

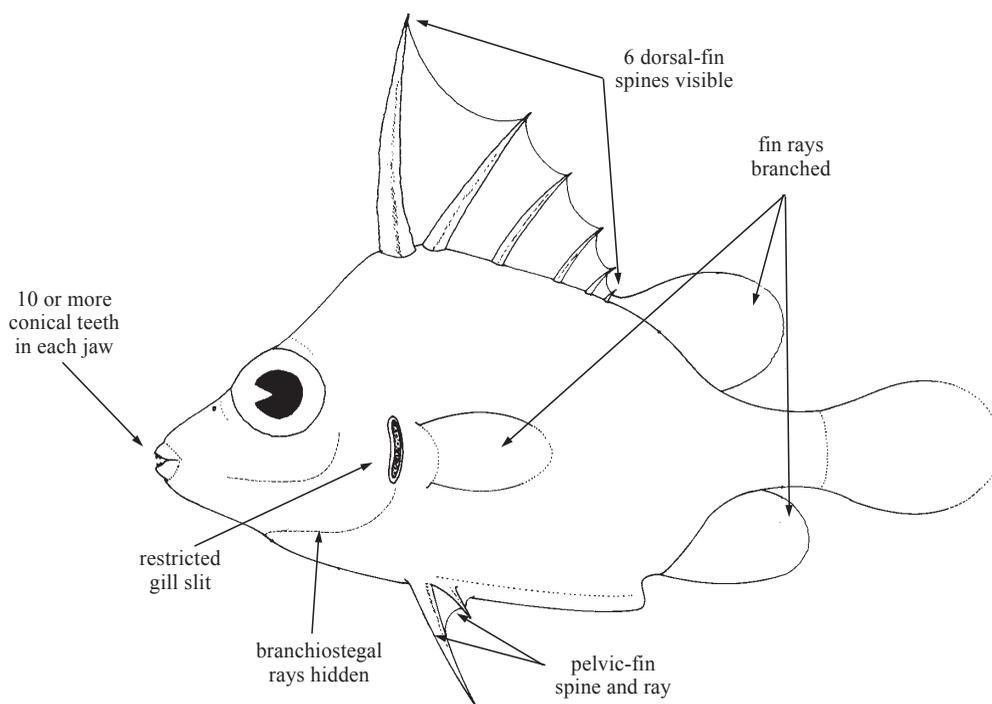
## Order TETRAODONTIFORMES

## TRIACANTHODIDAE

## Spikefishes

by K. Matsuura, National Science Museum, Tokyo, Japan

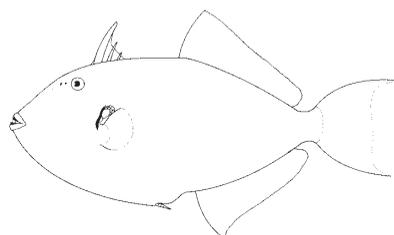
**Diagnostic characters:** Small fishes, never more than 20 cm, with deep, slightly compressed bodies covered by moderately thick skin with numerous small scales not individually distinguishable to the unaided eye, each scale bearing upright spinules and having a roughly shagreen-like appearance. Scales above pectoral-fin base not enlarged or otherwise modified, like scales of rest of the body. Gill opening a relatively short vertical slit in front of pectoral-fin base. Branchiostegal rays hidden beneath skin. Mouth small and usually terminal; teeth moderate, usually conical, 10 or more in an outer series in each jaw. Six dorsal-fin spines, gradually decreasing in length from large first spine to small sixth spine, which may be inconspicuous; the spines capable of being locked in an upright position by downward pressure on their pterygiophore supports, but second spine not directly locking first spine; most dorsal-, anal- and pectoral-fin rays branched; pelvic fins with a large spine and 1 or more relatively inconspicuous and rudimentary rays. Lateral line inconspicuous. **Colour:** generally reddish, often with spots or lines of yellow, blue, green, or darker red.



**Habitat, biology, and fisheries:** Spikefishes are benthic except for one bathypelagic species. They occur on firm open to rocky bottoms, from 35 to about 900 m depth. Their small mouths typically armed with moderate-sized conical teeth are adapted to feeding on bottom invertebrates. Spikefishes are not normally used for food but are sometimes taken as bycatch in commercial bottom trawl catches.

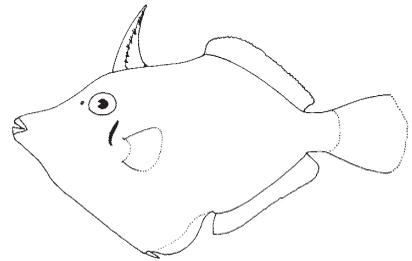
## Similar families occurring in the area

**Balistidae:** only 3 dorsal-fin spines; no large, obvious pelvic-fin spine; teeth larger and more incisor-like, not conical, only 8 in an outer series in each jaw; scales larger, rectilinear, and easily recognized as individual units, without numerous upright spinules and tough but not shagreen-like.



