

## 日本海山口県海域における希少種エビスザメ *Notorynchus cepedianus* の記録

メタデータ	言語: English
	出版者: 水産大学校
	公開日: 2024-10-11
	キーワード (Ja):
	キーワード (En):
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	<a href="https://fra.repo.nii.ac.jp/records/2011792">https://fra.repo.nii.ac.jp/records/2011792</a>

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## A record of the rare broadnose sevengill shark *Notorynchus cepedianus* off Yamaguchi in the Sea of Japan.

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The broadnose sevengill shark *Notorynchus cepedianus*, one of the most primitive present-day shark species, is characterized by seven pairs of large gill slits, a single short dorsal fin and bluish-gray dorsal body color with numerous dark spots. Although the species inhabits temperate continental shelf waters worldwide, ecological information is scarce because of limited catch data. A single female specimen (109.8cm total length, 5.26kg body weight) of *N. cepedianus*, incidentally caught by a long line fishery in south western Sea of Japan (4 km northeast of Futaoi Island, 45m depth) on 28 May, 2004, is documented here, being a rare record from Japan. Ten preserved specimens are known from Japanese waters, from Hokkaido, Wakayama, Ehime and an unspecified area (possibly Yellow Sea, East China Sea or western Sea of Japan), but only published record was from Tosa Bay, Kochi Prefecture. The present record appears to be the first published from Japan with detailed collection data accompanied by a voucher specimen.

### 1 Introduction

The broadnose sevengill shark *Notorynchus cepedianus* (Peron) (Japanese name: Ebisu-zame), belonging to the family Hexanchidae (order Hexanchiformes) is one of the most primitive present-day sharks being characterized by seven pairs of gill slits, a single short dorsal fin and bluish-gray dorsal body color with numerous dark spots. Although distributed worldwide in temperate continental shelf waters,<sup>1)</sup> distributional and ecological information on the species is limited because of the scarcity of catch records. The International Union for Conservation of Nature and Natural Resources (IUCN) categorised *N. cepedianus* as "data deficient" (DD) in the Red List of Threatened Species.<sup>\*3</sup> In May, 2004, one specimen of *N. cepedianus* was caught by long line fishery off Yamaguchi in the Sea of Japan. The specimen is fully documented here, along with

data for other Japanese specimens.

### 2 Materials and Methods

*Notorynchus cepedianus* was caught by a longliner Hakuju-Marū (Captain Hiroshi Konishi) of the Yoshimo Branch of the Shimonoseki-Hibiki Fisheries Cooperative Association on 28 May, 2004 some 4 km northeast of Futaoi Island (30° 7' N, 130° 50' E), in 45m depth (Fig. 1 A). The specimen was incidentally caught by longline, targeting mainly pike eel *Muraenesox cinereus* and gummy shark *Musterus manazo*, using adult anchovies for bait. The specimen was transported to the National Fisheries University, where it was photographed and measured (to 0.1cm) (Fig. 2). The specimen has been deposited at Kitakyushu Museum of Natural History and Human History, being registered as KMNH VR 100120.

2004年7月23日受付. Received July 23, 2004.

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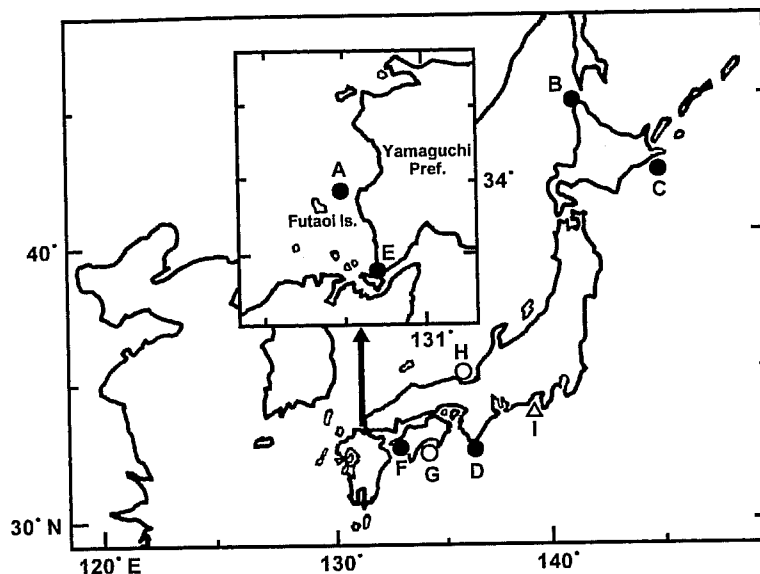


Fig. 1. Records of broadnose sevengill shark *N. cepedianus* in Japan: preserved specimens (●:A-F), published record (○:G, H) and video record (△:I).

