

First Record of the Rare Sharpnose Puffer *Canthigaster inframacula* Collected from the South China Sea off Vietnam

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Abstract. *Canthigaster inframacula* has been known only from four specimens collected from relatively deep waters in the Hawaiian Islands and the Ogasawara Islands, Japan. Three specimens of this rare sharpnose puffer were collected at depths of 60 m and 140 m in the South China Sea off central and southern Vietnam. They represent the first records of this rare species from the South China Sea and have enabled the description of fresh coloration and additional morphological data.

Key words: Sharpnose puffer, *Canthigaster inframacula*, distribution, Vietnam.

Sharpnose puffers belonging to the family Tetraodontidae are characterized by having a compressed body, relatively elongate and pointed snout, a distinct keel on the back from the nape to the dorsal-fin origin, and inconspicuous nostrils. Allen and Randall (1977) revised the Indo-Pacific *Canthigaster* with descriptions of six new species, recognizing 22 species in the genus. Subsequently, four new species were reported from various regions in the Indo-Pacific (Lubbock and Allen, 1979; Matsuura, 1986, 1992; Randall & Cea-Egana, 1989). Moura and Castro (2002) recently revised Atlantic sharpnose puffers. They recognized six species including three new species, taking the total number of species of *Canthigaster* to 32.

Most species of *Canthigaster* inhabit shallow waters around coral reefs, rocky reefs, sand flats, rubble areas, and wharf pilings (Allen & Randall, 1977), however, seven species, *C. epilampra* (Jenkins, 1903), *C. flavoreticulata* Matsuura, 1986, *C. inframacula* Allen & Randall, 1977, *C. investigatoris* (Annandale & Jenkins, 1910), *C. jamestyleri* Moura & Castro, 2002, *C. punctata* Matsuura, 1992, and *C. rivulata* (Temminck & Schlegel, 1850), have been recorded from depths

in excess of 60 m (Allen & Randall, 1977; Matsuura & Yoshino, 1994; Matsuura, 1986, 1992; Moura & Castro, 2002)

In the course of studies on Vietnamese puffers, we obtained three specimens of the rare sharpnose puffer, *Canthigaster inframacula* Allen and Randall, 1977, that were trawled from relatively deep waters in central and southern Vietnam. This species was originally described by Allen and Randall (1977) from three specimens collected at depths of 126–157 m (69–86 fathoms) in the Hawaiian Islands. Since the original description was published, only one additional specimen was reported by Matsuura and Yoshino (1994) from the Ogasawara Islands, Japan. In the following pages, *C. inframacula* from Vietnam is described and illustrated on the basis of the newly collected specimens. Counts and measurements follow those of Tyler (1967) and Allen and Randall (1977). The specimens are deposited at the Research Institute for Marine Fisheries (TETCINF: fish collection code in RIMF), Hai Phong City.

Canthigaster inframacula Allen &
Randall, 1977

(Figs. 1, 2, Table 1)

Material examined. TETCINF 1, 1 specimen, 90.4 mm SL, South China Sea, off southern Vietnam, 11°50.4'N, 109°37.8'E, 140 m depth, 12 Aug. 2004, collected by Nam H. Ng.; TETCINF 2, 1 specimen, 68.5 mm SL, South China Sea, off central Vietnam, 15°30.5'N, 108°58.3'E, 70 m depth, 29 July 2004, collected by Nam H. Ng.; TETCINF 3, 1 specimen, 65.1 mm SL, same data as the preceding specimen.

Description. Dorsal-fin rays 10, anal-fin rays 10, pectoral-fin rays 16–17.

Measurements as proportion of SL: body depth 2.5–3.1, body width 4.0–4.5, head length 2.4–2.5, snout length 4.1–4.3, snout to origin of dorsal fin 1.3, snout to origin of anal fin 1.2–1.3. As proportion of HL: eye diameter 3.2–5.2, bony interorbital width 2.7–3.0, postorbital length 3.6–4.1, depth of caudal peduncle 2.9–3.4, length of

caudal peduncle 1.6–2.4, length of dorsal-fin base 4.8–5.3, length of anal-fin base 5.5–5.9, length of longest dorsal-fin ray 2.2–2.9, length of longest anal-fin ray 2.9, length of longest pectoral-fin ray 2.8–3.1, length of caudal fin 1.6–1.7.

