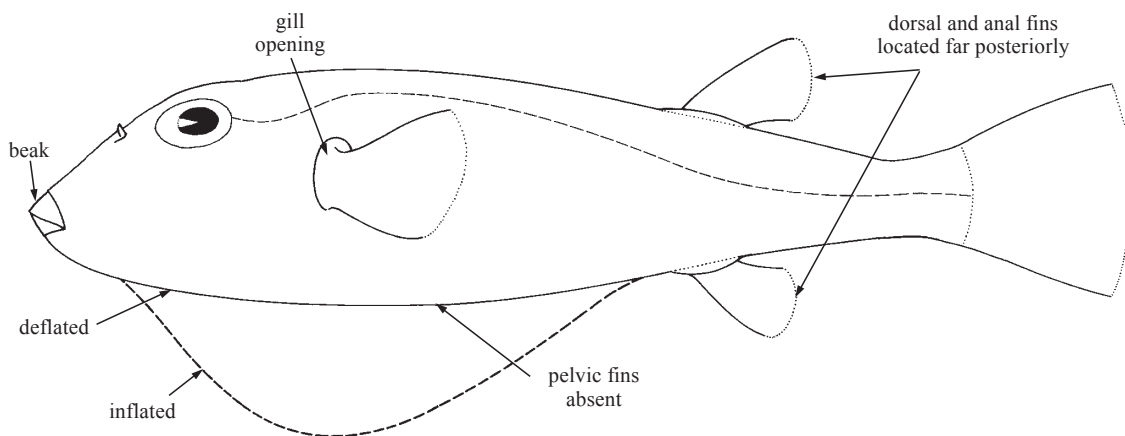


## TETRAODONTIDAE

### Puffers

by R.L. Shipp, University of South Alabama, USA

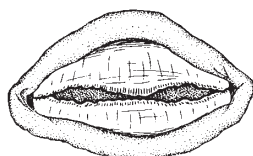
**Diagnostic characters:** Small to moderate-sized fishes, most species less than 300 mm, with a heavy blunt body capable of rapid inflation by intake of water (or air). Head large and blunt; jaws modified to form a **beak of 4 heavy, powerful teeth, 2 above and 2 below**; gill openings without distinct opercular cover, appearing as simple slits anterior to the pectoral fin; eyes located high on head. **Dorsal and anal fins located far posteriorly bearing no spines, but 7 to 15 soft rays**; caudal fin usually truncate to slightly rounded; **pelvic fins absent**. Typical scales absent, but most species are partially covered with tiny prickles or spinules, and many species have small fleshy tabs or lappets on the dorsal and/or lateral surfaces. **Colour:** most species are mottled, variegated, or barred on the upper and lateral surfaces, often with spots of various sizes and colours; ventral surfaces are almost always unpigmented.



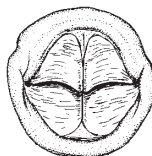
**Habitat, biology, and fisheries:** Inhabits tropical and temperate seas, most frequently in shallow nearshore waters, sometimes entering more brackish or fresh water habitats. Usually alone or in small, disorganized groups. Their capacity to inflate themselves like balloons probably prevents them from being swallowed by most potential predators. At least some species are able to bury in the bottom. They propel themselves through the water by a fan-like flapping of their dorsal and anal fins. All species are carnivorous. The flesh of many species is reportedly of excellent flavour and is consumed locally in many areas, especially Japan. However, many species are toxic (tetrodotoxin) and their consumption has caused serious (sometimes lethal) poisoning. The occurrence of the toxin is more prevalent in certain species, but may vary by season or sexual condition, and its presence is uncertain for many species. It is concentrated in the internal organs, especially liver and gonads, but can contaminate the flesh during careless cleaning of the fish. Although most species (except the northern puffer) are not commercially sought, all species of the family are included here because of their relative abundance and possible occurrence of the toxin.

### Similar families occurring in the area

Diodontidae: only 1 family, the porcupine fishes, is similar to the pufferfishes; they are distinguished by having a single (unsutured) tooth in each jaw, and very large spines covering the body.

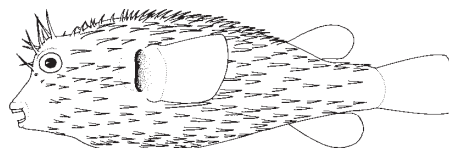


**Diodontidae**



**Tetradontidae**

tooth plates



**Diodontidae**

**Key to the species of Tetraodontidae occurring in the area**

Note: Several characters not typically found in other fishes are important in identifying the species of pufferfishes. One is the presence or absence of lappets, which are small fleshy tabs found in various localities on the body. They are most easily seen when specimens are immersed in fluid. Most often they are tan or flesh coloured, and most prominent on the flanks. However, they may also occur as a single dark or black pair, located mid-dorsally. 'Prickles' are very small spinules located at various areas of the body. They are sometimes imbedded in the skin, thus not always easily visible, but their presence and pattern can be diagnostic.