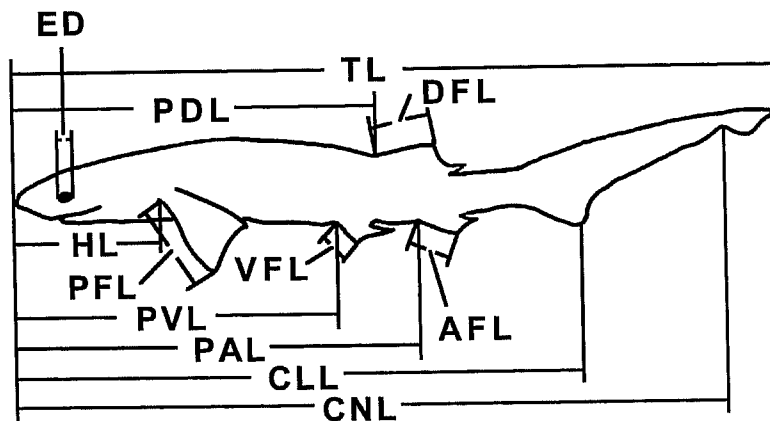


Fig. 2. Schematic illustration of measurements of broadnose sevengill shark *N. cepedianus*.

### 3 Results

The specimen was a female 109.8cm in total length (TL) and 5.26kg in body weight (BW), characterised by seven pairs of long gill slits and a single short dorsal fin (Fig. 3 a). The dorsal body surface was bluish-gray with numerous dark spots (Fig. 3 a, b), the ventral surface being uniformly white. (Fig. 3 c) The upper jaw teeth were sharp, canine-like without serrations, whereas the lower jaw teeth were incisor-like with outwardly-angled serrations, gradually decreasing in size (Fig. 3 d). The specimen had teeth on the symphyseal portion of the upper jaw, such

being thought to be a characteristic of *N. pectorosus* (Minami-ebisu-zame), a junior synonym of *N. cepedianus*.<sup>2)</sup>

Absolute measurements (percentage of TL in parentheses) were: snout to caudal fin notch length CNL=102.3cm (93.2% of TL), snout to lower caudal fin lobe length CLL=81.2 (74.0), pre-dorsal fin length PDL=51.8 (46.0), pre-ventral fin length PVL=44.2 (40.2), pre-anal fin length PAL=58.5 (53.3), head length HL=22.8 (20.8), dorsal fin length DFL=9.1 (8.3), pectoral fin length PFL=14.0 (12.8), ventral fin length VFL=6.0 (5.5) and eye diameter ED=1.4 (1.3).

