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**Validity of the Cottid Species *Stelgistrum mororane*
Transferred to the Genus *Icelus* (Actinopterygii:
Perciformes: Cottoidei), with Confirmed Records
of *Stelgistrum stejnegeri* from Japanese Waters**

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Stelgistrum mororane Jordan and Seale, 1906, previously synonymized with *Stelgistrum stejnegeri* Jordan and Gilbert, 1898, is here redescribed as a valid species of the genus *Icelus*. Contrary to the original description, the holotype of *S. mororane* has palatine teeth, which are diagnostic of *Icelus* but absent in *Stelgistrum*. *Icelus mororanis* comb. nov. is distinguished from all other species of *Icelus* by the following combination of characters: body relatively short; parietal spine undeveloped; subocular and supraocular spines absent; scales absent on cheek, between dorsal scale row and lateral line, and below lateral line except at pectoral axilla; small and simple cirrus present on upper rim of eye; two pairs of nuchal cirri present; and four saddles present on dorsolateral surface of body. Additionally, seven specimens of *Stelgistrum stejnegeri* collected from the Pacific coast of eastern Hokkaido are described, representing the first confirmed records of this species in Japanese waters.

Key Words: Redescription, *Icelus mororanis* comb. nov., *Stelgistrum stejnegeri*, confirmed record, Japan.

Introduction

The cottid genus *Stelgistrum* Jordan and Gilbert, 1898 is characterized by having four preopercular spines, teeth present on the jaws and vomer but absent on the palatines, one scale row on the lateral line and another scale row along the dor-

sal-fin base, a single pharyngeal tooth plate, no urogenital papilla, and a pelvic fin with one spine and three soft rays (Andriashev 1935). Three species are currently recognized as valid in this genus: *S. stejnegeri* Jordan and Gilbert, 1898, *S. beringianum* Gilbert and Burke, 1912, and *S. concinnum* Andriashev, 1935. All are distributed in the northern North Pacific, Bering Sea, Sea of Okhotsk, and northern Sea of Japan.

In addition to those three species, *Stelgistrum mororane* Jordan and Seale, 1906, was described on the basis of a single specimen collected from off Muroran (spelled “Mororan” in the original description), Volcano Bay, Hokkaido, Japan. Jordan *et al.* (1913), however, regarded *S. mororane* as a junior synonym of *S. stejnegeri* without discussion. Andriashev (1935) indicated that *S. mororane* differed from *S. stejnegeri* in the counts of anal-fin rays and the existence of a granulation (dermal cirrus) on the dorsal surface of the head, but he nevertheless supported the opinion of Jordan *et al.* (1913). Other authors followed these decisions and considered *S. mororane* as a junior synonym of *S. stejnegeri* (e.g., Watanabe 1958, 1960, 1978; Lindberg and Krasyukova 1987).

Recently, a large number of small cottid specimens were collected from the shallow marine waters of northern Japan, including near Muroran, the type locality of *S. mororane*. These specimens greatly resemble *S. mororane* or *S. stejnegeri*, but clearly belong to the genus *Icelus* Krøyer, 1845 on account of their having teeth on the palatines (Nelson 1984; Yabe 1985). Jordan and Seale (1906) originally described *S. mororane* as having no teeth on the palatines, but our reexamination of the holotype confirmed that *S. mororane* does have some teeth there. Therefore, *S. mororane* must be placed in the genus *Icelus* and is distinct from *S. stejnegeri*.

In this study, we redescribe *Icelus mororanis* on the basis of 103 specimens including the holotype and additional non-type specimens. Additionally, we redescribe *Stelgistrum stejnegeri* based on seven specimens newly collected from eastern Hokkaido, Japan, because the previous records of this species from Japanese waters are imprecise and unconfirmable.

Materials and Methods

The methods used for taking counts and measurements follow Hubbs and Lagler (1958) and Yabe (1991) except that interdorsal width was measured between the base of the last spine of the first dorsal fin and the origin of the second dorsal fin. Total length (TL), standard length (SL), and head length (HL) are used throughout unless indicated otherwise. All fin-ray elements were counted. Vertebrae and caudal-fin rays were observed and counted from radiographs. Sex was determined by observation of the gonads. The higher classification of the family Cottidae follows that presented by Imamura and Yabe (2002). Symbolic codes for institutions are those provided by Eschmeyer (1998). All materials examined in this study are given in the appendix.

Taxonomy

Icelus mororanis (Jordan and Seale, 1906) comb. nov.

[New Japanese name: Usujiri-kajika]

(Figs 1, 2, Tables 1, 2)

Stelgistrum mororane Jordan and Seale, 1906: 146, fig. 4 [original description, holotype, sex unknown (31.8 mm TL), in harbor at Mororan (=Muroran), Hokkaido, Japan]; Böhlke 1953: 132 (listed, type specimen in SU); Eschmeyer 1998: 1122 (validity).

Stelgistrum mororanae [sic]: Andriashev 1935: 296–297 (description, distribution, synonymy).