Balistidae

Monacanthidae: only 2 dorsal-fin spines; no large, obvious pelvic-fin spines; body more laterally compressed; teeth larger and more incisor-like, not conical, only 6 or fewer in an outer series in each jaw.



Monacanthidae

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

- 1a. Scale-covered ventral surface of pelvis externally rounded (Fig. 1a, b); pelvis either not tapering or only slightly tapering to posteriorly, usually not much wider anteriorly between the pelvic-fin spines than posteriorly; body with lines, reticulations, blotches or small spots, but never with a large ocellus beneath the soft dorsal-fin base . . . . . → 2
- 1b. Scale-covered ventral surface of pelvis externally flat; pelvis distinctly tapering posteriorly, much wider anteriorly between the pelvic-fin spines than posteriorly (Fig. 1c); body relatively plain, except for a large pale ringed ocellus beneath the soft dorsal-fin base . . . . . *Johnsonina eriomma*

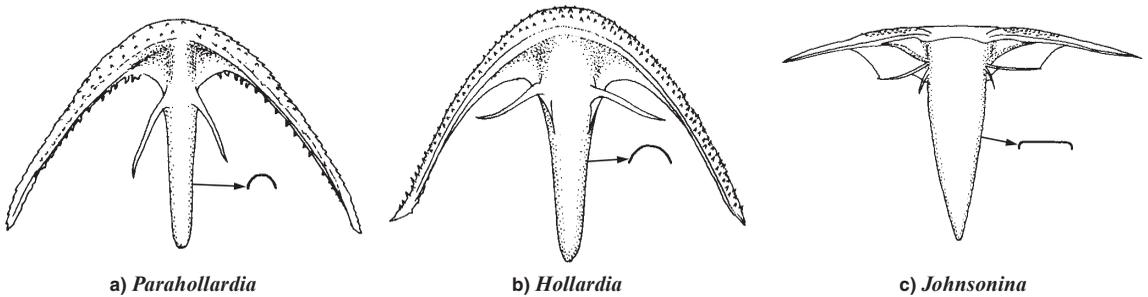


Fig. 1 ventral view of pelvis and pelvic fins

- 2a. One to 10 (usually 2 to 4) teeth internal to the outer series in each jaw (rarely lacking inner teeth in one jaw); origin of spiny dorsal fin usually slightly in front of level of upper edge of gill opening, sometimes over it (Fig. 2a) . . . . . (*Parahollardia*) → 3
- 2b. Teeth in a single series in each jaw, without teeth internal to them; origin of spiny dorsal fin usually slightly to well behind level of upper edge of gill opening, sometimes over it (Fig. 2b) . . . . . (*Hollardia*) → 4

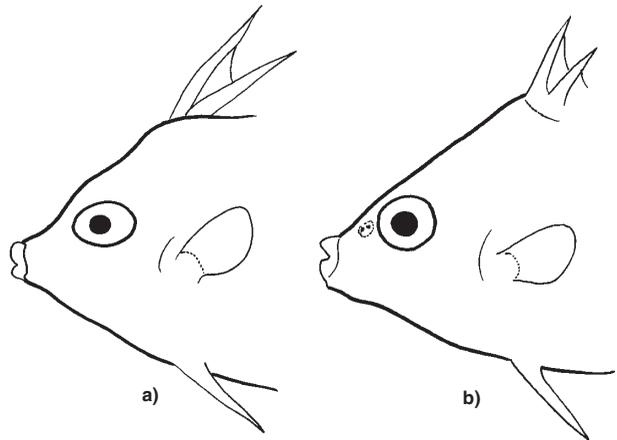
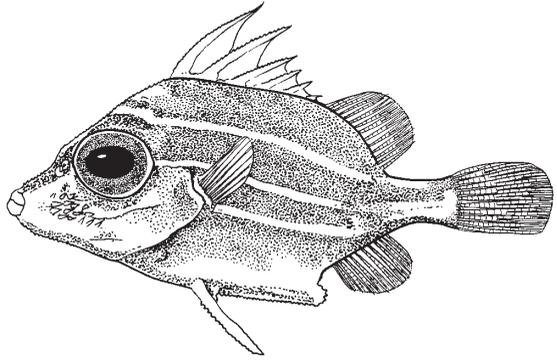


Fig. 2

- 3a. Body with 5 or 6, often more, dark horizontal clearly defined lines (Fig. 3a); interorbital distinctly convex; profile of head relatively steep, about 45° from horizontal axis of body  
 . . . . . *Parahollardia lineata*
- 3b. Body either plain (immatures and females) or with about 4 poorly defined broad dark lines (Fig. 3b), the narrow pale interspaces often prominent (males); interorbital more or less flat; profile of head less steep, about 35° from horizontal axis of body . . . . . *Parahollardia schmidti*



a) *Parahollardia lineata*



b) *Parahollardia schmidti*

Fig. 3

- 4a. Pelvis relatively narrow, its width between the pelvic spines about 6 to 7 times in its length (from region of pelvic spines to posterior end), the bases of the pelvic spines when unerected in close contact . . . . . *Hollardia meadi*
- 4b. Pelvis wider, its width between the pelvic spines about 4 to 5 times in its length (from region of pelvic spines to posterior end), the bases of the pelvic spines well separated from each other when not erected . . . . . *Hollardia hollardi*

