

**Record of *Lipogenys gillii* (Notacanthiformes,
Lipogenyidae) from Japan with Comments
on *L. plaxae* as a Junior Synonym**

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Lipogenys is the only genus of the family Lipogenyidae, suborder Notacanthoidei, order Notacanthiformes (McDowell, 1973; Nelson, 1984). *Lipogenys* is similar to the notacanthids in appearance of the head, and in having an anal fin with a long base and many spines. It is also similar to the halosaurids (suborder Halosauroidae) in having a short-based dorsal fin located a little behind the pelvic fin. However, *Lipogenys* differs from other Notacanthiformes in having a peculiar sucker-like mouth. *Lipogenys* is a rare deep-sea demersal fish and included until recently, only *L. gillii* Goode et Bean from the North Atlantic. However, Sheiko (1988) described a second species, *Lipogenys plaxae*, on the bases of two male specimens collected from off

Sendai Bay, northern Pacific coast of Honshu, Japan; this was the first record of *Lipogenys* from the Pacific Ocean.

We collected two female specimens of *Lipogenys* from off Sendai Bay very close to the type locality of *L. plaxae*. After careful examination, we identify the specimens as *L. gillii*, and regard *L. plaxae* as a junior synonym of the former species. We here describe our specimens as the second record of *L. gillii* from the Pacific Ocean.

Counts and measurements follow Hubbs and Lagler (1947) and Templeman (1973). The method of counting spines and rays in dorsal, pelvic and anal fins follows Templeman (1973). The premaxillary, maxillary, branchiostegal rays and vertebrae were observed and counted from radiographs taken using soft X-ray.

Lipogenys gillii Goode et Bean, 1894
(New Japanese name: Tanuki-sokogisu)
(Figs. 1, 2)

Lipogenys gillii Goode and Bean, 1894: 469, pl. 18, fig. 3
(type locality; 37°46'30''N, 73°56'30''W, 865 fms deep,
western North Atlantic); Goode and Bean, 1896: 172, pl.
51, fig. 190 (copy of above); McDowell, 1973: 208, fig. 17
(off Nova Scotia and off Cape May); Merrett and Marshall,
1981: 237 (25°26.0'N, 16°10.3'W, 811-890 m deep,
off northwest Africa).

Lipogenys gillii: Templeman, 1973: 1559, figs. 1-5 (off Nova

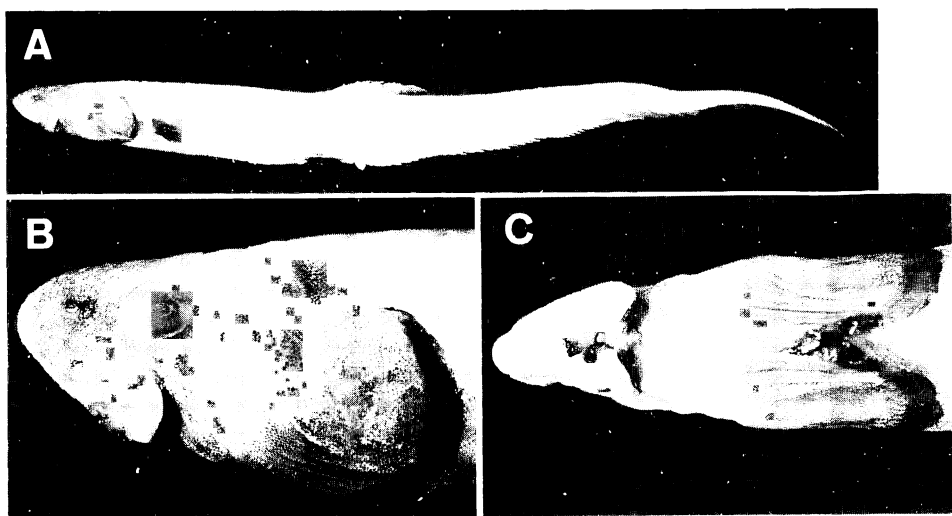


Fig. 1. *Lipogenys gillii* Goode et Bean. A, lateral view of FAKU 56676, 263.2 mm SL; B, lateral view of the head of FAKU 56675, 406.3 mm SL; C, ventral view of the head of FAKU 56675.

Scotia and off Newfoundland).

Lipogenys plaxae Sheiko, 1988: 361, figs. 1-2 (type locality; 38°06'N, 142°19'E, 1,000 m deep, east of Sendai Bay, Pacific coast of Japan).

