Species of Concern
NOAA National Marine Fisheries Service

Opossum pipefish
Microphis brachyurus lineatus

Adult in *Polygonum* vegetation.

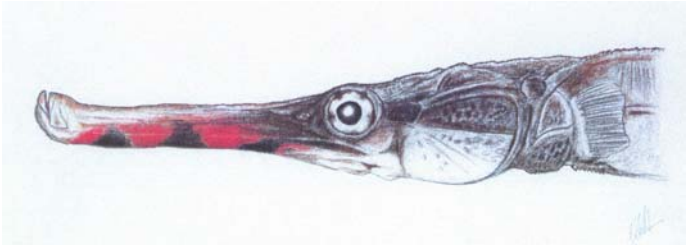
KEY INFORMATION

Areas of Concern
Southeast Florida to the Rio Grande River (Rio Bravo), Texas.

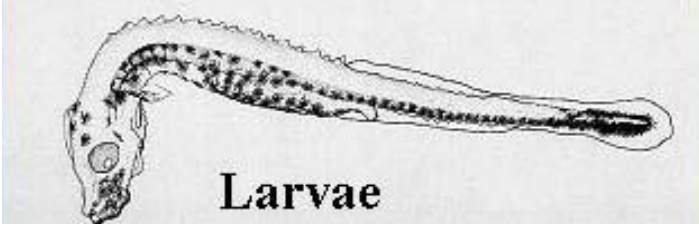
Year Identified as "Species of Concern"
1991

Factors for Decline
- Habitat destruction
- Water control structures
- Degraded water quality
- Disease

Conservation Designations
IUCN: Not Evaluated
American Fisheries Society: Threatened
Species of Greatest Conservation Need:
FL, LA, and TX.



Drawings courtesy: R. Grant Gilmore.



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Current Status:

Demographic and Genetic Diversity Concerns:
Nothing is known about annual variation in population size, but the decline in habitat quantity and quality (described below) has likely led to a drastic decrease in population size. Genetic studies have not been conducted anywhere within their range. There is evidence the western Atlantic populations have three isolated metapopulations, with the North Atlantic and Caribbean metapopulation including the U.S. distribution (Gilmore 1999). It is also possible that the Florida populations represent a self recruiting metapopulation separated from the primary Caribbean gene pool, with extremely rare waifs from southern sources recruiting during exceptional periods. It is estimated that only a few hundred individuals still breed in tributaries to the Indian River Lagoon system of Florida. None have been collected in recent years from Mississippi. Information on longevity, age of maturity, and recruitment rates is lacking.

Existing Protections and Conservation Actions:
Some existing spawning habitat is protected in parks (Jonathan Dickenson State Park, the north fork of the St. Lucie and parts of the St. Sebastian are in the Florida Aquatic Reserve System), though there are no specific measures to conserve opossum pipefish and all 3 rivers are influenced by water control systems.

Data Deficiencies: Larval and juvenile habitat use and needs including freshwater vegetation distribution and abundance, and migration dynamics need better data.

Brief Species Description:
Opossum pipefish is a widespread species that spawns in low salinity areas of **estuaries**. This subspecies ranges from New Jersey through the Gulf of Mexico and

Caribbean to Sao Paulo, Brazil and on the Pacific coast of Panama, having passed through the Panama Canal. It is a relatively large pipefish, reaching 7.6 inches SL. It is the only western Atlantic pipefish with confluent lateral trunk and inferior tail ridges, 17 to 23 pectoral rays, and 9 caudal rays. Fins are small and they are not strong swimmers. They are the only North American pipefish with the brood pouch on the trunk (not the tail). The snout is long, there are 16 to 21 trunk rings, and 20 to 26 tail rings. The color is distinctive, especially in breeding adults: the upper snout and back half of the head and body is brown with dark red blotches on each lateral trunk ring forming a red stripe; there is a mid-side silver stripe, a silver edge on the inferior trunk ridge; the lower half of the snout is red with a variable number of black bars, and the caudal fin is red with a central dark stripe. Juveniles are not as colorful as they are either nearly transparent or light brown with widely spaced dark vertical bars.

Opossum pipefish are not known to over-winter or breed in the warm temperate (Carolinian) portion of their range. Permanent populations only occur in southeastern Florida, especially the Indian River Lagoon. The smallest juveniles have only been captured in oceanic or coastal marine environments, while adults only occur in freshwater tributaries within 30 miles of the coast (Gilmore 1992). In Florida, juveniles migrate into freshwater tributaries during the dry season (December to May). Maturation, mating and larval release occur in freshwater during the wet season (June to November), under conditions of maximum water flow. Distribution in local streams appears to be patchy and associated with clumps of emergent vegetation. They are carnivorous, preying on crustaceans and small fish as ambush predators in dense vegetation (Frias-Torres 2002). Males incubate up to 953 eggs in the abdominal pouch, one of the highest numbers in North America. Eggs are incubated for 5 to 10 days before hatching. Males can receive at least two different sequential egg batches (mating and egg deposition observations in Frias-Torres 2002). Newly released larvae must have conditions near 18 ppt salinity for at least two weeks after birth to survive, indicating a physiology adapted for downstream transport to estuarine and marine environments (Frias-Torres 2002). Multiple spawnings per year occur (Miranda-Marure et al. 2004). Long distance upstream migration occurs in the St. Lucie River, Florida, and Panama Canal (Gilmore 1992).

Factors for Decline:

They depend on specific vegetation species for breeding, but these are targeted for herbicide treatment (Gilmore 1999). Seawall, dock, and rip rap construction destroy habitat. Water control structures prevent migration and alter hydrologic regime. Poor water quality, unnatural flow rates, and significant atypical release from water systems (wrong season, exceptional water volume) are typical of the rivers where the pipefish occurs in Florida.

Contact Information

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References:

Frias-Torres, S. 2002. Oceanic transport and life history of the tropical western Atlantic opossum pipefish. Ph.D. Diss., FIT, Melbourne, FL.

Gilmore, R. 1992. Threatened: Opossum pipefish, p. 73, In C. Gilbert (ed.). Rare and Endangered Biota of Florida: Vol 4. Univ. Press FL.

Gilmore, R.G. 1999. Life History and critical habitat/ environment of opossum pipefish. Candidate Report to Protected Resources, NMFS, Washington, D.C.

Miranda- Marure, M.E., et al. 2004. Gulf and Carib. Sci. 16:101-108.