DIOD

1983

FAO SPECIES IDENTIFICATION SHEETS

FISHING AREA 51
(W. Indian Ocean)

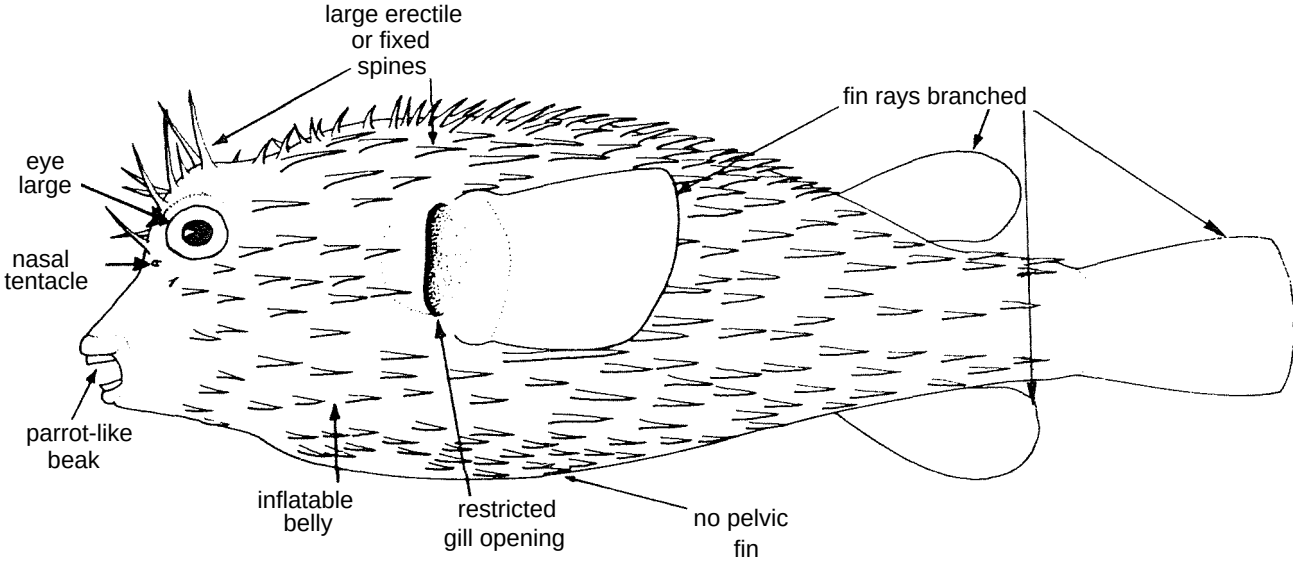
DIODONTIDAE

Porcupinefishes, spiny puffers, burrfishes, balloonfishes

Small to medium-sized fishes, to 1 m in length. Body wide and capable of great inflation, covered with spines which may be quite long; the spines have large bases, or roots, under the skin; long spines are usually erectile and are two-rooted, while short spines are fixed in an erect position by their three-rooted bases. Head broad and blunt; gill opening a relatively small vertical slit immediately before the pectoral fin base; nasal organ usually in small tentacles located in front of the large eyes; mouth large, wide and terminal, the teeth fused to form a beak-like crushing structure without a median suture dividing the upper and lower jaws into left and right halves. Dorsal and anal fins without spines, set far back on the body, and, like the caudal fin, generally rounded; most fin rays branched; bases of the fins often thick and fleshy; no pelvic fins. Lateral line inconspicuous. No normal scales.

Colour: background colour light tan to brown, but grey is not uncommon; usually overlain with dark brown to black spots, bars and/or blotches; green overtones and yellowish spots may also be present. Undamaged spines covered with skin which continues the colour pattern. Belly white, often with yellow overtones. A pelagic species is deep blue dorsally, and juveniles of species which pass through a pelagic phase may also be blue.

