

ANTENNA STANDARDS—Continued

Frequency (MHz)	Category	Maximum beamwidth to 3 dB points ¹ (included angle in degrees)	Minimum antenna gain (dbi)	Minimum radiation suppression to angle in degrees from centerline of main beam in decibels						
				5° to 10°	10° to 15°	15° to 20°	20° to 30°	30° to 100°	100° to 140°	140° to 180°
Above 31,300	A	2.2	38	25	29	33	36	42	55	55
	B	2.2	38	20	24	28	32	35	36	36

¹ If a licensee chooses to show compliance using maximum beamwidth to 3 dB points, the beamwidth limit shall apply in both the azimuth and the elevation planes.

² Except for Multiple Address System frequencies listed in §§ 101.147(b)(1) through (b)(4), where omnidirectional antennas may be used.

³ Antennas used at outlying stations as part of a central protection alarm system need conform to only the following 2 standards:

(i) The minimum on-beam forward gain must be at least 10 dBi, and

(ii) The minimum front-to-back ratio must be at least 20 dB.

⁴ Omnidirectional antennas may be authorized in the band 2150–2160 MHz.

⁵ These antenna standards apply to all point-to-point stations authorized after June 1, 1997. Existing licensees and pending applicants on that date are grandfathered and need not comply with these standards.

⁶ These antenna standards apply to all point-to-point stations authorized on or before June 1, 1997.

⁷ Except for antennas between 140° and 180° authorized or pending on January 1, 1989, in the band 10,550 to 10,565 MHz for which minimum radiation suppression to angle (in degrees) from centerline of main beam is 36 decibels.

⁸ These antenna standards apply only to DEMS User Stations licensed, in operation, or applied for prior to July 15, 1993.

⁹ Except for temporary-fixed operations in the band 13200–13250 MHz with output powers less than 250 mW and as provided in § 101.147(q).

¹⁰ DEMS User Station antennas in this band must meet performance Standard B and have a minimum antenna gain of 34 dBi. The maximum beamwidth requirement does not apply to DEMS User Stations. DEMS Nodal Stations need not comply with these standards.

¹¹ Except as provided in § 101.147(t).

Note to footnote 11: Stations must employ an antenna that meets the performance standards for Category A, except that in areas not subject to frequency congestion, antennas meeting standards for Category B may be employed. Note, however, that the Commission may require the use of high performance antennas where interference problems can be resolved by the use of such antennas.

¹² The minimum front-to-back ratio shall be 38 dBi.

¹³ Mobile, except aeronautical mobile, stations need not comply with these standards.

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DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

RIN 1018-AC83

Endangered and Threatened Wildlife and Plants; Determination of Endangered Status for the San Diego Fairy Shrimp

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: The U.S. Fish and Wildlife Service (Service) determines endangered status pursuant to the Endangered Species Act of 1973, as amended (Act), for the San Diego fairy shrimp (*Branchinecta sandiegonensis*). This animal is restricted to vernal pools in southwestern coastal California and extreme northwestern Baja California, Mexico. Less than 81 hectares (ha) (200 acres (ac)) of habitat likely remains. This species is imperiled by a variety of factors including: habitat destruction and fragmentation from urban development and agricultural conversion, alterations of vernal pool hydrology, off-road vehicle (ORV)

activity, and livestock overgrazing. This rule implements Federal protection and recovery provisions afforded by the Act.

EFFECTIVE DATE: February 3, 1997.

ADDRESSES: The complete file for this final rule is available for public inspection, by appointment, during normal business hours at the Carlsbad Field Office, U.S. Fish and Wildlife Service, 2730 Loker Avenue West, Carlsbad, California 92008.

FOR FURTHER INFORMATION CONTACT: Chris Nagano or Susan Wynn at the above address (telephone 619/431-9440).

SUPPLEMENTARY INFORMATION:

Background

The San Diego fairy shrimp is a member of the aquatic crustacean order Anostraca. The species was first collected in Poway and Ramona, San Diego County, in 1962 by J. E. Lynch (Fugate 1993). Michael Fugate (1993) described *Branchinecta sandiegonensis* based on collections that he and Marie Simovich made at Del Mar Mesa in San Diego County. The species is restricted to vernal pools in coastal southern California south to extreme northwestern Baja California, Mexico. No individuals have been found in riverine waters, marine waters, or other permanent bodies of water. All known localities are below 700 meters (m) (2,300 feet (ft)) and within 65 kilometers (km) (40 miles (mi)) of the Pacific

Ocean, from Santa Barbara County south to northwestern Baja California. The majority of the vernal pools in this region, including many which likely served as habitat for the species, were destroyed prior to 1990. Between 1979 and 1986, approximately 68 percent of the privately owned vernal pools under the City of San Diego's jurisdiction were destroyed (Wier and Bauder 1991).

Adult male San Diego fairy shrimp range in length from 9 to 16 mm (0.4 to 0.6 inches (in.)) and the females are 8 to 14 mm (0.4 to 0.5 in.) long. Mature individuals have a delicate elongate body, large stalked compound eyes, no carapace (shell covering the back), and 11 pairs of swimming legs. They swim or glide gracefully upside down by means of complex beating movements of the legs that pass in a wave-like front-to-back direction. Nearly all species of fairy shrimp feed on algae, bacteria, protozoa, rotifers, and bits of organic matter (Eng *et al.* 1990, Pennak 1989). The second pair of antennae in adult female San Diego fairy shrimp are cylindrical and elongate, but in the males they are greatly enlarged and specialized for clasping the females during copulation. The females carry their eggs in an oval or elongate ventral brood sac.

Five other species of branchinectid fairy shrimp occur in southern California (Simovich and Fugate 1992). The only other branchinectids in southern California that are similar in

appearance to the San Diego fairy shrimp are Lindahl's fairy shrimp (*Branchinecta lindalhi*) and the threatened vernal pool fairy shrimp (*B. lynchi*), which occurs in southwestern Riverside County. Male San Diego fairy shrimp can be distinguished from males of other *Branchinecta* species by the shape of the second antenna. Female San Diego fairy shrimp are distinguishable from other members of the genus by the shape and length of the brood sac and by the presence of paired dorsolateral spines on five of the abdominal segments (Fugate 1993).

The San Diego fairy shrimp is a habitat specialist found in small, shallow vernal pools, which range in depth from 5 to 30 centimeters (cm) (2 to 12 in.) and in water temperature from 10 to 20 degrees Celsius (C) (50 to 68 degrees Fahrenheit (F)) (Fugate and Simovich 1992, Hathaway and Simovich undated). Water chemistry is one of the most important factors in determining the distribution of fairy shrimp (Belk 1977, Branchiopod Research Group 1996). The San Diego fairy shrimp appears to be sensitive to high water temperatures (Branchiopod Research Group 1996). Hathaway and Simovich (undated) presented data indicating that pools located in the inland mountain and desert regions may be too cool (below 5 degrees C (41 degrees F)) or too warm (above 30 degrees C (86 degrees F)) for this species.

Adult San Diego fairy shrimp are usually observed from January to March; however, in years with early or late rainfall, the hatching period may be extended. The species hatches and matures within 7 days to 2 weeks depending on water temperature (Hathaway and Simovich undated, Simovich and Hathaway undated). The San Diego fairy shrimp disappear after about a month, but animals will continue to hatch if subsequent rains result in additional water or refilling of the vernal pools (Branchiopod Research Group 1996). The eggs are either dropped to the pool bottom or remain in the brood sac until the female dies and sinks. The "resting" or "summer" eggs are capable of withstanding heat, cold, and prolonged drying. When the pools refill in the same or subsequent rainy seasons, some but not all of the eggs may hatch. Fairy shrimp egg banks in the soil may be comprised of the eggs from several years of breeding (Donald 1983).

The genetic characteristics of the San Diego fairy shrimp, as well as ecological conditions such as watershed contiguity, indicate that populations of these animals are defined by pool

complexes rather than by individual vernal pools (Fugate 1992). Individual vernal pools occupied by the San Diego fairy shrimp are most appropriately referred to as subpopulations.

Vernal pools have a discontinuous occurrence in several regions of California (Keeler-Wolf *et al.* 1995). Vernal pools form in regions with Mediterranean climates where shallow depressions fill with water during fall and winter rains and then evaporate in the spring (Collie and Lathrop 1976; Holland 1976, 1988; Holland and Jain 1977, 1988; Simovich and Hathaway undated; Thorne 1984; Zedler 1987). Overbank flooding from intermittent streams may augment the amount of water in some vernal pools (Hanes *et al.* 1990). Downward percolation is prevented by the presence of an impervious subsurface layer, such as a claypan, hardpan, or volcanic stratum (Holland 1976, 1988). Due to local topography and geology, the pools are usually clustered into pool complexes (Bauder 1986, Holland and Jain 1988). Pools within a complex are typically separated by distances on the order of meters and may form dense, interconnected mosaics of small pools or a more sparse scattering of larger pools.

Temporary inundation makes vernal pools too wet during the wet period of the year for adjacent upland plant species adapted to drier soil conditions, while rapid drying during late spring makes pool basins unsuitable for typical marsh or aquatic species that require a more permanent source of water. However, a number of indigenous plant and aquatic invertebrate species have evolved to occupy the extreme environmental conditions found in vernal pool habitats (Alexander 1976, Barclay and Knight 1984, Baskin 1994, Zedler 1987). Fairy shrimp play an important role in the community ecology of many ephemeral water bodies. They are fed upon by waterfowl (Krapu 1974, Swanson *et al.* 1974) and other vertebrates, such as western spadefoot toad (*Scaphiopus hammondi*) tadpoles (Branchiopod Research Group 1996).

