

A New Stargazer, *Uranoscopus flavipinnis*, from Japan and Taiwan with Redescription and Neotype Designation of *U. japonicus*

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Abstract *Uranoscopus flavipinnis* sp. nov. is described based on 39 specimens from the coasts of southern Japan and Taiwan. It differs from other *Uranoscopus* species in having the following combination of external characters: posterior nasal valve tubular, as long as anterior one; nape naked between the lateral lines; body reddish brown with irregular yellow spots. Previously, *U. flavipinnis* was wrongly identified as *U. japonicus* Houttuyn, 1782 (= *U. asper* Temminck et Schlegel, 1843). This new species occurs from the South China Sea northward to Ibaraki and Niigata Prefectures, Japan. Since the type specimen of *U. japonicus* has been lost, one of the present specimens, HUMZ 109237, is designated as the neotype of *U. japonicus* to stabilize the nomenclature. *Uranoscopus japonicus* is redescribed and compared with *U. flavipinnis*.

The family Uranoscopidae (Perciformes) comprises a group of benthic marinefishes. Members of *Uranoscopus*, the largest genus in the family, occur circumglobally in warm and temperate waters. *Uranoscopus japonicus*, the commonest stargazer in Japan, was described by Houttuyn (1782) based on a specimen which was collected in Japan by Thunberg (Jordan and Snyder, 1901; Boeseman, 1947) but apparently has been lost. Houttuyn's (1782) description of *U. japonicus*, as Cuvier in Cuvier and Valenciennes (1829), Jordan and Snyder (1901) and Boeseman (1947) pointed out, was inaccurate, incomplete and without figures, but stated that *U. japonicus* has fifteen soft rays in the second dorsal, which distinguishes it from all other Japanese *Uranoscopus* species. The species name has seldom been referred to since Temminck and Schlegel (1843) described *U. asper*, providing a detailed description and a fine figure, based on specimens collected from Japan by Von Siebold and Burger (Richardson, 1846; Boeseman, 1947). However, Jordan and Snyder (1901) synonymized *U. asper* with *U. japonicus* and Tanaka (1913) accepted their synonymization. The species was named tenmondai-okoze in Japanese by Temminck and Schlegel (1843) based on literal translation from the genus name and Jordan and Snyder (1901, 1902) and Jordan and Hubbs (1925) quoted it. However, Tanaka (1913) changed the name from tenmondai-okoze to mishima-okoze. Jordan and Hubbs (1925), in a revision of Japanese stargazers, recognized eight species in five genera in the

family Uranoscopidae. Matsubara (1955) and the Ichthyological Society of Japan (1981) followed Jordan and Hubbs (1925). Matsuura and Yunokawa (1962), however, recognized two morphological types within *U. japonicus*, and compared the processes of gonad maturities of the two morphotypes. Kishimoto (1984b) reviewed the Japanese Uranoscopidae, giving short descriptions and figures of six species in three genera, including an undescribed species, which closely resembles *U. japonicus* in external appearance.

This previously unrecognized species is described here as *Uranoscopus flavipinnis* sp. nov., based primarily on specimens from Miho Peninsula, Suruga Bay; with additional specimens from various Japanese localities and one specimen from Taiwan. In this paper, *U. japonicus* is redescribed and compared with *U. flavipinnis*, and a 200 mm SL specimen, HUMZ 109237, is designated as the neotype of *U. japonicus* to avoid future confusion.

Material examined

The study material, including 39 type specimens of the new species and the neotype of *Uranoscopus japonicus*, is in the following repositories:

BMNH: British Museum (Natural History), London; BSKU: Department of Biology, Faculty of Science, Kochi University, Kochi; CAS-SU: California Academy of Sciences, San Francisco; FSFL: Far Seas Fisheries Research Laboratory, Shimizu; HUMZ: Laboratory of Marine Zoology, Faculty of Fisheries,

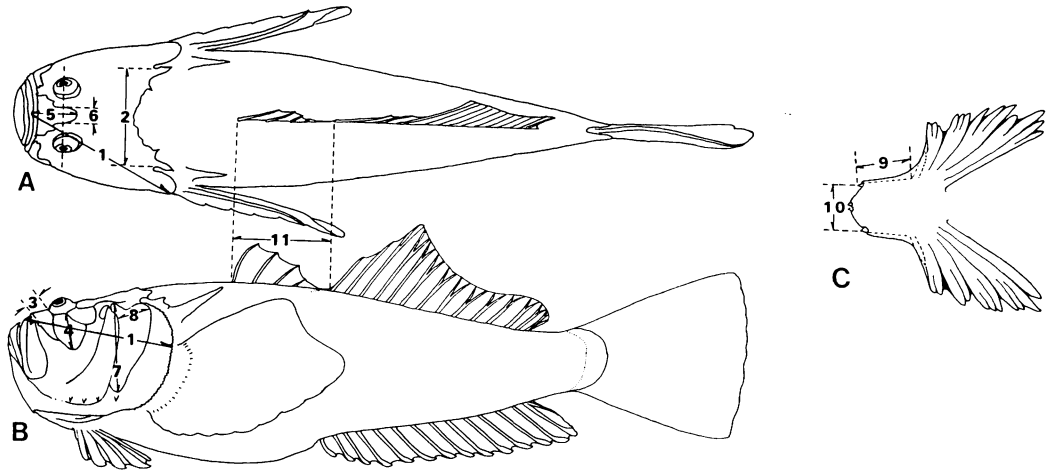


Fig. 1. Methods of measurements for stargazers. A, dorsal view; B, lateral view; C, ventral view of the basipterygial processes and pelvic fins. 1, head length; 2, distance between upper gill openings; 3, least depth of infraorbitals; 4, greatest depth of infraorbitals; 5, length of interorbital fossa; 6, width of interorbital fossa; 7, opercular height; 8, opercular width; 9, length of basipterygial process; 10, distance between basipterygial processes; 11, basal length of first dorsal.

Hokkaido University, Hakodate; IORD: Institute of Oceanic Research and Development, Tokai University, Shimizu; ISNB: Institut royal des Sciences naturelles de Belgique, Bruxelles; MK: Private collection of Masao Katayama; MNHN: Museum National d'Histoire Naturelle, Paris; MT: Koninklijk Museum voor Midden-Afrika, Tervuren; MSM: Marine Science Museum, Tokai University, Shimizu; NSMT: Department of Zoology, National Science Museum, Tokyo; RMNH: Rijksmuseum van Natuurlijke Historie, Leiden; SKSK: Surugawan Kaiyō Seibutsu Kenkyukai, Shimizu; USNM: National Museum of Natural History, Smithsonian Institution, Washington, D. C.; YCM: Yokosuka City Museum, Yokosuka; ZMA: Zoölogische Museum, Universiteit van Amsterdam, Amsterdam; ZUMT: Department of Zoology, University Museum, University of Tokyo, Tokyo.