Stelgistrum stejneri (not Jordan and Gilbert, 1898): Jordan *et al.* 1913: 258, fig. 195 (in part, listed, Japan, distribution); Watanabe 1958: 14, 227–230, figs 77, 78, pls 5 (lower), 56 (in part, listed, Japan, diagnosis, description of internal features); 1960: 32–35, fig. 11, pl. 20 (fig. 2) (in part, description); 1976: 6 (in part, listed, Japan); 1978: 230–232, figs 77, 78, pl. 19 (second from top) (in part, description); 1980: 427–428, pl. 48 (description of osteological features); 1981: 106 (in part, description of quantitative features); Lindberg and Krasnyukova 1987: 195–196 (in part?, diagnosis, distribution).

Material examined. 103 specimens (24.0–44.7 mm SL) including holotype of *Stelgistrum mororane* (see Appendix).

Diagnosis. A species of the genus *Icelus* having the following combination of characters: subocular, supraocular, parietal, and nuchal spines absent; uppermost preopercular spine unbranched; single dorsal scale row; scales of lateral line and dorsal rows with serrated margins; no scales on cheek, between dorsal scale row and lateral line, nor below lateral line except for pectoral axilla, where small scales sometimes present; small, unbranched cirrus on upper rim of eye; one pair each of supraocular and parietal cirri, and two pairs of nuchal cirri; four saddles on dorso-lateral surface of body; soft rays of second dorsal fin 14–17; anal-fin rays 10–13; pectoral-fin rays 15–16; vertebrae 12+23–25=35–37.

Description. Proportional measurements and counts are given in Tables 1 and 2. In the following text, data for the holotype are shown first, followed by data for non-type specimens in parentheses.

Body short, compressed (Fig. 1), body depth at origin of first dorsal fin 1.25 (1.00–1.67) times body width. Head (Fig. 2) large, slightly compressed, length 41.7% (37.0–43.5%) of SL, depth at base of uppermost preopercular spine 1.25 (0.83–1.25) times head width. Caudal peduncle slender, compressed, depth 27.0% (23.8–37.0%) of its length. Upper profile of snout steep, length 25.6% (23.3–31.3%) of HL. Nasal spine short, sharp, directed posterodorsally. Anterior nostril on outer base of nasal spine, forming short tube. Posterior nostril on anterior margin of orbit, with low rim. Mouth large; lower jaw extending forward slightly beyond upper jaw. Maxilla extending to level of posterior margin of orbit. Small conical teeth on jaws, vomer, and palatines (palatines partly broken in holotype). Eye large, length of orbit 29.4% (25.0–34.5%) of HL. Interorbital space narrow, concave, width 25.6% (20.8–37.0%) of orbit length. Occipital region slightly concave, without knob or ridge. Four preopercular spines: uppermost spine unbranched, sharp, hooked posterodorsally; sec-

Fig. 1. *Icelus mororanis* (Jordan and Seale, 1906) comb. nov., HUMZ 189781, male, 37.8 mm SL, collected from off Usujiri, Hakodate.

ond spine slightly blunted, directed posteriorly; third spine also slightly blunted, directed ventrally; lowermost spine small, directed anteroventrally, buried under skin. Numerous small scales scattered around orbit and on base of nasal spine, upper rim of eye, and dorsolateral surface of head above suborbital stay. Both jaws and ventral surface of head naked. Lateral line descending posteriorly in slight arch from upper border of supracleithrum to level of seventh or eighth (broken in holotype) ray of anal fin, then running directly posteriad along body axis. Scales on lateral line large, tubular, with serrated margins dorsally and posteriorly. Mid-sized scales with serrated dorsal margins arranged along dorsal-fin base, to form dorsal scale row originating beneath base of second spine of first dorsal fin and extending to caudal peduncle. Small scales with serrated margins scattered above dorsal scale row and on spines and soft rays of dorsal fin. No scales between dorsal scale row and lateral line, nor below lateral line. No (no or some small) ctenoid scales scattered in pectoral axilla. Belly naked. Four pairs of cirri on dorsal surface of head: pair of supraocular cirri developed as narrowly based dermal flaps bearing numerous short appendages along distal margin; pair of parietal cirri with short appendages along distal margins; and two pairs of small, unbranched nuchal cirri (Fig. 2). No cirri on base of nasal spine. One simple cirrus on dorsal margin of eye. One (one or two) simple cirrus on posterior end of maxilla. Two cirri on suborbital stay and posterior region of opercle, i.e., small cirrus with branched tip and small, simple cirrus, respectively. One or two small, simple cirri on base of each preopercular spine. Single cirrus present on several lateral-line scales.

First dorsal fin originating at level of posterior margin of opercular flap. First and second dorsal fins joined by low fin-membrane. Basal length of first dorsal fin 66.7% (52.6–83.3%) of that of second dorsal fin. Second dorsal fin originating above 13th (11th–13th) lateral-line scale. Anal fin originating at level of origin of second dorsal fin, its basal length 83.3% (58.8–83.3%) of that of second dorsal fin. Pectoral fin large, length 22.7–34.5% of SL (broken in holotype), with rounded posterior margin; base of uppermost ray beneath second (second or third) lateral-line scale; eighth or ninth ray longest (broken in holotype), extending posteriorly to level of

Fig. 2. Dorsal view of head of *Icelus mororanis* (Jordan and Seale 1906) comb. nov., HUMZ 189781. Scale bar 5 mm.

fourth or fifth ray of second dorsal fin (broken in holotype); lower six (six or seven) rays slightly thickened. Pelvic fin slender, originating beneath second spine of first dorsal fin; middle ray longest; spine and outermost soft ray closely united. Caudal fin slightly rounded posteriorly; 11 rays supported by hypural plates, uppermost and lowermost two rays unbranched, middle seven rays branched; five (five to eight) upper and four (four to seven) lower procurent rays. Anus located below eighth spine of first dorsal fin. Males lacking urogenital papilla.