Urban and water development, flood control, highway and utility projects, as well as conversion of wildlands to agricultural use, have eliminated vernal pools in southern California (Jones and Stokes Associates 1987). Changes in hydrological pattern, overgrazing, and ORV use also imperil this aquatic habitat and the San Diego fairy shrimp. Human activities that impact the watershed of vernal pools indirectly affect this animal. The flora and fauna in vernal pools or swales can change if

the hydrological regime is altered (Bauder 1986, 1987). Human-caused activities that reduce the extent of the watershed or that alter runoff patterns (i.e., amounts and seasonal distribution) may eliminate the animals, reduce their population sizes or reproductive success, or shift the location of sites inhabited by the animals. The vernal pool habitat type has been ranked in the California Department of Fish and Game's Natural Diversity Data Base in priority class G1-S1, which denotes communities in the State of California that occur over less than 800 ha (2,000 ac) globally.

The largest number of vernal pools in California, including those inhabited by the San Diego fairy shrimp, are located in San Diego County. However, the cumulative loss of vernal pool habitat in San Diego County is estimated at 90 to 97 percent (Bauder 1986, Oberbauer and Vanderweir 1991, Keeler-Wolf *et al.* 1995). Based on a composite of available information, the Service estimates that less than 81 ha (200 ac) of occupied vernal pool habitat likely remains. Weir and Bauder (1991) estimate that 70 percent of remaining vernal pool habitat occurs on military lands. Keeler-Wolf *et al.* (1995) concluded that the greatest recent losses of vernal pool habitat in San Diego County have occurred in Mira Mesa, Penasquitos, and Kearney Mesa, which accounted for 73 percent of all the pools destroyed in the region during the 7-year period between 1979 and 1986. Other substantial losses have occurred in the Otay Mesa area, where over 40 percent of the vernal pools were destroyed during the 11-year period between 1979 and 1990. Vernal pools in southern coastal Santa Barbara County are imperiled by development (Ferren and Pritchett 1988, Keeler-Wolf *et al.* 1995). Vernal pool habitat was once extensive on the coastal plain of Los Angeles County (R. Mattoni and T. Longcore, in litt., 1996). The loss of vernal pool habitat is now nearly total in Los Angeles and Orange counties (Keeler-Wolf *et al.* 1995, Ferren and Pritchett 1988).

Previous Federal Action

On March 24, 1992, the Service received a petition dated March 16, 1992, from David Hogan, formerly of the San Diego Biodiversity Project in Julian, California, and Dr. Denton Belk of the Lady of Our Lake University in San Antonio, Texas, to list the San Diego fairy shrimp as an endangered species. On August 4, 1994, the Service published a proposed rule in the Federal Register (59 FR 39874) to list the San Diego fairy shrimp as an endangered species. The proposed rule

was the first Federal action on the San Diego fairy shrimp and also constituted the 12-month warranted finding that the petitioned action was warranted, as required by section 4(b)(3)(B) of the Act.

The processing of this final rule follows the Service's fiscal year 1997 listing priority guidance published in the Federal Register on December 5, 1996 (61 FR 64475). The guidance clarifies the order in which the Service will process rulemaking following two related events: (1) the lifting on April 26, 1996, of the moratorium on final listings imposed on April 10, 1995 (Public Law 104-6), and (2) the restoration of significant funding for listing through passage of the Omnibus Budget Reconciliation Act passed on April 26, 1996, following severe funding constraints imposed by a number of continuing resolutions between November 1995 and April 1996. The guidance calls for giving highest priority to handling emergency situations (Tier 1) and second highest priority (Tier 2) to resolving the listing status of the outstanding proposed listings. This final rule falls under Tier 2. At this time there are no pending Tier 1 actions. This rule has been updated to reflect any changes in distribution, status and threats since the effective date of the listing moratorium. This additional information was not of a nature to alter the Service's decision to list the species.

Summary of Comments and Recommendations

In the August 4, 1994, proposed rule and associated notifications, all interested parties were requested to submit factual reports or information that might assist the Service in determining whether listing is warranted for this species. Appropriate State agencies, county governments (including affected planning departments), Federal agencies, scientific organizations, and other interested parties were contacted and requested to comment. Notices of the proposed rule were published in the *San Diego Union Tribune*, *Orange County Register*, and the *Riverside County Press-Enterprise*.

In compliance with Service policy on information standards under the Act (59 FR 34270; July 1, 1994), the Service solicited the expert opinions of three appropriate and independent specialists regarding pertinent scientific or commercial data and assumptions relating to the taxonomy, population models, and supportive biological and ecological information for the San Diego fairy shrimp. Comments received from these reviewers were supportive of the proposed listing action and included

corrections to the range of the species, the spelling of its scientific name, and additional information on co-occurrence with other listed vernal pool species. These revisions have been incorporated into this final rule.

On August 18, 1994, the Service received a written request for a public hearing from the late Dr. William Hazeltine of Oroville, California. Several other requests for a public hearing also were received. As a result, on September 26, 1994, the Service published a notice in the Federal Register (59 FR 49045) announcing the public hearing and extending the comment period until October 31, 1994. The Service conducted a public hearing on October 19, 1994, at the Radisson Hotel in Rancho Bernardo, California. Testimony was taken from 6 p.m. to 8 p.m. Twenty-one individuals presented testimony on the San Diego fairy shrimp. During the comment periods, the Service received 63 comments (letters and oral testimony), from 1 Federal agency, 1 local agency, and 61 individuals or groups. Several individuals submitted more than one comment. Twenty-six comments supported the proposed listing, 30 opposed it, and 7 were neutral.

The Service has reviewed all of the written and oral comments received during the comment period. Several comments dealt with matters of opinion or legal history, which are not relevant to the listing decision. Comments updating the data presented in the "Background" or "Summary of Factors Affecting the Species" are incorporated into those sections of this final rule. Opposing comments and other substantive comments concerning the rule have been organized into specific issues. These issues and the Service's response to each are summarized as follows.

Issue 1

A number of commenters stated that a single public hearing was inadequate to obtain full public input on the proposal. They requested that public hearings be held in more than one location.

Service Response

The Service is obligated to hold at least one public hearing on a listing proposal if requested to do so within 45 days of publication of the proposal (50 CFR 424.16(c)(3)). Considering the limited geographic distribution of the species, the Service judged that holding a single public hearing did not cause undue inconvenience to those wishing to attend.

Issue 2

Several respondents stated that the Service's notification to the public on the proposal was inadequate.

Service Response

The Service went through an extensive notification process to make the public aware of the proposal, including Federal Register notifications, letters to specific concerned parties, and notifications in local newspapers. This process satisfied the requirements of the Act and was described at the beginning of this section.

Issue 3

Some respondents believed that listing the San Diego fairy shrimp would result in adverse economic impacts to hundreds of acres of land and questioned the value of these animals to society. Two commenters requested that an analysis of the economic impact of listing the species be completed. Other commenters claimed the San Diego fairy shrimp is an "insignificant" species and that listing would interfere with the natural evolutionary process of extinction. Conversely, a number of respondents asserted that opposition to the listing of the species was based solely on economic interests. They cited the ecological and educational value of vernal pool plants and animals. Four crustacean biologists noted that the species is of great scientific value to the study of biological evolution, systematics, and ecology.

Service Response

Under section 4(b)(1)(A) of the Act, a listing determination must be based solely on the best scientific and commercial data available. The legislative history of this provision clearly states the intent of Congress to "ensure" that listing decisions are "based solely on biological criteria and to prevent non-biological criteria from affecting such decisions" (H.R. Rep. No. 97-835, 97th Cong. 2d Sess. 19 (1982)). As further stated in the congressional report, "economic considerations have no relevance to determinations regarding the status of species." Because the Service is specifically precluded from considering economic impacts in a final decision on a proposed listing, the Service does not consider the possible economic consequences of listing the San Diego fairy shrimp. Although a variety of opinions likely exist as to a particular species' contribution to society, including its aesthetic, scientific, or other significance, this issue is not among the five factors upon which a listing determination is based.

Issue 4

One commenter stated that the listing of the San Diego fairy shrimp will result in a "taking" of their private property in clear violation of their constitutional rights.

Service Response

Listing under the Act does not imply that private land would be confiscated or taken without just compensation. The San Diego fairy shrimp will be protected under section 9 of the Act, which prohibits the take of this animal. Recovery planning for the species may include recommendations for land acquisition or easements involving private landowners. These efforts would only be undertaken with the cooperation of the landowner. In the majority of cases, private landowners are not precluded from using their land in the manner originally intended.

Executive Order 12630, Government Actions and Interference with Constitutionally Protected Property Rights, requires that a Takings Implications Assessment (TIA) be conducted "as a part of any final rulemaking to evaluate the risk of and strategies for avoidance of the taking of private property." However, the Attorney General has issued guidelines to the Department of the Interior (Department) regarding TIAs. The Attorney General's guidelines state that TIAs used to analyze the potential for Fifth Amendment "taking claims" are to be prepared after, rather than before, an agency makes a restricted discretionary decision. In enacting the Act, Congress required the Department to list a species based solely upon scientific and commercial data indicating whether or not the species is in danger of extinction. The Service may not withhold a listing based upon economic concerns. Therefore, even though a TIA may be required, a TIA for a listing action is finalized only after the final determination is made regarding whether to list the species.

Issue 5

Three respondents stated that critical habitat should be designated for the San Diego fairy shrimp.

Service Response

The Service believes that the risk posed by designating critical habitat at this time outweighs the potential benefits. As discussed in Factors "A" and "E" under the "Summary of Factors Affecting the Species" section below, the San Diego fairy shrimp could be adversely affected by acts of vandalism. The Service is aware of vernal pools apparently containing suitable habitat

for this animal that were destroyed to escape regulatory requirements. Designation of critical habitat for the San Diego fairy shrimp is not prudent and would increase the degree of threat facing the species. Further discussion is contained in the "Critical Habitat" section below.

Issue 6

One commenter claimed that the petition was not valid because, pursuant to 50 CFR 424.14(b)(2)(I), the document was submitted prior to the publication of the scientific paper naming the species.

