potentially be affected by the rules proposed in this Further Notice.

16. *Description of Projected Reporting, Record keeping, and Other Compliance Requirements.* We tentatively conclude that there will not be any additional burdens or costs associated with the proposed rules on any entities, including on small entities. We seek comment on this tentative conclusion.

17. *Steps Taken to Minimize Significant Economic Impact on Small Entities and Significant Alternatives Considered.* In the FRFA to the *Universal Service Order*, the Commission described the steps taken to minimize the significant economic impact on a substantial number of small entities consistent with stated objectives associated with the Schools and Libraries section, the Rural Health Care Provider section, and the Administration section of the *Universal Service Order.* Our current action to amend our rules will benefit schools, libraries, and rural health care providers, by ensuring that funds are allocated first to the neediest schools and libraries and that schools, libraries, and rural health care providers will be able to receive any support approved by the Administrator that is not the subject of an appeal. We believe that the amended rules fulfill the statutory mandate to enhance access to telecommunications services for schools, libraries, and rural health care providers, and fulfill the statutory principle of providing quality services at ''just, reasonable, and affordable rates,'' without imposing unnecessary burdens on schools, libraries, rural health care providers, or service providers, including small entities.

18. *Federal Rules That May Overlap, Duplicate, or Conflict with the Proposed Rule.* None.

VIII. Ordering Clauses

19. Accordingly, it is ordered that, pursuant to the authority contained in sections 1–4, 201–205, 218–220, 254, 303(r), 403 and 405 of the Communications Act of 1934, as amended, 47 U.S.C. 151–154, 201–205, 218–220, 254, 303(r), 403 and 405, section 553 of the Administrative Procedure Act, 5 U.S.C. 553, and section 1.108 of the Commission's rules, 47 CFR 1.108, the Further Notice of Proposed Rulemaking is adopted.

20. It is further ordered that, because the Commission has found good cause, this Further Notice of Proposed Rulemaking is effective upon publication in the **Federal Register**.

21. It is further ordered that the Commission's Office of Public Affairs, Reference Operations Division, shall send a copy of this Further Notice of Proposed Rulemaking, including the Initial Regulatory Flexibility Analysis, to the Chief Counsel for Advocacy of the Small Business Administration.

List of Subjects in 47 CFR Part 54

Healthcare providers, Libraries, Reporting and recordkeeping requirements, Schools, Telecommunications, Telephone.

Federal Communications Commission.

Magalie Roman Salas,

Secretary.

[FR Doc. 99–16182 Filed 6–23–99; 8:45 am]

BILLING CODE 6712–01–P

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

RIN 1018–AF67

Endangered and Threatened Wildlife and Plants; Proposed Rule to Remove the Northern Populations of the Tidewater Goby From the List of Endangered and Threatened Wildlife

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Proposed rule.

SUMMARY: The Fish and Wildlife Service, pursuant to the Endangered Species Act of 1973, as amended (Act), proposes to remove the northern populations of the tidewater goby (*Eucyclogobius newberryi*) from the list of endangered and threatened wildlife. The species is now classified as endangered throughout its entire range. We have determined that north of Orange County there are more populations than were known at the time of the listing, that the threats to those populations are less severe than previously believed, and that the tidewater goby has a greater ability than was known in 1994 to recolonize habitats from which it is temporarily absent. This proposal would remove the northern populations of the tidewater goby from protection under the Act.

The Orange and San Diego counties population of tidewater goby, which constitutes a distinct population segment, is genetically distinct, is comprised of gobies from only six localities, and continues to be threatened by habitat loss and degradation, predation by non-native species, and extreme weather and streamflow conditions. Therefore, this distinct population segment will be retained as an endangered species on the List of Endangered and Threatened Wildlife.

DATES: We must receive comments from all interested parties by August 23, 1999. We must receive public hearing requests by August 9, 1999.

ADDRESSES: Send written comments and other materials concerning this proposal to Ms. Diane Noda, Field Supervisor, Ventura Fish and Wildlife Office, 2493 Portola Road, Suite B, Ventura, California 93003. You may inspect comments and materials received, by appointment, during normal business hours at the above address.

FOR FURTHER INFORMATION CONTACT: Carl Benz at the above address; telephone 805/644–1766, facsimile 805/644–3958.

SUPPLEMENTARY INFORMATION:

Background

The tidewater goby was first described in 1857 by Girard as *Gobius newberryi.* Gill (1862) erected the genus *Eucyclogobius* for this distinctive species. The majority of scientists has accepted this classification (e.g., Bailey *et al.* 1970, Miller and Lea 1972, Hubbs *et al.* 1979, Robins *et al.* 1991, Eschmeyer *et al.* 1983). No other species has been described in this genus. A few older works and Ginsburg (1945) placed the tidewater goby and the eight related eastern Pacific species into the genus *Lepidogobius.* This classification includes the currently recognized genera *Lepidogobius, Clevelandia, Ilypnus, Quietula,* and *Eucyclogobius.* Birdsong *et al.* (1988) coined the informal *Chasmichthys* species group, recognizing the phyletic relationship of the eastern Pacific group with species in the northwestern Pacific.

Crabtree's (1985) allozyme work on tidewater gobies from 12 localities throughout the range shows fixed allelic differences at the extreme northern (Lake Earl, Humboldt Bay) and southern (Cañada de Agua Caliente, Winchester Canyon, and San Onofre Lagoon) ends of the range. The northern and southern populations are genetically distinct from each other and from the central populations sampled. The more centrally distributed populations are relatively similar to each other (Brush Creek, Estero Americano, Corcoran Lagoon, Arroyo de Corral, Morro Bay, Santa Ynez River, and Jalama Creek). Crabtree's results indicate that there is a low level of gene flow (movement of individuals) between the populations sampled in the northern, central, and southern parts of the range. However, Lafferty *et al.* (in prep.) point out that Crabtree's sites were widely distributed geographically, and may not be

indicative of gene flow on more local levels.

Recently, David Jacobs (University of California, Los Angeles, Department of Organismic Biology, Ecology and Evolution, *in litt.*, 1998) initiated an analysis of mitochondrial genetic material from tidewater goby populations ranging from Humboldt to San Diego counties. Preliminary results indicate the San Diego gobies separated from other gobies along the coast long ago. These southernmost populations likely began diverging from the remainder of the gobies in excess of 100,000 years ago. Furthermore, gobies from the Point Conception area are more closely related to gobies from Humboldt County than they are to the gobies analyzed in San Diego County.

The tidewater goby (*Eucyclogobius newberryi*) is a small, elongate, grey-brown fish with dusky fins not exceeding 50 millimeters (mm) (2 inches (in.)) standard length (SL). The tidewater goby is a short-lived species, apparently having an annual life cycle (Irwin and Soltz 1984, Swift *et al.* 1997). At the time of the listing, the species was believed to have more stringent habitat requirements and to be less likely to disperse successfully than recent research indicates (see below). These factors, coupled with the short life span of the tidewater goby, were believed to make most tidewater goby populations vulnerable to extirpation by human activities. At the time of the listing, we believed that approximately 50 percent of the documented populations had been extirpated. However, in spite of the many factors affecting coastal wetlands, recent survey data demonstrate a less than 25 percent permanent loss of the known tidewater goby populations (Ambrose *et al.* 1993; Swift *et al.* 1994; Lafferty *et al.* 1996; C. Chamberlain, U.S. Fish and Wildlife Service, Arcata, California, *in litt.* 1997; Lafferty 1997; Swift *et al.* 1997).

