

A NEW *COTTIUSCULUS* FROM THE SEA OF JAPAN (TELEOSTEI: SCORPAENIFORMES: COTTIDAE)

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ABSTRACT: A new species of sculpins, *Cottiusculus primoricus*, is described from the Sea of Japan off Far Eastern Russia. It is similar to *C. gonez* in possession of the straight uppermost preopercular spine, short and simple nasal spines and lateral line not extending onto caudal fin, but differs from that species in the terminal point of the uppermost preopercular spine not barbed, dorsal-fin spines in males not distinctly elongated, in coloration and in some other minor details. A key for identification of all known species of *Cottiusculus* is presented.

KEY WORDS: Sculpins, new species, Far East of Russia

The genus *Cottiusculus* Jordan et Starks, 1904 can be distinguished from the related artedielline genera in the greatly depressed head and body, absence of bony plates, presence of four preopercular spines and two cusps on inner side of the uppermost preopercular spine. This genus has been revised by Kai & Nakabo (2009), who defined three species distributed in the north-western Pacific Ocean off Russia, Japan, Korea and North China: *C. gonez* Jordan et Starks, 1904, *C. nihonkaiensis* Kai et Nakabo, 2009 and *C. schmidtii* Jordan et Starks, 1904. In addition, Neyelov (1979) reported an unidentified species of *Cottiusculus* possibly conspecific with *C. minor* Watanabe, 1958, which was not recognized by Kai & Nakabo (2009). The nominal species *Cottiusculus minor* does not belong to this genus but is a member of *Artediellus* Jordan, 1887 as pointed out by Nakabo (2002). Sorting the cottid specimens housed in the Institute of Oceanology, Russian Academy of Sciences, Moscow (IOM) I discovered several specimens of *Cottiusculus* corresponding to the characters given for *Cottiusculus* sp. of Neyelov (1979). They are described as a new species in the present contribution.

Methods and terminology follow Neyelov (1979). All measurements were made point to point. Abbreviations: SL, standard length.

Cottiusculus primoricus Prokofiev, sp. nova

(Figs. 1-5)

Material examined: IOM, holotype (Fig. 1), male, 55 mm SL, Russia, Primorsky Krai, Sea of Japan, Peter the Great Bay, RPR-3098, trawl number 36, 20.07.2015, leg. Solomatov. Paratypes: IOM, 1 specimen, female, 50 mm SL, collected with holotype; IOM, 4 specimens, females, 58–66 mm SL, same data as for holotype, but trawl number 37.

Diagnosis: A species of *Cottiusculus* with short and simple nasal spines, terminal point of uppermost preopercular spine not barbed, dorsal-fin spines not conspicuously elongated in males, lateral line terminating at caudal-fin base, with

25–27 pores, medial row of blackish blotches on first dorsal fin in both sexes, single row of moderately small dark blotches below lateral line.

Description: Head and body markedly depressed (Figs. 1, 2). Dorsal-fin rays VII–VIII, 11–13, anal-fin rays 12–13, pectoral-fin rays 22–24, pelvic-fin rays I + 3. Spinous and soft portion of dorsal fin widely separated. Tips of dorsal-fin spines free from membrane, ending as small bulges (more pronounced in male) (Figs. 3, 4). Dorsal-fin spines somewhat longer in male than in females, but not considerably elongated. Pectoral fin reaching more or less behind anal-fin origin. Pelvic fin ending well before anus.

Nasal spines short, simple, posteriorly directed, shorter than the tube of anterior nostril. Mouth terminal, upper jaw reaching anterior third to middle of orbit. Preopercle with four spines; uppermost spine bifurcated at tip, with branches widely divergent (divaricate), with additional small cusp on inner side; terminal point not barbed. Maxillary cirrus always present. Supraocular cirri present, with one moderately long cirrus at mid-eye and 0 to 4 much smaller additional cirri in a row; upper surface of eyeball medially from cirri with several small fleshy bumps. A pair of parietal cirri rarely present. One or (usually) two pairs of small nuchal cirri present, sometimes reduced to a pair of minute bumps. Small cirri above two anteriormost lateral-line pores often present. Suborbital stay thin, rod-like, not expanded toward preopercle. Jaws, vomer and palatines with narrow band of small conical teeth.