Service Response

Pursuant to 50 CFR 424.14(b)(2)(I), a petition must contain the scientific and common name of the species. The petition for the listing of the San Diego fairy shrimp contained this information. Although the document was received prior to publication of the formal description of the animal, the petition included sufficient information, including a pre-publication copy of the paper, to adequately identify the species.

Issue 7

Two commenters stated that development of areas containing the San Diego fairy shrimp should be allowed to proceed because this is the only way to provide an economic incentive for private landowners to protect the habitat of this animal.

Service Response

The Service recognizes that while some populations of the San Diego fairy shrimp located on private lands are protected by their owners, significant privately owned areas containing the animal and its habitat are not secure against adverse impacts. Between 1979 and 1986, approximately 68 percent of the privately owned vernal pools under the City of San Diego's jurisdiction were destroyed (Weir and Bauder 1991). Please refer to Factor "A" below for an expanded discussion on landownership patterns and protection for the species.

Issue 8

Two commenters stated that the San Diego fairy shrimp should not be listed under the Act because the animal is indirectly protected by other taxa inhabiting vernal pools that have been designated as endangered or threatened species. Another commenter said that only the protection of ecosystems rather than species-by-species listing will protect the San Diego fairy shrimp and its vernal pool habitat.

Service Response

The other vernal pool taxa that have been listed under the Act have a more restricted range, inhabit different geographic areas, or different vernal pool habitats (e.g., deeper pools) than the San Diego fairy shrimp. In addition, although one purpose of the Act is to conserve ecosystems upon which endangered and threatened species depend, species rather than ecosystems are listed under the Act. Please see Factor "D" below for further discussion.

Issue 9

Two commenters stated that the Service had not obtained the review of the proposed listing by three experts. One of these commenters, in his discussion of the motives of one petitioner and two of his scientific colleagues, questioned whether the Service had "accounted for the bias on the part of the listing proponents."

Service Response

In accordance with the Service's policy on peer review, the proposed rule for the San Diego fairy shrimp was reviewed by at least four vernal pool specialists, including three experts other than the individuals referred to by the commenter, as well as by all interested reviewers during the public comment period on the proposed rule. Although the Service acknowledges the concern of the commenter regarding the parties expressing contrary views, the final decision to list the San Diego fairy shrimp is based on the best scientific and commercial information available, which includes peer review by acknowledged authorities.

Issue 10

Three commenters requested that the Service delay or not list the San Diego fairy shrimp because they felt that there is insufficient information on the distribution and abundance of the animal. Some of these parties contended that the data are lacking because the species was not formally described until 1993. One commenter stated that the status of the species in Ventura, Los Angeles, and Orange counties is not clear. Expressing a contrary view, a recognized crustacean biologist stated that the fairy shrimp fauna of southern California is well known. Two biologists noted that misidentification of the species may have caused confusion regarding the distribution of the San Diego fairy shrimp. Four biologists commented that the species has specific ecological and biological requirements and the animal has a restricted geographic range.

Service Response

The Service concludes, as detailed in the "Background" and "Summary of Factors" sections, that sufficient biological data exist to warrant listing of the San Diego fairy shrimp under the Act. Sampling conducted at various locations and intensities between 1962 and 1993 by biologists familiar with fairy shrimp and their habitats provided adequate information on the distribution, habitat requirements, and, most importantly, threats to the San Diego fairy shrimp to warrant the present action. Fugate's formal description of the species (Fugate 1993) contains records of the San Diego fairy shrimp that were collected in 1962. The species has not been found in the few extant vernal pools in Ventura and Los Angeles counties, and it has an extremely limited distribution in Santa Barbara and Orange counties, in part based on the prevailing lack of suitable habitat. The majority of the extant populations of the San Diego fairy shrimp are found in San Diego County. The listing process includes an opportunity for the public to comment and provide information that is evaluated and considered by the Service before making a final decision. The additional data provided by respondents during the comment period, the report by the Branchiopod Research Group (1996), and other appropriate information available to the Service have been incorporated into this final rule. None of these sources provide evidence indicating that this taxon is not endangered. These materials represent the best available scientific and commercial information upon which to base a listing decision.

Issue 11

Several commenters stated that the San Diego fairy shrimp does not warrant listing because of its "widespread" distribution.

Service Response

After reviewing all available data, the Service concludes the San Diego fairy shrimp is found in less than 81 ha (200 ac) of vernal pool habitat and is not a widespread species. The animal is restricted to vernal pools in coastal southern California and extreme northwestern Baja California, Mexico. As described elsewhere in this final rule, the San Diego fairy shrimp is imperiled by habitat loss from construction activities (urban development, highway construction, etc.) and degradation (conversion of land to agricultural use, ORV use, and

changes in hydrological patterns in areas it inhabits).

Issue 12

Two commenters claimed that the data on the San Diego fairy shrimp do not demonstrate a historic and consistent decline in population levels.

Service Response

Relatively little information is available to reconstruct the distribution of the San Diego fairy shrimp prior to the loss of its vernal pool habitat that began in the 1800's. However, the Service is required to evaluate species based on current and likely future threats to their status. In all likelihood, the species' status over time probably paralleled the region-wide trend in vernal pool losses. As discussed in this final rule, 97 percent of its vernal pool habitat has been destroyed, and all extant populations of this endemic vernal pool species face severe, imminent threats that could result in substantial habitat losses and extirpations in the future.

Issue 13

Several commenters noted that the proposed rule incorrectly stated that the San Diego fairy shrimp is found in more than 70 vernal pools located in 11 vernal pool complexes.

Service Response

After reviewing all available information, the Service has determined that the San Diego fairy shrimp inhabits a minimum of 25 vernal pool complexes in San Diego, Orange, and Santa Barbara counties, and Baja California. Although the species inhabits a number of vernal pool complexes that were not included in the proposed rule, the Service's decision to list the animal is based on significant threats associated with past and likely future habitat loss and fragmentation, rather than solely on the basis of numbers of inhabited vernal pools or vernal pool complexes. Furthermore, based on available information, the Service estimates that less than 81 ha (200 ac) of habitat remain that support the species. Please see Factor "A" for a discussion of the status of the locations inhabited by the animal.

Issue 14

One commenter asserted that there are insufficient data upon which to determine the potential habitat of the San Diego fairy shrimp in California and Baja California, Mexico. This commenter suggested that the Service survey for the species throughout southern California, as well as the entire

Baja California peninsula. In addition, the respondent said that the Service lacks the data to complete a "reasoned analysis" of the historic and potential loss of the vernal pool habitat of the animal and requested specific information on potential development projects to allow public review and comment on threats to the species posed by these proposed actions.

Service Response

Potentially suitable conditions for vernal pools in Baja California exist along the coast from the United States/Mexico border south to about 30 degrees north Latitude. Only a few vernal pools are known from this area because of the typically mountainous terrain and relative absence of plateaus and mesas. Those present are subject to adverse human impacts. Sonoran Desert habitat is found south of 30 degrees north Latitude (Shreve and Wiggins 1986, Wiggins 1980); ephemeral wetlands in that region do not provide suitable conditions for the San Diego fairy shrimp. Please see Factor "A" for a discussion of the specific threats to each of the locations inhabited by the San Diego fairy shrimp in California and northwestern Baja California. Copies of the Environmental Impact Statements for individual development projects impacting occupied locations are available for public review at the Carlsbad Field Office (see ADDRESSES section).

Issue 15

One commenter stated that 90 percent of the remaining vernal pool habitat in San Diego County is located on U.S. Navy and Marine Corps bases and, therefore, is protected. Two commenters noted that proactive management programs for vernal pools have been implemented at the affected military facilities. However, three commenters noted that vernal pool habitat for the San Diego fairy shrimp has been degraded by ORVs and trash dumping at Miramar Naval Air Station and Marine Corps Base Camp Pendleton.

Service Response

Weir and Bauder (1991) state that 70 percent of the remaining vernal pools occur on military lands. The largest remaining block of habitat for the San Diego fairy shrimp is located at Miramar Naval Air Station. This site contains approximately 26 ha (65 ac) of vernal pools, exclusive of associated watersheds. The base is owned by the U.S. Navy and will be realigned to the U.S. Marine Corps on October 1, 1997. Furthermore, proposed re-alignment related activities will impact

approximately 4 percent of the vernal pools at the air station. (Department of the Navy 1996). The U.S. Navy and the U.S. Marine Corps have stated that they do not have plans to permit a National Wildlife Refuge overlay of the vernal pools, and have not prepared a management plan for the vernal pools (Department of the Navy 1996). The U.S. Marine Corps has not yet prepared a management plan for the vernal pools at Camp Pendleton. Therefore, the protection of the San Diego fairy shrimp at the two bases containing the largest blocks of extant vernal pools within the range of the species is not assured.

Issue 16

One commenter questioned the accuracy of the references (Bauder 1986, Oberbauer 1990) which provided the amount of historic and extant vernal pools. In addition, the commenter stated that some of the information was only relevant to San Diego County and not the remainder of the species' range in California and Baja California. The commenter did not provide data to support his assertion that the information utilized by the Service was incorrect.

Service Response

The Service has determined that Bauder (1986) and Oberbauer (1990) based their conclusions on data gathered utilizing acceptable scientific methods. Except for a few remnant sites, vernal pools in Santa Barbara, Ventura, Los Angeles, and Orange counties have been destroyed.

Issue 17

Two commenters asserted that the San Diego fairy shrimp is not restricted to vernal pools because individuals have been observed in man-made non-vernal pool habitats such as roadside ditches, mud puddles, and road ruts. The City of San Diego provided information describing vernal pools inhabited by the animal that formed on soil placed on top of the Miramar Landfill. Expressing a contrary view, five biologists stated that the San Diego fairy shrimp is restricted to vernal pools. They reported that the "artificial" habitats are either degraded vernal pools or areas subject to overflow from extant pools during periods of high water.

