New Record of the Rare Shark *Parmaturus melanobranchius* (Scyliorhinidae) from Taiwan

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(Manuscript received 28 April 2010; accepted 24 June 2010)

ABSTRACT: The specimen of *Parmaturus melanobranchius* (Chondrichthyes: Carcharhiniformes) was collected in the waters off south-western Taiwan. After the description in 1966, only three specimens of *P. melanobranchius* were collected, one from South China Sea, one from Philippines and the other from Aragusuku Island of Japan. In this study, the fourth specimen was reported and its diagnostic characters, color photos and distribution map are given.

KEY WORDS: New record, Catshark, Taiwan, Scyliorhinid, rare species.

INTRODUCTION

Sharks obtain much attention recently because of the conservation issues. Some species of sharks are under the fishery pressure and natural population sizes of these species declined very quickly (Myers et al., 2007). However, some shark species are originally rare. For example, the famous megamouth shark (Berra, 1997) was recorded for just 46 individuals (Lee and Shao, 2010) after the description. *Parmaturus melanobranchius* (Chan, 1966) is one of the rarest sharks, only three specimens were collected in the past, one from South China Sea, one from Philippines and the other from Aragusuku Island of Ryukyu Archipelago (GBIF, http://www.gbif.net). The type locality of *Parmaturus melanobranchius* was (115.45°E, 19.05°N). During our deep-sea investigation cruise off southwest Taiwan in 24 November 2001, a juvenile male specimen was collected from the station CD141 of depth 985-1110 m with a bottom otter trawl employed as a sampling tool.

The poorly known catshark genus *Parmaturus* Garman is defined by following characters: anal and subcaudal long, snout short and thick, nostrils near mouth, supracaudal crest of denticles, first dorsal fin above pelvic fins and second dorsal fin above anal fin (Garman, 1906; Séret and Last, 2007). However, due to the lack of specimens and bad condition of deep-sea specimens, the revision of *Parmaturus*, as well as the scyliorhinid genera *Galeus* Rafinesque and *Halaelurus* Gill, could not be finished. The status of these genera has been questioned because of the variability of some diagnostic features. The most useful diagnostic characters of genus *Parmaturus* might be the soft body and presence of a crest of enlarged denticles on the upper caudal lobe compared with *Halaelurus* (Compagno, 1984; Séret and Last, 2007). In this study, the characters of the specimen are fully consistent with the species *P. melanobranchius*. This paper includes description of diagnostic characters and geographical distribution map of *P. melanobranchius*. Color photos are also given.

MATERIALS AND METHODS

Measurements were taken according to Compagno (2001) and Séret & Last (2007) and data were expressed in Table 1 in mm and percentages of total length (TL). Specimen sampling station is named as CD141 (120°E, 22.33°N). Specimen was preserved in formalin and deposited in 70% alcohol permanently at the Research Museum of Biodiversity Research Center, Academia Sinica (BRCAS) with number ASIZP 60963. The capture localities of specimen in this study with other known specimens are shown in Figure 1. Fish names in Chinese were based on Latin-Chinese Dictionary of Fishes Names (Wu et al., 1999).

TAXONOMIC TREATMENT

Parmaturus melanobranchius (Chan, 1966) Blackgill Catshark. 黑鰓盾尾鯊 Figs. 2 & 3

Material Examed: ASIZP 60963, 148 mm TL, juvenile male, collected from Southern Taiwan Strait in 24 November 2001 by authors.

Diagnosis: A scyliorhinid catshark with the following combination of characters: a soft body; blackish grey to light brown coloration; front edges and distal halves of fins, tip of snout, and lateral edge of nostrils blackish brown; skin with large bristle-like denticles; dermal denticles along dorsal margin of anterior half of caudal, as well as along ventral edge of caudal peduncle and front portion of lower caudal lobe, modified to form a crest of enlarged denticles, denticles

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Table 1. Measurements of blackgill catshark compared with holotype.