Material examined. FAKU (Department of Fisheries, Faculty of Agriculture, Kyoto University) 56675-56676, 2 females, 263.2-406.3 mm in standard length, 93.3-151.6 mm in gnathoproctal length, 37°44'-37°52'N, 142°27'-142°24'E, off Sendai Bay, northern Pacific coasts of Honshu, 1,000 m deep, coll. No. 51 Dainichi-maru, Oct. 29th, 1987.

Diagnosis. Mouth nearly circular, suctorial and toothless; maxillary with long downward blade at posterior end, lower jaw very short, lying within the mouth opening.

Description. Counts and proportional measurements are shown in Table 1.

Body compressed and extremely elongate, tapering posteriorly (Fig. 1A). Head compressed. Snout produced, obtuse at tip (Fig. 1B); ventral surface of

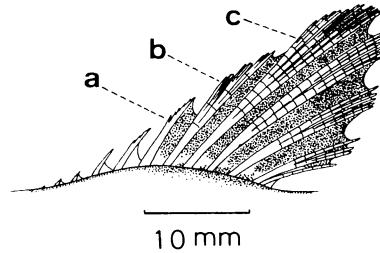


Fig. 2. Dorsal fin of *Lipogenys gillii*, FAKU 56675. a dorsal spine; b, dorsal spine-ray (hard); c, dorsal ray (soft).

snout with a broad band of many small papillae (Fig. 1C). Mouth inferior just below eye, suctorial and toothless. Premaxillary and maxillary forming nearly circular rim of sucker-like mouth, and surrounded by rugose, contractile lip; maxillary with long downward blade at posteriormost end and with

Table 1. Counts and proportional measurements as a percentage of standard length in *Lipogenys gillii* from Japan. Hard spine-rays with segments in dorsal, pelvic and anal fins are recognized and counted as soft rays.

Characters	FAKU 56675	FAKU 56676
Sex	female	female
Total length (mm)	417.5	271.7
Standard length (mm)	406.3	263.2
Gnathoproctal length (mm)	151.6	93.3
Counts		
Dorsal fin	VI, 5	V, 5
Anal fin	XLV, 88	XXXVII, 106
Pectoral fin	12	13
Pelvic fin	III, 7	III, 7
Pored scales on lateral line	121	116
Vertebrae	232	229
Branchiostegals	7	7
Pyloric caeca	6	6
Proportional measurements (% SL)		
Head length	14.9	16.3
Eye diameter	2.5	2.5
Interorbital width	2.8	2.6
Snout length	3.8	4.5
Opening of mouth (transverse diameter)	0.7	0.5
Body depth	9.9	9.1
Body width	5.8	4.3
Length of dorsal fin base	5.6	5.5
Length of longest dorsal ray	5.7	7.1
Pectoral fin length	7.2	7.2
Pelvic fin length	6.9	7.0
Predorsal length	39.2	38.9
Snout to upper origin of pectoral fin	16.0	17.1
Preanal length	42.5	41.9
Snout to origin of pelvic fin	34.4	34.2

a strong retrorse spine at dorsoposterior angle. Lower jaw very short and not extending forward, forming almost transverse oral border. Nostrils tubular and located nearer to eye than to tip of snout; anterior tubule higher posteriorly, posterior tubule higher anteriorly. Opercular margin rounded and soft; gill-rakers absent; right and left branchiostegal membranes united together, but somewhat overlapping each other at midway. Lateral line single, reaching 39th or 41st anal rays (spine, spine-ray or soft ray); lateral line scales with simple or double pores. Scales minute and elliptical, covering entire body except for tip and ventral surface of snout, posterior margin of opercular flap and axillary pocket.

Dorsal fin short, located a little before middle of body beginning above midway between origins of pelvic and anal fins; anterior distal faces of posterior 2 or 3 spines serrated; 1st spine-ray (with segments) hard, 2nd-5th or 6th ray (with segments) soft (Fig. 2). Pectoral fin rounded. Pelvic fin rounded, located a little before dorsal fin, almost reaching anterior border of anus in FAKU 56675, but exceeding anterior border of anus in FAKU 56676; 1st spine embedded in skin, anterior distal surfaces of 2nd and 3rd spines serrated, 1st spine-ray (with segments) hard, 2nd-7th ray (with segments) soft. Anal fin long, beginning below somewhat before posterior end of dorsal fin, posteriorly continuous with anterior lower margin of caudal fin; anterior distal surface of most spines serrated, some anterior spine-rays (with segments) hard, other rays (with segments) soft. Caudal fin very small.

Color in 10% formalin: Body uniformly brown. Posterior margin of opercular flap blackish brown. Dorsal, pectoral, pelvic fins blackish brown. Posterior one-third of anal fin blackish brown. Caudal fin blackish brown. Peritoneum black.

