide population estimate of 1,342 foxes reported in 1994 (Roemer *et al.* 1994).

Island fox trapping efforts during 2000 and 2001 resulted in capture of 137 island foxes on the western end and 37 on the eastern portion of Santa Catalina Island, and a conservative population estimate of 225 foxes islandwide (Kohlmann *et al.* 2003; D. Garcelon, unpublished data). Monitoring conducted in 2001 and 2002 resulted in capture of 161 individuals (67 at the east end, 94 at the west end) and a conservative population estimate of 215 foxes islandwide (119 on the west end, and 96 on the east end) (Kohlmann *et al.* 2003).

A captive propagation program for the Santa Catalina Island fox was initiated in 2001. The Institute for Wildlife Studies captured 16 adults (10 females and 6 males) between February and mid-March 2001 as the founder population for the captive breeding program. The pregnant females from the founder group gave birth to a total of 18 pups. Twelve of these pups died within 7 days of birth, likely due to stress to the females from capture during late pregnancy. The six remaining pups were released onto the east end of the island in the fall of 2001. Eight pups were released as part of this program in 2002, and 15 were released in 2003. During 2002, 10 additional foxes were brought into captivity from the west end to replace captive breeding stock. Early results of the captive breeding-release program are promising. Of the 14 pups released in 2001 and 2002, 11 are known to be alive and at least 3 captive reared foxes are reproducing (Institute for Wildlife Studies, unpublished data).

In addition to the captive breeding program, the Santa Catalina Conservancy and the Institute for Wildlife Studies initiated a translocation program in 2001 to re-establish island foxes on the east side of the island. Seven of 10 juvenile island foxes were relocated from the west end to the east end in 2001, and all of the 12 foxes that were relocated in 2002 remain in the population (Institute for Wildlife Studies, unpublished data). The translocation effort has been discontinued to avoid adverse effects to the west end population, but appears to have been successful as a population augmentation mechanism for the east end. At least 6 of the translocated foxes are known to be reproducing on the east end, and at least 4 pups have been produced in the wild by translocated animals.

Previous Federal Action

We published an updated candidate Notice of Review (NOR) for animals on December 30, 1982 (47 FR 58454). This notice included all six subspecies of island fox in a list of category 2 candidate species. We maintained all six subspecies of island fox as category 2 candidates in subsequent notices: September 18, 1985 (50 FR 37958), January 6, 1989 (54 FR 554), November 21, 1991 (56 FR 58804) and November 15, 1994 (59 FR 58982). As announced in a notice published in the February 28, 1996, **Federal Register** (61 FR 7596), we discontinued the designation of category 2 candidates. Thus, all six subspecies of island fox were not included in the 1996 and subsequent NORs until our October 30, 2001 (66 FR 54808), NOR in which the San Miguel, Santa Rosa, Santa Cruz, and Santa Catalina Island foxes were included as candidate species. Candidate species are those species being considered for listing by the Secretary but which are not yet the subject of a proposed listing rule (50 CFR 424.02(b).

On June 1, 2000, we received a petition from the Center for Biological Diversity (Center) in Tucson, Arizona, and the Institute for Wildlife Studies in Arcata, California, requesting that we add four subspecies of island fox, the San Miguel Island fox, Santa Rosa Island fox, Santa Cruz Island fox, and Santa Catalina Island fox, to the list of endangered species pursuant to the Act. Due to a lack of funding, we initially did not issue a 90-day finding in response to the petition. In response to our lack of action on the petition, the Center sent us a 60-day notice of intent to sue on December 4, 2000. In the October 30, 2001, NOR, however, the island foxes were included as candidate species for which listing was warranted but precluded by higher priority listing actions (66 FR 54808); as noted in the NOR, the Service considered that the island foxes, and all other candidate species, as having been subject to a positive 90-day finding and a warranted-but-precluded 12-month finding (66 FR 54814). We proposed to list the four subspecies of island fox on December 10, 2001 (66 FR 63654). The proposed rule satisfied a measure in the settlement agreement with the Center (*Center for Biological Diversity, et al.* v. *Norton,* Civ. No. 01–2063 (JR) (D.D.C.)), entered by the Court on October 2, 2001.

On April 22, 2003, the Center filed suit against the Service for failure to finalize the listing and for failure to publish a final determination regarding critical habitat. (*Center for Biological Diversity* v. *Williams, et al.* No. CV–03–2729 AHM). In a settlement of that lawsuit, the Service agreed to submit the final listing determination to the **Federal Register** on or by March 1, 2004, and if prudent, submit a proposed rule to designate critical habitat to the **Federal Register** on or by October 1, 2004, and a final determination regarding critical habitat on or by November 1, 2005.

Summary of Comments and Responses

In the December 10, 2001, proposed rule (66 FR 63654), we requested all interested parties to submit factual

reports or information that might contribute to development of a final rule. A 60-day comment period closed on February 8, 2002. We contacted appropriate Federal agencies, State agencies, county and city governments, scientific organizations, and other interested parties and requested comments, and notified affected landowners of the proposed listing. We published public notices of the proposed rule, which invited general public comment, in the Santa Barbara News Press and Ventura County Star on December 15, 2001. We requested peer review in compliance with our policy, published in the **Federal Register** on July 1, 1994 (59 FR 34270). We did not receive any requests for a public hearing, and no public meeting was held.

During the public comment period, we received written comments from 11 individuals, businesses, and organizations. In all, one commenter opposed the listing and two supported continued protection of the subspecies proposed for listing. The remaining eight commenters stated neither opposition nor support for the ruling, but provided additional information on the causes of decline and threats to the island fox. Issues raised by the commenters, and our response to each, are summarized below.

Issue 1: Several commenters stated that the rule lists the introduction of non-native herbivores as the primary cause of the fox decline. One commenter further pointed out that, if non-native herbivores were the cause of decline, the fox population on Santa Rosa Island should have been decimated in the 1870s, when more than 100,000 head of sheep (*Ovis aries*) were present. Several commenters noted that foxes flourished for over 130 years with extensive grazing by cattle (*Bos taurus*) and sheep, and for close to 70 years with the added presence of pigs, elk, and deer.

Our response: Although the degradation of habitat that occurred due to the introduction of non-native herbivores is the first threat presented in the rule (under Factor A), this threat was not identified as the primary cause of the island fox decline. The Service concluded that the primary cause of decline for island foxes is from predation by golden eagles on Santa Cruz, San Miguel, and Santa Rosa Islands and canine distemper on Santa Catalina Island. However, the introduction of non-native mammals to the northern Channel Islands has facilitated declines of island foxes in two ways: (1) By type-converting woodland and scrub habitats to open grasslands comprised of non-native annual grasses, it greatly reduces the amount of cover available to island foxes and (2) feral pigs and deer provide an unnatural prey base for golden eagles, which has facilitated the colonization of the northern Channel Islands by golden eagles. Removing non-native animals is essential to break the link that attracts golden eagles to the northern islands, where they also prey on island foxes.

Issue 2: Several commenters pointed out that the rapid decline in fox populations over the last 6 years occurred concurrently with the removal of non-native species, including pigs and cattle, and the reduction of deer and elk. The commenters proposed that the removal of non-native species caused the decline of the island foxes.

Our response: Declines of island foxes only occurred concurrently with the removal of non-native species on Santa Rosa Island. On San Miguel Island, no non-native species removal programs occurred during the period of decline, and on Santa Cruz Island, 9,000 sheep were removed after island fox numbers had declined. An analysis of the best available data regarding the island fox population declines (Coonan *et al.* 2000; Roemer *et al.* 2001b and 2002; Coonan 2003) has not revealed a causal link between the removal of cattle on Santa Rosa Island and the decline. The removal of cattle from Santa Rosa Island may have negatively affected foxes, as the cattle fed on the non-native annual grasses and kept them in check. Although island foxes may have been negatively affected by the proliferation of non-native annual grasses following the removal of cattle (Roemer and Wayne 2003), we do not believe that this was the cause of decline. As described in the rule, predation by golden eagles is the primary cause of decline on the three northern Channel Islands. We are not aware of any data that show that the decline of island foxes is due to the removal of non-native herbivores. In addition, island foxes existed on the islands for thousands of years without the presence of deer, elk, pigs, and cattle. Therefore, it seems unlikely that removing non-native species would cause a decline in island foxes.

Issue 3: Two commenters recommended that objective research be conducted prior to the removal of deer and elk on Santa Rosa Island to study the impacts of removing non-native animals. Another commenter asked if the Service or NPS had conducted any research to find out if pigs and cattle have a positive impact on fox populations.

Our response: We are not aware of any studies that have been or are planned to be conducted on these subjects. Funding for research has been focused on those areas identified as being most crucial for the recovery of the island fox. On Santa Cruz, Santa Rosa, and San Miguel islands, financial resources have gone into removing the primary threat, golden eagles, and constructing and operating captive breeding facilities. Because island foxes existed on all islands for thousands of years without the presence of deer, elk, pigs, and cattle, the Service concludes that removing these species should not affect the long-term conservation of island foxes once the ecosystem has been restored to more natural conditions.

The Service, the NPS, and the Island Fox Conservation Working Group have identified a concern with the timing of eradication of pigs from Santa Cruz Island. Pig carcasses will be left to decompose on the island, rather than being transported to the mainland. If golden eagles remain on the island, the widespread availability of pig carcasses may increase golden eagle numbers and impede capture efforts by making bait less attractive. In addition, once pigs have been removed or their numbers substantially decreased, lingering golden eagles may switch to island foxes remaining in the wild. The Service, NPS, and TNC are working to develop measures to decrease the probability of the negative effects of pig removal on island foxes. Although the removal of pigs may have short-term negative effects on island foxes, this action is essential to deter golden eagles from colonizing the islands, and will facilitate the long-term recovery of the island fox.

Issue 4: One commenter noted that after burros (Equus asinus) were removed from San Miguel Island, vegetation piled up, making the island impossible to penetrate. The conversion of once-open hunting grounds to impenetrable forest may have affected the ability of foxes to find food.