Color in alcohol. Body light brown (light brown or grayish brown), with four dark saddles dorsolaterally; area below lateral line, except for pectoral axilla and belly, light brown (light brown or grayish brown) with numerous pale spots. Head darker than body; occipital and suborbital regions especially dark. First dorsal fin transparent with large dark blotch on posterior margin. Second dorsal fin transparent with obscure oblique dark stripes. Pectoral fin translucent with triangular dark blotch on base, some small dark blotches on each ray. Pelvic fin pale with slightly darker base. Anal fin transparent with dark stripes. Caudal fin pale with some dark lateral stripes.

Color when fresh (based on non-type materials). Ground color of body cream-white, grayish brown, or reddish brown; pectoral axilla and ventral surface of body whitish. Four dark brown saddles across back: one below middle part of first dorsal fin, two below second dorsal fin, and one on caudal peduncle. Head below suborbital deep brown. Some vertical brown stripes on upper jaw. Ground color of first dorsal fin transparent, bearing brown vermiculations; black blotch on posterior margin. Second dorsal fin transparent, bearing obscure oblique brown stripes. Black triangular blotch on base of pectoral fin. Pelvic fin white, with slightly darker spots on base. Anal fin transparent, with two or three dark brown horizontal stripes (discolored in holotype). Caudal fin transparent, with reddish-brown lateral stripes. Cirri darkly pigmented except for those on lateral-line scales.

Distribution. Off Muroran, Volcano Bay, Hokkaido (Jordan and Seale 1906).

Fig. 3. Collection sites of the specimens used in this study. Holotype (open circle) and non-type specimens (solid circles) of *Icelus mororanis* (Jordan and Seale, 1906) comb. nov. and non-type specimens (solid squares) of *Stelgistrum stejnegeri* Jordan and Gilbert, 1898.

Off Esashi, Oumu, and Monbetsu, Okhotsk coast of Hokkaido; off Rausu on Shiretoko Peninsula, eastern Hokkaido; off Usujiri on Oshima Peninsula, southern Hokkaido; and off Miyagi Prefecture, Pacific coast of Honshu, Japan (Fig. 3) (this study). Rocky and/or boulder-stone areas in depths of 5–100 m.

Comparison. According to Yabe (1985), *Icelus* and *Stelgistrum* form a multiple-branching monophyletic group with *Ricuzenius*, *Thyriscus*, *Stlengis*, and *Icelinus* supported by a single synapomorphy: absence of the second and fourth pharyngobranchial bones. *Icelus* and *Stelgistrum* are very similar to each other in their external appearance (e.g., one dorsal scale row and one lateral-line scale row on body, pelvic fin composed of one spine and three soft rays), although they can be separated clearly by the presence (in *Icelus*) or absence (in *Stelgistrum*) of teeth on the palatines (e.g., Jordan and Gilbert 1898; Watanabe 1958, 1960; Yabe 1985; Lindberg

and Krasnyukova 1987). Although Jordan and Seale (1906) originally described *Stelgistrum mororane* as having no teeth on the palatines, the holotype of *S. mororane* has a few teeth on its palatines; therefore, this species should be regarded as a member of the genus *Icelus* rather than the genus *Stelgistrum*.

As was mentioned above, *Icelus mororanis* differs from *Stelgistrum stejnegeri* in having palatine teeth and, moreover, it can be distinguished also in having no scales on the cheek (vs small, scattered scales in *S. stejnegeri*). Additionally, differences in the number of second dorsal-fin rays, anal-fin rays, and lateral-line scales between *Icelus mororanis* and *Stelgistrum stejnegeri* are statistically significant (Mann-Whitney *U* test; $P < 0.01$) (Table 2).

Although Andriashev (1935) noted that a granulation (dermal cirrus) on the dorsal surface of head was present in the original drawing of *S. mororane* but not in that of *S. stejnegeri*, this feature is actually present in both species, including the holotype of each, and does not provide a way to distinguish them.

