

(ii) A related entity of any Partner State other than the United States; and
 (iii) The employees of any of the entities identified in paragraphs (c)(1)(i) and (ii) of this clause.

(2) The Contractor agrees to extend the waiver of liability as set forth in paragraph (c)(1) of this clause to subcontractors at any tier by requiring them, by contract or otherwise, to agree to waive all claims against the entities or persons identified in paragraphs (c)(1)(i) through (c)(1)(iii) of this clause.

(3) For avoidance of doubt, this cross-waiver includes a cross-waiver of liability arising from the Convention on International Liability for Damage Caused by Space Objects, (March 29, 1972, 24 United States Treaties and other International Agreements (U.S.T.) 2389, Treaties and other International Acts Series (T.I.A.S.) No. 776) in which the person, entity, or property causing the damage is involved in Protected Space Operations.

(4) Notwithstanding the other provisions of this clause, this cross-waiver of liability shall not be applicable to:

(i) Claims between the United States and its related entities or claims between the related entities of any Partner State (e.g., claims between the Government and the Contractor are included within this exception);

(ii) Claims made by a natural person, his/her estate, survivors, or subrogees for injury or death of such natural person;

(iii) Claims for damage caused by willful misconduct; and

(iv) Intellectual property claims.

(5) Nothing in this clause shall be construed to create the basis for a claim or suit where none would otherwise exist.

(End of clause)

[FR Doc. 93-25646 Filed 10-19-93; 8:45 am]

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DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

RIN 1018-AB73

Endangered and Threatened Wildlife and Plants; Determination of Threatened Status for the Giant Garter Snake

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: The U.S. Fish and Wildlife Service (Service) determines the giant garter snake (*Thamnophis gigas*) to be a threatened species pursuant to the Endangered Species Act of 1973, as amended (Act). This snake inhabits localized wetland habitats in portions of the Central Valley of California. The species is threatened by habitat loss and threats from urbanization, flooding,

contaminants, agricultural and maintenance activities, and introduced predators. This rule extends the Act's protective provisions to the giant garter snake throughout its range.

EFFECTIVE DATE: November 19, 1993.

ADDRESSES: The complete file for this rule is available for inspection, by appointment, during normal business hours at U.S. Fish and Wildlife Service, Sacramento Field Office, 2800 Cottage Way, room E-1803, Sacramento, California 95825-1846 (telephone 916/978-4866).

FOR FURTHER INFORMATION CONTACT: Tom C. Sorensen (see ADDRESSES section) at 916/978-4866.

SUPPLEMENTARY INFORMATION:

Background

The giant garter snake (*Thamnophis gigas*) is one of the largest garter snakes, reaching a total length of at least 162 centimeters (cm) (64 inches (in)) (George H. Hanley, pers. comm. to Mark Jennings, USFWS, pers. comm., 1993). Females are slightly longer and proportionately heavier (typically 500-700 grams (g)) (1.0-1.4 pounds (lb)) than males (George E. Hansen, biological consultant, pers. comm., 1991). Dorsal background coloration varies from brownish to olive with a checkered pattern of black spots, separated by a yellow dorsal stripe and two light colored lateral stripes. Background coloration and prominence of black checkered pattern and the three yellow stripes are geographically and individually variable (Hansen 1980). Individuals in the northern Sacramento Valley tend to be darker with more pronounced mid-dorsal and lateral stripes (California Department of Fish and Game (CDFG) 1992). The ventral surface is cream to olive or brown and sometimes infused with orange, especially in northern populations (CDFG 1992). First described by Fitch (1940) as a subspecies of the northwestern garter snake (*Thamnophis ordinoides*), the taxonomic status of the giant garter snake, along with that of other western garter snakes, has undergone several revisions, including its placement as a subspecies of the western terrestrial garter snake (*Thamnophis elegans*) (Johnson 1947, Fox 1951), and then the western aquatic garter snake (*Thamnophis couchii*) (Fox and Dessauer 1965, Lawson and Dessauer 1979). In 1987, it was accorded the status of a full species, *Thamnophis gigas* (Rossman and Stewart 1987).

Endemic to valley floor wetlands in the Sacramento and San Joaquin Valleys of California, the giant garter snake inhabits marshes, sloughs, ponds, small

lakes, low gradient streams, and other waterways and agricultural wetlands, such as irrigation and drainage canals and rice fields. Giant garter snakes feed on small fishes, tadpoles, and frogs (Fitch 1941, Hansen 1980, Hansen 1988). Habitat requisites consist of (1) adequate water during the snake's active season (early-spring through mid-fall) to provide food and cover, (2) emergent, herbaceous wetland vegetation, such as cattails and bulrushes, for escape cover and foraging habitat during the active season, (3) grassy banks and openings in waterside vegetation for basking, and (4) higher elevation uplands for cover and refuge from flood waters during the snake's dormant season in the winter (Hansen 1988). Giant garter snakes are absent from larger rivers and other water bodies that support introduced populations of large, predatory fish, and from wetlands with sand, gravel, or rock substrates (Hansen 1980, Rossman and Stewart 1987, Brode 1988, Hansen 1988). Riparian woodlands do not provide suitable habitat because of excessive shade, lack of basking sites, and absence of prey populations (Hansen 1980).

The giant garter snake inhabits small mammal burrows and other soil crevices above prevailing flood elevations throughout its winter dormancy period (November to mid-March) (G. Hansen, pers. comm., 1991). Giant garter snakes typically select burrows with sunny aspects along south and west facing slopes (G. Hansen, pers. comm.). Upon emergence, males immediately begin wandering in search of mates (G. Hansen, pers. comm.). The breeding season extends through March and April, and females give birth to live young from late July through early September (Hansen and Hansen 1990). Brood size is variable, ranging from 10 to 46 young, with a mean of 23.1 (n=19) (Hansen and Hansen 1990). At birth, young average about 20.6 cm (8.1 in) snout-vent length and 3-5 g (0.1-0.18 ounces (oz)) (Hansen and Hansen 1990, G. Hansen, pers. comm. 1991). Young immediately scatter into dense cover and absorb their yolk sacs, after which they begin feeding on their own. Although growth rates are variable, young typically more than double in size by one year of age (G. Hansen, pers. comm. 1991). Sexual maturity averages 3 years of age in males and 5 years for females (G. Hansen, pers. comm. 1991).

Fitch (1940) described the historical range of the species as extending from the vicinity of Sacramento and Contra Costa Counties southward to Buena Vista Lake, near Bakersfield in Kern County. Prior to 1970, the giant garter snake was recorded historically from 17

localities (Hansen and Brode 1980). With five of these localities clustered in and around Los Banos, Merced County, the paucity of early records makes it difficult to determine precisely the species' former range. Nonetheless, these records coincide with the historical distribution of large flood basins, fresh water marshes, and tributary streams. Reclamation of wetlands for agriculture and other purposes apparently extirpated the species from the southern one-third of its range by the 1940's-1950's, including the former Buena Vista Lake and Kern Lake in Kern County, and the historic Tulare Lake and other wetlands in Kings and Tulare Counties (Hansen and Brode 1980, Hansen 1980).

As recently as the 1970's, the range of the giant garter snake extended from near Burrell, Fresno County (Hansen and Brode 1980), northward to the vicinity of Chico, Butte County (Rossman and Stewart 1987). As discussed in more detail below, there are no post-1980 giant garter snake sightings from Burrell, Fresno County, northward to Stockton, San Joaquin County (California Natural Diversity Data Base records). Giant garter snake populations currently are distributed in portions of the rice production zones of Sacramento, Sutter, Butte, Colusa, and Glenn Counties; along the western border of the Yolo Bypass in Yolo County; and along the eastern fringes of the Sacramento-San Joaquin River delta from the Laguna Creek-Elk Grove region of central Sacramento County southward to the Stockton area of San Joaquin County (Hansen 1988).

Prior to State listing in 1971, 17 giant garter snake localities, representing about 9 distinct populations, were known from the literature and museum records. Subsequent surveys by the California Department of Fish and Game (CDFG) in the mid-1970's indicated that eight of these localities, representing about four populations, had since become extinct (Hansen and Brode 1980). These same surveys documented a total of 36 giant garter snake localities, 28 of them newly discovered, representing about 7 new populations not previously known. Thus, the result of these surveys indicated a net increase of 3, for a total of 12 distinct giant garter snake populations known to be extant around 1980.

In the mid-1980's, CDFG conducted another status survey of the giant garter snake throughout its range (Hansen 1988), surveying more than 460 sites. Giant garter snakes were found at 46 of these localities, representing 7 distinct populations, 3 previously unknown. However, this study failed to observe

snakes at seven previously documented populations. The uniform census methods used in the 1970's and 1980's studies were designed to detect any changes in relative abundance. Hence, although the negative data did not prove conclusively that the species had been extirpated from the seven populations, they reflect, at a minimum, severe declines in population density to undetectably low levels. For example, former strongholds, such as Mendota Waterfowl Management Area, which yielded 20 captures on a single day in April 21, 1976, has not produced any sightings throughout the 1980's and 1990's, despite repeated sampling.

In 1992, a third round of giant garter snake studies were conducted, in part precipitated by the Service's proposal to list the species. These studies further clarified the current rangewide status of the giant garter snake (Beak 1992, Pacific Environmental Consultants 1992).

