

## DEPARTMENT OF THE INTERIOR

## Fish and Wildlife Service

## 50 CFR Part 17

RIN 1018-AB88

28-94

**Endangered and Threatened Wildlife and Plants; Determination of Endangered Status for the Tidewater Goby**

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

**SUMMARY:** The Fish and Wildlife Service (Service) determines endangered status pursuant to the provisions of the Endangered Species Act of 1973, as amended (Act), for the tidewater goby (*Eucyclogobius newberryi*). The tidewater goby is a fish that occurs in tidal streams associated with coastal wetlands in California. Since 1900, the tidewater goby has disappeared from nearly 50 percent of the coastal lagoons within its historic range, including 74 percent of the lagoons south of Morro Bay in central California. Only three populations currently exist south of Ventura County. This rule implements the protection and recovery provisions provided by the Act for the tidewater goby.

**EFFECTIVE DATE:** March 7, 1994.

**ADDRESSES:** The complete file for this rule is available for inspection, by appointment, during normal business hours at the Ventura Field Office, U.S. Fish and Wildlife Service, 2140 Eastman Avenue, suite 100, Ventura, California 93003.

**FOR FURTHER INFORMATION CONTACT:** Carl Benz at the above address (805/644-1766).

**SUPPLEMENTARY INFORMATION:****Background**

The tidewater goby (*Eucyclogobius newberryi*) is a small fish, rarely exceeding 50 millimeters (2 inches) standard length, and is characterized by large pectoral fins and a ventral sucker-like disk formed by the complete fusion of the pelvic fins. The tidewater goby was first described as a new species (*Gobius newberryi*) by Girard (1856), from specimens collected in the San Francisco Bay area. Based on Girard's specimens, Gill (1862) reassigned *Gobius newberryi* to the newly described genus *Eucyclogobius* (Eschmeyer 1990).

A member of the family Gobiidae, the tidewater goby is the only species in the genus *Eucyclogobius* and is almost unique among fishes along the Pacific

coast of the United States in its restriction to waters with low salinities in California's coastal wetlands. All life stages of tidewater gobies are found at the upper end of lagoons in salinities less than 10 parts per thousand (ppt); however, gobies from two populations have been collected and reared in slightly higher salinities (Ramona Swenson, University of California, Berkeley, *in litt.* 1993). Although its closest relatives are marine species, the tidewater goby does not have a marine life history phase. This lack of a marine phase severely restricts the frequency of genetic exchange between coastal lagoon populations and significantly lowers the potential for natural recolonization of a locality once extirpated. Studies by Crabtree (1985) noted that some populations of gobies have differentiated genetically, indicating a long period of isolation. Tidewater gobies have a short lifespan and seem to be an annual species (Irwin and Stoltz 1984, Swift 1990), further restricting their potential to recolonize habitats from which they have been extirpated.

The tidewater goby occurs in loose aggregations of a few to several hundred individuals on the substrate in shallow water less than 1 meter (3 feet) deep (Swift *et al.* 1989), although gobies have been observed at depths of 1.5 to 2.3 meters (4.9 to 7.6 feet) (Dan Holland, University of Southwestern Louisiana, *in litt.* 1993). Peak nesting activities commence in late April through early May, when male gobies dig a vertical nesting burrow 10 to 20 centimeters (4 to 8 inches) deep in clean, coarse sand. Suitable water temperatures for nesting are 18 to 22°C (75.6 to 79.6°F) with salinities of 5 to 10 ppt. Male gobies remain in the burrows to guard eggs, which are hung from the ceiling and walls of the burrow until hatching. Larval gobies are found midwater around vegetation until they become benthic (Swift *et al.* 1989). Although the potential for year round spawning exists, it is probably unlikely because of seasonal low temperatures and disruptions of lagoons during winter storms. Ecological studies performed at two sites documented spawning occurring as early as the first week in January (Swenson *in litt.* 1993). Although usually associated with lagoons, the tidewater goby has been documented in ponded freshwater habitats as far as 8 kilometers (5 miles) upstream from San Antonio lagoon in Santa Barbara County (Irwin and Stoltz 1984).

The tidewater goby is discontinuously distributed throughout California, ranging from Tillas Slough (mouth of

the Smith River) in Del Norte County south to Agua Hedionda Lagoon in San Diego County. Areas of precipitous coastlines that preclude the formation of lagoons at stream mouths have created three natural gaps in the distribution of the goby. Gobies are apparently absent from three sections of the coast between: (1) Humboldt Bay and Ten Mile River, (2) Point Arena and Salmon Creek, and (3) Monterey Bay and Arroyo del Oso.

Roughly 10 percent of the coastal lagoons presently containing populations of tidewater goby are under Federal ownership. Over 40 percent of the remaining populations are either entirely or partly owned and managed by the State of California. The remainder are privately owned.