**List of species occurring in the area**

- Hollardia hollardi* Poey, 1861. 18 cm. Bermuda through the Caribbean to S Gulf of Mexico.
- Hollardia meadi* Tyler, 1966. 9 cm. The Bahamas, Cuba and Barbados.
- Johnsonina eriomma* Myers, 1934. 16 cm. The Bahamas to the Antilles, W Caribbean.
- Parahollardia lineata* (Longley, 1935). 21 cm. Virginia through Florida to Mexico.
- Parahollardia schmidti* Woods, 1959. 10 cm. W Caribbean.

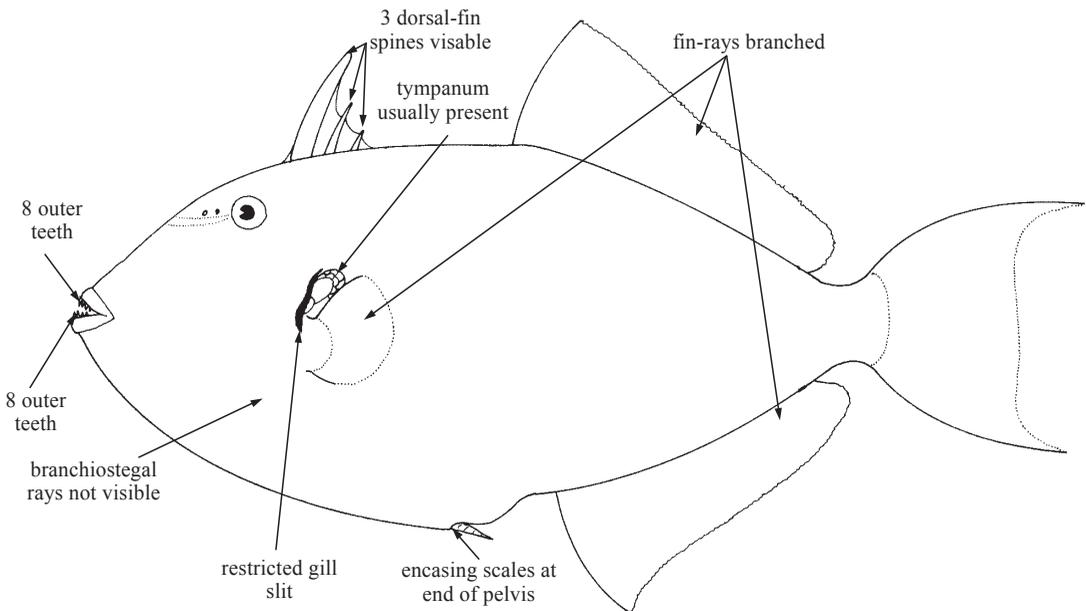
**Reference**

Tyler, J.C. 1968. A monograph on plectognath fishes of the superfamily Triacanthoidea. *Acad. Nat. Sci. Philad.*, Monograph 16, 364 p.

**BALISTIDAE****Triggerfishes (durgons)**

by K. Matsuura, National Science Museum, Tokyo, Japan

**Diagnostic characters:** Small or medium-sized fishes, usually less than 40 cm, with deep, moderately compressed bodies encased with very thick tough skin with large rectilinear scale plates easily discernible as individual units; scales above pectoral-fin base usually enlarged and slightly separated, forming a flexible tympanum. **Gill opening a relatively short vertical to oblique slit in front of pectoral-fin base; branchiostegal rays hidden beneath the skin; mouth small and usually more or less terminal; teeth heavy, 8 in an outer series in the upper jaw and 8 in the lower jaw. Three dorsal-fin spines, second spine more than 1/2 the length of first; first spine capable of being locked in an upright position of erection by second; most dorsal-, anal- and pectoral-fin rays branched; pelvic fins and spines rudimentary or absent, represented by a series of 4 pairs of enlarged scales encasing the end of pelvis.** Lateral line inconspicuous. **Colour:** variable, sometimes black or drab brown, grey or greenish, but often with strikingly marked and vivid patterns.

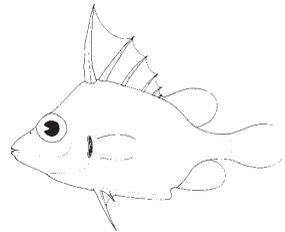


**Habitat, biology, and fisheries:** Most triggerfishes are solitary, ranging in depth down to about 90 m, with some species being found primarily in pelagic open water and others primarily benthic around rocky and coral reefs. They feed on bottom invertebrates, often hard-shelled, or on zooplankton, with their small mouths typically armed with large and relatively heavy incisor-like teeth. Highly valued as food in many Caribbean hand-line fisheries, although sometimes collected as bycatch in commercial bottom trawls; on rare occasions the flesh has been considered toxic. In the past 6 years landings for Balistidae reached a peak in 1994 at 1 569 t and steadily declined in 1999 to 496 t.