Currently, 17 species are recognized in the genus *Icelus* (Yabe 1983; Nelson 1984; Tsutsui and Yabe 1996; Nakabo 2000; Tsuruoka *et al.* 2006). *Icelus mororanis* differs from all species of *Icelus*, except for *I. gilberti* Taranetz, 1936 and *I. sekii* Tsuruoka, Munehara and Yabe, 2006, in having the following combination of characters: body slightly short, not elongated (body depth at first dorsal fin origin more than 18.5% of SL); nuchal spine obscure; supraocular and parietal spines absent; uppermost preopercular spine simple, not bifid; and body color light or grayish brown in alcohol. *Icelus mororanis* is distinguished from *I. sekii* in having two pairs of nuchal cirri (one pair in *I. sekii*) and four saddles on the dorsolateral surface of the body (five saddles). *Icelus mororanis* differs from *I. gilberti* in having no scales on the cheek (small, scattered scales in *Icelus gilberti*), no scales between the dorsal scale row and the scale row on the lateral line (several scales present in that area), two pairs of nuchal cirri (one pair), and a relatively short anal-fin base (18.2–25.3% of SL vs 27.0–30.1% of SL; Table 1). In addition, the number of rays of the second dorsal fin and anal fin, and the number of lateral-line scales, are also valuable to distinguish *I. mororanis* from *I. gilberti* and *I. sekii*, although the counts partially overlap: *I. mororanis* has 14–17 (mode 16) rays in the second dorsal fin, 10–13 (11) rays in the anal fin, and 35–39 (37) scales in the lateral line; *I. gilberti* has respectively 17–18 (17, 18), 12–13 (13), and 38–39 (39); and *I. sekii* has respectively 17–19 (18), 12–14 (13), and 38–40 (39) (Table 2). These differences are statistically significant (Kruskal-Wallis test and Steel's procedure; $P < 0.01$ between *I. mororanis* and the other two species).

Icelus sekii has previously been known as the smallest species (maximum of 53.3 mm SL) in this genus, but *I. mororanis* is even smaller [maximum of 44.7 mm SL (HUMZ 187866)] and matures at the smallest size among the species of the genus.

Although the presence (in *Icelus*) or absence (in *Stelgistrum*) of teeth on the palatines is the only diagnostic character separating the two genera, Matsubara (1955) noted in his key to genera that *Stelgistrum* (and/or *Astrocottus*) occasionally has a few teeth on the palatines. Further studies aimed at clarifying the interrelationships and validity of *Icelus* and *Stelgistrum* are needed.

Remarks. In the serial studies of Japanese cottoids by Watanabe (1958, 1960, 1976, 1978, 1980, 1981), a few specimens of *Stelgistrum stejnegeri* were used as the basis for his description. The management of part of Watanabe's collection has

been entrusted to NSMT, but these specimens have not been found there (G. Shinohara pers. comm.). The following remarks are thus based wholly on Watanabe's papers cited here, since no reexamination of the material has been possible. Watanabe (1980) described the internal features of *S. stejnegeri* based on one specimen, no. 20147, which is reidentified herein as *I. mororanis* because palatine teeth were illustrated in the drawings (Watanabe 1980, pl. 48). This specimen can be traced back through his earlier works. Watanabe (1978) described the external features of *S. stejnegeri* on the basis of two specimens, nos 20146 and 20147, of which the latter at least is *I. mororanis*, as was shown above. Watanabe (1960) used the two same specimens, according to that work's supplement (Watanabe 1981). The description of the external features of *S. stejnegeri* provided by Watanabe (1958) was based on one specimen, w. 21882, and the descriptions of the internal features and quantitative characters were based on two uncatalogued specimens. These uncatalogued specimens were evidently the same as nos 20146 and 20147 used in Watanabe (1978, 1980, 1981), because the counts and measurements given in the tables, figures, and plates of each study are much the same (cf. Watanabe 1958, table 55, figs 77, 78 vs Watanabe 1978, table 55, figs 77, 78; Watanabe 1958, pl. 56 vs Watanabe 1980, pl. 48), and Watanabe's (1958) description must, therefore, also have been partly based on at least one specimen of *I. mororanis*. Watanabe (1976) presented only *S. stejnegeri* in his species list of the Cottoidei of Japan, but it would be appropriate to consider that the specimens involved included both *I. mororanis* and *S. stejnegeri*.

Lindberg and Krasnyukova (1987) redescribed *S. stejnegeri* on the basis of 30 specimens collected from the Sea of Okhotsk and the Sea of Japan, but some specimens of *I. mororanis* are likely to have been mixed in with them, because the reported number of dorsal-fin spines was 8–10, and dorsal scales 35–38 (*I. mororanis* has 8–10 dorsal-fin spines and 25–38 dorsal scales, and *S. stejnegeri*, 9–10 dorsal-fin spines and 29–36 dorsal scales; this study).

Although no collection of *I. mororanis* has been reported until now since its original description, it is likely to be widely distributed around the coast of northern Japan. The many specimens found in various collections and our own observations while SCUBA diving demonstrate its occurrence at least from the Okhotsk coast of Hokkaido to the Pacific coast of Miyagi Prefecture, Japan.