Service Response

The Service has carefully reviewed the assertion that the San Diego fairy shrimp is found in non-vernal pool habitat. A number of the sites that served as the basis for this belief have been examined by Service biologists and were found to represent degraded vernal

pool habitat. Some of these records, such as roadside ditches, scraped areas, and airport runoff ditches likely represent remnant vernal pool habitat or are part of the swale systems connected to vernal pools, a fact reiterated in the oral comments of a vernal pool expert during the public hearing. Most of these disturbed habitats are also imperiled by urban development.

The record of San Diego fairy shrimp in "mud puddles" at El Camino Memorial Park in Mira Mesa likely represents degraded vernal pool habitat. The animals that inhabit the Miramar Landfill site were likely distributed into this area from adjacent areas with extant vernal pools, or eggs were contained in material that was scraped from an area that previously contained vernal pools and was used to cover the landfill.

In addition, the accurate identification of fairy shrimp is extremely difficult because the morphological characters that differentiate the species are often subtle and can be misinterpreted by biologists not specifically trained in fairy shrimp identification. Widespread common species, such as Lindahl's fairy shrimp, can be mistaken for other fairy shrimp species, including the San Diego fairy shrimp. Some of the records of the San Diego fairy shrimp in non-vernal pool habitats may be the result of such misidentifications.

Issue 18

Three commenters questioned the scientific basis upon which the taxonomy of the San Diego fairy shrimp is based. Two of these parties, citing the lack of unambiguous genetic data, claimed that it is unclear that the animal is a distinct species. However, a recognized crustacean biologist stated that the San Diego fairy shrimp is distinct. This biologist noted that the genetics of the genus had been examined in detail by Fugate (1992).

Service Response

Using the best and most recent systematic information from a number of reliable sources, including Eng *et al.* (1990), Fugate (1992, 1993), and other recognized experts on fairy shrimp taxonomy, the Service adopts the prevailing scientific consensus and maintains that the San Diego fairy shrimp is a distinct species.

Issue 19

One commenter questioned the threat to the San Diego fairy shrimp posed by ORV activity, trash dumping, and alterations of vernal pool hydrology. This commenter felt that trash dumping and ORV use could benefit the animal

because trash could provide shade and ORVs could serve as a dispersal agent. This same party questioned whether fragmentation of the vernal pool complexes resulting from human actions poses a threat to the San Diego fairy shrimp because the complexes have historically constituted fragmented habitat. In contrast, two biologists noted that the species is imperiled by chemicals associated with trash dumping, such as motor oil or pesticides, and by the physical damage or destruction of the vernal pools through alteration in hydrology caused by urban development, ORVs, and other actions.

Service Response

After reviewing all available data, the Service has determined that habitat fragmentation, trash dumping, ORV use, and alterations in the hydrology of the vernal pool habitat of the San Diego fairy shrimp imperil the species. Please refer to Factors "A" and "E" for an expanded discussion of these threats.

Issue 20

One commenter stated that cattle grazing does not affect the San Diego fairy shrimp, but did not present supporting data.

Service Response

The Service recognizes and acknowledges that low to moderate levels of livestock grazing likely have minimal impacts on the San Diego fairy shrimp. However, overgrazing in areas containing the animal is likely to be detrimental. High livestock densities may result in excessive physical disturbances, such as trampling, and changes in pool water chemistry and water quality. Trampling of pool margins and thinning of vegetation from overgrazing may increase pasture runoff, leading to erosion and increased siltation of vernal pool habitat.

Issue 21

One commenter stated that a minimum viable population analysis for the San Diego fairy shrimp must be completed prior to listing because an analysis based on the loss of the vernal pool habitat of the species does not provide a basis upon which to evaluate the status of the animal.

Service Response

A minimum viable population analysis, while potentially useful for developing a recovery plan for the species (Shaffer 1990), is not required to determine whether a taxon should be listed, nor does it address foreseeable deterministic threats to species.

Issue 22

Three respondents contended that the proposed rule did not accurately reflect the success of vernal pool "creation" efforts. The commenters claimed that artificial vernal pools were successful and were adequate mitigation for adverse impacts to vernal pools resulting from urban development.

Service Response

In a review of 21 vernal pool creation projects located throughout California, Ferren and Gervitz (1990) concluded that no conclusive data exist to substantiate the hypothesis "that vernal pools can be restored or created to provide functional values within the range of variability of natural pools." The only known vernal pool creation experiment conducted in southern California that specifically investigated fairy shrimp was a failure (Branchiopod Research Group 1996). Although some individuals (Sugnet and Associates *et al.* 1992) have claimed complete success or some degree of success for vernal pools in the Central Valley of California, these conclusions are generally based on anecdotal studies and the persistence of fairy shrimp for only a short period of time (e.g., 3 years or less). Moreover, the principle pool creation technique (i.e., relocation of soil from excavated pool bottoms rather than inoculation with a known quantity of eggs) and a lack of scientifically designed monitoring do not allow for collection of the necessary data to determine the long-term population viability of transplanted species (Branchiopod Research Group 1996).

In a study of the preservation and management of vernal pools (Jones and Stokes Associates 1990), the researchers concluded that the "science of vernal pool creation is still in its infancy and is primarily an experimental mitigation technique." Environmental requirements, not dispersal, are likely the limiting factors in the distribution of fairy shrimp (U.S. Fish and Wildlife Service (USFWS) 1994). The San Diego fairy shrimp requires more restrictive environmental conditions than more widely distributed taxa (Branchiopod Research Group 1996). No demonstrated long-term populations of the San Diego fairy shrimp exist in artificial habitats.

Artificially created habitats may also increase the potential for hybridization between the San Diego fairy shrimp and other more widespread species. For example, Lindahl's fairy shrimp is a widespread species found in western North America that occurs in a wide array of habitats, ranging from pools whose salinity is high enough to

support brine shrimp (*Artemia* sp.) to snow melt pools. Poor planning, careless construction, or haphazard placement of the substrate during vernal pool creation may enhance conditions for species like Lindahl's fairy shrimp. Laboratory studies have shown that Lindahl's fairy shrimp and the San Diego fairy shrimp readily hybridize in the laboratory and produce viable first generation hybrids (Fugate 1992, Branchiopod Research Group 1996). Evidence suggests that hybridization between other fairy shrimp has occurred in the field due to human actions. Belk (1977) reported that the westward dispersal of a desert fairy shrimp (*Streptocephalus dorotheae*) from Texas and New Mexico across extensive expanses of arid land into Arizona may be due to the cattle ponds and livestock watering holes that were built in the region during the past century. Wiman (1979) reported that viable hybrid offspring are produced by this species and Mackin's desert fairy shrimp (*S. mackini*), a resident species in Arizona.

The San Diego fairy shrimp may be adversely impacted as a result of actions taken to create and/or restore vernal pools (Branchiopod Research Group 1996). Scraping of the vernal pool bottoms for plant seed collection can damage or destroy fairy shrimp eggs, and heat or humidity during storage can mold or kill eggs. Created or modified vernal pools may hold water for inappropriate lengths of time, at inappropriate depths or temperatures.

Given these uncertainties associated with vernal pool creation, the Service maintains that transplanting target species (e.g., listed, proposed, and candidate species) into artificial pools cannot be considered adequate replacement for the loss of occupied vernal pool habitat. Even if such transplantation of the San Diego fairy shrimp and creation of its habitat were documented to be a proven procedure rather than an evolving problematic venture, artificial pool creation for the species would not fulfill the mandates of section 2 of the Act, which require the Service to develop programs that conserve the ecosystems upon which listed species depend. As discussed elsewhere in this rule, natural habitat throughout the range of the San Diego fairy shrimp has been damaged or eliminated. As a result, the Service concludes that the continued survival and recovery of the San Diego fairy shrimp can only be assured at this time by the preservation and enhancement of extant vernal pools and their associated watersheds.

Issue 23

Nine respondents alleged that Federal, State and local regulatory processes provide adequate protection for the crustaceans. Several of these commenters said that listing would directly affect agricultural, industrial and commercial development in areas that have been meticulously planned and subject to State laws such as the Natural Community Conservation Planning (NCCP) Act and the California Environmental Quality Act (CEQA). Some commenters noted the "no net loss" wetlands policies of several State and county agencies, while others cited section 404 of the Clean Water Act as providing protection for this habitat. Two commenters, citing two development projects in San Diego County, claimed that significant portions of the vernal pools at these project sites will be preserved. These commenters stated that these projects are representative of the level of preservation afforded vernal pool habitat in the San Diego area.

Expressing a contrary position, several other commenters noted that Federal, State, and local laws have been ineffective in providing protection for the species. One commenter noted that the City of San Diego has approved the California Terraces project on Otay Mesa, and has advanced other projects impacting San Diego fairy shrimp habitat through the CEQA planning process without adequate mitigation for the species.

Service Response

Based on an examination of the available information, the Service has determined that proposed and on-going damage or destruction of vernal pools in southern California caused by urban and agricultural development is prevalent despite existing Federal, State, and local regulations. Existing levels of protection are not adequate to assure the survival of the San Diego fairy shrimp. For example, while vernal pool habitat has been preserved permanently for some projects through special conditions of permits authorized under section 404 of the Federal Clean Water Act, significant areas of vernal pool habitat continue to be destroyed in spite of the U.S. Army Corps of Engineers' (Corps) jurisdictional authority to regulate these wetlands under the Clean Water Act. Between 1993 and 1996, the Service identified 15 unauthorized projects in San Diego and Orange counties that destroyed or damaged a minimum of 40 vernal pools exclusive of watersheds (Susan Wynn, USFWS, unpub. notes). The projects were not authorized

because landowners either were not required or failed to comply with the regulatory requirements of the section 404 permitting process. Please see Factor "D" for a detailed discussion of the inadequacy of existing regulations.