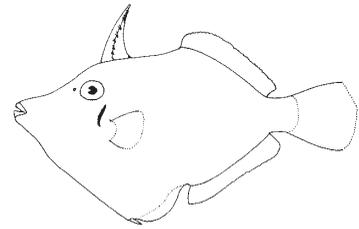
**Remarks:** The Monacanthidae are sometimes included within the Balistidae.

**Similar families occurring in the area**

**Triacanthodidae:** 6 dorsal-fin spines, at least 5 of which are readily visible; a large pair of pelvic-fin spines present; teeth smaller and more conical, usually more than 8 in the outer series in each jaw; scales smaller and shagreen-like, with upright spinules projecting from the basal plates.

**Triacanthodidae**

Monacanthidae: 2 dorsal-fin spines, only the first of which is especially large and prominent; body more laterally compressed; fewer and less massive teeth in jaws; scales shagreen-like, with the individual basal plates small and not readily distinguishable from one another to the unaided eye.



Monacanthidae

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

- 1a. Scales above pectoral-fin base and just behind gill slit much enlarged and partially separate, forming a flexible tympanum (Fig. 1) . . . . . → 2
- 1b. Scales above pectoral-fin base and just behind gill slit not enlarged and not especially well separated, not forming a flexible tympanum . . . . . → 3

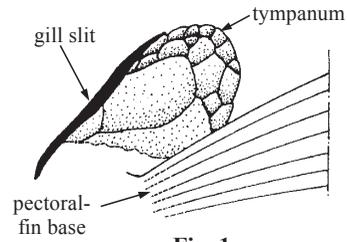


Fig. 1

- 2a. Teeth notched, uneven, of distinctly increasing length toward the middle teeth (Fig. 2a); scales of posterior body without keels forming longitudinal ridges; body greyish to bluish green, but never distinctly black, and no pale stripe along the bases of the soft dorsal and anal fins . . . . . (*Balistes*) → 4

- 2b. Teeth not notched, at least in larger juveniles and adults, with relatively even distal edges, not of distinctly increasing length toward the middle teeth (Fig. 2b); scales of posterior body with keels at the centre forming longitudinal ridges; body blackish with a pale bluish stripe along the bases of the soft dorsal and anal fins. . . . . *Melichthys niger*

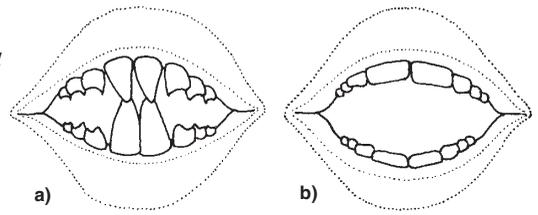


Fig. 2

- 3a. Cheek with about 3 prominent naked longitudinal grooves, darker in colour than the surrounding skin; mouth slightly but distinctly supraterminal (Fig. 3a) . . . . . *Xanthichthys ringens*
- 3b. Cheek evenly scaled, without prominent naked longitudinal grooves; mouth terminal (Fig. 3b) . . . . . (*Canthidermis*) → 5

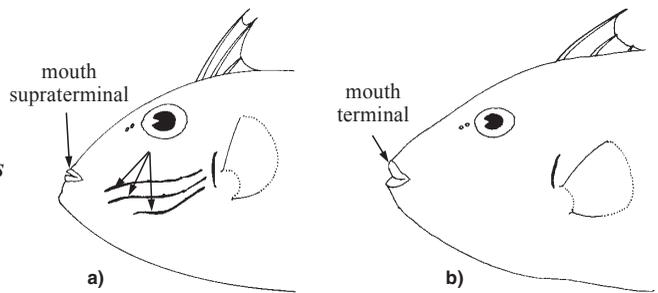


Fig. 3

- 4a. No conspicuous blue or dark lines or bands on head; dorsal-fin rays 26 to 29 (usually 27 or 28); anal-fin rays 23 to 26 (usually 24 or 25) . . . . . *Balistes capriscus*
- 4b. Two curved, conspicuous blue lines on cheek from above mouth to below the region in front of pectoral-fin base (Fig. 4); dorsal-fin rays 29 to 31 (usually 30); anal-fin rays 27 or 28 . . . . . *Balistes vetula*
- 5a. Dorsal-fin rays 23 to 25; anal-fin rays 20 to 22; pectoral-fin rays 13 to 15; body depth 36 to 45% standard length in specimens larger than 15 cm standard length (Fig. 5) . . . . . *Canthidermis maculata*
- 5b. Dorsal-fin rays 25 to 28 (usually 26 or 27); anal-fin rays 23 to 25; pectoral-fin rays 15 or 16; body depth 47 to 63% standard length in specimens larger than 15 cm standard length (Fig. 6) . . . . . *Canthidermis sufflamen*