**Previous Federal Action**

The tidewater goby was first classified by the Service as a category 2 species in 1982 (47 FR 58454). It was reclassified as a category 1 candidate in 1991 (56 FR 58804) based on status and threat information in Swift *et al.* (1989). Category 2 applies to taxa for which information now in the possession of the Service indicates that proposing to list as endangered or threatened is possibly appropriate, but for which conclusive data on biological vulnerability and threats are not currently available to support a listing proposal. Category 1 applies to taxa for which the Service has on file substantial information on biological vulnerability and threats to support proposals to list them as endangered or threatened species.

On October 24, 1990, the Service received a petition from Dr. Camm Swift, Associate Curator of Fishes at the Los Angeles Museum of Natural History, to list the tidewater goby as endangered (Swift 1990). The petition, status surveys, and accompanying data describe the goby as threatened because of past and continuing losses of coastal and riparian habitats within its historic range. The Service's finding that this petition presented substantial information that the requested action may be warranted was published on March 22, 1991 (56 FR 12146). Following this finding, the Service initiated a status review on the tidewater goby.

Section 4(b)(3)(B) of the Endangered Species Act (Act), as amended in 1982, requires the Secretary to make a finding within 12 months of the date a petition is received as to whether or not the requested action is warranted. On December 11, 1992, the Service published a proposal to list the tidewater goby as an endangered species (57 FR 58770). The proposed rule

constituted the 12-month finding that the petitioned action was warranted.

#### Summary of Comments and Recommendations

In the December 11, 1992 proposed rule, all interested parties were requested to submit factual reports or information that might contribute to the development of a final determination. Appropriate Federal and State agencies, county governments, scientific organizations, and other interested parties were contacted and requested to comment. Newspaper notices were published in The Los Angeles Times on January 1, 1993, The San Francisco Sunday Examiner and Chronicle on January 3, 1993, and The San Diego Union-Tribune on February 4, 1993. The public comment period ended on February 9, 1993. A total of 548 comments were received. The Service received one letter from a Federal agency, three letters from State offices, and five from city or county agencies. Five hundred and ten of the comments were post cards from individuals urging support for the listing of the species. The Service received 29 letters from individuals and private organizations. Of those, only one expressed an opinion in opposition to listing the tidewater goby as endangered.

The National Park Service (Santa Monica Mountains National Recreation Area) stated support for the listing of the tidewater goby as endangered and suggested locations within the recreation area boundaries that may be candidates for reintroduction of the species. The National Park Service also sought assistance from the Service in determining potential habitat locations on lands not under public ownership that may be acquired under its land acquisition program.

Three California State agencies offered comments. The Topanga-Las Virgenes Resource Conservation District, a subdivision of State government, expressed full support for the listing of the goby. The California Coastal Commission stated, "The acute vulnerability of the tidewater goby to man-induced changes of estuarine habitat makes the development of comprehensive management strategies and plans, including development of recovery plans, for this species imperative." The California Department of Fish and Game submitted information pertaining to a project to reestablish a population of tidewater gobies on Waddell Creek Lagoon. The population was reintroduced in the fall of 1991 and subsequently sampled in November 1992. Gobies were reported from three sites in the lagoon. The Department will

continue to obtain information on that population as it is surveyed.

Five letters of information were received from city or county agencies. Two of these, one from the County of Santa Barbara Resource Management Department and one from the City of Santa Cruz, detailed population occurrences that were already known to the Service. Two letters from the cities of San Buenaventura and Santa Barbara cited possible impacts to goby habitat due to proposed or ongoing projects. These letters listed threats that are discussed under Factor A in the "Summary of Factors Affecting the Species" section. The Santa Barbara County Flood Control and Water Conservation District stated support for listing, but expressed concerns regarding the designation of critical habitat.

The Environmental Defense Center identified three issues concerning the proposed rule.

*Issue 1:* The critical habitat finding failed to meet the standards of section 4 of the Endangered Species Act and under *Northern Spotted Owl v. Lujan*, 758 F. Supp. 621 (W.D. Wash. 1991).

*Service Response:* The Service concurs that critical habitat should be designated for the tidewater goby. Information needed to complete required economic impact analyses consists of identifying Federal actions that might be precluded or modified by the destruction/adverse modification standard but not by the jeopardy standard. Moreover, it will be necessary to describe how these actions may be modified by application of the destruction/adverse modification standard. This information will provide a basis for analyses on the economic effects of designating critical habitat.

*Issue 2:* Without critical habitat, the Service lacks jurisdiction to prevent or modify certain actions affecting the tidewater goby.

*Service Response:* Although in some cases critical habitat may provide protection otherwise unavailable through the jeopardy standard, jurisdiction is available through the jeopardy standard and section 9, both of which may be aggressively applied to protect listed species.

*Issue 3:* The Service should at minimum propose the Santa Ynez estuary as critical habitat now.

*Service Response:* The Service intends to propose as critical habitat all tidewater goby habitat that may be essential to the species' conservation, as opposed to the piecemeal approach advocated in the recommendation to propose one estuary. In the interim, the Santa Ynez estuary is owned by the U.S.