1a. Nostrils minute, barely visible without aid of magnification; dorsal surface posterior to eyes distinctly keeled; eyes accentuated by ventrally directed dark blue or green radiating lines (Fig.1) . . . *Canthigaster rostrata*

1b. Nostrils easily visible with the naked eye; dorsal surface posterior to eyes smooth, without a distinct keel; eyes not accentuated by dark blue or green radiating lines . . . → 2

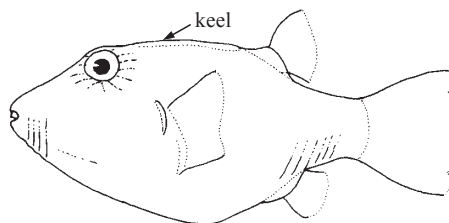


Fig. 1 *Canthigaster*

2a. Dorsal-fin rays 13 to 15; anal-fin rays 12 or more; caudal fin distinctly lunate (Fig. 2). . . → 3

2b. Dorsal-fin rays 12 or less; anal-fin rays 11 or less; caudal fin rounded or truncate (Fig. 3). . . → 4

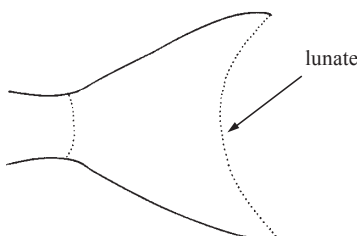


Fig. 2 caudal fin (*Lagocephalus*)

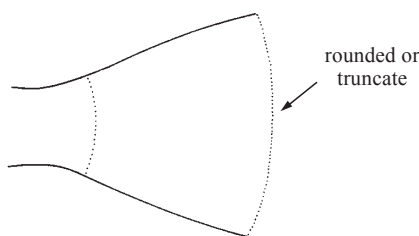


Fig. 3 caudal fin (*Sphoeroides*)

3a. Pectoral-fin rays usually 13 to 16; in subadults and adults (over about 200 mm), dark blue or black spots on anterior and medial regions of belly and laterally near pectoral-fin base; in adults, lower caudal-fin lobe longer than upper; lower third of pectoral fin white . . . . . *Lagocephalus lagocephalus*

3b. Pectoral-fin rays usually 17 or 18; never any spots laterally or ventrally; in adults, upper caudal-fin lobe longer than lower; pectoral fin uniformly dusky or with lower few rays dark . . . . . *Lagocephalus laevigatus*

4a. Dorsal fin with 10 to 12 rays; dorsum with 5 or 6 bars, each about as wide as the intervening light areas (Fig. 4) . . . . . *Colomesus psittacus*

4b. Dorsal fin with with 9 or fewer rays; dorsum mottled, spotted, or variously marked, but not with 5 or 6 distinct dark bars . . . . . → 5

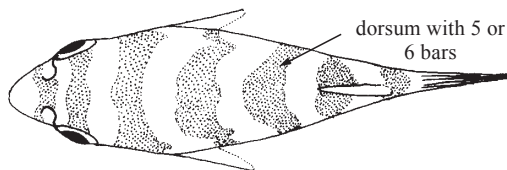


Fig. 4 *Colomesus*


5a. Body entirely smooth, prickles totally lacking; interorbit broad, usually 8% or more of standard length; pigmentation mostly uniform, except usually a few dark spots on flanks . . . . . *Sphoeroides pachygaster*

5b. Body usually with prickles (prickles often not exposed, but present beneath tiny pores in the integument); interorbit of moderate to narrow width, usually 8% or less of standard length; if prickles absent, interorbit concave, narrow, 5% or less of standard length; pigmentation variously mottled . . . . . → 6

- 6a. Lappets present on dorsal and/or lateral surfaces; sometimes only a single black pair on dorsum about 1/2 the distance between posterior margins of orbits and dorsal-fin origin, or scattered light tan lappets concentrated near posterolateral body margin . . . . . → 7
- 6b. Lappets absent . . . . . → 11
  
- 7a. A single pair of black lappets present on the dorsum; no lappets on posterolateral body surfaces; cheeks marbled in subadult and adult males; from 1 to 5 diffuse dark blotches present on lateral body surface posterior to pectoral fin . . . . . *Sphoeroides dorsalis*
- 7b. Black dorsal pair of lappets absent; light or tan lappets present on posterolateral portions of body; cheeks variously pigmented but not marbled . . . . . → 8
  
- 8a. Lower lateral surfaces lacking pigment except for many tiny black flecks or speckles; least bony interorbit narrow, about 5 or more in snout, pectoral-fin rays usually 14, rarely 13 or 15 . . . . . *Sphoeroides yergeri*
- 8b. Lower lateral surfaces marked with blotches or spots, not with tiny black flecks or speckles; least bony interorbit either broad, less than 5 in snout, or if narrow, pectoral-fin rays usually 16 (rarely 15) . . . . . → 9
  