Most species are benthic around coral or rocky reefs, but some frequent sand or mud bottoms in deeper water (100 m), and one species plus the juveniles of others are pelagic. They feed on hard-shelled benthic invertebrates which are crushed with the powerful jaws. They inflate when disturbed and present a potential predator with a large, very spiny ball. Most or all spawn pelagic eggs and pass through a pelagic juvenile phase. Not known to school. Not normally eaten except perhaps as fish meal, but often collected as bycatch in bottom trawls. Sometimes inflated and dried to be sold as curios. Thought to be poisonous, but some species are eaten in the Pacific without ill effects.



SIMILAR FAMILIES OCCURRING IN THE AREA:

No other family has the following combination of characters: large body spines; no pelvic fins; capability of inflating the body; and teeth fused into a single beak-like unit in each jaw, without a median suture dividing upper and lower jaws into right and left halves.

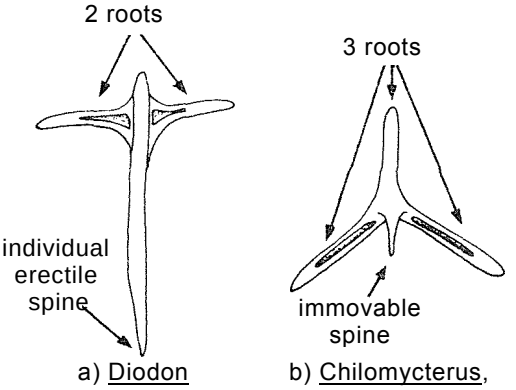
KEY TO GENERA AND SPECIES OCCURRING IN THE AREA:

1a. All spines two-rooted*, long and erectile (Fig. 1a), except for a few around gill openings, dorsal fin base and on caudal peduncle ..... Diodon

2a. None of the spines wholly on caudal peduncle (Fig. 2a); body with several large dark dorsal blotches; no small dark spots on fins (Figs 3, 4)

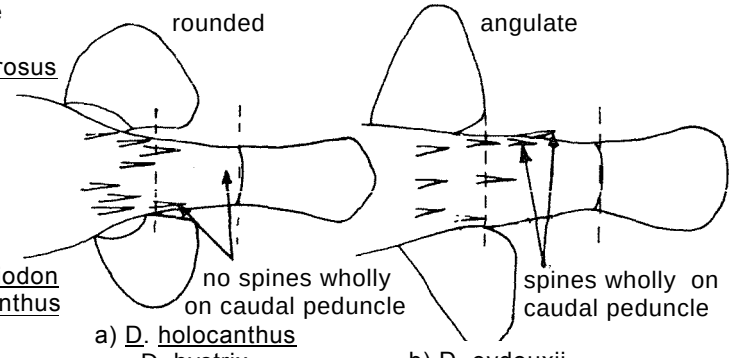
3a. Frontal spines much shorter than spines immediately behind pectoral fin base; a small downward-pointing spine below anterior margin of eye; large dorsal blotches with a distinct light border (Fig. 3) ..... Diodon liturosus

3b. Frontal spines slightly shorter to much longer than spines immediately behind the pectoral fin base; no small downward-pointing spine below anterior margin of eye; dorsal blotches without distinct light border (Fig. 4) ..... Diodon holocanthus



