

## New species of *Buccinum* (Neogastropoda: Buccinidae) from the Kurile Islands

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**ABSTRACT.** The new species, *Buccinum kosyanae* sp. nov. is described from the Middle Kurile Islands. Previously the species was included in multigene molecular phylogeny of the genus [Kantor *et al.*, 2022b] as *B. cf. kobjakovae*. The new name, *B. fedosovi* nom. nov. is proposed for *Buccinum solidum* Golikov et Sirenko, 1988, non *Buccinum solidum* Philippi, 1887.

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Новый вид *Buccinum* (Neogastropoda: Buccinidae) с Курильских островов

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**РЕЗЮМЕ.** Из района островов Симушир и Кетой, Средние Курильские острова описан новый вид *Buccinum kosyanae* sp. nov. Ранее вид под названием *B. cf. kobjakovae* был включен в молекулярную филогению рода *Buccinum*, реконструированную по трем генам [Kantor *et al.*, 2022b]. Предложено новое название *B. fedosovi* nom. nov. для *Buccinum solidum* Golikov et Sirenko, 1988, non *Buccinum solidum* Philippi, 1887.

the subfamily Buccininae Rafinesque, 1815, and the subfamily was recovered as monophyletic within the family Buccinidae Rafinesque, 1815 in the recent multigene phylogeny of Buccinoidea Rafinesque, 1815 [Kantor *et al.*, 2022a].

Recently the multigene based phylogenetic reconstruction was conducted for the subfamily Buccininae [Kantor *et al.*, 2022b]. In addition to *Buccinum*, the genera *Volutharpa* P.Fischer, 1856, *Plicibuccinum* Golikov et Gulbin, 1977 and possibly *Corneobuccinum* Golikov et Gulbin, 1977 (for which molecular data are unavailable) were considered valid, while *Bathybuccinum* Golikov et Sirenko, 1988, *Ovulatibuccinum* Golikov et Sirenko, 1988, and *Thysanobuccinum* Golikov et Gulbin in Golikov, 1980 were synonymized with *Buccinum*.

Most recently two new genera of Buccininae were established, one genus (*Sulcosinus* Dall, 1895) was re-allocated to the subfamily and seven new species described [McLean, Clark, 2023]. All taxa of the latter publication were established on morphological grounds. Thus presently the subfamily includes 6 genera and 162 accepted Recent species.

Representatives of Buccininae remain poorly studied from the molecular point of view, with only 21 species sequenced for several genes [Kantor *et al.*, 2022b]. Moreover, even within those, four species were identified as new for science but not described due to inadequate material. Among them there was a species identified as *Buccinum cf. kobjakovae* Golikov et Sirenko, 1988 [Kantor *et al.*, 2022b] which at that moment was represented in our material by

### Introduction

The genus *Buccinum* Linnaeus, 1758 is one of the most specious within Neogastropoda encompassing presently 148 accepted Recent species [Mollusca-Base, 2023]. It is broadly distributed in the northern Hemisphere in temperate and Arctic waters from intertidal to abyssal depths and is characterized by high conchological variability, including adult size, shell shape, spiral and axial sculpture. *Buccinum* together with other recognized genera comprises

a single subadult specimen. Additional material is stored in the Zoological Institution of the Russian Academy of Sciences, St.-Petersburg (ZIN). This paper is dedicated to the description of the new species and correction of the case of primary homonymy in *Buccinum*.

## Material and methods

The holotype of the new species, the only sequenced specimen, was collected during the 56<sup>th</sup> cruise of the R/V *Akademik Oparin* off the Kurile Islands. Additional material was collected during the 34<sup>th</sup> cruise of the R/V *Odyssey* of the Kurile Islands.

For the details of DNA extraction, PCR, and phylogenetic analysis please refer to Kantor *et al.* [2022b].

### Abbreviations and conventions

MIMB – Museum of A.V. Zhirmunsky, National Scientific Center of Marine Biology of the Far Eastern Branch, Russian Academy of Sciences, Vladivostok, Russia

ZIN – Zoological Institute of the Russian Academy of Sciences, St. Petersburg, Russia

R/V – research vessel

SL – shell length

stn – station

## Taxonomy

Class Gastropoda Cuvier, 1795  
 Subclass Caenogastropoda Cox, 1960  
 Order Neogastropoda Wenz, 1938  
 Superfamily Buccinoidea Rafinesque, 1815  
 Family Buccinidae Rafinesque, 1815  
 Subfamily Buccininae Rafinesque, 1815  
 Genus *Buccinum* Linnaeus, 1758

*Buccinum kosyanae* sp. nov.  
 (Figs 1 A-E, 2)

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*Buccinum* sp. 3 – Sirenko (ed.), 2013: 160.