Comparative materials. *Uranoscopus cognatus*: BMNH 1860.3.19:397, holotype (only photograph examined), Sea of Pinang; BMNH 1879. 5. 14: 191, one specimen among six syntypes of *U. kaianus*, 52.5 mm SL, Arafura Sea; BMNH 1879. 5. 14: 192, one specimen among six syntypes of *U. kaianus*, 18.9 mm SL, south of New Guinea, 51 m; BMNH 1879. 5. 14: 246, 112.6 mm SL, Arafura Sea; BMNH 1890.12.4:4, 101.2 mm SL, Ganjam coast; CAS-SU 29825, 111.6 mm SL, South China Sea; CAS-SU 30784, East China Sea (locality doubtful); HUMZ 38038, 38442, 46961, 46968, 47019, 47020, 47041, 93128 and 101096, 79.5–108.4 mm SL, South China Sea, 59–74 m; RMNH 4883 and 4884, two specimens among three syntypes of *U. oligolepis*, 60.1 and 79.4 mm SL, Java and Sumatra;

RMNH 5940, smallest one among five specimens of Bleeker's *U. asper*, exact locality not known; ZMA 119.615, 48.7 mm SL, probably off north Java.

Uranoscopus marmoratus: MNHN 5254, holotype, 95 mm SL, Indian Ocean; four syntypes of *U. crassiceps*, BMNH 1890.11.28:5–8, 52.7–74.0 mm SL, off Ganjam coast, India; HUMZ 73459 and 73851, 183.1–209.3 mm SL, Saya de Malha Bank, Indian Ocean, 95–147 m; ISNB n° 1852, 88.8 mm SL, Bay of Bengal, 175–183 m; SKSK 8499, 8559, 8861, 8962, 8963, 8986 and 8987, 127.0–199.3 mm SL, Saya de Malha Bank, Indian Ocean.

Uranoscopus polli: FSFL-EI 590, 123.2 mm SL, coast of Portuguese Guinea, 45 m; ISNB n° 13705 (4 specimens), 130.6–146.6 mm SL, coast of Angola, 25–40 m; ISNB n° 13706, 128.2 mm SL, coast of Angola, 50 m; MT 126626–629, 114.7 and 132.1 mm SL, coast of Angola.

Methods of counting and measuring

Methods of counting and measuring followed Hubbs and Lagler (1947) and Kishimoto (1984a), with modifications discussed below. Where possible, measurements were taken from the left side of the body, point to point by means of vernier calipers and were recorded to the nearest 0.1 mm. The body was straightened to such an extent to be reasonably normal with both the mouth and opercles closed. The midpoint of the anterior edge of the concave upper jaw was

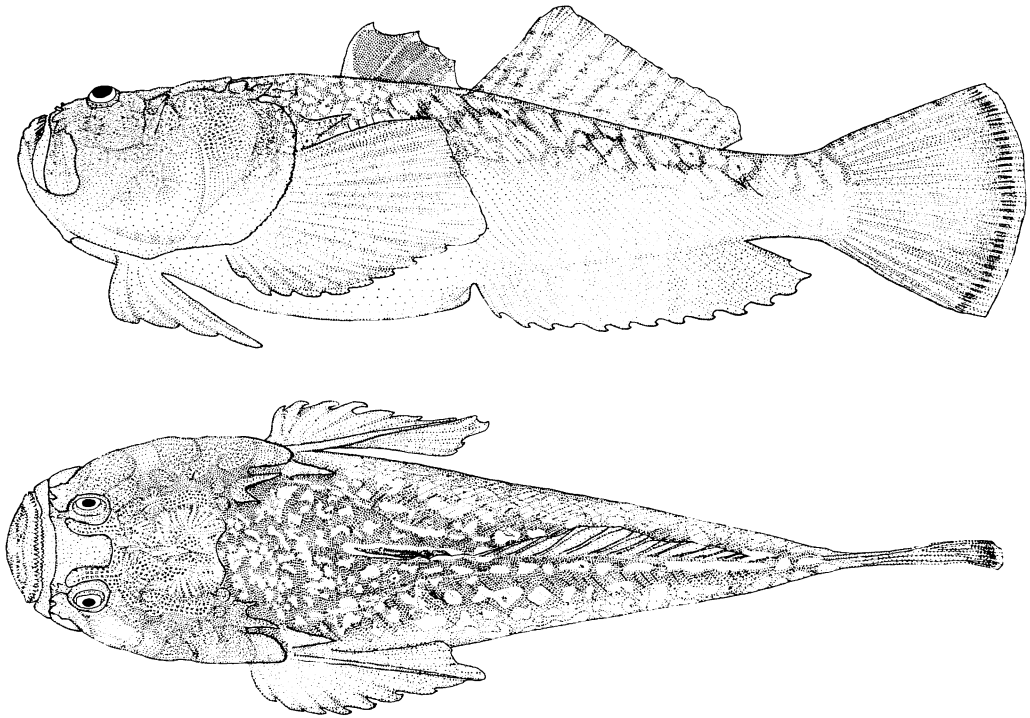


Fig. 2. Holotype of *Uranoscopus flavipinnis* sp. nov., HUMZ 107319, 201.4 mm SL.

used to represent the anteriormost point on the head. The farthest extremity of the gill flap is difficult to define, because the posterior margin of the gill flap is almost vertical. Therefore, the distal edge of the gill flap at a point level with the uppermost edge of the pectoral fin base was used as a point of measurement, as mentioned by Kishimoto (1984a, see Fig. 1: 1).

The following points of measurements relate to numbered features in Fig. 1: 2–11.

2. Distance between upper gill openings: least width between inner edges of dorsal ends of gill openings.

3. Least depth of infraorbitals: least depth from orbital rim to lower edge of part behind longest lacrimal spine.

4. Greatest depth of infraorbitals: greatest depth from orbital rim to lower edge of infraorbitals (at lacrimal in *Uranoscopus*), measuring on a perpendicular line to rim.

5. Length of interorbital fossa: measured from midpoint of anterior edge of concave upper jaw to rear end of bony rim of interorbital fossa.

6. Width of interorbital fossa: width of fossa measured on line through centers of eyes.

7. Opercular height: measured from lowermost margin to dorsalmost tip of opercle including articular knob.

8. Opercular width: greatest width from posterior edge of preopercle below articular knob to posterior margin of opercle, measured on perpendicular line to posterior winding edge of preopercle.

9. Length of basipterygial process: measured from extreme tip of anteriormost spiny process to pelvic origin.

10. Distance between basipterygial processes: distance between extreme tips of anteriormost spiny processes.

11. Basal length of first dorsal: distance between insertions of first dorsal spine and first element of second dorsal fin, last spine of first dorsal fin usually rudimentary and covered by skin.