a) Diodon b) Chilomycterus, Lophodiodon

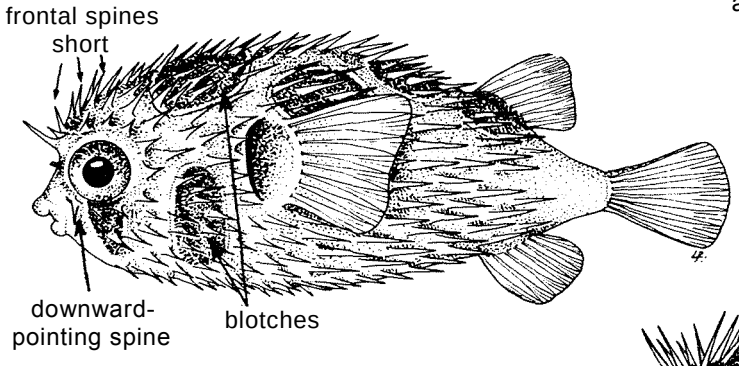
Fig.1



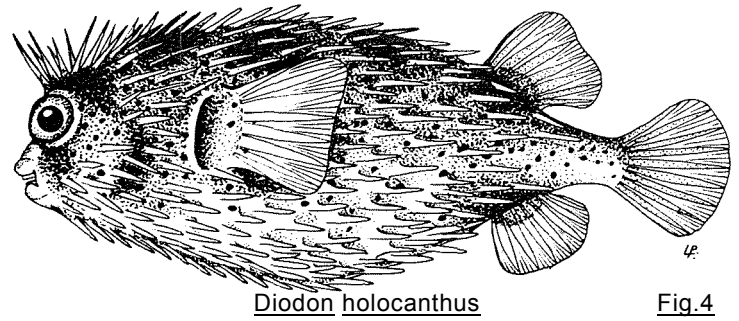
a) D. holocanthus D. hystrix b) D. eydouxii

posterior part of body (lateral view)

Fig. 2



D. liturosus Fig.3

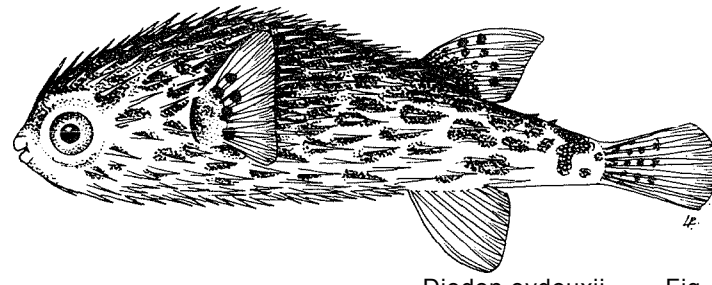


Diodon holocanthus Fig.4

*There may be a short anterior extention of the spine shaft which resembles a short, third root (Fig. 1)

2b. One or more small spines wholly on the dorsal surface of caudal peduncle (Fig. 2b); body without large dorsal blotches; all fins heavily spotted (Figs 5,6)

4a. Pectoral fin rays 19 to 22; dorsal and anal fins somewhat angulate in adults (Fig. 2b); body relatively slender, width of head less than 30% standard length (Fig. 5); a wholly pelagic species coloured dark blue ..... Diodon eydouxii

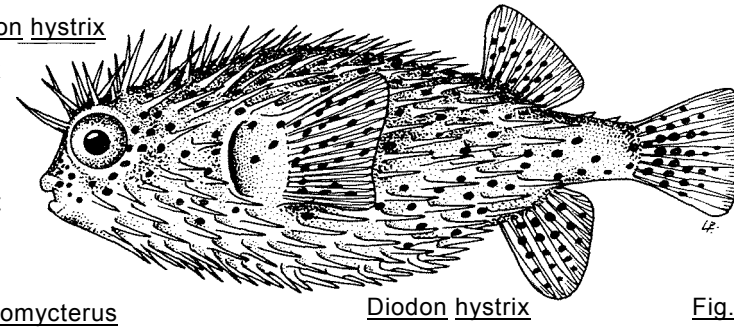


Diodon eydouxii Fig. 5

4b. Pectoral fin rays 22 to 25; dorsal and anal fins rounded (Fig. 2a); body relatively robust, width of head more than 30% of standard length (Fig. 6); juveniles (to 20 cm) pelagic, adults demersal and coloured tan to brown ..... Diodon hystrix

1b. At least the spines on the sides and back posterior to the pectoral fin three-rooted and fixed in an erect position (Fig. 1b)

