

A New Species of Sculpin, *Zesticelus ochotensis* (Scorpaeniformes: Cottidae), from the Southwestern Okhotsk Sea

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Abstract A new deep-sea cottid species, *Zesticelus ochotensis*, is described on the basis of three specimens collected from 1440-1450 m the southwestern Okhotsk Sea. It is distinguished from other species of *Zesticelus* by having well developed nuchal spines, spines absent on the lachrymal, a single uppermost preopercular spine lacking an outer spine at its base, and lateral anterior central and lateral posterior central pores present on the occipital sensory canal.

Fishes of the genus *Zesticelus* are small, deep-sea cottids distributed across the North Pacific Ocean from Japan to California. The three currently recognized species in the genus (Neyelov, 1979) are characterized by a naked body lacking scales and cirri, branchiostegal membranes that are united and form a fold over the isthmus, large pores associated with the infraorbital and operculo-mandibular sensory canals, a long and slightly curved, uppermost preopercular spine, teeth on the prevomer and a toothless palatine. During the bottom trawl surveys in the southwestern Okhotsk Sea, directed by the Japan Marine Fishery Resource Research Center (JAMARC) in 1991 to 1993, three specimens of an undescribed species of *Zesticelus* were collected from deep water near Kitami-yamato Bank off Abashiri, Japan. They are described below as a new species.

The type specimens are deposited in the Laboratory of Marine Zoology, Faculty of Fisheries, Hokkaido University, Hakodate, and the Department of Zoology, National Science Museum, Tokyo. Institutional abbreviations are as listed by Leviton et al. (1985). Methods for taking counts and measurements follow Hubbs and Lagler (1958) and Yabe (1991). Terminology for the cephalic sensory system follows Nelson (1986).

Zesticelus ochotensis sp. nov.

(New Japanese name: Ohotsuku-soko-kajika)

(Figs. 1-3)

Holotype. HUMZ 126133, female, 52.0 mm SL,

44°27.2'N, 145°06.9'E, depth 1450 m, southwestern Okhotsk Sea off Cape Shiretoko, 27 May 1993.

Paratypes. NSMT-P 46437 (a female, 53.4 mm SL), HUMZ 121626 (a male, 54.2 mm SL), 44°31.1'N, 144°28.9'E, depth 1440 m, southern Okhotsk Sea near Kitami-yamato Bank, 15 Sept. 1991.

Diagnosis. A species of *Zesticelus* with the following features: Nuchal spines well developed, length between posterior angle and tip of spine 1.1-1.4 in interorbital width. Nasal spine present. Margin of orbit swollen anterodorsally and posterodorsally. Occipital region deeply concave between distinct fronto-parietal ridges. No spine on lachrymal. A single, uppermost preopercular spine without outer spine on base. Bases of two anteriormost spines of dorsal fin close-set. Lateral anterior central and lateral posterior central pores present on the occipital sensory canal.

Description. Dorsal fin rays VII-10 (VII-11 in paratypes), anal fin rays 9 (9), pectoral fin rays 18 (17, 18), pelvic fin rays I,2 (I,2 or I,3), lateral line pores 18 (19, 20), branchiostegal rays 6 (6), vertebrae 9+19=28 (9+18=27, 9+19=28). Head length 41.0 (39.5, 41.3)% SL, body depth 20.4 (20.3, 22.1)% SL, body width 25.2 (21.8, 23.4)% SL, predorsal length 40.2 (37.1, 39.7)% SL, preanal length 55.8 (53.7, 54.3)% SL, caudal peduncle length 23.1 (22.5, 22.7)% SL, caudal peduncle depth 6.2 (5.4, 6.1)% SL, snout length 9.2 (8.2, 8.9)% SL, orbital diameter 12.1 (11.2, 11.3)% SL, interorbital width 4.8 (4.9, 5.4)% SL, upper jaw length 15.6 (14.8, 16.2)% SL, lower jaw length 16.0 (15.0,

