

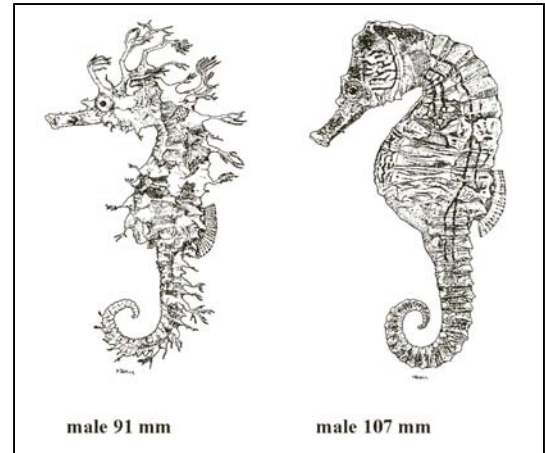
Lined seahorse

Hippocampus erectus

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DESCRIPTION

The lined seahorse, *Hippocampus erectus* Perry, 1810 is a small, oddly shaped fish found in marine and estuarine waters. They are caught as by-catch in trawl fisheries and are hand-collected primarily for the curio and aquarium trade. They occupy structured habitats, where they cling to living or inanimate structures using a prehensile tail. Males brood eggs in specialized pouches. Seahorses are not targeted in fisheries in the western Atlantic, but are in other regions where they are used in traditional medicines (Fritzsche and Vincent 2002). The lined seahorse is among the most commonly traded seahorse species, particularly for ornamental display; declines in seahorse availability have raised concern for this species (Foster et al. 2003).



Taxonomy and Basic Description

The lined seahorse is a member of the family Syngnathidae (pipefishes and seahorses). Syngnathids are members of a morphologically bizarre order of bony fishes, the Gasterosteiformes, which includes sticklebacks, trumpetfishes, cornetfishes and snipefishes. The genus *Hippocampus* includes three species of seahorse found in the western North Atlantic (Fritzsche and Vincent 2002; Nelson et al. 2004).

The body of the lined seahorse is elongate and encased in bony armor arranged into series of



rings; maximum length is about 200 mm (8 inches). The mouth is small, toothless, and placed at end of a tubular snout. Gills are tufted and lobe-like; gill openings are restricted to the upper border of operculum. Both pelvic and anal fins are absent and the tail is prehensile. The dorsal fin is spineless and contains 16 to 20 soft rays. The coronet is variable and low. It can be a triangular wedge, ridge-like, raised with sharp edges, or with relatively sharp spines. The fact that usually first, third, fifth, seventh and eleventh trunk rings are enlarged

distinguishes the lined seahorse from other species; in most other seahorse species, it is the first, fourth, seventh and eleventh trunk rings that are enlarged. The base color of lined seahorses varies from ash grey, orange, brown, yellow, red or black; brown individuals tend to be paler on the ventral side. There is often a characteristic pattern of white lines following the contour of

neck, tiny white dots on tail and this seahorse may have darker or paler ‘saddles’ across dorsal surface often in line with the more enlarged body rings (Fritzsche and Vincent 2002; Froese and Pauly 2004).