Our response: No impenetrable forests currently exist on San Miguel Island. When the San Miguel Island fox began to decline, the NPS conducted a study to determine if food availability was the cause of decline. They concluded that the availability of food was not the cause of decline (Coonan *et al.* 1998; Crowell 2001). Numbers of alligator lizards (*Gerrhonotus multicarinatus*), mice, and sea-figs, important components of the San Miguel Island fox diet, did not decrease during the period of decline. In addition, the decrease in fox numbers was not

accompanied by declines in adult fox weight, making lack of food unlikely as a cause of decline.

Issue 5: One commenter stated that the removal of greater than 35,000 sheep and 3,000 cattle on Santa Cruz Island resulted in an explosion of fennel (*Foeniculum vulgare*), which now forms ''miles of impenetrable fennel-forests.'' The commenter poses that the loss of the island foxes' open hunting habitat caused the population crash. Another commenter speculated that foxes needed the more open habitat that grazing animals provided on all islands, and the removal of those animals led to the decline.

Our response: Non-native fennel covers approximately 10 percent of Santa Cruz Island (Breton and Klinger 1994). The densest stands of fennel are concentrated in approximately 1,800 ac (730 ha) (in the isthmus area; an additional 1,600 acres in the central valley on Santa Cruz Island are dominated by fennel (NPS 2002). The best available data do not support the conclusion that island foxes find the fennel to be impenetrable. In a recent study to determine distribution and abundance of island foxes on Santa Cruz Island, most foxes were found in the central valley and isthmus area. Of the 82 foxes trapped during the study, 22 were trapped in the thick fennel stands on the isthmus (Dennis *et al.* 2001). The high percentage of island foxes found in these stands may be due to the fact that the fennel provides foxes with cover from aerial predation by golden eagles. Crooks and Van Vuren (1995) found more foxes in the fennel grasslands than in ravines and patches of scrub oak on the isthmus. As with San Miguel Island, no available data support the idea that island foxes were limited by food availability. Although island foxes (pre-decline) could be found in all vegetative community types occurring on the island, they appear to prefer vegetative communities that provide some cover. As described above, for most of the island foxes' evolutionary history, non-native herbivores were not present on the islands. Because island foxes existed for thousands of years in the more dense vegetation with increased cover that occurred on the island before the introduction of non-native herbivores, removing these species should not affect the long-term conservation of island foxes once the other threats to its continued existence have been removed.

Issue 6: One commenter pointed out that the decrease in the fox population coincided with increased trapping and fox studies by the NPS and other scientists, and that it is possible that humans played a role in the population decline.

Our response: The best available data do not support a causal link between the increased trapping and studies by scientists. In fact, no trapping of island foxes occurred during declines on Santa Catalina and Santa Rosa islands. Surveys that include capture and handling of island foxes are conducted biannually on San Nicolas Island, which has had stable or increasing island fox numbers for approximately a decade. Between 2000 and 2003 (following the decline on Santa Catalina Island), the Catalina Island Conservancy increased capture and handling of island foxes. During this time period, the size of the island fox population has increased.

Issue 7: One commenter asked about the sizes of the fox populations on the Channel Islands prior to the influence of Europeans.

Our response: We have no data on fox numbers on the Channel Islands prior to the influence of Europeans. We do know from the fossil record that foxes existed on the islands; however, this information cannot be used to determine numbers.

Issue 8: One commenter stated that government efforts to rescue island foxes will fail because the foxes are being managed as a ''climax'' species.

Our response: We are not sure what the commenter meant by managing foxes as a ''climax'' species. Island foxes are found in all habitats on the island, including native habitats such as oak woodlands. Our management for island foxes has focused on addressing the primary causes of decline (golden eagles on the northern Channel Islands and canine distemper on Santa Catalina Island) and on captive propagation of island foxes to bolster numbers.

Issue 9: Two commenters disputed the conclusion that the presence of deer on Santa Rosa Island is a threat to the fox, as the deer ''likely'' compete for flowering and fruiting branches of native shrubs. One commenter stated that no scientific evidence is cited to support this assertion.

Our response: Competition between deer and island foxes has not been studied on Santa Rosa Island. In the presence of a healthy island fox population, competition for food resources with deer may occur. Deer have been shown to have a significant browsing effect that reduces the amount of flowering and seed production on the Santa Rosa Island manzanita (*Arctostaphylos confertiflora*) on some study plots (Schreiner *et al.* 2003).

Issue 10: Three commenters pointed out that Santa Rosa Island foxes may have been supported in large part by carrion available from the 300 to 400 feral pigs shot annually, as well as from the normal death of piglets. In addition, carrion from cattle, elk, and deer would have been available to island foxes. The decline of island foxes on Santa Rosa Island corresponded with the removal of pigs from the island.

Our response: Island foxes are omnivorous and do feed upon carrion, when available. No studies of food availability were conducted on Santa Rosa Island during the period of decline; however, environmental conditions should have been similar to those on San Miguel Island, where food availability was ruled out as a cause of decline (Coonan *et al.* 1998; Crowell 2001). Although the decline of island foxes on Santa Rosa Island occurred after pig removal, the best available data concerning island fox declines do not implicate feral pig removal as the cause of the declines (Coonan *et al.* 2000; Roemer *et al.* 2001b and 2002; Coonan 2003). We believe that removing pigs has had a net beneficial effect on island foxes, by removing the food source that supports their main predator, the golden eagle thereby discouraging golden eagles from staying on the islands.

Issue 11: One commenter pointed out that there is some disagreement on which habitats island foxes prefer, and that scrub and woodland habitat exist on Santa Rosa Island, yet no foxes remain.

Our response: The proposed rule states that the island fox is a habitat generalist, occurring in all habitats found on the islands. Some authors have indicated that island foxes prefer areas of diverse topography and vegetation (Von Bloeker 1967; Laughrin 1977; Moore and Collins 1995). Laughrin (1973, 1980) found woodland habitats to support higher densities of island fox due to increased food availability, while Crooks and Van Vuren (1995) found island foxes to prefer fennel grasslands and avoid ravines and scrub oak patches. Because of the generalist nature of the island fox, studies conducted at different times under variable environmental conditions may produce different results. Scrub and woodland habitat only comprise about 5 percent of Santa Rosa Island; the majority of the island is covered by non-native annual grasslands (Clark *et al.* 1990). Although some habitats providing cover do remain on Santa Rosa Island, these habitats have not protected island foxes from golden eagle predation, as no island foxes currently exist in the wild on the island.

Issue 12: Several commenters stated that the island fox decline on Santa

Rosa Island coincided with NPS assumption of the ranch. These commenters recommended further investigation of NPS management as a cause of decline.

Our response: The best available data concerning the island fox decline on Santa Rosa Island points to the golden eagle as the cause of decline (Roemer 1999; Roemer *et al.* 2001b, 2002; Coonan 2003b; Coonan *et al.* in review; Institute for Wildlife Studies unpublished data). We are aware of no information that indicates that NPS management was responsible for the presence of golden eagles on the island. We are also not aware of other data supporting NPS management as a cause of decline. See responses to issues 2, 5 and 6.

Issue 13: Two commenters doubted the importance of golden eagle predation in the island fox declines. One only rarely observed golden eagles on the Santa Rosa Island, while another asked if there have been sightings of numerous successful hunting attempts by golden eagles on island foxes.

Our response: Direct observations of golden eagles on the northern Channel Islands have been rare, even by teams of biologists working on golden eagle removal. However, golden eagles commonly leave behind evidence of island fox carcasses that leaves little doubt as to their involvement. Specific evidence found at numerous fox carcasses implicating golden eagle predation includes plucking spots, golden eagle feathers, talon holes, and carcasses typically left by eagles (evisceration, degloving of limbs (*i.e.*, pulling flesh away from bone as in removing a glove), damage to fragile bones). In addition, numerous island fox bones have been found in golden eagle nests on Santa Cruz and Santa Rosa islands (Latta 2001; B. Latta, pers. comm. 2003), indicating that golden eagles were present on the island before 2000 and preyed upon island foxes.

Issue 14: One commenter stated that golden eagles had been regular visitors to the islands for years and that island foxes had dealt with aerial predators for eons. Also, due to the more nocturnal nature of foxes, they would not be visible when golden eagles were foraging.

Our response: The behavior of the island fox suggests an evolutionary history lacking in predation. As described in the proposed rule, the only known predator of island foxes was the red-tailed hawk (*Buteo jamaicensis*), which preyed only occasionally on young island foxes (Laughrin 1973; Moore and Collins 1995). Although island foxes are primarily nocturnal, they exhibit more diurnal behavior than mainland gray foxes and can commonly be seen during the daytime. Evidence of golden eagle predation at island fox carcass sites, as well as the remains of island foxes found in a nest on Santa Rosa Island, indicate that golden eagles are finding and preying upon island foxes.

Issue 15: One commenter was skeptical that introducing bald eagles (*Haliaeetus leucocephalus*) would assist the island fox situation.

Our response: We acknowledge that the effectiveness of bald eagles in assisting with island fox recovery is uncertain. Restoring bald eagles to the northern Channel Islands may deter future golden eagles from becoming resident and attempting to nest on the islands, especially if the majority of the prey base for the golden eagle is removed. Bald and golden eagles are fairly equally matched in interspecific antagonistic interactions; in most cases, the territory holder will have the advantage (B. Latta, pers. comm. 2001). If bald eagles successfully breed and create territories, they may be able to discourage future colonization by nonterritorial golden eagles. However, our recovery actions for the island fox do not hinge upon the success of bald eagle reintroduction. Removing golden eagles and conditions attracting them to the islands is the singlemost important recovery action for the Santa Cruz, Santa Rosa, and San Miguel island fox and will be implemented regardless of the status of bald eagles on the islands. Unlike golden eagles, which forage on land, bald eagles are primarily marine feeders, and coexisted with island foxes in the past. Remains from an historic bald eagle nest indicate that island foxes constituted less than 0.5 percent of faunal elements found, and these remains were speculated to be scavenged rather than hunted (Collins *et al.* 2003; Paul Collins, Santa Barbara Museum of Natural History, pers. comm. 2003).