***Stelgistrum stejnegeri* Jordan and Gilbert, 1898**

[English name: Furseal sculpin]

[Japanese name: Ottosei-kajika]

(Fig. 4, Tables 1, 2)

Stelgistrum stejnegeri Jordan and Gilbert, 1898: 1921 [original description, holotype, sex unknown (52 mm TL), off Robben Island (=Ostrov Tyulenyi), Sea of Okhotsk off southern part of Sakhalin, Russia]; Jordan and Starks 1904: 248, fig. 7 [description, following Jordan and Gilbert (1899)]; Schmidt 1904: 117 (diagnosis); Jordan *et al.* 1913: 258, fig. 195 (in part, listed, Japan, distribution); Popov 1931: 128–129 (diagnosis); Tanaka 1933: 263 (short comments on fisheries); Okada and Matsubara 1938: 321 (key); Matsubara 1955: 1140 (key); Watanabe 1958: 14, 227–230, figs 77, 78, pls 5 (lower), 56 (in part, listed, Japan, di-

agnosis, description of internal features); 1960: 32–35, fig. 11, pl. 20 (fig. 2) (in part, description); Ueno 1971: 91 (listed, Hokkaido and adjacent waters); Watanabe 1976: 6 (in part, listed, Japan); 1978: 230–232, figs 77, 78, pl. 19 (second from top) (in part, description); 1981: 106 (in part, description of quantitative features); Yabe 1984: 310 (diagnosis, distribution); 1985: 4 (material for phylogenetic analysis of the superfamily Cottoidea); Nakabo 1993: 555 (key); Eschmeyer 1998: 1606 (validity); Nakabo 2000: 636 (key); Sheiko and Fedorov 2000: 29 (listed, Kamchatka and adjacent waters); Mecklenberg *et al.* 2002: 447 (diagnosis, distribution); Nakabo 2002: 636 (key); Parin *et al.* 2002: 86 (listed, Russia and adjacent countries, distribution); Fedorov *et al.* 2003: 80 (distribution).

Stelgistrum stejnegeri [sic]: Jordan and Gilbert 1899: 456, pl. 54 (description); Soldatov and Lindberg 1930: 182–183 (in part, diagnosis, synonymy, distribution); Popov 1933: 144 (listed, Sea of Japan); Andriashev 1935: 294–297 (in part, description, distribution, synonymy); Taranetz 1937: 109 (key); 1941: 430 (discussion about Icelinae); Schmidt 1950: 127 (diagnosis, distribution); Lindberg and Krasyukova 1987: 195–196, fig. 121 (in part ?, diagnosis, distribution); Orlov 1998: 150 (listed, Pacific waters around Kuril Islands and southeastern Kamchatka); Sokolovskaya *et al.* 1998: 5 (listed, Peter the Great Bay).

Material examined. 7 specimens collected from Japanese waters (see Appendix).

Description. Proportional measurements and counts as given in Tables 1 and 2.

Body short, compressed posteriorly (Fig. 4). Head large, slightly depressed. Caudal peduncle slender, compressed. Upper profile of snout steep. Nasal spine short, sharp. Mouth large; lower jaw extending forward slightly beyond upper jaw. Small teeth on jaws and vomer. No teeth on palatines. Interorbital space narrow, concave. Four preopercular spines: uppermost spine unbranched, sharp, hooked posterodorsally; lower three spines slightly blunt, directed posteriorly or ventrally. Numerous small scales scattered on fringe of nasal spine, interorbital space, suborbital region, outer rim of eye, cheek, and dorsolateral surface of head. Both jaws and ventral surface of head naked. Lateral line descending in slight arch anteriorly. Scales on lateral line large, tubular, with serrated margins dorsally and

Fig. 4. *Stelgistrum stejnegeri* Jordan and Gilbert, 1898, HUMZ 92926, female, 44.2 mm SL, collected from off Hamanaka, Pacific coast of Hokkaido.

Table 1. Comparison of proportional measurements among *Icelus mororanis*, *Stelgistrum stejnegeri*, *Icelus gilberti*, and *Icelus sekii*.