Body moderately compressed, covered with very small spines except for around pectoral-fin base and lower side of caudal peduncle; dorsal and ventral profiles of body convex. Snout long and conical. A raised skin fold on back extending from above posterior part of eye to origin of dorsal fin. Mouth small and terminal; two large dental plates in each jaw. A single nostril on each side of snout, surrounded by an elevated rim. Interorbital space slightly concave. Caudal peduncle strongly compressed, slightly tapering toward caudal-fin base. Dorsal and anal fins small and slightly rounded. Pectoral fin short and broad. Caudal fin slightly convex. Pelvic fins absent.

Ground color of freshly dead specimens: ground color of body light brown dorsally, becoming whitish ventrally; a longitudinal dark

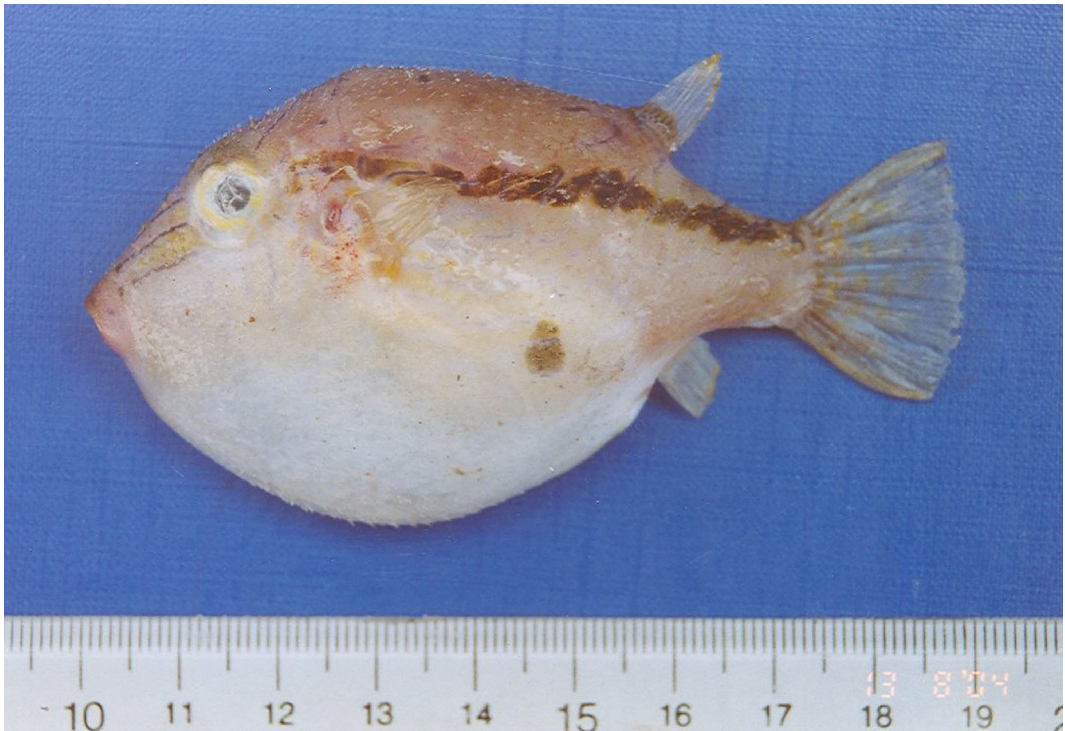


Fig. 1. *Canthigaster inframacula*, TETCINF 2, 68.5 mm SL, off central Vietnam, South China Sea.

Table 1. Counts and measurements (mm) of *Canthigaster inframacula* collected from the South China Sea off Vietnam.

Registration number	TETCINF 1	TETCINF 2	TETCINF 3
Dorsal-fin rays	10	10	10
Anal-fin rays	10	10	10
Pectoral-fin rays (left)	16	17	17
Pectoral-fin rays (right)	16	17	17
Standard length	90.4	68.5	65.1
Total length	104.7	85.4	84.1
Body depth at anal origin	35.7	22.4	26.3
Body width at pectoral base	20.3	17.0	16.2
Head length	36.6	28.9	28.1
Snout length	22.2	16.1	17.9
Snout to dorsal origin	70.4	54.5	52.3
Snout to anal origin	69.4	54.9	48.8
Postorbital length	10.3	7.0	6.3
Eye diameter	7.0	9.1	8.1
Interorbital width	14.6	11.6	9.8
Bony interorbital width	13.4	9.7	9.2
Longest dorsal-fin ray	16.6	9.9	12.1
Longest anal-fin ray	12.6	10.1	12.4
Longest pectoral-fin ray	12.0	10.5	10.9
Caudal-fin length	22.8	17.2	19.2
Caudal peduncle depth	12.7	8.6	8.8
Caudal peduncle length	22.6	12.1	14.5
Length of dorsal-fin base	7.6	5.5	4.6
Length of anal-fin base	6.7	4.9	6.7
Gill opening length	5.7	3.4	4.6