Issue 16: Two commenters questioned why the proposed listing rule did not include the San Clemente Island fox and the San Nicolas Island fox subspecies, as these populations also have threats to their continued existence. San Nicolas Island foxes have unusually low genetic variability, increasing their susceptibility to disease. One commenter presented information concerning threats to the San Clemente Island fox from the management program for the San Clemente loggerhead shrike (*Lanius ludovicianus mearnsi*). Another commenter disputed the characterization contained in the proposed rule that the decline of the San Clemente Island fox population was ''slow,'' pointing out that the decline, if continued over time, would probably lead to extinction in the next 100 years.

Our response: We limited our analysis in the proposed rule to the four subspecies on which we were petitioned. The petition included substantial information concerning the threats to these four subspecies. We did not receive a petition for the San Clemente and San Nicolas island subspecies. In addition, because we determined that listing was not needed, we did not make these subspecies candidates in the October 2001 NOR. We will continue to monitor the San Nicolas Island fox and San Clemente Island fox to determine if they warrant listing.

Issue 17: Three commenters stated that the entire island fox species should be listed, as with precipitous declines on 4 of 6 islands where it occurs, it meets the definition of endangered: ''any species which is in danger of extinction throughout all or a significant portion of its range.''

Our response: The Endangered Species Act allows for listing of species, subspecies, or distinct population segments. Because island foxes have subspecific status on each island where they occur, this taxonomic level is the appropriate level upon which to evaluate our listing decisions. As discussed previously, the island foxes on San Clemente Island and San Nicolas Island do not warrant listing under the ESA.

Peer Review

In accordance with our July 1, 1994, Interagency Cooperative Policy for Peer Review in Endangered Species Act Activities (59 FR 34270), we solicited review from five experts in the fields of ecology, conservation, genetics, taxonomy, pathology, and management. Four of these have direct experience with island foxes, while the fifth is a well-known mammalogist. The purpose of such a review is to ensure that listing decisions are based on scientifically sound data, assumptions, and analyses, including input from appropriate experts. Three reviewers sent us letters during the public comment period supporting the listing of the four island fox subspecies. All three provided corrections on minor factual issues, interpretation of data, and citations. One recommended that the entire island fox species be listed, while another recommended further scrutiny and monitoring for the San Clemente Island fox. Their information has been incorporated, as appropriate.

Summary of Factors Affecting the Species

Section 4 of the Endangered Species Act and its implementing regulations (50 CFR part 424) issued to implement the listing provisions of the Act establish procedures for adding species to the Federal Lists. A species may be determined to be an endangered or threatened species due to one or more of the five factors described in section 4(a)(1) of the Act. These factors and their application to the four island fox subspecies are as follows:

A. *The present or threatened destruction, modification, or curtailment of its habitat or range.* Habitat on all islands occupied by island foxes has been altered by a history of livestock grazing, cultivation, and other disturbance. A century and a half of grazing by non-native herbivores, including sheep, goats (*Capra hircus*), rabbits (*Oryctolagus cuniculus*), deer, elk, cattle, pigs, and horses (*Equus caballus*) resulted in substantial impacts to the soils, topography, and vegetation of the islands (Coblentz 1980; Johnson 1980; O'Malley 1994; Peart *et al.* 1994). Damage to native island plants and their habitats on the northern Channel Islands by introduced stock and game animals is discussed in our 1997 listing of 13 endemic island plants as endangered or threatened (62 FR 40954).

Even after the removal of non-native grazers on some islands, habitat recovery is slow (Hochberg *et al.* 1979) and threatened by the spread of non-native plants that became established during the ranching era. These exotic species continue to invade and modify island fox habitat, resulting in lower diversity of vegetation and habitat structure, and reduced food availability. The replacement of native shrub communities by non-native annual grasslands has reduced protective cover for island foxes, making them more vulnerable to predation (Roemer 1999; Coonan *et al.* in review). Annual grasslands also offer fewer food resources to foxes, and the seeds of non-native annual grasses can become lodged in the eyes of island foxes, causing occasional damage or temporary blindness (Laughrin 1977).

In summary, the habitat of island foxes on all islands has been subject to substantial human-induced changes over the past 150 years. Although these changes have resulted in some adverse effects to island foxes described above, they are unlikely to have directly caused the observed declines. However, the habitat changes indirectly contributed to the effects of other factors (*e.g.*, predation) by reducing the amount of vegetative cover available to island foxes.

B. *Overutilization for commercial, recreational, scientific, or educational purposes.* Although island foxes were used in the past for pelts and ceremonial uses by Native Americans (Collins 1991b), island foxes are not currently known to be exploited for commercial, recreational, scientific, or educational purposes.

C. *Disease or predation. Predation.* Recent island fox declines on San Miguel, Santa Cruz, and Santa Rosa islands have been attributed to predation by golden eagles (Roemer 1999; Roemer *et al.* 2001b, 2002; Coonan *et al.* in review). Roemer (1999) linked 19 of 21 documented island fox mortalities on Santa Cruz Island between April 1994 and July 1997 to golden eagles. Most (90 percent) of these mortalities occurred in 18 months between April 1994 and September 1995. On San Miguel Island, 5 of 7 mortalities of radio-collared foxes were attributed to golden eagle predation between 1998 and 1999 (Roemer *et al.* 2001b; Coonan *et al.* in review). No mortality data exist from Santa Rosa Island, but due to its location between Santa Cruz and San Miguel islands, island foxes on Santa Rosa Island likely experienced similar predation pressures from golden eagles.

As island foxes did not evolve with the presence of a large avian predator, they are likely not vigilant towards avian predators, and thus provide an easy target for golden eagles (Roemer *et al.* 2001b). Golden eagle predation continues to be the leading cause of mortality of island foxes on Santa Cruz Island. In 3 years of islandwide radio tracking on the island, 16 of 20 island fox mortalities were attributed to golden eagle predation (Institute for Wildlife Studies, unpublished data). Annual survivorship of Santa Cruz Island foxes, as estimated from radiotelemetry, was 61 percent in 2001 and 70 percent in 2002 (Coonan 2003b). This level of survivorship is below the 80 percent required for an increasing island fox population (Roemer *et al.* in prep.).

The current level of golden eagle activity on the northern Channel Islands is unprecedented (Roemer *et al.* 2002). Golden eagles were known to occasionally visit the islands but never to establish residence (Diamond and Jones 1980; Jones and Collins, in prep.). The first known active golden eagle nest on the Channel Islands was located on Santa Cruz Island in 1999 (Latta 2001), but golden eagles were likely established on the island as early as 1994 (Roemer *et al.* 2001b). Island fox remains, along with the remains of feral piglets, common ravens (*Corvus corax*), Brandt's cormorants (*Phalacrocorax pencillatus*), and western gulls (*Larus occidentalis*), were found in the nest. In September 1999, surveys by the Santa Cruz Predatory Bird Research Group (SCPBRG) identified 12 resident golden eagles, including possibly 5 breeding pairs on Santa Cruz Island.

At the time we published the proposed rule, golden eagles breeding on Santa Cruz Island were thought to ''commute'' to Santa Rosa and San Miguel Islands to feed. On Santa Rosa and San Miguel Islands, eagles find fewer alternative prey species to island foxes (*e.g.*, no feral pigs on Santa Rosa and San Miguel islands as occur on Santa Cruz Island) and foxes have less cover from vegetation to hide them from avian predators (Roemer 1999). However, since the proposed rule was published, we have obtained information that two breeding pairs appeared to have successfully bred on Santa Rosa Island during the period when island fox numbers were declining (Latta 2003). Remains of island foxes, deer fawns, and numerous birds were found during an excavation of one of the nests on Santa Rosa Island, indicating that golden eagles were breeding on the island before island foxes were taken into captivity in 1999 and 2000.

Before golden eagles started using the northern Channel Islands in the 1990s, the only known predator of island foxes was the red-tailed hawk (*Buteo jamaicensis*), which preyed only occasionally on young island foxes (Laughrin 1973; Moore and Collins 1995). The docile and inquisitive nature of the island fox (Laughrin 1977) suggests an evolutionary history lacking predation (Carlquist 1974).

The recent colonization of the northern Channel Islands by golden eagles is likely a combination of two factors: (1) Introduction of exotic mammals on the northern Channel Islands, resulting in a historically unprecedented prey base, and (2) the extirpation of bald eagles from the islands as a result of dichlorodiphenyltrichloroethane (DDT) poisoning. Historically, the small population of vertebrate island fauna would have provided little prey for golden eagles, which rely on a diet of small terrestrial vertebrates. Before the ranching era on the Channel Islands, transient golden eagles landing on the islands would have found little prey to encourage them to establish permanent residence. Furthermore, nesting bald eagles would have discouraged foraging golden eagles from establishing residence by aggressively defending

their already established territories. Bald eagles are represented in the prehistoric fossil record of the northern Channel Islands (Guthrie 1993) and bred there until 1960, when nest failures, as a result of DDT contamination, extirpated them from the northern Channel Islands (Kiff 1980). The northern Channel Islands (Anacapa, Santa Cruz, Santa Rosa, and San Miguel) likely supported more than 14 pairs of bald eagles before their decline (Kiff 1980).

Roemer *et al.* (2001b) modeled time-energy budgets and predation rates of golden eagles on Santa Cruz Island to determine if the precipitous decline in island foxes could be attributed to predation alone. They concluded that the island fox declines on the northern Channel Islands are a consequence of hyperpredation, defined as when the availability of one prey species, that can sustain high predation rates, leads to the extinction of another prey species that becomes an alternate food resource for a shared predator (Courchamp *et al.* 1999). In this case, the large feral pig population provided sufficient prey base for the golden eagle to colonize Santa Cruz Island: A resident golden eagle population could not have been supported by the native terrestrial vertebrate fauna alone (Roemer *et al.* 2001b). Their model indicates that as few as 6 golden eagles could have driven the island fox populations to the current low levels. Between 1999 and the present, 31 golden eagles have been translocated from Santa Cruz Island (Latta 2003). Currently, 8 golden eagles are thought to remain on the islands. Three adults that have bred or attempted breeding in the past are thought to be on Santa Rosa Island, while 3 (3 breeding adults and 2 subadults) remain on Santa Cruz Island.

