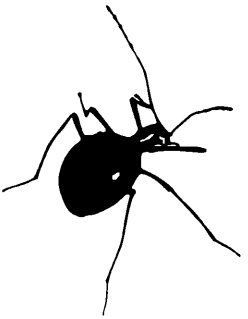

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PROSPELAEOBATES BRELIHI SP. NOV., A NEW LEPTODIRINE BEETLE FROM SLOVENIA (COLEOPTERA: CHOLEVIDAE)

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Abstract – *Prospelaeobates brelihi* sp.n., the third species of this genus of the subfamily Leptodirinae, is described. The new species lives in colder caves on the high Dinaric plateau of Mount Snežnik (SW Slovenia). Relations to the other species of the genus *Prospelaeobates,* as well as the distribution and ecology of the new taxon, are discussed.

KEY WORDS: Coleoptera, Cholevidae, Leptodirinae, *Prospelaeobates*, new species, Snežnik.

Izvleček – *PROSPELAEOBATES BRELIHI* SP. NOV NOV LEPTODIRIN IZ SLOVENIJE (COLEOPTERA: CHOLEVIDAE)

Podan je opis nove vrste *Prospelaeobates brelihi,* tretje vrste tega rodu iz podružine Leptodirinae. Nova vrsta živi v hladnejših jamah dinarske visokokraške Snežniške planote (JZ Slovenija). Obravnavani so razširjenost, ekologija ter odnos nove vrste do drugih vrst tega rodu.

KLJUČNE BESEDE: Coleoptera, Cholevidae, Leptodirinae, *Prospelaeobates*, nova vrsta, Snežnik.

Introduction

In 1994 Žarko Vrezec, from Ljubljana, found some specimens of a small unknown leptodirine in Jama Medvedjak near Skadanščina (SW Slovenia). Almost at the same time Marco Bognolo, from Trieste, found similar specimens in Petričeva

jama on the island Cres (NW Croatia). On the basis of this material, Giachino and Etonti (1996) described the genus *Prospelaeobates* and two new species, *P. vrezeci* and *P. bognoloi*. Both species are rare and known from their type localities only, which are situated in the lower littoral karst, between 300 and 600 m of altitude. The genus *Prospelaeobates* was at first declared as closely related to the genus *Spelaeobates* Müller, 1901, but later (Newton, 1998) moved to the subtribe Bathysciina Horn, 1880 [=Division II (Teleomorphes in part) of Jeannel, 1924].

In August 2001 one of the authors (S.P.) found some specimens of the genus *Prospelaeobates* in Jama v Kovačiji near Koritnice on the north-western edge of the Snežnik plateau. The preliminary analyses revealed these specimens to be a new species. Later on, together with the other author (M.B.), further specimens of the same species were found in two other caves, situated in the densely forested high Dinaric plateau of Mount Snežnik (SW Slovenia) at an altitude above 1000 m. The description of the new taxon is the subject of this paper.

Prospelaeobates brelihi sp. nov.

Type locality: Slovenia, Snežnik, Felajeva luknja 1 (Slovene cave register No. 6654).

Type series: Holotype ♂, Slovenia, Snežnik, Felajeva luknja 1, 6.7.2002, leg. M. Bognolo & S. Polak, coll. (PMSL) Prirodoslovni muzej Slovenije, Ljubljana (Slovenija). Paratypes: Slovenia, Snežnik, Felajeva luknja 1, 7 ♂♂ and 21 ♀♀, 6.7.2002, leg. M. Bognolo & S. Polak. Slovenia, Snežnik; Jama v Kovačiji (not registered), 2 ♂♂ and 2 ♀♀, 8.8.2001, leg. S. Polak; 5 ♂♂ and 2 ♀♀, 19.8.2001, leg. S. Polak. Slovenia, Snežnik; Lekšanova mrzla jama (Slovene cave register No. 5237), 6 ♂♂ and 13 ♀♀, 27.10.2001, leg. S. Polak, coll. (PMSL) Prirodoslovni muzej Slovenije, Ljubljana; coll. (NMPO) Notranjski muzej Postojna, Postojna; coll. Biološki Inštitut Jovana Hadžija, Ljubljana; coll. (MCT) Museo Civico di Storia Naturale di Trieste, Trieste; coll. M. Bognolo, Trieste; coll. (HPM) Hrvatski prirodoslovni muzej, Zagreb).