First and third supraorbital pores absent; first supraorbital pore always replaced by a triangular fleshy protrusion as long as nasal spine. Some pore openings on dorsal surface of head (nasal, coronal and occipital pores) often replaced by fleshy bumps variably developed between the specimens. Eight infraorbital and ten preoperculo-mandibular pores. Posterior opening of ninth preoperculo-mandibular pore very large. First pair of mandibular pores well spaced. Lateral-line pores small, with a single (lower) opening each, 25–27 in number, not extending onto caudal fin (last pore situated at base of caudal-fin rays).

Dorsal surface of head and body (above lateral-line canal) indistinctly and irregularly mottled; a single row of moderately small dark blotches below lateral line (Fig. 5); ventral surface uniformly whitish. First dorsal fin with an oblique medial row of blackish blotches on interradiar membranes; distal margin somewhat infuscated (Figs. 3, 4). Male: second dorsal, pectoral and caudal fin with several rows of bold dark spots, better developed on second dorsal and pectoral fin than in the females; anal fin blackish, pelvic fin somewhat infuscated. Female: second dorsal, pectoral and caudal fin with several rows of dark spots, larger and more pronounced on caudal fin; pelvic and anal fins unpigmented.

Measurements (in % of SL; data for male holotype are given first, followed by the female paratypes in parentheses): head length 38.2 (37.9–39.3), snout length 9.1 (7.4–9.1), horizontal diameter of orbit 8.2 (9.0–10.4), bony interorbital width 2.7 (2.6–3.8), upper jaw length 15.5 (12.1–14.8), first and second predorsal and preanal distances 32.7 (36.2–41.0), 50.9 (54.1–60.6) and 54.5 (54.0–60.6), respectively, pelvic-anal distance 25.5 (26.0–33.3), length of longest dorsal-fin spine 16.4 (9.0–10.6), pectoral-fin length 25.5 (25.0–31.2), pelvic-fin length 18.2 (16.4–18.0), length and least depth of caudal peduncle 9.1 (8.0–10.7) and 7.3 (6.0–6.6), respectively.

Etymology: The species epithet is given from Primorsky Krai of Russia; adjective.

Remarks: The studied specimens well agree with the description of *Cottiusculus* sp. in Neyelov (1979) except in average higher number of the lateral-line pores (25–27 vs. 23–26). Furthermore, some of the nasal, supraorbital, coronal and occipital pores can be replaced by fleshy bumps in certain specimens of the new species, which was not reported for *Cottiusculus* by Neyelov (1979). It is possible that some of the previous reports of *C. gonez* from the mainland coast may actually belong to this new species. For instance, Chang et al. (1955) reported the specimens of *C. gonez* from the Yellow Sea with three supraocular cirri, which is characteristic for the new species, not for the true *C. gonez*. The differences between the known species of *Cottiusculus* can be summarized in the following identification key.