In the genus *Uranoscopus*, it is difficult to accurately count dorsal fin spines without using radiographs or tearing the skin, as the last spine is very small and embedded in most cases. As a result, Houttuyn (1782), Jordan and Snyder (1902), Tanaka (1913), Jordan and Hubbs (1925), Brüss

and Klausewitz (1984) and Okamura in Okamura, ed. (1985) did not include the last dorsal spine in their counts. Very rarely the last element of the first dorsal fin is moderately long and located at the second dorsal fin origin. However, since this element is sometimes so small, it is difficult to confirm whether it is a spine or not. In such cases, it was recorded as the first spine of the second dorsal fin.

All members of *Uranoscopus* possess a pelvic fin with a very weak, minute spine which is connected to the first segmented ray by a tendon and occasionally has been overlooked (e.g. Houttuyn, 1782; Brüss and Klausewitz, 1984). The terminology "pelvic spine" of Brüss and Klausewitz is equivalent to the "basipterygial process" in this paper (R. Brüss, in lit.).

Uranoscopus flavipinnis sp. nov.

(Japanese name: Kibire-mishima)

(Fig. 2)

Uranoscopus asper (non Tem. et Schl.); Bleeker, 1853: 27 (Nagasaki, Kyushu, Japan); Bleeker, 1983: pl. 424, fig. 6.

Uranoscopus japonicus (non Houttuyn); Jordan and Hubbs, 1925: 315 (key confused with *U. japonicus*), 316 (in part of records); Wu, 1931: 174 (Tchou-San, East China Sea); Okada and Matsubara, 1938: fig. 335 (not description on p. 132); Liang, 1948: 58 (Keelung, Taiwan, in part); Liang, 1955: 170 (Taipei, Keelung, and Tainan, Taiwan, in part, not fig. 1); Li, 1955: 159, fig. 101 (Yantai, Weihai, and Tsingtau, Shandong Pen.); Hiyama and Yasuda, 1961: 109, pl. 142, fig. 245 (southern Japan); Hotta, 1961: 70 (Japan, in part, not pl. 49 nor fig. 116); Chu et al., 1962: fig. 563 (South China Sea); Chu et al., 1963: 371 (Tchou-San, East China Sea, in part); Chen, 1969: 430 (Taipei and Keelung, Taiwan, in part); Lindberg and Krasnyukova, 1969: 456 (in part), fig. 425 (Tsuruga, Sea of Japan); Hiyama and Yasuda, 1971a: 197, fig. 268 (southern Japan); Yang, 1979: 415 (Tungtau, Xisha Is., South China Sea, not fig. 290).

Uranoscopus sp.; Kishimoto, 1984b: 293, pl. 263, fig. D (one of the paratypes; southern Japan to the South China Sea excluding the Ryukyu Is.); Yamada in Okamura, ed., 1986: 304, 1 fig. (East China Sea and Yellow Sea).

Holotype. HUMZ 107319, 201.4 mm SL, ♀, outside coast of Miho Pen., innermost Suruga Bay, Pacific coast of Japan, 7–10 m, 27 May 1979, caught by a gill net.

Thirty-eight paratypes. BMHN 1986. 3. 10: 1, 229.8

mm SL, ♀; BMNH 1986.3.10:2, 168.0 mm SL, ♀; BMNH 1986.3.10:3, 105.8 mm SL, ♀; HUMZ 107322, 240.1 mm SL, ♀; HUMZ 107321, 176.4 mm SL, ♀; HUMZ 107323, 158.4 mm SL, ♂; HUMZ 107320, 124.2 mm SL, ♀; HUMZ 107325, 100.7 mm SL, ♂; IORD79-122, 211.6 mm SL, ♀; IORD79-139, 208.9 mm SL, ♀; IORD79-145, 194.7 mm SL, ♀; IORD79-36, 190.9 mm SL, ♀; IORD79-29, 171.2 mm SL, ♀; IORD79-38, 150.4 mm SL, ♀; IORD79-35, 88.7 mm SL, ♂; IORD80-66, 68.0 mm SL, ♀; MNHN 1986-332, 181.1 mm SL, ♀; MNHN 1986-333, 112.4 mm SL, ♂; MSM-79-491, 163.4 mm SL, ♀; MSM-79-490, 117.4 mm SL, ♂; MSM-79-492, 83.5 mm SL, ♀; NSMT-P 44174, 219.3 mm SL, ♀; NSMT-P 44172, 139.8 mm SL, ♂; NSMT-P 44173, 110.7 mm SL, ♂; RMNH 29573, 224.3 mm SL, ♀; RMNH 29572, 134.2 mm SL, ♂; USNM 274952, 183.6 mm SL, ♀; USNM 274951, 145.5 mm SL, ♂; USNM 274953, 86.1 mm SL, ♂; ZUMT 55110, 155.7 mm SL, ♀; ZUMT 55111, 119.2 mm SL, ♀; ZUMT 55112, 83.2 mm SL, ♂; all the above 32 specimens from same locality as holotype, collected in 7–35 (mostly 10–18) m, between 8 Apr. 1979 and 4 July 1980; HUMZ 80659, 100.3 mm SL, Kaohsiung fish market, Taiwan, Dec. 1978, Tsutomu Kanayama; HUMZ 107324, 67.4 mm SL, ♀, off Kanazawa City, Ishikawa Pref., Sea of Japan, 64 m, Oct. 1979, Hatsuo Matsumura; IORD67-1, 131.5 mm SL, ♀, off Minabe-cho, Wakayama Pref., Pacific coast of Japan, Mar. 1967; YCM-P 8021 (3 specimens), 38.6–74.5 mm SL, off Anorizaki, Kumano-nada, Pacific coast of Japan, 1980, Eiji Tsuchida.

Nontype material. 21 specimens, 118.7–201.0 mm SL: IORD79-28 (skeletonized), IORD79-30–32, 34, 39, 58, 59, 63, 86, 93, 103, 104, 108, 123, 136, 137, 176, 209, 80-56 and 57, all from same locality as holotype, collected in 10–25 m, between 8 Apr. 1979 and 26 June 1980. 1 specimen, 179.5 mm SL: IORD80-39, off Sakai Port, Wakayama Pref., Pacific coast of Japan, ca. 50 m, 9 Apr. 1980, Shojiro Fukui. 14 specimens, 140.5–221.3 mm SL: IORD79-160–173, Taisha Bay, Shimane Pref., Sea of Japan, 18–30 m, 4–5 July 1979. 1 specimen, 173.9 mm SL: IORD79-188, Maizuru fish market, Kyoto Pref., Sea of Japan, Eiichi Fujii. 5 specimens, 121.3–161.1 mm SL: IORD79-191, 197–200, off Kanazawa City, Ishikawa Pref., Sea of Japan, 30–50 m, 24 June and 27 July, 1979, Hatsuo Matsumura. 5 specimens, 134.6–192.0 mm SL: IORD79-192–196, off Kaga City, Ishikawa Pref., Sea of Japan, 40–50 m, 26 June 1979, Hatsuo Matsumura. 1 specimen, 195.6 mm SL: MSM71-705, data unknown. 1 specimen, 109.7 mm SL, YCM-P 8045, Choshi fish market, Chiba Pref., Pacific coast of Japan, 7 Dec. 1980, Masayoshi Hayashi.