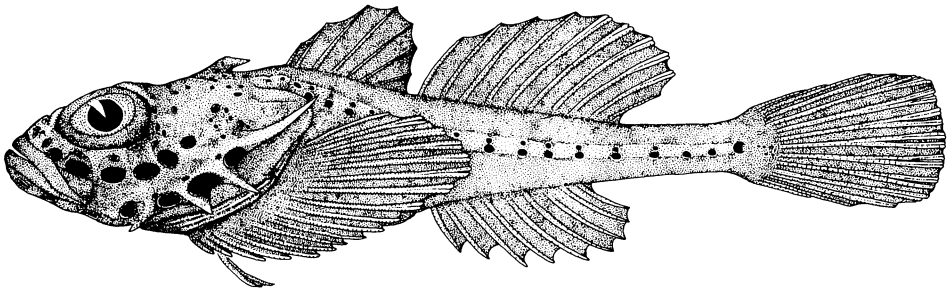


Fig. 1. *Zesticelus ochotensis* sp. nov., holotype, HUMZ 126133, male, 52.0 mm SL, from the southwestern Okhotsk Sea, 44°27.2'N, 145°06.9'E.

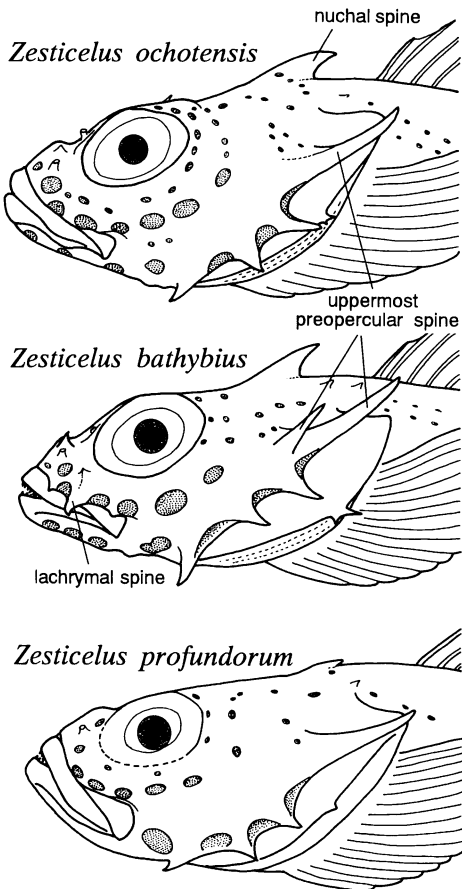


Fig. 2. Lateral views of head of *Zesticelus ochotensis* sp. nov. and two other species of *Zesticelus*.

16.4)% SL, basal length of first dorsal fin 16.0 (16.1, 16.6)% SL, basal length of second dorsal fin 25.8 (27.7, 27.9)% SL, basal length of anal fin 22.9 (21.9, 22.1) SL, pectoral fin length 22.3 (20.5, 22.5)% SL, pelvic fin length 15.8 (14.2, 14.4)% SL, caudal fin

length 28.4 (23.1, 24.2)% SL.