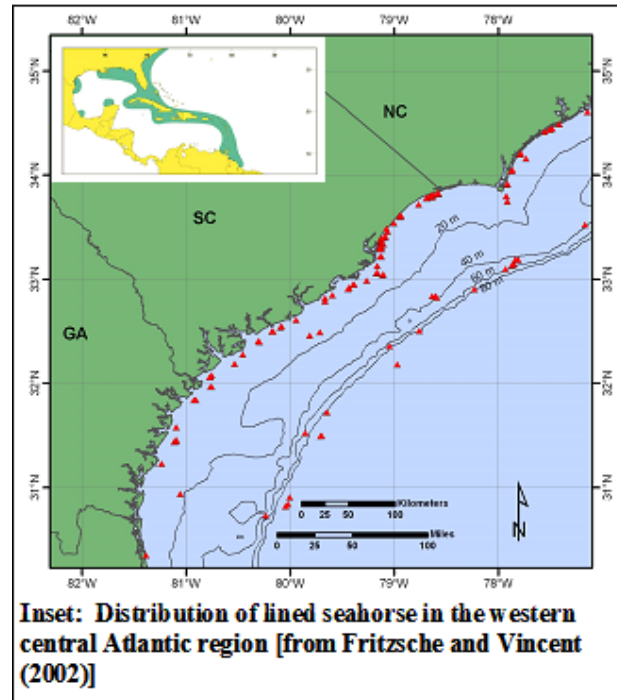
Status

The lined seahorse is included on the IUCN (International Union for the Conservation of Nature) List of Threatened Species as “Vulnerable (VU)” (Foster et al. 2003). A taxon is considered vulnerable by IUCN when it is not critically endangered or endangered, but is facing a high risk of extinction in the wild in the medium-term future.

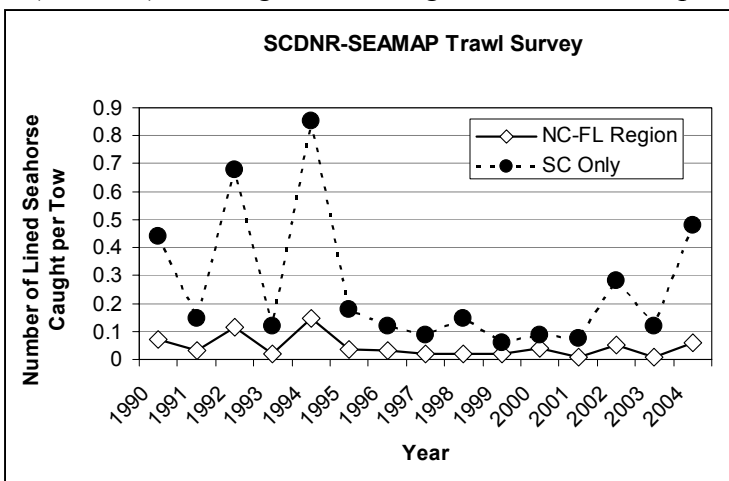
POPULATION DISTRIBUTION AND SIZE

The lined seahorse is found from Nova Scotia along the western Atlantic coast, through the Gulf of Mexico and Caribbean to Venezuela, from shallow inshore areas to depths of over 70 m (230 feet). A southern form, possibly a new species, has been collected in Suriname and Brazil (Fritzsche and Vincent 2002).

Fishery statistics are not compiled separately for this species (or any seahorse) in the U.S. and no fishery-independent surveys in existence are designed to sample lined seahorse populations off the southeastern U.S. Estimates of population size cannot be made; however, the SCDNR-Southeast Area



Monitoring and Assessment Program (SEAMAP) trawl survey has indicated a slight decline in relative abundance since 1990. Baum et al. (2003) estimated that the live-bait shrimp trawl fleet (31 boats) working out of a single Gulf of Mexico port caught nearly 72,000 lined seahorse per



year. Unknown numbers of live lined seahorse are marketed from that fishery (Baum et al. 2003) and may be marketed from other shrimp fisheries in the southeastern U.S., as well. Given that the lined seahorse is among the most commonly traded seahorse species, particularly for ornamental display, evidence from fishing effort and the lowered market supply of seahorses has raised concern about the status of population of this species (Foster 2003).