- 9a. Pectoral-fin rays 15 or 16; lower cheek with 3 or 4 vague diagonal blotches not evident in poorly preserved specimens; a pair of beard-like pigment blotches on either side of the chin . . . . . *Sphoeroides tyleri*
- 9b. Pectoral-fin rays 13 to 15; lower cheek with a row of 4 to 6 very distinct round spots, or with many discrete spots of various shapes, but not with 3 or 4 vague diagonal blotches; no beard-like chin markings . . . . . → 10
  
- 10a. Lower margin of lateral surface bounded by a regular series of distinct, uniform, rounded spots, 4 to 6 anterior and 7 to 9 posterior to the pectoral fin; caudal fin with dark, sharply defined proximal and distal bars . . . . . *Sphoeroides spengleri*
- 10b. Lower margin of lateral surface with many broken blotches or spots, irregularly placed and shaped; caudal fin with a poorly defined, vaguely barred pattern . . . . . *Sphoeroides greeleyi*
  
- 11a. One or 2 distinct, transverse, white interorbital bars, the posterior one often connected by a posterior perpendicular extension to a dorsal pattern of coarse white arches and circular markings . . . . . *Sphoeroides testudineus*
- 11b. Vague dark interorbital bar; dorsal pattern variously mottled, but not with coarse white arches and circular markings . . . . . → 12
  
- 12a. Several (usually 6 to 8) distinct, vertically elongate bars posterior to pectoral fins; dorsal and lateral surfaces in mature specimens (above 70 mm) covered with tiny (to 1 mm) jet black spots; prickles on ventral surface extend posteriorly beyond the anus, usually to the anal-fin origin; pectoral-fin rays 15 to 17, usually 16 . . . . . *Sphoeroides maculatus*
- 12b. Lateral markings posterior to pectoral fins varied, but not distinct, vertically elongate bars; no tiny (to 1 mm) jet black spots over dorsal and lateral surfaces, except rarely a few beneath the eye; prickles on ventral surfaces, if present, do not extend beyond the anus; pectoral-fin rays 13 to 17 . . . . . → 13
  
- 13a. Spot at axil of pectoral fin more intense than any other spots on body; bony interorbit usually concave; least bony width narrow, more than 4 in snout; adults often marked with discrete white (or green in fresh or live specimens) reticulate, vermiculate, or circular markings . . . . . *Sphoeroides nephelus*
- 13b. Spot at axil of pectoral fin absent, or if present, hardly (if at all) more intense than any other spots on body; bony interorbit nearly flat, least bony width moderate, less than 4 in snout; adults with diffuse, indiscrete white (or green in fresh or live specimens) markings, or no such markings at all . . . . . → 14

- 14a.** Pectoral-fin rays 16, rarely 15 or 17; prickles on dorsum present only in a narrow strip from the nape to the level of the posterior margin of the pectoral fin; prickles never present on cheeks or lateral surface . . . . . *Sphoeroides georgemilleri*
- 14b.** Pectoral-fin rays 14 or 15 (rarely 13 or 16); prickles on dorsum extend posteriorly from the nape (or anterior to nape) to dorsal-fin origin, and often present on cheeks or on lateral surfaces posterior to pectoral fin. . . . . → 15
- 15a.** Snout and head extensively covered with prickles, which extend anteriorly on the snout to at least between the nasal papillae . . . . . *Sphoeroides parvus*
- 15b.** Prickles present on the head only on the interorbit, and posteriorly to the origin of the dorsal fin, not present anteriorly to between the nasal papillae; individuals of *S. greeleyi* from some population of the Central American and southern Brazilian coast may rarely lack lap-pets and key here; see also 10b . . . . . *Sphoeroides greeleyi*

### List of species occurring in the area

The symbol  is given when species accounts are included.

-  *Canthigaster rostrata* (Bloch, 1782).
-  *Colomesus psittacus* (Bloch and Schneider, 1801).
-  *Lagocephalus laevigatus* (Linnaeus, 1766).
-  *Lagocephalus lagocephalus* (Linnaeus, 1758).
-  *Sphoeroides dorsalis* Longley, 1934.
-  *Sphoeroides georgemilleri* Shipp, 1972.
-  *Sphoeroides greeleyi* Gilbert, 1900.
-  *Sphoeroides maculatus* (Bloch and Schneider, 1801).
-  *Sphoeroides nephelus* (Goode and Bean, 1882).
-  *Sphoeroides pachygaster* (Müller and Troschel, 1848).
-  *Sphoeroides parvus* Shipp and Yerger, 1969.
-  *Sphoeroides spengleri* (Bloch, 1785).
-  *Sphoeroides testudineus* (Linnaeus, 1758).
-  *Sphoeroides tyleri* Shipp, 1972.
-  *Sphoeroides yergeri* Shipp, 1972.