Issue 24

Five commenters stated that the San Diego Multiple Species Conservation Program (MSCP) plan and the Multiple Habitat Conservation Plan (MHCP) that are being prepared pursuant to the State of California's NCCP Act of 1991 will adequately protect the San Diego fairy shrimp and its vernal pool habitat in San Diego County. For this reason, the commenters urged the Service not to list the animal. Expressing a contrary view, one respondent stated that the MSCP and the MHCP will not adequately protect the animal or its habitat. This same respondent noted that no plan that will protect the San Diego fairy shrimp has been adopted by any local government in southern California.

Service Response

The San Diego fairy shrimp is proposed to be covered under the MSCP plan, which is currently in the final stages of the National Environmental Policy Act public review process. The Service anticipates making a decision on "incidental take" (section 10(a)(1)(B)) permit issuance in April 1997. The Service has determined that 72 percent of the remaining vernal pool habitat within the MSCP planning area is located in the proposed program preserve. However, less than 30 percent of the total San Diego fairy shrimp habitat is protected within the MSCP planning area. Additional important habitat for this species occurs on military lands, such as Miramar Naval Air Station, but this land is not included as part of the MSCP. Military lands contain the largest remaining blocks of vernal pool habitat for the San Diego fairy shrimp, approximately 70 percent of the total habitat of the species. Conservation planning for listed species on military lands will be accomplished through separate avenues, such as formal consultations pursuant to section 7 of the Act and through the Sikes Act agreements. It will be the responsibility of the Service to ensure that these conservation planning activities are consistent with the MSCP or MHCP should these plans be approved. Preserve management plans must include specific measures to protect against detrimental edge effects to the San Diego fairy shrimp. The MHCP is still in development and the precise configuration and conservation strategy have not been determined. Therefore the

protections that would be afforded the San Diego fairy shrimp by this plan cannot yet be determined. Please see Factor "D" for a discussion of the inadequacy of these regulatory mechanisms.

Summary of Factors Affecting the Species

After a thorough review and consideration of all available information, the Service has determined that the San Diego fairy shrimp should be classified as an endangered species. Procedures found at section 4 of the Act and regulations implementing the listing provisions of the Act (50 CFR part 424) were followed. 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). These factors and their application to the San Diego fairy shrimp (*Branchinecta sandiegonensis* Fugate) are as follows.

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

The San Diego fairy shrimp is imperiled because its vernal pool habitat is being damaged or destroyed by a variety of human-caused activities, primarily urban development and agricultural conversion. Habitat loss occurs from destruction and modification of vernal pools due to filling, grading, discing, leveling, and other activities, as well as the modification of surrounding uplands that alters vernal pool watersheds.

Rapid urbanization of areas containing vernal pools poses a significant threat to the San Diego fairy shrimp. Nearly all of the vernal pools that occurred throughout the range of the species from southern Santa Barbara County to extreme northwestern Baja California have been eliminated (Keeler-Wolf *et al.* 1995). The majority of extant vernal pools located in the range of the San Diego fairy shrimp are found in San Diego County. According to Bauder (1986), 838 vernal pools comprising 283 ha (698 ac) were eliminated by urban development between 1979 and 1986. Adequate mitigation measures were not implemented for these areas. In general, the growth rate of the human population and associated urban development in southern California and northwestern Baja California is equal to or exceeds that of any other region in California. San Diego is one of the fastest growing counties in the nation, with a population increase of 349 percent between 1950 and 1990 (California Department of Finance 1993). The population growth rate that is predicted

could further fragment and degrade the remaining vernal pool habitat of the San Diego fairy shrimp.

The following is a discussion of the status of the locations that contain suitable vernal pool habitat for the San Diego fairy shrimp.

San Diego County

Tijuana Slough National Wildlife Refuge

The vernal pool watershed is approximately 2 ha (5 ac) in size. Construction of an improved fence on the United States/Mexican border has apparently eliminated trampling caused by persons crossing the border illegally.

Proctor Valley

This small vernal pool complex is located in an isolated valley (Bauder 1986). The vernal pools are highly disturbed by grazing and ORV traffic (Julie Vanderweir, USFWS, pers. obs.). The San Diego fairy shrimp has been documented at this site. The vernal pools in Proctor Valley are part of the MSCP.

Otay Mesa

The vernal pools at this site are located in several disjunct locations across the southernmost mesa in California. Otay Mesa extends from just south of the Otay River, across the international border into Mexico, west to Interstate 805, and east to the foothills below Otay Mountain. Historical and ongoing agricultural activities, such as cattle ranching and dry land farming, have continually disturbed this area and have destroyed 78 percent of the vernal pools once located on Otay Mesa. The remaining vernal pools are scattered, with the only sizeable areas of vernal pool habitat occurring on the northeastern corner of Otay Mesa. The San Diego fairy shrimp has been documented at this site (H. Wier and J. Brown, *in litt.*, 1994). Portions of the vernal pool complexes on Otay Mesa are part of the MSCP and are also being considered for inclusion in the proposed San Diego National Wildlife Refuge. Otay Mesa currently is farmed for truck crops and barley and is grazed. However, significant portions have been or are proposed for industrial and residential development in the Otay Mesa Community Plan. This development is closely associated with development projects that have been or will be implemented on the United States/Mexican border. A proposed toll road would facilitate the development of significant portions of Otay Mesa.

On west Otay Mesa, the proposed California Terraces residential project will eliminate significant amounts of vernal pool habitat for the San Diego

fairy shrimp. The Final Environmental Impact Report for this project has been approved by the City of San Diego. Other proposed projects, such as State Highway 905, Robinhood Ridge, Hidden Trails, and Santee Investments also would adversely impact vernal pool habitat for this animal.

On east Otay Mesa, the proposed Otay Ranch and State Highway 125 would impact approximately 9,300 ha (23,000 ac), including substantial areas containing habitat for the San Diego fairy shrimp. Some of the vernal pools located within these project areas are located in a proposed biological reserve. However, the projects as proposed would eliminate the majority of the habitat for the San Diego fairy shrimp.

On-going actions by the U.S. Border Patrol on Otay Mesa continue to significantly impact vernal pools by ORV use and associated law enforcement activities. Unauthorized discing and grading on Otay Mesa also has impacted vernal pool habitat for the San Diego fairy shrimp.

Otay Lakes

These vernal pools consist of several scattered complexes, north and south of the lake, not connected by any continuous mesa system (Bauder 1986). Four vernal pool complexes at Otay Lakes are included in the MSCP and are proposed to be included within the San Diego National Wildlife Refuge. These pools are owned by the City of San Diego. A proposed resort would eliminate all vernal pools that are located north of the lake.

Sweetwater Reservoir

The vernal pools occur on the southwestern edge of Sweetwater Reservoir in southern San Diego County. These pools are one of the few remaining examples of isolated vernal pool habitat between the central mesas of San Diego and Otay Mesa to the south (Bauder 1986). The surrounding area has been brushed or grazed and consists primarily of disturbed ruderal vegetation. Portions of the area containing vernal pools have been proposed for urban development. Some of the vernal pool complexes at Sweetwater Reservoir are included in the MSCP and are proposed to be included within the San Diego National Wildlife Refuge. However, the extension of State Route 125 may impact a portion of these vernal pools.

Mission Trails County Park

The small vernal pool complex at this site is inhabited by the San Diego fairy shrimp. The vernal pools are subject to

damage caused by bikes, trash dumping, and unrestricted hiking.

Linda Vista

Museum specimens of the San Diego fairy shrimp are known from Linda Vista. However, these vernal pools have been eliminated by urban development.

Kearney Mesa

The vernal pools on Kearney Mesa originally covered approximately 38 square km (15 square mi). However, the majority of this region has been developed for residential and commercial uses.

The largest and most contiguous block and number of vernal pools in southern California and northwestern Baja California occurs on Miramar Naval Air Station. Weir and Bauder (1991) state that 70 percent of the remaining vernal pools occur on military lands.

Approximately 26 ha (65 ac) of vernal pools are located on the Miramar Naval Air Station. These pools exhibit a wide variety of conditions from disturbed to pristine, and vary greatly in size, depth, type and number of cobbles, soil type, hydrological characteristics, and species composition. The San Diego fairy shrimp has been estimated to inhabit 80 percent of the vernal pools at the base (Branchiopod Research Group 1996). This military base will be transferred from the U.S. Navy to the U.S. Marine Corps (Department of the Navy 1996). The Marine Corps has proposed construction of additional helicopter landing fields, ammunition bunkers, and other facilities that may adversely affect areas containing habitat for the San Diego fairy shrimp.

The vernal pools at Montgomery Field occur within the approach path of the airport. This vernal pool complex is in a heavily urbanized area surrounded by the airport, research and office developments, and Interstate 15 and State Route 163. Three separate areas of airport land encompass the watershed containing 138 vernal pools. Although this site has been set aside for the protection of the vernal pools, in February 1995 unknown persons dug trenches which resulted in the draining of some high-quality pools. The vernal pools at Montgomery Field are included in the MSCP and are proposed to be part of the San Diego National Wildlife Refuge.

The construction of a sludge processing facility and mounding of excess dirt at the Miramar Landfill, as well as on-going landfill maintenance have eliminated vernal pools inhabited by the San Diego fairy shrimp. The proposed extension of Nobel Drive

would damage or eliminate the vernal pools containing habitat for the species.

Del Mar Mesa, Lopez Ridge, and Mira Mesa

The vernal pools found on Del Mar Mesa are part of a large mesa of approximately 36 square km (14 square mi). Approximately 120 vernal pools with a high diversity of sizes, depths, surface configuration, and soil type occur in this area (Bauder 1986). The San Diego fairy shrimp has been documented in vernal pools at this site (H. Wier and J. Brown, *in litt.*, 1994). Some of the vernal pool complexes at Del Mar Mesa are included in the MSCP and are proposed to be included within the San Diego National Wildlife Refuge. Residential development occurs to the east, agriculture consisting of row-crop dry farming occurs in McGonigle Canyon, and undeveloped private lands occur to the west.