A cluster of locality records in a contiguous habitat area represents a population. Thirteen populations have been identified using locality records collected since the mid-1970's (G. Hansen, pers. comm., 1993; J. Brode, pers. comm., 1993). The 13 populational clusters largely coincide with historical riverine flood basins and tributary streams throughout the Central Valley (Hinds 1952, Hansen 1980, Brode and Hansen 1992): (1) Butte Basin, (2) Colusa Basin, (3) Sutter Basin, (4) American Basin, (5) Yolo Basin—Willow Slough, (6) Yolo Basin—Liberty Farms, (7) Sacramento Basin, (8) Badger Creek—Willow Creek, (9) Caldoni Marsh, (10) East Stockton—Diverting Canal and Duck Creek, (11) North and South Grasslands, (12) Mendota, and (13) Burrell—Lanare. Within the rice production zones associated with population clusters 1 to 4 above, giant garter snakes occupy the maze of interconnected agricultural water delivery and drainage facilities. The giant garter snake populations 5 to 13 above occur discontinuously in typically small, isolated patches of valley floor habitat. This latter group of giant garter snake populations supports few individuals because of limited extent and quality of suitable habitat (Hansen 1988). The species is absent from the northern portion of the San Joaquin Valley, where the floodplain of the San Joaquin River is restricted to a relatively narrow trough by alluvium from tributary rivers and streams. This 100 kilometer (km) (62 mile (mi)) gap in its distribution separates historically known populations in Merced County from those along the eastern fringes in the Sacramento-San Joaquin River Delta

(known as the Delta) in San Joaquin County (Hansen and Brode 1980). Suitable habitat that may have existed formerly throughout remaining portions of the Delta has been eliminated (Hansen 1988). Below is a summary of the status and threats associated with each of these 13 populations (J. Brode, pers. comm., 1993; G. Hansen, pers. comm., 1993):

(1) *Butte Basin*: Approximately six locality records are known from the basin and tributary streams/canals. Existing records indicate that the species is widely distributed in low population numbers/densities, primarily in water delivery/drainage facilities and perhaps associated rice fields. Giant garter snakes appear restricted to unnatural (agricultural) habitats. Individuals are susceptible to flooding. Mortality from predatory fish and birds, vehicular traffic, agricultural practices, and maintenance of water channels represent the primary threats. These chronic threats imperil giant garter snakes in individual localities but do not seem great enough to place at imminent risk the continued survival of the entire population.

(2) *Colusa Basin*: Approximately 10 discrete locality records are known from the basin and tributary streams/canals. Available information indicates a tenuous connection between localities clustered at the north and south end of the basin. Status and threats are similar to the Butte Basin population.

(3) *Sutter Basin*: Approximately five discrete locality records are known from the basin and tributary streams/canals. The overall situation is similar to the previous two populations.

(4) *American Basin*: The numerous records distributed throughout most of the basin indicate that a large giant garter snake population inhabits this rice production district. Scattered natural habitats comprise a small component of this larger, agricultural habitat complex. Flooding threatens this population; however, it is under less threat of flooding than some of the other populations. The American Basin population also is threatened by incremental, large scale urbanization. Review of development proposals by the Service and CDFG indicate that mitigation measures proposed for impacts to the giant garter snake would not offset adverse effects and therefore would not eliminate the threat to the existence of this population.

(5) *Yolo Basin—Willow Slough*: Approximately two records are known from along Willow Slough, Willow Slough Bypass, and a limited amount of rice fields. Available habitat is limited and degraded. Based on habitat scarcity

and an associated small population size, threats are imminent. Because of its small size, this population is vulnerable to extirpation from stochastic (random) environmental, demographic, and genetic processes. Primary threats include proposed urban development on the Conway Ranch, flood control and agricultural practices, flooding, road mortality, and predatory fish. The Putah Creek population within this basin apparently has been extirpated (G. Hansen, *in litt.*, 1992) because of stream desiccation caused by upstream water diversions and impoundments (USFWS 1992).

(6) *Yolo Basin—Liberty Farms*: Two records from an irrigation canal network, combined with an absence of suitable, natural habitat in the area, suggest that this population is restricted entirely to degraded, artificial habitat. Given the known effect of livestock grazing on garter snakes and their associated wetland habitats (Szaro *et al.* 1989), grazing likely threatens the giant garter snake in this area. Threats are similar to those at Willow Slough, absent the threat of urban development.

(7) *Sacramento Basin*: Except for one record from 1982, the other six records from this population date from the 1970's. During the intervening period, numerous development projects have been constructed in or near giant garter snake habitat in this rapidly urbanizing area. Any remaining populations are vulnerable to secondary effects of urbanization, such as increased predation by house cats and vehicular mortality. Most documented localities have been adversely impacted by development, including freeway construction, flood control projects, and commercial development. Several former localities are known to have been lost and/or depleted to the extent that continued viability is in question (Hansen, *in litt.*, 1992; G. Hansen, pers. comm., 1992). The scarcity of remaining suitable habitat, flooding, stochastic processes, and continued threats of habitat loss pose continued threats to this population.

(8) *Badger Creek—Willow Creek*: Restricted to less than about 200 acres of natural, emergent marsh, this population faces imminent threats from flooding, livestock grazing, and predation by fish and birds. Planning for commercial development of the property is in progress. Habitat scarcity and limited population size render the giant garter snake vulnerable to extirpation in this area from stochastic environmental, demographic, and genetic processes.

(9) *Caldoni Marsh*: Also known as White Slough Wildlife Area, about 50

acres of suitable habitat remains, the most valuable portion situated on private land. Approximately 280 acres of habitat was eliminated during the construction of Interstate 5 around 1978 to 1979. Restricted to such a small patch size of remaining habitat, this population is vulnerable to extirpation from stochastic processes. A locality record along Eight Mile Road possibly connected with this population apparently has been extirpated due to habitat loss (J. Brode, CDFG, pers. comm. 1992; G. Hansen, *in litt.*, 1992).

(10) *East Stockton—Diverting Canal and Duck Creek*: Known from a few locality records along the Diverting Canal and Duck Creek, the status of this population is unknown. Remaining habitat consists of degraded habitat in flood control bypass channels, and is dependent upon vegetation maintenance practices. Impacts associated with channel maintenance and vehicular mortality represent the most severe threat. The age of giant garter snake records raise questions regarding the long-term viability of this population. Stochastic threats to this population, if still extant, are similar to those described above for the other smaller populations.

(11) *North and South Grasslands*: Twenty-four records in the California Natural Diversity Data Base, all prior to 1976, delimited a formerly extensive complex of occupied suitable habitat, probably the largest regional population in the San Joaquin Valley since the demise of the Tulare and Buena Vista lakebeds. However, Hansen (1988) searched 38 localities in 1986 to 1987, and Beak (1992) searched 7 localities in 1992. Neither survey found any giant garter snakes. As discussed in more detail under Factor E in the "Summary of Factors Affecting the Species," the prevalence of selenium and salinity contamination throughout this area and absence of any giant garter snake sightings since the 1970's indicates that this population, if still extant, is at risk. In many areas, the restriction of suitable habitat to water canals bordered by roadways and levee tops renders giant garter snakes vulnerable to vehicular traffic and vegetation maintenance practices. In addition, livestock grazing has adversely impacted certain areas in proximity to known locality records (J. Brode, pers. comm., 1992). Overall, threats to this population are imminent and severe.

(12) *Mendota*: As recently as the late 1970's and perhaps early 1980's, a relatively small acreage of habitat in and around the northern portions of the Mendota Waterfowl Management Area and to a lesser extent, Mendota Pool,

supported a robust population of giant garter snakes. However, flooding during the winter of 1985 to 1986, presence of predatory fish, vehicular mortality, and disturbance and persecution by fishermen and recreationists apparently has depleted population levels at this former stronghold (J. Brode, pers. comm., 1992; G. Hansen, pers. comm., 1992; R. Hansen, biological consultant, pers. comm., 1992). Recent survey efforts by Hansen (1988) and Beak (1992) failed to observe any giant garter snakes. If still extant, the future persistence of this population is under threat.

(13) *Burrell-Lanare*: The remnant population in this area never was secure or prevalent, based on the limited amount of fragmented habitat available along a few irrigation/drainage canal networks. Recent observations (J. Brode, pers. comm., 1992; G. Hansen, pers. comm., 1992) found deteriorating habitat conditions caused by canal maintenance practices, public use, and presence of predatory fish. Accordingly, Hansen (*in litt.*, 1992) concluded that this population apparently has been extirpated. If still extant, threats are imminent and severe, including threats associated with small population size, such as stochastic events.

Previous Federal Action

On September 18, 1985, the Service published the Vertebrate Wildlife Notice of Review (50 FR 37958), which included the giant garter snake as a category 2 candidate species for possible future listing as threatened or endangered. Category 2 candidates are species for which information contained in Service files indicates that proposing to list is possibly appropriate but additional data are needed to support a listing proposal. In the January 6, 1989, Animal Notice of Review (54 FR 554), the Service again included the giant garter snake as a category 2 candidate and solicited information on the status of this species. On September 12, 1990, the California-Nevada Chapter of the American Fisheries Society petitioned the Service to list the giant garter snake as an endangered species. The Service published a 90-day petition finding on March 22, 1991 (56 FR 12146), which concluded that the petition presented substantial information indicating that listing may be warranted. On November 21, 1991, the Service changed the status of the giant garter snake to a category 1 candidate in the most recent Animal Notice of Review (56 FR 58804). Category 1 candidates are species for which the Service has on file enough substantial information on biological vulnerability and threats to support

proposals to list them as endangered or threatened species. This change in category status was based in part on rangewide distributional and abundance studies conducted by CDFG (Hansen 1988), threats to San Joaquin Valley populations from contaminants in irrigation drain water, and escalating urbanization. On December 27, 1991 (56 FR 67046), the Service published a proposal to list the giant garter snake as an endangered species. The proposed rule constituted the final 1-year finding for the petitioned action pursuant to section 4(b)(3)(B) of the Act. The Service now determines the giant garter snake to be a threatened species with the publication of this rule.

(The Service reevaluated the status of the giant garter snake before adopting this final rule. The giant garter snake remains in 13 populations, 3 of which are not imminently threatened. Threatened status, therefore, seems more appropriate for this species.)