The tidewater goby inhabits coastal brackish water habitats entirely within California. Within the range of the tidewater goby, these conditions occur in two relatively distinct situations: (1) The upper edge of tidal bays, such as Tomales, Bolinas, and San Francisco bays near the entrance of freshwater tributaries, and (2) the coastal lagoons formed at the mouths of small to large coastal rivers, streams, or seasonally wet canyons, along most of the length of California. Few well authenticated records of this species are known from marine environments outside of enclosed coastal lagoons and estuaries (Swift *et al.* 1989). This may be due to the lack of collection efforts at appropriate times (i.e., following storm events or breachings when gobies are flushed from the estuaries and lagoons). Historically, the species ranged from Tillas Slough (mouth of the Smith River, Del Norte County) near the Oregon border to Agua Hedionda Lagoon (northern San Diego County).

The tidewater goby is often found in waters of relatively low salinities (around 10 parts per thousand (ppt)) in the uppermost brackish zone of larger estuaries and coastal lagoons. However, the fish can tolerate a wide range of salinities (Swift *et al.* 1989, 1997; Worcester 1992; K. R. Worcester, California Department of Fish and Game (CDFG), *in litt.* 1996; Worcester and Lea 1996), and is frequently found throughout lagoons. Tidewater gobies regularly range upstream into fresh water, and downstream into water of up to 28 ppt salinity (Worcester 1992, Swenson 1995), although specimens have been collected at salinities as high as 42 ppt (Swift *et al.* 1989). The species' tolerance of high salinities (up to 60 ppt for varying time periods) likely enables it to withstand the marine environment, allowing it to colonize or re-establish in lagoons and estuaries following flood events (Swift *et al.* 1989; K. R. Worcester, *in litt.* 1996; Worcester and Lea 1996; Lafferty *et al.* in prep.).

Tidewater gobies are usually collected in water less than 1 meter (m) (3 feet (ft)) deep; many localities have little or no area deeper than this (Wang 1982, Irwin and Soltz 1984, Swift *et al.* 1989, Swenson 1995). However, it has been found in waters over 1 m in depth (Worcester 1992, Lafferty and Altstatt 1995, Swift *et al.* 1997, Smith 1998). In lagoons and estuaries with deeper water, the failure to collect gobies may be due to the inadequacy of the sampling methods, rather than the lack of gobies (Worcester 1992, Lafferty 1997, Smith 1998).

Tidewater gobies often migrate upstream into tributaries up to 2.0 kilometers (km) (1.2 mile (mi)) from the estuary. However, in San Antonio Creek and the Santa Ynez River, Santa Barbara County, tidewater gobies are often collected 5 to 8 km (3 to 5 mi) upstream of the tidal or lagoonal areas, sometimes in beaver impounded sections of streams (Swift *et al.* 1989). The fish move upstream in summer and fall, as sub-adults and adults. There is little evidence of reproduction in these upper areas (Swift *et al.* 1997).

Populations originally inhabiting tidal areas, such as those found in San Francisco Bay, rarely were studied before they disappeared, and none remain to adequately study their use of truly tidal conditions. Several of the lagoonal habitats have been converted by human activities into tidal harbors and bays, such as Humboldt Bay, Elkhorn Slough, Morro Bay and Santa Margarita River, among others (Swift *et al.* 1989, 1993). Populations recently present in these artificially created tidal situations, such as Elkhorn Slough, Morro Bay, and Santa Margarita River, have disappeared in the last 5 to 10 years. The only remaining tidal system with tidewater gobies is Humboldt Bay (Swift *et al.* 1989; C. Chamberlain, *in litt.* 1997).

The life history of tidewater gobies is keyed to the annual cycles of the coastal lagoons and estuaries (Swift *et al.* 1989, 1994; Swenson 1994, 1995). Water in estuaries, lagoons and bays is at its lowest salinity during the winter and spring as a result of precipitation and runoff. During this time, high runoffs cause the sandbars at the mouths of the lagoons to breach, allowing mixing of the relatively fresh estuarine and lagoon waters with seawater. This annual building and breaching of the sandbars is part of the normal dynamics of the systems in which the tidewater goby has evolved (e.g., Zedler 1982, Lafferty and Alstatt 1995, Heasly *et al.* 1997). The time of sandbar closure varies greatly between systems and years, and typically occurs from spring to late summer. Later in the year, occasional waves washing over the sandbars can introduce some sea water, but good mixing often keeps the lagoon water at a few parts per thousand salinity or less. Summer salinity in the lagoon depends upon the amount of freshwater inflow at the time of sandbar formation (Zedler 1982, Heasly *et al.* 1997).

Males begin digging breeding burrows 75–100 mm (3–4 in.) deep, usually in relatively unconsolidated, clean, coarse sand averaging 0.5 mm (0.02 in.) in diameter, in April or May (Swift *et al.* 1989; Swenson 1994, 1995). Swenson (1995) has shown that tidewater gobies prefer this substrate in the laboratory, but also found tidewater gobies digging breeding burrows in mud in the wild (Swenson 1994). Inter-burrow distances range from about 5 to 275 centimeters (cm) (2 to 110 in.) (Swenson 1995). Females lay about 100–1000 eggs per clutch, averaging 400 eggs/clutch, with clutch size depending on the size of both the female and the male. Females can lay more than one clutch of eggs over their lifespan, with captive females spawning 6–12 times (Swenson 1995). Wild females may spawn less frequently due to fluctuations in food supply and other environmental conditions, but the species clearly has a high reproductive potential, enabling populations to recover quickly under suitable conditions. Male gobies remain in the

burrow to guard the eggs that are attached to sand grains in the walls of the burrow. Males also spawn more than once per season (Swenson 1995), and although they can have more than one clutch in their burrow, presumably from different females (Swift *et al.* 1989), Swenson (1995) found that males accepted only one female per brood period. Males frequently go for at least a few weeks without feeding, and this probably contributes to a mid-summer mortality often noted in populations (Swift *et al.* 1989; Swenson 1994, 1995).

Reproduction peaks during spring to mid-summer, late April or May to July, and can continue into November or December depending on the seasonal temperature and rainfall. Reproduction sometimes increases slightly in the fall (Swift *et al.* 1989; Camm Swift, Department of Biology, Loyola Marymount University, pers. comm., 1995). Reproduction takes place from 15–20 degrees Celsius© (60–65 degrees Fahrenheit (F)) and at salinities of 0–25 ppt (Swift *et al.* 1989; Swenson 1994, 1995). Typically, winter rains and cold weather interrupt spawning, but in some warm years reproduction may occur all year (Goldberg 1977, Wang 1984). Goldberg (1977) showed by histological analysis that females have the potential to lay eggs all year in southern California, but this rarely has been documented. Length-frequency data from southern and central California (Swift *et al.* 1989; Swenson 1994, 1995) and analysis of otoliths from central California populations (Swift *et al.* 1997) indicate that tidewater gobies are an annual species and typically live one year or less.