Catalogue number	BMNH 1965.8.11.6 (Holotype)	ASIZP 60963 (This Study)
Sex and maturity	juvenile female	juvenile male
Total length	235 mm	148 mm
Pre-first dorsal length	45.90	42.57
Pre-second dorsal length	59.60	57.43
Precaudal length	71.50	72.97
Prepectoral length	19.20	17.23
Prepelvic length	39.00	38.99
Preanal length	51.10	49.19
Snout-vent length		39.53
Preorbital length (direct)	7.00	5.47
Eye length	4.50	4.05
Eye height		2.03
Interorbital space		7.97
Prespiracular length		10.34
Spiracle length		1.01
Prenarial length	4.00	3.78
Nostril width		3.38
Internarial space	2.50	2.64
Anterior nasal flap length		1.01
Preoral length	8.50	5.68
Mouth width	8.90	7.97
Mouth length	7.00	4.32
Upper labial furrow length	1.00	1.62
Lower labial furrow length	2.30	2.03
Prebranchial length	17.00	13.51
Head length		16.89
First gill slit height	1.90	1.69
Fifth gill slit height	1.20	1.01
First dorsal-fin anterior margin		7.84
First dorsal-fin base	6.10	6.35
First dorsal-fin height	3.40	2.03
First dorsal-fin inner margin		2.03
First dorsal-fin posterior margin		1.22
Interdorsal space		7.97
Second dorsal-fin anterior margin		11.82
Second dorsa-fin base	9.40	9.46
Second dorsal-fin height	3.40	3.38
Second dorsal-fin inner margin		2.84
Second dorsal-fin posterior margin		1.89
Pectoral-fin anterior margin	10.20	8.65
Pectoral-fin base	4.70	4.59
Pectoral-fin inner margin		4.19
Pectoral-fin posterior margin		5.20
Pectoral-pelvic space		16.76
Pelvic-fin anterior margin	8.90	7.43
Pelvic-fin base	6.20	5.54
Pelvic-fin inner margin length		2.16
Pelvic-fin posterior margin length	3.20	1.89
Pelvic-anal space		6.76
Anal-fin anterior margin		13.51
Anal-fin base	12.90	12.84
Anal-fin height	4.60	4.32
Anal-fin length		14.05
Anal-fin inner margin		1.69
Anal-fin posterior margin	1.50	4.05
Dorsal-caudal space		2.03
Anal-caudal space		1.35
Caudal peduncle height		3.92
Caudal peduncle width		1.89
Dorsal caudal-fin margin	27.00	28.78
Preventral caudal-fin margin	23.20	21.62
Subterminal caudal-fin margin	6.20	4.73
Terminal caudal-fin margin		3.65
Head height		6.22
Head width		10.34

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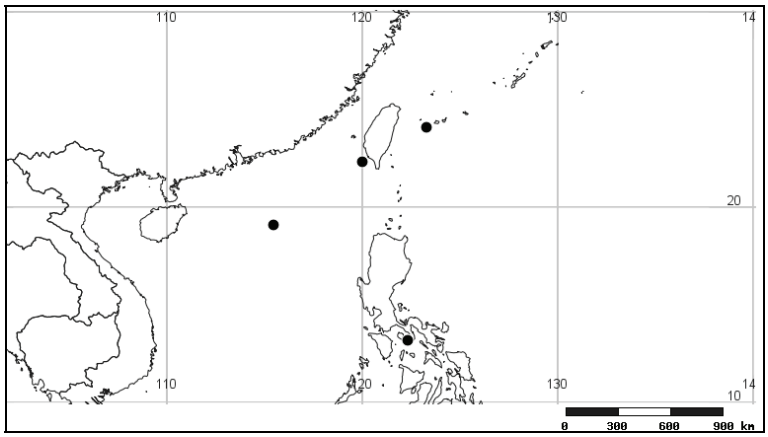


Fig. 1. Distribution of *Parmaturus melanobranchius*. Known from South China Sea, Philippines, Taiwan Strait and Japan.



Fig. 2. *Parmaturus melanobranchius*, fresh specimen. (Juvenile: ASIZP 60963, 148 mm TL) A: Dorsal view. B: Ventral view. C: Lateral view.