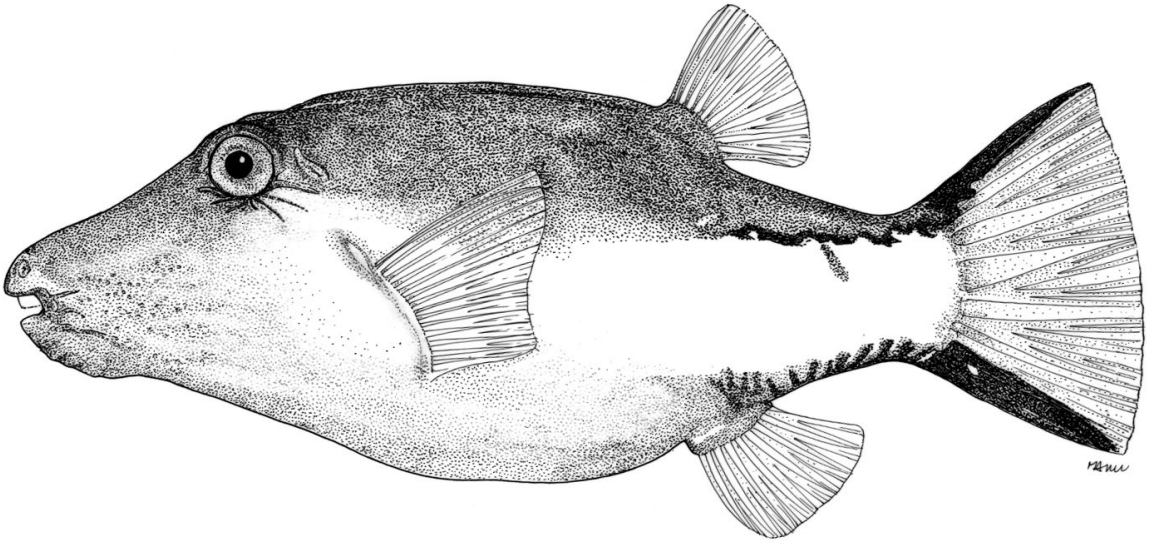
### Reference

Shipp, R.L. 1974. The pufferfishes (Tetraodontidae) of the Atlantic Ocean. *Publ. Gulf Coast Res. Lab. Mus.*, 41:162 p.

*Canthigaster rostrata* (Bloch, 1782)

**Frequent synonyms / misidentifications:** None / None.

**FAO names:** En - Sharpnose puffer.



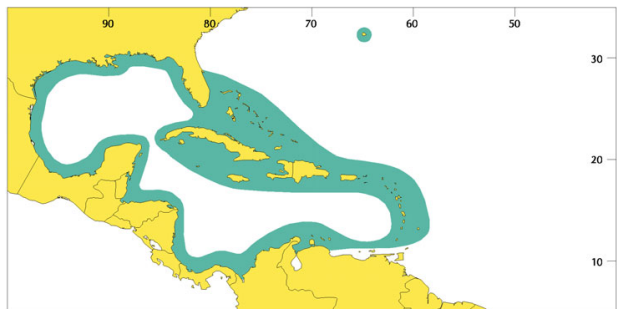
**Diagnostic characters:** A small puffer, with a slightly laterally compressed body and a **keeled dorsal surface**. The snout is pointed with **minute nostrils** and the jaws bear an upper and lower pair of teeth with a distinct medial suture. Dorsal and anal fins are far posterior, the caudal is truncate, and pelvic fins are lacking. **Colour:** body is generally dark tan or brown above, with the **posterior edges of the dorsal and ventral surfaces with dark markings that extend onto the caudal fin; there are distinctive fluorescent bluish green markings radiating ventrally from the eye.**

**Size:** This is the smallest puffer in the region, rarely reaching more than 75 mm.

**Habitat, biology, and fisheries:** This is a coral reef species, requiring warm clear water. It browses on small reef invertebrates, especially polychaete worms. Little is known of its natural history. It is too small to support any foodfishery, but its attractive coloration and habits make it a popular ornamental species in the aquarium trade.

**Distribution:** Abundant in coral habitats from the Florida Keys southward throughout the Caribbean, but rarely present in more temperate regions which lack coral reef habitat. Also present in tropical eastern Atlantic.

**Remarks:** This species is sometimes considered to be in a separate family, the Canthigasteridae. There are many species of the genus in the Indo-Pacific.