Material for distributional study. Tsushima, north of Kyushu, NSMT-P 6310–6312; Sado Island, north of

Table 1. Meristic characters of *Uranoscopus flavipinnis* sp. nov. and *U. japonicus*. Counts for the former's holotype and the latter's neotype are indicated by an asterisk.

	Vertebrae										Proximal pterygiophores													
	Total	25				26				27	Dorsal				Anal									
	AV+CV+Uro.	10+14+1	11+13+1		10+15+1		11+14+1		11+15+1	17	18	19	20	11	12	13	14							
<i>U. flavipinnis</i>	39 types	1	35*		3		3		1	4	35*	1		36*	2									
<i>U. japonicus</i>	36		1		34*		1		1	8	27*	1	2	30*	4									
	Dorsal rays										Anal rays				Pectoral rays									
	Spines		IV			V				IV-I		V-I		Anal rays				Pectoral rays						
	Soft rays	13	14	15	12	13	14	15	13	14	12	13	12	13	14	15	15	16	17	18	19	20		
<i>U. flavipinnis</i>	39 types others 49	1	2			28*				6		1		1	35*	3		15					19*	4
<i>U. japonicus</i>		101	9	11	7			54*				1		3	16	3		87*	11		1	4	36	57*
	Opercular spines										Scale rows on body													
	Pre.			Sub.				Inter.			Scale rows on body													
	3	4	5	6	1	2	3	4	0	1	2	3	4	5	5<	36	41	46	51	56	60			
<i>U. flavipinnis</i>	39 types others 49	1	32*	4	2	33*	4	2	34	1*	1	1	2	1	11	17*	9							
<i>U. japonicus</i>		101 (97)	96*	3	1	1	87*	6	7	1	91*	3	2	1	2	1	1	1	1	1	1	1		
	Labial fimbriae																							
	on upper lip							on lower lip																
	<6	6-10	11-15	16-20	21-25	25<	<16	16-20	21-25	26-30	31-35	35<												
<i>U. flavipinnis</i>	39 types others 49	6			28*	4	1	1				8	26	4*										
<i>U. japonicus</i>		99	11	49	36*	3	1				34	53*	11											

— 5 —

Kishimoto: New Stargazer from Japan

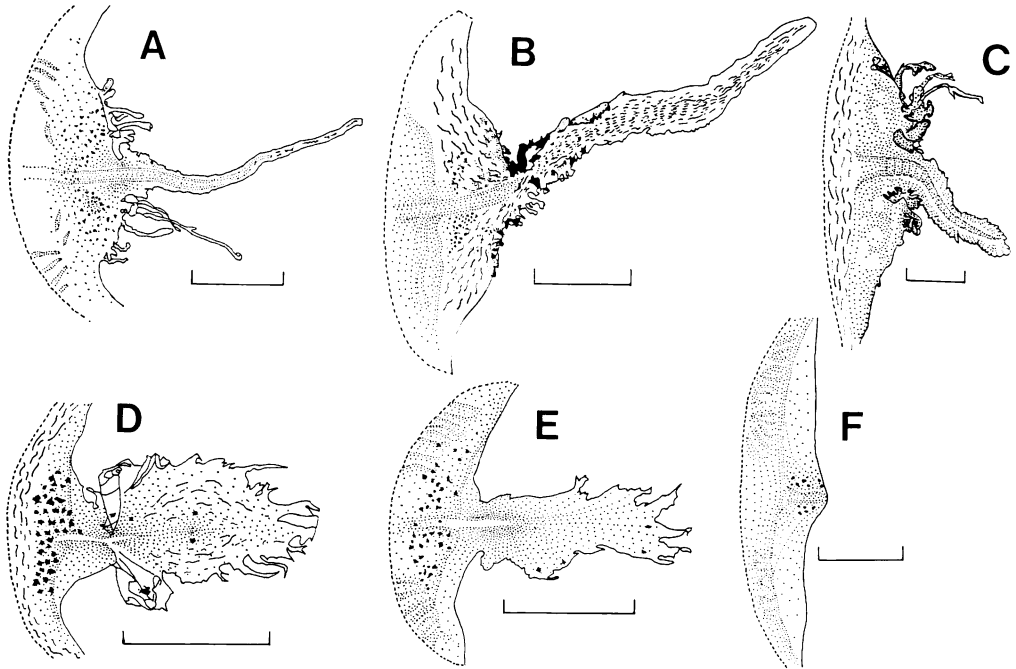


Fig. 3. Dorsal view of respiratory valve inside lower jaw. Anterior to left. Scales indicate 3 mm. *Uranoscopus flavipinnis* sp. nov.: A, 67.4 mm SL, HUMZ 107324; B, 168.0 mm SL, BMNH 1986. 3. 10:2; C, 224.3 mm SL, RMNH 29573. *U. japonicus*: D, 39.5 mm SL, IORD80-44; E, 61.2 mm SL, IORD80-21; F, 160.0 mm SL, IORD79-8.

Niigata Pref., HUMZ 59144, 51992-51994; Kochi Prefecture, BSKU 39045, 39046, and HUMZ 58767; Sagami Bay, HUMZ 48392 and 49163.

Diagnosis. Lower edge of preopercle usually with four or sometimes more spines. Labial fimbriae well developed, sides of those on lower lip form fringe. Posterior nostril with tubular valve. Dorsoposterior margin of pectoral fin truncate. Pectoral and caudal fins deep yellow in fresh specimens. Vertebrae, including urostyle, 25, very rarely 26. Sixth proximal anal pterygiophore (the first to follow a complete hemal spine) inserts between hemal spines of 14th and 15th vertebrae.