Air Force, which is subject to the section 7(a)(1) affirmative conservation mandate and the prohibitions against jeopardy contained in section 7(a)(2).

#### Summary of Factors Affecting the Species

After a thorough review and consideration of all information available, the Service has determined that the tidewater goby should be classified as an endangered species. Procedures found at section 4 of the Endangered Species Act (16 U.S.C. 1531 *et seq.*) 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 tidewater goby (*Eucyclogobius newberryi*) are as follows:

*A. The present or threatened destruction, modification, or curtailment of its habitat or range.* Coastal development projects that result in the loss of coastal saltmarsh habitat are currently the major factor adversely affecting the tidewater goby. Coastal marsh habitats have been drained and reclaimed for residential and industrial developments. Waterways have been dredged for navigation and harbors resulting in permanent and direct losses of wetland habitats, as well as indirect losses due to associated changes in salinity. Coastal road construction projects have severed the connection between marshes and the ocean, resulting in unnatural temperature and salinity profiles that the tidewater goby cannot tolerate.

Furthermore, upstream water diversions adversely affect the tidewater goby by altering downstream flows, thereby diminishing the extent of marsh habitats that occurred historically at the mouths of most rivers and creeks in California. Alterations of flows upstream of coastal lagoons have already changed the distribution of downstream salinity regimes. Since the tidewater goby has relatively narrow salinity tolerances, changes in salinity distributions due to upstream water diversions may adversely affect both the size and distribution of goby populations (D. Holland, Univ. of Southwestern Louisiana, pers. comm., 1991).

Historically, the tidewater goby occurred in at least 87 of California's coastal lagoons (Swift *et al.* 1989). Since 1900, it has disappeared from approximately 50 percent of formerly occupied lagoons. A rangewide status survey conducted in 1984 found that 22

historic populations of tidewater goby had been extirpated (Swift *et al.* 1989). Only 5 years later, a status survey documented the disappearance of an additional 21 populations. In the San Francisco Bay area, 9 of 10 previously identified populations have disappeared (Swift *et al.* 1989, 1990). Losses in the southern part of the State have been the greatest, including 74 percent of the coastal lagoons south of Morro Bay. Three populations currently remain south of Ventura County. Since 1989, three additional tidewater goby populations have been lost in San Luis Obispo and Santa Cruz Counties (Swift *et al.* 1989, 1990). Five small populations have been rediscovered since 1984, but the overall losses indicate a decline of 35 percent rangewide in 6 years (Holland 1991a, 1991b, 1991c; Swift *et al.* 1991).

Of the 43 remaining populations of tidewater gobies identified by Swift *et al.* (1990), most are small and threatened by a variety of human and natural factors. According to Swift *et al.* (1990), only eight extant localities contain populations that are considered large enough and free enough from habitat degradation to be safe for the immediate future. These areas are all located north of San Francisco Bay. The remaining lagoons are so small or modified that tidewater goby populations are restricted in distribution and vulnerable to elimination (Swift *et al.* 1989, 1990). The number of extirpated localities of gobies has left remaining populations so widely separated throughout most of the species' range that recolonization is unlikely.

Several specific proposed and ongoing coastal development activities threaten habitats supporting tidewater gobies, including road widening and bridge replacement projects along Highway 101, water diversion projects in San Luis Obispo County, expansion of several State Park Recreation areas in Santa Barbara and San Luis Obispo Counties, and hotel and golf course developments in San Luis Obispo and Marin Counties.

In addition to these specific threats, the tidewater goby is vulnerable throughout its remaining range because of the loss of coastal marsh, as noted above, and because of other effects of water diversions as well. In addition to restricting the goby's overall range by altering downstream salinities, water diversions and alterations of water flows may negatively impact the species' breeding and foraging activities. Gobies in southern and central California breed primarily in sand/mud substrates and apparently avoid areas that contain large

amounts of decaying vegetation (Holland 1991b). Reductions in water flows may allow aggressive plant species to colonize the otherwise bare sand/mud substrates of coastal lagoon margins, thus degrading the habitat quality for the goby. Decreases in stream flows also reduce the deep stream pools utilized by gobies venturing upstream from lagoons. In San Luis Obispo County alone, the effects of drought, either directly or exacerbated by upstream water diversions, have been responsible for the extirpation of at least three populations of gobies between 1986 to 1990 (K. Worcester, California Department of Fish and Game, pers. comm., 1991).

The tidewater goby is also adversely affected by groundwater overdrafting and discharge of agricultural and sewage effluents. For example, in Santa Barbara County, increased groundwater pumpage and siltation from topsoil runoff in the San Antonio Creek drainage has significantly affected areas immediately upstream of occupied goby habitat (i.e., Barka Slough) (C. Swift, Los Angeles County Museum of Natural History, pers. comm., 1991). Enrichment by agricultural and sewage effluents may cause algal blooms and deoxygenation that restrict habitable areas of lagoons utilized by tidewater gobies, especially in summer (Swift *et al.* 1989). The potential for these factors to degrade remaining goby habitats has also been noted at all three extant localities south of Ventura County (D. Holland, pers. comm., 1991) and at several sites along the central California coast (T. Taylor, California State Parks and Recreation, pers. comm., 1991; K. Worcester, pers. comm., 1991).