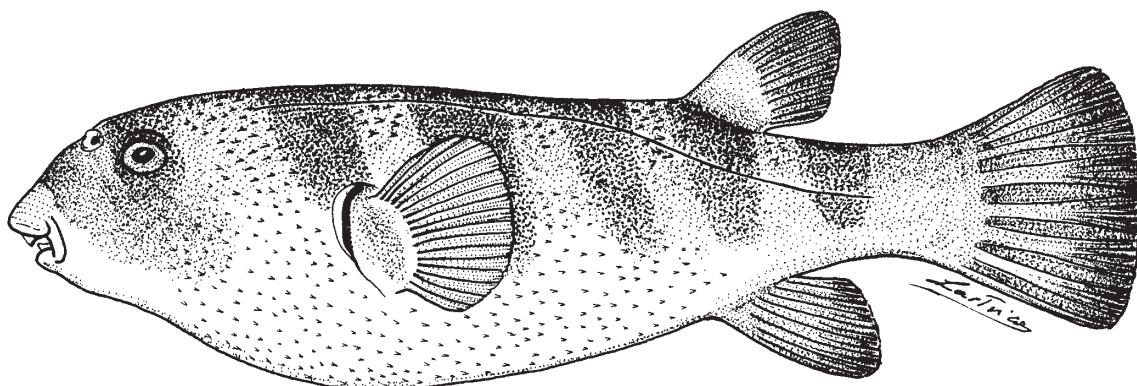


***Colomesus psittacus*** (Bloch and Schneider, 1801)

KOP

**Frequent synonyms / misidentifications:** None / *Colomesus asellus* (Müller and Troschel, 1848).

**FAO names:** En - Banded puffer; Fr - Compère à bandes; Sp - Corrotucho listado.



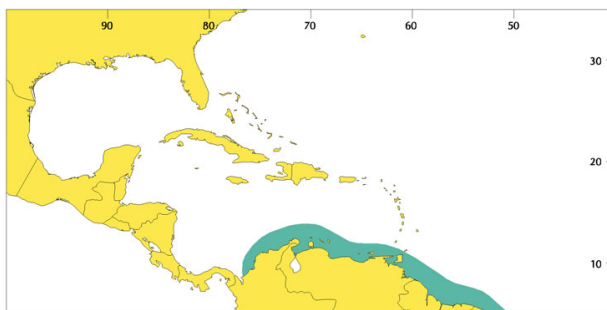
**Diagnostic characters:** A blunt-headed fish with a stout body, and with heavy jaws forming a beak of 2 teeth in both upper and lower jaws. Dorsal and anal fins set far back, near caudal fin, **dorsal and anal fins with 10 or 11 soft rays (no spines); pectoral fin with 17 to 19 rays**; pelvic fins absent. Prickles are present from the snout to posterior margin of the dorsal fin, and chin to near the anus ventrally, and present laterally on the cheeks and to near level of dorsal fin. **Lappets are absent. Colour:** dorsally and laterally, basal pigmentation is a light grey or brown **with 6 dark, prominent, uniform, transverse bars; the first extending between the orbits, the sixth across the caudal fin**; the lighter areas between bars may sometimes have shading; **ventral surface, including the underside of the caudal peduncle, unpigmented.**

**Size:** Common to 300 mm, largest known specimens are near 350 mm.

**Habitat, biology, and fisheries:** Inhabits brackish and marine waters along northern South American coasts, occasionally entering fresh water. Little else is known of its natural history.

**Distribution:** From the Gulf of Paria, Venezuela to Sergipe, Brazil, and nearby continental islands.

**Remarks:** May be toxic. A fresh-water congener, *Colomesus asellus*, is similar but is pigmented on the underside of the caudal peduncle.



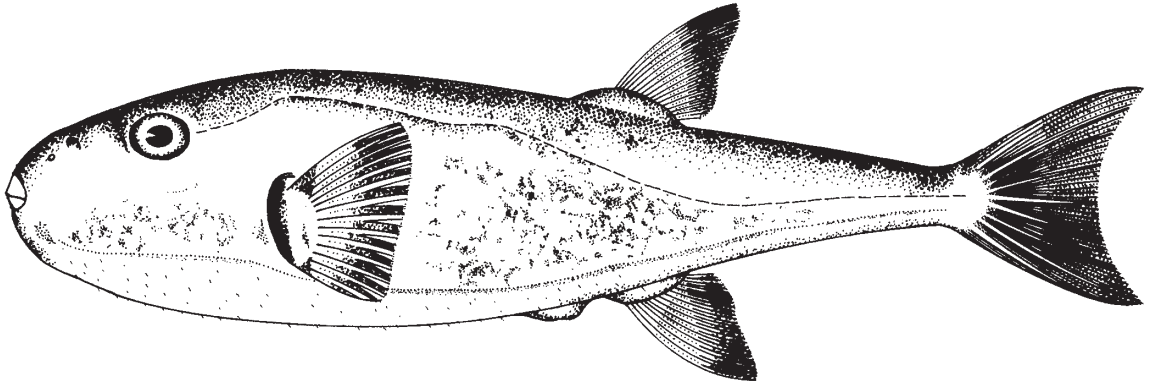


***Lagocephalus laevigatus*** (Linnaeus, 1766)

LFL

**Frequent synonyms / misidentifications:** *Lagocephalus pachycephalus* Jordan and Rutter, 1897 / *Lagocephalus lagocephalus* (Linnaeus, 1758).