Diagnosis: The new species is distinguishable from *P. vrezeci* and *P. bognoloi* primarily by the external morphology. The body is large, nearly 1.25-1.30 times as long as in *P. vrezeci* (Fig. 38). Compared to the body length, the antennae are a bit shorter than in *P. vrezeci* and *P. bognoloi*; the apical joint is stout and much shorter in the new species (Figs. 27-36). Pronotum is larger than in the other species, shaped almost as in *P. vrezeci*, much wider than in *P. bognoloi* (Figs. 7-16, Fig. 39). Elytra are a little wider than in both *P. vrezeci* and *P. bognoloi* (Figs. 17-26, Fig. 40). Aedeagus is shorter and stouter than in *P. bognoloi*, similar in shape to *P. vrezeci*, but clearly larger than the latter (Figs. 2-6).

Description: A small specialized leptodirine beetle (♂ 2.46-2.63 mm; ♀ 2.48-2.68 mm), with leptodiroid shape (Fig. 1). Integument shiny, densely pubescent, colour dark reddish.

Head anophthalmous, not retractile, slightly narrower than pronotum; occipital carina absent. Antennae inserted in the middle third of the head, backwards not extending to the half of the elytra.

Length of antennomeres (percentage):

HT ♂: 7.92; 13.26; 6.04; 7.22; 5.16; 7.43; 10.20; 5.84; 10.89; 10.39; 15.65.

PT ♀: 7.66; 11.84; 6.37; 5.77; 6.47; 6.17; 11.34; 6.47; 10.45; 11.04; 16.42.

Pronotum (Figs. 7-9, 12-14) small, almost as wide as long (length / width ratio: ♂ 1.01-1.06; ♀ 1.00-1.09), with maximum width in the anterior third; disc convex, lateral sides regularly rounded anteriorly, sinuated basally; basal margin narrower than the base of the elytra.

Elytra (Figs. 17-19, 22-24) elongate ovate, slightly wider in females (length/width ratio: ♂ 1.37-1.46; ♀ 1.34-1.47), with maximum width at middle, separately rounded at apex.

Legs long and slender, protarsi 4-segmented, the basal tarsomere feebly dilated in males.

Aedeagus (Figs. 2-4) small, not much arcuate in lateral view. Median lobe short and stout, widely rounded at apex in dorsal view, with lateral sides subparallel. Parameres stout, exceeding the apex of the median lobe, each furnished with three apical setae. Inner sac without evident sclerotized parts.

Etymology: The new species is dedicated to the Slovenian entomologist Savo Brelih, retired collaborator of the Slovenian Museum of Natural History (Prirodoslovni muzej Slovenije), Ljubljana.

Distribution and ecology: At present, *P. brelihi* sp. n. had been found only on the high Dinaric karst plateau of Mount Snežnik (south-western Slovenia) at altitudes between 1000 m and 1500 m above sea level. This area is densely forested by *Fagus sylvatica* and *Abies alba* and characterised by an evident doline karst, with plenty of deep shafts. All three known localities (Fig. 37) are caves formed in the Cretaceous limestones, consisting of small or medium-sized blind shafts at the bottom of steep collapse dolines. The environmental conditions are similar: in the small chambers at the bottom of the shafts, the trapped cold air let snow and ice last till summer. The temperature normally ranges from 3°C to 6°C. The percolation water causes the relative humidity to be very high, almost reaching the saturation point.

P. brelihi sp. n. had been collected both using pitfalls and searching under stones and on the cave walls. Most specimens were found in the deepest parts of the caves; however, in Jama v Kovačiji and in Lekšanova mrzla jama, some of them were found in the superficial underground spaces of the doline entrance, namely in the lowest part, where low temperature and high humidity last longer.