*Buccinum* cf. *kobjakovae* – Kantor *et al.*, 2022b: Fig. 3G.

**Type material.** Holotype (sequenced)– Kurile Is., off Simushir I., 46°40.6'N, 151°58.4'E, 436 m, R/V *Akademik Oparin*, cruise 56, stn 19, MIMB 47413, 02.07.2019, leg. A. Maiorova; 5 paratypes (not sequenced) – Kurile Is., off Ketoy I., 47°19.4'N, 152°39.0'E, 450 m, small and large pebbles, R/V *Odyssey*, stn 19, geological dredge, 05.01.1985, leg. A. Alekseev and V. Bizikov, ZIN 63719.

**Genbank acquisition numbers** (holotype): *cox-1* – OM791448, 28S – OM778281 [Kantor *et al.*, 2022b].

**Description** (holotype) (Fig. 1 A-A'). Shell small, biconical, with weakly angulated shoulder, and

strongly angular at transition to shell base. Shell thin, fragile, with short siphonal canal, yellow-brown, with slightly lighter fasciole. Protoconch and upper teleoconch whorls eroded. Remaining teleoconch whorls 3.5. Suture distinct, lightly adpressed at periphery of previous whorl. Axial sculpture of thin nearly orthocone growth lines. Spiral sculpture distinct, consists of a keel on shoulder, more pronounced keel on transition to shell base and smaller unequal cords covering entire shell surface. Cords distinct on shell base and canal, around 20 on penultimate whorl, 23 between suture and basal keel on last whorl and 30 on shell base and canal. Intervals between cords are narrower than cords.

Aperture large, sub-triangular. Outer lip thin, distinctly convex adapically, forming obtuse angle at transition to shell base and nearly straight abapically. Columella with low fold bordering fasciole, short, nearly straight. Siphonal notch indistinct. Periostracum very thin, smooth, tightly adhering. Operculum large, spanning 2/3 of aperture, thin, yellowish, transparent, oval, with subcentral nucleus.

**Dimensions** (holotype). Shell length 12.2 mm, last whorl length 9.4 mm, aperture length 7.4 mm, shell width 8.8 mm.

**Etymology.** The new species is named after our late colleague and friend, Russian malacologist Dr. Alisa Kosyan from A.N. Severtsov Institute of Ecology and Evolution, who published numerous papers on north Pacific Buccinoidea.

**Remarks.** The shell length attains 19.1 mm (Fig. 1 D, Table 1). Other examined specimens are quite similar to the holotype in shell outline and sculpture pattern. In largest specimen the periostracum is forming low axial lamellae.

The new species has a highly distinctive, nearly biconical shell shape. The presence of a robust keel at transition to the shell base is a feature shared with some *Buccinum* species, such as *B. angulosum* Gray, 1839 (differing however in the presence of well-developed axial ribs and much larger shell which can exceed 70 mm – Golikov, 1990). This characteristic is sometimes accomplished by more or less obtusely angular shoulder, as observed in *B. kashimanum* Okutani, 1964, *B. bicordatum* (Golikov et Sirenko, 1988), *B. kobjakovae* Golikov et Sirenko, 1988 (depicted on Fig. 1 F-F' herein), but the shell never achieves such a distinctly biconical shape.

Kantor *et al.* (2022b) compared the new species to *B. kobjakovae* (which is known only from the holotype). Nevertheless the new species can be distinguished by its much less pronounced keel on shoulder and broader shell. It bears a certain resemblance to *B. kurilense* Golikov et Sirenko, 1988, which differs in much more slender and notably larger shell (42 mm in the holotype).