Summary of Comments and Recommendations

In the December 27, 1991, proposed rule (56 FR 67046) and associated notifications, all interested parties were requested to submit factual reports or information that might contribute to the development of a final rule or withdrawal of the proposed rule. Appropriate State agencies, county and city governments, Federal agencies, scientific organizations, and other interested parties were contacted and requested to comment. Notices of the proposal were published in 11 newspapers throughout the range of the giant garter snake inviting general public comment: *Chico Enterprise-Record*, *Corning Daily Observer*, *Davis Enterprise*, *Fresno Bee*, *Marysville-Yuba City Appeal Democrat*, *Merced Sun Star*, *Modesto Bee*, *Oroville Mercury Register*, *Sacramento Bee*, *Stockton Record*, and *Woodland Daily Democrat*. In response to the proposed rule, the Service received 18 written requests for a public hearing(s) within the first 45 days of the comment period. Consequently, the Service published a notice of public hearing on May 15, 1992 (57 FR 20806), and a separate notice on May 26, 1992 (57 FR 21933), reopening the public comment period until July 15, 1992. The Service conducted the public hearing on June 1, 1992, at the Radisson Hotel in Sacramento, California. Testimony was taken from 6 p.m. to 8 p.m. Notice of the public hearing was published in the *Sacramento Bee*. Numerous additional notices soliciting public comment were sent for the proposal and public hearing to interested/affected parties.

During and after the public hearing, the Service learned that certain interests were conducting additional field work on the status and distribution of the giant garter snake throughout its range and that this information would be provided to the Service upon completion. To consider this information when it became available, the Service again reopened the public comment period from December 18 through 28, 1992. The Service received two reports that reached conclusions that differed from those stated in the proposed rule (Beak 1992, Pacific Environmental Consultants 1992). To help resolve these issues, the Service convened a panel of experts that evaluated the merits of work performed on the giant garter snake. The panel reached the same conclusions as reached in the Service's proposed rule.

During the comment periods, the Service received 58 comments (letters and oral testimony) from 45 interested parties. CDFG was among 14 commenters expressing support for the listing proposal; 24 commenters opposed the proposal. Seven commenters expressed a neutral position. Written comments and oral statements obtained during the public hearing and comment periods are combined in the following discussion. Some commenters provided additional information that has been incorporated into this final rule. Comments opposing or questioning the rule and the Service's response to each are organized under four issues, as follows.

Issue 1. Inadequate Scientific Data

Scientific Standards of Proof

Comment: Several respondents indicated that the listing proposal was not based on scientific standards of proof, contained unsubstantiated speculation, and presented unbalanced hypotheses without acknowledgement of other possible conclusions.

Service Response: The Act requires the Service to use the best available biological information as the sole basis for its listing decisions. The Service considers professional judgment and expert opinion by knowledgeable biologists, among other sources of information. Thus, listing proposals are based on the preponderance of evidence rather than standards obtained through application of the scientific method (e.g., statistically valid test).

Comment: Many commenters believed that the listing proposal was not valid because much of the information supporting the need to list the giant garter snake was obtained by one or a few individuals, and the data and

reports prepared by those individuals had not been published in peer reviewed journals.

Service Response: Though published information in peer reviewed journal articles is generally considered a credible source of information among the scientific community, such information is not often available for threatened and endangered species at the time of a listing determination. In most cases, one or a few biologists have provided the bulk of the status data used by the Service to support a listing action. Agency reports commonly provide information needed to support a listing decision. Time delays between the completion of research and publication in a scientific journal are often on the order of several to many years. Such delays would allow the status of a species to continue to decline prior to listing under the Act and would not be in keeping with its purposes. As specified at 50 CFR 424.13, the Service must consider a broad range of informational sources, including comments from interested parties, in its listing decisions. Hence, the Act does not limit, nor would it be appropriate for the Service to constrain, the scope of information suitable for consideration in the preparation of listing proposals.

Comment: Several commenters contended that estimates of baseline and current population levels are requisite to substantiating the need to list the giant garter snake.

Service Response: Baseline and current population levels often are not known for species at the time they are listed by the Service. Trend information on population levels and habitat loss/availability or population/habitat indices often represent the best available information upon which to base listing actions. These types of information provide accurate indicators of population viability. Furthermore, for most species, it is difficult to obtain population estimates, and such methods are typically associated with wide confidence intervals, especially for species that are difficult to observe or capture.

Distribution and Abundance

Comment: Numerous commenters claimed that the available information on the distribution and abundance of the giant garter snake provides an inadequate basis for listing. These commenters also asserted that the 127 locality records currently known for the giant garter snake indicate that the species is growing in numbers and expanding its range, further suggesting that the species does not warrant listing.

Service Response: Several studies were conducted in 1992 to clarify the current rangewide status of the giant garter snake. As a part of its Merced County Streams project, the U.S. Army Corps of Engineers (Corps) sponsored field work to ascertain the presence or absence of giant garter snakes in suitable habitat within the affected project area. No garter snakes were observed (G. Hansen, pers. comm., 1992). In an unrelated study, CDFG conducted intensive surveys of all suitable habitat on lands owned by the State from Stockton, San Joaquin County, northward throughout the remaining range of the giant garter snake in the Sacramento Valley. Giant garter snakes were found at two sites; one at a new locality within the Butte Basin population complex, the other at a known historic site (T. King, CDFG, pers. comm., 1992). In addition, Beak (1992) indicated that within the 95 areas studied, 3 previously unrecorded localities within the Butte Basin and Sutter Basin population clusters were found. Thus, no new populations were discovered to reveal a range expansion, and none of the information presented suggested that these populations are under lesser threat than previously thought. However, the Service has reevaluated the status of the garter snake and determined that listing as threatened is more appropriate than listing it as endangered.

Of the 127 locality records (Pacific Environmental Consultants 1992), many represent repetitive sightings (observed at different points in time from the same or adjacent locality(ies), or areas in close or identical geographic proximity). For example, 11 records listed for Caldoni Marsh, Thornton Road, White Slough, or Highway 12, as variously reported by different investigators, refer to sightings from the same 50-acre marsh adjacent to less than 1.0 mile of linear canal habitat. A single occurrence in the American Basin is represented by 35 records. One of the 127 records is questionable because it is located outside of the historic range of the species.

The 127 locality records represent 68 reasonably separable records, distributed among 13 populations. During 1992 survey efforts, no new populations were discovered. Many of these 68 separable records are no longer extant.

Comment: Several commenters claimed that the proposed rule, by not comprehensively analyzing all the available information on the former and current extent of wetlands in the Central Valley, exaggerated the historical loss of giant garter snake habitat. These and other commenters also contended that

suitable habitat exceeds the estimate of currently available habitat discussed in the proposed rule.

Service Response: It was not the intention, nor was it appropriate to conduct an exhaustive analysis of information pertaining to the history of wetland habitat losses affecting the giant garter snake. The purpose of addressing historic wetland losses in the proposed rule was to provide a context to the Central Valley ecosystem inhabited by the giant garter snake.

The primary issue is whether or not current activities including on-going habitat loss threaten the continued existence of the giant garter snake. Discussions of historic habitat availability are of academic interest, and sometimes contribute to an overall understanding of a species' decline. As discussed under the "Summary of Factors Affecting the Species," much of the present wetlands that occur within the current range of the giant garter snake are not stable, or are managed in a manner that is inconsistent with the needs of the snake, or are under threat of urban development.

Comment: Several respondents concluded that because available information suggests the giant garter snake has adapted to agricultural practices in certain areas, all of the 365,730 acres of rice fields currently in production provide suitable or potentially suitable habitat. These commenters also contended that the giant garter snake is widespread and abundant throughout these regions and with the proliferation of rice production, the species recently has spread into new areas beyond its historical range.

Service Response: Although giant garter snakes occupy some rice production areas of the American Basin (G. Hansen, pers. comm., 1992), they do not occur in many rice growing regions. A number of factors may account for giant garter snake absence from rice fields: (1) As discussed under Factor E in the "Summary of Factors Affecting the Species," frequent, severe winter flooding precludes occupation over thousands of acres, (2) burning rice fields and canals after harvest for vegetation management leaves giant garter snakes exposed upon emergence in the spring, and (3) disced roadsides and manicured vegetation often are prevalent. Furthermore, the amount of acreage in rice production varies from year to year, and, hence, rice fields do not represent habitats that are available on a long-term basis. Intensive studies conducted by Hansen (1988) and Beak (1992) in the rice production zones of the Sacramento Valley found giant

garter snakes at approximately 9 of 84 study sites and 4 of 68 sites, respectively. The majority of these records were from water supply/drainage canals, not rice fields.

Comment: Another commenter conducted a literature survey and found that wetlands providing suitable habitat for the giant garter snake may have increased over the last decade as a result of effective State and Federal wetlands protection and restoration programs. The commenter concluded that this expanded habitat base demonstrated that the species does not warrant listing.

Service Response: This particular commenter compared wetland acreages in various studies that focused on different geographic study areas, and erroneously concluded that wetland habitats are expanding. For example, the two Service studies referenced by the commenter cannot be used together to draw conclusions on changes in wetland acreages because of incompatible data for the Central Valley and the entire State. Overall wetland habitat has declined within the historic range of the giant garter snake (Frayser *et al.* 1989).

Comment: One commenter stated that because the Service failed to present data relating habitat abundance and quality to giant garter snake population levels, there is no reason to believe that the species is endangered simply due to habitat loss.

Service Response: Although quantitative data do not exist on the relationships between giant garter snake abundance and habitat quality, available information provides sufficient basis for the Service to conclude that giant garter snake population levels in present-day habitats are depleted. Recent surveys throughout the range of the species have failed to find previously unknown populations, and have failed to find snakes at previously occupied sites.

Inadequate Documentation of Threats

Comment: A few commenters noted that the lack of extirpations reflected in the record suggests that the giant garter is not declining or facing severe threats to its existence. Another commenter argued that the giant garter snake serves as a bio-indicator, providing an early warning of ecosystem disturbances.