Tidewater goby eggs hatch in 7–10 days at temperatures of 15–18 degrees C (60–65 degrees F). The newly hatched larvae are 4–7 mm (0.2 in) in length and are planktonic for one to a few days. Once they reach 8–18 mm (0.3–0.8 in.) in length they become substrate oriented. All larger size classes are substrate oriented and, although little habitat segregation by size has been noted (Swift *et al.* 1989, Swenson 1995), Worcester (1992) did find that larval gobies in Pico Creek Lagoon tended to use the deeper portion of the lagoon. Individuals collected in marshes appear to be larger (43–45 mm (1.7–1.8 in.) SL) than those collected in open areas of lagoons (32–35 mm (1.3–1.4 in.) SL) (Swenson 1995).

Studies of the tidewater goby's feeding habits suggest that it is a generalist. At all sizes examined, tidewater gobies feed on small invertebrates, usually mysids, amphipods, ostracods, snails, and aquatic insect larvae, particularly dipterans (Irwin and Soltz 1984; Swift *et al.* 1989; Swenson 1994, 1995). The food items of the smallest tidewater gobies (4–8 mm (0.2–0.3 in.)) have not been examined, but these gobies, like many other early stage larval fishes, probably feed on unicellular phytoplankton or zooplankton (Swenson and McCray 1996).

Tidewater gobies may be preyed upon by native species such as steelhead (*Oncorhynchus mykiss*) (Swift *et al.* 1989), and are documented prey items of prickly sculpin (*Cottus asper*), staghorn sculpin (*Leptocottus armatus*), and starry flounder (*Platichthys californicus*) (Swift *et al.* 1997). However, tidewater gobies were found in stomachs of only 6 percent of nearly 120 of the latter three species examined, and comprised less than 20 percent by volume of the prey. Predation by the Sacramento perch (*Archoplites interruptus*) and tule perch (*Hysterocarpus traski*) may have prevented tidewater gobies from inhabiting the San Francisco Bay delta (Swift *et al.* 1989), although direct documentation to support this hypothesis is lacking.

Tidewater gobies also are preyed upon by non-native African clawed frogs (*Xenopus laevis*) (Lafferty and Page 1997), although this is probably not a significant source of mortality due to the limited distribution of this frog species in tidewater goby habitats. The frogs are killed by the higher salinities that occur when the lagoons are breached (Glenn Greenwald, U.S. Fish and Wildlife Service, pers. obs.). Several non-native fish species also prey on tidewater gobies. The shimofuri goby (*Tridentiger bifasciatus*), which has become established in the San Francisco Bay region (Matern and Fleming 1995), may compete with the smaller tidewater goby, based on dietary overlap (Swenson 1995) and foraging and reproductive behavioral observations in captivity. Shimofuri gobies have been observed to eat juvenile tidewater gobies in captivity, but usually were unable to catch subadult and adult tidewater gobies (Swenson and Matern 1995). Evidence of predation or competition in the wild is lacking (Swenson 1998). Competition with yellowfin (*Acanthogobius flavimanus*) and chameleon (*Tridentiger trigonocephalus*) gobies has also been hypothesized. Although Wang (1984) found that yellowfin gobies do prey on tidewater gobies, no data were presented indicating the extent of such interactions, nor has there been any further documentation of such competitive or predatory interactions with either species. Shapovalov and Taft (1954) documented the non-native striped bass (*Morone saxatilis*) preying on tidewater gobies in Waddell Creek Lagoon, but stated that striped bass were found only infrequently in the areas inhabited by the goby. Sunfishes and black bass (*Centrarchidae*) have been introduced in or near coastal lagoons and may prey heavily on tidewater gobies under some conditions. Predation by young-of-the-year largemouth bass (*Micropterus salmoides*) on tidewater gobies was documented in one system (Santa Ynez River), where tidewater gobies accounted for 61 percent of the prey volume of 55 percent (10 of 18) of the juvenile bass sampled (Swift *et al.* 1997). Although tidewater gobies disappeared soon after centrarchids were introduced at several localities, direct evidence that the introductions led to the extirpations is lacking (Swift *et al.* 1989, 1994; Rathbun *et al.* 1991; Dan Holland, Department of Biology, Southwestern Louisiana State University, Monroe, LA, pers. comm. 1991). In at least one location, tidewater gobies have re-established naturally (see below).

Lafferty *et al.* (1996) monitored post-flood persistence of 17 tidewater goby populations in Santa Barbara and Los Angeles counties during and after the heavy winter flows of 1995. All 17 populations persisted after the high flows, and no significant changes in population sizes were detected. In addition, gobies apparently colonized Cañada Honda, approximately 10 km (6 mi) from the closest known population, during or after the flooding (Swift *et al.* 1997). Lafferty *et al.* (in prep.) estimated the extirpation and recolonization rates for 37 populations in southern California, based on over 250 presence-absence records. They found higher recolonization rates than expected, and suggested that there is more gene flow among populations within geographic clusters (northern California, San Francisco Bay, Santa Cruz, San Luis Obispo and south) than previously believed to exist. They also found an association between tidewater goby presence and wet years. This information suggests that flooding may contribute to recolonization of sites from which gobies have temporarily disappeared.

Lagoons in which tidewater gobies are found range in size from a few square meters (yards) (less than 0.10 hectares (ha) (0.25 acres (ac)) of surface area to about 800 ha (2000 ac). Most lagoons with tidewater goby populations are in the range of 0.5–5 ha (1.25–12.5 ac). Surveys of tidewater goby localities and historical records indicate that size,

configuration, location, and access by humans are all related to persistence of populations of this species (Swift *et al.* 1989, 1994). Watered surface areas smaller than about 2 ha (5 ac) generally have histories of extinction, extirpation, or population reduction to very low levels, although some as small as 0.35 ha (0.86 ac) have been identified as having permanent tidewater goby populations (Swift *et al.* 1997, Lafferty 1997, Heasly *et al.* 1997). As evidenced by the Cañada Honda colonization (Swift *et al.* 1997), even relatively long distances are not obstacles to colonization or re-establishment. Many of the small lagoons with histories of intermittent populations are within 1–2 km (0.6–1.2 mi) of larger lagoons that can act as sources of colonizing gobies.

The largest localities have not proved to be the best for the species, as evidenced by the loss of tidewater gobies from San Francisco and Morro bays and the Santa Margarita River estuary. Today, the most stable and largest populations are in lagoons and estuaries of intermediate sizes, 2–50 ha (5–125 ac) that have remained relatively unaffected by human activities, although some systems that are heavily affected or altered also have large, stable populations (e.g., Santa Clara River, Ventura County; Santa Ynez River, Santa Barbara County; Pismo Creek, San Luis Obispo County). In many cases these probably have provided the colonists for the smaller ephemeral sites (Swift *et al.* 1997, Lafferty *et al.* in prep.).

