

Article XIX.—A NEW GOBLIN SHARK, *SCAPANORHYNCHUS JORDANI*, FROM JAPAN.

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PLATE XLIV.

Four specimens of the rare Japanese shark *Scapanorhynchus* (*Mitsukurina*) have recently come into my hands for study. Two were generously placed at my disposal by Professor Bashford Dean, one belongs to the American Museum collection, and the fourth (a head only) was secured for me in Japan by my friend Dr. N. Yatsu of the Imperial University at Tokyo. On comparing these specimens among themselves and with the description and figures of *S. owstoni* (Jordan),¹ it was seen that they differed markedly in certain regards from that species, though agreeing entirely among themselves. Since the type species is known from at least two carefully figured specimens — one a male 42 inches long (type), the other² a female 11 feet long — the characters of the four specimens in hand, three females and one (head only) apparently a male, are not to be regarded as mere sex or age variants, but as indicating a distinct species. This may be defined as follows.

***Scapanorhynchus jordani* n. sp.**

Similar to *S. owstoni* (Jordan) in general proportions and in the form, size and position of the fins, but different in a number of important characters as shown in the following table. (Figs. 1 A, 1 B.)

	<i>S. owstoni</i>	<i>S. jordani</i> n. sp.
Jaw	Greatly protrusible. When fully protruded a deep >-shaped excavation between jaw and lower surface of rostrum.	Slightly protrusible. Very little or no excavation between jaw and rostrum.

¹ Jordan, D. S., Description of a species of fish (*Mitsukurina owstoni*) from Japan, the type of a distinct family of lamnoid sharks. Proc. Cal. Acad. Sci. (3), I, 1898, pp. 199–202, pls. xi and xii.

² Bean, Barton A., Notes on an adult goblin shark (*Mitsukurina owstoni*) of Japan. Proc. U. S. Nat. Mus., XXVIII, 1905, pp. 815–818, 8 figs.

	<i>S. owstoni</i>	<i>S. jordani</i> n. sp.
<i>Mouth</i>	Cleft of mouth horizontal (as seen in profile in the protruded jaw).	Cleft of mouth sloping backward and upward at angle of about 30°.
<i>Eye</i>	Anterior margin on a vertical through a point $\frac{1}{2}$ to 2 diameters of eye back of angle of jaw.	Above middle of lower jaw.
<i>Interorbital space</i>	2 $\frac{3}{4}$ times in snout (measured to eye).	Slightly less than 2.
<i>Nostril</i>	On a vertical through a point one diameter of eye anterior to angle of jaw.	On vertical through anterior extremity of lower jaw.
<i>Gills</i>	Large. Length of gill area 5 in head (according to figure of type). ¹ Depth of last gill, 6 in head.	Relatively smaller. Length of gill area 6.5 to 7 in head. Depth of last gill, 7.6 in head.

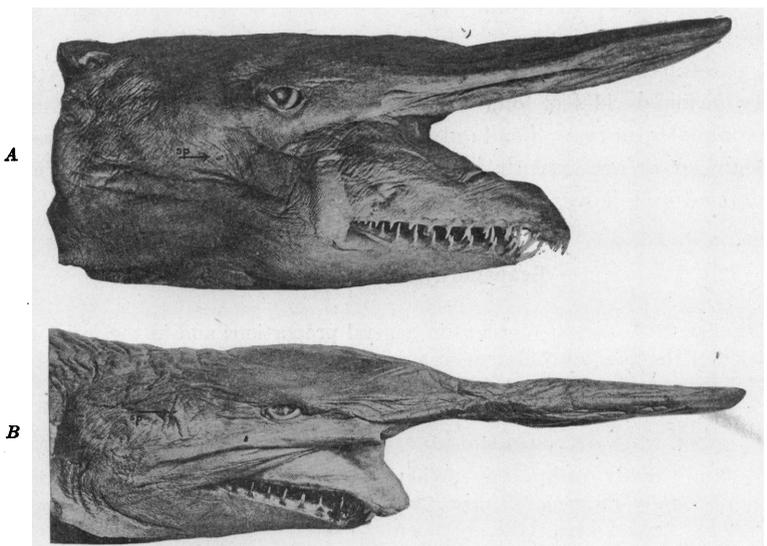


Fig. 1. Heads of (A), *Scapanorhynchus owstoni* (after Jordan); (B), *S. jordani* n. sp. A, from a photograph kindly loaned by Prof. B. G. Wilder. sp, spiracle.

Detailed measurements of the two sharks taken as the types are given in the following table. One (1.155 M.) is in the Zoölogical Department at Columbia University, the other (1.30 M.) is in the American Museum of Natural History.

¹ According to the type description this is 2 $\frac{3}{4}$ — apparently an error.