The City of San Diego's proposed Future Urbanizing Area Neighborhood 8A project would result in the damage or loss of several vernal pools on Del Mar Mesa. Some of these vernal pools have recently been scraped. The construction of two major roads is proposed in the immediate vicinity of the California Department of Transportation vernal pool reserve. If completed, these roads would result in further isolation and fragmentation of these vernal pools and their watersheds, as well as impacts to several pools outside of the reserve. Used refrigerators, sofas, and other trash have been dumped in and around the vernal pools outside of the vernal pool reserve.

Ninety of the vernal pools on Lopez Ridge are owned by the California Department of Transportation and the City of San Diego. The vernal pools have a wide variety of sizes and depths (Bauder 1986). The area containing vernal pools on the north side of Carroll Canyon is being quarried for sand and gravel. Some of the vernal pool complexes at Lopez Ridge are included in the MSCP and are proposed to be included within the San Diego National Wildlife Refuge. The remainder are located on private property and are proposed to be developed for residential housing. Although the publicly owned pools are protected from development, ORV activity, proposed development immediately adjacent to the preserve, and proposed restoration actions may threaten the San Diego fairy shrimp at this locality (M. Simovich, pers. comm., 1993).

Some of the vernal pools at Challenger High School in Mira Mesa were filled without authorization under the Clean Water Act during the winter

of 1987 to 1988. No restoration for this action has occurred to date; a public park is proposed for this location.

Carlsbad

The small vernal pool complex in Carlsbad is located on a coastal bluff in an urbanized area. The San Diego fairy shrimp has been documented at this site (H. Wier and J. Brown, *in litt.*, 1994). Construction of a railroad station and associated facilities resulted in the permanent loss of some of the vernal pools. The mitigation consisted of restoration and preservation of additional habitat. The remaining vernal pools are protected in a preserve.

Marine Corps Base Camp Pendleton

The vernal pools at Marine Corps Base Camp Pendleton are found on the coastal bluffs in the vicinity of Interstate 5 north of the mouth of the Santa Margarita River, and in the vicinity of Wire Mountain (Bauder 1986). Mima mound topography (a natural patchwork of soil mounds and surrounding flat ground) is well developed on the coastal bluffs and the vernal pools vary greatly in size and depth. The vernal pools on Wire Mountain, in the western portion of the base, are located in a watershed consisting of coastal sage scrub. The vernal pools on Wire Mountain have been fenced to prevent entry by casual visitors and "keep out" signs have been placed around a few of the pools. Many of the vernal pools on the coastal bluffs continue to be damaged or destroyed during military maneuvers.

Poway

The vernal pools in Poway were historically located north of Poway Road and east of Interstate 15 (Bauder 1986). Some of the pools occurred on mesa fingers and others were in grassy hills (Bauder 1986); however, only three vernal pools were extant at this site by the end of 1987. The majority of the vernal pools at this site have been eliminated by urban development. No conservation measures have been undertaken or are proposed for the Poway vernal pools. Therefore, these pools are still subject to potential urban development, ORV use, and other human-caused disturbances.

Ramona

The vernal pools in Ramona are found in an inland valley approximately 65 km (40 mi) from the coast (Bauder 1986). They represent the easternmost and highest elevational occurrences in San Diego County. These vernal pools, which vary in size and depth, are located in non-native grassland and coastal sage scrub. Expansion of the

Ramona Airport may impact some of the vernal pools. Other vernal pools have been eliminated by the construction of retail stores and the realignment of Dye and Highland Roads. Bauder (1986) stated that overgrazing by cattle has a significant impact on these pools. To date, no proposal has been made to protect the Ramona vernal pools.

San Marcos

The vernal pools in San Marcos are more closely related, physically and botanically, to vernal pools in Riverside County than those in San Diego County (Bauder 1986). Two of the four vernal pool complexes in San Marcos have been eliminated (Bauder 1986; Chris Nagano, USFWS, pers. obs., 1996). The remaining complexes have been significantly impacted by discing (F. Roberts, USFWS, pers. obs., 1995). Indirect impacts, such as runoff from adjacent industrial areas, adversely affect the vernal pools. No conservation measures have been undertaken or are proposed for the San Marcos vernal pools, which the City of San Marcos has requested be excluded from the proposed MHCP.

Orange County

The San Diego fairy shrimp has been recorded at Fairview Park in the City of Costa Mesa. This site has been damaged by recreational activities, such as dog walking, model airplane flying, and soccer players. Insecticide spraying for mosquito control in the park also likely adversely impacts the vernal pool habitat. The San Diego fairy shrimp has been found inhabiting a single vernal pool located along the proposed Antonio Parkway in southern Orange County.

Los Angeles County

The San Diego fairy shrimp has not been recorded from the two known extant vernal pools in Los Angeles County.

Ventura County

The San Diego fairy shrimp has not been recorded from the two known extant vernal pool complexes in Ventura County.

Santa Barbara County

Vernal pools are rare in Santa Barbara County; they are located at Moore Mesa, Ellwood Mesa, and Isla Vista. All of the vernal pools in this area have been or are currently imperiled by urban development, ORVs, draining, and other human-caused factors (Ferren and Pritchett 1988). The Santa Barbara County vernal pools are now isolated from those in San Diego County by

substantial agricultural and urban development in Ventura, Los Angeles, and Orange counties.

The vernal pools at Isla Vista are found in an isolated group that occurs on a flat-topped coastal mesa. Despite intensive sampling, only a single adult female San Diego fairy shrimp is known from the Del Sol Open Space and Vernal Pool Reserve in Isla Vista. This park is owned and managed by the Isla Vista Recreation and Park District, a local agency (Ferren and Pritchett 1988). Directed surveys of vernal pools in Isla Vista for fairy shrimp have not located any additional San Diego fairy shrimp individuals (M. Simovich, pers. comm., 1994).

Baja California

Few vernal pool complexes in Baja California are similar to those in San Diego County. The vernal pool complex at Valle de las Palmas, located south of Tecate, contains several proposed or rare plant species (Brown *et al.* 1993). The vernal pools at Valle de las Palmas are being adversely affected by cattle grazing, agriculture, and removal of clay soil for pottery and bricks. The highly disturbed vernal pool complex located at Bajamar, north of Ensenada, is imperiled by cattle grazing and potentially from chemical spills from the adjacent highway. No Federal, State, or local regulations protect the vernal pools or the San Diego fairy shrimp in Mexico.

The San Diego fairy shrimp is especially vulnerable to alterations in hydrology. Its vernal pool habitat is also vulnerable to indirect destruction due to the alteration of supporting watersheds. Development projects adjacent to vernal pools are often responsible for adverse alterations in drainage. Hydrological alterations can result from urban or agricultural development or a combination of these activities. An increase in water due to urban run-off leads to increased inundation, making the pools vulnerable to invasion by marsh plant species that outcompete obligate (restricted to) vernal pool taxa, resulting in decreased abundance of obligate vernal pool taxa. At the other extreme, some pools have been drained or blocked from their source of water and have shown an increased domination by upland plant species. Alterations in vernal pool hydrology may adversely impact the San Diego fairy shrimp due to changes in the maximum and minimum water temperatures.

Filling of vernal pool wetlands without authorization from the Corps also poses a threat to this species. The Service is aware of 15 actions that

occurred between 1993 and 1996 in San Diego County, including urban development, that have resulted in the damage or destruction of approximately 40 vernal pools, exclusive of associated watersheds, that likely provided habitat for the San Diego fairy shrimp (S. Wynn, F. Roberts, unpub. notes). At least three of these parties likely intended to alter the elevations of the site to eliminate one or more of the parameters used by the Corps to define a wetland according to their 1987 jurisdictional manual (U.S. Army Corps of Engineers 1987). Similar deliberate activities that are damaging or destroying vernal pools are likely occurring throughout the range of the San Diego fairy shrimp (S. Wynn, unpub. notes). Because of the immediate threat posed by these on-going activities, the Service finds that good cause exists for this rule to take effect immediately upon publication in accordance with 5 U.S.C. 553(d)(3).

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

Not known to be applicable.

C. Disease or Predation.

No known diseases affect the San Diego fairy shrimp. Fairy shrimp are a food item in the diet of migratory waterfowl and other native animals (Krapu 1974, Swanson *et al.* 1974). However, this naturally occurring predation is not considered a threat to the continued existence of the San Diego fairy shrimp.

D. The Inadequacy of Existing Regulatory Mechanisms

The primary cause for the decline of this species is loss of habitat due to human activities. No State or local laws exist that adequately protect the San Diego fairy shrimp. Other regulatory mechanisms necessary for the conservation of its vernal pool habitat have also proven inadequate and ineffective.

Existing regulatory mechanisms that could provide some protection for the San Diego fairy shrimp include: (1) section 404 of the Federal Clean Water Act; (2) occurrence with other species protected by the Federal Endangered Species Act; (3) consideration under the California Environmental Quality Act (CEQA); (4) implementation of conservation plans pursuant to the State of California's Natural Community Conservation Planning Act of 1991 (NCCP), including the San Diego Multiple Species Conservation Plan (MSCP), the San Diego County Multiple Habitat Conservation Plan (MHCP), and the Central/Coastal Orange County

NCCP/HCP; (5) local laws and regulations; (6) Federal land management responsibilities; and (7) Mexican law.