Distinct Population Segments

We analyzed tidewater goby populations based on the joint National Marine Fisheries Service and U.S. Fish and Wildlife Service Policy Regarding the Recognition of Distinct Vertebrate Populations, published in the **Federal Register** on February 7, 1996 (61 FR 4722). We consider three elements in determining whether a vertebrate population segment could be treated as threatened or endangered under the Act: discreteness, significance, and conservation status in relation to the standards for listing. Discreteness refers to the isolation of a population from other members of the species and is based on two criteria: (1) Marked separation from other populations of the same taxon resulting from physical, physiological, ecological, or behavioral factors, including genetic discontinuity, or (2) populations delimited by international boundaries. We determine significance either by the importance or contribution, or both, of a discrete population to the species throughout its range. The policy lists four examples of factors that may be used to determine significance:

(1) Persistence of the discrete population segment in an ecological setting unusual or unique for the taxon;

(2) Evidence that loss of the discrete population segment would result in a significant gap in the range of the taxon;

(3) Evidence that the discrete population segment represents the only surviving natural occurrence of the taxon that may be more abundant elsewhere as an introduced population outside its historic range; and

(4) Evidence that the discrete population segment differs markedly from other populations of the taxon in its genetic characteristics.

If we determine that a population segment is discrete and significant, we evaluate it for endangered or threatened status based on the Act's standards.

The previously discussed electrophoretic and mitochondrial DNA analysis indicates the Orange and San Diego counties population is genetically discontinuous from other coastal populations of tidewater gobies. Furthermore, the significant distance (129 km, 80 mi) between the Orange and San Diego counties population and the closest extant population physically isolates these gobies from those populations to the north. Therefore, we conclude the Orange and San Diego counties population of tidewater gobies is discrete in accordance with our distinct vertebrate populations policy.

Genetic investigations (e.g., Jacobs *in litt.*, 1998) indicate that tidewater gobies are made up of four geographically distinct populations in California. Of these four, the southernmost, in Orange and San Diego counties, constitutes the most genetically divergent population. The genetic data reveal differences in the southern population that are consistent with interspecific boundaries in other species, and suggest divergence of the southern population from the rest of the populations over 100,000 years ago. This coincides with the fact that the southern population is the most geographically isolated, being 129 km (80 mi) from the nearest extant population. Loss of the Orange and San Diego counties population of tidewater gobies would result in a loss of a genetically unique tidewater goby population, and a reduction in range of tidewater gobies by approximately 129 km (80 mi). We therefore conclude that the Orange and San Diego counties population is significant in accordance with our distinct vertebrate populations policy. This population constitutes a distinct population segment, and we have evaluated it for endangered or threatened status based on the Act's standards.

Previous Federal Actions

We first classified the tidewater goby as a category 2 species in 1982 (47 FR 58454). We reclassified it as a category 1 candidate in 1991 (56 FR 58804) based on status and threat information in Swift *et al.* (1989). Category 2 applied to taxa for which information we possessed indicated that proposing to list as endangered or threatened was possibly appropriate, but for which conclusive data on biological vulnerability and threats were not currently available to support a listing proposal. Category 1 species, now referred to as candidate species, applies to taxa for which we have on file substantial information on biological vulnerability and threats to support a proposal to list as threatened or endangered. On October 24, 1990, we 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. We published a finding that the requested action may be warranted on March 22, 1991. We published a proposal to list the tidewater goby as an endangered species on December 11, 1992 (57 FR 58770). On March 7, 1994, we listed tidewater goby as a federally endangered species (59 FR 5494). No critical habitat was designated.

Federal involvement with the tidewater goby following listing has included consultations under section 7 of the Act, permitting of breaching and other activities in lagoons through the section 404 process by the U.S. Army Corps of Engineers (ACOE), and funding and conducting research and surveys. Measures to reduce impacts to tidewater goby habitat and reduce or eliminate the potential for take of individuals have included adjusting the timing of projects to avoid disruption to breeding activities, the use of silt fencing to reduce sediment loads and as barricades around project sites, installing coffer dams above and below project sites and removal and translocation of animals found within the exclosures prior to necessary dewatering of project sites, minimization of project area, and requiring qualified biologists to oversee all activities.

Tidewater Goby Status Review

At the time of listing (1994), California had recently experienced 5 years of drought conditions (1987–1991), and we believed that most populations throughout the species' range were threatened by one or more factors, including modification and loss

of habitat as a result of coastal development, channelization of habitat, diversion and alteration of water flows, groundwater overdrafting, discharge of agricultural and sewage effluents, introduction of exotic fish species (particularly centrarchid species), and increased sedimentation due to cattle grazing and feral pig activity (59 FR 5494). We have assembled and evaluated new information regarding habitat status, habitat requirements of the goby, critical life history needs, dispersal processes and goby population status during drought and wet years. In the remainder of this section and in the Summary of Factors Affecting this Species, we review this new information and reassess the threats to the tidewater goby.

At the time of listing, we believed that the number of extant tidewater goby populations was 46, with 87 known historically. Since the listing, 4 populations once believed permanently extirpated have been rediscovered, 2 populations have been re-established artificially (Waddell Creek, Malibu Creek), records for at least 15 populations indicate that they are naturally intermittent, 11 populations believed extinct due to drought conditions have re-established naturally, and 20 new populations have been found. At present the number of extant populations is believed to be about 85, and the number of historical populations about 110.

In the early 1990s, the number of tidewater goby populations believed to be extinct caused concern, especially considering the high proportion believed lost in the southern third of the species' range. The final rule for the listing of the tidewater goby stated that 74 percent of the populations in coastal lagoons south of Morro Bay had been extirpated, with only 3 populations remaining south of Ventura County. We now know of 6 populations south of Ventura County, and only about 20 percent of populations south of Morro Bay are currently considered extirpated. Range-wide, of the 25 populations currently considered permanently extirpated, 19 were extirpated prior to 1970, before regulations protecting the environment were promulgated. The six more recent population extirpations are discussed in the appropriate sections below.

Summary of Factors Affecting the Species

Section 4 of the Endangered Species Act and regulations (50 CFR Part 424) promulgated to implement the listing provisions of the Act, set forth the procedures for listing, reclassifying, and delisting species on Federal lists. A species may be determined to be an endangered or threatened species due to one or more of the five factors described in section 4(a)(1). A species may be delisted, according to section 4 regulations (50 CFR Part 424.11(d)), if the best scientific and commercial data available substantiate that the species is neither endangered nor threatened because of (1) extinction, (2) recovery, or (3) original data for classification of the species were in error.