Description. Meristic characters are shown in Table 1 and proportional measurements in Table 2. Other morphological features are as follows. Large head and anterior part of body depressed, body becoming compressed posteriorly. External apparent bones of head, slightly concave along middorsal line, moderately sculptured with minute tubercles fusing into reticulations, and with radially aligned ridges. Sutures marked by rather deep channels. Two occipital lobes de-

veloped. Preopercular limb joined with opercle by broad bony ridges. Interorbital fossa reaches (as in holotype) or exceeds line joining posterior margin of orbits. No supraocular tentacle, chin barbel, or cirri on branchiostegal membrane. Both nostrils tubular, usually without flap (as in holotype), rarely with a threadlike or laminate flap on top of the tube posteriorly. Distinct labial fimbriae on lower lip with fringed edges, those on upper lip papillose in adults (including holotype), but in young, those on lower lip papillose. Respiratory valve of holotype dark colored, with a fernlike flap at central tip. Respiratory valve of young prolonged as a retractile filament, dark colored, with some appendages near the base, and reaching nuchal region (Fig. 3A). Respiratory valve of adults varies in length from long enough to reach over the eyes (Fig. 3B) to rudimentary (Fig. 3C), and is often absent as a result of damage. Teeth on jaws conical, inner three (in adults, including holotype) or two (in young) series fewer and larger than those in outer series on dentary; one series of widely separated caniniform teeth on posterior part of dentary.

Table 2. Proportional measurements of *Uranoscopus flavipinnis* sp. nov. and *U. japonicus*. Features marked † vary with growth. †† Border line: e.g. the ratios of head length in standard length of two species duplicate between 2.62 and 3.01. For specimens larger than 60 mm standard length (x), the ratio (y) of *Uranoscopus flavipinnis* is always smaller than a value expressed by $y=(x/450)+2.6$ and that of *U. japonicus* is larger.

Species	<i>U. flavipinnis</i>		<i>U. japonicus</i>		Borderline††
	Holotype	Paratypes	Neotype	Nontype	
Specimens examined	1	38	1	44	
Range of standard length in mm	201.4	38.6–240.1	200.0	36.1–251.7	
In standard length:					
†Head length	2.92	2.53–3.01	3.09	2.62–3.33	(SL/450)+2.6 [SL>60 mm]
Head width	3.35	2.73–3.34	3.46	3.23–4.07	usually 3.33
†Length between snout to gill opening	3.74	3.11–3.91	3.87	3.41–4.16	usually (SL/550)+3.46 [SL>60 mm]
†Anal longest soft ray length (s. r. l.)	7.02	5.66–7.20	8.65	7.16–8.99	(SL/240)+6.5
†Pelvic fin length	4.65	3.39–4.87	5.33	4.21–5.79	usually (SL/200)+0.38
In head length:					
Length of postorbital part of head	1.45	1.38–1.50	1.51	1.46–1.60	usually 1.47
†Orbit diameter	6.11	5.03–6.98	5.38	4.18–5.55	(SL/300)+5.1 [SL>60 mm]
†Upper jaw length	2.25	2.04–2.35	1.98	1.88–2.10	usually 2.05 [SL>100 mm]
†Caudal peduncle depth	3.35	3.03–3.78	3.02	2.76–3.45	usually 3.1 [SL>100 mm]
†Caudal fin length	1.33	1.12–1.38	1.21	1.00–1.23	usually (SL/1000)+1.0 [SL>100 mm]
†Cleithral spine length	4.26	3.20–5.05	3.40	2.48–3.99	usually (SL/170)+2.3 [SL>100 mm]
Distance between basipterygial processes	5.15	3.73–6.04	7.60	5.17–11.67	usually 6.0
Opercular width	4.21	3.40–4.46	4.49	4.15–5.10	usually 4.2
Opercular height/Opercular width	1.98	1.66–2.03	2.13	1.88–2.51	usually 2.0 [SL>100 mm]
†Interorbital width/Orbit diameter	1.29	0.83–1.50	0.98	0.68–1.18	(SL/700)+0.9 [SL>60 mm]
†Length of interorbital fossa/Orbit diameter	1.66	1.23–1.95	1.54	1.13–1.64	(SL/300)+5.1 [SL>60 mm]
†Orbit diameter/Width of interorbital fossa	1.53	1.23–2.50	2.35	1.84–4.44	usually 2.0 [SL>140 mm]
Greatest dep. infraorbitals/Orbit diameter	1.38	1.17–1.82	1.08	0.72–1.32	1.35 [SL>100 mm]
L. basipt. process/Dist. basipt. processes	0.95	0.71–1.43	1.20	0.90–2.53	usually 1.2
D. longest s. r. l./A. longest s. r. l.	1.10	1.03–1.38	1.10	1.27–1.56	usually 1.3
†Pectoral fin length/Cleithral spine length	3.49	2.79–3.81	2.85	2.10–3.42	usually (SL/175)+1.97 [SL>100 mm]

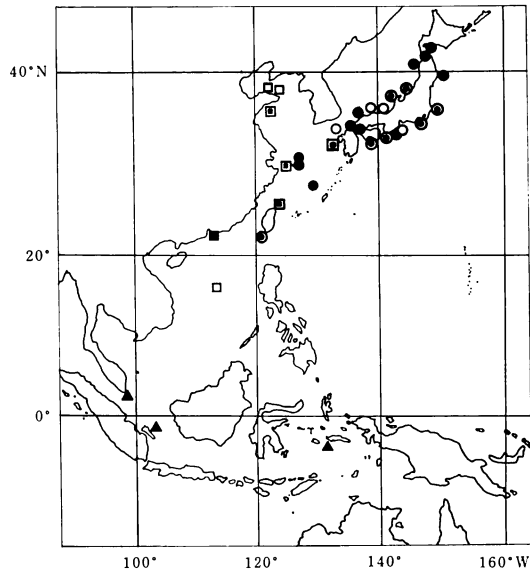


Fig. 4. Localities for *Uranoscopus flavipinnis* sp. nov. (open symbols) and *U. japonicus* Houttuyn (solid symbols). Circles designate localities for material examined, squares represent literature reports, and triangles represent questionable records of Bleeker (1878).