Clean Water Act

Under section 404 of the Clean Water Act, the Corps regulates the discharge of fill into waters of the United States, including navigable waters, wetlands (e.g., vernal pools), and other waters (33 CFR parts 320-330). The Clean Water Act requires project proponents to obtain a permit from the Corps prior to undertaking many activities (e.g., grading, discharge of soil or other fill material) that would result in the filling of wetlands subject to the Corps' jurisdiction. The Corps promulgated Nationwide Permit Number 26 to address fill of isolated or headwater wetlands totaling less than 10 acres. Under the 1996 reauthorized Nationwide Permit 26 (61 FR 65873), project proposals that involve the fill of wetlands of less than one-third of an acre are considered authorized. Fill of between one-third and one acre requires notification only to the Corps. Where fill would adversely modify between 1 and 3 acres of wetland, the Corps circulates a pre-discharge notification to the Service and other interested parties for comment to determine whether an individual permit should be required for a proposed fill activity and associated impacts.

Individual Corps permits are required for discharge of material that would fill or adversely modify more than 3 acres of wetlands. The review process for individual permits is more rigorous than for nationwide permits. Unlike nationwide permits, an analysis of cumulative wetland impacts is required for individual permit applications. Resulting permits may include special conditions that require potential avoidance or mitigation for environmental impacts. On nationwide permits, the Corps has discretionary authority to instead require an individual permit if the Corps believes that resources are sufficiently important, regardless of the wetland's size. In practice, however, the Corps generally does not require an individual permit when a project qualifies for a nationwide permit, unless a threatened or endangered species or other significant resources would be adversely affected by the proposed activity. Most vernal pools and swales within the range of the San Diego fairy shrimp encompass less than 1 acre. The discontinuous distribution of these sites has allowed some landowners to divide large projects into several smaller projects. Wetland acreage on these

smaller projects is generally less than 1 acre, and therefore, most projects qualify for Nationwide Permit 26. Discing and other farming or ranching practices, including grazing, can degrade or destroy vernal pool habitat without a permit from the Corps because many of these activities are exempt from regulation under the Clean Water Act (33 CFR 323.4(a)). The discontinuous configuration of the pools and swales further obscures separation of these wetland losses.

Endangered Species Act

The Act can incidentally afford protection to San Diego fairy shrimp if they co-exist with species already listed as threatened or endangered. *Pogogyne abramsii* (San Diego mesa mint), *P. nudiscula* (Otay mesa mint), *Orcuttia californica* (California orcutt grass), *Eryngium aristulatum* var. *parishii* (San Diego button celery), and the Riverside fairy shrimp (*Streptocephalus wootoni*) are listed as endangered under the Act and occur in the same habitat as the San Diego fairy shrimp. However, these species are not always found in the same vernal pools or vernal pool complexes as the San Diego fairy shrimp. The Riverside fairy shrimp and San Diego fairy shrimp are known to co-exist in only three vernal pool complexes in San Diego County. Within a vernal pool complex, the San Diego fairy shrimp often does not occur in the same pools as listed plant species. Except for the Riverside fairy shrimp, these other noted vernal pool species are plants for which the Act does not provide prohibitions against take. Therefore, the umbrella protection that they may provide would only occur if a proposed federally funded or authorized action would jeopardize the continued existence of those species, as determined in a biological opinion developed under section 7 of the Act.

California Environmental Quality Act

Section 15380 of the CEQA requires that impacts to any taxon that meets the criteria for listing under the California Endangered Species Act be treated as significant regardless of its current listing status. The San Diego fairy shrimp has been recognized as a distinct taxon by the scientific and local conservation communities since 1990. Impacts to this species would qualify as significant under section 15380 of the CEQA even though this species was not described taxonomically until 1993 (Fugate 1993). However, this taxon has only been considered in a limited number of environmental impact reports since 1990. Required biological surveys are often inadequate and project

proponents may ignore the results of surveys if occurrences of sensitive species are viewed as a constraint on project design. Mitigation measures used to condition project approvals are essentially experimental and fail to adequately guarantee protection of the populations. Most mitigation plans that have been required were designed specifically for vernal pool plants. The artificial creation of vernal pools as compensatory mitigation has not been scientifically demonstrated to be successful (Ferren and Gevirtz 1990; Zedler and Black 1988; M. Simovich, *in litt.*, 1992). For example, in San Diego County, vernal pools containing the San Diego fairy shrimp and the federally and State-listed San Diego mesa mint were destroyed without adequate environmental documentation or coordination with the Service and the California Department of Fish and Game.

Natural Communities Conservation Planning Act

In 1991, the State of California passed the NCCP Act to address the conservation needs of natural ecosystems throughout the State. The initial focus of this program was the coastal sage scrub community in southern California, although other associated vegetation communities are also being addressed in this ecosystem-based planning approach. The San Diego fairy shrimp is found in vernal pools that are often not located in coastal sage scrub. However, the San Diego fairy shrimp is being treated as a covered species under the MSCP plan and MHCP. These plans, under development by the County of San Diego and its coastal cities, are being integrated as components of the NCCP program. The MSCP is developed and is currently undergoing the final stages of the public review process. The MHCP is still in the developmental phase, and it is uncertain as to how successful it will be in providing protection for this species. The Central/Coastal Orange County NCCP/HCP (approved by the Service on July 17, 1996) treats the San Diego fairy shrimp as a "conditionally covered" species and provides coverage for this species under the section 10(a)(1)(B) "incidental take" permits only for highly degraded and/or artificial habitat. Non-degraded, natural vernal pool habitat is not covered. The San Diego fairy shrimp has not been confirmed in the Central/Coastal NCCP/HCP planning area. If present, it would likely occur in highly degraded and/or artificial habitat, where incidental take would be allowed under the permit.

Local Laws and Regulations

The San Diego fairy shrimp is not specifically protected under any local laws or regulations. The San Diego fairy shrimp occurs within the California Department of Transportation Vernal Pool Preserve on Del Mar Mesa. Although these pools are being managed for the long-term protection of vernal pool flora and fauna, ORV activity, proposed development immediately adjacent to the preserve, and proposed restoration actions may threaten the San Diego fairy shrimp at this locality (M. Simovich, pers. comm., 1993).

The San Diego Vernal Pool Preservation Program, enacted by the City of San Diego in 1980, did not include adequate protection for vernal pools, nor did it contain sufficient mitigation to compensate for the loss of vernal pools. More than 800 pools have been destroyed under the preservation plan, and only three sites containing approximately 8 ha (21.8 ac) of watersheds containing vernal pools have been purchased using \$882,000 of the mitigation funds. The preservation program did not collect sufficient funds to mitigate the vernal pool land area lost, nor did it include suitable preserve size, design configuration, or adequate management.

Federal Land Management Responsibilities

The Service has proposed a National Wildlife Refuge in San Diego County which includes a proposed Vernal Pool Stewardship Project. The Draft Environmental Assessment for the Vernal Pools Stewardship Project was released in November of 1996. Approval of the Vernal Pools Stewardship Project does not grant the Service jurisdiction or control over lands within the project boundary, nor does it automatically make lands within the project boundary part of the National Wildlife Refuge System (NWRS). Lands do not become part of the NWRS until they are purchased by the Service or are placed under an agreement that provides for management as part of the refuge system. Service policy is to acquire lands only from willing sellers. To date, the Service has not purchased any lands for inclusion in the vernal pool unit, nor are any lands under an agreement to be managed as part of the refuge. Proposed projects are located within several of the areas recommended for inclusion in the vernal pool refuge. On Otay Mesa and below the Sweetwater Reservoir, the proposed alignment for State Route 125 intersects lands within the proposed refuge boundary. Because these lands have not been purchased, the Federal

Highways Administration does not have to complete an evaluation pursuant to section 4(f) of the U.S. Department of Transportation Act (49 U.S.C. 303). In addition, a resort is proposed within the unit located above Otay Lakes that would eliminate the vernal pools on that site.

The San Diego fairy shrimp is found on Federal lands managed by the U.S. Navy at Cholla Heights Naval Housing and Miramar Naval Air Station, and the U.S. Marine Corps at Camp Pendleton. These lands are used, in part, for military training activities that involve ORV maneuvers that adversely impact the species (Hogan and Belk 1992). The air station will be transferred to the Marine Corps on October 1, 1997. The Marine Corps has indicated that they will not allow a National Wildlife Refuge overlay on the air station (Department of the Navy 1996); however, they have agreed to place a vernal pool stewardship overlay on the areas of the base containing vernal pools. The Marine Corps stated that they will implement management plans for the vernal pools at Miramar Naval Air Station and Camp Pendleton, but none has been prepared to date. Surrounding privately owned vernal pool habitat and watershed is not protected.

Mexican Law

The Service is not aware of any existing regulatory mechanisms that would protect the San Diego fairy shrimp or its habitat where it occurs in northwestern Baja California, Mexico.

E. Other Natural or Man-Made Factors Affecting Their Continued Existence

Secondary impacts associated with urbanization include disposal of waste materials into habitat for the San Diego fairy shrimp. Disposal of concrete, tires, refrigerators, sofas, and other trash adversely affects these animals by eliminating habitat, disrupting pool hydrology or, in some cases, through release of toxic substances (Bauder 1986, 1987). Malathion, herbicides, laundry detergent, household plant fertilizer, and motor oil have been documented to be fatal to the San Diego fairy shrimp through poisoning of the animals or by the formation of a barrier to gas exchange on the surface of the water, which can result in asphyxiation (Branchiopod Research Group 1996). Dust and other forms of air or water pollution from commercial development or agricultural projects may also be deleterious to this animal.

ORV use also imperils the San Diego fairy shrimp. ORVs crush fairy shrimp eggs (Ericksen *et al.* 1986); less than the weight of an apple can crush dormant

fairy shrimp eggs (Branchiopod Research Group 1996). ORVs can also cut deep ruts, compact soil, destroy native vegetation, and alter pool hydrology. Fire fighting activities, security patrols, military maneuvers, and recreational activities have cumulatively damaged vernal pool habitats in many areas within the range of the species (Bauder 1986, 1987). On the Otay Mesa, law enforcement-related ORV use by the U.S. Border Patrol has adversely impacted vernal pools known to be inhabited by the San Diego fairy shrimp.