SCAPANORHYNCHUS JORDANI n. sp.	Columbia University Cotype ♀	Amer. Museum Cotype ♀
	M.	M.
Total length (tip of rostrum to tip of tail)	1.155	1.300
Depth at origin of pectoral . . . . .	.110	.135
Depth at first dorsal . . . . .	.135	.145
Tip of rostrum to eye . . . . .	.180	.210
Head (tip of rostrum to first gill-opening) . . . . .	.290	.325
Tip of rostrum to origin I dorsal . . . . .	.430	.470
“ “ “ “ “ II “ . . . . .	.630	.710
“ “ “ “ “ pectoral . . . . .	.330	.360
Base I dorsal . . . . .	.066	.063
“ II “ . . . . .	.060	.060
“ ventral . . . . .	.110	.115
“ anal . . . . .	.095	.120
Posterior termination base II dorsal to end of caudal . . . . .	.470	.525
Greatest depth of caudal . . . . .	.110	.120
Length of gill area . . . . .	.042	.050
Depth of last gill . . . . .	.038	.042
Distance of posterior rim of eye to spiracle . . . . .	.036	.040
Interorbital area . . . . .	.096	.107
Rostrum (under side measured from jaw) . . . . .	.145	.170
Longer diameter of eye . . . . .	.015	.018
Spiracle . . . . .	.0035	.002
Head in total length	3.900	4.000
Greatest depth in total length	8.500	8.900
Snout (from eye) in head	1.600	1.600
Length of gill area in head	6.900	6.500
Depth of last gill “ “	7.600	7.700

Named for President David Starr Jordan, who has contributed so largely to our knowledge of the fishes of Japan, and who was first to bring to notice a living representative of this ancient type of fish.

REMARKS ON THE PROPER NAME OF THE GENUS.

1898.¹ In the original description President Jordan says: “The genus is apparently unique among living forms, its nearest relative being apparently the genus *Carcharias* of Rafinesque, which is *Odontaspis* of Agassiz. This group contains few recent sharks, but is rich

¹ Proc. Cal. Acad. Sci. (3), I, p. 201.

in fossil forms. Unless place can be found for it in some family of fossil species, it must stand as the type of a distinct family *Mitsukurinidae*."

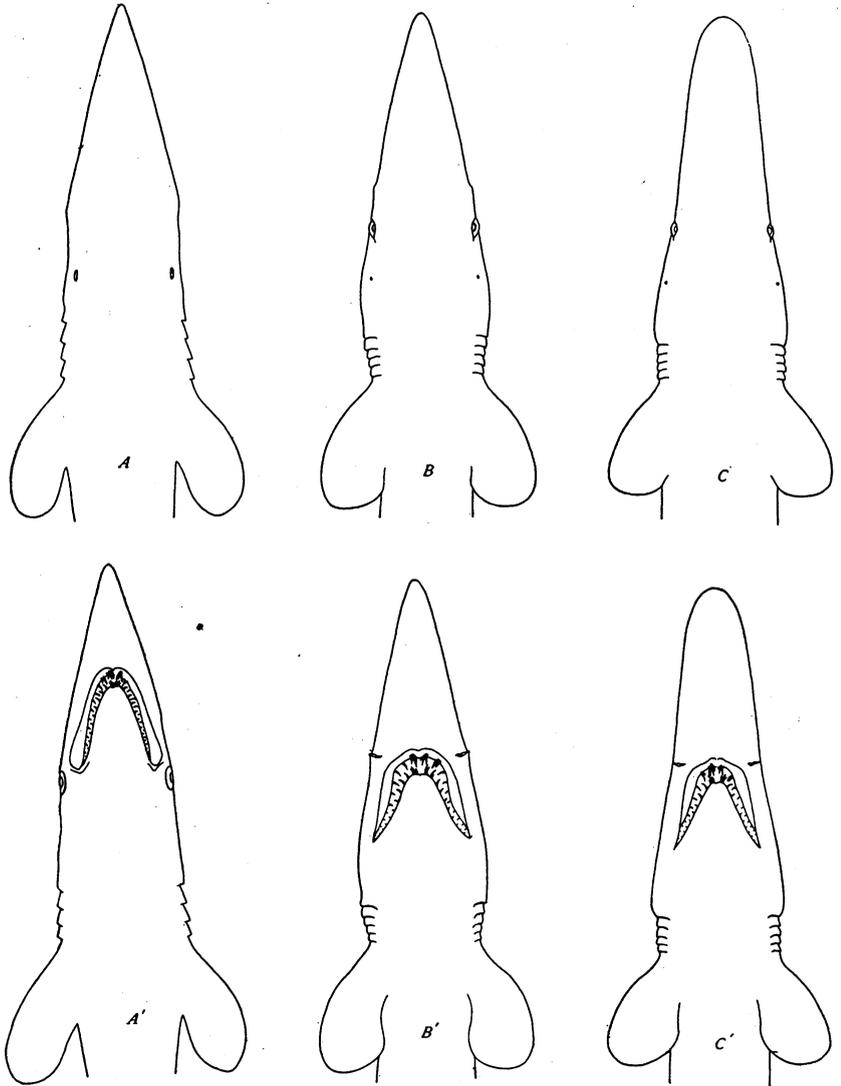


Fig. 2. Heads of *Scapanorhynchus*, to show variations in length and form of rostrum. Dorsal (A), and ventral (A'), views of *S. owstoni* (after Jordan). Dorsal (B, C), and ventral (B', C'), views of two specimens of *S. jordani* n. sp.