**Distribution.** Presently the species was recorded

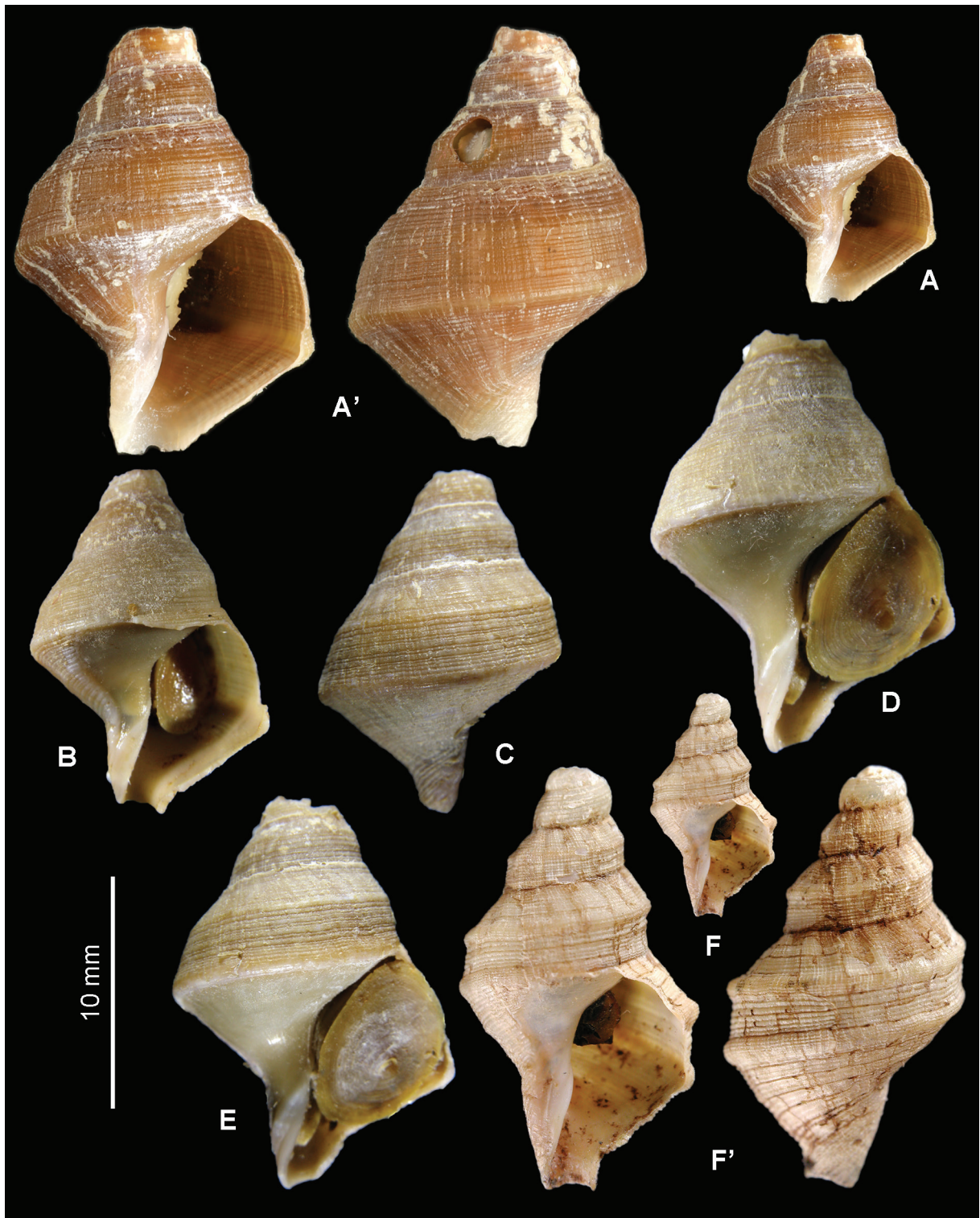


FIG. 1. *Buccinum kosyanae* sp. nov. (A–E). A–A'. Holotype, MIMB 47413, shell length (SL) 12.2 mm. B–E. Paratypes, off Ketoy Island, ZIN 63719 (B–C – SL 15.2 mm; D – SL 19.1 mm; E – SL 17.8 mm). *Buccinum kobjakovae* Golikov et Sirenko, 1988 (F–F'), holotype, ZIN 48667/1, eastward from Shikotan, Kurile Islands, 285–287 m, SL 10.1 mm. All shells at the same scale except A' and F' (enlarged).

РИС. 1. *Buccinum kosyanae* sp. nov. (A–E). A–A'. Голотип, МИМБ 47413, высота раковины (SL) 12.2 мм. B–E. Паратипы, о. Кетой, ZIN 63719 (B–C – SL 15.2 мм; D – SL 19.1 мм; E – SL 17.8 мм). *Buccinum kobjakovae* Golikov et Sirenko, 1988 (F–F'), голотип, ZIN 48667/1, восточнее о. Шикотан, Курильские острова, 285–287 м, SL 10.1 мм. Все раковины, кроме A' и F' (увеличены) – в одном масштабе.



Table 1. Dimensions of shells of the paratypes of *Buccinum kosyanae* sp. nov.Табл 1. Измерения раковин паратипов *Buccinum kosyanae* sp. nov.