The remaining golden eagles constitute a substantial threat, seriously jeopardizing the success of releases of captive island foxes on San Miguel and Santa Rosa Island, and preventing recovery of island foxes in the wild on Santa Cruz Island.

Non-native deer and elk on Santa Rosa Island provide a food source that helps golden eagles establish territories and attempt breeding on the island. Fawn remains have been found in a golden eagle nest on Santa Rosa Island (Coonan 2003b), and golden eagles likely feed upon carrion and gut piles from the commercial hunt of elk and mule deer occurring between August and December each year. In addition to the commercial hunt, between 200 and 500 deer are culled annually. The availability of carrion in winter determines whether golden eagles attempt to breed (general data for GEs) (Lockie 1964). Watson *et al.* (1992) found golden eagle densities to be highest in areas where there were abundant dead sheep and/or deer. In one location, golden eagle density declined when deer management was altered in a manner that resulted in reduced carrion availability (Watson *et al.* 1989). Until unnatural prey sources on the islands are eliminated, removal of golden eagles may be temporary, and the continued presence of golden eagles would likely prevent recovery of island foxes. Under the provisions of a settlement agreement between the NPS and the commercial hunt operators, deer and elk will be removed from Santa Rosa Island permanently by 2011, with decreases in both populations slated to begin in 2008.

Golden eagles have not been recorded breeding on San Miguel Island. No tall trees that could support a golden eagle nest exist on this island. However, because empirical evidence linked golden eagle predation to 5 of 7 island fox carcasses discovered in 1998 and 1999 (Roemer *et al.* 2001b; Coonan *et al.* in review), golden eagles breeding on the other two islands must have ''commuted'' to San Miguel Island to feed. The island fox would have been the largest prey item available for these commuting golden eagles, as no larger non-native herbivores were present during the period of decline. Golden eagles have never been recorded breeding on Santa Catalina Island and are not known to be a threat to that subspecies.

To protect island foxes on the northern Channel Islands from further declines, the NPS, the Service, and TNC funded a golden eagle removal program, which began on Santa Cruz Island in August of 1999 and was expanded to include Santa Rosa Island in 2003. Between the fall of 1999 and October 2003, 31 golden eagles were captured and removed from Santa Cruz and Santa Rosa islands, with the majority (29) being captured on Santa Cruz (Latta 2003). Eight golden eagles are thought to remain on Santa Cruz and Santa Rosa Islands.

Due to trap wariness, the abundance of feral pig and other prey, and the harsh topography of Santa Cruz Island, the remaining golden eagles have proven difficult to trap (B. Latta, pers. comm. 2001). Thus, despite these efforts to remove golden eagles from the islands, golden eagle predation continues to be the main cause of mortality of island foxes on Santa Cruz Island and would likely constitute a serious predation threat to any foxes subsequently released from captive breeding programs on Santa Rosa and San Miguel islands. Two captive-born island fox juveniles released to the wild in December 2002 were killed by golden eagles soon after they left rearing pens. Captive-raised foxes may be more vulnerable to predation than wild-raised foxes, and could continue to incur considerable predation with just a few eagles on the islands.

We are currently investigating the feasibility of reintroducing bald eagles to the northern Channel Islands (Valoppi *et al.* 2000). As part of this feasibility study, juvenile bald eagles were released on Santa Cruz Island in 2002 and 2003. Currently, 15 bald eagles inhabit Santa Cruz and Santa Rosa islands (D. Garcelon, in litt. 2003). The feasibility study is being conducted as a pilot project to assess the potential breeding success of bald eagles on the northern Channel Islands, and will include several aspects of monitoring bald eagle movement and exposure to 2, 2-Bis (p-chlorophenyl)-1, 1-dechloroethylene (DDE), the metabolized form of DDT. The presence of territorial golden eagles on the islands may hinder bald eagle reintroduction, because territorial golden eagles may chase away non-nesting bald eagles (B. Latta, pers. comm. 2001). Conversely, the presence of territorial bald eagles on the northern Channel Islands may assist in discouraging transient golden eagles from establishing breeding territories on the islands. However, the success of bald eagle introduction efforts is uncertain, and would take years to discern, due to the long time it takes for bald eagles to reach sexual maturity (4 years or more). Therefore, if reintroduction efforts are successful, bald eagles will not nest on the islands until 2006. Because Santa Cruz Island is large enough for many eagle breeding territories, a large resident bald eagle population would be necessary to be successful in discouraging future colonization by golden eagles from the mainland.

Disease. On Santa Catalina Island, the large, sudden decline in island foxes has been attributed to canine distemper, most likely brought to the island by a domestic dog (Timm *et al.* 2000). The steep and sudden pattern of decline on Santa Catalina Island is typical of a disease outbreak rather than the slower decline pattern seen on the northern Channel Islands from predation (Timm *et al.* 2000). In addition to positive testing for canine distemper in foxes caught on the east end of Santa Catalina Island, the evidence suggesting a disease-related decline versus other causes are: (1) The population decline

on Santa Catalina Island is of a similar magnitude (90 percent) as that on the northern Channel Islands, but occurred within 1 year rather than the steady 6-year decline seen on San Miguel, Santa Cruz, and Santa Rosa Islands; (2) the declines on the northern islands are islandwide, while the geographically restricted western population on Santa Catalina Island has remained relatively healthy; and (3) sick foxes have been seen on Santa Catalina Island but not on the northern islands (G. Roemer, pers. comm. 2000).

Two healthy adult foxes caught on the east end of Santa Catalina Island in 1999 had high antibody titers to canine distemper virus, constituting the first positive records of canine distemper in island fox. A necropsy of one island fox identified the cause of death as canine distemper (Timm *et al.* 2000). No island foxes tested positive for canine distemper in a previous comprehensive serologic survey of all islands (Garcelon *et al.* 1992), nor did any foxes from San Clemente, Santa Cruz, or San Miguel test positive for canine distemper virus during the period (1994 to 1997) of the fox decline on the northern islands (Roemer *et al.* 2001b).

The absence of antibodies to canine distemper virus in any island foxes during these studies implies that, either the virus had never been introduced to the islands, or the species is highly susceptible to the virus and none survive infection. Previous studies had found no evidence of canine distemper in Santa Catalina Island foxes (Garcelon *et al.* 1992), although a recent assay of wild island fox blood samples discovered evidence of previous exposure to canine distemper virus on all islands with wild foxes (Coonan 2003). Although the ramifications of this discovery are not entirely understood, it is now believed that the virus may occasionally affect wild island fox populations, but that some individuals survive (as evident by the existence of survivors with evidence of exposure). Because wild foxes with antibodies against canine distemper virus have immunity, and thus protection against the next outbreak, a greater degree of protection could be conferred to wild populations by vaccinating wild foxes against canine distemper virus. As the closely related mainland gray fox is highly susceptible to canine distemper virus, island foxes likely have high susceptibility as well (Garcelon *et al.* 1992). This hypothesis is supported by the deaths of two island foxes in zoos from the inappropriate administration of modified live canine distemper vaccine (Linda Munson, University of California at Davis, pers. comm. 2001).

Although the outbreak of canine distemper that precipitated the sudden decline of island foxes on Santa Catalina Island has apparently run its course, the Santa Catalina Island subspecies remains susceptible to another outbreak of the disease due to the continued exposure to domestic dogs that may transmit the virus.

Administration of an experimental canine distemper vaccine developed for ferrets (another species highly susceptible to canine distemper) to some island foxes captured on Santa Catalina Island has had promising preliminary results (S. Timm, pers. comm. 2001). With further testing, the vaccine may prove useful for protecting island foxes on all islands from future canine distemper outbreaks. One hundred thirty-eight island foxes in captivity and in the wild on Santa Catalina Island have been administered vaccinations and booster shots during 2001 and 2002. Currently, 95 percent of island foxes on the west end and 45 percent of foxes on the east end of Santa Catalina Island have been vaccinated against canine distemper virus (Kohlmann *et al.* 2003). The Island Fox Conservation Working Group recommends expanding the canine distemper vaccination program to other islands (Coonan 2003b).

A recent serosurvey of island foxes showed that wild foxes on Santa Catalina, San Nicolas, San Clemente, and Santa Cruz Islands had evidence of exposure to canine distemper virus (Fritcher *et al.* in prep.). This result was surprising given the results of an earlier study that did not find evidence of canine distemper virus exposure (Garcelon *et al.* 1992). San Nicolas and Santa Cruz Islands had the highest canine distemper virus antibody prevalence. Given the high numbers of island foxes on San Nicolas Island, the canine distemper virus appears to not have the same effect as on Santa Catalina Island, perhaps indicating that the different islands were exposed to viruses of differing morbidity (Fritcher *et al.* in prep.).