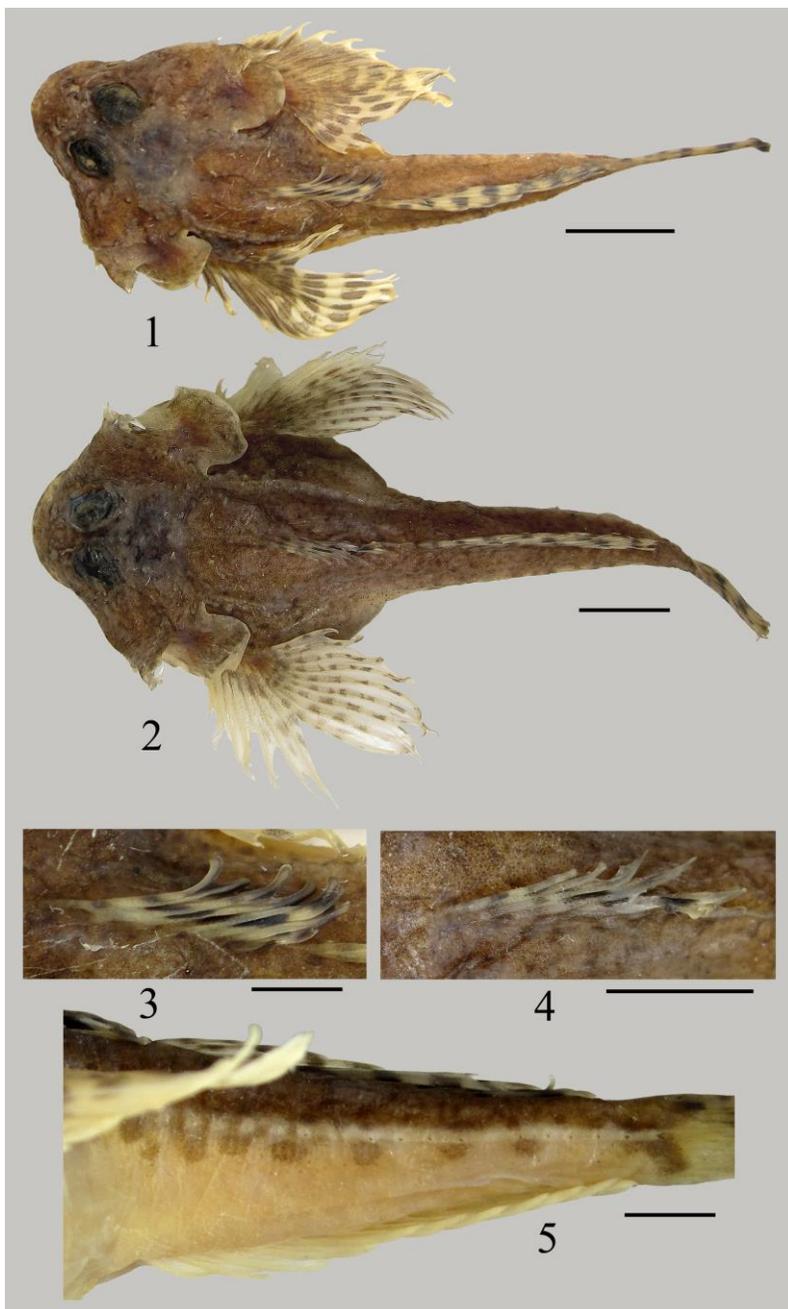
- 1a.** Uppermost preopercular spine upcurved; nasal spines long, usually bicuspid; lateral-line canal extending onto caudal fin **2**
- 1b.** Uppermost preopercular spine straight; nasal spines short, always simple; lateral-line canal ending at base of caudal fin **3**
- 2a.** Nasal spines deeply bicuspid; ventral lateral and lateral-line cirri absent; dorsal-fin spines elongated in males; five to eight brown blotches below lateral line *C. schmidti*
- 2b.** Nasal spines weakly bicuspid, sometimes simple; ventral lateral and lateral-line cirri present; dorsal-fin spines not elongated in males; two to four brown blotches below lateral line *C. nihonkaiensis*
- 3a.** Terminal point of uppermost preopercular spine barbed; supraocular cirrus single, long; suborbital stay broadened toward preopercle; dorsal-fin spines in males considerably elongated; lateral line with 27–32 pores; medial row of blackish blotches on first dorsal fin in males, blackish band along distal margin of first dorsal fin in females; numerous small dark dots below lateral line *C. gonez*
- 3b.** Terminal point of uppermost preopercular spine not barbed; one moderately long and several small supraocular cirri; suborbital stay uniformly narrow; dorsal-fin spines in males only slightly elongated; lateral line with (23)25–27 pores; medial row of blackish blotches on first dorsal fin in both sexes; single row of moderately small dark blotches below lateral line *C. primoricus*

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Figures 1–5. *Cottiusculus primoricus*, new species: (1) holotype, male, 55 mm SL, habitus, dorsal view; (2) paratype, female, 61 mm SL, habitus, dorsal view; (3) first dorsal fin, male; (4) first dorsal fin, female; (5) flank pigmentation, female, 61 mm SL. Scale bars: 10 mm (1, 2), 5 mm (3–5).