Cattle grazing occurs on Otay Mesa, Otay Lakes, and Ramona in areas where several vernal pool complexes contain the San Diego fairy shrimp. Overgrazing in areas containing the animal and its habitat is likely detrimental. High levels of pasture runoff may lead to increased siltation of vernal pool habitat. High livestock densities may result in excessive physical disturbance, such as trampling, and cause changes in pool water chemistry and water quality. Impacts due to overgrazing have been described as analogous to those from vehicle traffic (e.g., causing deep tracks, burying eggs, and trampling individuals) (Bauder 1986, 1987).

The Service has carefully assessed the best available scientific and commercial information regarding past, present, and future threats faced by the San Diego fairy shrimp in determining to issue this final rule. Based on this evaluation, the preferred action is to list the San Diego fairy shrimp as endangered. This species is imperiled by rapid urbanization, conversion of land to agricultural use, vehicle use, extremely limited available habitat (less than 81 ha (200 ac) of vernal pools), and changes in hydrologic patterns in areas where they occur. Numerous ongoing and proposed development projects pose an imminent threat to the San Diego fairy shrimp. Extraordinary increases in the human population and associated pressures from urban development have rendered existing regulatory mechanisms inadequate. All of the known populations of the San Diego fairy shrimp are imperiled. Only a portion of the extant vernal pools would be protected under the MSCP and/or the proposed San Diego National Wildlife Refuge. Because the San Diego fairy shrimp has been extirpated from all but approximately 81 ha (200 ac) of vernal pool habitat, and because of the threats to the species discussed above, the San Diego fairy shrimp is in danger of extinction throughout all or a significant portion of its range and thus meets the definition of endangered as defined in the Act. Designation of critical habitat

for the San Diego fairy shrimp is not prudent for the reasons discussed below.

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, upon a determination 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.

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 concurrently with determining a species to be endangered or threatened. The Service finds that the designation of critical habitat is not prudent for the San Diego fairy shrimp. Service regulations at 50 CFR 424.12(a)(1) state that 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 such threat to the species, or (2) such designation of critical habitat would not be beneficial to the species. Because the San Diego fairy shrimp faces numerous human-caused threats (see Factors “A” and “E” above), the publication of precise maps and descriptions of critical habitat in the Federal Register would make this species more vulnerable to incidents of vandalism and, therefore, would contribute to the decline of the species. A number of sites inhabited by the San Diego fairy shrimp occur on private land that is undergoing rapid urban development and agricultural conversion. As documented in this rule, some areas have been destroyed to eliminate vernal pool characteristics and escape regulatory jurisdiction by the Corps. The proper agencies have been notified concerning management requirements of the animal. Protection of the habitat of the species will be addressed through the recovery, section 7 consultation, and incidental take permit processes. Federal involvement in areas where the animal occurs can be

identified without designation of critical habitat. Therefore, the Service finds that designation of critical habitat for the San Diego fairy shrimp is not prudent at this time, because such designation would likely increase the degree of threat from vandalism or other human activities.

Available Conservation Measures

Conservation measures provided to species listed as endangered or threatened under the Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain activities. Recognition through listing encourages and results in public awareness and 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 plans be developed for listed species. The protection required by Federal agencies and the prohibitions against taking and harm are discussed, in part, below.

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 being designated. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR part 402. Section 7(a)(1) requires Federal agencies to use their authorities to further the purposes of the Act by carrying out programs for listed species. Section 7(a)(2) of the Act requires Federal agencies to insure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of the species. If a Federal action is likely to adversely affect a listed species, the responsible Federal agency must enter into formal consultation with the Service.

Federal agencies expected to have involvement with the San Diego fairy shrimp include the Army Corps of Engineers and the Environmental Protection Agency due to their permit authority under section 404 of the Clean Water Act. Nationwide permits are not valid where a federally listed endangered or threatened species would be affected by the proposed project. When listed species may be affected, formal consultation is required pursuant to section 7 of the Act before nationwide permits become effective.

The San Diego fairy shrimp occurs on Miramar Naval Air Station, Marine Corps Base Camp Pendleton, and Cholla Heights Naval Housing. These bases will likely be involved through military

activities or potential exceeding of Federal lands. The Department of Transportation (Federal Highways Administration) may possibly be affected by the listing of this species because some populations occur on properties where federally funded roadways may be constructed. Activities undertaken by the U.S. Border Patrol may affect vernal pools containing the species along the international border. The Federal Aviation Administration will be affected through activities they fund, permit, or authorize at the Ramona Airport and Montgomery Field Airport. In addition, the Department of Housing and Urban Development (HUD) may insure housing loans in areas that presently support San Diego fairy shrimp. HUD actions regarding these loans would also be subject to review by the Service under section 7 of the Act.

The listing of the San Diego fairy shrimp also brings sections 5 and 6 of the Act into effect. Section 5 authorizes acquisition of lands for the purposes of conserving endangered and threatened species. Pursuant to section 6, the Service will be able to grant funds to the affected State for management actions aiding in protection and recovery of the species.

Listing the San Diego fairy shrimp as endangered provides for the development and implementation of a recovery plan for the species. Such a plan will bring together State and Federal efforts for conservation of the species. The plan will establish a framework for agencies to coordinate activities and cooperate with each other in conservation efforts. The plan will set recovery priorities and estimate the costs of various tasks necessary to accomplish the priorities. It also will describe site-specific management actions necessary to achieve conservation and survival of the San Diego fairy shrimp.

The Act and its implementing regulations set forth a series of prohibitions and exceptions that apply to all endangered wildlife. The prohibitions, codified at 50 CFR 17.21 for endangered wildlife, in part, 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 or foreign commerce in the course of commercial activity, or sell or offer for sale in interstate or foreign commerce any listed species. It also is illegal to possess, sell, deliver, carry, transport, or ship any such wildlife that has been taken illegally. Certain exceptions apply

to agents of the Service 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 connection with otherwise lawful activities.

It is the policy of the Service, 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 constitute a violation of section 9 of the Act. The intent of this policy is to increase public awareness of the effect of the listing on proposed and on-going activities within a species' range. Activities that could potentially result in "take" of the San Diego fairy shrimp include, but are not limited to: unauthorized collecting or handling of the animal, unauthorized pesticide applications within the vernal pool habitat of the species, or intentional or unauthorized damage or destruction of its habitat (e.g., ORV use, urban development or agricultural conversion that damages or destroys the vernal pools or alters their hydrology), violation of the terms and conditions of discharge permits, and discharges or dumping of toxic chemicals, silt fertilizers, oil, organic wastes, or other pollutants into waters supporting the species.

Activities that the Service believes are unlikely to result in a violation of section 9 are: possession, delivery, or movement, including interstate transport and import into or export from the United States, involving no commercial activity, of dead specimens of the San Diego fairy shrimp that were collected prior to the date of publication in the Federal Register of the final regulation adding this species to the list of endangered species; and federally approved projects that involve activities such as discharge of fill material, draining, ditching, tiling, pond construction, stream channelization or diversion, or alteration of surface or ground water into or out of a wetland (i.e., due to roads, impoundments, discharge pipes, storm water detention basins, etc.), when such activity is conducted in accordance with any reasonable and prudent measures given by the Service in accordance with section 7 of the Act.

Questions regarding whether specific activities will constitute a violation of section 9 of the Act should be directed

to the Field Supervisor of the Service's Carlsbad Field Office (see **ADDRESSES** section). Requests for copies of the regulations regarding listed wildlife and inquiries about prohibitions and permits should be addressed to U.S. Fish and Wildlife Service, Ecological Services, Endangered Species Permits, 911 N.E. 11th Avenue, Portland, Oregon 97232-4181 (telephone 503/231-2063, facsimile 503/231-6243).

Reasons for Effective Date

The Service is concerned that issuance of a final rule for this species that is not effective immediately upon publication will result in continued deliberate damage to vernal pools inhabited by the San Diego fairy shrimp. As discussed under Factor "A" above, on-going alteration of vernal pool hydrology and destruction of pools has been documented by the Service. Because of the immediate threat to the continued existence of the San Diego fairy shrimp posed by these on-going activities, the Service finds that good cause exists for this rule to take effect immediately upon publication in accordance with 5 U.S.C. 553(d)(3).

National Environmental Policy Act

The Fish and Wildlife Service has determined that Environmental Assessments and Environmental Impact Statements, as defined under the authority of the National Environmental Policy Act of 1969, need not be prepared in connection with regulations adopted pursuant to section 4(a) of the Endangered Species Act of 1973, as amended. 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 in this rule is available upon request from the Carlsbad Field Office (see **ADDRESSES** section).

Required Determinations

The Service has examined this regulation under the Paperwork Reduction Act of 1995 and found it to contain no information collection requirements. This rulemaking was not subject to review by the Office of Management and Budget under Executive Order 12866.

Authors

The primary authors of this final rule are Chris Nagano and Susan Wynn, Carlsbad Field Office (see **ADDRESSES** section).

List of Subjects in 50 CFR Part 17
 Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, and Transportation.
 Regulation Promulgation
 Accordingly, part 17, subchapter B of chapter I, title 50 of the Code of Federal

Regulations, is amended 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 CRUSTACEANS, to the List of Endangered and Threatened Wildlife, to read as follows:
§ 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						
CRUSTACEANS							
Fairy shrimp, San Diego	<i>Branchinecta sandiegonensis</i> .	U.S.A. (CA), Mexico ..	NA	E	608	NA	NA

Dated: January 27, 1997.
 John G. Rogers,
 Acting Director, U.S. Fish and Wildlife Service.
 [FR Doc. 97–2578 Filed 1–31–97; 8:45 am]
 BILLING CODE 4310–55–P