All island fox populations have been surveyed for other canine diseases and parasites. Although island foxes are known to carry antibodies for a variety of canine diseases, none of these could explain the type or geographic distribution of the observed decline on the northern Channel Islands (Garcelon *et al.* 1992; Coonan *et al.* 2000; Roemer 1999; Roemer *et al.* 2001b). Although pathology work has not identified a specific cause of population decline (with the exception of canine distemper virus on Santa Catalina Island), some underlying diseases or parasites may also affect population viability or individual health (L. Munson, pers. comm. 2001). The most common antibodies found in island foxes are canine adenovirus and canine parvovirus (Garcelon *et al.* 1992; Fritcher *et al.* in prep.). Canine herpesvirus, coronavirus, leptospirosis, and toxoplasmosis have been recorded at low levels (Garcelon *et al.* 1992; Coonan *et al.* 2000; Roemer *et al.* 2001b). The relative occurrence of canine adenovirus was similar before and after the population crashes on these islands, while antibodies for parvovirus were detected from a small number of samples from 1994, but not detected in 1995 or 1997 samples (Coonan *et al.* 2000). More recent information shows an increase in the prevalence of parvovirus on Santa Catalina Island in 2001 and 2002, a period of time when that population was beginning to recover from canine distemper (Fritcher *et al.* in prep.). Canine parvovirus has been found in other wild canids and can result in mortality of pups, prior to emergence from the den (Garcelon *et al.* 1992). Canine adenovirus may be typically present in the island fox populations (Garcelon *et al.* 1992), with little effect on individual health. However, because both Santa Catalina and Santa Cruz islands have never been exposed to canine adenovirus (Garcelon *et al.* 1992; Fritcher *et al.* in prep.), these subspecies are naïve to the virus and would be more susceptible to exposure to adenovirus.

Antibodies to canine heartworm (*Dirofilaria immitis*) have been documented in four island fox subspecies (San Miguel, Santa Cruz, Santa Rosa, and San Nicolas island foxes) (Roemer *et al.* 2000). Despite the high seroprevalence (*i.e.*, occurrence) of heartworm in these populations (between 58 and 100 percent in 1997), heartworm is not thought to be responsible for the decline of island foxes for the following reasons: (1) Seroprevalence on San Nicolas Island, where the population is stable, is higher than on Santa Cruz Island, where the population is decreasing (Roemer *et al.* 2001b); (2) heartworm antibodies were present in all four subspecies in or before 1988, pre-dating the population declines; (3) seroprevalence in the San Miguel population was high in 1994, when densities on that island reached the highest levels ever recorded for island foxes; and (4) necropsy results have found few adult worms in the hearts of island foxes and no evidence of heartworm disease (Roemer 1999). However, heartworm may have

contributed to mortality in older foxes (Roemer *et al.* 2001b), exacerbating the conservation crisis for the island fox.

Necropsies performed at the University of California at Davis have detected an unusually high degree of thyroid atrophy (characterized by a complete absence of colloid in the thyroid gland) in island foxes from San Clemente, Santa Catalina, San Nicolas, and San Miguel Islands (L. Munson, pers. comm. 2001). The cause of thyroid atrophy in island foxes has yet to be investigated; thyroid atrophy in other species has been linked to high levels of polychlorinated biphenyls (PCBs). It is unclear how thyroid atrophy is affecting fox populations (L. Munson, pers. comm. 2001). Pathology work on 89 foxes has also detected an increased prevalence of emaciation (20 percent pre-1994; 47 percent post-1994); it is unknown why increased emaciation has occurred.

In summary, we have concluded that disease and predation under Factor C result in substantial extinction risk for four subspecies of island fox. Specifically, predation of island foxes by golden eagles was directly responsible for the decline of island foxes on Santa Cruz, Santa Rosa, and San Miguel Islands, while an outbreak of canine distemper virus was directly responsible for the decline of the Santa Catalina Island fox.

D. *The inadequacy of existing regulatory mechanisms.* The primary causes of the decline of the island fox are unprecedented predation by golden eagles and the rapid transmission of canine distemper through the Santa Catalina Island subspecies. Federal, State, and local laws have not been sufficient to prevent past and ongoing losses of island foxes.

In 1971, the State of California listed the island fox as State-rare (a designation later changed to threatened), which means that it may not be taken without a special (*i.e.*, scientific collecting) permit (California Code of Regulation, Title 14, Section 41) or an incidental take permit issued pursuant to section 2081 of the California Endangered Species Act. However, this protection applies generally only to actual possession or intentional killing of individual animals, or actual death of individual animals incidental to otherwise lawful activity. State law does not require Federal agencies to avoid or compensate for impacts to the island fox and its habitat. There are currently no State regulatory mechanisms designed to protect island foxes on federally managed lands, including San Miguel, Santa Rosa, and Santa Cruz Islands.

Federal law governs the management of NPS (San Miguel, Santa Cruz, and Santa Rosa islands) and Navy (San Miguel Island) lands, including the National Environmental Policy Act (NEPA), the Endangered Species Act, the National Park Service Organic Act, and the Marine Mammal Protection Act. Many federally listed plant and animal species, including 14 listed plants, the brown pelican (*Pelecanus occidentalis*), the southern sea otter (*Enhydra lutris nereis*), the island night lizard (*Xantusia riversiana*), and the western snowy plover (*Charadrius alexandrinus nivosus*), occur on the Channel Islands. NPS management is further dictated by Department of the Interior policies and NPS policies and guidelines, including NPS guidelines for natural resources management (NPS 1991), and the Channel Islands National Park Management Plan (NPS 1985). Both the NPS and the Navy have adequate authority to manage the land and activities under their administration to benefit the welfare of the island fox. The NPS developed a recovery strategy for island foxes on the northern Channel Islands to guide their recovery options. This strategy contains many elements of the recovery plans outlined in section 4 of the Act.

The NPS has implemented portions of their recovery strategy to prevent the extinction of the island foxes in the near term. Despite the best efforts of the NPS, the populations have significantly declined in recent years such that on San Miguel, no foxes remain in the wild, on Santa Rosa, there are likely no foxes in the wild, on Santa Cruz, approximately 68 foxes remain in the wild, and on Santa Catalina, approximately 215 foxes remain in the wild.

Because the number of foxes on San Miguel, Santa Rosa, and Santa Cruz islands declined to extremely low numbers as a result of predation by golden eagles, the NPS and The Nature Conservancy captured the remaining individuals and initiated a captive breeding program. Captive breeding efforts prevented the almost assured extinction of the San Miguel and Santa Rosa island foxes, but the existence of animals bred in captivity alone is not sufficient to ensure recovery; there must be successful reintroduction of the island foxes to the wild. Although captive breeding has been conducted for approximately three years, and the number of island foxes in captivity has increased, this has not resulted in a substantial reduction in the extinction risk for the fox, as island fox releases have either not occurred (San Miguel Island), have been unsuccessful (Santa Cruz Island) or the results are not yet determinable (Santa Rosa Island). While we have been working with NPS to remove the threats to island foxes from golden eagle predation and disease, the success of these efforts and captive breeding and feral pig removal remains uncertain. Steps are underway to understand the prevalence of disease and the potential use of vaccination. However, even with the ongoing conservation efforts, the low population numbers and uncertainty of the effectiveness of these efforts leave the island fox in danger of extinction.

San Miguel Island is under the jurisdiction of the Navy, but the NPS assists in managing the natural, historic, and scientific values of San Miguel Island through a Memorandum of Agreement (MOA) originally signed in 1963, an amendment signed in 1976, and a supplemental Interagency Agreement (IA) signed in 1985. The MOA states that the ''paramount use of the islands and their environs shall be for the purpose of a missile test range, and all activities conducted by or in behalf of the Department of the Interior on such islands, shall recognize the priority of such use'' (Navy 1963). The Navy currently does not actively use San Miguel Island. In addition to San Miguel, Santa Cruz and Santa Rosa islands also lie wholly within the Navy's Pacific Missile Test Center (PMTC) Sea Test Range. The 1985 IA provides for PMTC to have access and use of portions of those islands, for expeditious processing of any necessary permits by NPS, and for mitigation of damage of park resources from any such activity (Navy 1985). Should the Navy no longer require use of the islands, NPS would seek authorization for the islands to be preserved and protected as units within the NPS system (Navy 1976). To date, conflicts concerning protection of sensitive resources on San Miguel Island have not occurred. The Navy contributed $100,000 to island fox conservation efforts on San Miguel Island in 2000 and 2001.

On islands managed by Federal agencies, prohibitions against bringing domestic pets to the islands exist. These prohibitions are difficult to enforce and violations are known to occur. Boaters have been observed bringing pets onshore to all three northern Channel Islands with island fox populations. On Santa Catalina Island, health certificates or quarantines are not necessary to bring domestic pets to the islands, exposing island foxes to increased risk of disease. On Santa Rosa Island, a ranching enterprise operating under a special use permit from the NPS is allowed to have ranch dogs on the island provided that

the dogs have proof of vaccination in compliance with Santa Barbara County regulations, which requires only rabies shots.

Federal protection of golden eagles by the Bald and Golden Eagle Protection Act of 1962, as amended, has increased the golden eagle population on mainland California (Brian Walton, SCPBRG, pers. comm. 2000). As a result, golden eagles have expanded their range in order to establish breeding territories. The protections afforded golden eagles limit management alternatives to protect island foxes. Lethal removal of golden eagles would require a depredation permit from the Service. Such a permit would allow golden eagles to be taken by firearms, traps, or other suitable means, except by poison or from aircraft (50 CFR 22.23(b)(1)). The regulatory restrictions on taking golden eagles limit the effectiveness of golden eagle removal, as the very steep topography on Santa Cruz Island makes lethal removal of golden eagles from the ground infeasible.

The golden eagle is considered a fully protected species by the State of California (California Fish and Game Code, section 3511). Fully protected species may not be taken or possessed at any time, and no licenses or permits may be issued for their take except for collecting these species for necessary scientific research and relocation of the bird species for the protection of livestock. However, on October 9, 2003, this law was amended by SB412, which allows the California Department of Fish and Game to authorize the take of fully protected species for scientific research, including research on recovery for other imperiled species. Therefore, the State law no longer prohibits take of golden eagles for the purpose of recovering the island fox if the appropriate authorization is granted.

California State law (Food and Agricultural Code 31752.5) prohibits lethal control of feral cats unless cats are held for a minimum of six days. This law prevents the Catalina Island Conservancy from taking steps to eradicate feral cats on the island, as it does not have adequate facilities to hold cats (see Factor E).