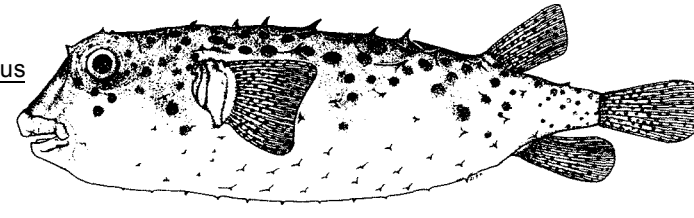
5a. All spines three- or four-rooted and fixed (except possibly one or two immediately behind the pectoral fin base or near the corner of the mouth) ..... Chilomycterus



Diodon hystrix Fig. 6

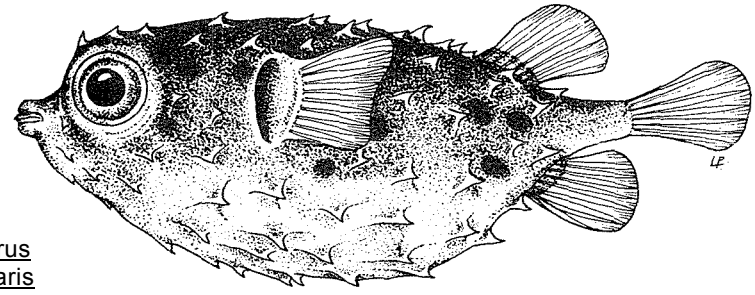
6a. One or more spines on dorsal surface of caudal peduncle; spines short, often reduced to only the subdermal bases; caudal fin normally with 10 rays; fish larger than 10 cm with black spots on fins (Fig. 7).....Chilomycterus reticulatus

6b. No spines wholly on caudal peduncle; spines short to long; caudal fin normally with 9 rays; no black spots on fins (Figs 8, 9)



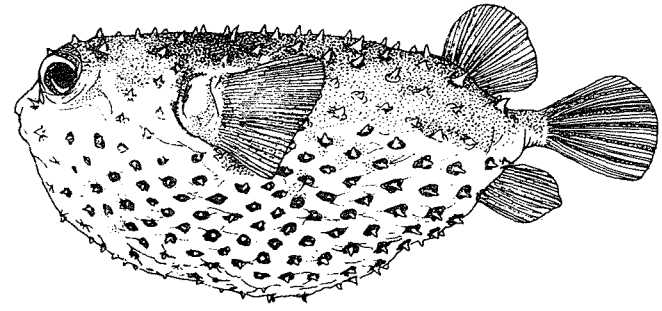
Chilomycterus reticulatus Fig.7

7a. Spines few, 4 dorsally between pectoral fin bases, 8 or 9 anterior to dorsal fin base; a short, moveable spine near the corner of the mouth (Fig. 8); all spines on top of head with 3 bases .. Chilomycterus orbicularis



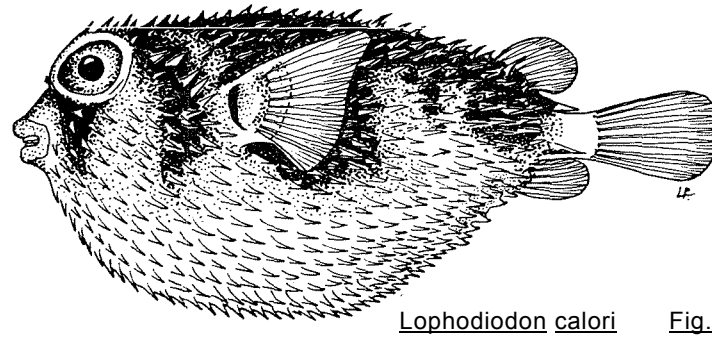
Chilomycterus orbicularis Fig. 8

7b. Spines more numerous, 5 or 6 dorsally between pectoral fin bases, 11 or 12 anterior to dorsal fin base; no moveable spines; some spines on top of head with 4 bases (Fig. 9) .. Chilomycterus spilostylus



