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Presence of the Seahorse *Hippocampus reidi* (Pisces: Syngnathidae) In Diet of Marine Fish in Northeastern Brazil

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Abstract

Seahorses are species that are globally threatened with extinction because of their capture for the ornamental fish trade and traditional medicine and because of suffering from environmental degradation and habitat loss. Moreover, they make up the diet of many animals, including fishes. Seahorses are often bycatch in net fishing, and rarely reported as bycatch in fishing with hooks, but they are prey of fish that are caught in this way. The analysis of the stomach contents of fish caught in troll and longline fishing, revealed the presence of *Hippocampus reidi* as a food item of *Cephalopholis fulva* and *Thunnus atlanticus*.

Kewords: *Cephalopholis fulva*; *Thunnus atlanticus*; Longline fishing; Trolling line

Introduction

Seahorses (Syngnathidae: *Hippocampus*) are globally endangered species [1], where they are targets of the trade for ornamental fish, traditional medicine, handicrafts, charms and others [2]. Of course, they are prey for several animals, including other fish, where they are regular or occasional food for some species, which can be verified by the analysis of stomach contents [3,4]. Seahorses compose the bycatch of fisheries with gillnets and mainly trawls but they can be caught indirectly when they are eaten by other fish that are targets of the most varied fishing gear [5-8]. Of the various methods of fishing with hooks, mode "pargueira" is used to catch bottom fishes, which live on rocky, gravel or coral substrates, such as grouper (Epinephelinae), while mode "corrico" is done with baited fishing lines in a moving boat and is intended for the capture of sea bass (Centropomidae) and mackerel (Scombridae), among others [9,10]. We report here, these two types of fishing, whose target fish had ingested seahorses.

Materials and Methods

Two excursions were carried out by the commercial fishing boat Deep Drop (Pernambuco, Brazil) from the states of Alagoas/Pernambuco border to the beach of Porto de Galinhas (Pernambuco), fishing exclusively with hooks. A fishery of "pargueiras" aimed at the common seabream *Pagrus pagrus* (Sparidae) occurred at a depth of 130 m, whereas the other fishing method used was "corrico" with hooks at 70 m; both were performed 30 to 35 km from the coast, following the slope of the continental shelf of Pernambuco [11]. The seahorses were identified according to Silveira *et al.* [12] and their predators according to Lessa & Nobrega [13]. These were sporadic records; it was not a systematic investigation.

Results and Discussion

In the "pargueiras" mode, a coney (*Cephalopholis fulva*; Serranidae) weighing 500 g and measuring 23 cm in total length (TL) was captured. A seahorse specimen was found inside the mouth and still alive, it had been collected and frozen by the fisherman, with the other fishing catch. In the "corrico" mode, at 70 m deep resulted in the capture of a blackfin tuna (*Thunnus atlanticus*; Scombridae) weighing 1980 g, whose stomach contents revealed two specimens of partially digested seahorses, but with the skeleton in good condition, allowing the identification of the species.

The seahorse found inside the mouth of the coney was a female of *Hippocampus reidi* (Figure 1, A), 9.4 cm height (measured linearly from the top of the head to the tip of the stretched tail).

The two specimens collected from the stomach of the blackfin tuna were 6.5 and 7.0 cm tall, both *H. reidi* females (Figure 1, B). Only the seahorse found in the coney was donated to the Project Hippocampus, contributing to its collection, the others were used by fishermen to make tea for "childhood fatigue" (asthma).

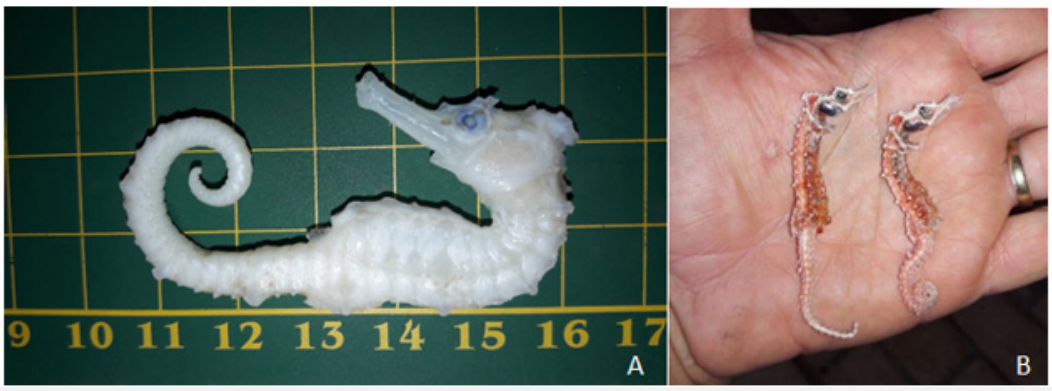

Figure 1: Seahorse removed from the *Cephalopholis fulva* (A) and from *Thunnus atlanticus* (B) stomachs contents.

Cephalopholis fulva is distributed from North Carolina (USA) to southeastern Brazil, being relatively common on the Northeastern coast of Brazil [14-16]. Its diet is composed of small fish and crustaceans and is a daytime predator that exhibits a sit-and-wait strategy, staying close to the bottom [17-19]. Predation of juveniles of the green turtle (*Chelonia mydas*) by the coney has been observed, along with annelids, which were found in their stomach contents [20]. According to Oliveira *et al.* [21], the coney is fished in the range of 100 to 200 m deep, which is in agreement with the range where the fish that contained the seahorse in its mouth was fished. It is not uncommon demersal fish prey on seahorses and other Syngnathidae, Kleiber *et al.* [3] conducted an extensive review of seahorses and pipefish as food for other animals and found a diversity of predators, comprising 82 species, including invertebrates, fish, sea turtles, waterfowl and marine mammals. For *C. fulva*, this was the first record of predation on seahorses.

Thunnus atlanticus is distributed from Massachusetts (USA) to southeastern Brazil and is found in coastal waters with a temperature above 20°C. It is an epipelagic species and feeds on fish, squid and crustaceans, usually occurring in a range of 20 -60 m depth [22-24]. Kleiber *et al.* [3] were found *T. albacares*, *T. thynnus* and *Thunnus* sp. preying on seahorses, so this is the first record for *T. atlanticus*. The predation of the seahorse by the coney, a fish that stays near the bottom is easily understandable, since both explore the bottom. However, the fact that a tuna (epipelagic) swallowed two seahorses (demersal), suggested that the displacement of these Syngnathidae in the water column occurs by adherence to floating vegetation [3,25], favoring settlements in new environments or making them occasional prey for other resident animals or travelers from the open sea. This contribution is the first record of *H. reidi* predation by *Cephalopholis fulva* and *Thunnus atlanticus* in Brazilian waters.

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