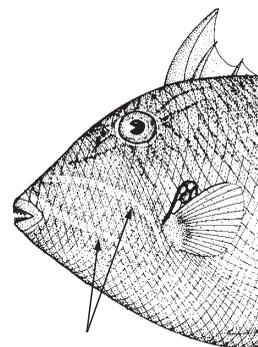


Fig. 4 *Balistes vetula*

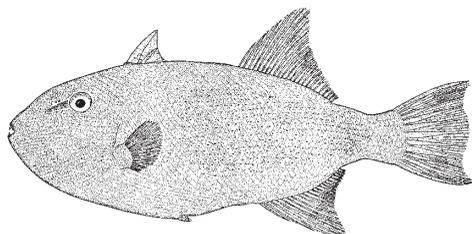


Fig. 5 *Canthidermis maculata*

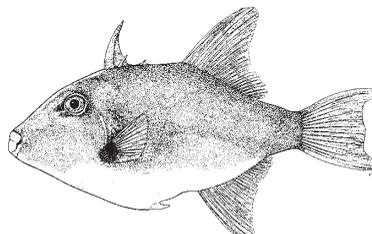


Fig. 6 *Canthidermis sufflamen*

**List of species occurring in the area**

The symbol  is given when species accounts are included.

-  *Balistes capriscus* Gmelin, 1789.
-  *Balistes vetula* Linnaeus, 1758.
-  *Canthidermis maculata* (Bloch, 1786).
-  *Canthidermis sufflamen* (Mitchill, 1815).
-  *Melichthys niger* (Bloch, 1786).
-  *Xanthichthys ringens* (Linnaeus, 1758).

**References**

Moore, D. 1967. Triggerfishes (Balistidae) of the western Atlantic. *Bull. Mar. Sci.*, 17:689-722.

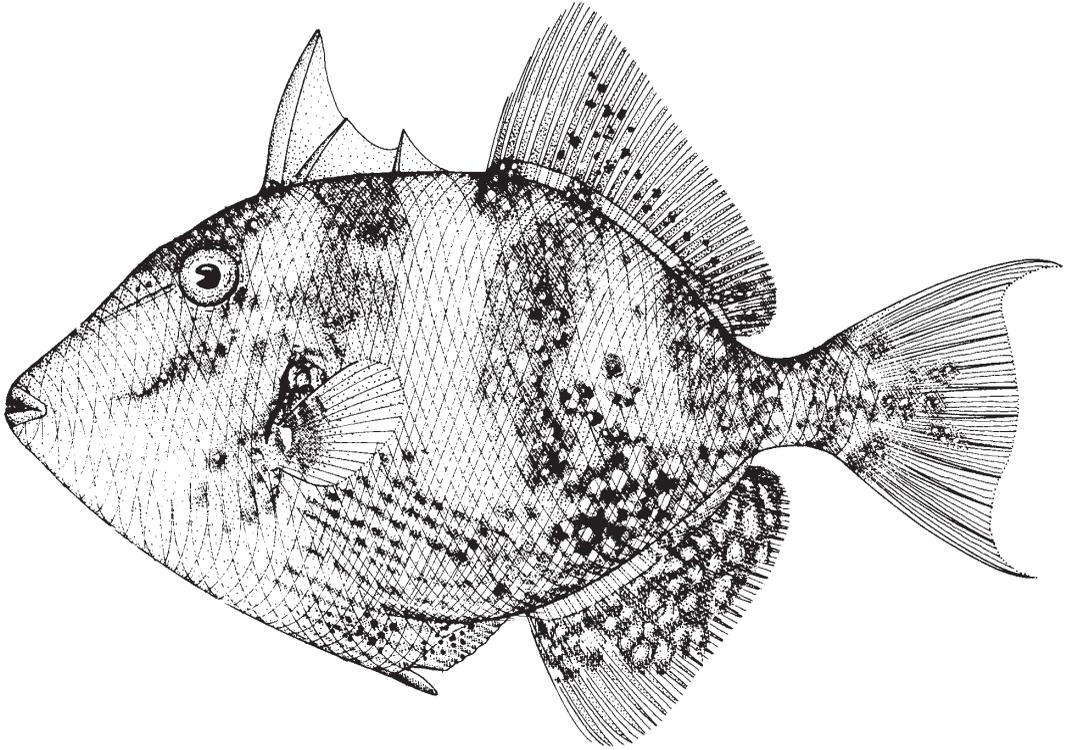
Randall, J. E. and W. Klausewitz. 1973. A review of the triggerfish genus *Melichthys*, with description of a new species from the Indian Ocean. *Senckenberg. Biol.*, 54(1/3):57-69.

Randall, J. E., K. Matsuura and A. Zama. 1978. A review of the triggerfish genus *Xanthichthys*, with description of a new species. *Bull. Mar. Sci.*, 28(4):688-706.