Head large, depressed, depth at base of first preopercular spine 1.8 (1.4–1.5) in width. Caudal peduncle slender, slightly depressed, depth 3.8 (3.7–4.1) in length. Lower jaw slightly protruded anteriorly. Maxilla reaching to a vertical through middle of pupil. Narrow tooth bands on both jaws. A pair of single tooth rows comprising 5–6 minute teeth on prevomer. Snout short, rather steep, length 1.3 (1.3–1.4) in orbital diameter. Nasal spine small, pointed. Anterior nostril with a slender tube. Posterior nostril with a short tube. Eye large, orbital diameter 3.4 (3.5–3.7) in head length. Interorbital space flat, its width 2.5 (2.1–2.3) in orbital diameter. Supraocular spine absent (small spine present in paratype HUMZ 121626). Nuchal spine long, thick, directed backward. Length of first preopercular spine 3.3 (3.1–3.2) in head length. Second preopercular spine sharp, slightly curved, its length about half of first spine. Third preopercular spine short, triangular, pointed. Fourth preopercular spine sharp, directed downward, covered with skin basally. Two small spines on low angle of subopercle. Seven large pores on infraorbital sensory canal; eight large pores on operculo-mandibular canal; ten or more minute pores on postorbital canal. Anterior medial, posterior medial, lateral anterior central and lateral posterior central pores present on the occipital sensory canal. A pair of terminal mandibular pores, each bordering on symphysis. Lateral line distinct. Anterior 15 (anterior 11–12 and middle 3–4) lateral line pores with a double opening, dorsal opening smaller than ventral; remaining pores with ventral opening only; single terminal pore at end of lateral line followed by several minute pores on proximal midline of caudal fin. First dorsal fin small, roughly triangular, basal length 1.6 (1.7–1.9) in that of second dorsal fin. Dorsal fin spines flexible; first two spines

Zesticelus ochotensis

Zesticelus profundorum

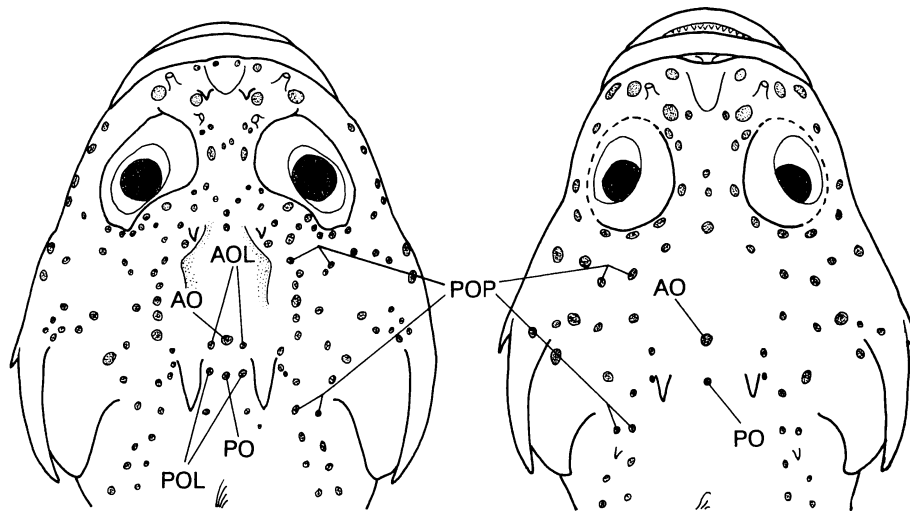


Fig. 3. Dorsal views of head of *Zesticelus ochotensis* sp. nov. and *Z. profundorum*. AO—anterior medial pore of occipital sensory canal; AOL—lateral anterior central pores of occipital sensory canal; PO—posterior medial pore of occipital sensory canal; POL—lateral posterior central pores of occipital sensory canal; POP—postorbital pores.

with close-set bases, succeeding spine bases evenly spaced; fourth spine longest, length almost equal to orbital diameter. Space between first and second dorsal fins almost equal to half of pupil diameter. Second dorsal fin originating on a vertical between midpoint of anus and anal fin origin. Fifth to ninth rays of dorsal fin branched; fifth ray longest, length 1.4 in base of second dorsal fin. Anal fin origin under base of second ray of dorsal fin, basal length 1.1 (1.2–1.3) in that of second dorsal fin; all rays unbranched. Last rays of second dorsal and anal fins almost free from caudal peduncle. Dorsalmost eight rays of pectoral fin branched; ventral rays simple, thickened. Pelvic fin base below base of nuchal spine; inner ray longer than outer (an additional rudimentary inner ray present in paratype HUMZ 121625). Caudal fin rounded, longer than caudal peduncle; 12 rays supported by hypural plate, middle eight (8–9) rays branched, dorsalmost two (1–2) and ventralmost two (1) rays unbranched; six (5–6) dorsal and four (5–6) ventral procurrent rays.