In the case of the tidewater goby, a significant number of populations previously believed extirpated have recolonized naturally, and a significant number of populations previously believed to be in decline have stabilized or increased in size since the listing. Therefore, we reevaluated all of the factors believed to be threatening the existence of the tidewater goby. We found that some of our interpretations of the data available when the species was listed were in error, and we also found that new information exists which supports interpretations of status and threats that differ from those presented in the final listing rule. After a thorough review of all available information, including considerable new information, we have determined that, north of Orange and San Diego counties, the tidewater goby is not endangered or threatened with endangerment. In this part of the range we now know that there are more populations than were known at the time of the listing, that the threats to those populations are less severe than previously believed, and that the tidewater goby has a marked ability to recolonize habitats from which it is temporarily absent. The 1994 final rule identified several threats to the tidewater goby, including coastal development, upstream water diversions and alteration of flows, groundwater overdrafting, discharge of agricultural and sewage effluents, channelization, cattle grazing, feral pig activity, predation by introduced fish species, inadequacy of existing regulatory mechanisms, drought, flood events and competition with introduced species. A reanalysis of these threats follows.

The remaining tidewater gobies in Orange and San Diego counties, which constitute a distinct population segment, are limited to the U.S. Marine Corps Base, Camp Pendleton. Threats to these southernmost tidewater goby populations differ from those found elsewhere on the California coast or, due to the small number of populations or other factors, threats that are minor to the northern populations of gobies are greatly exacerbated in the south. Urban development, although possibly impacting recovery areas, is not an overriding threat on Camp Pendleton. Nevertheless, habitat loss and degradation have occurred frequently and continue to threaten this population segment, as do predation by and competition with introduced species. These factors are discussed below for both the populations north of Orange and San Diego counties and the population within Orange and San Diego counties.

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

Populations North of Orange and San Diego Counties. Coastal development projects that result in the loss of coastal saltmarsh habitat were identified in the final rule as the major threat adversely affecting the tidewater goby. Such projects probably were the most significant threat responsible for the historical loss of tidewater goby populations. Projects included dredging of waterways for navigation and harbors and road construction that severed the connections of marshes with the Pacific Ocean. Reevaluation of the number of extirpations resulting from coastal development and habitat modification and loss shows that the potential for the substantial habitat loss and modification that occurred historically has been reduced substantially. This is due largely to the implementation of key environmental regulations required by the Clean Water Act, Coastal Zone Management Act and related California environmental statutes. For example, only five permanent extirpations resulting from destruction or modification of habitat have occurred since the initial promulgation of environmental regulations during the early 1970s (two due to construction of golf courses, one due to installment of culverts that altered natural lagoon dynamics, one due to placement of riprap cutting off ocean access, and one due to water appropriations). Thus, in the northern part of the species' range (i.e., north of Orange and San Diego counties) there is insufficient evidence to suggest that destruction and modification of habitat from coastal development are occurring at levels that constitute a substantial threat to the continued existence of the northern populations of tidewater gobies.

We stated in the final rule that upstream water diversions and groundwater overdrafting may 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 and potentially affecting the species' breeding and foraging activities. The final rule also suggested that alterations of flows upstream of coastal lagoons resulting in changes in downstream salinity regimes might affect the tidewater goby due to its presumed narrow salinity tolerances. Supporting these arguments at the time of the listing, the population in San Antonio Creek, Santa Barbara County, was believed to have been extirpated due to groundwater overdrafting. However, gobies are not currently extirpated from this location; they were found there in 1995.

Tidewater gobies have been collected from waters ranging from 0 to 42 ppt salinity (Swift *et al.* 1989, Lafferty and Alstatt 1995). During the late 1980s and early 1990s, Worcester (1992) conducted an investigation of habitat use in Pico Creek lagoon, and observed large numbers of tidewater gobies using the lower portion of the lagoon where high salinities (up to 27 ppt) were documented. Since the listing, Swenson (1995) and Swift *et al.* (1997) have reported capturing gobies in waters up to 28 ppt and 32 ppt salinity, respectively. Two salinity tolerance experiments discussed in Swift *et al.* (1989) indicate that tidewater gobies can withstand a wide range of salinities, from 0–40 ppt for up to 25 days with 20 percent or less mortality, even when moved directly from low salinity environments into high. A third experiment allowed salinities to increase through evaporation for 53 days. At a final salinity of 25 ppt, 75 percent of the tidewater gobies survived, while 59 percent of those held in water reaching a final salinity of 62 ppt survived. In the early 1990s, while tidewater gobies were held at the Granite Canyon Fish Culture Facility, a salinity tolerance test was conducted in hypersaline water (45–54 ppt) for 6 months, with no mortality. In addition, tidewater gobies were maintained in fresh water and salinities of 10–15 ppt, 20 ppt, and normal sea water (about 33 ppt salinity). Reproduction took place in all four regimes. Some of the laboratory bred tidewater gobies spawned when they matured (K. R. Worcester, *in litt.* 1996; Worcester and Lea 1996). Based on these studies, the goby appears tolerant of a broad range of salinity conditions.

Channelization was identified as a threat in ''most'' of the habitats occupied by the species due to the scouring effects of high winter flows in the restricted channels and the lack of protective habitat. However, with the exception of the extirpation of the Waddell Creek, Santa Cruz County, population during the winter of 1972–73 attributed to channelization, further review of causes of extirpations since 1970 has not been able to identify population extirpation due to this threat. Moreover, tidewater gobies were re-established in Waddell Creek in 1991 and have persisted there through 1997 (Smith 1998).

Siltation from topsoil runoff and the increased sedimentation and habitat degradation associated with cattle grazing and feral pig activity were also identified as threats to the tidewater goby. Many tidewater goby populations exist in habitats where such agricultural effluent and runoff and wastewater effluent occur, and the final rule identified the resulting algal blooms and deoxygenation as possible factors in the further degradation of tidewater goby habitats. During the 1950s, sewage effluents high in ammonia were discharged into the Salinas River and are believed to have been a factor in the apparent extirpation of that tidewater goby population (Jerry J. Smith, Ph.D., San Jose State University, pers. comm. 1998). However, in many lagoons receiving agricultural and sewage effluents, tidewater gobies are the most abundant fish species present, as found during surveys of lagoons in Santa Barbara County (Ambrose *et al.* 1993). Field observations made during tidewater goby surveys have found extremely low levels of dissolved oxygen (0.2–1.7 mg/l) (Worcester1992, Swift *et al.* 1997) and elevated temperatures (greater than 30 degrees C) where gobies were found in high numbers (C. Chamberlain, pers. comm. 1996; E. Ballard, U.S. Fish and Wildlife Service, Sacramento, California, personal observation 1997). Based on those observations, the tidewater goby appears to be tolerant of agricultural and sewage effluents, and of a wide range of dissolved oxygen levels and temperatures.

We suggested in the final rule that only 6 to 8 of the 46 remaining populations were large enough and free enough from habitat degradation to be safe in the immediate future. The remaining lagoons were considered so small or modified that tidewater goby populations were thought to be restricted in distribution and vulnerable to extirpation. Of particular concern was the extirpation of smaller populations due to effects of drought exacerbated by upstream water diversions. The number of extirpated populations of gobies was believed to leave remaining populations so widely separated throughout most of the species' range that recolonization was unlikely. New information and analyses indicate that the tidewater goby is very well adapted to the climatically dynamic system within which it has evolved, and that the intermittent occupancy of some sites is a normal aspect of the species' biology (Swift *et al.* 1994, 1997; Lafferty *et al.* in prep.; J. Smith, pers. comm. 1998). Following the listing of the tidewater goby and the end of the 1987–1992 drought, at least 14 populations considered extirpated due to the drought and other causes were found to be extant. In some cases, these habitats were documented as being dry during the drought, with no gobies believed to be present in the drainages (e.g., Laguna and Moore creeks, Santa Cruz County; Arroyo del Puerto, San Luis Obispo County). Following a return to normal or above average rainfall, gobies were found not only in those 14 sites but also in approximately 20 others from which they previously had not been found. These findings show that recolonization is possible and indicate that it is a normal process following habitat variation due to climatic fluctuations (Swift *et al.* 1994, 1997; Lafferty *et al.* in prep.; J. Smith, pers. comm. 1998).

In a number of cases, surveys that concluded that populations were extirpated from localities that did not go dry during the drought apparently were inadequate to determine presence or absence of the species. Periodic disappearances and re-appearances of the tidewater goby in various locations during the last 25 years (Lafferty 1997, Lafferty *et al.* in prep.) suggest that conclusions regarding presence/absence based on standard survey methods may not be reliable. Researchers along the central California coast have observed periods when tidewater gobies cannot be found, but then later reappear (Rathbun *et al.* 1991; Swift *et al.* 1993, 1997; J. Smith, pers. comm. 1998). These observations may be the result of the gobies being temporarily absent from the sampled habitat or the population decreasing temporarily to a size not detectable by standard presence/absence methods (e.g., seine hauls). Regardless, the reappearance of tidewater gobies in localities where they previously were considered to be extirpated may be the result of earlier surveys being conducted during the windows of time when gobies temporarily were not observable (Smith 1998; Norm Scott, Ph.D., U.S. Geological Survey, Biological Resources Division, San Simeon, pers. comm. 1997). The continued survival of tidewater goby populations, both large and small, following the long drought of the late 1980s and early 1990s suggests that the previous assessment that most of the

populations are extremely vulnerable to extirpation is not valid.

Although not discussed in the final listing rule, artificial lagoon breaching during the dry season has been suggested as a potential threat to tidewater gobies. No data exist to substantiate the severity of this threat (but see the adverse effects of artificial breaching San Onofre Creek lagoon, below). Significant decreases in water level, exposure of tidewater goby breeding burrows and bottom habitat, and increased salinity resulting from breaching during the dry season are factors that we considered as possible threats to the persistence of tidewater goby populations. However, in the northern part of its range, the species continues to persist at numerous locations (e.g., Pescadero Creek, San Mateo County; Pismo Creek, San Luis Obispo County; Santa Ynez and Arroyo Burro, Santa Barbara County; Santa Clara River, Ventura County) where unseasonal breaching occurred on a regular basis prior to the listing (Swenson 1995; Lafferty 1995; Lafferty and Alstatt 1995; Heasly *et al.* 1997; D. W. Alley, *in litt.* 1998). The lack of any records of breaching-related extirpations leads us to conclude that breaching does not pose a significant threat to the northern populations of the species.

Orange and San Diego Counties Population. Of the 13 historic and current sites in Orange and San Diego counties, the two northernmost, Aliso and San Juan creeks in Orange County were lost in the 1980s and 1960s (respectively). The three southernmost sites, San Luis Rey, Buena Vista, and Agua Hedionda were lost in the 1940s and 1950s. More recently, it appears that Santa Margarita River, which probably was habitat for a naturally intermittent population (see Lafferty 1997, Lafferty *et al.* in prep.), is now permanently unsuitable due to exotic species and hydrologic changes. Permanent population losses, such as those listed above, can seriously influence metapopulation dynamics in the region, leading to larger scale extinctions, by reducing opportunities for recolonization of suitable sites. Exacerbating this concern, recent human activities have further endangered the two largest goby populations in Orange and San Diego counties (San Onofre Creek Lagoon, San Mateo Creek Lagoon) which may be important sources of dispersing gobies that repopulate other areas when they are periodically lost.

In October 1996, a survey conducted by Drs. Dan Holland and Camm Swift in the San Onofre Creek lagoon estimated the population of gobies at 12,265. On November 22, 1996, the lagoon was artificially breached and water immediately began draining from the lagoon into the ocean. The water level dropped 40 to 50 cm and the surface area of the lagoon decreased approximately 60 to 75 percent during the next 12 hours. During the night of November 22–23, 1996, the bar across the mouth of the lagoon reformed and water ceased to flow directly into the Pacific Ocean. On November 24, 1996, Drs. Holland and Swift resurveyed the lagoon and estimated the goby population at 5,345, a decrease of 6,920 fish from their October 1996 survey (Swift and Holland 1998). Recent surveys confirm that tidewater gobies are still present in San Onofre Creek Lagoon but no precise population estimates are available.

On February 24, 1998, repair work began on storm-damaged railroad trestles that traverse San Mateo Creek Lagoon. This work included dredging portions of the creek and lagoon, and filling fresh water marsh which function as goby refugia. The San Mateo goby population at this locality was estimated at approximately 70,000 in 1996 (Swift and Holland 1998). After the dredging and filling, several surveys were conducted and no gobies were detected, but they were found at Las Flores, Cockleburr, and Hidden lagoons. The trestle repair work coupled with the winter storms may have resulted in the extirpation of the goby at San Mateo Creek. The consequences of population losses or elimination of the San Mateo and San Onofre populations, which had appeared to be two of the three most stable in the area, are very serious because the effects could extend to other areas, contributing, for example, to long term or permanent extirpation of the remaining intermittent populations in the region (Hidden, Aliso, French and Cockleburr creeks).

These examples described above illustrate serious adverse population responses to earthmoving activities in and around creeks and lagoons. The specific mechanism or mechanisms (e.g., changed hydrological regime, siltation, water quality) leading to population declines are not known, and it is also not known if gobies in the Orange and San Diego counties distinct population segment respond differently to environmental stresses than gobies to the north. Tidewater gobies from Orange and San Diego counties are genetically distinct and live in a very different physical and biotic environment from those in more northerly habitats. It is possible that in this part of the range, environmental stresses such as siltation or changed hydrology affect gobies more severely than the same stresses to the north. Or, environmental factors unique to southern California or combinations of factors of which we are now currently unaware may be leading to declines in disturbed areas occupied by Orange and San Diego counties populations. Whatever the mechanisms, the recent loss or serious reduction of the Santa Margarita River and San Onofre and San Mateo lagoon populations, all of which have experienced human-caused changes in hydrologic regime and earthmoving activities, suggests that, in this part of the range, this kind of disturbance has serious negative consequences for tidewater gobies. Depending on the alternative alignment selected, the proposed Foothill Transportation Corridor-South project could result in population effects similar to those described above.

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

Populations North of Orange and San Diego Counties. Overutilization is not known to be applicable; there is no change in this factor since the species was listed in 1994.

Orange and San Diego Counties Population. Same as above.

C. Disease or Predation

Populations North of Orange and San Diego Counties. Disease was not identified as a threat in the final listing rule, nor is it known to be a threat at this time. Swenson (1995) reported finding cysts, presumably of the digenean trematode (a flatworm or fluke (*Cryptocotyle lingua*), and felt that the fluke could have been a factor in the apparent population decline of tidewater gobies in Pescadero Lagoon in 1992 and 1993. However, gobies have persisted in the lagoon and associated creek and marsh, at least through 1996 (J. Smith, pers. comm. 1998). The fluke species also has been reported from fish in Corcoran (Rodeo) Lagoon in Santa Cruz County (Swift *et al.* 1989), but there is no indication of consequences for the tidewater goby population there.

A large number of exotic species that have been perceived as threats to the tidewater goby have been introduced into goby habitats. In the final rule, the introduction of striped bass into the San Francisco delta area was hypothesized to have caused the loss of tidewater gobies in that habitat. However, no historic data exist to test this hypothesis. As discussed in the background section, predation by and competition with the introduced yellowfin, chameleon, and shimofuri gobies exists. However, tidewater goby

populations north of Orange and San Diego counties are not particularly vulnerable to these introduced fish. The centrarchid species largemouth bass and green sunfish (*Lepomis cyanellus*) were identified in the final listing rule as having caused the loss of at least two populations. However, centrarchids are known to exist in many sites inhabited by large populations of tidewater gobies (e.g., Santa Clara River, Las Pulgas Creek, San Mateo Creek). Because of the range of salinity tolerances of the tidewater goby and the more limited salinity tolerances of many exotic species, and because tidewater goby populations are sufficiently large and can repopulate from adjacent streams, the threat of tidewater goby extirpation throughout its habitat as a result of predation by exotic species appears minimal. While exotic species forage on tidewater gobies, the current suite of exotic fishes are not likely a serious threat to populations north of Orange County at this time. Although African clawed frogs feed on tidewater gobies (Lafferty and Page 1997), gobies are found in large numbers in at least one habitat (Santa Clara River) occupied by the frogs.

Orange and San Diego Counties Population. As described under Factor A, above, it is not known if tidewater gobies in Orange and San Diego counties respond differently to environmental stresses than gobies to the north. Exotic fishes are thought to have played an important role in population losses or declines in San Onofre Creek and the Santa Margarita River. The predatory yellowfin goby, native to the inshore marine waters of Japan and China, is established in most lagoons that have or had gobies in Orange and San Diego counties. This and other exotic species may or may not by themselves extirpate tidewater gobies in Orange and San Diego counties, but when combined with other factors, especially habitat disturbance (see Factor A, above), may pose a serious ongoing threat to the Orange and San Diego counties distinct population segment. In addition, only six populations remain and two of the formerly largest have been seriously imperiled recently by human activities (see Factor A, above). Therefore, threats such as exotic predators, that prevent or contribute to significant reductions in dispersal and recolonization of sites where gobies are temporarily absent, could lead to the extinction of the entire Orange and San Diego distinct population segment.

D. The Inadequacy of Existing Regulatory Mechanisms

Populations North of Orange and San Diego Counties. Inadequacies of existing regulatory mechanisms were cited in the final listing rule as a factor leading to the listing. This factor undoubtably contributed to the loss of populations prior to the promulgation of environmental regulations *circa* 1970. Currently, the review and permitting of projects conducted by the ACOE under section 10 of the Rivers and Harbors Appropriation Act of 1899 and section 404 of the Clean Water Act (CWA) are unlikely to allow the extent of destruction and modification of tidewater goby habitat that occurred prior to the implementation of these regulations. Measures are often included as standard measures in section 404 permits because other listed and sensitive species (e.g., California red-legged frog (*Rana aurora draytoni*), steelhead trout (*Oncorhynchus mykiss*), unarmored threespine stickleback (*Gasterosteus aculeatus williamsoni*)) often occur in the same locations as tidewater gobies. Examples of these measures include eliminating or reducing siltation by silt fencing along project sites and access roads, preventing sensitive species from entering project areas, erecting coffer dams on either side of project sites, and timing project activities to reduce impacts during the breeding season. Little evidence exists to support the conclusion that existing regulatory mechanisms inadequately protect the species or are contributing to substantial or widespread population decline and loss in the northern portion of the species' range (see Factor A, above).

Current regulations require that a project that may alter wetland habitat be reviewed by and permitted through the ACOE and the California Coastal Commission (CCC). During the review of projects, avoidance of impacts (i.e., the prevention of habitat degradation including that occupied by listed species) is the first consideration. If wetlands will be altered, mitigation and/or compensation are required (40 CFR Part 230, CCC 1994). Section 404 of the CWA and the subsequent guidelines (40 CFR Part 230) for implementing that act govern the discharge of materials into waters of the United States in such a manner as to avoid or minimize impacts to (in part) human health and welfare; aquatic life and wildlife; aquatic system diversity, and productivity and stability; and they prohibit violation of state water quality standards, Environmental Protection Agency toxic effluent standards, the Act, and the Marine Protection, Research and Sanctuaries Act. Projects within the California coastal zone come under the provisions of the Federal Coastal Zone Management Act of 1990, and must go through an environmental review process. As with projects falling under section 404 of the CWA, the priorities are to avoid impacts, to mitigate if impacts are unavoidable, and to provide compensation if mitigation is infeasible (CCC 1994).

In most cases, current regulations generally do not require minimal freshwater inflows into lagoons and estuaries in California. However, in many cases, water inflows during the dry season probably are higher than occurred historically due to wastewater treatment plant discharge and urban and agricultural runoff. Although discharge of such effluents was identified as an adverse factor in the final listing rule, and the effects of such effluents have not been studied directly, many of the habitats where such dry season inflows occur (e.g., Santa Ynez Lagoon, Ventura Lagoon, Santa Clara Lagoon) support large populations of tidewater gobies. A review of the Environmental Protection Agency's on-line database AQUIRE found no contaminant data directly relating to tidewater gobies. No published research has addressed contaminant concentrations or effects in the tidewater goby. Little evidence exists to support the conclusion that water diversions, groundwater overdrafting and modifications in salinity regimes, or the discharge of effluents are posing a significant threat to the ongoing existence of the goby in the northern portion of its range, especially in today's regulatory environment. Of the five populations extirpated due to habitat destruction and modification since 1970, only the loss of the Upper Morro Bay population possibly can be attributed to water appropriation.

Orange and San Diego Counties Population. Despite the fact that the previously cited regulatory mechanisms were in place, three of the largest populations of tidewater goby (e.g., Santa Margarita River, and San Onofre and San Mateo creeks) have been lost or nearly lost since 1993. The populations in San Onofre and San Mateo creeks were lost or greatly diminished following single human-caused events occurring so rapidly that existing regulatory processes failed to protect the gobies. The small number (6) of extant populations in the Orange and San Diego counties distinct population segment makes the loss of any one population a greater cause for concern than in the northern portion of the

range. With fewer extant populations, the likelihood of recolonization of temporarily empty habitat is reduced, and the risk that all populations will be extirpated due to drought or human factors is greater.

E. Other Natural or Manmade Factors Affecting Its Continued Existence

Populations North of Orange and San Diego Counties. The deterioration of coastal and riparian habitats mostly resulting from drought was cited as the most significant natural factor adversely affecting the tidewater goby in the final rule. At the time of listing, California had experienced over 5 consecutive years of lower than average rainfall. The stressful conditions brought on by the drought were considered to be exacerbated by human-induced water reductions (i.e., diversions of water from streams, excessive groundwater withdrawals). The substantial increase in the numbers of populations apparently extirpated and in the rates of decline of other populations during the drought were the major impetus for listing the species. However, since the end of the drought, 14 sites from which tidewater gobies were believed to have been extirpated have been recolonized. The recovery of nearly all populations and recolonization after the prolonged drought demonstrated that recovery and recolonization of habitats following natural events is probably a normal process for this species. No information exists to indicate that the natural processes are being significantly compromised by current regulatory mechanisms, habitat use, or natural events. The survival and recovery of these populations following a prolonged drought has alleviated the concern that drought exacerbated by human-induced water reductions will result in significant permanent population decline and loss.

The extent of habitat degradation and losses of the tidewater goby from weather related phenomena, cited as threats in the final listing rule, has been difficult to determine. However, flood events have been shown to have no significant adverse effect on tidewater goby populations. The flushing action of floods is probably the primary mechanism for colonization of other habitats along the coast (Lafferty *et al.* 1996, Swift *et al.* 1997).

Competition with introduced species also was identified as a potential threat in the final listing rule. The competing species of concern were the yellowfin goby and the chameleon goby. The shimofuri goby is also found in some tidewater goby sites, exhibits dietary overlap with the tidewater goby (Swenson 1995), and has been documented to prey on tidewater gobies in the laboratory (Swenson and Matern 1995). The significance of these interactions in the wild remains undocumented. To date no documented extirpation or population decline can be attributed directly to these or other introduced competing species. Lafferty and Page (1997) cite Brittan *et al.* (1970) and McGinnis (1984) as evidence that the introduction of the yellowfin goby into San Francisco Bay and the disappearance of tidewater gobies were correlated. However, Brittan *et al.* (1970) do not discuss the distribution of nor impacts on the tidewater goby. Lafferty and Page (1997) cited Hubbs and Miller (1965) as evidence that killifish also were involved in the loss of tidewater gobies from that region. However, Lafferty and Page (1997) note that yellowfin gobies, mosquitofish, and green sunfish coexist with tidewater gobies in at least one location, the Santa Clara River.

Orange and San Diego Counties Population. Historically, natural events such as high storm flows washed many fish, including tidewater gobies, out of lagoons. These events ultimately may have benefitted many native fishes, including tidewater gobies. High flows likely reduced populations of predators, and gobies soon recolonized the lagoons from adjacent populations. Unfortunately, the extirpation of many historic tidewater goby populations from adjacent watersheds requires the gobies to travel greater distances and from smaller source populations. As a result, this natural recolonization is much more difficult and uncertain.

Similarly, droughts may have temporarily reduced local tidewater goby populations, but they soon recovered during wet years. However, many of the larger tidewater goby populations in Orange and San Diego counties have already been lost, and therefore, recolonization of smaller intermittent lagoons following droughts appears much more unlikely. Extended droughts, coupled with other physical alterations to the lagoons threaten the tidewater goby in Orange and San Diego counties.

Effects of the Rule

Finalization of this rule will change the portion of the range of the tidewater goby listed as endangered from ''Entire'' to ''Orange and San Diego counties'' in the List of Endangered and Threatened Wildlife. Therefore, taking, interstate commerce, import and export of tidewater gobies occurring outside of Orange and San Diego counties will no longer be prohibited under the Act. In addition, Federal agencies will no longer need to consult with the Service to ensure that any action authorized, funded, or carried out by them is not likely to jeopardize the continued existence of the tidewater goby outside of Orange and San Diego counties.

The distinct population segment of the tidewater goby in Orange and San Diego counties will remain an endangered species on the List of Endangered and Threatened Wildlife. Federal agencies will need to continue to consult with the Service to ensure that any action authorized, funded, or carried out by them is not likely to jeopardize the continued existence of the Orange and San Diego counties population of tidewater goby.

Future Conservation Measures

Section 4(g) of the Act requires that all species that have been delisted due to recovery be monitored for at least 5 years following delisting. The tidewater goby populations north of Orange and San Diego counties are proposed for delisting primarily because there have been additional discoveries of tidewater goby populations since the original listing and more complete information is now available. A monitoring plan is not required for species delisted due to errors in or insufficiency of the data on which the classification was based, but we strongly encourage those parties involved in conducting surveys and monitoring programs for tidewater gobies to continue their efforts and forward the information to us.

Public Comments Solicited

We intend that any final action resulting from this proposal will be as accurate and as effective as possible. Therefore, we solicit comments or suggestions from the public, other concerned governmental agencies, the scientific community, industry, or any other interested party concerning this proposed rule. We particularly seek comments concerning:

(1) Biological, commercial trade, or other relevant data concerning any threat (or lack thereof) to this species;

(2) Additional information concerning the range, distribution, and population size of this species; and

(3) Current or planned activities in the range of this species and their possible impacts on this species.

The final decision on this proposal for the tidewater goby will take into consideration the comments and any additional information we receive, and such communications may lead to a final regulation that differs from this proposal.

The Act provides for one or more public hearings on this proposal, if requested. Requests must be received within 45 days of the date of publication of this proposal. Such requests must be made in writing and addressed to the office listed in the **ADDRESSES** section (above).

Required Determinations

Paperwork Reduction Act

This rule does not include any collections of information that require approval by OMB under the Paperwork Reduction Act.

National Environmental Policy Act

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

References Cited

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

Authors

The primary authors of this proposed rule are Ed Ballard and Grace McLaughlin, Ventura Fish and Wildlife Office (805/644–1766), and Paul Barrett, Carlsbad Fish and Wildlife Office (760/431–9440), U.S. Fish and Wildlife Service.

List of Subjects in 50 CFR Part 17

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

Proposed Regulation Promulgation

Accordingly, we propose to amend part 17, subchapter B of Chapter I, title 50 of the Code of Federal Regulations, as set forth below:

PART 17—[AMENDED]

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

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

2. In § 17.11(h), we propose to amend the table by revising the entry for ''goby, tidewater'' under FISHES to read as follows:

§ 17.11 Endangered and threatened wildlife.

* * * * *

(h) * * *

Species		Historic range	Vertebrate population where endangered or threatened	Status	When listed	Critical habitat	Special rules
Common name	Scientific name						
*	*	*	*	*	*	*	
FISHES							
*	*	*	*	*	*	*	
Goby, tidewater	Eucyclogobius newberryi.	U.S.A. (CA)	Orange and San Diego Counties (U.S.A.-CA).	E	527	NA	NA
*	*	*	*	*	*	*	

Dated: May 28, 1999.

Jamie Rappaport Clark,

Director, Fish and Wildlife Service.

[FR Doc. 99–16030 Filed 6–23–99; 8:45 am]

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