Notes and comparisons

According to its distrubution, the genus *Prospelaeobates* can be classified among the genera with a north-western Dinaric spread (Polak, 2002). *P. brelihi* sp. n. represents at the moment the northernmost species of this genus. In addition to the morpholog-

ical differences pointed out in the description of the new taxon, *P. brelihi* sp. n. characteristically stands out also in its distribution and ecology. In fact, the new taxon is clearly segregated from *P. vrezeci* and *P. bognoloi* by a continuous belt of Palaeogene sandstones and marls, extending from Brkini hills south-eastwards almost to Rijeka.

Regarding the ecology, *P. vrezeci* and *P. bognoloi* have been found in the inner part of the caves only (dark zone); these two species are rare and cohabit with other cave beetles, like the leptodirines *Aphaobius milleri* and *Bathysciotes khevenhuelleri* and the trechine *Typhlotrechus bilimeki*. On the contrary, *P. brelihi* sp. n. has been found in the twilight zone of deep shafts and in the superficial underground spaces as well, colonizing a particular ecological niche characterised by low temperature and abundance of snow and ice. The associated fauna consists of other leptodirine beetles strictly belonging to the north-western Dinaric Leptodirinae fauna, such as *Parapropus sericeus*, *Astagobius angustatus* and *Bathyscimorphus serkoi*.

Concerning further possible discoveries in the future, it looks like there is a close connection between Cretaceous limestones and the distribution of the genus *Prospelaeobates* (Fig. 37), thus new findings are likely to be expected in south-western Slovenia and north-western Croatia.