The tidewater goby is further threatened by channelization of the rivers it inhabits. Because most of the goby's localities have been moderately to extremely channelized, winter floods scour the species out of the restricted channelized areas where no protection is afforded from such high flows. This type of event was responsible for the disappearance of gobies from Waddell Creek lagoon in the winter 1972-73 (C. Swift, pers. comm., 1991).

Finally, cattle grazing and feral pig activity present a threat to the existence of the tidewater goby. These activities have resulted in increased sedimentation of coastal lagoons and riparian habitats, removal of vegetative cover, increased ambient water temperatures, and elimination of plunge pools and collapsed undercut banks utilized by tidewater gobies. In San Luis Obispo County, increased sedimentation into Morro Bay has significantly accelerated the conversion of wetland

habitats to upland habitats (Josselyn *et al.* 1989). Presently, cattle continue to graze freely both upstream and in many of the coastal lagoons supporting tidewater gobies (K. Worcester, pers. comm., 1991).

*B. Overutilization for commercial, recreational, scientific, or educational purposes.* Not known to be applicable.

*C. Disease or predation.* Over the past 20 years, at least 60 species of exotic fishes have been introduced to the western United States, 59 percent of which are predatory (Hayes and Jennings 1986, Jennings 1988). The introduction of exotic predators to southern California waters has been facilitated by the interbasin transport of water (e.g., California Aqueduct). Introduced predators, particularly centrarchid fishes, may have contributed to the elimination of the tidewater goby from several localities in California (Swift *et al.* 1989). The present day absence of the tidewater goby from the San Francisco delta area may well be explained by the presence of introduced predators such as striped bass (*Morone saxatilis*) and native predators including the Sacramento perch (*Archoplites interruptus*) (Swift *et al.* 1989, 1990). Two of the most recent disappearances of gobies from San Luis Obispo County (Old Creek) and San Diego County (San Onofre Creek) are likely due to the presence of exotic largemouth bass (*Micropterus salmoides*) and green sunfish (*Lepomis cyanellus*), respectively. Natural predation on gobies by rainbow trout (*Oncorhynchus mykiss*) has been documented (Swift *et al.* 1989). Other non-native predators, specifically crayfish (*Cambarus* spp.) and mosquitofish (*Gambusia* spp.), may also threaten goby populations through direct predation on adults, larvae, or eggs.

*D. The inadequacy of existing regulatory mechanisms.* Section 10 of the Rivers and Harbors Act and section 404 of the Clean Water Act regulate the placement of dredge and fill materials into waters of the United States. Under section 404, nationwide permits, which undergo minimal public and agency review, can be issued for projects involving less than 10 acres of waters of the United States and adjacent wetlands, unless a listed species may be adversely affected. Individual permits, which are subject to more extensive review, are required for projects that affect greater than 10 acres.

The U.S. Army Corps of Engineers (Corps) is the agency responsible for administering the section 10 and section 404 programs. The Service, as part of the section 404 review process, provides

comments on both predischage notices for nationwide permits and public notices for individual permits. The Service's comments are only advisory, although procedures exist for elevation when disagreements between the agencies arise. In practice, the Corps' actions under section 10 and section 404 are insufficient to protect the tidewater goby.

Most projects within the range of the tidewater goby considered in this proposal may require approval from the Corps as currently described in section 404 of the Clean Water Act. Projects proposed in coastal lagoons may also require a permit under section 10 of the Rivers and Harbors Act. Federal listing of this species requires Federal agencies to insure their actions are not likely to jeopardize the tidewater goby's continued existence or destroy or adversely modify any habitat that is designated as critical.

The National Environmental Policy Act and California Environmental Quality Act require an intensive environmental review of projects that may adversely affect Federal candidate species. However, project proponents are not required to avoid impacts to these species, and proposed mitigation measures are frequently not adequately implemented. As with section 404 permits, the Service's comments through these environmental review processes are only advisory.

The California Coastal Act regulates the approval of developments within the coastal zone. Although a significant slowing in wetland losses has occurred, the continued loss and degradation of coastal wetlands since the California Coastal Act was enacted in 1974 attests to the limitations of this legislation.

*E. Other natural or manmade factors affecting its continued existence.* By far, the most significant natural factor adversely affecting the tidewater goby is drought and resultant deterioration of coastal and riparian habitats. California has recently experienced 5 consecutive years of lower than average rainfall. These drought conditions, when combined with human induced water reductions (i.e., diversions of water from streams, excessive groundwater withdrawals), have degraded coastal and riparian ecosystems and have created extremely stressful conditions for most aquatic species. Formerly large populations of tidewater gobies have declined in numbers because of the reduced availability of suitable lagoon habitats (i.e., San Simeon Creek, Pico Creek), others disappeared when the lagoons dried (i.e., Santa Rosa Creek). In San Luis Obispo County alone, 6 of 20 populations of tidewater gobies were

extirpated between 1984 and 1989 because of drought, water diversions, and pollution (K. Worcester, pers. comm., 1991).