Service Response: Confirmed and likely extirpations within the recent past known to the Service include (1) generalized habitat degradation at the Burrell/Lanars population in Fresno County (G. Hansen, *in litt.*, 1992), (2) flood control dredging and commercial development along Elk Grove and Laguna Creeks in Sacramento County (USFWS file information), (3) water

diversion/desiccation at the Franklin Road and Hood-Franklin Road area in Sacramento County (G. Hansen, pers. comm., 1992), (4) habitat loss and degradation along Eight Mile Road in San Joaquin County (J. Brode, pers. comm., 1992), (5) Morrison Creek/Beach Lake quarry excavation along Interstate 5 in Sacramento County (G. Hansen, pers. comm., 1992), (6) desiccation of Putah Creek in Yolo County (USFWS 1992), (7) high levels of selenium and salinity (sodium sulphate) contamination in portions of the north and south Grasslands (various papers cited below), and (8) disappearance of the species in the Natomas East Main Drainage Canal during the 1980's, coincident with urbanization of the North Natomas area in the American Basin. Other populations and localities also face imminent threats that render them vulnerable to extirpation in the foreseeable future.

Comment: One commenter observed that the Sacramento metropolitan area was the only region experiencing significant amounts of urbanization and that these impacts were satisfactorily addressed under State law.

Service Response: Since at least the mid-1980's, human populations have been growing rapidly throughout the Central Valley of California. The expansion of urban areas in the vicinity of giant garter snake populations is more fully discussed under Factor A in the "Summary of Factors Affecting the Species."

Comment: Several commenters indicated that the paucity of historic records for the giant garter snake suggests a patchy distribution under pristine conditions; hence, the Service's assumption that large scale loss of wetlands since 1850 does not necessarily equate to a dramatic loss of giant garter snake populations.

Service Response: The Act requires the Service to base its listing actions upon present threats facing the species, not upon historic abundance. The high correlation of historic giant garter snake records with the distribution of the historic floodbasins in the Central Valley suggest that the species occurred primarily in the vast bulrush and cattail marshes that characterized these floodbasins and tributary streams (Hinds 1952, Hansen 1980, Brode and Hansen 1992). Thus, abundant suitable habitat was available historically. Documented losses of populations known from the mid-1970's are more meaningful to the Service's decision than are speculations about historical distribution.

Comment: Several commenters contended that the proposed rule did not adequately document the Service's

conclusion that predation (either in general or from introduced fish), contaminants, flooding, or agricultural impacts were severe enough factors to contribute to the endangerment of the giant garter snake.

Service Response: Additional references and discussion have been provided under the section entitled "Summary of Factors Affecting the Species" that substantiate the severity of threat to the giant garter snake by these and other factors. Predators, such as largemouth bass, catfish, and bullfrogs, contribute to the declining status of the giant garter snake. Agricultural areas (primarily rice fields) do not contain stable habitat for the garter snake. Where escape cover is lacking, garter snake populations may be reduced or eliminated through flooding. Contaminants such as selenium and heightened salinity contribute to the declining status of the giant garter snake.

Issue 2. Alternate Listing Status or Management Approach

Comment: One respondent commented that because captive breeding programs have proven successful for other reptiles, such a program provides an acceptable alternative to listing the giant garter snake.

Service Response: The ultimate goal of captive breeding programs is to return the species to its wild habitats. The Service views captive propagation programs as a last recourse for conserving species. The Act directs the Service to focus on conserving the ecosystems upon which threatened and endangered species depend. Thus, captive breeding does not represent a suitable alternative to listing the species.

Comment: Several commenters concluded that the Service has not substantiated that the severity of threats facing the giant garter snake are sufficient to endanger the species with extinction. In supporting this claim, one commenter pointed out the apparent inconsistency on the part of the Service for listing the Puerto Rican crested toad as a threatened species, known from a few localities, while proposing the giant garter snake as endangered, which is known from many more localities than the toad.

Service Response: The Service believes that threatened status is warranted for the giant garter snake. The natural ecosystem historically occupied by the giant garter snake has been lost in its entirety, through water diversions and land reclamation practices to the extent that natural flooding and

vegetational patterns have been eliminated from California's landscape. The species no longer occurs throughout the southern third of its former range, and appears vulnerable to extinction throughout the entire San Joaquin Valley and southern Sacramento Valley, encompassing about three-fourths of its historic distribution. However, three populations do not seem to be imminently threatened. Based on the known and likely extirpation of the species throughout a significant portion of its range, the Service concludes that the giant garter snake is likely to become endangered throughout all or a significant portion of its range within the foreseeable future, and therefore fits the Act's definition of threatened.

Decisions to list species as endangered or threatened are based upon many factors relating to the degree of threat facing a species. The total distribution of a species is only one of these factors. Each species presents a different combination of these factors and must be judged on an individual basis.

Comment: Several commenters noted that the proposed giant garter snake listing would exacerbate flooding threats to the species by delaying authorization/construction of the Corps' American River Watershed Investigation flood control project.

Service Response: The recent decision by the U.S. Congress not to authorize this flood control project was based on numerous considerations above and beyond those involving the proposed listing of the giant garter snake.

Comment: Several commenters stated that improved management of State and Federal waterfowl refuges and protective efforts through the Service's Central Valley Habitat Joint Venture were not considered in the proposed rule and would alleviate the need for listing. Other State and Federal land holdings, associated easement programs, private duck hunting clubs and refuges, military facilities, and pending or proposed land acquisitions provide potential habitat for giant garter snakes, and if managed appropriately would foreclose the need for listing.

Service Response: Although historical giant garter snake records are known from six State or Federal refuges, suitable habitat and associated garter snake populations are sufficiently limited that even dramatic changes in management practices would not preclude the need to list the species. These refuges encompass a very small portion of 4 of the 13 populations.

Historic management of many areas was not conducive to maintenance of healthy giant garter snake populations

because funding levels typically were not available or adequate to implement appropriate management practices, and a lack of available water precluded the potential to create or restore suitable habitat. The species apparently has been extirpated from some of the State and Federal refuges where they once were present. As discussed under Factor D in the "Summary of Factors Affecting the Species," the water regime of many waterfowl ponds is not consistent with the needs of the giant garter snake. Virtually no populations of the giant garter snake can be considered secure.

Comment: Several respondents proposed that Federal listing is not needed because 16 existing provisions of State law afford adequate protection for the species. Two commenters responded that State listing does not afford adequate protection, as evidenced by the destruction and continuing loss of over 90 percent of the wetlands throughout its range.

Service Response: Please refer to Factor D in the "Summary of Factors Affecting the Species" for a detailed discussion of this issue. One commenter listed numerous case histories that purportedly demonstrated successful resolution of impacts to the giant garter snake under State law. However, scrutiny of this list revealed that (1) many of the projects or proposals did not affect the species (J. Brode, pers. comm., 1992), (2) processing of permit applications has not yet progressed to the point that final conclusions can be made, and (3) many of the projects or proposals resulted in unmitigated adverse impacts to the species. Thus, State laws do not adequately protect the giant garter snake from threats facing this species.

Issue 3. Inadequate Public Participation

Comment: Several commenters asserted that the Service relied on information not available to the public and then attempted to prevent public participation in the rulemaking process by delaying the release of that information to preclude public comment within the prescribed comment periods.

Service Response: Service policy requires that all information relied upon by the Service in listing proposals be made available to the public upon request. The Freedom of Information Act (FOIA) provides additional requirements for releasing requested information to the public. The Service has provided all available information in response to such requests. Moreover, the Service provided appropriate public comment periods (see discussion at the beginning of this section) and a public

hearing to ensure that all affected interests were provided sufficient opportunity to participate effectively in the public comment process. Consequently, the public was given adequate opportunities to comment on the proposal to list the giant garter snake.

Comment: One respondent, in reliance upon *Conservation Law Foundation v. Watt*, 560 F. Supp. 561 (D. Mass. 1983), and *Village of False Pass v. Watt*, 565 F. Supp. 1123 (D. Alaska 1983), claimed that the Service (1) was acting improperly by not awaiting the results of a particular field study on the distribution and abundance of the giant garter snake that was being prepared, and (2) in light of informational deficiencies on giant garter snake distribution and abundance, was obligated to conduct a "first class effort * * * to conduct requisite tests and studies." In the referenced cases, the courts held that Federal agencies must use the best scientific and commercial data available, including the final results of ongoing studies, prior to making any agency decision that may affect listed species. Other commenters claimed that the Service scheduled public comment periods to preclude consideration of results of the ongoing field study referenced above. Another respondent asserted that in the absence of an affirmative public pronouncement, the Service was erecting a *de facto* barrier to the initiation or completion of additional distribution and abundance studies because his clients had no confidence that the Service would reopen the public comment period if they began or attempted to complete such work.

Service Response: As discussed above, the Service reopened the comment period to ensure that the best available scientific and commercial information was considered in this final rulemaking. The Service also (1) contacted sponsors of the ongoing field study referenced above, after completion of their contractor's final report in October 1992, (2) solicited any relevant information, and (3) assured the sponsors that the Service was interested in reviewing the results of their study should they elect to submit additional information. The Service has incorporated information provided in that study into this final rule. In addition, the Service contacted the sponsors of other ongoing studies prior to release of final reports to ensure that the most recent information was considered in this listing action. The Service disagrees that *Conservation Law Foundation v. Watt* and *Village of False*

Pass v. Watt obligate the Service to conduct requisite tests and studies after publication of a proposed rule. These cases involved consultation under section 7 of the Act, which allows time limitations to be extended by the action agency and Service upon mutual agreement, and to gather requisite information to complete the consultation. See 16 U.S.C. § 1536(b)(1)(B). In cases with substantial scientific disagreement regarding the sufficiency or accuracy of available data relevant to listing determinations (see 16 U.S.C. § 1533(b)(5)(B)(i) and 50 CFR 424.17(e)(1)(iv)), the Service may extend the 1-year review period between proposed and final rulemakings for the purposes of obtaining and reviewing additional information as may be necessary for making a final decision. As noted elsewhere in this rule, the Service has not received additional information indicating that the species is more widespread or under lesser threat than was previously believed. Thus, no scientific disagreement exists to support an extension.