Acknowledgements

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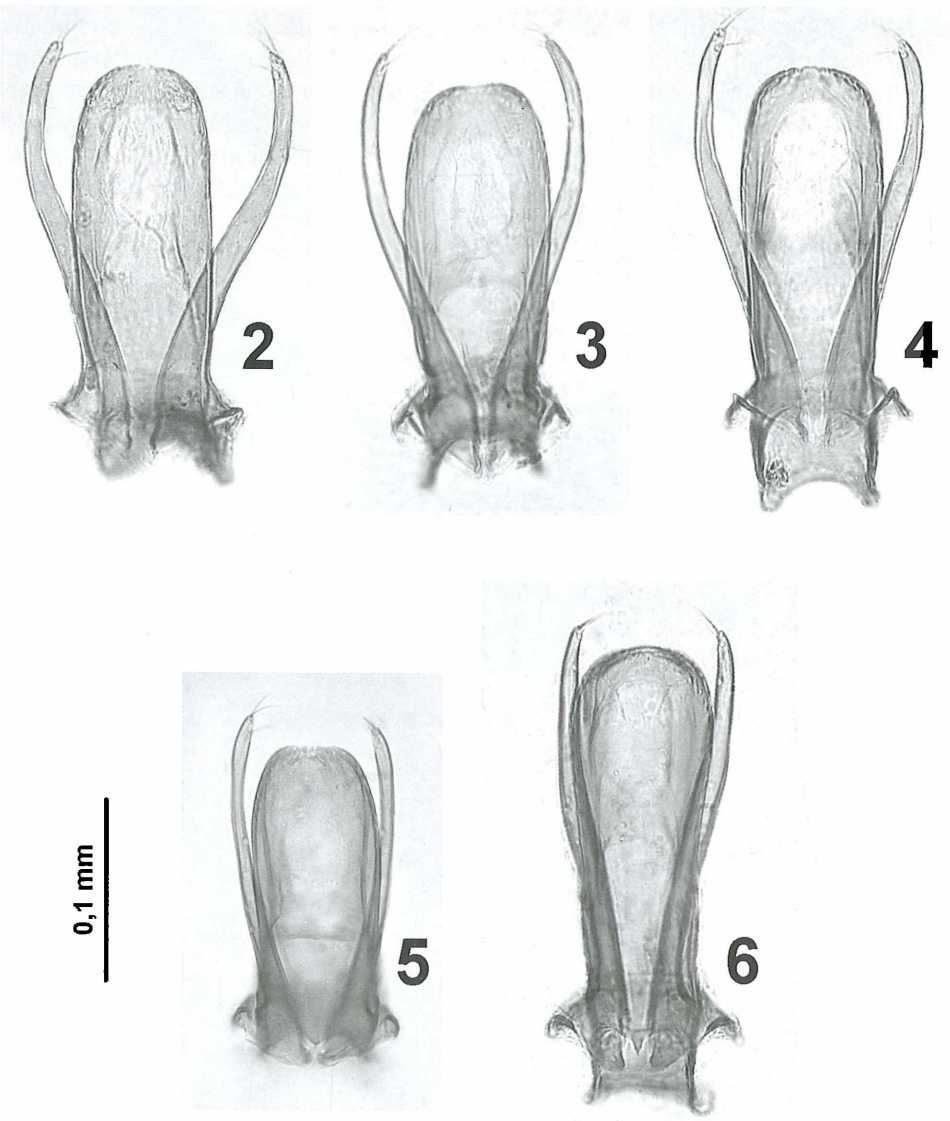
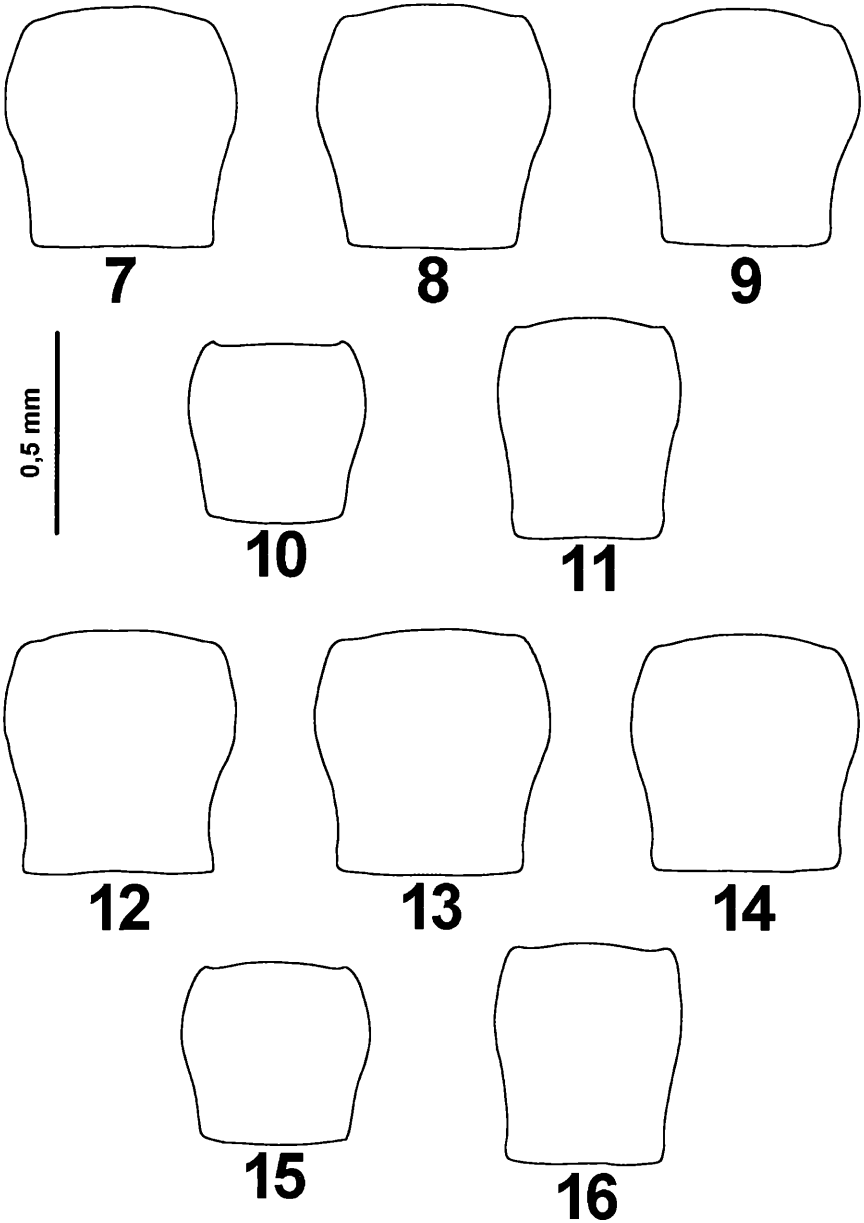
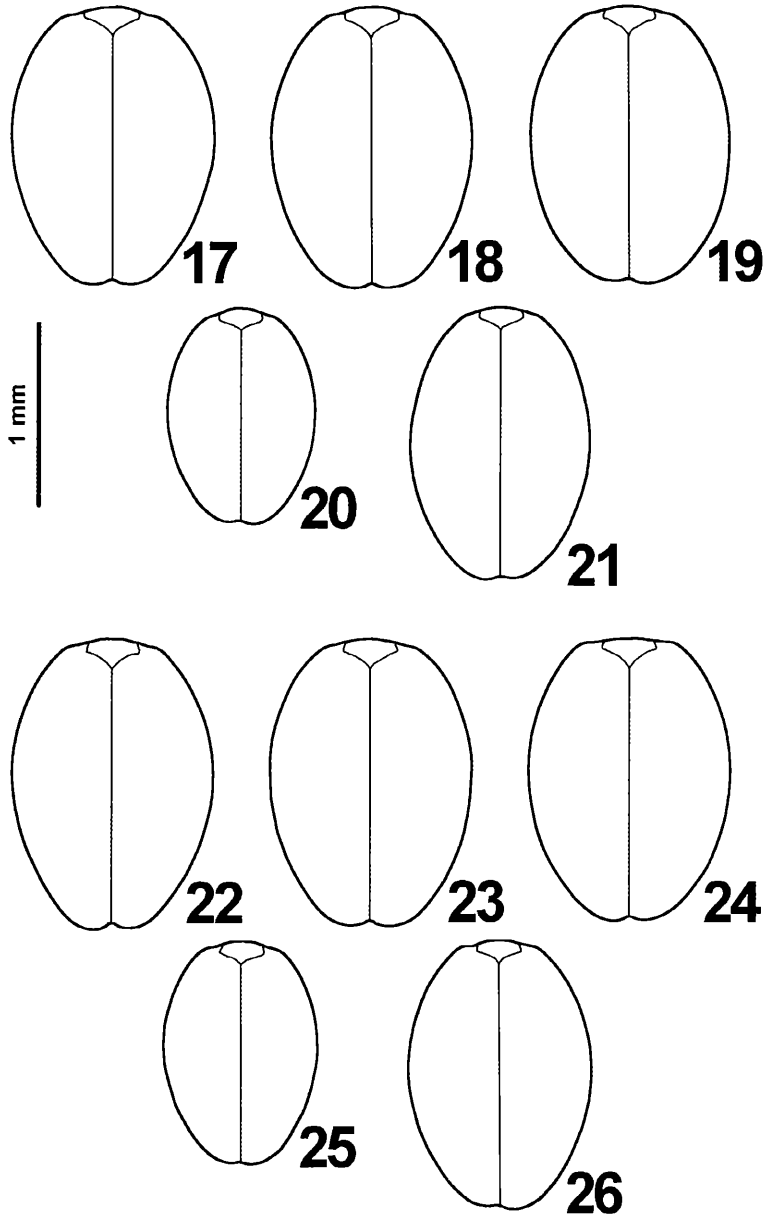
Fig. 1: *Prospelaeobates brelihi* sp. n. (holotypus ♂; Slovenija: Felajeva luknja 1), habitus