Habitat degradation and losses of the tidewater goby from weather related phenomena commonly occur due to the restriction of the species to coastal lagoon systems and its dependence on freshwater inflows. Events such as river flooding and heavy rainfall have been reported to destroy goby burrows and wash gobies out to sea. Storm surges that enter a lagoon may also adversely affect entire goby populations by rapidly changing its salinity.

The tidewater goby was undoubtedly subjected to such natural flood events even before major human alteration of drainage basins. As mentioned under Factor A, channelization and urbanization have increased the frequency and perhaps the intensity of such flood events. In addition, populations of gobies are becoming more isolated from one another as intervening populations are extirpated, thus further decreasing the likelihood of successfully colonizing and reestablishing a population lost to a "natural" flood.

Competition with introduced species is a potential threat to the tidewater goby. Although problems have not been documented so far, the spread of two introduced oriental gobies (yellowfin goby (*Acanthogobius flavimanus*) and chameleon goby (*Tridentiger trigonocephalus*)) may have a detrimental effect on the tidewater goby. According to Swift *et al.* (1990), the chameleon goby was recently found in Pyramid Lake, probably imported with central California water. If this goby becomes established in the Santa Clara River as other imported species have (e.g., prickly sculpin (*Cottus asper*)), the tidewater goby population at the mouth of the Santa Clara River may be at risk.

The Service has carefully assessed the best scientific and commercial information available regarding the past, present, and future threats faced by this species in determining to make this rule final. The tidewater goby has been extirpated from nearly 50 percent of the lagoons within its historic range, including 74 percent of the lagoons south of Morro Bay. Forty-three populations remain; however, only six are large in number and reasonably free from immediate threats. Based on this evaluation, the preferred action is to list the tidewater goby as endangered. The tidewater goby has experienced a substantial decline throughout its historic range and faces threats indicating that this downward trend is likely to continue. This species lives

within specific habitat zones that have been, and will continue to be, targeted for development and degradation by human activities. The goby is extremely vulnerable to adverse habitat modification and water quality changes. The tidewater goby is in imminent danger of extinction throughout its range and requires the full protection of listing as endangered under the Act to survive. For reasons discussed below, the Service is not proposing to designate critical habitat for this fish species at this time.

#### 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. Furthermore, the Service is to designate critical habitat on the basis of the best scientific and commercial data available after taking into consideration the economic and other relevant impacts of specifying an area as critical habitat (16 U.S.C. 1533(b)(2)). In the case of the tidewater goby, critical habitat is not presently determinable. A final designation of critical habitat requires detailed information on the possible economic effects of such a designation. The Service does not currently have sufficient information needed to perform the economic analysis. A delay in the determination to list the species to gather additional information and perform analyses would not serve the needs of the species. Information is needed on actions that may be proposed within tidewater goby habitat and the degree to which a designation of critical habitat may affect these actions over and above effects associated with listing the goby as endangered (i.e., the jeopardy standard alone). It will also be necessary to determine how and to what extent application of the destruction/adverse modification standard will change various Federal actions. These data will be used in the economic analyses to determine the economic effects of critical habitat designation.

#### Available Conservation Measures

Conservation measures provided to species listed as endangered or threatened under the Endangered Species Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain activities. Recognition through listing encourages and results in conservation actions by Federal, State, and private agencies, groups, and individuals. The Endangered Species Act provides for possible land

acquisition and cooperation with the States 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, as amended, requires Federal agencies to evaluate their actions with respect to any species that is proposed or listed as endangered or threatened and with respect to its critical habitat, if any is being designated. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR part 402. Section 7(a)(2) requires Federal agencies to ensure 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.

A number of Federal agencies or departments control lands that support the tidewater goby. These include the Department of Defense (U.S. Army Corps of Engineers, U.S. Navy, U.S. Air Force, and U.S. Marine Corps), Department of Agriculture (U.S. Forest Service), and Department of the Interior (National Park Service and U.S. Fish and Wildlife Service). Federal actions that may be affected by this determination would be the funding or authorization of projects within the species' habitat, including the construction of roads, bridges, and dredging projects subject to section 404 of the Clean Water Act (33 U.S.C. 1344 *et seq.*) and section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 401 *et seq.*), and special use permits. Other Federal actions that are subject to environmental review under the National Environmental Policy Act would also require consultation with

the Service. Projects on federally owned land would also be subject to the provisions of section 7 of the Endangered Species Act.

The Act and implementing regulations found at 50 CFR 17.21 set forth a series of general prohibitions and exceptions that apply to all endangered wildlife. These prohibitions, in part, would make it illegal for any person subject to the jurisdiction of the United States to take (includes harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect; or attempt any of these), 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.