- 1899.¹ Dr. A. S. Woodward calls attention to the identity of *Mitsukurina* with the Cretaceous genus *Scapanorhynchus*, pointing out that the differences between the two forms in length of rostrum, body-proportions and fins are "not of greater than specific value."
- 1902.² G. B. Howes refers to *Mitsukurina* as "a genus whose grotesqueness leaves no doubt of its identity with the Cretaceous lamnoid *Scapanorhynchus*."
- 1903.³ Prof. Bashford Dean refers to additional specimens of this shark taken in Japanese waters and doubts the propriety of separating it from the odontaspids as a distinct family.
- 1904.⁴ Prof. Léon Vaillant discusses briefly the column, cranium and gills in a specimen 2.50 M. long, said to be the first received in Europe; remarks on its resemblance to *Oxyrhina*, *Lamna* and *Odontaspis*, but regards it as a distinct genus. Disputes propriety of founding a separate family for it. "Il ne diffère des elasmobranches auxquels il est ici comparé, que par des caractères de second ordre et se rattache directement à la famille des *Lamnidae*, telle qu'elle a été comprise par M. Günther."
- 1905.⁵ Dr. Barton A. Bean describes and figures a specimen of this shark 11 feet long; retains name *Mitsurkurina*.
- 1906.⁶ Mr. C. Tate Regan refers to the type species as *Scapanorhynchus owstoni* and places it in the family *Odontaspidae*.

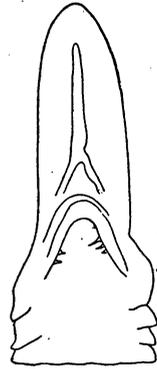


Fig. 3. *Scapanorhynchus lewisii* (Davis). Rostrum and jaws, X about $\frac{1}{2}$. Upper cretaceous: Mt. Lebanon, Syria. After figure by A. S. Woodward of a specimen in British Museum (49474).

In the light of present knowledge, I believe there can be no doubt of the generic identity of *Mitsukurina* with the Cretaceous *Scapanorhynchus*. The variations in the length and form of the rostrum in *Scapanorhynchus* are not greater than those in the living species. (Cf. Figs. 2 and 3.) The rostrum is rounded in both female specimens here made the types of *S. jordani*, exactly as in a specimen of *S. lewisii* (Davis) from the Cretaceous

¹ Ann. Mag. Nat. Hist. (7), III, p. 487.

² Proc. Brit. Assoc. Adv. Sci., Belfast, p. 626.

³ Science, N. S., XVII, p. 630

⁴ C. R. Acad. Sci. Paris, 138, pp. 1517-1518.

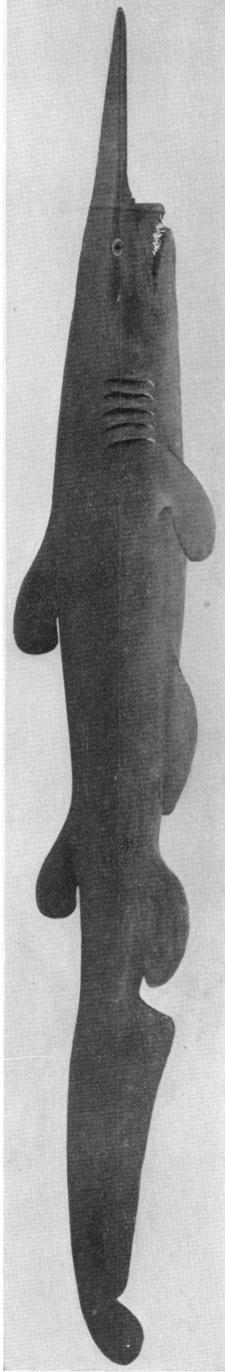
⁵ Proc. U. S. Nat. Mus., XXVIII, pp. 815-818, 8 figs.

⁶ Proc. Zool. Soc. London, 1906, p. 744.

figured by Woodward¹; and the large eleven foot specimen figured by Bean shows that the rostrum varied in relative size with age, becoming proportionally shorter in old individuals.

Regarding the family position, there is no doubt that *Scapanorhynchus* is closely related to the Odontaspididæ but whether of that family or constituting a distinct family remains to be seen from a more careful anatomical study than any now available.

¹ Catal. Fos. Fishes Brit. Mus., Part I, 1891, pl. xvii, fig. 2.



SCAPANORHYNCHUS JORDANI n. sp.

From a model of the American Museum cotype, by Mr. Dwight Franklin