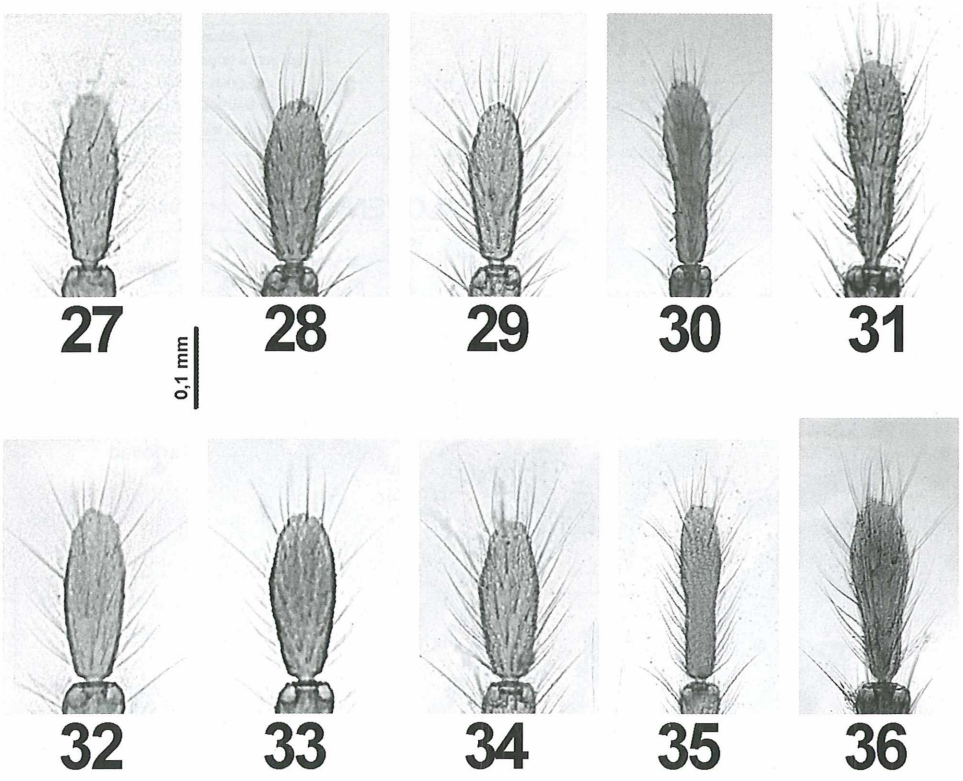
Figs. 2-6: *Prospelaeobates*, male genital organ. 2: *P. brelihi* (Felajeva luknja 1); 3: *P. brelihi* (Jama v Kovačiji); 4: *P. brelihi* (Lekšanova mrzla jama); 5: *P. vrezeci* (Jama Medvedjak); 6: *P. bognoloi* (Petričeva jama)