***Balistes capriscus* Gmelin, 1789**

**Frequent synonyms / misidentifications:** *Balistes carolinensis* Gmelin, 1789 / None.

**FAO names:** En - Grey triggerfish; Fr - Baliste cabri; Sp - Pejepuerco blanco.

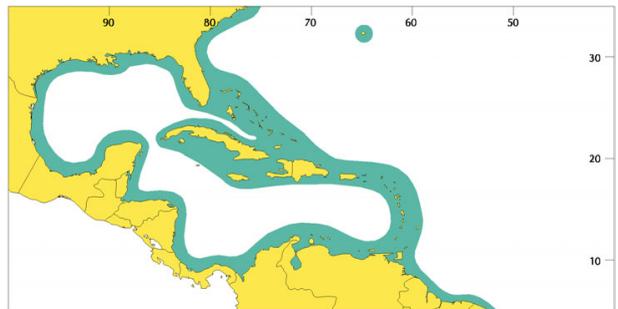


**Diagnostic characters:** Mouth terminal; **teeth notched**. A small groove in the skin from in front of eye to below low nasal apparatus. Dorsal fin with 3 spines and 27 to 29 soft rays. Anal fin with 23 to 26 soft rays. Caudal-fin rays slightly prolonged above and below. **Scales enlarged above pectoral-fin base and just behind gill slit to form a flexible tympanum; scales of body without prominent keels** not forming longitudinal ridges. **Colour:** generally greyish with green overtones and about 3 darker blotches or irregular bars across the back; chin lighter; small bluish to purplish spots on upper body, with lighter spots on lower body, sometimes larger and forming short irregular lines; soft dorsal and anal fins with spots, tending to form rows.

**Size:** Maximum to about 30 cm; commonly to 20 cm.

**Habitat, biology, and fisheries:** Found in shallow water down to about 50 m depth. Nothing definite is known about the areas occupied by this species, but like *B. vetula*, it seems to occur in coral reef environments including shallow sandy or grassy areas as well as rocky bottoms. Feeds on bottom-living invertebrates. Caught incidentally throughout its range, but apparently not very abundant. Taken in bottom trawls, in traps, and on handlines. The flesh is of excellent quality. Consumed mostly fresh. Separate statistics are not reported for this species.

**Distribution:** Both sides of the tropical and temperate Atlantic, from Nova Scotia to Argentina, including the Caribbean (rare) and Gulf of Mexico, and from England and Europe to Africa.