	<i>Icelus mororanis</i>		<i>Stelgistrum stejnegeri</i>		<i>Icelus gilberti</i>		<i>Icelus sekii</i>
	non-types <i>n</i> =102	holotype SU 9260	Japan <i>n</i> =7	Russia <i>n</i> =10	holotype USNM 48236	<i>n</i> =4 ^a	<i>n</i> =19 ^b
Standard length (mm)	24.0–44.7	25.8	33.9–46.1	32.6–53.5	40.6	49.0–90.9	28.4–71.7
Measurements (%SL)							
Body depth at first dorsal-fin origin	18.5–29.5	23.3	22.7–24.9	20.3–30.3	21.9	25.7–30.1	19.4–25.1
Body depth at anal-fin origin	13.1–21.9	18.6	17.4–18.4	14.3–18.6	17.2	20.6–21.4	16.7–23.9
Body width at first dorsal-fin origin	13.3–22.7	17.8	19.1–21.8	15.8–25.0	19.5	19.1–24.2	16.1–23.4
Body width at anal-fin origin	6.7–13.6	10.9	10.3–12.8	8.3–12.1	12.1	12.8–13.1	8.4–15.6
Head length	35.3–44.2	41.1	38.3–41.4	36.0–42.5	39.7	39.0–42.0	34.7–39.5
Head depth	18.3–25.9	21.7	20.8–23.4	17.6–25.2	21.9	21.0–27.7	18.2–23.1
Head width	15.3–27.1	17.1	21.5–29.3	16.5–26.8	20.7	22.5–33.0	15.6–26.1
Predorsal length	31.7–39.9	35.7	34.5–38.7	33.7–39.3	35.5	35.5–37.5	30.4–35.6
Preanal length	52.9–65.2	56.6	50.5–58.6	47.5–60.9	56.4	48.7–56.1	46.0–57.7
Prepelvic length	29.7–38.9	30.2	29.7–33.4	27.5–32.5	29.1	29.6–34.4	28.2–34.4
Length of first dorsal-fin base	17.8–26.9	20.2	18.6–23.9	18.9–24.3	20.0	21.8–25.0	16.5–23.3
Length of second dorsal-fin base	27.4–37.9	29.8	32.5–36.7	32.3–37.8	33.5	32.7–37.9	34.9–39.9
Interdorsal width	1.4–3.7	2.7	2.6–4.0	1.8–2.8	2.0	1.8–3.3	1.1–2.5
Length of anal-fin base	17.8–26.0	24.8	24.2–27.7	20.2–26.8	26.8	27.0–30.1	24.8–30.0
Length of pectoral-fin base	10.5–16.0	15.1	12.4–14.3	10.1–14.8	12.6	13.2–15.9	11.0–14.2
Length of caudal peduncle	17.6–25.5	21.7	21.8–23.8	17.3–23.0	22.9	18.4–21.9	19.8–24.1
Depth of caudal peduncle	5.3–7.7	5.8	5.9–7.2	5.2–6.5	6.2	5.7–7.1	6.0–7.4
Snout length	9.2–15.3	10.5	10.2–13.4	9.5–12.0	10.1	11.2–14.3	8.6–12.3
Length of orbit	9.5–13.0	12.0	10.2–13.4	10.3–12.1	10.3	10.2–11.6	8.6–12.4
Interorbital width	2.5–4.6	3.1	3.2–3.8	2.6–3.8	broken	3.8–4.1	2.4–4.0
Length of upper jaw	15.2–20.5	19.0	17.4–19.1	15.6–19.8	17.5	17.6–19.7	14.1–17.6
Length of mandible	13.6–19.4	16.3	16.5–18.6	14.7–19.2	19.2	16.7–18.5	13.7–16.8
Postorbital length of head	17.3–21.9	19.0	16.6–19.1	16.0–19.5	18.7	18.7–20.0	15.5–19.1
Length of longest pectoral-fin ray	24.4–37.1	broken	28.3–31.6	22.0–28.2	broken	26.2–31.9	31.0–38.7
Length of pelvic fin	15.0–21.2	broken	17.0–19.5	15.6–21.1	broken	18.5–23.1	15.6–21.6
Length of caudal fin	21.3–29.4	broken	21.0–27.7	21.1–25.0	broken	19.4–25.2	20.1–29.2

Table 1. Continued.

	<i>Icelus mororane</i>		<i>Stelgistrum stejnegeri</i>		<i>Icelus gilberti</i>	<i>Icelus sekii</i>
	non-types <i>n</i> =102	holotype SU 9260	Japan <i>n</i> =7	Russia <i>n</i> =10	holotype USNM 48236	
Standard length (mm)	24.0–44.7	25.8	33.9–46.1	32.6–53.5	40.6	<i>n</i> =4 ^a 49.0–90.9 <i>n</i> =19 ^b 28.4–71.7
Measurements (% HL)						
Head depth	45.9–58.9	52.8	51.7–59.9	46.6–61.6	55.3	52.5–63.3
Head width	37.8–59.4	41.5	55.9–70.9	40.5–67.6	52.2	47.3–65.4
Snout length	23.3–30.1	25.5	25.9–33.1	25.4–29.7	25.5	23.4–33.3
Length of orbit	24.5–34.3	29.2	26.6–32.3	25.1–30.3	26.1	24.5–31.2
Interorbital width	7.1–11.7	7.5	7.9–10.0	6.9–10.1	broken	7.3–10.9
Length of upper jaw	40.4–49.7	46.2	44.8–48.4	41.9–54.9	44.1	37.4–48.6
Length of mandible	33.6–48.3	39.6	42.0–47.2	36.5–49.1	48.4	36.4–46.3
Postorbital length of head	42.5–57.4	46.2	42.1–49.7	43.7–49.2	47.2	41.1–52.5

^aTwo syntypes and two non-types.

^bHolotype, five paratypes, and 11 non-types.

Table 2. Frequency distributions of eight meristic counts in *Icelus mororanis*, *Stelgistrum stinegeri*, *Icelus gilberti*, and *Icelus sekii*.