Issue 4. Economic Effects

Comment: One commenter reminded the Service of its obligations under Executive Order 12630, which requires Federal agencies to prepare takings implication statements on actions with potential to violate the Fifth Amendment of the Constitution.

Service Response: Regarding Executive Order 12630, Governmental Actions and Interference with Constitutionally Protected Property Rights, the Attorney General has issued guidelines to the Department of the Interior (Department) on implementation of the Executive Order. Under these guidelines, a special rule applies when an agency within the Department is required by law to act without exercising its usual discretion—that is, to act solely upon specified criteria that leave the agency no discretion.

In this context, an agency's action might be subject to legal challenge if it did not consider or act upon economic data. Therefore, in these cases, the Attorney General's guidelines state that Takings Implications Assessments (TIAs) shall be prepared after, rather than before, the agency makes the decision upon which its discretion is restricted. The purpose of TIAs in these special circumstances is to inform policymakers of areas where unavoidable taking exposures exist. Such TIAs shall not be considered in the making of administrative decisions that must, by law, be made without regard to their economic impact. In

enacting the Act, Congress required the Department to list species based solely upon scientific and commercial data indicating whether or not they are in danger of extinction. The Act does not allow the Service to withhold a listing based on concerns regarding economic impact. The provisions of the guidelines relating to nondiscretionary actions clearly are applicable to the determination of threatened status for the giant garter snake.

Comment: Numerous comments asserted that listing the giant garter snake would threaten the ability of flood control and other districts to perform necessary maintenance of levees, thereby jeopardizing public health and safety.

Service Response: Although the Service is limited in its ability to predict with certainty the measures needed to conserve the species in all situations involving levee and canal maintenance activities, past experience with other listed species impacted by such practices indicates that the commenters' fears have seldom, if ever, materialized. Flood control projects generally involve Federal permits or sponsors, and are reviewed by the Service under section 7 of the Act (see "Available Conservation Measures" below). In practice, the Service usually completes biological opinions within 90 days of receipt of a request for formal consultation. In addition, if the Service determines that an action would jeopardize the continued existence of a federally listed species, in most cases it recommends reasonable and prudent alternatives that allow the intended purpose of the project to proceed, with modifications. The Service has a well established record of working cooperatively with flood control and related districts in designing maintenance procedures that accommodate the habitat requirements of the species yet do not impinge on the ability of other agencies to fulfill their charges. The Service is confident that Federal listing will contribute to the survival and scientific understanding of the species and its environment without jeopardizing public health and safety.

Comment: Several commenters suggested that the proposed listing may impact the ability to accomplish water exchanges and transfers and restrict operations of the State Water Project. Due to that, there may be a significant negative impact on agricultural lands that rely on water for irrigation. In a related argument, one commenter alleged measures needed to conserve the giant garter snake would conflict directly with the instream water requirements of the Sacramento River population of the winter run chinook

salmon (*Oncorhynchus tshawytscha*), listed as a threatened species by the Federal Government and as an endangered species by the State of California. Due to controversies and economic effects associated with this issue, the commenter contended that the Service was obligated to prepare an environmental impact statement for the proposed listing, pursuant to the National Environmental Policy Act (NEPA).

Service Response: Though the Service disagrees that listing necessarily would lead to the impacts and conflicts raised by these commenters, the Service is precluded from considering such impacts or conflicts while assessing any of the five factors listed at section 4(a)(1)(b) of the Act. The Service believes that the reasons provided in the **Federal Register** notice published on October 25, 1983 (48 FR 49244) determining that an environmental impact statement need not be prepared in connection with regulations adopted pursuant to section 4(a) of the Act are valid.

Comment: Several commenters responded that Federal listing would (1) place pressure on the agricultural industry to grow alternative crops to rice in an effort to avoid Federal restrictions associated with the Act, (2) reduce land values, and (3) lead to future economic losses, which cumulatively would adversely affect the future viability of the species.

Service Response: The Act directs the Service to base listing decisions solely on the best scientific and commercial information available; thus, the Act prohibits such economic considerations.

Summary of Factors Affecting the Species

After a thorough review and consideration of all information available, the Service has determined that the giant garter snake (*Thamnophis gigas*) should be classified as a threatened species. Procedures found in section 4 of the Endangered Species Act (16 U.S.C. § 1533) and regulations (50 CFR part 424) promulgated to implement the listing provisions of the Act 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 giant garter snake (*Thamnophis gigas* Fitch) are as follows:

A. *The present or threatened destruction, modification, or curtailment of its habitat or range.* Regardless of the extent of wetlands currently remaining, field studies (Hansen 1986, Hansen 1988, Beak 1992)

indicate that the species is absent from most areas with seemingly suitable habitat (see discussions under Factors B, C, and E).

A number of land use practices and other human activities currently threaten the survival of the giant garter snake throughout its remaining range. Although some giant garter snake populations have persisted at low population levels in artificial wetland associated with agricultural and flood control activities, many of these altered wetlands are now threatened with urban development. Examples of these activities include: a new city proposed in San Joaquin County would threaten known or potential habitat for the Badger/Willow Creek population; the Sacramento Metropolitan Area Investigation, a 400-year flood protection project proposed by the Corps and local governments for over 3,240 hectares (8,000 acres) of agricultural lands and open space (USFWS, unpubl. information) would threaten an estimated 45 km (28 mi) of small waterway habitat potentially inhabited by portions of the Yolo Basin/Willow Slough population of the giant garter snake; in the Laguna Creek-Elk Grove region of Sacramento County, 11 proposed residential developments and associated stream channelization projects would threaten portions of the Sacramento Basin population.

In addition, several cities within the current range of the giant garter snake are expanding. Rapidly expanding urban areas within or near the historic range of the giant garter snake include, but are not limited to, Chico (Butte Basin population), Yuba City (Sutter Basin population), Sacramento (American and Sacramento Basin populations), Galt (Badger/Willow Creek population), Stockton (East Stockton population), and Gustine and Los Banos (North and South Grasslands population). Numerous city and county governments recently have updated or amended their General Plans to facilitate urban growth. The North Delta Water Management project proposed by the California Department of Water Resources would facilitate urban development and adversely affect the Sacramento Basin population; Corps American River Watershed Investigation or local equivalent would facilitate urban growth that may adversely affect the American Basin population; Sacramento River Flood Control Project, Phase II—Marysville/Yuba City Area, and Yuba River Basin project would facilitate urban growth in the vicinity of the Sutter Basin population; and Department of Water Resources' North Delta Water Management Project would

facilitate urban growth in the vicinity of the Sacramento Basin population.

The largest extant population of the giant garter snake inhabits extensive agricultural lands in the American Basin, a large flood basin at the confluence of the Sacramento and American Rivers, in Sacramento and Sutter Counties. Throughout this area, reconnaissance level surveys (USFWS 1991) indicate that about 570 hectares (1,400 acres) of giant garter snake habitat exist in the form of man-made irrigation channels and drainage ditches, as well as an undetermined acreage of suitable habitat within approximately 5,260 hectares (13,000 acres) of adjoining rice fields. The giant garter snake also uses an undetermined amount of habitat at higher elevations to escape from winter flooding during the inactive winter phase of the snake's life cycle. However, as discussed under Factor E, the amount of land in rice production varies from year to year; consequently, this area does not contain stable habitat.

Habitat supporting the giant garter snake in the American Basin is threatened by a number of activities, primarily expanding urbanization. The Corps and/or local project sponsors are proposing flood protection for this 22,260-hectare (55,000-acre) agricultural area. The Service (USFWS 1991) anticipates that the provision of flood control would result in the conversion of most or all of this area to urban land uses within the next 50 years. Other projects in the American Basin include the North Natomas Community Drainage System and associated urban development, proposed by the City of Sacramento, which affect about 42 km (26 mi) of giant garter snake habitat along existing canals and ditches, and additional rice field habitat (Brode and Hansen 1992); the proposed Sutter Bay project, at the north end of the American Basin, could eliminate or degrade about 68 km (42 mi) of suitable canals (Brode and Hansen 1992) and thousands of hectares of associated rice fields and giant garter snake habitat; the proposed South Sutter Industrial Center, located near the Sutter Bay project, could eliminate another 14.5 km (9.0 mi) of aquatic habitat and associated rice fields; a new city proposed in Sutter County also would adversely affect the American Basin population; and the Sacramento Metropolitan Airport is proposing about 765 hectares (1,890 acres) of development on agricultural and vacant lands that could result in major adverse impacts to the species, including the loss of about 14.5 km (9.0 mi) of canal habitat and 607 hectares (1,500 acres) of rice fields, as well as the

disruption of movement corridors (Brode and Hansen 1992). Roadway improvements or construction projects, or the planned extension of the Sacramento Regional Transit system in this area, would likely result in elevated mortality from increased traffic on local roads and highways (Brode and Hansen 1992).

Certain agricultural practices can destroy habitat that supports the giant garter snake. For example, intensive vegetation control activities along canal banks can fragment and isolate available habitat (See Factor E below). In addition, Hansen (1982, 1986), G. Hansen (pers. comm., 1992), and J. Brode (pers. comm., 1992) have observed livestock grazing threats to four populations of the species. Studies on other garter snake species have established a negative cause and effect relationship between livestock grazing and snake population demographics (Szaro *et al.* 1989). The giant garter snake requires dense vegetative cover in proximity to waterside foraging and basking habitats in which to seek refuge from predators and other forms of disturbance. Livestock grazing along the edges of water sources degrades habitat quality by reducing vegetative cover. Overall, grazing has contributed to the elimination and reduction of the quality of available habitat at four known locations.

B. Overutilization for commercial, recreational, scientific, or educational purposes. Although giant garter snakes do not seem to be of great interest to reptile collectors, the species has been found for sale in pet shops (J. Brode, pers. comm., 1991). However, collection for commercial purposes does not appear to threaten the giant garter snake.