Chilomycterus spilostylus Fig.9

5b. Spines on head and perhaps belly two-rooted and erectile, others three-rooted and fixed (Fig. 10) ... Lophodiodon calori



Lophodiodon calori Fig.10

LIST OF SPECIES OCCURRING IN THE AREA*:

Code numbers are given for those species for which Identification Sheets are included

Chilomycterus reticulatus (Linnaeus, 1758)
Chilomycterus orbicularis (Bloch, 1785) DIOD Chilo 1
Chilomycterus spilostylus Leis & Randall, 1982

Diodon eydouxii Brissout de Barneville, 1846
Diodon holocanthus Linnaeus,1758
Diodon hystrix Linnaeus, 1758 DIOD Diod 1
Diodon liturosus Shaw, 1804

Lophodiodon calori (Bianconi, 1850)

Prepared by J.M. Leis, The Australian Museum, Sydney, Australia

* This family is under study and nomenclatorial changes will be made, but it is unlikely additional species will be recorded in the area

DIOD Chilo 1

1983

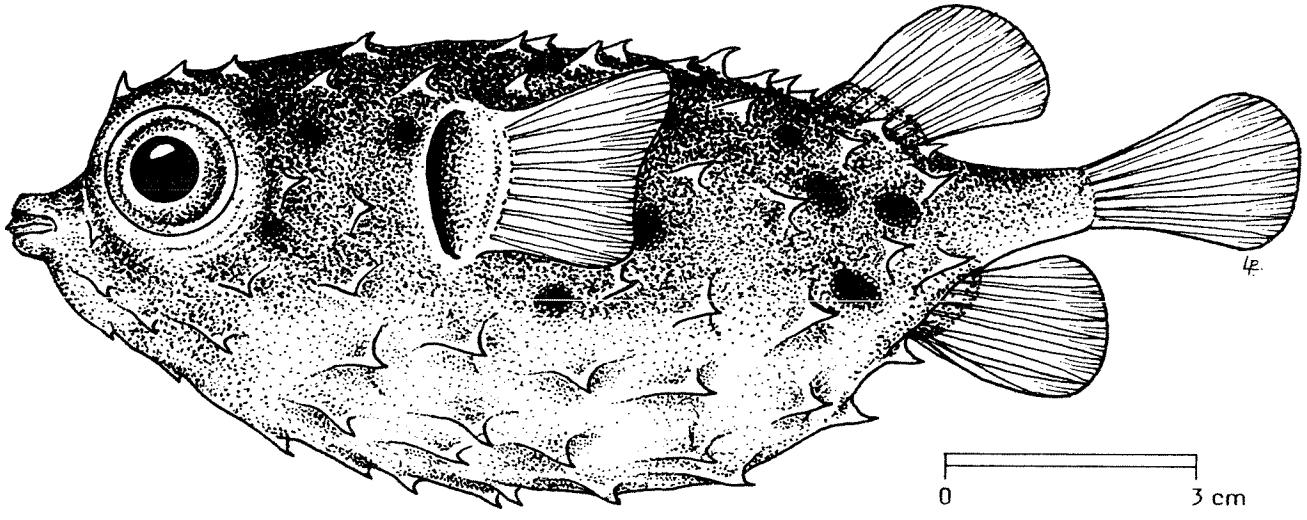
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: DIODONTIDAE

FISHING AREA 51
(W. Indian Ocean)

Chilomycterus orbicularis (Bloch, 1785)

OTHER SCIENTIFIC NAMES STILL IN USE: Cyclichthys orbicularis Smith, 1948
Atinga orbicularis coeruleus De Danois, 1959



VERNACULAR NAMES:

FAO : En - Birdbeak burrfish
Fr - Porc-épic bécard
Sp - Puercoespin pajarito

NATIONAL:

DISTINCTIVE CHARACTERS:

Body rotund and capable of inflation, bearing massive but relatively short, immovable, 3-rooted spines; medial spine on forehead even with nasal organs and anterior edge of eye; none of the spines wholly on caudal peduncle; a short movable spine near the corner of the mouth; a second, possibly movable, and somewhat elongate spine immediately behind pectoral fin bases. Nasal organ a short hollow tube with two openings near tip, distance between nasal organs less than one eye diameter; teeth relatively thin and fused to form a beak-like crushing structure without median suture dividing upper and lower jaws into right and left halves. All fins spineless; dorsal and anal fins rounded and set far back on body; pelvic fins absent. No fleshy tentacles.