**FAO names:** **En** - Smooth puffer; **Fr** - Compère lisse; **Sp** - Tamboril mondeque.

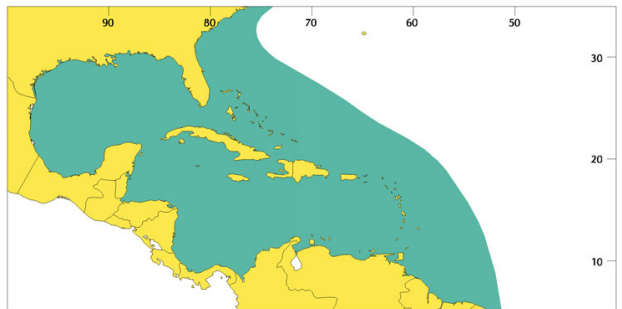


**Diagnostic characters:** A blunt-headed fish with heavy jaws forming a beak of 2 teeth in both upper and lower jaws. Dorsal and anal fins set far back near caudal fin, the **dorsal fin usually with 13 or 14 soft rays** (no spines), **the anal usually with 12 or 13 soft rays** (no spines); **caudal fin distinctly concave, its upper and lower lobes about equal in length**; pelvic fins absent. Prickles covering much of the belly, usually absent on the back; **no lappets on head or body**. **Colour:** upper side a uniform grey or greenish grey, **sides mostly silver**, belly white. Juveniles and subadults have a few dark bars on upper side.

**Size:** Maximum to about 1 000 mm; common to 600 mm.

**Habitat, biology, and fisheries:** Inhabits inshore and nearshore areas to about 60 m depth, over sand and mud bottoms; usually found alone or in small, loose aggregations. Caught mainly on hook-and-line and on longlines; much feared by fisherman because of its predation on longline catch and destruction of gear by its powerful teeth. Marketed fresh. Although not sought commercially at present, the flesh is of good quality and is often eaten by the coastal populations after skinning it. Toxicity status unknown, but there are no reports of it being toxic. Large sizes and wide distribution make this species a possible candidate for eventual commercial utilization.

**Distribution:** Moderately abundant throughout the area, including Bermuda; northward extending to New England, southward to Argentina; also occurs in the eastern Atlantic.

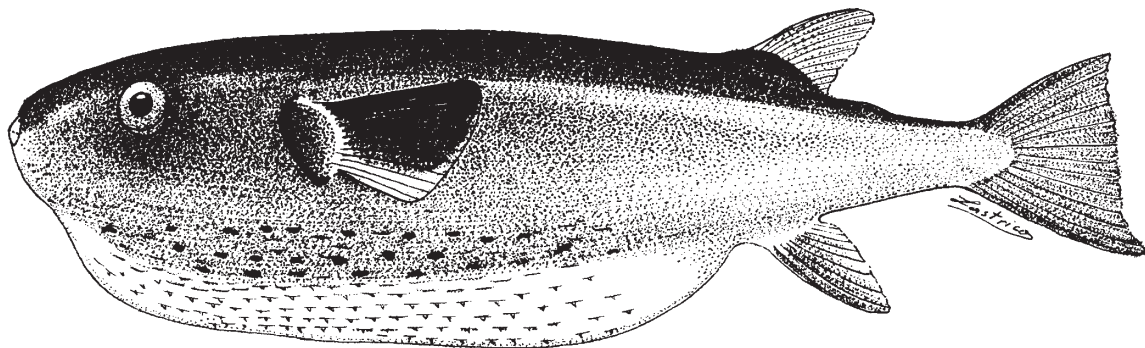


***Lagocephalus lagocephalus* (Linnaeus, 1758)**

LGH

**Frequent synonyms / misidentifications:** None / *Lagocephalus laevigatus* (Linnaeus, 1766).

**FAO names:** En - Oceanic puffer.

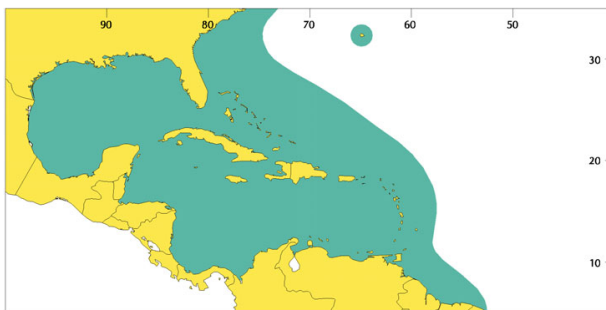


**Diagnostic characters:** A blunt-headed puffer fish with heavy jaws forming a beak of 2 teeth in both upper and lower jaws. Fins falcate, dorsal fin with **13 to 15 soft rays**, anal fin with **11 to 13 soft rays**, and pectoral fins with **13 to 16 rays**. Pelvic fins absent. **Lower caudal lobe longer than upper lobe**. Prickles present on belly only. **No lappets on head or body**. **Colour:** adults (over 300 mm) dark green or blue dorsally, white ventrally, with **distinct dark spots around pectoral-fin base**, extending to ventral surface. **Juveniles with about 9 evenly spaced bars dorsally**. Pectoral fin dark above, with lower third distinctly lighter.