Catalog numbers	Shell length (mm)	Last whorl length (mm)	Aperture length (mm)	Shell width (mm)
ZIN 63719	19.1	16.0	12.6	15.8
ZIN 63719	17.8	13.9	10.1	11.8
ZIN 63719	15.2	12.1	9.0	11.1
ZIN 63719	11.0	8.5	6.8	7.0
ZIN 63719	8.6	7.0	5.2	5.8

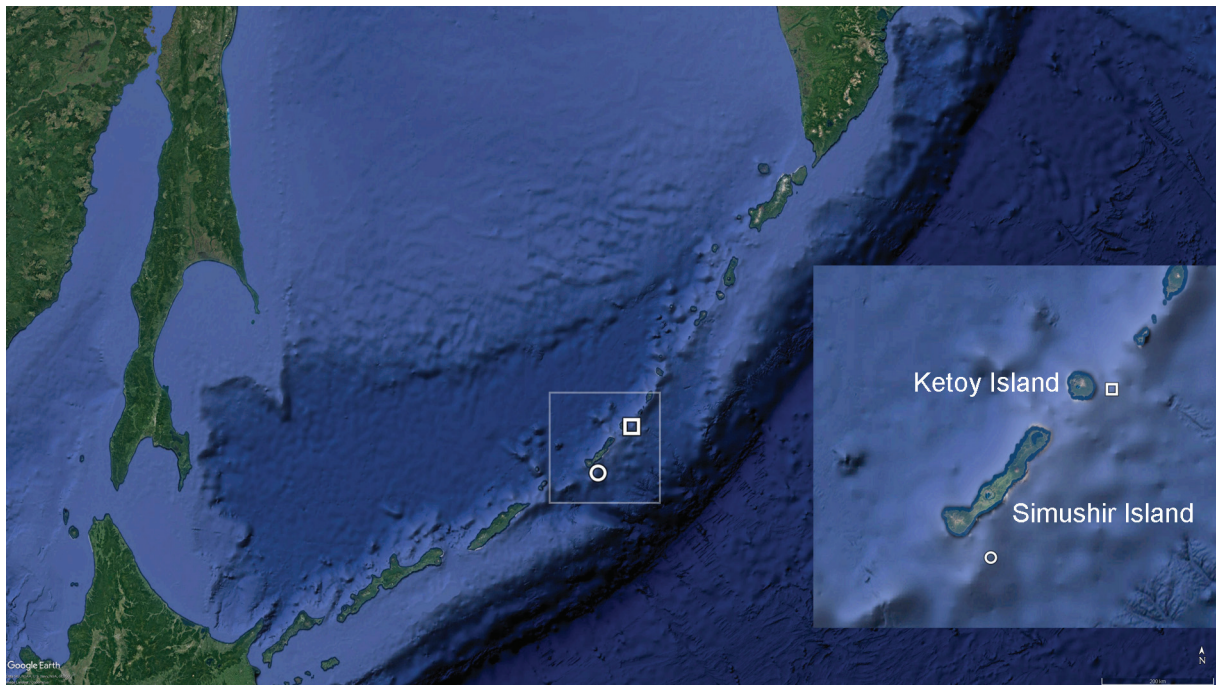
FIG. 2. Distribution of *Buccinum kosyanae* sp. nov. The insert shows map at larger scale. Circle – type locality, square – locality of the paratypes.

РИС. 2. Распространение *Buccinum kosyanae* sp. nov. На вкладке приведена карта в более крупном масштабе. Кругок – типовое местонахождение, квадрат – нахождение паратипов.

in a very narrow range – only off Simushir and Ketoy Islands, Kurile Islands, at 436–450 m (Fig. 2).

Presently we found out the case of a primary homonymy among *Buccinum* species (see below).

#### *Buccinum fedosovi* nom. nov.

*Buccinum* (*Lobatibuccinum*) *solidum* Golikov, Sirenko, 1988: 98–99, figs. 24–26.

*Buccinum solidum* – Kantor, Sysoev, 2006: 174, plate 85 G (holotype); Sirenko, (Ed.), 2013: 162.

Zoobank registration: urn:lsid:zoobank.org:act:14214F14-A299-4BDB-BC84-264322EA1E4A

**Type material.** Holotype: ZIN 44151/1, Okhotsk Sea, westward from Kamchatka, 57°00'N, 154°00'E, 760–780 m

**Etymology:** The species is named after Dr. Alexander Fedosov from Swedish Museum of Natural

History, Stockholm for his outstanding contributions to taxonomy and phylogeny of Neogastropoda.

**Remark.** The name *Buccinum solidum* Golikov et Sirenko, 1988 is a junior primary homonym of *Buccinum solidum* Philippi, 1887 [= *Xanthochorus cassidiformis* (Blainville, 1832), Muricidae]. Since there is no known available and potentially valid synonym, according to art. 60.3 of ICZN the name *Buccinum solidum* Golikov et Sirenko, 1988 must be replaced by a new substitute name proposed herein.

**Distribution.** Type locality.

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