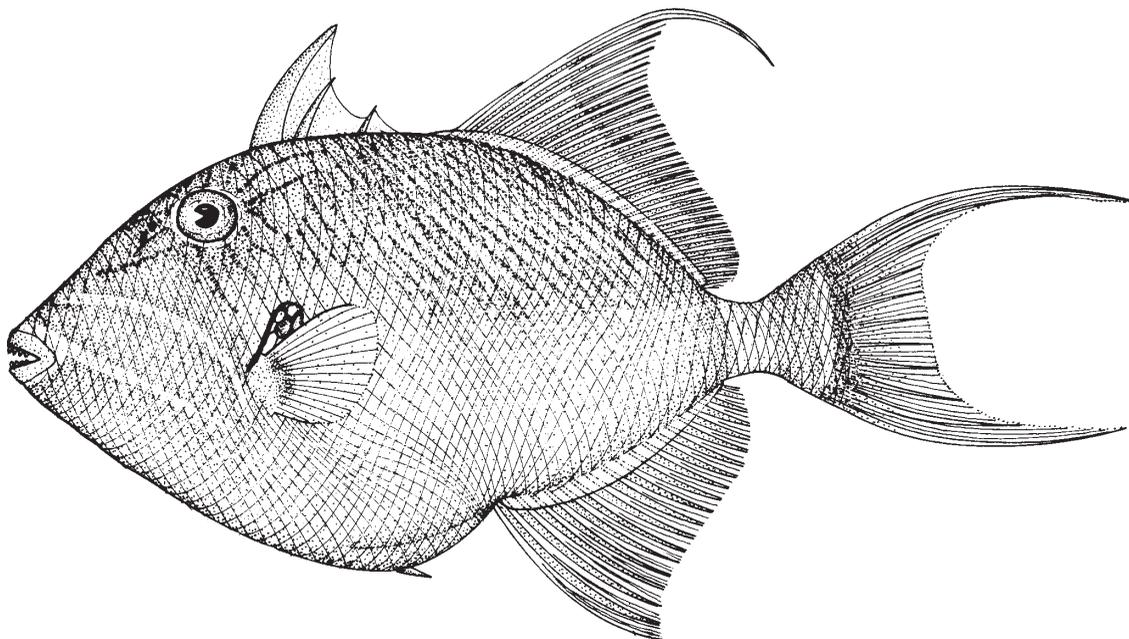


*Balistes vetula* Linnaeus, 1758

BLV

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

**FAO names:** **En** - Queen triggerfish; **Fr** - Baliste royale; **Sp** - Pejepuerco cachuo.

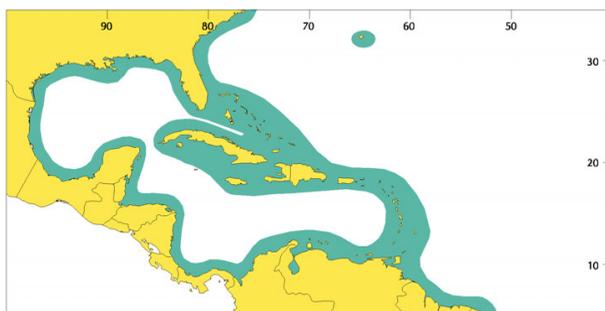


**Diagnostic characters:** Mouth terminal; **teeth notched**. A small groove in the skin from in front of eye to below low nasal apparatus. Dorsal fin with 3 spines and 29 to 31 (usually 30) soft rays. Anal fin with 26 to 28 soft rays. Caudal-fin rays of adults greatly prolonged above and below. **Scales enlarged above pectoral-fin base and just behind gill slit to form a flexible tympanum; scales of body without prominent keels**, not forming longitudinal ridges. **Colour:** generally yellowish grey to bluish green, or brownish, with lower regions more yellowish orange; bluish lines outlined with yellow radiating from eyes; a wide bluish band around caudal peduncle; 2 obliquely curved bright blue bands from above mouth to below and in front of pectoral-fin base.

**Size:** Maximum to about 50 cm; commonly to 30 cm.

**Habitat, biology, and fisheries:** Adults are found near the bottom on most coral reef environments ranging from shallow sandy or grassy areas to the upper slope of the reef (to about 100 m depth). Feeds mainly on bottom-living invertebrates with a strong preference for echinoids, especially *Diadema antillarum*. Caught with lines, traps and bottom trawls. Marketed mostly fresh. An excellent foodfish, but occasionally reported to have caused slight intoxication. Separate statistics are not reported for this species.

**Distribution:** Both sides of the tropical and temperate Atlantic, from Massachusetts to Brazil, including the Caribbean (common on reefs) and Gulf of Mexico, and from England and Europe to Africa.

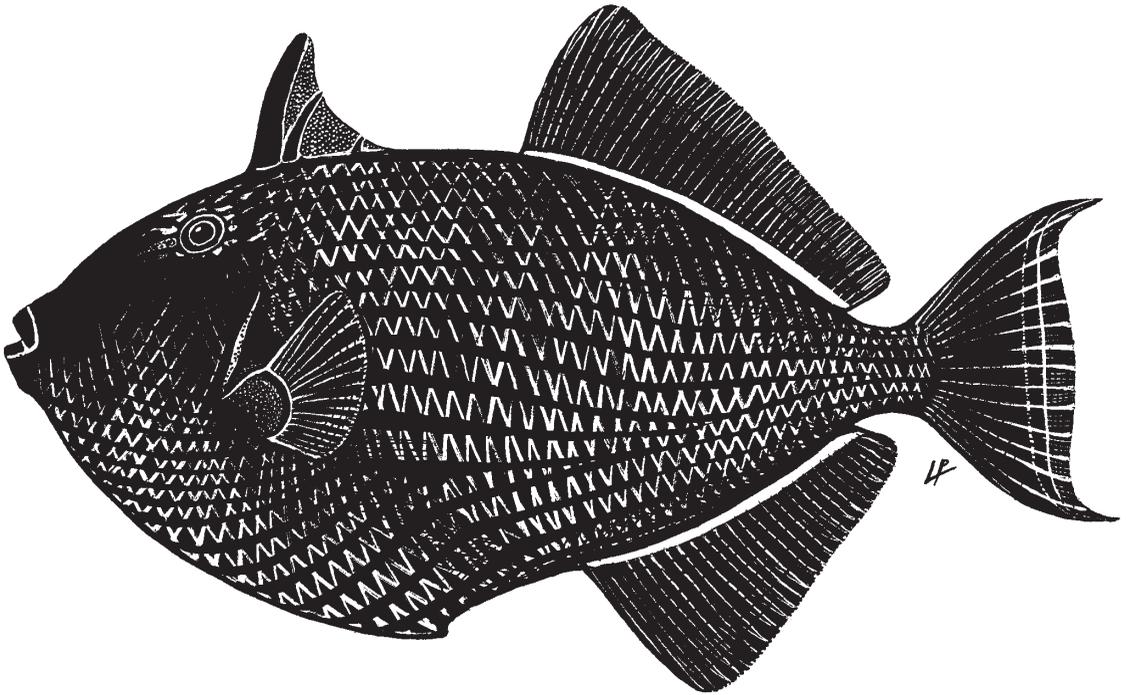


*Melichthys niger* (Bloch, 1786)