Collection and harassment associated with recreational activities apparently cause a substantial impact in certain areas. Recreationists can disturb basking snakes and, thus, interfere with thermoregulatory behavior. Angling pressure at the Mendota population during the 1970's and 1980's resulted in numerous observed instances of road kills and other possible killing and injuring of giant garter snakes (J. Brode, pers. comm., 1992; G. Hansen, pers. comm., 1992; R. Hansen, biological consultant, pers. comm., 1992). In the American Basin, collection of crayfish for human consumption also results in harassment of giant garter snakes (G. Hansen, pers. comm., 1992). Disturbance and harassment associated with fishing pressure also is implicated in the demise of the giant garter snake population at Burrell (G. Hansen, pers. comm., 1992).

C. Disease or predation. Little information on diseases that affect the giant garter snake is available. CDFG ceased mark and recapture studies on the giant garter snake in the American Basin after observing that marked snakes were slow to heal and often became infected (J. Brode, pers. comm., 1992; G. Hansen, pers. comm., 1992).

Unidentified parasitic worms have been found in giant garter snakes from the American Basin population (Hansen, *in litt.*, 1992). Infected snakes exhibited reduced appetites and growth rates compared to uninfected snakes, and all infected snakes eventually died after lingering malaise, although some reached 12 to 14 months of age. Upon death, uniformly sized 5- to 8-cm (2- to 3-inch) worms, the thickness of a replacement pencil lead and colored with alternating narrow rings of red and beige, emerged from noticeable lumps at any location along the ventral or dorsal skin surfaces. The degree of threat posed by these worms to the American Basin population or the species throughout its range is not known.

Predation levels on the giant garter snakes have increased due to a number of factors. A number of native mammals and birds are known or likely predators of giant garter snakes, including raccoons, skunks, opossums, foxes, hawks, egrets, and herons. The abundance and diversity of predators and a paucity of escape cover in remaining giant garter snake habitat suggest that predation pressure on this species probably is severe (Hansen 1980). The high fecundity (Hansen and Hansen 1990) and extremely wary behavior (Hansen 1980 and references cited therein) of the species provide additional evidence that the species has developed physiological and behavioral adaptations to help withstand predatory pressure. Hansen (1986) observed that nearly all giant garter snakes captured and examined possessed scars or recent injuries presumably acquired during attacks by predators.

Domestic cats prey upon the giant garter snake. G. Hansen (pers. comm., 1992), has observed numerous snake kills by domestic cats in one of his longtime study areas about 3.2 km (2 miles) from the closest urban development in the City of Davis, Yolo County.

Few, if any, native fish species posed a predatory threat to the giant garter snake. However, introduced largemouth bass and catfish are voracious, opportunistic predators of many species of invertebrates, fish, reptiles, amphibians, birds, and small mammals, and have become established in virtually all permanent and semi-

permanent waters throughout the Central Valley (Dennis Lee, CDFG, pers. comm., 1992). These introduced predatory fishes have been responsible for eliminating many species of native fishes and aquatic vertebrates in the western United States (Minkley 1973, Moyle 1976).

Bass in the 0.4- to 1.4-kilogram (1- to 3-lb) size class can take 30- to 38-cm (12- to 15-in) snakes and would prey upon giant garter snakes (Dennis Lee, pers. comm., 1992). The instinctive response of giant garter snakes to dive under water upon disturbance (Fitch 1941) would be maladaptive where non-native predatory fish have become established. Parmley and Mulford (1985) reported an instance of a largemouth bass eating a water snake. Introduced predatory fish may explain the absence of garter snakes from large bodies of water (Brode 1988). Brode (1988) believed that the giant garter snake was absent from large bodies of water due to the presence of introduced predatory fishes.

Introduction of the bullfrog (*Rana catesbeiana*) to virtually all areas inhabited by the giant garter snake further increases the threat of predation facing the species. The spread of bullfrogs has contributed to the demise of numerous species of native amphibians and reptiles (S. Sweet, Univ. Calif. at Santa Barbara, *in litt.*, 1992; Schwalbe and Rosen 1989, Holland 1992). Bury and Whelan (1984) cited 14 cases of bullfrogs eating snakes. These studies documented (1) bullfrog ingestion of garter snakes up to 80 cm (31.5 in) in length, (2) depletion of garter snake age class structure less than 80 cm length (snout-vent), and (3) disappearance and resurgence of garter snake populations coincident with the introduction and decline of bullfrog populations. Schwalbe and Rosen (1989) concluded that bullfrogs have a high potential for eliminating garter snake populations. Treanor (1983) found that unidentified garter snakes (*Thamnophis* spp.) comprised 6.0 and 6.4 percent volume of bullfrog stomach contents in the months of July and August at Gray Lodge Waterfowl Management Area, a known giant garter snake location.

D. The inadequacy of existing regulatory mechanisms. The National Environmental Policy Act and section 404 of the Clean Water Act represent the primary Federal laws that could afford some protection for the giant garter snake. These laws, however, do not protect candidate species *per se*. Under section 404 of the Clean Water Act, the Corps regulates the discharge of fill material into waters of the United

States, which include navigable and isolated waters, headwaters, and adjacent wetlands.

Pursuant to 33 CFR part 323.4, the Corps also has promulgated regulations that exempt various farming, forestry, and maintenance activities from the regulatory requirements of section 404. Many of the irrigation and drain water canals and other agricultural wetlands, such as rice fields that provide giant garter snake habitat, are not subject to section 404 regulation. For example, in the recent jurisdictional determination for the American River Watershed Investigation, the Corps found that of the 373 km (232 mi), totalling 515 hectares (1,272 acres) of canal and waterway habitat in the American Basin, 153 hectares (379 acres) constituted jurisdictional wetlands.

The section 404 regulations require that applicants obtain an individual permit to place fill for projects affecting greater than 10 acres of waters. Nationwide Permit Number 26 (NWP 26) (33 CFR part 330) was established by the Corps to facilitate issuance of permits for discharges of fill material into isolated waters that cause the loss of less than 10 acres of waters, and that cause only minimal individual and cumulative environmental impacts. Projects that qualify for authorization under NWP 26 and that affect less than 1 acre of isolated waters or headwaters may proceed without notifying the Corps. Corps District and Division Engineers may require that an individual section 404 permit be obtained if projects otherwise qualifying under NWP 26 would have greater than minimal individual or cumulative environmental impacts. However, the Corps has been reluctant to withhold authorization under NWP 26 unless the existence of a listed species would be jeopardized, regardless of the significance of the affected wetland resources. The Corps cannot issue a nationwide or individual permit where a federally listed species would be affected without first consulting with the Service under section 7 of the Endangered Species Act.

The giant garter snake was listed as a threatened species by the State of California in 1971. The California Environmental Quality Act and California Endangered Species Act are the primary environmental legislation at the State level that potentially benefit the giant garter snake. Certain city and county governments have adopted protective measures and ordinances that under certain circumstances could afford additional levels of protection for the giant garter snake. However, numerous cities and counties have not

adopted protective mechanisms, and many of the threats to the species are not amenable to remediation at the State or local level because they are related to natural processes or catastrophes, contaminants, introduction of and predation from alien species, and ongoing economic uses of private lands. These threats fall beyond the application of State planning laws that address proposed changes in land uses.

Although State laws and local ordinances can provide a measure of protection to the species and have resulted in the formulation of mitigation measures to reduce or offset impacts for projects proposed in certain areas, these laws have not adequately protected the species. Numerous activities do not fall under the purview of State and local governments, such as certain projects proposed by the Federal government and projects falling under State statutory exemptions. For example, pursuant to section 2081 of the State Fish and Game Code, CDFG has not required permits for numerous activities that result in take of giant garter snakes (see the examples below). Where overriding social and economic considerations can be demonstrated, these laws allow project proposals to go forward, even in cases where the continued existence of the species may be jeopardized, or where adverse impacts are not mitigated to a point of insignificance.

Project-specific examples of the limitations associated with State law include: (1) Strawberry Creek Realignment—existing wetland habitat was destroyed prior to creation of new replacement habitat, contrary to agreed upon mitigation measures; (2) Caltrans State Route 99/70 widening project—mitigation measures agreed upon under the State Endangered Species Act still have not successfully replaced habitat losses along 32 miles of canal habitat 3 years after construction and completion of the project; (3) over 0.5 miles of known giant garter snake habitat at Fishermen's Lake was graded and eliminated by Reclamation District 1000 through channel maintenance practices and in response to a cleanup order from the Sacramento County Health Department (based on information provided by Reclamation District 1000, continued annual grading to maintain water conveyance and abate the apparent health menace is anticipated to prevent reestablishment of giant garter snake habitat in the future); (4) according to CDFG information, the City of Sacramento permitted development to proceed under the North Natomas Community Plan, even though habitat replacement to mitigate giant garter

snake habitat losses was deferred to approval and construction of another project—North Natomas Community Drainage System—which has not yet occurred (over 5 years after the fact) and reportedly did not require the mitigation measures deferred from the previous project; (5) numerous Negative Declarations were filed by the City of Sacramento for projects affecting giant garter snake habitat within the North Natomas Community Plan, which relied on later implementation of mitigation measures that have not yet been enacted; (6) the Negative Declaration for the now constructed Coral Business Center did not require measures to offset the permanent loss of about 5 acres of giant garter snake habitat; (7) total elimination in 1992 of documented giant garter snake habitat from channel maintenance practices along over 2 miles of canal habitat bordering Block Road in Butte County; (8) dredging and filling of Elk Grove Creek and Laguna Creek resulted in substantial habitat losses for a known giant garter snake population for which no mitigation measures were required by any level of government; (9) from 1978 to 1979, approximately 280 acres of known giant garter snake habitat were eliminated without replacement by Caltrans during construction of Interstate 5 at the State Route 12 intersection; (10) approved mitigation measures for the South Sutter County General Plan do not offset adverse impacts to the giant garter snake (mitigation was deferred to completion of a regional habitat conservation plan sponsored by the Sacramento Area Flood Control Agency, planning for which has been at least temporarily abandoned); (11) the adopted Sutter Bay Village Specific Plan, the Negative Declaration for Sutter Bay Boulevard Interchange on Route 99, and the Negative Declaration for the Sutter Bay Country Club, deferred mitigation to the now abandoned regional planning effort referenced above; (12) Laguna Creek flood control project—known or likely giant garter snake habitat was eliminated prior to replacement of suitable habitat (recreated habitat has not yet been shown to be suitable for or occupied by the species); (13) in the 1970's, approximately 24 hectares (60 acres) of known giant garter snake habitat was eliminated by excavation and freeway construction for Interstate 5 at Beach Lake in Sacramento County; (14) within the last few years, 0.8 km (0.5 mi) of documented giant garter snake habitat was scraped along the East Drainage Canal near the intersection of Interstates 5 and 80; (15) in 1990, about 4 km (2.5 mi) of documented giant

garter snake habitat was eliminated by construction of a new channel bordering the south side of the Cross Canal at the Highway 70/99 crossing in Sutter County; and (16) construction of Del Paso Boulevard interchange with Interstate 5 in the American Basin eliminated giant garter snake habitat without successful replacement.