Colour: back brown to grey, fading to white on belly. Clusters of pupil to eye-size black spots on back over pectoral fin base, on mid-back, and in front of dorsal fin; on sides behind eyes, at margins of pectoral fins, and forward of dorsal fin base; spots of clusters occasionally merged to form blotches. Faint thin cross bars present, but no dark spots on fins. A light area often surrounds the spine bases on back and sides.

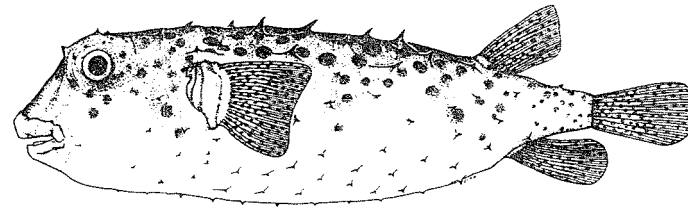
DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Chilomycterus reticulatus: many spines on head with 4 roots (3 roots in C. orbicularis); 1 or 2 small spines on top of caudal peduncle; no movable spines; caudal fin with 10 rays (9 in C. orbicularis); nasal organ a flat, ridged plate (adults only); body and fins covered with small, black spots; teeth thick; size to about 60 cm.

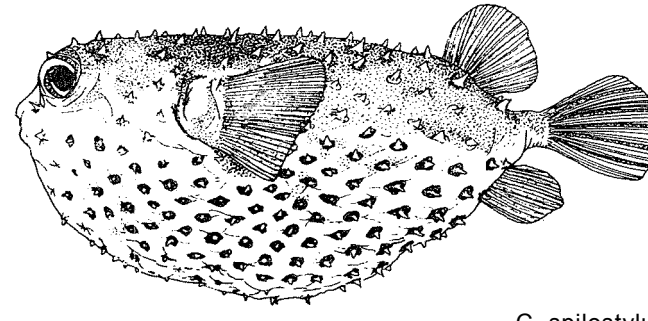
Chilomycterus spilostylus: many spines on head with 4 roots; no movable spines; nasal organs separated by more than 1 eye diameter; teeth thick; body with many small unclustered black spots; size to about 30 cm.

Diodon species: all spines long, thin, capable of erection, with only 2 roots.

Lophodiodon calori: most spines on head and belly thin, capable of erection, with only 2 roots.



C. reticulatus



C. spilostylus

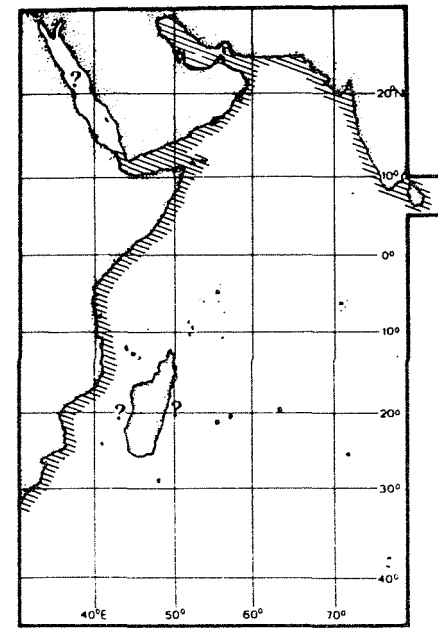
SIZE :

Maximum: about 15

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR :

Present throughout the area, except possibly in the Red Sea; but not known from oceanic islands. Elsewhere, in the Eastern Indian Ocean and Western Pacific extending northward to southern Japan.