MEN

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

**FAO names:** En - Black triggerfish (AFS: Black durgon); Fr - Baliste noir; Sp - Calafate negro.

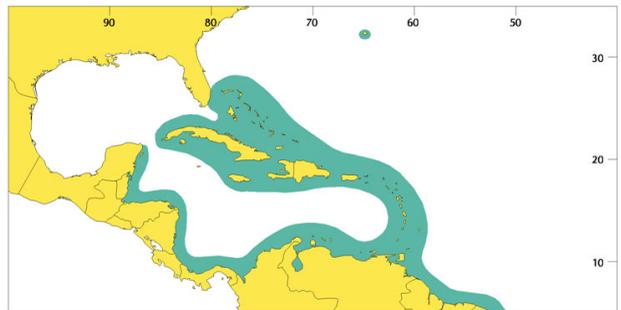


**Diagnostic characters:** Mouth terminal or only very slightly supraterminal; **teeth with relatively even, straight edges, not notched**, except in young juveniles in which notches are not yet worn down. A small groove in the skin from in front of eye to below low nasal apparatus. Dorsal fin with 3 spines and 32 to 34 soft rays; only first 2 dorsal-fin spines readily apparent, third spine smaller and scarcely protruding above dorsal profile when fin is erected. Anal fin with 28 to 31 soft rays. Caudal-fin rays slightly prolonged above and below. **Scales enlarged above the pectoral-fin base and just behind gill slit to form a flexible tympanum; scales of posterior body with prominent keels**, forming longitudinal ridges. **Colour:** generally black with greenish overtones; pale blue bands along bases of soft dorsal and anal fins; ephemeral orangish red overcasting tending to outline scale plates, especially on head in a rhombical pattern.

**Size:** Maximum to about 50 cm; commonly to 30 cm.

**Habitat, biology, and fisheries:** Found in shallow water and coral outer reefs down to about 30 m. Feeds on a great variety of plants and (mainly large planktonic) invertebrates, but seems to favour plants, grazing off the substrate and nibbling at the surface. Caught in traps, bottom trawls and on lines. Caught throughout its range, but especially on oceanic islands where it may be locally abundant. Consumed mostly fresh. A good foodfish. Separate statistics are not reported for this species.

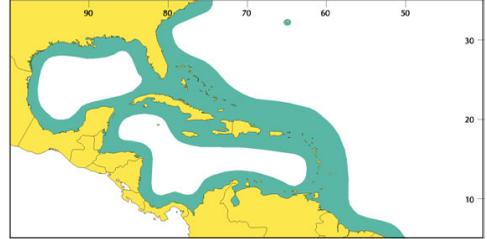
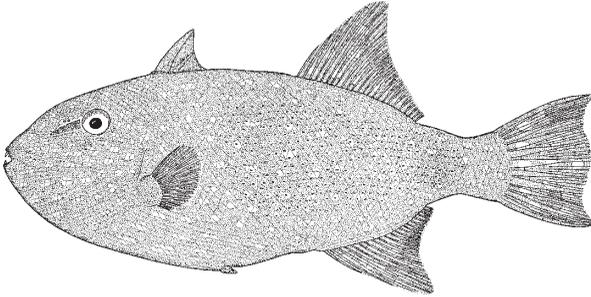
**Distribution:** Both sides of the tropical Atlantic; in the western Atlantic, from south Florida and the Bahamas to Brazil, including the Caribbean and Bermuda, but absent from the Gulf of Mexico; most often found in insular regions and outer reef areas.



***Canthidermis maculata*** (Bloch, 1786)

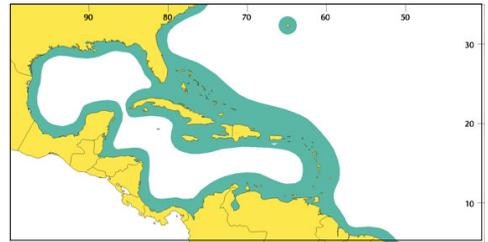
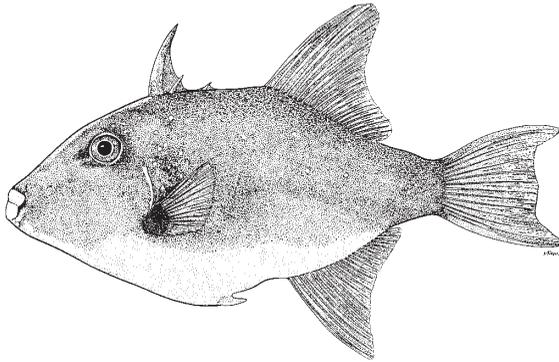
**En** - Spotted oceanic triggerfish (AFS: Rough triggerfish); **Fr** - Baliste rude; **Sp** - Calafate áspero.

Maximum size to 50 cm; commonly to 40 cm. Epipelagic, often associated with drifting objects. Marketed fresh; taken by longlines. Circumglobal, temperate and tropical seas.

***Canthidermis sufflamen*** (Mitchill, 1815)

**En** - Ocean triggerfish; **Sp** - Lija (Cuba), Puerco (Dom. Rep.).

Maximum size to 55 cm; commonly to 45 cm. Occur usually around offshore reefs in clear water near drop-offs to deep water. Marketed fresh; taken by longlines. Bermuda and Massachusetts to Caribbean Sea.

***Xanthichthys ringens*** (Linnaeus, 1758)

**En** - Sargassum triggerfish; **Sp** - Cocuyo or para (Cuba), Varraco or peje puerco (Dom. Rep.).

Maximum size to 24 cm. Usually found around reefs in depths from 30 to 60 m. Feeds mainly on zooplankton. Not marketed. Bermuda and South Carolina to Caribbean Sea.

