Sphoeroides nephelus (Southern Puffer)

Family: Tetraodontidae (Pufferfish)
Order: Tetraodontiformes (Pufferfish and Boxfish)
Class: Actinopterygii (Ray-finned Fish)

Fig. 1. Southern puffer, *Sphoeroides nephelus.*

[http://www.roughfish.com/lifelists/overview/detail/fish/45422, downloaded 19 January 2016]

TRAITS. The southern puffer, member of the Tetraodontidae family, typically has a brown body, lacking hard spines, but small spines may be found on some (Hoese and Moore, 1977) additionally, they lack scales (Hinchcliff, 2004). The maximum size ranges to about 250-300 mm with a common size of 200 mm (Hoese and Moore, 1977; Froese and Pauly, 2008). This blunt-headed fish possesses a small mouth (Fig. 1) which forms a beak shape due to the fusion of four teeth; two teeth each in the upper and lower jaws. Colour: brown upper surface with a distribution of white and black spots (Fig. 1). In fresh specimens the colour of the spots maybe pale blue or green (Shao et al., 2014). The underside is paler compared to the upper side, with lightly distributed dark spots. Sexually mature males occasionally are covered with bright red/ orange spots approximately 1mm in diameter. The usual ray count is dorsal fin has 7 soft rays, the anal 6 soft rays and the pectoral with 14 rays, the pelvic fins are absent (Hoese and Moore, 1977). A dark spot below the pectoral fin is useful in distinguishing this species.

DISTRIBUTION. Spread over the Western Atlantic specifically northeastern Florida and northern Gulf of Mexico as well as Bahamas along with Campeche in Mexico and Lesser Antilles in the Caribbean, including Trinidad and Tobago (Fig. 2). The taxonomic status of specimens from South America to Brazil is uncertain (Shipp and Yerger, 1969). The southern puffer is native to Trinidad and Tobago along with the other countries it is spread over (Shao et al., 2014).

HABITAT AND ACTIVITY. Found in marine habitats, chiefly a benthic (bottom-dwelling) inhabitant of bays, estuaries, and sheltered waters to a depth of approximately 11 m, although it can also be found at lower depths to 20 m (Shao et al., 2014), it is observed regularly in seagrass

beds as well and mangroves such as in Trinidad (Sedberry and Carter, 1993; Froese and Pauly, 2008). They may also be present in salt marshes (Nordlie, 2003) and in protected reef environments such as the Bucco Reef in Tobago (Sedberry and Carter, 1993). These habitats may be spoiled for the species due to pollution and coastal developments which destroy the sea grass (Shao et al., 2014). Southern puffers are primarily diurnally active hence they are not nocturnal; they may settle into sand to rest at night (Fig. 3) (Masterson, 2008).

FOOD AND FEEDING. The diet comprises mainly of invertebrates, predominantly molluscs, crustaceans (shellfish) and sometimes finfish (Shipp and Yerger, 1969). Since there is limited information available for the feeding of this species, it is documented that other members of the family are solitary feeders it can be assumed that the southern puffer is also a solitary feeder.

POPULATION AND ECOLOGY. Southern puffers are typically loners but can be found in small groups, especially the juvenile fishes; the adults are solitary. They have a high affinity to seagrasses and mangroves (IUCN, 2014). According to the IUCN the population of *S. nephelus* is severely fragmented with it being most common tetraodontid in the shallow coastal lagoons of northeastern Florida and is abundant in the Gulf of Mexico (Shao et al., 2014).

REPRODUCTION. There is limited information available for this as there is often misidentification associated with the puffer fish. Since the other members of the family lays eggs, it can be assumed that southern puffers lay eggs. Developmental details of the juveniles are also limited. Other tetraodontids lay eggs that are attached to rocks and coral surfaces, when hatched they release free-swimming larvae hence the same is assumed for *S. nephelus* although the southern puffer is a benthic fish (Masterson, 2008). It can be assumed that *S. nephelus* lays spherical sticky eggs on the substrate (Watson, 1996). *S. nephelus* reproduces sexually, and are dioecious (with separate sexes). Fertilization occurs externally in these fishes. It was reported previously that *S. nephelus* reproduces around fall (Shao et al., 2014), however this was revised to include breeding from spring to fall in some regions and possibly year-round in the southern regions such as the Caribbean. Hence the southern puffer may reproduce the entire year in Trinidad and Tobago (Shipp and Yerger, 1969).

BEHAVIOUR. Juvenile behaviour: Very little is known about the juvenile behavior of this type of fish. The adult puffers remain inshore while the juvenile is collected with the related species *S. maculatus* (Masterson, 2008*).* Anti-predator behaviour: *S. nephelus* are rib-less fishes and can inflate their stomachs with water (Fig. 4) when they are frightened or disturbed. Additionally, puffer fish can also produce as well as accumulate toxins such as tetrodotoxin and saxitoxin in the gonads, skin and liver. The gradation of poisonousness differs by species, geographic area and time of year (Allen and Erdmann, 2012).

APPLIED ECOLOGY. IUCN had red listed the *S. nephelus* as of least concern (Shao et al., 2014). The southern puffer has no known major threats. There are no records to show the decrease in the number of southern puffer across its range, however, *S. nephelus* is observed to be undergoing decrease in population due to the loss of mangrove and seagrass habitat (Shao et al., 2014). It is assumed the southern puffers are decreasing in population due to the worldwide decline of seagrass. According to the IUCN, about 21% of seagrass throughout the word is threatened due to coastal development and contamination (Shao *et al.,* 2014). Additionally, mangroves are also threatened; about 16% worldwide, and in the Caribbean over the last 25 years about 24% of the mangrove has been lost (Shao et al., 2014).