brown stripe running from eye to upper base of caudal fin; a round dark brown spot, about equal to eye diameter, on lower side of body between lower base of pectoral fin and origin of anal fin; dark brown lines radiating anteriorly, dorsally and posteriorly from eye; short irregular dark brown lines on dorsal half of body; dorsal, anal, and pectoral fins pale with light yellow tinge; caudal fin pale with several dark yellowish spots in transverse rows on rays.

Remarks. *Canthigaster inframacula* has been found in the tropical Pacific only from the Hawaiian Islands and the Ogasawara Islands, Japan (Allen & Randall, 1977; Matsuura & Yoshino, 1994). The type specimens from the Hawaiian Islands were collected at depths of 126–157 m and the specimen from the Ogasawara Islands at a depth of 130 m. The Vietnamese specimens, taken at depths of 60 m and 140 m, further indicate that this sharpnose puffer is a deep-dwelling species. The present speci-

mens agree well with the original description and the Ogasawara Islands specimen in all characters except for the number of pectoral-fin rays; one of the Vietnamese specimens (TETCINF 1) has 16 rays instead of 17–18. *Canthigaster inframacula* is distinguished from the other species of *Canthigaster* by having a prominent dark spot on the lower side of the body. An X-ray photograph of the three specimens of *C. inframacula* showed small bivalves in their stomachs (Fig. 2). This indicates that this rare sharpnose puffer forages on the bottom in relatively deep water.

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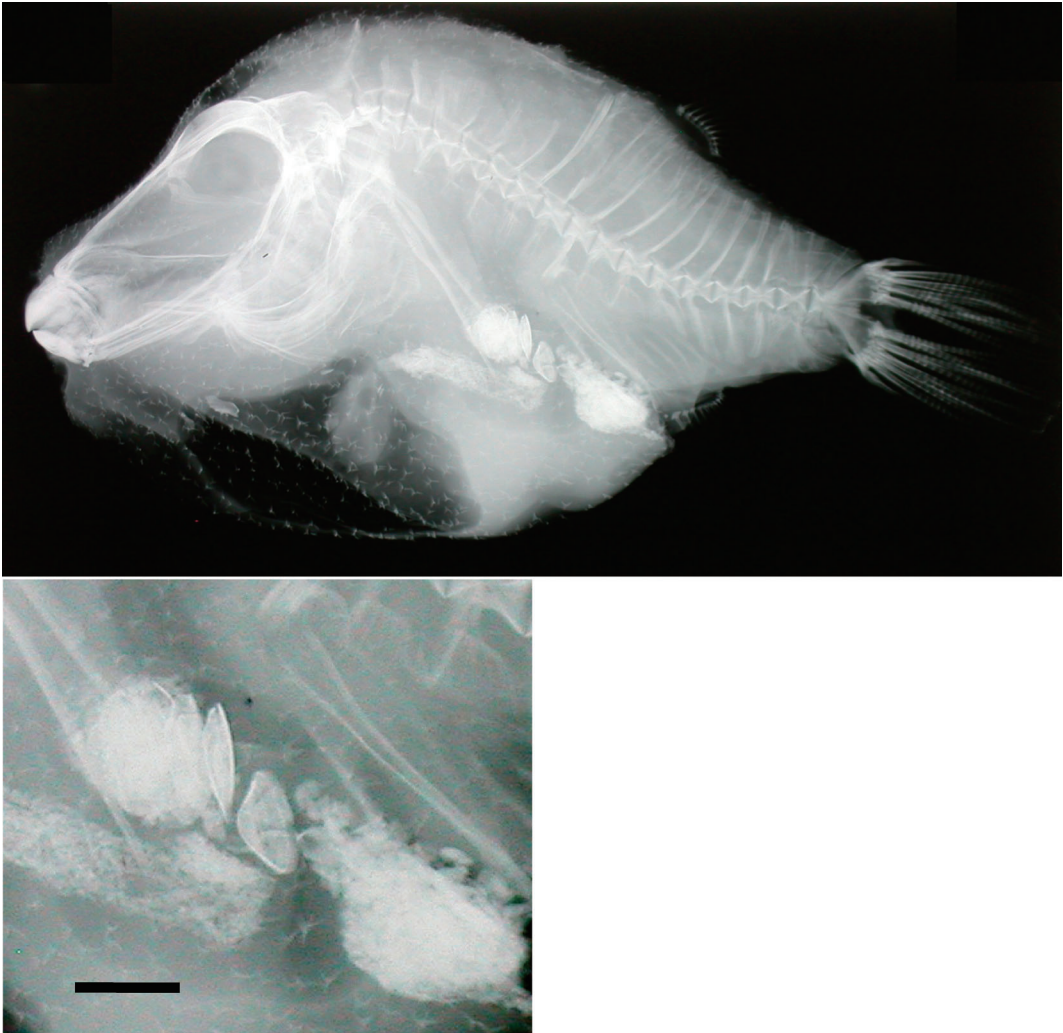