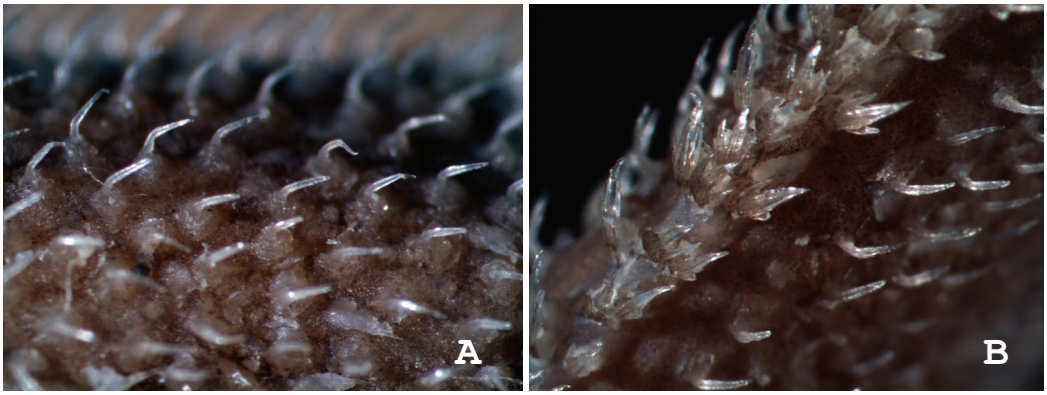


Fig. 3. Dermal microscope photography of *Parmaturus melanobranchius*. A: Dermal denticles from dorsal surface in front of first dorsal fin. B: Supracaudal crests of enlarged denticles and naked area.

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bearing three points; teeth alike in both jaws, multicuspid, varying from three to five points; first two outer series on upper jaw without definite shape and typically devoid of pointed cusps; gill openings small, anterior edges strongly curved, closely set; two dorsal fins, first dorsal fin forward of mid-length, pre-first dorsal length 42.6–45.9% TL; pelvic fins and vent well in front of mid-length, pre-vent length 39.5% TL; snout relatively short, prenarial length 3.8–4.0% TL; mouth relatively long, length 8.0–8.9% TL; labial furrows rudimentary, 1.00–1.62% TL in upper and 2.03–2.30% TL in lower; head almost the same with abdomen, length 16.89% TL, pectoral-pelvic length 16.76% TL; second dorsal fin larger than first, anterior margins of first and second dorsal fins 7.84% and 11.82% TL respectively; subterminal caudal lobe developed, subterminal margin length 4.7% TL, terminal margin length 3.65% TL; vertebral data are: precaudal vertebral count = 102; caudal vertebral count = 38; total vertebral count = 140.

Coloration: Color blackish grey in fresh specimen and light brown in preservation; front edges and distal halves of fins, tip of snout, and lateral edge of nostrils blackish brown; peritoneum throughout abdominal cavity, lining of gill chambers and externally the first four gill openings, brownish black; areas around stomach and gill chambers blackish grey.

Size: Holotype is a juvenile female of 235 mm in TL, specimen of this study is a juvenile male of 148 mm in TL. Maximum TL about 85 cm (Compagno and Niem, 1998).

Distribution: From the upper continental slopes off China, on mud bottom at depths of 549 to 1100 m. Known only from 4 specimens collected from the South China Sea (BMNH 1965.8.11.6), Philippines (MNHN 1986-0515), Taiwan Strait (ASIZP 60963, this study) and Japan (HUMZ 101534).

ACKNOWLEDGEMENTS

We thank Dr. Séret for helping identify the specimen. We thank the financial support of the Deep-Sea Biodiversity project by National Science Council (NSC 96-2628-B-001-006-MY3). Thanks are also given to members of the Laboratory of Fish Ecology and Evolution, Biodiversity Research Center, Academia Sinica for their assistance in the project.

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臺灣新紀錄罕見鯊魚—黑鰓盾尾鯊

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(收稿日期：2010 年 4 月 28 日；接受日期：2010 年 6 月 24 日)

摘要：黑鰓盾尾鯊自從 1966 年發表後，只有模式標本以及一尾來自日本琉球群島的新城島海域，共兩尾標本，極為罕見。本研究發表第三尾標本，同時也是臺灣海域首次紀錄，除詳細描述，記錄標本之形態特徵，並附上分佈地圖、標本照片。

關鍵詞：新紀錄、貓鯊、臺灣、罕見種。

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