Portions of four giant garter snake populations currently occur or formerly occurred on six State and Federal refuges managed for wildlife purposes: Gray Lodge Waterfowl Management Area, Kesterson National Wildlife Refuge (NWR), Delevan NWR, San Luis NWR, Los Banos Wildlife Area, and Mendota Waterfowl Management Area. For a variety of reasons, little if any giant garter snake habitat on these refuges can be considered secure. The presence of giant garter snakes on these refuges typically is known from one or two older records, and the current status of the giant garter snake is uncertain. Recent surveys (Beak 1992) of four of these refuges in addition to Sacramento NWR failed to detect the species. Only Gray Lodge Waterfowl Management Area has a record within the last 15 to 20 years (T. King and J. Brode, pers. comm., 1992).

Giant garter snakes require water during the active phase of their life cycle in the summer, not during the winter while they remain inactive underground. Many waterfowl areas are managed to provide water during the winter and spring months, and are drained during the summer months. Permanent water on these refuges that provides suitable giant garter snake habitat generally supports populations of largemouth bass or other non-native predatory fish, as well. However, it is likely that some refuges could be managed to support waterfowl and garter snakes.

Potential benefits to the garter snake exist through the establishment of additional waterfowl refuges through the Central Valley Joint Venture, provided that management efforts consider the needs of giant garter snakes.

E. Other natural or manmade factors affecting its continued existence. In rice production areas of the American Basin, the largest remaining population of giant garter snakes inhabits water management facilities adjoining rice fields (in rare instances the snake occurs along other agricultural waterways). The seasonal flooding and draining of rice ponds may provide an adequate forage base and may prevent establishment of populations of large predatory fish (Brode and Hansen 1992).

However, Pacific Environmental Consultants (1992) cites sources that document 250,000-acre swings in rice production over a 3-year time span, which suggests that these situations do not represent stable conditions for associated giant garter snake populations. Rice production varies depending upon market conditions (e.g., Department of Agriculture price support programs), and water availability for agriculture (e.g., State Water Resources Control Board Draft Interim Water Rights Decision (D-1630) protects estuarine fisheries values by reducing winter and spring exports from the Delta, which could result in reduced acreage of rice production).

Furthermore, intensive control of vegetation along water delivery and drainage facilities eliminates remaining habitat and prevents reestablishment of former habitat (Hansen 1988; Brode and Hansen 1992; G. Hansen, pers. comm., 1992; J. Brode, pers. comm., 1992). For example, more intensive maintenance practices have eliminated habitat along water canals in the American Basin along State Route 70/99 (CDFG, unpublished information; J. Brode, pers. comm., 1992). Such activities can kill or injure snakes, remove critical escape cover, eliminate prey populations, and destroy small mammal burrows and other soil fissures needed as winter retreat habitat. Beak (1992) documented two giant garter snakes killed apparently by levee maintenance or farming equipment. G. Hansen (pers. comm., 1992) has observed the complete elimination of suitable habitat from maintenance practices along both sides of canals where giant garter snakes were found the previous season.

The giant garter snake is vulnerable to changes in water management, because it depends on the availability of wetlands. In response to statewide water shortages associated with drought, water management agencies, including the California Department of Water Resources and U.S. Bureau of Reclamation, announce reductions in delivery of water to certain agricultural regions (Grubb 1991). In addition, the Department of Water Resources has begun acting as a broker to facilitate transfer of water from users with discretionary supplies to those with critical needs (Schnitt 1991). Water districts from around the State are offering to purchase water from water districts in rice production regions of the Sacramento Valley (Schnitt 1991).

Contaminants, such as fertilizers and pesticides, could adversely affect giant garter snake populations by degrading water quality and reducing prey populations. Selenium contamination of

agricultural drainwater appears to pose a severe threat to any giant garter snake population that still may inhabit the Grasslands region of western Merced County in the San Joaquin Valley. High levels of selenium contamination have been documented in biota from at least six major canals and water courses in the Grasslands (Saiki *et al.* 1991, 1992) that have historic giant garter snake records. The bioaccumulative food chain threat of selenium contamination on fish, frogs, and fish-eating birds in this region has been well documented (Ohlendorf *et al.* 1986, 1988; Saiki and Lowe 1987; Saiki and May 1988; Hothem and Ohlendorf 1989; Saiki *et al.* 1991, 1992, 1993). Contaminant studies on aquatic organisms and their habitats in the Grasslands and neighboring areas documented elevated levels of waterborne selenium in many representative water bodies in this region that exceeded known toxicity thresholds for giant garter snake prey species (San Joaquin Valley Drainage Program 1990, Central Valley Regional Water Quality Control Board 1992, Hermanutz 1992, Hermanutz *et al.* 1992, Hermanutz *in litt.* 1992, Nakamoto and Hassler 1992). Elevated salinities of waters in the Grasslands due to a sodium sulfate based salt also have been documented at deleterious levels in resident fishes and amphibians (Ohlendorf *et al.* 1986, 1988; Saiki *et al.* 1992), the major food source of giant garter snakes.

Most or all giant garter snake populations also are vulnerable to adverse effects from flooding. A 100-year flood event represents a threat that could extirpate all remaining populations. Many areas, such as in the rice production districts of the Sacramento Valley, flood more frequently, even during winters with normal levels of rainfall. In Glenn and Colusa Counties, Willow Creek, Walker Creek, French Creek, Wilson Creek, Logan Creek, Hunter Creek, Lurline Creek, and the 2047 Drain all flood to depths exceeding the levee tops (L. Rauen, pers. comm., 1993). In eastern Sutter County, many creeks convey water to depths 1 to 2 feet above levee tops (Larry Rauen, pers. comm., 1993.). These flooding events may account, at least in part, for the apparent absence of the giant garter snake in many rice production districts.

Giant garter snakes seek refuge in habitat at higher elevations where they retreat during the winter dormancy period. Commercial development, agricultural conversion, and levee/channel construction and maintenance along the edges of wetlands have eliminated much of the retreat habitat,

forcing giant garter snakes to overwinter in flood-prone (streamside) levee slopes.

Habitat loss throughout the range of the giant garter snake has resulted in fragmented and isolated habitat remnants. Such small populations confined to limited habitat areas are likely vulnerable to extirpation from stochastic (random) environmental, genetic, and demographic events (Schonewald-Cox *et al.* 1983). When an existing population becomes extinct, there is virtually no chance of recolonization from any remaining populations. In addition, the breeding of closely related individuals can cause genetic problems in small populations, particularly the expression of deleterious genes (known as inbreeding depression).

In overview, 3 of the 13 populations discussed in the Background section are not imminently threatened with extirpation. The three populations are located in the Butte, Sutter, and Colusa Basins. Although long-term potential threats to these populations have been identified (e.g., changing land use practices, and/or uncertain water supplies), giant garter snakes in these areas are at risk of becoming endangered, but not extirpated, in the foreseeable future.

The Service has carefully assessed the best scientific and commercial information available regarding the past, present, and future threats faced by the giant garter snake in determining to make this final determination. Based on this evaluation, the Service concludes that the giant garter snake is threatened with extinction throughout the San Joaquin Valley, portions of the eastern fringes of the Delta, and the southern Sacramento Valley, an area encompassing about 75 percent of the species' geographic range. The Service finds that the species warrants listing as threatened based on known or potential threats throughout a significant portion of its range. Critical habitat is not being designated for this species for reasons discussed below in the "Critical Habitat" section of this rule.

Critical Habitat

Section 4(a)(3) of the Act, as amended, requires 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 designation of critical habitat presently is not prudent and would not benefit the giant garter snake. The giant garter snake occurs or formerly occurred on about six wildlife refuges managed by the Service or California Department of Fish and

Game. These agencies are aware of the presence of the species and, upon listing, the Service will expand coordination efforts to protect the giant garter snake in these areas. However, most populations on private lands typically contain low numbers of individuals and occur in small patches of variable quality habitat. This situation renders the species vulnerable to acts of vandalism or collection, which could deplete population levels and cause irreparable harm. Many locality records occur in water delivery/drainage canals in which water levels readily can be managed to eliminate giant garter snake habitat. In response to publication of the proposed rule, several commenters informed the Service that landowners were likely to take rice lands out of production in an effort to rid their land of giant garter snakes and thereby avoid reduced land values and increased future economic losses. Accordingly, publication of maps and precise descriptions delineating critical habitat areas would increase the likelihood of land use changes, increased collection, or habitat vandalism in violation of section 9 of the Act.

As discussed above under Factor D, many of the artificially created habitats inhabited by giant garter snakes, such as irrigation and drainage canals, do not fall under Federal jurisdiction. Absent jurisdiction by Federal agencies, designation of critical habitat on private land does not afford additional protection to listed species beyond that provided under section 9 of the Act. Where Federal jurisdiction does extend to populations on private lands, habitat protection will be addressed through the recovery process and formal consultation requirements under sections 4 and 7 of the Act, respectively. Therefore, the Service finds that designation of critical habitat is not prudent at this time because such designation would increase the likelihood of habitat vandalism and take and because it is unlikely to benefit (aid the conservation of) the giant garter snake.