	First dorsal-fin spine					Second dorsal-fin rays						
	8	9	10	11	12	13	14	15	16	17	18	19
<i>Icelus mororanis</i> (n=103)	2	94 ^a	7				2	39	55 ^a	6	—	—
<i>Stelgistrum stinegeri</i> from Japan (n=7)	—	7	—				—	—	1	5	1	—
<i>Stelgistrum stinegeri</i> from Russia (n=11)	—	10 ^a	1				—	—	—	5 ^a	6	—
<i>Icelus gilberti</i> (n=4)	—	4 ^a	—				—	—	—	2 ^a	—	—
<i>Icelus sekii</i> (n=19)	2	17 ^a	—				—	—	—	2	14 ^a	3
	Anal-fin rays					Pectoral-fin rays						
	10	11	12	13	14	14	14	15	16	17	18	19
<i>Icelus mororanis</i> (n=103)	11	78 ^a	13	1			—	—	—	33 ^a	70	—
<i>Stelgistrum stinegeri</i> from Japan (n=7)	—	1	4	2			—	—	—	—	6	1
<i>Stelgistrum stinegeri</i> from Russia (n=11)	—	—	5	6 ^a			—	—	—	—	11 ^a	—
<i>Icelus gilberti</i> (n=4)	—	—	1 ^a	3 ^a			—	—	—	—	4 ^a	—
<i>Icelus sekii</i> (n=19)	—	—	3	15 ^a	1		1	16 ^a	2			—
	Pelvic-fin rays			Lateral-line scales								
	1, 2	1, 3		35	36	37	38	39	40			
<i>Icelus mororanis</i> (n=103)	—	103 ^a		1	10	49 ^a	42	1	—			
<i>Stelgistrum stinegeri</i> from Japan (n=7)	—	7		—	—	2	3	2	—			
<i>Stelgistrum stinegeri</i> from Russia (n=11)	—	11 ^a		—	—	—	3	7	—			
<i>Icelus gilberti</i> (n=4)	—	4 ^a		—	—	—	—	4 ^a	—			
<i>Icelus sekii</i> (n=19)	1	18 ^a		—	—	—	2	10 ^a	7			

Table 2. Continued.

	Dorsal scales										
	25	26	27	28	29	30	31	32	33	34	
<i>Icelus mororanis</i> (n=103)	2	1	—	2	7	22	17	15	20	9	
<i>Stelgistrum stejnegeri</i> from Japan (n=7)	—	—	—	—	1	3	—	1	1	1	
<i>Stelgistrum stejnegeri</i> from Russia (n=11)	—	1	—	—	—	1	—	—	3 ^a	1	
<i>Icelus gilberti</i> (n=4)	—	—	—	—	—	—	—	—	—	—	
<i>Icelus sekii</i> (n=19)	—	—	—	—	—	—	—	—	—	1	
	Dorsal scales										
	35	36	37	38	39	40	41	42	43	44	
<i>Icelus mororanis</i> (n=103)	3	3 ^a	2	1	—	—	—	—	—	—	
<i>Stelgistrum stejnegeri</i> from Japan (n=7)	—	—	—	—	—	—	—	—	—	—	
<i>Stelgistrum stejnegeri</i> from Russia (n=11)	4	1	—	—	—	—	—	—	—	—	
<i>Icelus gilberti</i> (n=4)	2 ^a	1	—	1 ^a	—	—	—	—	—	—	
<i>Icelus sekii</i> (n=19)	—	—	2	1	4 ^a	5	2	2	1	1	
AV + CV	Vertebrae										
	12 + 23	12 + 24	12 + 25								
<i>Icelus mororanis</i> (n=103)	31	70 ^a	2								
<i>Stelgistrum stejnegeri</i> from Japan (n=7)	—	7	—								
<i>Stelgistrum stejnegeri</i> from Russia (n=11)	—	6	4 ^a								
<i>Icelus gilberti</i> (n=4)	—	1	1								
<i>Icelus sekii</i> (n=19)	—	13 ^a	16								

AV, abdominal vertebrae; CV, caudal vertebrae.

^a Includes holotype or syntypes.

posteriorly. Dorsal scale row originating beneath second spine of first dorsal fin and extending to caudal peduncle. Small scales scattered above dorsal scale row and on spines and soft rays of dorsal fin. No scales between dorsal scale row and lateral line, nor below lateral line. One to three midsize scales scattered in pectoral axilla. Belly naked. Three pairs of cirri on dorsal surface of head. Unbranched cirrus on dorsal margin of eye. Two simple cirri on posterior end of maxilla. Small, simple cirrus on suborbital stay, another on posterior region of opercle. One small, simple cirrus on base of each preopercular spine and on several lateral-line scales.

First dorsal fin originating at level of dorsal edge of gill slit. First and second dorsal fins joined by low membrane; second dorsal fin originating above 12th lateral-line scale. Anal fin originating below origin of second dorsal fin. Pectoral fin large, rounded posteriorly. Pelvic fin slender, originating beneath second spine of first dorsal fin. Caudal fin slightly rounded. Anus located below ninth or 10th spine of first dorsal fin. Urogenital papilla of male absent.

Distribution. The present specimens were collected off Chirrip, Hamanaka, and off Atoeka, Kushiro, both in eastern part of Hokkaido, Japan, the western North Pacific (Fig. 3). This species is widely distributed in the Sea of Okhotsk from Tauiskaya Bay, the Shantar Islands, and the Jonas Island via the eastern coast of Sakhalin, Terpenie Bay, and Aniwa Bay to the western coast of Kamchatka and Iturup Island (Andriashev 1935; Schmidt 1950; Lindberg and Krasnyukova 1987). In the Sea of Japan, it occurs along the coast of the Primorskii from the Tatar Strait to the Peter the Great Bay (Schmidt 1950; Lindberg and Krasnyukova 1987; Sokolovskaya *et al.* 1998). In addition, it is known from the western coast of the Kuril Islands, the western North Pacific (Orlov 1998; Parin *et al.* 2002). Parin *et al.* (2002) recorded this species from depths of 18 to 320 m.

Remarks. In order to consider the intra-specific variation of this species, non-type specimens collected from Russian Sea of Okhotsk were used as comparative material in addition to the holotype (see Appendix).