Found in moderate depths (to at least 170 m), apparently mostly over sand and mud bottoms; occasionally at the surface over deeper water.



PRESENT FISHING GROUNDS :

Taken incidentally throughout its range.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION :

Separate statistics are not reported for this species.

Caught mainly with bottom trawls.

Probably seldom consumed. Other members of the family are considered poisonous. No information available on this species.

DIOD Diod 1

1983

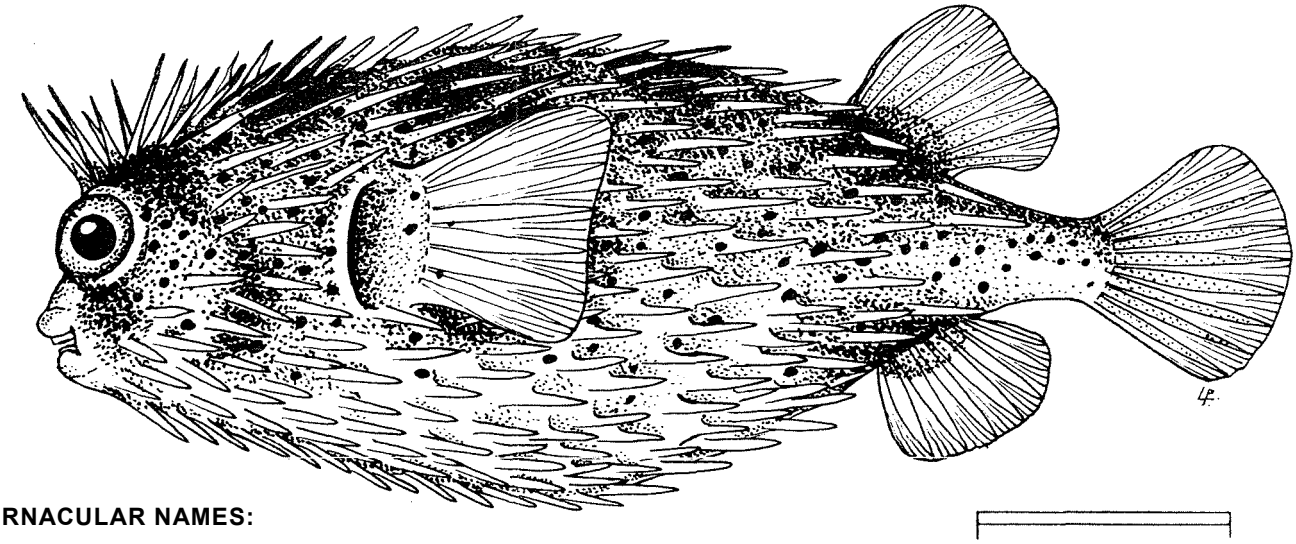
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: DIODONTIDAE

FISHING AREA 51
(W. Indian Ocean)

Diodon holocanthus Linnaeus, 1758

OTHER SCIENTIFIC NAMES STILL IN USE: Diodon paraholocanthus Kotthaus, 1979
Diodon maculifer Kaup, 1855



0 5 cm

VERNACULAR NAMES:

FAO : En - Balloonfish
Fr - Porc-épic ballon
Sp - Pejerizo balón

NATIONAL:

DISTINCTIVE CHARACTERS:

Body rotund and capable of inflation, bearing long erectile two-rooted spines; none of the spines wholly on caudal peduncle; frontal spines very long, slightly shorter to much longer than the spines immediately behind pectoral fin bases; no small downward-pointing spine below anterior margin of eye. Nasal organ a short hollow tube with two openings near tip; teeth thick and strong, fused to form a beak-like crushing structure without median suture dividing upper and lower jaws into right and left halves. All fins spineless; dorsal and anal fins rounded and set far back on body; pelvic fins absent. Short fleshy tentacles often present over eyes, on mid-back, and along lower side. A pair of short barbels on chin.

Colour: back brown to grey fading to white on belly. Six large dark blotches on back and head; many small black spots scattered on back and sides. No spots on fins.

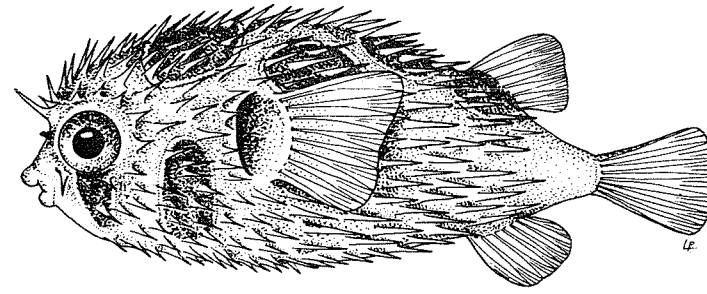
DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA :

Diodon liturosus: frontal spines much shorter than spines immediately behind pectoral fin base; a small downward-pointing spine below anterior border of eye; usually a dark band from eyes and along lower jaw (absent in D. holocanthus).

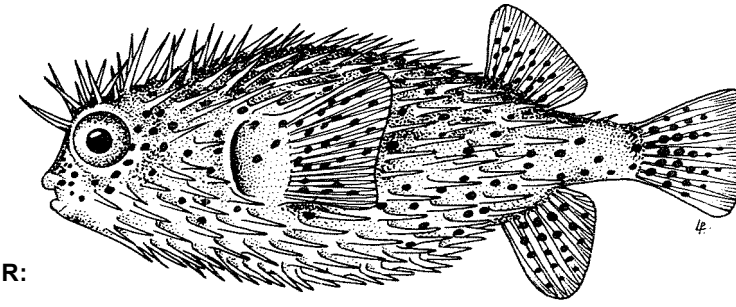
Diodon eydouxii and D. hystrix: one or more spines on top of caudal peduncle; all fins covered with small black spots, no large black blotches on back.

Chilomycterus species: all but 1 or 2 spines with 3 or 4 roots, relatively short and immovable.

Lophodiodon calori: most spines on head and belly erectile, spines on back and sides three-rooted, relatively short and immovable.



D. liturosus



D. hystrix

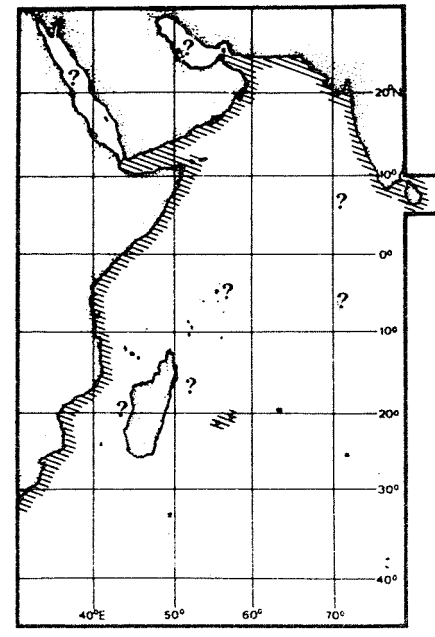
SIZE:

Maximum: 30 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Circumtropical in distribution but perhaps absent on some oceanic islands; possibly also absent from the Red Sea and the "Gulf".

Found on coral reefs and over sand and mud bottoms from shallow to moderate depths. Juveniles are pelagic and occasionally found at the surface in the open ocean.



PRESENT FISHING GROUNDS:

Taken incidentally throughout its range.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION:

Separate statistics are not reported for this species.

Caught mainly with bottom trawls.

Probably rarely consumed; often considered to be poisonous, but documented proof lacking. Occasionally dried and sold as curios.