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 conservation actions by Federal, State, and private agencies, groups, and individuals. The Act provides for possible land acquisition and cooperation with the State and

requires that recovery actions be carried out for all listed species. The protection required of Federal agencies and the prohibitions against taking and harm are discussed, in part, below.

Section 7(a) of the Act 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)(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 such a species or to destroy or adversely modify its critical habitat. If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency must enter into formal consultation with the Service.

Giant garter snake populations inhabiting some wetlands on private and public lands would fall under the regulatory jurisdiction of the Corps, pursuant to section 404 of the Clean Water Act and section 10 of the Rivers and Harbors Act. As described under Factor A above, numerous commercial developments currently are proposed in known and likely giant garter snake habitat. Pursuant to 33 CFR part 330.5(b)(3), project proposals in giant garter snake habitat otherwise allowed under nationwide permit authority would be subject to scrutiny under section 7 of the Endangered Species Act and imposition of special permit conditions needed to avoid and/or offset impacts incurred by the projects. Pursuant to 33 CFR part 325, individual permits, letters of permission, and regional permits issued by the Corps also would be subject to consultation requirements under section 7 of Act. In addition, water development projects proposed by Federal agencies, such as the Department of the Army and U.S. Bureau of Reclamation, would fall

under the purview of section 7 of the Act. The American River Watershed Investigation, Sacramento Metropolitan Area Investigation, and the Merced County Streams project, among other Federal project proposals, will be reviewed pursuant to section 7 of the Act. Habitat manipulation and recreational activities on State or federally owned waterfowl management areas may be affected by the regulatory requirements of sections 7, 9, and 10 of the Endangered Species Act.

The Act and its implementing regulations found at 50 CFR 17.31 set forth a series of general prohibitions and exceptions that apply to all threatened wildlife. These prohibitions, in part, make it illegal for any person subject to the jurisdiction of the United States to take (including harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt any such conduct), import or export, transport 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 threatened wildlife species under certain circumstances. Regulations governing permits are at 50 CFR 17.32. 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. In some instances, permits may be issued for a specified time to relieve undue economic hardship that would be suffered if such relief were not available. Requests for information on permits may be addressed to the Office of Management Authority, U.S. Fish and Wildlife Service, 4401 North Fairfax Drive, Room 432, Arlington, Virginia 22203-3507 (703/358-2093).

National Environmental Policy Act

The Fish and Wildlife Service has determined that an Environmental Assessment, as defined under the authority of the National Environmental Policy Act of 1969, need not be prepared in connection with regulations adopted pursuant to section 4(a) of the Act. A notice outlining the Service's reasons for this determination was published in the Federal Register on October 25, 1983 (48 FR 49244).

References Cited

A complete list of the references cited herein is available upon request from the Sacramento Field Office (see ADDRESSES section).

Author

The primary author of this rule is Peter C. Sorensen, Sacramento 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.

Final 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. Amend § 17.11(h) by adding the following, in alphabetical order under REPTILES, to the list of Endangered and Threatened Wildlife:

§ 17.11 Endangered and threatened wildlife.

* * * * *
(h) * * *

Species		Historic range	Vertebrate population where endangered or threatened	Status	When listed	Critical habitat	Special rules
Common name	Scientific name						
REPTILES							
Snake, giant garter	<i>Thamnophis gigas</i>	U.S.A. (CA)	Entire	T	522	NA	NA

Issued: September 27, 1993.
 Richard N. Braff, Jr.
 Acting Director, U.S. Fish and Wildlife
 Service.
 [FR Doc. 93-25741 Filed 10-19-93; 8:45 am]
 BILLING CODE 4310-65-P

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

50 CFR Parts 217 and 227

[Docket No. 910779-2317; I.D. 092493D]

Sea Turtle Conservation; Approved Turtle Excluder Devices

AGENCY: National Marine Fisheries
 Service (NMFS), NOAA, Commerce.

ACTION: Final rule, technical
 amendment.

SUMMARY: NMFS issues this final rule, technical amendment to amend the regulations listing turtle excluder devices (TEDs) approved for use in trawl fisheries to reduce the incidental capture of endangered and threatened sea turtles. This final rule, technical amendment creates a new category of hard TEDs called "special hard TEDs", which do not conform to the generic design criteria for hard TEDs, but nevertheless meet the approval criteria of the NMFS TED testing protocols. This amendment also lists two TEDs, the Flounder TED and the Jones TED, as special hard TEDs.

DATES: Effective October 15, 1993.

FOR FURTHER INFORMATION CONTACT:
 Phil Williams, National Sea Turtle
 Coordinator (301-713-2319) or Charles
 A. Oravetz, Chief, Protected Species
 Program, NMFS, Southeast Region (813-
 893-3366).

SUPPLEMENTARY INFORMATION:

Background

Regulations at 50 CFR 227.72 (57 FR 57346, December 4, 1992) require, with certain exceptions, that shrimp trawlers in the southern Atlantic and Gulf of Mexico have NMFS-approved TEDs installed in nets rigged for fishing; TEDs are devices designed to allow sea turtles caught in trawl nets to escape. These regulations also provide for restrictions, including the required use of TEDs, on vessels in other fisheries, under certain circumstances. Specifically, for example, NMFS promulgated an interim rule requiring vessels in the mid-Atlantic Summer Flounder Fishery to use TEDs (58 FR 48797, September 20, 1993).

The regulations currently allow the use of hard TEDs, which have rigid

reflector grids and meet specified generic design criteria, and soft TEDs, which have deflector panels made from polypropylene or polyethylene webbing and meet specified standards of construction and installation.

Although TEDs designed according to the generic standards (50 CFR 227.72(e)(4)(i)) may be applicable for use in other fisheries where TEDs are required, the hard TEDs which satisfy these standards have been largely developed for use in shrimp trawl nets. TED use is now required in the Atlantic summer flounder bottom trawl fishery pursuant to the interim rule. The Atlantic summer flounder bottom trawl fishery uses larger nets constructed from much heavier webbing than the shrimp trawl fishery, trawls at faster speeds and encounters bycatch, such as conch and small sharks, which can cause standard hard TEDs to work inefficiently or clog, or even collapse under some conditions.

The existing TED regulations provide for revisions of the hard TED generic design criteria, allowable modifications to hard TEDs, and the addition of new soft TED designs, if, according to a NMFS-approved scientific protocol, the TEDs demonstrate a sea turtle exclusion rate of 97 percent or greater (or an equivalent exclusion rate) (50 CFR 227.72(e)(5)). Two protocols have been published by NMFS and are currently being used for TED testing (52 FR 24262, June 29, 1987 and 55 FR 41092, October 9, 1990). However, the regulations make no provision for new hard TED designs that comply with a NMFS-approved protocol and meet the test criteria.

This technical amendment modifies the existing regulations to allow for the approval of new hard TED designs that are tested pursuant to a NMFS-approved protocol and meet the test criteria; the amendment creates a new category of hard TEDs called "special hard TEDs." These TEDs are designed for specific applications and may not strictly adhere to the generic design criteria, although they meet the approval criteria.

This technical amendment also recognizes that two TEDs, the Flounder TED and the Jones TED, have been approved as special hard TEDs, based on tests conducted pursuant to the NMFS-approved scientific protocol described at 55 FR 41092 (October 9, 1990). The Flounder TED has been designed, tested and is approved for use in the Atlantic summer flounder bottom trawl fishery. The Jones TED may be used in any fishery where TEDs are required.

The Flounder TED is an upward deflecting device, designed strictly for use only in the Atlantic summer

flounder bottom trawl fishery. It differs from the generic hard TED specifications in that it incorporates two openings, each no larger than 10 inches by 14½ inches (25.4 cm x 36.8 cm), at the bottom of the TED. This greatly exceeds the bar spacing allowed (4 inches, 10.2 cm) in other single-grid TEDs. It also has a minimum length (51 inches, 129.5 cm) which is much larger than the minimum required for a generic hard TED (28 inches (71.1 cm) in the Gulf of Mexico and 30 inches (76.2 cm) in the Atlantic).

The Jones TED is designed as an upward or downward deflecting device for use in the shrimp and other fisheries where TEDs are required. It differs from the generic hard TED specifications in that the deflector bars do not run from top to bottom of the TED, but extend, at a 45° angle, from each side of the TED. It also differs in that the deflector bars are only connected at one end to the TED frame and the maximum bar spacing on the upper bars is 3½ inches (8.9 cm), and on the lower three bars is 2½ inches (6.4 cm). The Jones TED is anticipated to be especially useful in a bottom opening configuration where algae, grass, and debris clog other types of TEDs.

Although the hard TED generic design criteria allow for the use of steel, aluminum, or fiberglass rod and steel or aluminum tubing, both of these TEDs must be constructed of aluminum or steel pipe with a minimum outside diameter of 1¼ inch (3.2 cm) and a minimum wall thickness of ¼ inch (0.3 cm). Both the Jones and Flounder TEDs must be installed, according to the generic hard TED requirements, with certain specific exceptions, and must have escape openings which meet the requirements for generic single-grid hard TEDs.

TED Testing

The Flounder TED is a large, rectangular, single-grid hard TED which is installed in the trawl angled upwards to an exit opening at the top of the net ahead of the extension. It has two openings at the bottom to allow small sharks, large shelled mollusks, such as conch, and rocks to pass into the cod end of the trawl. The Jones TED is a single-grid TED, oval in shape with a flattened bottom, which is installed in the trawl ahead of the extension. The Jones TED has diagonal bars attached only at one end to the frame to allow vegetation to slide off the bars into the cod end of the net.

Both TEDs were tested by NMFS at Panama City, Florida, in May and June 1993. The TED testing protocol consisted of two parts: