Endangered Species Facts

Tidewater Goby

Eucyclogobius newberryi

Photo source: © 2007 Bradford Norman

The tidewater goby is an *endangered species*. Endangered species are plants and animals that are in immediate danger of becoming extinct.

***Threatened species* are plants and animals whose population numbers are so low that they may become endangered in the near future.**

The U.S. Environmental Protection Agency's (EPA) Endangered Species Protection Program (ESPP) will help ensure that pesticide use does not jeopardize the survival of listed species.

Eucyclogobius newberryi

Description and Ecology

Status Endangered, listed February 4, 1994.

Critical Habitat Designated November 20, 2000

Appearance The tidewater goby is a small fish, rarely more than 2 inches in length. It has large pectoral fins (face-framing when viewed from the front). The pelvic fins are fused, forming a "sucker-like disc" below the chest and belly. The two dorsal fins are close to one another. The upper 1/4 to 1/3 of the forward dorsal fin bears a transparent, white, or yellowish triangular area which distinguishes the tidewater goby. Overall, this elongate fish appears nearly transparent; the males are grey-brown mottled, while the females may also develop black or dark coloring on the body, dorsal fin and anal fin. The scales of this fish are so small and embedded that they are visible only with magnification.

Range Populations of the tidewater goby are described as being "discontinuously distributed" along most of the California Coast. The northern most population is found in Tillas Slough at the mouth of the Smith River in Del Norte County. The southern most population is located in Agua Hedionda Lagoon in San Diego County. Tidewater gobies are still found spread across their original range and yet within that range, at the time of the Recovery Plan (2005), 17% of the populations were extirpated and 41-52% of the populations so small and degraded that their long-term survival appears uncertain. Gaps in distribution along the coast may be natural, due to steep coastlines, or due to the extirpation of populations. Because the tidewater goby is adapted to a narrow range of salinity tolerance, the marine environment limits genetic exchange between populations and recolonization of habitat following extirpations.

Habitat Tidewater gobies are nearly unique among Pacific coast fish in that they inhabit the fresh-saltwater interface where salinity is less than 10 to 12 parts per thousand. This occurs both at the upper edge of tidal bays (such as Tomales, Bolinas, and San Francisco Bays) near the entrance of fresh-water tributaries and in coastal lagoons formed at the mouths of coastal rivers, streams, and seasonally wet canyons. These habitats provide the relatively shallow, and still, but not stagnant, water that tidewater gobies prefer. Yet, such areas are also subject to seasonal variations. Spring floods can scour lagoons, breaking open (breaching) the sandbar barriers established the previous season, and flushing tidewater gobies into an unfavorable marine environment. Sediments settle out variously, mud in the backwaters, soft sand across the lagoon. These deeper, backwater habitats offer safe harbor for tidewater gobies during the spring floods. Aquatic vegetation such as sago pond weed and widgeon grass are typical of tidewater goby habitat. They provide shelter for young gobies and substrate for the vertebrates used as food by the gobies. Half grown and adult tidewater gobies may migrate upstream from the estuaries into tributaries, a distance of 0.5 miles to 3-5 miles. Such upstream locations appear to also be used for reproduction.

Reproduction and Life Cycle Reproduction can occur year round, but appears to peak in April-May, after the lagoons close to the ocean, and again later in summer. Males dig burrows in clean, coarse sand at least 3-4 inches from one another. Females compete with one another for access to these burrows, where they will deposit a clutch of 300-500 eggs about 1 inch below the burrow entrance. The male goby then remains in the burrow with the eggs until they hatch 9-11 days later. For a couple of days the young hang out in midwater, before becoming "benthic" (settling to the bottom to live and feed). Tidewater gobies have several strategies for capturing prey such as chironomid midge larvae, mysid shrimp, ostracods, and amphipods. They pluck them from the water or the substrate surface, or sift sediment in their mouths. In turn, they are prey for young steelhead, staghorn sculpin, tule, and Sacramento perch, nonnative fish such as bass and shimofuri gobies, and many birds such as egrets, herons, mergansers, grebes, and loons. Tidewater gobies only live about a year.

Recovery Plan The U.S. Fish and Wildlife Service

Tidewater Goby

(FWS) developed a recovery plan for the tidewater goby in 2005. Recovery plans outline reasonable actions that FWS believes are required to recover or protect listed species. FWS prepares recovery plans, sometimes with the assistance of recovery teams, contractors, state agencies, and others. Recovery plans do not necessarily represent the views nor the official positions or approvals of any individuals or agencies, other than FWS, involved in the plan formulation. Approved recovery plans are subject to modification as dictated by new findings, changes in species' status, and the completion of recovery tasks.

Tidewater Goby Information Sources

Primary Reference Beacham, Walton, Castronova, Frank F., and Sessine, Suzanne (eds.), 2001. *Beacham's Guide to the Endangered Species of North America,* Gale Group, New York. Vol. 2, pp. 1090–1092.

Listing Notice U.S. Fish and Wildlife Service, 1994. Federal Register 59 No. 24, pp. 5494-5499, February 4, 1994. http://ecos.fws.gov/docs/federal_register/fr2517.pdf

Critical Habitat Designation U.S. Fish and Wildlife Service, 2000. Federal Register 65 No. 224, pp. 69693-69717, November 20, 2000. http://ecos.fws.gov/docs/federal_register/fr3676.pdf

Recovery Plan U.S. Fish and Wildlife Service, 2005. Recovery Plan for the Tidewater Goby, (*Eucyclogobius newberryi*). U.S. Fish and Wildlife Service, Pacific Region, Portland, Oregon.vi + 199 pp. *http://ecos.fws.gov/docs/recovery_plan/051207.pdf*

Tidewater goby habitat, Tillas Slough, Del Norte County California. Photo courtesy of Bradford Norman, www.arsconsulting. org

Gravid female tidewater goby / © 2007 Bradford Norman

Tidewater gobies from near the mouth of Lake Tolowa. © 2007 Bradford Norman, ARS Consulting

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