In summary, the existing regulatory mechanisms have not prevented the steep declines of the four island fox subspecies and will not ensure their recovery. One Federal law (the Bald and Golden Eagle Protection Act) and two State laws (California Fish and Game Code, section 3511, and Food and Agricultural Code 31752.5) have delayed or precluded the implementation of needed recovery actions for island foxes. Despite current efforts, the island foxes meet the definition of endangered.

E. *Other natural or manmade factors affecting its continued existence.* Several other factors, including competition from introduced species and stochastic environmental factors, may have negative effects on island foxes and their habitats.

Competition with feral cats. CDFG, in recommending the retention of the threatened classification of the island fox under State law, cited competition with feral cats on Santa Catalina, San Nicolas, and San Clemente Islands (CDFG 1987). The effects of cats on island foxes are unknown and may differ among islands. Feral cats outweigh island fox by an average of 2 to 1 and may negatively affect island foxes by direct aggression, predation on young, disease transmission, and competition for food resources (Laughrin 1978). Island fox population decreases on San Nicolas Island were accompanied by a concomitant increase in feral cat populations (Laughrin 1978). The presence of feral cats increases the risk of a transfer of infectious disease to island foxes (Roelke-Parker *et al.* 1996). Feral cats have been found to displace island foxes from habitats on San Nicolas Island (Kovach and Dow 1985). As has been seen on San Nicolas and San Clemente islands, feral cats are extremely difficult to eradicate, requiring ongoing yearly programs to keep numbers controlled (Phillips and Schmidt 1997). No feral cat control exists on Santa Catalina Island due to local ordinances and resistance to lethal control from the residents of the island.

Lack of genetic variability. As a population becomes genetically homogenous, its susceptibility to disease, parasites, and extinction increases (O'Brien and Evermann 1988) and its ability to evolve and adapt to environmental change is diminished (Templeton 1994). The four island fox subspecies that have suffered large population declines could be at risk of having reduced genetic variability. Such population or demographic ''bottlenecks'' (severe crashes in population resulting in abnormally low numbers) may result in reductions in genetic variation, depending on the size of the bottleneck and the growth rate of the population afterward (Meffe and Carroll 1997). In fact, at least one previously variable microsatellite locus is now fixed (*i.e.*, one DNA marker no longer exhibits any genetic variability) in the San Miguel Island captive population (Gray *et al.* 2001). The effect of population bottlenecks on island fox genetic variation is demonstrated by an example from San Nicolas Island. The San Nicolas Island fox has an unusually low degree of genetic variability (Gilbert *et al.* 1990; Wayne *et al.* 1991; Goldstein *et al.* 1999), which may have been due to a major historical bottleneck (Gilbert *et al.* 1990). A lack of genetic variability can correspond to a reduced resistance to disease or physical abnormalities due to inbreeding. Due to the low numbers of individuals in the captive breeding programs and the lack of wild populations on San Miguel and Santa Rosa Islands, low genetic variability threatens the island foxes from these islands. The threat also exists on Santa Cruz and Santa Catalina islands, although the bottleneck was less severe on these islands.

Stochastic environmental and population factors. Island endemic species have high extinction risk due to isolation and small population sizes (MacArthur and Wilson 1967). Because the island fox is restricted to small islands, it is more subject to the effects of environmental perturbations and decline of birth rates due to low densities (*i.e.*, Allee effects, Allee 1931) than species occurring on the mainland. Reduced population size exposes the island fox to both catastrophic environmental events (*e.g.*, drought, wildfire, or disease) and demographic factors (*e.g.*, skewed sex ratios) that could cause or hasten extinction. Wildfires could affect island foxes by reducing food availability, altering vegetation, or resulting in the death of individual foxes (especially pups during the denning season). On San Miguel and Santa Rosa Islands, which no longer have wild populations, the concentration of all island foxes into small geographic areas increases the vulnerability of these subspecies to disease outbreaks. The extremely small captive island fox population sizes on San Miguel, Santa Rosa, and Santa Cruz Islands puts those populations at risk of extinction due to demographic factors as well. For example, 4 of the 14 original island foxes brought into the captive propagation program on San Miguel Island were male. Skewed sex ratios may hinder recovery efforts for the species, because island foxes typically form long-standing pair bonds and unpaired females have never been recorded to raise a litter.

Road mortalities. The fearless nature of island foxes, coupled with relatively high vehicle traffic on the southern Channel Islands, results in a number of vehicle collisions each year on islands with human populations (Wilson 1976; Garcelon 1999; G. Smith, unpublished data). For example, on San Nicolas Island where vehicle collisions are the largest documented mortality source, an

average of 13 fox carcasses attributed to vehicle collisions are recovered each year (G. Smith, unpublished data). On San Clemente Island, vehicle strikes claimed a minimum of 26 foxes between the years 1991 and 1995 (Garcelon 1999), while in earlier times, Wilson (1976) estimated that approximately 25 island foxes were killed each year. Although no records have been kept, vehicle collisions likely cause a number of island fox deaths on Santa Catalina Island each year. Vehicle collisions on the northern Channel Islands are uncommon due to low traffic volume and the rough unpaved nature of most roads.

In summary, other threats analyzed under Factor E either directly contribute or may contribute to the decline of island foxes. However, the threat of roadkill alone is unlikely to have been a cause of decline, and the reduced genetic variability and the increased probability of extinction due to stochastic factors are risks that have emerged as a result of the decline rather than a cause.

We have carefully assessed the best scientific and commercial information available regarding the past, present, and future threats faced by these taxa in determining to propose this rule. The precipitous declines of the four island fox subspecies addressed in this rule are primarily due to predation from golden eagles (on San Miguel, Santa Rosa, and Santa Cruz islands) or canine distemper virus (on Santa Catalina Island), as well as indirect and direct effects of the introduction of non-native mammals on all islands. Other threats include disease and competition from feral cats, road mortality on Santa Catalina Island, and natural events, all of which could diminish or destroy the small extant populations. Existing regulatory mechanisms are inadequate to protect these taxa. See Tables 1–4 for summaries of the status, major threats, conservation actions, and effectiveness for each of the four subspecies. Based on our evaluation, the San Miguel Island fox, Santa Cruz Island fox, Santa Rosa Island fox, and Santa Catalina Island fox fit the definition of endangered as defined in the Act.

Critical Habitat

Critical habitat is defined in section 3 of the Act as: (i) The specific areas within the geographical area occupied by a species, at the time it is listed in accordance with the Act, on which are found those physical or biological features (I) essential to the conservation of the species and (II) that may require special management consideration or protection and, (ii) specific areas outside the geographical area occupied by a species at the time it is listed in accordance with the provisions of section 4 of the Act, upon a determination by the Secretary that such areas are essential for the conservation of the species. ''Conservation'' means the use of all methods and procedures needed to bring the species to the point at which listing under the Act is no longer necessary.

TABLE 1.—SUMMARY OF STATUS, MAJOR THREAT, CONSERVATION ACTIONS, AND THEIR EFFECTIVENESS FOR THE SAN MIGUEL ISLAND FOX

SAN MIGUEL ISLAND FOX

[0 = Number of foxes in wild; 38 = Number of foxes in captivity; 450 = Number of foxes in 1994]

Major threat causing decline	Conservation action	Assess effectiveness
Predation by golden eagles	Capture island foxes for sanctuary from predation	Successful in preventing the near-term extinction of the San Miguel Island fox.
	Implement captive breeding for augmentation of population.	Captive breeding has been successful in maintaining and increasing the captive population. However, there are inherent problems with captive breeding (*e.g.*, disease, captive stress syndrome resulting in mortality, low productivity, *etc.*)
	Reintroduce foxes from captive breeding into the wild ..	This effort has not been implemented on San Miguel Island due to continued threat of predation by golden eagles. The reintroduction program will be experimental, and there are inherent uncertainties that may affect its success (*e.g.*, inexperience of captive-born animals).
	Decrease the threat of predation from golden eagles by: (a) Removing golden eagles from the northern channel islands; and (b) Removal of feral pigs from Santa Cruz Island so that golden eagles are not sustained or attracted to the northern Channel Islands.	Unsuccessful to date, although see (b) below. (a) Eight golden eagles remain on Santa Cruz and Santa Rosa islands. This is larger than the number expected to cause extinction of island foxes in 7–10 years. Eagles from those islands are transient visitors to San Miguel Island. Golden eagles continue to be the singlemost important threat. (b) This action is proposed to begin being implemented in summer/fall 2004, and will take 4–6 years to complete.

Summary: The island fox population on San Miguel Island has decreased by over 80% since 1994. Currently, removing golden eagles from the northern Channel Islands is the single-most important recovery action, and these efforts have not been successful to date. Reintroduction of foxes on San Miguel Island has not been implemented due to the threat of predation by golden eagles. Captive breeding and reintroduction programs are expensive, and long-term funding is not assured.

TABLE 2.—SUMMARY OF STATUS, MAJOR THREAT, CONSERVATION ACTIONS, AND THEIR EFFECTIVENESS FOR THE SANTA ROSA ISLAND FOX

SANTA ROSA ISLAND FOX

[6–7 = Number of reintroduced foxes; 56 = Number of foxes in captivity; >1,000 = Number of foxes in 1994]

Major threat causing decline	Conservation action	Assess effectiveness
Predation by golden eagles	Capture island foxes for sanctuary from predation	Successful in preventing the extinction of the Santa Rosa Island fox in the near term.
	Implement captive breeding for augmentation of population.	Captive breeding has been successful in maintaining and increasing the captive population. However, there are inherent problems with captive breeding (*e.g.*, disease, captive stress syndrome resulting in mortality, low productivity, *etc.*).
	Reintroduce foxes from captive breeding into the wild ..	This program is experimental. Eight foxes released in 2003, 1 and possibly 2 of which were killed by golden eagles. If one more fox is killed by an eagle, the remainder will be recaptured and returned to captivity to avoid further losses. Furthermore, there are inherent uncertainties that may affect the success of reintroduction programs (*e.g.*, inexperience of captive-born animals).
	Decrease the threat of predation from golden eagles by: (a) Removing golden eagles from the northern channel islands; (b) Removing feral pigs so that golden eagles are not sustained or attracted to northern Channel Islands; and (c) Managing deer and elk hunts on Santa Rosa Island to reduce availability of carcasses as food source for golden eagles.	Unsuccessful to date, although see (b) below. (a) Eight golden eagles remain on Santa Cruz and Santa Rosa islands. This is larger than the number expected to cause extinction of island foxes in 7–10 years. Golden eagles continue to be the single most important threat. (b) This action is proposed to begin being implemented in summer/fall 2004, and will take 4–6 years to complete. (c) Park Service and permittee working cooperatively for changes in operations. By current agreement, reduction in deer and elk numbers will occur by 2008 and animals eliminated by 2011.