Fig. 2. X-ray photograph of *Canthigaster inframacula*, TETCINF 1, 90.4 mm SL (top); enlarged X-ray photograph of its stomach showing small bivalves (bottom). Scale bar in the enlarged photograph indicates 5 mm.

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References

- Allen, G. R. & J. E. Randall, 1977. Review of the sharpnose pufferfishes (subfamily Canthigasterinae) of the Indo-Pacific. *Records of the Australian Museum*, **30**: 475–517.
- Lubbock, R. & G. R. Allen, 1979. *Canthigaster leoparda*, a new sharpnose pufferfish (Teleostei: Tetraodontidae) of the Indo-Pacific. *Revue Française d’Aquariologie Herpetologie*, **6**: 87–90.
- Matsuura, K., 1986. A new sharpnose pufferfish, *Canthigaster flavoreticulata* (Teleostei: Tetraodontidae), collected from the South Pacific. *Japanese Journal of Ichthyology*, **33**: 223–224.
- Matsuura, K., 1992. A new sharpnose puffer, *Canthigaster punctata* (Teleostei: Tetraodontidae), from the Mascaren Submarine Ridge, Western Indian Ocean. *Bulletin of the National Science Museum, Tokyo, Series A*, **8**: 127–130.
- Matsuura, K. & T. Yoshino, 1994. Records of three tetraodontoid fishes from Japan. *Japanese Journal of*

Ichthyology, **31**: 331–334.

- Moura, R. L. & M. C. Castro, 2002. Revision of Atlantic sharpnose pufferfishes (Tetraodontiformes: Tetraodontidae: *Canthigaster*), with description of three new species. *Proceedings of the Biological Society of Washington*, **115**: 32–50.
- Randall, J. E. & A. Cea-Egana, 1989. *Canthigaster cyanetron*, a new toby (Teleostei: Tetraodontidae) from

Easter Island. *Revue Française d'Aquariologie, Herpetologie*, **15**: 93–96.

- Tyler, J. C., 1967. A diagnosis of the two transversely barred Indo-Pacific pufferfishes of the genus *Canthigaster* (*valentini* and *coronatus*). *Proceedings of the Academy of Natural Sciences of Philadelphia*, **119**: 53–73.

ベトナム沖の南シナ海から採集されたフグ科キタマクラ属の 希種ホクロキンチャクフグ

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ホクロキンチャクフグは、ハワイ諸島から採集された4個体の標本に基づいて Allen and Randall が 1977 年に *Canthigaster inframacula* として新種記載した後、小笠原諸島から1個体が採集されたのみであった。キタマクラ属の多くの種は浅海のサンゴ礁や岩礁に生息するが、本種は水深 100m を超える深い海に生息する。西部太平洋のインベントリー調査プロジェクトの一環として南シナ海のフグ科魚類を調査している過程で、ベトナム中部と南部から採集された本種の標本を調査する機会を得た。本報告に用いた3個体は、ハワイ諸島や小笠原諸島から採集された標本と同様に、水深 60–140 m のかなり深い海からトロールによって採集された。本種の前記載論文や小笠原諸島から採集された標本を扱った論文では新鮮な標本の色彩が不明であったが、本報告によって本種の体は背部が茶色で腹方に向かって白くなること、眼から尾鰭基部に向かって1本の暗褐色縦帯が走ること、腹側部に眼とほぼ等しい大きさの1暗褐色斑をもつこと、眼から暗褐色線が放射状に走ること、体背部には短い不規則な暗褐色線が複数走ること、背鰭、臀鰭および胸鰭はほぼ透明でやや黄色を帯びること、そして尾鰭はほぼ透明で鱗条に暗黄色の点が散在して背腹方向に走る数錠の列を構成することが明らかになった。