The seven specimens collected from off Atoeka and Chirrip in eastern Hokkaido are clearly assigned to *Stelgistrum* by the presence of four preopercular spines, teeth on jaws and vomer but not on palatines, scales with serrated margins forming the lateral-line scale row, enlarged scales each with serrated margin forming one dorsal scale row, and one spine and three soft rays in the pelvic fin (Andriashev 1935; Yabe 1985). Three species, *S. stejnegeri*, *S. beringianum*, and *S. concinnum*, are recognized in this genus. *Stelgistrum stejnegeri* is distinguishable from *S. beringianum* by having the dorsal scale row extending to the base of the caudal fin (not extending beyond the insertion of the second dorsal fin in *S. beringianum*), and scattered scales on the snout and cheek (vs such scales being absent or very few). It is also distinguishable from *S. concinnum* by having the maxilla extending nearly to the posterior edge of the eye (to the anterior edge of the eye in *S. concinnum*), no cirrus on the nasal spine (vs one unbranched cirrus there), and a single pair of nuchal cirri (vs two pairs).

The present seven specimens have all the diagnostic characters of *S. stejnegeri* mentioned above. In other morphological characters, they are also in complete agreement with the holotype of *Stelgistrum stejnegeri* (e.g., in the extent of scale-covered areas on the body). Their counts and proportional measurements coincide with, or are close to, those of the holotype and other specimens from the Russian side of the Sea of Okhotsk and Sea of Japan (Tables 1, 2). Thus, these seven speci-

mens are identified as *S. stejnegeri*. No significant intra-specific variation was found between the present specimens and the comparative material.

Many authors have included Muroran in the distributional range of *S. stejnegeri* (Okada and Matsubara 1938; Schmidt 1950; Matsubara 1955; Watanabe 1958, 1960, 1978; Ueno 1971; Yabe 1984; Nakabo 1993, 2000, 2002). Except for Watanabe, these authors merely followed Jordan *et al.* (1913), who synonymized *Stelgistrum mororanis* under *S. stejnegeri*; their reports included no new topotypic specimens from Muroran. As was mentioned in the remarks under *I. mororanis*, *S. stejnegeri* might have been included in Watanabe's studies, but his specimens are unavailable now. Thus the present report constitutes the first confirmed record of this species from Japanese waters.

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Appendix: List of the Specimens Examined

Icelus mororanis: SU 9260 at CAS (holotype), harbor of Muroran, Volcano Bay; HUMZ 201287, off Menashitomari, Esashi, Sea of Okhotsk; HUMZ 190078–190080, 194919, 201285, 201286, off Oumu, Sea of Okhotsk; HUMZ 87725, off Lake Komuke, Sea of Okhotsk; HUMZ 188575, 190126–190129, off Rausu, eastern part of Hokkaido, northwestern Pacific; HUMZ 121684, 121717, 175832, 175833, 179894–179900, 179903–179906, 179908, 179910, 179913–179917, 185295–185302, 185304, 185305, 186672–186675, 186722, 186723, 187659–187662, 187824–187831, 187866–187892, 187894, 189778–189783, off Usujiri, Hakodate, northwestern Pacific; HUMZ 188567–188571, off Onagawa, Miyagi Prefecture, northwestern Pacific.

Stelgistrum stejnegeri collected from Japanese waters: HUMZ 92925, 92926, off Chirrip, Hamanaka, eastern part of Hokkaido, northwestern Pacific; HUMZ 201289–201293, off Atoeka, Kushiro, eastern part of Hokkaido, northwestern Pacific.

Comparative specimens

Icelus gilberti: ZISP 25514 (syntype), Olga Bay, Sea of Japan; ZISP 25328 (syntype), Vladimir Bay, Sea of Japan; HUMZ 87726, off Shokotsu, Sea of Okhotsk; HUMZ

140590, off Lake Saroma, Sea of Okhotsk.

Icelus sekii: HUMZ 179901, 179902, 187896, 187897, 188572–188574, 198892, 198893, 200258 (incl. holotype and 3 paratypes), off Rausu, eastern part of Hokkaido; HUMZ 198857, off Shari, Shiretoko Peninsula, eastern part of Hokkaido, Sea of Okhotsk; HUMZ 187634, Moekeshi Bay, Iturup Island, Sea of Okhotsk; HUMZ 187898, 188505 (2 paratypes), off Urakawa, Hokkaido, northwestern Pacific; HUMZ 179892, 190688, 190689, 192091, 192092, off Usujiri, Hakodate, northwestern Pacific.

Stelgistrum stejnegeri: USNM 48236 (holotype), off Robben Island, Sea of Okhotsk; HUMZ 141143, off Feklistova Island, Sea of Okhotsk; HUMZ 140178, off Bolshoi Shantar Island, Sea of Okhotsk; HUMZ 140715, Severny Bay, Sakhalin, Sea of Okhotsk; SU 7577 at CAS, Aniwa Bay, Sakhalin, Sea of Okhotsk; SU 22324 at CAS (incl. 5 specimens), off western coast of Kamchatka, Sea of Okhotsk; ZISP 44166, Aniwa Bay, Sakhalin, Sea of Okhotsk.

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