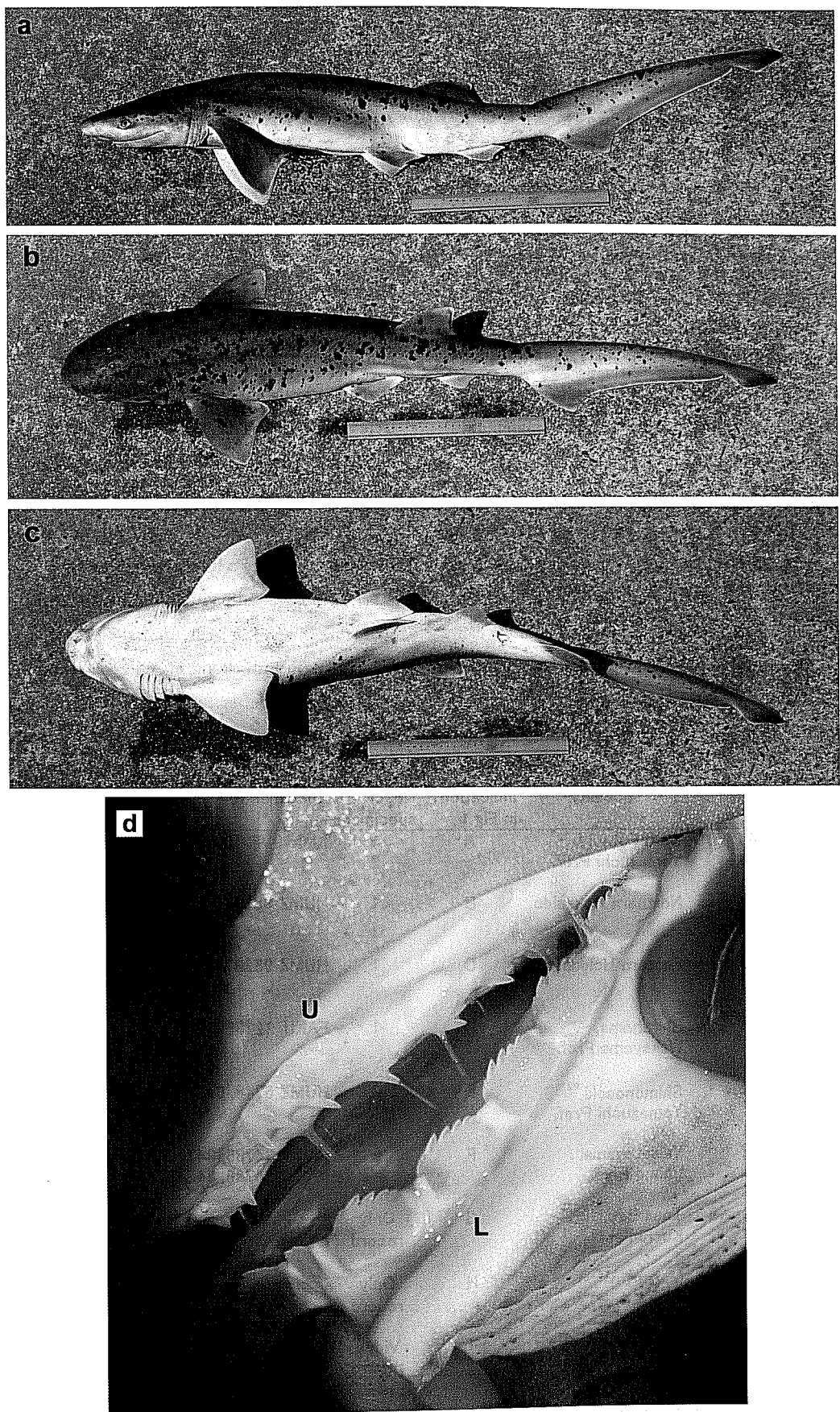


Fig. 3. Photographs of broadnose sevengill shark *N. cepedianus* from Yamaguchi. a:side view, b:dorsal view, c:ventral view, d:jaw teeth. U and L in photograph d indicate upper jaw and lower jaw, respectively.

## 4 Discussion

Although *Notorynchus cepedianus* is widely distributed in the Atlantic, Pacific and Indian Oceans between 60°N–59°S,<sup>1)</sup> information on the species is very limited. Population densities may be low in many areas, including Japanese waters. Previous Japanese records with collection details when available are summarized in Table 1, the locations being mapped in Fig. 1.

Ten preserved specimens are currently held in Japanese institutions (Fig. 1, Table 1 A–F). The Graduate School of Fisheries Science, Hokkaido University, Hakodate, Hokkaido (HUMZ) holds four specimens, all specimen data being unpublished to date (Kazuhiro Nakaya pers. comm.). Two HUMZ specimens were caught off northern and eastern Hokkaido (B, C) in 1980 and 1983, respectively, the remaining two HUMZ specimens having been collected at the Shimonoseki Fish Wholesale Market, Yamaguchi Prefecture (E) in 1962. The exact localities for the latter cannot now be determined (possibly Yellow Sea, East China

Sea or western Sea of Japan) owing to the wide range of fishery locations contributing that market during that period. Matsubara<sup>4)</sup> reported occasional catches of *N. pectorosus* (= *N. cepedianus*) in the East China Sea before the 1960's, but the species was not listed a recent catalogue of fishes for the area.<sup>5)</sup>

The Fisheries Research Station of Kyoto University, Maizuru, Kyoto (FAKU) currently holds six examples of *N. cepedianus* (Yoshiaki Kai, pers. comm.). One, collected in 1973 from Shirahama, Wakayama Prefecture (D), is represented by the head only. The remaining five specimens (F), juveniles of about 25–40cm TL, were all collected in March 1962 from Yawatahama, Ehime Prefecture.