The Act and 50 CFR 17.22 and 17.23 also provide for the issuance of permits to carry out otherwise prohibited activities involving endangered wildlife species under certain circumstances. Such permits are available for scientific purposes, to enhance the propagation or survival of the species, for incidental take in connection with otherwise lawful activities, and for economic hardship under certain circumstances. Requests for copies of the regulations on listed plants and wildlife and inquiries regarding them may be addressed to the U.S. Fish and Wildlife Service, Ecological Services, Permit Branch, 911 N.E. 11th Avenue, Portland, Oregon 97232-4181, telephone 503/231-6241, FAX 503/231-6243.

**National Environmental Policy Act**

The Fish and Wildlife Service has determined that an Environmental Assessment or Environmental Impact Statement, as defined under the authority of the National Environmental

Policy Act of 1969, need not be prepared in connection with regulations adopted pursuant to section 4(a) of the Endangered Species Act of 1973, as amended. A notice outlining the Service's reasons for this determination was published in the **Federal Register** on October 25, 1983 (48 FR 49244).

**References Cited**

A complete list of all references cited herein, as well as others, is available upon request from the Ventura Field Office (see ADDRESSES section).

**Authors**

The primary authors of this final rule are Donna C. Brewer, Cathy Brown, and Thomas Davidson of the Ventura Field Office (see ADDRESSES section).

**List of Subjects in 50 CFR Part 17**

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

**Regulation Promulgation**

Accordingly, 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 species, in alphabetical order under the group FISHES, to the List of Endangered and Threatened Wildlife to read as follows:

**§ 17.12 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						
<b>Fishes</b>							
Goby, tidewater	<i>Eucyclogobius newberryi</i>	U.S.A. (CA)	Entire	E	527	NA	NA

Dated: January 31, 1994.

Mollie H. Beattie,

Director, Fish and Wildlife Service.

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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; Endangered Status for Three Plants and Threatened Status for One Plant From Sandy and Sedimentary Soils of Central Coastal California

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

**SUMMARY:** The U.S. Fish and Wildlife Service (Service) determines endangered status pursuant to the Endangered Species Act of 1973, as amended (Act), for three plants: *Chorizanthe pungens* var. *hartwegiana* (Ben Lomond spineflower (also previously known as Hartweg's spineflower)), *Chorizanthe robusta* (inclusive of var. *hartwegii* and var. *robusta*) (robust spineflower), and *Erysimum teretifolium* (Ben Lomond wallflower). The Service also determines threatened status for one plant: *Chorizanthe pungens* var. *pungens* (Monterey spineflower). These four taxa occur in coastal habitats of southern Santa Cruz and northern Monterey Counties and are imperiled by one or more of the following factors: Habitat destruction due to residential and golf course development, agricultural land conversion, sand mining, military activities, and encroachment by alien plant species. This rule implements the protection and recovery provisions afforded by the Act for these plants.

**EFFECTIVE DATE:** March 7, 1994.

**ADDRESSES:** The complete file for this rule is available for public inspection, by appointment, during normal business hours at the U.S. Fish and Wildlife Service, Ventura Field Office, 2140 Eastman Avenue, Suite 100, Ventura, California 93003.

**FOR FURTHER INFORMATION CONTACT:** Connie Rutherford at the above address (805/644-1766).

#### SUPPLEMENTARY INFORMATION:

##### Background

*Chorizanthe pungens* Benth. var. *hartwegiana* Reveal & Hardham, *Chorizanthe robusta* Parry var. *hartwegii* (Benth. in A. DC), and *Erysimum teretifolium* Eastwood are endemic to sandstone and mudstone deposits in the Santa Cruz Mountains in Santa Cruz County, California. *Chorizanthe pungens* Benth var. *pungens* and *Chorizanthe robusta* Parry var. *robusta* are endemic to sandy soils of coastal habitats in southern Santa Cruz and northern Monterey Counties.

The Santa Cruz Mountains are a relatively young range composed of igneous and metamorphic rocks overlain by thick layers of sedimentary material uplifted from the ocean floor and ancient shoreline zone (Caughman and Ginsberg 1987). These ancient marine terraces persist as pockets of sandstones and limestones that are geologically distinct from the volcanic origins of the range. Soils that form from these sandstone and limestone deposits tend to be coarse and, at least superficially, lose soil moisture rapidly. The more mesic slopes of the Santa Cruz Mountains are covered primarily by redwood forest (Zinke 1988) and mixed evergreen forest (Sawyer *et al.* 1988).

In contrast, the drier pockets of sandstone and limestone, referred to as the "Ben Lomond sandhills" (Thomas 1961), support two unique communities—maritime coast range ponderosa pine forest and northern maritime chaparral (Griffin 1964, Holland 1986). The ponderosa pine forest, locally referred to as "ponderosa pine sandhill" or "ponderosa pine sand parkland" (California Native Plant Society 1986, Marangio and Morgan 1987), consists of an open park-like forest of scattered ponderosa pine (*Pinus ponderosa*) with knobcone pine (*Pinus attenuata*), coast live oak (*Quercus agrifolia*), and at a few sites, the federally endangered Santa Cruz cypress (*Cupressus abramsii*). These stands intergrade with another unique community, northern maritime chaparral, locally referred to as silver-leaf manzanita mixed chaparral (Marangio 1985, Marangio and Morgan 1987), and are dominated by the endemic silver-leaved manzanita (*Arctostaphylos silvicola*).