HABITAT AND NATURAL COMMUNITY REQUIREMENTS

Adults are known from the surface and bottom waters of shallow and deep areas of channels, bays and saltmarshes, and along beaches and nearshore coastal waters (Hardy 1978; Wenner and Sedberry 1989; Froese and Pauly 2004). They have been found associated with oyster beds and weed-covered banks. Lined seahorses are usually associated with, or clinging to, aquatic vegetation such as turtlegrass (*Thalassia*), eelgrass (*Zoostera*) and Gulfweed (*Sargassum*). They can also be found clinging to soft corals (gorgonians). They have been found offshore to depths of 70 m (230 feet) associated with soft corals and benthic algae (Gilligan 1989). They tolerate a wide range of salinities (10.0 to 36.6 ppt) and temperatures (5.0 to 29.9°C; 41-96°F). Larvae are hatched from the egg in the brood pouch of males and "newborn" juveniles swim near the surface (Hardy 1978; Froese and Pauly 2004).

CHALLENGES

The lined seahorse is listed by IUCN as vulnerable based on inferred declines of at least 30 percent caused by targeted catch, incidental capture and habitat degradation. While there is little information on changes in numbers of the species, there is indirect evidence to suggest that declines have taken place and are continuing as availability to fishermen seems to be in decline, indicating lowering abundance. This vulnerable listing is consistent with the precautionary approach of the IUCN (Foster et al. 2003).

The lined seahorse is traded for use as aquarium fishes, curios and traditional Chinese medicine (Vincent 1996). This species has been documented as incidentally caught (bycatch) in shrimp trawl and other fisheries in Florida, Mexico, Central America and South America. The lined seahorse is also affected by habitat degradation due to coastal development, pollution and shellfish fisheries, because it occupies oyster (*Crassostrea virginica*) reefs and associated gorgonian corals. Although the lined seahorse is one of the most commonly traded seahorses in the aquarium trade and other ornamental displays (Foster et al. 2003), little is known of the ability of the species to support intense harvest.

CONSERVATION ACCOMPLISHMENTS

Seahorses have been included (since 2002) in the listing on Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), with additional international trade rules adopted in 2004 (CITES 2004). The recommendation to adopt a 10 cm (4 inches) minimum height for wild seahorses in international trade took effect when the CITES Appendix II listing for seahorses entered into force on 15 May 2004. CITES parties believe the size limit will permit reproduction and continued trade in most species that are currently exported. It serves as an initial approach while parties assess international trade levels, impacts on domestic species and potential alternative management tools, which could supplement or replace the minimum size limit. A minimum size limit of 10 cm should be sufficient to permit reproduction in most species, including all six of the species, which includes lined seahorse, at which the CITES listing was primarily directed (CITES 2004).

The listing requires that any member country wishing to export seahorses demonstrate that the trade harms no wild populations. For many countries, the "Non-Detriment Finding" tool of choice will be the minimum size limit.

The SCDNR-SEAMAP program currently monitors abundance of fishes and decapod crustaceans using a trawl survey of coastal waters (4 to 10 m, 13 to 33 ft.), from North Carolina to Florida. Although lined seahorse is not a priority species to be sampled and assessed, they are occasionally caught in coastal trawl surveys (Wenner and Sedberry 1989).

Aquaculture of lined seahorse may prove to be an important conservation measure for this species and other wild seahorses. Culture methods are being perfected (Gardner 2003).

CONSERVATION RECOMMENDATIONS

- Develop an annual index of abundance for the lined seahorse from fishery-independent surveys.
- Develop culture methods for the aquarium, curio and traditional medicine trades.
- Additional research should be aimed at developing culture methods for the aquarium, curio and traditional medicine trades. Develop a reliable stock assessment of seahorse populations in the South Atlantic.
- Develop ways to better document landings of seahorse during shrimp trawling and monitor by-catch.
- Gather and monitor marketing statistics of lined seahorses to infer demand on wild seahorse populations.

MEASURES OF SUCCESS

Although it is believed that worldwide trade in seahorses has resulted in declining populations of many species, the evidence is indirect, circumstantial and often anecdotal regarding particular species or stocks. The measurement of success will be to document the cause of declines, at least for South Carolina populations. Once causes are identified, a management plan can be developed for the conservation of this species.

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