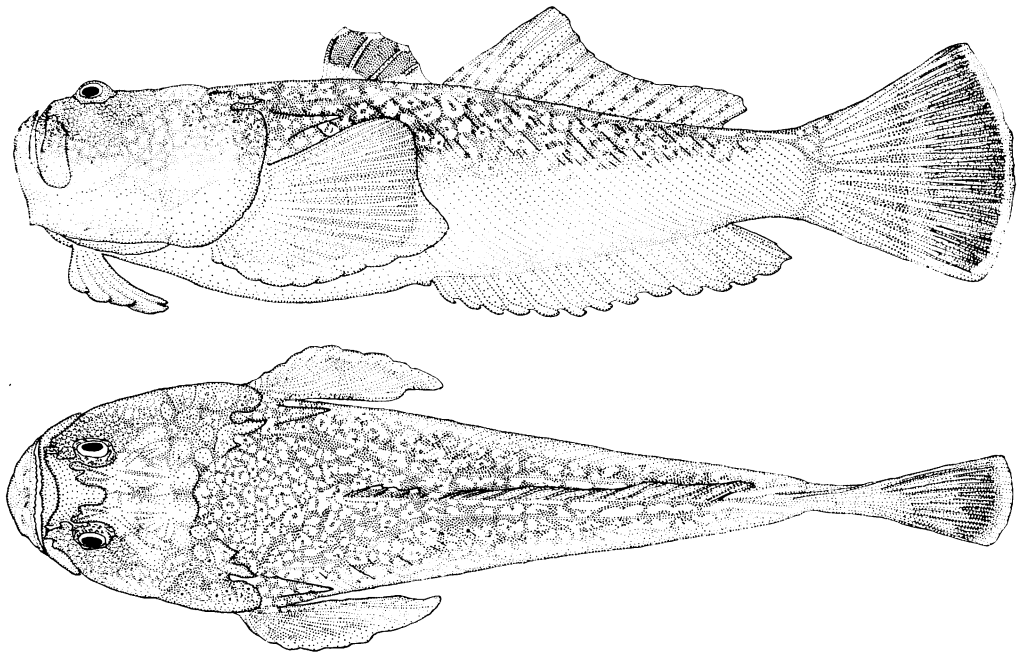


Fig. 5. Neotype of *Uranoscopus japonicus* Houttuyn, HUMZ 109237, 200.0 mm SL.

Premaxillary teeth in broad band in adults (including holotype) or in two series in young tapering to a single row posteriorly. Usually oval patch of villiform teeth on each side of prevomer (as in

holotype), both patches sometimes connected in large adults; palatine with two rows of teeth in adults, young with one sparse row.

Rudimentary 5th element of dorsal fin almost

always covered by skin. First element of second dorsal fin usually segmented and unbranched. Single pair of basipterygial processes widely separated in usual. Scales on body characteristically developed in oblique rows (ridges) directed downward and backward, but several posterior rows sometimes directed downward and forward. Head, nape between lateral lines, breast, and belly naked. Dorsoposterior margin of pectoral fin truncate. First proximal anal pterygiophore supports two rays. Sixth proximal anal pterygiophore (the first to follow a complete hemal spine) inserts between hemal spines of 14th and 15th vertebrae (3rd and 4th caudal vertebrae) in 36 (including holotype) of 39 type specimens.

Color of freshly dead specimens. Upper half of body reddish brown with pale yellowish spots, which are usually irregular in shape and slightly smaller than eye; upper half of head reddish brown with numerous, scattered, pale speckles; lower half of head and body white. Spinous dorsal with base and tips of spines pure white, remainder jet-black. Segmented dorsal fin rays reddish brown, with many diagonal yellow bars; fin membrane pale and translucent. Caudal deep yellow, posterior part dark with white distal margin. Upper part of pectoral pale yellow, lower part deep yellow with pale margin on ventral and posterior edges. Anal white, except for posterior basal part.

Color of preserved specimens. Ground color of upper parts of head and body, and bases of soft dorsal rays dark brown; black area of spinous dorsal similar to that in freshly dead specimens; white and yellow areas described for freshly dead specimens evenly pale.

Range. As shown in Fig. 4, *Uranoscopus flavipinnis* occurs from Ibaraki Pref. and Niigata Pref., Japan, southward to Keelung, Taiwan. It has not been collected from the Ryukyu Islands. Yang's (1979) description (not fig. 290) of "*U. japonicus*" from Xisha Islands, South China Sea, is based on a specimen of *U. flavipinnis* and is the southernmost known record.

Etymology. The specific epithet is a combination of the Latin *flavus*, meaning "yellow", and *pinnis*, meaning "with fins", and refers to the deep yellow color of the pectoral and caudal fins.

Remarks. *Uranoscopus flavipinnis* has been confused with *U. japonicus* (= *U. asper*), because they both have yellow spots on a brownish body.

However, *U. flavipinnis* is distinguishable from *U. japonicus* by the counts and proportional measurements shown in Tables 1 and 2 and the following characters (condition found in *U. japonicus* is given in parentheses): 1. dorsoposterior edge of pectoral fin truncate in *flavipinnis* (concave); 2. labial fimbriae well developed and forming a distinct fringe (poorly developed and papillose); 3. lower respiratory valve with a long, dark, thread-like filament throughout life, sometimes broken (leaflike flap in the young, no filament in adults); 4. the 6th (5th) proximal anal pterygiophore normally inserts between hemal spines of 14th and 15th (13th and 14th) vertebrae; 5. ground color of the body reddish brown (greenish brown); 6. yellow spots on dorsal half of body irregular in shape (several spots ringlike); 7. caudal and pectoral fins deep yellow (pale yellow).

Other species in this genus from Japan are differentiated in the key on p. 12.

***Uranoscopus japonicus* Houttuyn, 1782**
(Japanese name: Mishima-okoze)
(Fig. 5)

Uranoscopus japonicus Houttuyn, 1782: 314 (type locality, Nagasaki, Kyushu, Japan); Jordan and Snyder, 1901: 745 (Yokohama, Tokyo Bay, Japan; synonymized *U. asper* Temminck et Schlegel with *U. japonicus* Houttuyn); Jordan and Snyder, 1902: 475 (Yokohama); Tanaka, 1913: 197, pl. 53, figs. 202-204 (Wakayama, Kii Pen., Pacific coast of central Japan); Jordan and Hubbs, 1925: 315 (in key, confused with *U. flavipinnis*), 316 (in part of records); Evermann and Shaw, 1927: 121 (Ningpo, eastern China); Wang and Wang, 1936: 206, fig. 33 (Tsingtau, Yellow Sea, northeast China); Okada and Matsubara, 1938: 132 (not fig. 335, Japan); Liang, 1948: 58 (Keelung, Taiwan, in part); Kamohara, 1952: 88, fig. 85 (Shikoku, Japan); Tanaka and Abe, 1955: 245, fig. 1 (Japan); Fowler, 1956: 328 (key), 329 (China); Hotta, 1961: 70 (in part), pl. 39, figs. 116, A-D (Japan); Chu et al., 1963: 371 (East China Sea; in part), fig. 278 (Changle, Fujian, East China Sea); Shen, 1964: 20 (Hong Kong); Chen, 1969: 430 (Taipei and Keelung, Taiwan; in part); Lindberg and Krasnyukova, 1969: 456 (reference, in part; not fig. 425); Hiyama and Yasuda, 1971b: 228, 318 and 319, fig. 492 (Aburatsubo, Sagami Bay); Masuda et al., 1975: 260, pl. 83-c (southern Japan); Yang, 1979: fig. 290 (not description, South China Sea); Murofushi et al., 1980: 113 (Suruga Bay, Pacific coast of central Japan); Shen, 1984: 116, figs. 378-5, a-c (northeastern part of Taiwan); Kishimoto,

1984b: 293, pl. 263-C (Japan to the South China Sea except the Ryukyu Is.); Okamura in Okamura, ed., 1985: 558 and 713, fig. 338 (Okinawa Trough); Yamada in Okamura, ed., 1986: 302, 1 fig. (East China Sea and Yellow Sea).