**Size:** Reaches at least 600 mm; common to 400 mm.

**Habitat, biology, and fisheries:** This is an oceanic, pelagic puffer, found at depths to at least 1 000 m; rarely found near shore. It is a forage species for larger pelagics. There is no known fishery, and the species may be toxic.

**Distribution:** This is a circumglobal species occurring in all tropical and temperate oceans and the Mediterranean Sea.

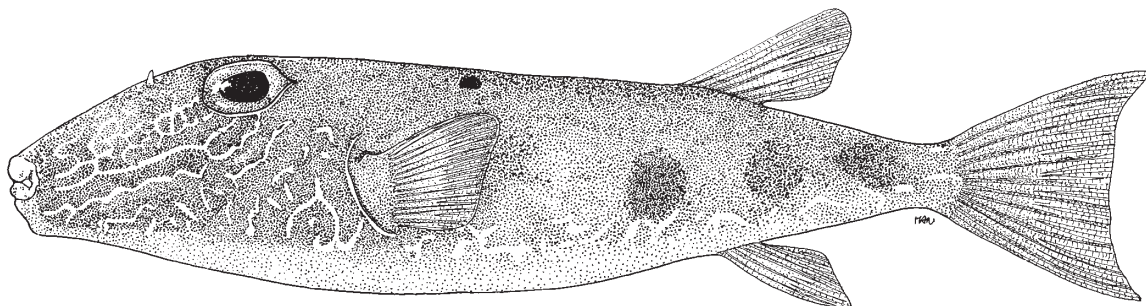




*Sphoeroides dorsalis* Longley 1934

**Frequent synonyms / misidentifications:** None / None.

**FAO names:** En - Marbled puffer; Fr - Compère marbré; Sp - Corrotucho futre.



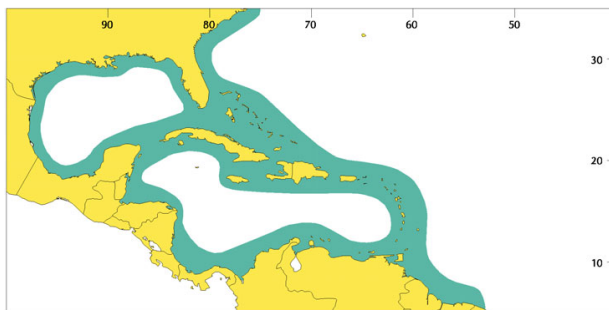
**Diagnostic characters:** A blunt-headed fish with heavy jaws forming a beak of 2 teeth in both upper and lower jaws. Dorsal and anal fins set far back near caudal fin. Dorsal-fin rays 8, anal-fin rays 7, pectoral-fin rays usually 16. Prickles are always present on the dorsum to near origin of dorsal fin. **A single pair of dark lappets (sometimes difficult to see) on dorsal surface midway between eyes and dorsal-fin origin.** **Colour:** basal pigmentation uniform grey or brown, with a few diffuse spots laterally, posterior to pectoral fins; **males exhibit a distinctive but irregular pattern of scrawl-like markings on cheek.**

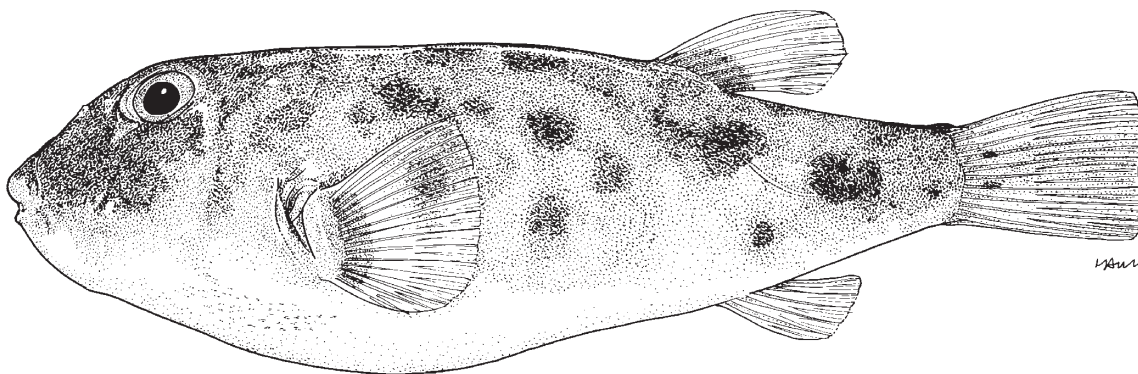
**Size:** May reach 175 mm, common to 125 mm.

**Habitat, biology, and fisheries:** Found in moderate depths, 20 to 100 m, and most frequently taken in shrimp trawls. Little is known of its natural history. No directed fishery exists.