Summary: The island fox population on Santa Rosa Island has decreased by approximately 95% since 1994. Currently, removing golden eagles from the northern Channel Islands is the single-most important recovery action, and these efforts have not been successful to date. Predation by golden eagles continues to be the leading cause of mortality of island foxes in the wild on Santa Rosa Island. Captive breeding and reintroduction programs are expensive, and long-term funding is not assured.

TABLE 3.—SUMMARY OF STATUS, MAJOR THREATS, CONSERVATION ACTIONS, AND THEIR EFFECTIVENESS FOR THE SANTA CRUZ ISLAND FOX

SANTA CRUZ ISLAND FOX

[~70 = Number of foxes in wild; 40 = Number of foxes in captivity; 1,300 = Number of foxes pre-decline]

Major threat causing decline	Conservation action	Assess effectiveness
Predation by golden eagles	Capture island foxes for sanctuary from predation	Successful in preventing the extinction of the Santa Cruz Island fox.
	Implement captive breeding for augmentation of population.	Captive breeding has been successful in maintaining and increasing the captive population. However, there are inherent problems with captive breeding (*e.g.*, disease, captive stress syndrome resulting in mortality, low productivity, *etc.*).
	Reintroduce foxes from captive breeding into the wild ..	This effort is experimental and unsuccessful to date. Five of nine foxes released in winter 2003 were killed by golden eagles. The remainder were recaptured and returned to captivity to avoid further losses. Furthermore, there are inherent uncertainties that may affect the success of reintroduction programs (*e.g.*, inexperience of captive-born animals).

TABLE 3.—SUMMARY OF STATUS, MAJOR THREATS, CONSERVATION ACTIONS, AND THEIR EFFECTIVENESS FOR THE SANTA CRUZ ISLAND FOX—Continued

SANTA CRUZ ISLAND FOX

[~70 = Number of foxes in wild; 40 = Number of foxes in captivity; 1,300 = Number of foxes pre-decline]

Major threat causing decline	Conservation action	Assess effectiveness
	Decrease the threat of predation from golden eagles by: (a) Removing golden eagles from the northern channel islands; and (b) Removing feral pigs from Santa Cruz Island so that golden eagles are not sustained or attracted to northern Channel Islands.	Unsuccessful to date, although see (b) below. (a) Eight golden eagles remain on Santa Cruz and Santa Rosa islands. This is larger than the number expected to cause extinction of island foxes in 7–10 years. Golden eagles continue to be the singlemost important threat. (b) This action is proposed to begin being implemented in summer/fall 2004, and will take 4–6 years to complete.

Summary: The island fox population on Santa Cruz Island has decreased by approximately 90% since 1994. Currently, removing golden eagles from the northern Channel Islands is the single-most important recovery action, and these efforts have not been successful to date. Predation by golden eagles continues to be the leading cause of mortality of island foxes in the wild on Santa Cruz Island. Captive breeding and reintroduction programs are expensive. Seventy-five percent of Santa Cruz Island is owned by the Nature Conservancy. Long-term funding is not assured.

TABLE 4.—SUMMARY OF STATUS, MAJOR THREATS, CONSERVATION ACTIONS, AND THEIR EFFECTIVENESS FOR THE SANTA CATALINA ISLAND FOX

SANTA CATALINA ISLAND FOX

[200 = Number of foxes remaining in wild; 40? = Number of foxes in captivity; 1,200 = Number of foxes in 1998]

Major threat causing decline	Conservation action	Assess effectiveness
Disease	Remove/reduce causes of future disease transmission by: (a) Requiring vaccinations for animals coming to the island, (b) Removing feral cats, which act as vectors for disease.	These measures have not been implemented, and we don't know how successful they will be (*i.e.*, if additional measures are needed).
	Vaccinate wild foxes for canine distemper virus (CDV)	Effective for strain of CDV that caused decline. Not effective against other strains.
	Use captive breeding to augment populations	Captive breeding was successful in the short term following the decline. Because reproductive rates and survival are currently similar to those in wild, captive breeding is being phased out.

Summary: The island fox population on Santa Catalina Island has decreased by 80%. Two of the symptoms of the threat (*i.e.*, low population numbers, immunity to canine distemper) have been successfully addressed by captive breeding and vaccination of wild foxes from the canine distemper virus. However, the threat of disease itself has not been addressed, and thus the population continues to be susceptible to catastrophic disease outbreaks. This risk is especially heightened now due to the low numbers of Santa Catalina Island foxes relative to historical population sizes. The following three actions need to be implemented in the future to recover the Santa Catalina Island fox: (1) Work with residents of Catalina Island to have pets receive appropriate vaccinations; (2) work with boat concessionaires to require proof of vaccination for any pets coming to the island in the future; and (3) develop educational materials to inform island residents and visitors of the threats to island foxes from disease and measures they can implement to assist in protecting foxes.

Section 4(a)(3) of the Act, as amended, and implementing regulations (50 CFR 424.12) require that, to the maximum extent prudent and determinable, the Secretary designate critical habitat at the time the species is determined to be endangered or threatened. Our regulations (50 CFR 424.12(a)(1) state that the designation of critical habitat is not prudent when one or both of the following situations exist—(1) The species is threatened by taking or other human activity, and identification of critical habitat can be expected to increase the degree of threat to the species, or (2) such designation of critical habitat would not be beneficial to the species.

In the case of these subspecies, designation of critical habitat would not be expected to increase the threats to the subspecies and may provide some benefits. The primary regulatory effect of critical habitat is the section 7 requirement that agencies refrain from taking any action that destroys or adversely modifies critical habitat. While a critical habitat designation for habitat currently occupied by this species would not be likely to change the section 7 consultation outcome because an action that destroys or adversely modifies such critical habitat would also be likely to result in jeopardy to the species, there may be instances where section 7 consultation would be triggered only if critical habitat is designated. Examples could include unoccupied habitat or occupied habitat that may become unoccupied in the future. Designating critical habitat may also produce some educational or informational benefits. Therefore, designation of critical habitat is prudent for the San Miguel, Santa Rosa, Santa Cruz, and Santa Catalina island foxes.

Because the designation of critical habitat is prudent for the San Miguel, Santa Rosa, Santa Cruz, and Santa Catalina Island foxes, we will under the terms of the settlement in *CBD* v. *Williams et al*, submit a proposed designation for publication on or by October 1, 2004, followed by a final determination submitted for publication on or by November 1, 2005. Section 4(b)(6)(C)(I) of the ESA states that final listing determinations may be issued without critical habitat designations

when it is essential that such determinations be promptly published.

Available Conservation Measures

Conservation measures provided to species listed as endangered or threatened under the Endangered Species Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain practices. Recognition through listing encourages public awareness and results in conservation actions by Federal, State, and local agencies, private organizations, and individuals. The Act provides for possible land acquisition and cooperation with the States and requires that recovery actions be carried out for all listed species. Funding may be available through section 6 of the Act for the State to conduct recovery activities. Recovery planning and implementation, the protection required of Federal agencies and the prohibitions against certain activities involving listed animals are discussed, in part, below.

The primary purpose of the Act is the conservation of endangered and threatened species and the ecosystems upon which they depend. The ultimate goal of such conservation efforts is the recovery of these listed species, so that they no longer need the protective measures of the Act. Subsection 4(f) of the Act requires the Service to develop and implement plans for the conservation of endangered and threatened species (''recovery plans''). The recovery process involves halting or reversing the species' decline by addressing the threats to its survival. The goal of this process is to restore listed species to a point where they are secure, self-sustaining and functioning components of their ecosystems, thus allowing delisting.

Recovery planning, the foundation for species recovery, includes the development of a recovery outline as soon as a species is listed, and later, preparation of draft and final recovery plans, and revision of the plan as significant new information becomes available. The recovery outline—the first step in recovery planning—guides the immediate implementation of urgent recovery actions, and describes the process to be used to develop a recovery plan. The recovery plan identifies site specific management actions that will achieve recovery of the species, measurable criteria that determine when a species may be downlisted or delisted, and methods for monitoring recovery progress. Recovery teams, consisting of species experts, federal and state agencies, non-government organizations, and stakeholders, are often established to develop recovery plans. When completed, a copy of the recovery outline, draft recovery plan, or final recovery plan will be available from our office (*see* **ADDRESSES**) or from our website (*http://endangered.fws.gov*).

Implementation of recovery actions generally requires the participation of a broad range of partners, including other Federal agencies, States, non-governmental organizations, businesses, and private landowners. Examples of recovery actions include habitat restoration (restoration of vegetation, hydrology, *etc.*), research, captive propagation and reintroduction, and outreach and education. The recovery of many listed species cannot be accomplished solely on our National Wildlife Refuges, National Forests, National Parks, and other Federal lands. Because many species occur primarily or solely on private lands, achieving recovery of these species requires cooperative conservation efforts on private lands. The island fox occurs primarily on federal land.

The funding for recovery actions can come from a variety of sources, including Federal budgets, State programs, and cost share grants for non-federal landowners, the academic community, and non-governmental organizations. Information on the Service's grant programs that can aid in species recovery can be found at: *http://endangered.fws.gov/grants/index.html*.