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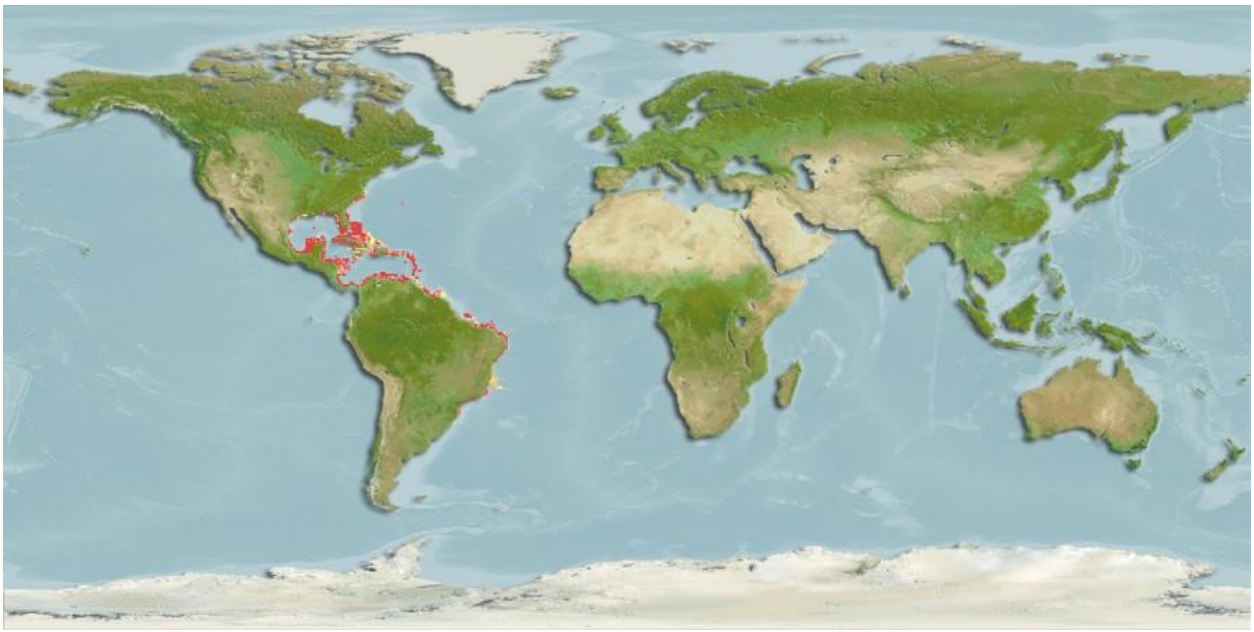

Fig. 2. Southern puffer fish geographic distribution.

[http://www.aquamaps.org/receive.php?type_of_map=regular downloaded 8 March 2016]

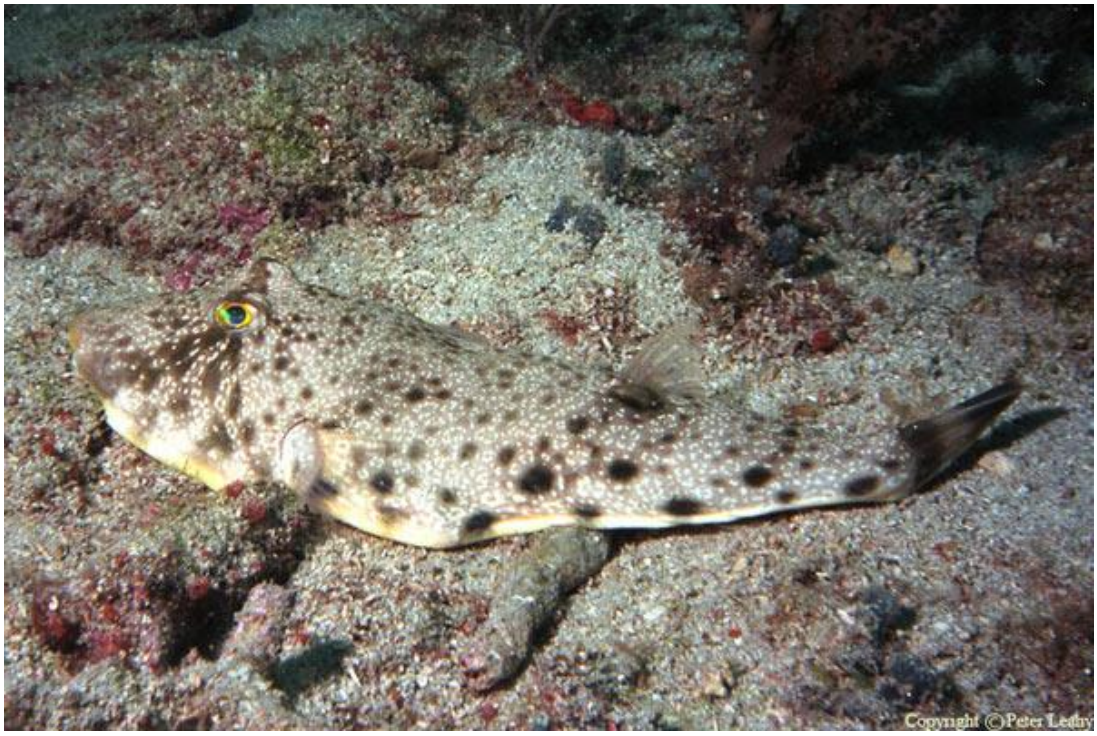

Fig.3. Southern puffer covering itself with sand at nightfall.

[http://www.fishbase.org/Photos/PicturesSummary.php?ID=1240&what=species downloaded 8 March 2016]

Fig. 4. Southern puffer fish with inflated abdomen due to disturbance.

[http://www.inaturalist.org/observations/1511148 downloaded 8 March 2016]