Uranoscopus asper Temminck and Schlegel, 1843: 26, pl. 9, fig. 1 (type locality, Japan); Richardson, 1846: 211 (redescription of type, not Rev. George Vachell's specimens); Bleeker, 1857: 66 (Japan); Günther, 1860: 228 (Japan); Bleeker, 1878: 53 (Singapore, Bangka, and Ambon); Boeseman, 1947: 39 (redescription of type).

Neotype. HUMZ 109237, 200.0 mm SL, ♀, outward Miho Pen., innermost Suruga Bay, Pacific coast of Japan, 36–55 m, 4 Apr. 1979, caught by a gill net.

Nontype material. 100 specimens, 36.1–251.7 mm SL: HUMZ 80660, Kaohsiung fish market, Taiwan, Dec. 1978, Tsutomu Kanayama; IORD79-4–8, 10–26, 40–55, 60–62, 69–71, 73–75, 87, 88, 90–92, 95, 97, 98, 100, 101, 105, 115, 116, 118, 130, 151, 259, 260, 275, 276, 366, 80-5, 21, 41, 44 and 47, from same locality as neotype, collected from 10–55 m, between 4 Apr. 1979 and 18 May 1980; IORD79-293–296, 298 and 299, off Nachi-Katsuura, Kumano-nada, Pacific coast of central Japan, Nov. 1979, Shojiro Fukui; IORD80-63–65, off Kasa-jima, Miura Pen., Sagami Bay, Pacific coast of central Japan, Mar. 1980, Hiroshi Iwasaki; MK-308, Nagasaki fish market, Kyushu, Japan, May 1950, Masao Katayama; MK-382, Shimonoseki fish market, Yamaguchi Pref., Japan, Oct. 1950, Masao Katayama; MK-549, Hohfu City, Yamaguchi Pref., Inland Sea, Japan, June 1951, Masao Katayama; MSM-72-210, 212, 544, -77-174, off Miho Pen., Suruga Bay, Mar. 1972 to July 1977; largest four of five specimens of RMNH 5940, 102.8–215.7 mm SL, Singapore, Bangka, and Amboina, Pieter Bleeker's *U. asper*; SKSK 076, 1189, 10347, 10443 and 10486, off Miho Pen., Suruga Bay, June 1974 to Nov. 1977, Atsushi Hattori and Yoshiaki Sekiguchi; YCM-P 8044, 79.9 mm SL, Choshi fish market, Chiba Pref., Dec. 1980, Masayoshi Hayashi.

Material for distributional study. Okinawa Trough, BSKU 29687; East China Sea, HUMZ 90445, 90534, 90596, 90624, 94709, 94905 and 94987; Kochi Pref., BSKU 36075, 39047, 39048, HUMZ 39516, 39550, 39576, 39654, 39821, 47616, 49367, 58766 and 62648; Miyako, Iwate Pref., HUMZ 59645; Hamada, Shimane Pref., HUMZ 41025; Ishikawa Pref., HUMZ 65632; Fukaura, Aomori Pref., ZUMT 13293; Shiriuchi, southern Hokkaido, HUMZ 82506; Usujiri, southern Hokkaido, HUMZ 49810, 57012, 65244 and 92621.

Diagnosis. Lower edge of preopercle with three spines, very rarely more. Labial fimbriae poorly developed and simple. Posterior nostril slitlike. Dorsoposterior margin of pectoral fin

slightly concave; pectoral and caudal fins pale yellow in fresh specimens. Vertebrae 26, very rarely 27. Fifth proximal anal pterygiophore (the first to follow a complete hemal spine) usually inserts between the hemal spines of 13th and 14th vertebrae.

Description. Meristic characters are shown in Table 1 and proportional measurements in Table 2. Shape of head and body similar to that of *Uranoscopus flavipinnis*, except top of head flat and relatively smaller, with external bones finely sculptured. Interorbital fossa not reaching line joining posterior margin of orbits. No supra-ocular tentacle, chin barbel, nor branchiostegal membrane cirri. Anterior nostril tubular without flap (as in neotype), rarely with laminate flap; posterior nostril slitlike without flap; labial fimbriae on lower lip distinct and papillose with smooth edges, those on upper lip indistinct and knoblike. Respiratory valve inside lower jaw translucent, expanded, and forming foliaceous flap in young (Fig. 3D, E), its size greatly diminishing with growth (Fig. 3F) (lacking in neotype). Teeth on jaws, vomer, and palatines similar to those of *U. flavipinnis*. Rudimentary 5th element of the dorsal fin similar to that described for *U. flavipinnis*. Scales characteristically developed in oblique rows (ridges), all directed downward and backward; head, nape between lateral lines, breast, and belly naked. Dorsoposterior margin of pectoral fin slightly concave. First proximal anal pterygiophore supports first and second anal rays; fifth anal pterygiophore (the first to follow a complete hemal spine) inserts between hemal spines of 13th and 14th vertebrae (second and third caudal vertebrae) in 30 specimens, but in 6 specimens (including neotype), sixth inserts between 14th and 15th.

Color of freshly dead specimens. Upper half of body greenish brown with pale yellowish rings or spots, which are usually irregular in shape and slightly smaller than eye; upper half of head greenish brown, with numerous scattered pale yellowish speckles; lower half of body and head brilliant yellow to whitish. Dorsal fin rays greenish brown, with some pale yellow cross bars, fin membrane pale and translucent; anterior part of caudal fin yellow, posterior part dark brown with white distal margin. Pectoral fin pale yellow with whitish margin on ventral and posterior edges; anal fin white.

Color of preserved specimens. Pigmentation in preservative resembles that described for *Uranoscopus flavipinnis*.

Range. As shown in Fig. 4, this species occurs commonly along the Pacific coast of Japan from Ibaraki Pref., including the Inland Sea, southward to Kaohsiung, Taiwan, and rarely occurs northward from Ibaraki Pref. to southern Hokkaido and in the Sea of Japan. From the Ryukyu Islands, it has been reported only from the Okinawa Trough (Okamura in Okamura, ed., 1985). The description of specimens of *U. japonicus* from Hong Kong (Shen, 1964), and an illustration of a specimen of *U. japonicus* from the South China Sea by Yang (1979) represent the southernmost distributional records for this species. *U. japonicus* may occur in the waters around the East Indies (see below).