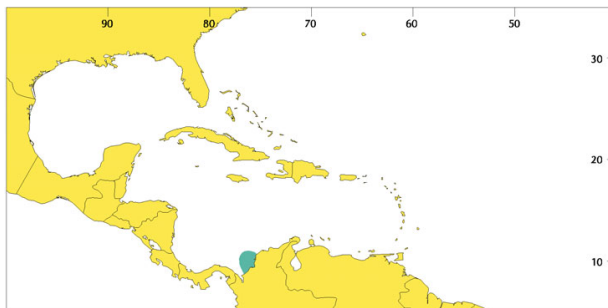
**Distribution:** Found throughout the area, ranging from North Carolina to Suriname.

**Remarks:** Although this species has not been reported as toxic, many of its congeners are, and it should not be consumed.



***Sphoeroides georgemilleri* Shipp, 1972****Frequent synonyms / misidentifications:** None / None.**FAO names:** En - Plaincheek puffer.

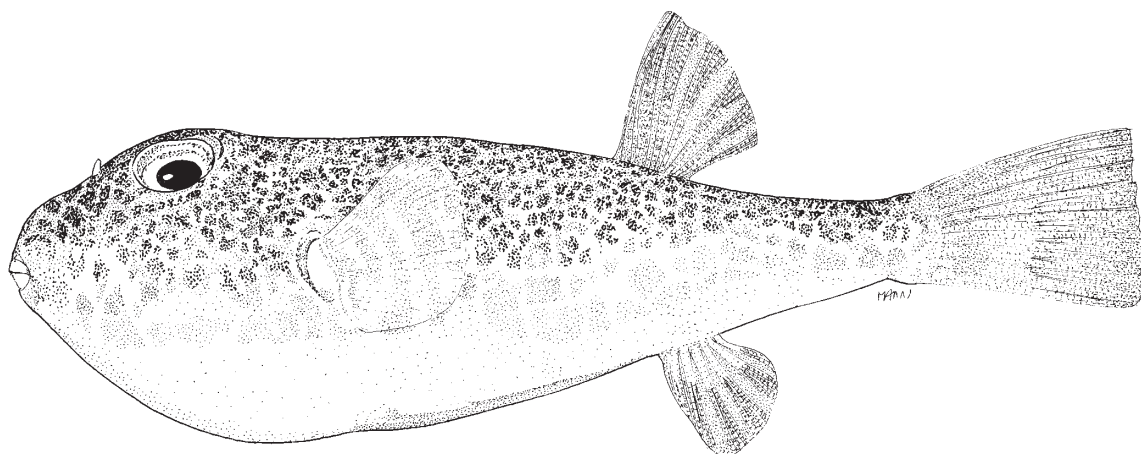
**Diagnostic characters:** A blunt-headed fish with heavy jaws forming a beak of 2 teeth in both upper and lower jaws. Dorsal and anal fins set far back near caudal fin; dorsal fin with 8 soft rays (no spines); anal fin with 7 soft rays (no spines); pectoral fin usually with 16 rays; pelvic fins absent. Prickles present from snout to posterior margin of pectoral fin dorsally, and chin to several millimetres anterior to anus ventrally, but absent laterally. **Lappets absent. Colour:** dorsally and laterally, basal pigmentation light grey or brown, with a few dark, poorly defined blotches; cheeks with uniform basal pigment, without distinct markings; ventral surface unpigmented.

**Size:** Largest known specimen 120 mm.**Habitat, biology, and fisheries:** Known only from 8 specimens taken in about 25 m off Colombia.**Distribution:** Known only from Colombia.**Remarks:** This is the least known and least collected of all WCA tetraodontids. It may be toxic.

***Sphoeroides greeleyi*** Gilbert, 1900

**Frequent synonyms / misidentifications:** *Sphoeroides eulepidotus* (Metzelaar, 1919) / *Sphoeroides testudineus* (Linnaeus, 1758).

**FAO names:** **En** - Green puffer; **Fr** - Compère vert; **Sp** - Corrotucho verde.



**Diagnostic characters:** A blunt-headed fish with heavy jaws forming a beak of 2 teeth in both upper and lower jaws. Dorsal and anal fins set far back near caudal fin; dorsal fin with 8 soft rays (no spines); anal fin with 7 soft rays (no spines); **pectoral fin with 14 or 15 rays**; pelvic fins absent. Prickles present from snout to dorsal fin dorsally, and chin to anus ventrally. **Lappets usually present.** **Colour: dorsally and laterally, basal pigmentation light cream colour, overlaid with dark, richly pigmented chocolate blotches of various sizes and shapes;** ventral surface unpigmented.

**Size:** Common to 100 mm, may reach 150 mm.

**Habitat, biology, and fisheries:** Abundant in very shallow water near mainland coasts of Central and northern South America and adjacent continental islands. Sexually mature by 80 mm. Feeds on slow moving shelled invertebrates. No known fishery exists.

**Distribution:** Belize to Santos, Brazil, and Caribbean islands from Jamaica and Hispaniola southeastward through the lesser Antilles, and possibly also present at the Canary Islands.

**Remarks:** This species strongly resembles the very abundant checkered puffer, *Sphoeroides testudineus*, with which it is frequently taken. It may be toxic.