The NPS in conjunction with FWS has developed a recovery strategy for island foxes on the northern Channel Islands (Coonan 2003a) that provides the basis for recovery actions on San Miguel, Santa Rosa, and Santa Cruz islands. Essential recovery actions on these islands will likely include: Complete removal of golden eagles, maintenance of captive breeding facilities, keeping a studbook to inform captive breeding pairings, releases of island foxes into the wild, monitoring wild populations, developing and implementing vaccination protocols, and conducting public outreach and education.

On Santa Catalina Island, essential recovery actions will likely include implementing measures to reduce the transmission of canine diseases to the island, vaccinating wild foxes for protection against canine distemper, monitoring wild populations, exploring the role that non-native deer and bison have on island fox habitats, and controlling feral cats to reduce competition and disease transmission risk.

We will be working with the NPS, CDFG, TNC, the Navy, the Catalina Island Conservancy, academic researchers, private individuals, and environmental groups to implement these recovery actions for the island fox.

Please let us know if you are interested in participating in recovery efforts for the San Miguel, Santa Rosa, Santa Cruz, and Santa Catalina island foxes (*see* **FOR FURTHER INFORMATION CONTACT**). Additionally, we invite you to submit any further information on the species whenever it becomes available and any information you may have for recovery planning purposes (*see* **ADDRESSES**).

Section 7(a) of the Act, as amended, requires Federal agencies to evaluate their actions with respect to any species that is proposed or listed as endangered or threatened and with respect to its critical habitat, if any is designated. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR part 402. Section 7(a)(4) of the Act requires Federal agencies to confer with the Service on any action that is likely to jeopardize the continued existence of a species proposed for listing or result in destruction or adverse modification of proposed critical habitat. If a species is subsequently listed, section 7(a)(2) of the Act requires Federal agencies to ensure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of the species or destroy or adversely modify its critical habitat. If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency must enter into consultation with the Service, under section 7(a)(2) of the Act.

San Miguel and Santa Rosa Islands are entirely federally-owned and managed. Although 75 percent of Santa Cruz Island is owned by TNC, the entire island lies within the Channel Islands National Park and Channel Islands National Marine Sanctuary, and TNC and the NPS coordinate many of the resource management activities occurring on the island. Santa Catalina Island is the only island fox locality that does not have substantial Federal involvement. Federal agency actions that may affect the San Miguel, Santa Rosa, Santa Cruz, and Santa Catalina island foxes and may require conference or consultation with us include, but are not limited to, those within the jurisdiction of the U.S. Army Corps of Engineers, the Navy, the NPS, and the National Oceanic and Atmospheric Administration.

The listing of the San Miguel, Santa Rosa, Santa Cruz, and Santa Catalina island foxes as endangered would provide for the development and implementation of a recovery plan for

these taxa. Such a plan will bring together Federal, State, and local efforts for the conservation of these taxa. The plan will establish a framework for agencies to coordinate activities and to cooperate with each other in conservation efforts. The plan will set recovery priorities and estimate the costs of the tasks necessary to accomplish the priorities. It will also describe site-specific management actions necessary to achieve the conservation of the San Miguel, Santa Rosa, Santa Cruz, and Santa Catalina Island foxes. Additionally, pursuant to section 6 of the Act, we would be able to grant funds to the State for management actions promoting the protection and recovery of the San Miguel, Santa Rosa, Santa Cruz, and Santa Catalina Island foxes.

The Act and its implementing regulations set forth a series of general prohibitions and exceptions that apply to all endangered wildlife. The prohibitions in section 9(a)(2) of the Act, implemented by 50 CFR 17.21 for endangered species, make it illegal for any person subject to the jurisdiction of the United States to take (includes harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt any of these), import or export, ship in interstate commerce in the course of commercial activity, or sell or offer for sale in interstate or foreign commerce any listed species. It is also illegal to possess, sell, deliver, carry, transport, or ship any such wildlife that has been taken illegally. Further, it is illegal for any person to attempt to commit, to solicit another person to commit, or to cause to be committed, any of these acts. Certain exceptions apply to our agents and State conservation agencies.

Permits may be issued to carry out otherwise prohibited activities involving endangered wildlife under certain circumstances. Regulations governing permits are codified at 50 CFR 17.22 and 17.23. Such permits are available for scientific purposes, to enhance the propagation or survival of the species, and/or for incidental take in the course of otherwise lawful activities. Permits are also available for zoological exhibitions, educational purposes, or special purposes consistent with the purposes of the Act. Requests for copies of the regulations on listed species and inquiries about prohibitions and permits may be addressed to the U.S. Fish and Wildlife Service, Endangered Species Permits, 911 NE 11th Avenue, Portland, OR 97232–4181 (503/231–2063, facsimile 503/231–6243).

It is our policy, as published in the **Federal Register** on July 1, 1994 (59 FR 34272), to identify to the maximum extent practicable at the time a species is listed those activities that would or would not constitute a violation of section 9 of the Act. The intent of this policy is to increase public awareness of the effect of this listing on proposed and ongoing activities within the species' range.

We believe that, based on the best available information, the following actions are not likely to result in a violation of section 9, provided these activities are carried out in accordance with existing regulations and permit requirements:

(1) Possession, delivery, or movement, including interstate transport and import into or export from the United States, involving no commercial activity, of dead specimens of these taxa that were collected prior to the date of publication in the **Federal Register** of a final regulation adding these taxa to the list of endangered species;

(2) Actions that may affect the San Miguel, Santa Rosa, Santa Cruz, or Santa Catalina Island foxes that are authorized, funded, or carried out by a Federal agency, when the action is conducted in accordance with an incidental take statement issued by us under section 7 of the Act;

(3) Actions that may affect the Santa Cruz or Santa Catalina Island foxes that are not authorized, funded, or carried out by a Federal agency, when the action is conducted in accordance with an incidental take permit issued by us under section 10(a)(1)(B) of the Act. To obtain a permit, an applicant must develop a habitat conservation plan and apply for an incidental take permit that minimizes and mitigates impacts to the species to the maximum extent practicable; and

(4) Actions that may affect the San Miguel, Santa Rosa, Santa Cruz, or Santa Catalina Island foxes that are conducted in accordance with the conditions of a section 10(a)(1)(A) permit for scientific research or to enhance the propagation or survival of the species.

We believe that the following actions could result in a violation of section 9; however, possible violations are not limited to these actions alone:

(1) Unauthorized collecting, trapping, capturing, killing, harassing, sale,delivery, or movement, including interstate, and foreign commerce, or harming, or attempting any of these actions, of San Miguel, Santa Rosa, Santa Cruz, or Santa Catalina island foxes without a permit (research activities where San Miguel, Santa Rosa, Santa Cruz, or Santa Catalina Island foxes are trapped or captured will require a permit under section 10(a)(1)(A) of the Endangered Species Act);

(2) The transportation of unvaccinated domestic animals, which transmit diseases or parasites to island foxes, causing serious injury or death on the San Miguel, Santa Rosa, Santa Cruz, or Santa Catalina Islands;

(3) Activities that actually kill or injure a San Miguel, Santa Rosa, Santa Cruz, or Santa Catalina island fox by significantly impairing essential behavioral patterns (such as breeding, feeding or sheltering) through significant habitat modification or degradation (*e.g.*, via excavating, compacting, grading, discing, or removing soil or vegetation) in such a way as to facilitate the introduction or spread of non-native species of plants or that would result in the removal of a den;

(4) Destruction or alteration of San Miguel, Santa Rosa, Santa Cruz, or Santa Catalina Island fox dens, even when seasonally unoccupied when the destruction results in the den no longer being able to be used for breeding purposes; and

(5) Discharges or dumping of toxic chemicals or other pollutants into San Miguel, Santa Rosa, Santa Cruz, or Santa Catalina Island fox habitat, including dens or burrows, that results in death or injury of the species or that results in degradation of their occupied habitat.

Questions regarding whether specific activities would constitute a violation of section 9 of the Act should be directed to our Ventura Fish and Wildlife Office (*see* **ADDRESSES** section). Requests for copies of the regulations regarding listed species and inquiries regarding prohibitions and permits may be addressed to the U.S. Fsh and Wildlife Service, Endangered Species Permits, 911 NE 11th Avenue, Portland, OR 97232–4181 (503/231–2063; facsimile 503/231–6243).

National Environmental Policy Act

We have determined that an Environmental Impact Statement and Environmental Assessment, 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 Act. A notice outlining the Service's reasons for this determination was published in the **Federal Register** on October 25, 1983 (48 FR 49244).

References Cited

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

Author

The primary authors of this notice are Bridget Fahey, Ventura Fish and Wildlife Office, and Sandy Vissman, Carlsbad 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

■ Accordingly, we 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.

■ 2. Section 17.11(h) is amended by adding the following, in alphabetical order under MAMMALS, to the List of Endangered and Threatened Wildlife:

§ 17.11 Endangered and threatened wildlife.

* * * * *

(h) * * *

Species		Historic range	Vertebrate population where endangered or threatened	Status	When listed	Critical habitat	Special rules
Common name	Scientific name						
*	*	*	*	*	*	*	
MAMMALS							
*	*	*	*	*	*	*	
Fox, San Miguel Island.	*Urocyon littoralis littoralis*.	U.S.A. (CA)	U.S.A. (CA)	E	742	NA	NA
Fox, Santa Catalina Island.	*Urocyon littoralis catalinae*.	U.S.A. (CA)	U.S.A. (CA)	E	742	NA	NA
Fox, Santa Cruz Island.	*Urocyon littoralis santacruzae*.	U.S.A. (CA)	U.S.A. (CA)	E	742	NA	NA
Fox, Santa Rosa Island.	*Urocyon littoralis santarosae*.	U.S.A. (CA)	U.S.A. (CA)	E	742	NA	NA
*	*	*	*	*	*	*	

Dated: March 1, 2004.

Steve Williams,

Director, Fish and Wildlife Service.

[FR Doc. 04–4902 Filed 3–4–04; 8:45 am]

BILLING CODE 4310–55–P