As uplift of the Santa Cruz Mountains proceeded, some of the raised marine terraces of sandstone and limestone were buried beneath layers of sedimentary material deposited by flowing water. Pockets of this alluvial material, referred to as Santa Cruz mudstone, persisted during this process

of mountain uplifting and alluvial movement. In the Scotts Valley area, mudstone outcrops support annual grasses and herbaceous species. These communities were referred to as annual grasslands and wildflower fields by Holland (1986).

##### Discussion of the Four Species

In California, the spineflower genus (*Chorizanthe*) in the buckwheat family (Polygonaceae) comprises species of wiry annual herbs that inhabit dry sandy soils along the coast and inland. Because of the patchy and limited distribution of such soils, many species of *Chorizanthe* tend to be highly localized in their distribution.

One subsection of the genus referred to as *Pungentes* consists of seven species distinguished by the following features: The inner and outer tepals (petal-like sepals) are of equal length and are entire or lobed but not fringed, filaments are free, involucre (whorl of bracts subtending the flowers) are 6-toothed with the alternating three shorter and the anterior one slightly long-awned, involucre margins are not continuously membranaceous across the sinuses, the number of stamens are variable (3-9), and plants are decumbent to erect with spreading pubescence and are distributed mainly on or near the coast from Santa Barbara County northward to Mendocino (Reveal and Hardham 1989).

Although three of the seven species in the section *Pungentes* are still thought to be common, the remaining four species are becoming increasingly rare. Two of these species (*Chorizanthe howellii* and *C. valida*) were listed as endangered on June 22, 1992 (57 FR 27848). The remaining two species, *C. pungens* and *C. robusta*, inclusive of their varieties, are subjects of this rule.

*Chorizanthe pungens* was first described by George Bentham in 1836 based on a specimen collected in Monterey. This taxon was recognized by George Goodman in 1934 as the type species in describing the *Pungentes* section of the genus. At that time, Goodman also recognized *C. pungens* var. *hartwegii*, previously described and identified as *C. douglasii* var. *hartwegii* by Bentham in 1856. It was named after Karl Hartweg who collected the type from "dry mountain pastures near Santa Cruz" in 1847 (Reveal and Hardham 1989).

*Chorizanthe pungens* var. *hartwegiana* was distinguished from *C. pungens* var. *pungens* by James Reveal and Clare Hardham (1989) after they noticed a difference between the coastal form and an inland form found "in the Ben Lomond sand hills area." The name

*Chorizanthe pungens* var. *pungens* was retained to represent the coastal form of the plant. Reveal and Hardham noted that the type for *C. pungens* var. *hartwegiana* was dissimilar to the plant that was called *C. pungens* var. *hartwegii*.

The recent article describing *Chorizanthe* (Reveal and Hardham 1989) treats *C. pungens* var. *pungens* and *C. pungens* var. *hartwegiana* as distinct varieties. Though Hickman (1993) did not treat *Chorizanthe pungens* var. *hartwegiana* separately in The Jepson Manual, he did state that plants with "more erect petals with pink to purple involucre margins have been called var. *hartwegiana* Rev. & Hardham." For the purposes of this final rule, the Service lists *C. pungens* var. *pungens* and *C. pungens* var. *hartwegiana* separately because the former variety qualifies for threatened status and the latter qualifies for endangered status under the Act. Even if the conservative Hickman (1993) treatment were used, *C. pungens* (inclusive of vars. *pungens* and *hartwegiana*) faces the same threats as described under the section entitled "Summary of Factors Affecting the Species" and would qualify for listing under the Act.

*Chorizanthe robusta* was first described by Charles Parry in 1889 based on a collection he made 6 years earlier "north of Aptos along Monterey Bay" (Parry 1889). Willis Jepson considered it to be a variety of *C. pungens* and thus combined the taxon under the name *C. pungens* var. *robusta* in his Flora of California in 1914 (Jepson 1914). In their revision of the genus in 1989, Reveal and Hardham (1989) recognized Parry's treatment and retained the taxon as *C. robusta*. Although they placed in this synonymy the type of *C. pungens* var. *hartwegii*, Reveal and Hardham noted that the definition of the taxon was still not settled with their review.

Concurrent with the publication of the Reveal and Hardham revision, the first collection in over 50 years was made of the inland form that matched Hartweg's original collection made in 1847. Reveal was therefore able to reconfirm its affinity with *Chorizanthe robusta*, while recognizing the distinctness of this taxon as a variety. Reveal, along with local botanist Randall Morgan, published the combination *C. robusta* var. *hartwegii* (Reveal and Morgan 1989), inclusive of the type of *C. pungens* var. *hartwegii*.