Remarks. Our *Lipogenys* is similar to *L. plaxae* in all meristic and some morphometric characters, but differs from the latter in the following characters (our *Lipogenys* listed first): 1) lateral view of snout round (somewhat pointed); 2) distance from tip of snout to anterior edge of upper lip/width of snout just before anterior edge of upper lip 1.3–1.5 (2.8–2.9); 3) nasal pores equidistant from tip of snout and anterior margin of eye (nearer to the eye than to the tip of the snout); 4) body scales elliptical (rounded); 5) axillary pocket without scales (with scales); 6) lateral line scales with simple or double pores (simple pores); 7) tips of composite spine-rays

serrated, i.e. brush-like (spinous); 8) pectoral fin 7.2% (8.2–9.4%) of SL; 9) pelvic fin 6.9–7.0% (7.9–8.0%) of SL; 10) transverse diameter of mouth opening 4.4–5.0% (8.8–9.4%) of head length; 11) eye diameter/transverse diameter of mouth opening 3.3–3.5 (1.7–2.1); 12) pelvic fin spine-rays 3 (6). The characters of *L. plaxae* noted above are followed by Sheiko (1988).

Subsequent personal communication with Dr. Sheiko revealed that the holotype and paratype of *L. plaxae* also have elliptical body scales and an area without scales at the axillary pocket (differences 4 and 5). Differences 10 and 11 were caused by a difference in measuring methods; Sheiko (1988) measured the outer distance as the transverse diameter of the mouth opening, but we measured the inner distance following Templeman (1973) and McDowell (1973); if the inner distance is measured for the species, values of 8 and 9 in *L. plaxae* are 4.0–4.2 and 4.0–4.7. Difference 12 is due to a typographical error; the correct number of spine-rays in the pelvic fin is 4 in *L. plaxae*.

Accordingly, our *Lipogenys* and *L. plaxae* differ from each other in only 7 characters. Moreover, differences 1–3 result from one feature, snout length (short vs. long snouts). The holotype and paratype of *L. plaxae* are both males and our two *Lipogenys* specimens are both females, which means some differences between the two may reflect sexual dimorphism. It is notable in this regard that species of the related Notacanthidae (Crabtree et al., 1985) and Halosauridae (Sulak, 1977) display sexual dimorphism in the snout region. The same may be true with respect to differences in the pectoral and pelvic fins. Differences 6 and 7 are possibly due to individual variations. In addition to the above, the collection sites of the FAKU specimens and *L. plaxae* are very close to each other. Therefore, it is reasonable for us to regard our *Lipogenys* as females of *L. plaxae*.

Our *Lipogenys* specimens, however, agree reasonably well with the holotype and specimens of *L. gillii* from the western North Atlantic described by Templeman (1973), in both meristic and morphometric characters, although differing from the latter as follows (our *Lipogenys* specimens listed first): more anal rays (133–143 vs. 116–130), fewer pored lateral line scales (116–121 vs. 135), a somewhat larger head (14.9–16.3 vs. 12.2–13.8% of standard length), a greater length from tip of snout to upper origin of pectoral fin (16.0–17.1 vs. 14.2–15.2% of SL), a

slightly longer preanal length (41.9–42.5 vs. 37.8–41.9% of SL) and a shorter pectoral fin (7.2 and 7.8–8.0% of SL in female). Templeman (1973) noted that pectoral and pelvic fin lengths are relatively longer in females, which is the reverse in our *Lipogenys-L. plaxae* as noted above.

To sum up, *L. gillii* and *L. plaxae*—our *Lipogenys* differ in some meristic characters, male's snout length (Templeman (1973) noted no difference in snout length between male and female of *L. gillii*), and in the sexual dimorphism in pectoral and pelvic fins. These differences are very small, and should not be regarded as the specific differences, so much as those resulting from separate geographic populations. Therefore, we concluded that our *Lipogenys* specimens should be identified as *L. gillii*, and *L. plaxae* is a junior synonym for *L. gillii*.

Acknowledgments

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ソコギス目タヌキソコギス(新称)の仙台湾沖深海からの記録

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東北地方仙台湾沖水深1,000mの海底から、ソコギス目の魚類が2個体採集された。これらを Lipogenyidae (タヌキソコギス科; 新称) に属する *Lipogenys gillii* Goode et Bean, 1894 (タヌキソコギス; 新称) と同定して報告する。これまで、本海域から報告されている *Lipogenys plaxae* Sheiko, 1988 は *L. gillii* の同種異名であることを論じた。本種の太平洋からの記録は2番目である。

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