Remarks. *Uranoscopus japonicus* was originally described by Houttuyn (1782) based on a specimen from Nagasaki, Japan. Like all species of *Uranoscopus*, *U. japonicus* has two dorsal fins, eyes on the top of head, and pelvic fins on the throat. The accuracy of the fin formulae of D. IV-15, P₁ 12, and P₂ 5, as given by Houttuyn (1782), was questioned by Cuvier and Valenciennes (1829), Jordan and Snyder (1901), and Boeseman (1947). None of the known species of *Uranoscopus* has as few as twelve soft rays in the pectoral fin. Houttuyn apparently overlooked the rudimentary last spine of the five dorsal spines and the pelvic spine. The only feature useful to distinguish Houttuyn's species from the other Japanese *Uranoscopus* species is a count of fifteen soft rays in the second dorsal fin (close to the count of the fourteen rays, characteristic of what has been called *U. japonicus* in Japan). This high count was not found in any species of the genus from Japan. A count of fourteen is rare for other Japanese *Uranoscopus* species. As it was not possible to correctly identify *U. japonicus* from Houttuyn's description, I attempted to locate the type specimen. Lars Wallin unsuccessfully searched for the type of *U. japonicus* in Thunberg's collection, the majority of which is still in the possession of the Zoological Museum, Uppsala University, Sweden. He thought the specimen might be in a Dutch museum, if it still exists. M. J. P. van Oijen and Isaac Isbrücker could not locate the type in either the Rijksmuseum van Natuurlijke Historie, Leiden,

or the Zoölogisch Museum, Universiteit van Amsterdam, respectively. As the type has apparently been lost, I designate a 200.0 mm SL specimen, registered HUMZ 109237, as the neotype of *U. japonicus* in order to stabilize the name of the species.

My examination of a radiograph of the lectotype of *Uranoscopus asper*, RMNH 713, confirms that Temminck and Schlegel (1843) correctly counted the dorsal spines and anal softrays. In the latter, the two last rays are split through the base and were counted separately. Jordan and Snyder (1901) correctly considered *U. asper* to be a junior synonymy of *U. japonicus*.

Comparison

All members of *Uranoscopus* have a cartilaginous interopercle with a smooth edge, but sometimes in *U. flavipinnis* and *U. japonicus*, it is partly ossified with a few small spines or with a serrated margin (see Table 1). This ossification tends to occur although not always, in growing males. This sexual variation was not found in the few specimens of the other species examined.

Only two species of *Uranoscopus*, *U. flavipinnis* and *U. cognatus* Cantor, 1849, are known to have the tubular valve on the posterior nostril as long as the anterior one. However, *U. cognatus* is easily distinguishable from *U. flavipinnis* by having two basipterygial processes, a supraocular tentacle, uniformly light brown color-pattern, and by some proportional measurements. Several species of *Uranoscopus* have pale spots on the body. Four of them, *U. flavipinnis*, *U. japonicus*, *U. marmoratus* Cuvier in Cuvier and Valenciennes, 1829 (= *U. crassiceps* Alcock, 1890) and *U. polli* Cadenat, 1953, have a scaleless nape between the lateral lines. *Uranoscopus flavipinnis* is distinguishable from the other three species by having a tubelike posterior nostril (versus slitlike) and from the latter two species, i.e. *U. marmoratus* and *U. polli*, in having pale caudal and pectoral fins (versus blackish fins) when preserved. *Uranoscopus flavipinnis* has no papillae on the branchiostegal membrane (versus several papillae in *U. polli*).

Both *Uranoscopus flavipinnis* and *U. japonicus* are very common along the Pacific coast of Japan south of Ibaraki Pref. However, *U. flavipinnis* is more common in the Sea of Japan south of

Niigata Pref. than *U. japonicus*. *Uranoscopus japonicus* is rarely found north of Ibaraki and Niigata Prefectures to the southern coast of Hokkaido. Neither species has been recorded from the Ryukyu Islands, except for one record of *U. japonicus* from the Okinawa Trough, but both occur in the East China Sea, on the coast of Taiwan, and in the South China Sea.

Bleeker (1857) described *Uranoscopus asper* based on two specimens from Nagasaki, Japan. He listed the species from Japan (in 1859–1860), Banka (in 1860), Singapore (in 1861), Amboina (in 1865), China (in 1873), and Shimoda of Shikoku and Nagasaki, Japan (in 1879). However, Bleeker (1878) used seven specimens of *U. asper* in his revision and omitted Japan and China from the localities. Five of his specimens, RMNH 5940, are deposited at the Rijksmuseum van Natuurlijke Historie, Leiden, excluding a specimen reported by Bleeker (1853), which is referable to *U. flavipinnis*. Although the smallest one of the five is identical to *U. cognatus*, the largest four appear to be *U. japonicus*. Unfortunately it was not possible to match all his specimens with collection localities. If these four large specimens of *U. japonicus* (RMNH 5940) were from the East Indies, this would extend the range of *U. japonicus* to Singapore, Banka, or Amboina.

Key to Japanese species of *Uranoscopus*

- 1a. Preopercular spines 3, very rarely more; D. V-14; A. 14; P₁. 18 or 19; oblique scale rows more than 45; spots on dorsum; vertebrae 26.....*U. japonicus*
- 1b. Preopercular spines 4, rarely more; D. V-13; A. 13; P₁. 17 or 18; oblique scale rows less than 45; spots present or absent on dorsum, vertebrae 25 2
- 2a. Nape between lateral lines densely covered with scales, at least on the posterior half; no marks on dorsum.....*U. tosaе*
- 2b. Nape between lateral lines naked or with few scales, pale spots or dark bands on dorsum 3
- 3a. Posterior nostril with tubular valve as long as anterior one; spots on dorsum.....*U. flavipinnis*
- 3b. Posterior nostril slitlike; head with a black band, body with two black bands.....*U. bicinctus*

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日本および台湾産ミシマオコゼ科魚類の1新種キビレミシマとミシマオコゼの新模式標本の指定

岸本浩和

南日本および台湾沿岸から得られた 39 個体のミシマオコゼ科魚類に基づいて、新種キビレミシマ *Uranoscopus flavipinnis* を記載した。キビレミシマは、後鼻弁が円筒形で前鼻弁とほぼ同長であること、両側線に囲まれた項部は無鱗であること、および体は赤褐色で黄色の不定形斑をもつなどの諸点で本属他種と区別される。キビレミシマは新潟県および茨城県以南の南日本にごく普通にみられ、南支那海まで分布するが、琉球列島には分布しないものと思われる。

これまでも、本種をミシマオコゼ *Uranoscopus japonicus* Houuttuyn, 1782 (= *U. asper* Temminck et Schlegel, 1843) と混同した記載が多数見受けられるので、ミシマオコゼを再記載し、両種の比較を行なった。

また、ミシマオコゼの原記載には疑わしい点が多く、単に背鰭軟条数が 15 である点で他種と区別できずにすぎない。しかし、その模式標本は現存しないため、他の形質を検査することができなかった。そこで体長 200 mm の 1 標本 (HUMZ 109237) を新模式標本に指定する。

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