The recent article describing *Chorizanthe robusta* var. *hartwegii* (Reveal and Morgan 1989) treats *C. robusta* var. *robusta* and *C. robusta* var.

*hartwegii* as distinct varieties. Though Hickman (1993) did not treat *C. robusta* var. *hartwegii* separately in The Jepson Manual, he did state that plants with "more erect petals with pink involucre margins have been called var. *hartwegii* (Benth.) Rev. & R. Morgan." For the purposes of this listing, the Service adds the entire species of *C. robusta* (inclusive of *C. robusta* var. *hartwegii* and *C. robusta* var. *robusta*) to the List of Endangered and Threatened Wildlife and Plants.

During the Service's review of a petition to list *Chorizanthe robusta* var. *hartwegii*, Dr. John Thomas questioned the taxonomic validity of *Chorizanthe robusta* var. *hartwegii* (John Thomas, Stanford University, *in litt.*, 1990). To address these concerns, the Service reviewed specimens of *Chorizanthe robusta* var. *hartwegii* and other closely related taxa in the *Pungentes* subsection of the genus with plant taxonomists at the University of California. The Service's review indicates that specimens ascribed to *C. pungens* and *C. robusta* have five morphologically recognizable phases that correspond to ecological and geographical patterns. Four of these five phases generally correspond to *C. pungens* var. *pungens*, *C. pungens* var. *hartwegiana*, *C. robusta* var. *robusta*, and *C. robusta* var. *hartwegii*. The fifth phase consists of specimens that were identified as *C. robusta* or *C. pungens* (Ertter 1990). This final rule, by addressing the subject four varieties of *Chorizanthe*, includes all five phases reviewed.

*Chorizanthe pungens* var. *pungens* and *Chorizanthe robusta* var. *robusta* are endemic to sandy soils of coastal habitats in southern Santa Cruz and northern Monterey Counties. The inner rim of Monterey Bay is characterized by broad, sandy beaches backed by an extensive dune formation. Just inland from the immediate coast, maritime chaparral occupies areas with well-drained soils. Coastal dune and coastal scrub communities exist along the inner rim of Monterey Bay, but portions were affected by habitat modification or destruction.

*Chorizanthe pungens* var. *pungens* (Monterey spineflower) has white (rarely pinkish) scarious margins on the involucre lobes and a prostrate to slightly ascending habit that distinguish it from *Chorizanthe pungens* var. *hartwegiana*. The aggregate of flowers (heads) tend to be small (less than 1 centimeter (cm) (0.4 inches (in)) in diameter) and either distinctly or indistinctly aggregate. The plant is found scattered on sandy soils within coastal dune, coastal scrub, grassland, maritime chaparral, and oak woodland

communities along and adjacent to the coast of southern Santa Cruz and northern Monterey Counties and inland to the coastal plain of Salinas Valley. Historically, the plant ranged along the coast from southern Santa Cruz County south to northern San Luis Obispo County and from Monterey inland to the Salinas Valley. Only one collection dating from 1842 was made from northern San Luis Obispo County; however, in recent years it was not collected south of Monterey Peninsula (Reveal and Hardham 1989).

Along the immediate coast, *Chorizanthe pungens* var. *pungens* was documented at Manresa State Beach and the dunes near Marina. The plant probably was extirpated from a number of historical locations in the Salinas Valley, primarily due to conversion of the original grasslands and valley oak woodlands to agricultural crops (Reveal and Hardham 1989). Significant populations of *Chorizanthe pungens* var. *pungens*, representing upwards of 70 percent of the range of the plant, were recently documented from Fort Ord (Army Corps of Engineers 1992). These surveys indicated that within grassland communities the plant occurs along roadsides, in firebreaks, and in other disturbed sites. In oak woodland, chaparral, and scrub communities, the plants occur in sandy openings between shrubs. In older stands with a high cover of shrubs, the plant is restricted to roadsides and firebreaks that bisect these communities. The highest densities of *C. pungens* var. *pungens* are located in the central portion of the firing range, where disturbance is the most frequent. Although studies were not conducted on factors that determine the pattern of distribution and the densities of *C. pungens* var. *pungens* on Fort Ord, a correlation exists between open conditions resulting from activities that disturb habitat and high densities of *C. pungens* var. *pungens*. Prior to onset of human use of this area, this species was possibly restricted to openings created by wildfires within these communities.

*Chorizanthe robusta* (robust spineflower) is comprised of two varieties: *C. robusta* var. *robusta* and *C. robusta* var. *hartwegii*. A description of the species is broken out below by variety.

*Chorizanthe robusta* var. *robusta* has thin white to pinkish scarious margins along the basal portions of the teeth and an erect to spreading or prostrate habit. The heads are large (1.5 to 2 cm (0.6 to 0.8 in) in diameter) and distinctly aggregate. The plant once ranged from Alameda to Monterey Counties, but is currently known only from sandy and