Japanese literature are very few. A single record from Tosa Bay, Kochi Prefecture (G) was published by Kamohara,<sup>6,7)</sup> and Nakaya and Shirai<sup>3)</sup> listed Maizuru, Kyoto Prefecture (H), as a locality for *N. pectorosus* (synonym of *N. cepedianus*), but omitted to give an accompanying data source.

In 1985, an individual of *N. cepedianus* was video re-

**Table 1.** Summary of collected specimens and published records of broadnose sevengill shark *N. cepedianus* in Japan

Date	Locality	Indication in Fig.1	No. of specimens	Specimen registration number <sup>*1</sup>	Reference
28 May, 2004	Near Futaoi Is., Yamaguchi Pref.	A	1	KMNH VR 100120	present report
14 Jun., 1983	Northern Hokkaido	B	1	HUMZ 98336	Kazuhiro Nakaya pers. comm.
9 Jul., 1980	Eastern Hokkaido	C	1	HUMZ 95297	Kazuhiro Nakaya pers. comm.
1974	Shirahama, Wakayama Pref.	D	1	FAKU 121888	Yoshiaki Kai pers. comm.
Nov., 1962	Shimonoseki, <sup>*2</sup> Yamaguchi Pref.	E	2	HUMZ 6748, 6749	Kazuhiro Nakaya pers. comm.
Mar., 1962	Yawatahama, Ehime Pref.	F	5	FAKU 34735, 34736, 34739, 34740	Yoshiaki Kai pers. comm.
unknown	Tosa Bay, Kochi Pref.	G	Only record	–	Kamohara <sup>6,7)</sup>
unknown	Maizuru, Kyoto Pref.	H	Only record	–	Nakaya and Shirai <sup>3)</sup>
1985	Suruga Bay, Shizuoka Pref.	I	Video record	–	Sho Tanaka pers. comm.

<sup>\*1</sup> For abbreviations, see text

<sup>\*2</sup> Collected at fish wholesale market. Location equivocal, see text

corded in Suruga Bay, Shizuoka Prefecture (I) during a dive of Shinkai 2000, a manned research submersible of Japan Agency for Marine-Earth Science and Technology (Sho Tanaka pers. comm.).

Accordingly, the present record of *N. cepedianus* from Japan is the first published with full collection and specimen data.

### Acknowledgements

The authors thank to Mr. Hiroshi Konishi, captain of Hakuju-Maru, and Mr. Shigeru Murata, director of Yoshimo Branch of the Shimonoseki-Hibiki Fisheries Cooperative Association, for providing the shark specimen. We are grateful to Dr. Kazuhiro Nakaya, Hokkaido University, Drs. Yoh Yamashita and Yoshiaki Kai of Fishery Research Station of Kyoto University, Dr. Sho Tanaka, Tokai University, Dr. Hajime Ishihara, Taiyo Engineering Inc., Dr. Shigeru Shirai, Japan Sea National Fisheries Research Institute, Fisheries Research Agency and Dr. Kunio Sasaki, Kochi University for valuable information and literatures. Dr. Yoshitaka Yabumoto, Kitakyushu Museum of Natural History and Human History provided registration details for the specimen. The authors appreciate Dr. Graham Stuart Hardy for valuable suggestions on English expression.

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エビスザメ *Notorynchus cepedianus* はカグラザメ目に属する原始的なサメで、7対の大きな鰓孔、1基の背鰭および青灰色の地色に多数の暗色斑が散在する背面の体色を特徴とする。本種は世界の温帯海域の大陸棚域に広く生息するものの、その採集例は極めて少なく、その分布や生態に関する情報に乏しい。2004年5月28日に日本海南西部の山口県蓋井島北東約4km、水深45mの地点において、延縄漁業により本種1個体が採集されたので、希少な記録として報告する。採集された個体は全長109.8cm、体重5.26kgの雌であった。国内におけるエビスザメの保存標本は北海道、和歌山県、愛媛県からの8個体および下関漁港に水揚げされた2個体（漁獲海域は黄海、東シナ海から日本海南西部と考えられる。）、計10個体が確認されたが、いずれもその記録は未公表である。採集地点が明確な記録として公表されたものは土佐湾のものが唯一であるが、標本は残されていない。今回の記録は標本、採集データの双方がそろったものとしては国内最初の記録となる。