Color when fresh.—Head and body uniformly dark brown, snout slightly paler. Branchiostegal membranes and fins black. Region of anus white. Peritoneum black.

Distribution. Southwestern Okhotsk Sea from Kitami-yamato Bank to Cape Shiretoko, Hokkaido,

Japan. Depth 1440–1450 m.

Etymology. The specific name *ochotensis* is given in reference to the type locality, the Okhotsk Sea.

Comparison. Neyelov (1979) recognized three species in the genus *Zesticelus*: *Z. bathybius* (Günther, 1887), *Z. profundorum* (Gilbert, 1895), and *Z. japonicus* Oshima, 1957. The southern Japanese species, *Z. bathybius*, clearly differs from *Z. ochotensis* in having two (inner and outer) uppermost preopercular spines and a distinct, ventrally-directed spine on the lachrymal (Yabe and Okamura, 1993). According to Bolin (1944) and Neyelov (1979), and confirmed by personal observations, the eastern Pacific species, *Z. profundorum*, differs from *Z. ochotensis* in having no nasal spine, a short nuchal spine (length 2.5–3.8 in interorbital width), a flat occipital region, all dorsal fin spines with evenly-spaced bases, and no lateral anterior central and lateral posterior central pores on the occipital sensory canal. *Zesticelus japonicus* differs from *Z. ochotensis* in having a strongly hooked, uppermost preopercular spine and teeth on the palatines. The validity of *Z. japonicus*, however, has been questioned (Neyelov, 1979; Yabe and Okamura, 1993); it does not agree fully with the diagnosis of *Zesticelus* and may be a synonym of *Arteidiellus*

dydymovi dydymovi Soldatov, 1915.

In addition to these cogenetic species, a northern Okhotsk cottid, *Artediellina antilope* (Schmidt, 1937), is rather similar to *Zesticelus ochotensis* in the conditions of the head spines (e.g., preopercular, nasal, and supraocular spines). However, according to Schmidt (1950), *A. antilope* has teeth on the palatines, a long cirrus on the upper margin of the eyeball and a narrow interorbital width (6.0–6.8% HL v.s. 12.3–12.9% in *Z. ochotensis*).

Comparative material. *Zesticelus bathybius*, 3 specimens (45.8–49.0 mm SL), BSKU 44791 and 46135, CAS-SU 22326. *Zesticelus profundorum*, 3 (32.8–50.2), HUMZ 81867, CAS-SU 05729 and 25277.

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オホーツク海南西域から得られたカジカ科の1新種オホーツクソコカジカ

矢部 衛

オホーツク海の北海道網走沖にある北見大和礁周辺の深海域(水深約1450 m)から採集されたカジカ科魚類3個体(体長52.0–54.2 mm)に基づき、ソコカジカ属の1新種 *Zesticelus ochotensis* オホーツクソコカジカを記載した。本種は、頸棘が発達しその後縁の長さが両眼間隔の1.1–1.4倍であること、鼻棘があること、前鰓蓋骨最上棘は1本で後側向棘を欠くこと、涙骨下縁に棘がないこと、眼窩の前背縁と後背縁が肥厚すること、後頭部背面が凹むこと、後頭部の感覚孔が多いことなどの特徴により本属の他の3種と識別される。また、本種は、頸棘、前鰓蓋骨棘などの特徴ではオホーツク海北部から報告されている *Artediellina antilope* に類似するが、口蓋骨歯を持たないこと、眼球上部に皮弁を持たないこと、両眼間隔が広く頭長の12.3–12.9%であることにより、後種とも識別される。

(〒041 函館市港町 3-1-1 北海道大学水産学部水産動物学講座)