Figs. 7-16: *Prospelaeobates*, shape of pronotum. 7: *P. brelihi* ♂ (Felajeva luknja 1); 8: *P. brelihi* ♂ (Jama v Kovačiji); 9: *P. brelihi* ♂ (Lekšanova mrzla jama); 10: *P. vrezeci* ♂ (Jama Medvedjak); 11: *P. bognoloi* ♂ (Petričeva jama); 12: *P. brelihi* ♀ (Felajeva luknja 1); 13: *P. brelihi* ♀ (Jama v Kovačiji); 14: *P. brelihi* ♀ (Lekšanova mrzla jama); 15: *P. vrezeci* ♀ (Jama Medvedjak); 16: *P. bognoloi* ♀ (Petričeva jama)



Figs. 17-26: *Prospelaeobates*, shape of elytra. 17: *P. brelihi* ♂ (Felajeva luknja 1); 18: *P. brelihi* ♂ (Jama v Kovačiji); 19: *P. brelihi* ♂ (Lekšanova mrzla jama); 20: *P. vrezeci* ♂ (Jama Medvedjak); 21: *P. bognoloi* ♂ (Petričeva jama); 22: *P. brelihi* ♀ (Felajeva luknja 1); 23: *P. brelihi* ♀ (Jama v Kovačiji); 24: *P. brelihi* ♀ (Lekšanova mrzla jama); 25: *P. vrezeci* ♀ (Jama Medvedjak); 26: *P. bognoloi* ♀ (Petričeva jama)



Figs. 27-36: *Prospelaeobates*, apical joint of antennae. 27: *P. brelihi* ♂ (Felajeva luknja 1); 28: *P. brelihi* ♂ (Jama v Kovačiji); 29: *P. brelihi* ♂ (Lekšanova mrzla jama); 30: *P. vrezeci* ♂ (Jama Medvedjak); 31: *P. bognoloi* ♂ (Petričeva jama); 32: *P. brelihi* ♀ (Felajeva luknja 1); 33: *P. brelihi* ♀ (Jama v Kovačiji); 34: *P. brelihi* ♀ (Lekšanova mrzla jama); 35: *P. vrezeci* ♀ (Jama Medvedjak); 36: *P. bognoloi* ♀ (Petričeva jama)

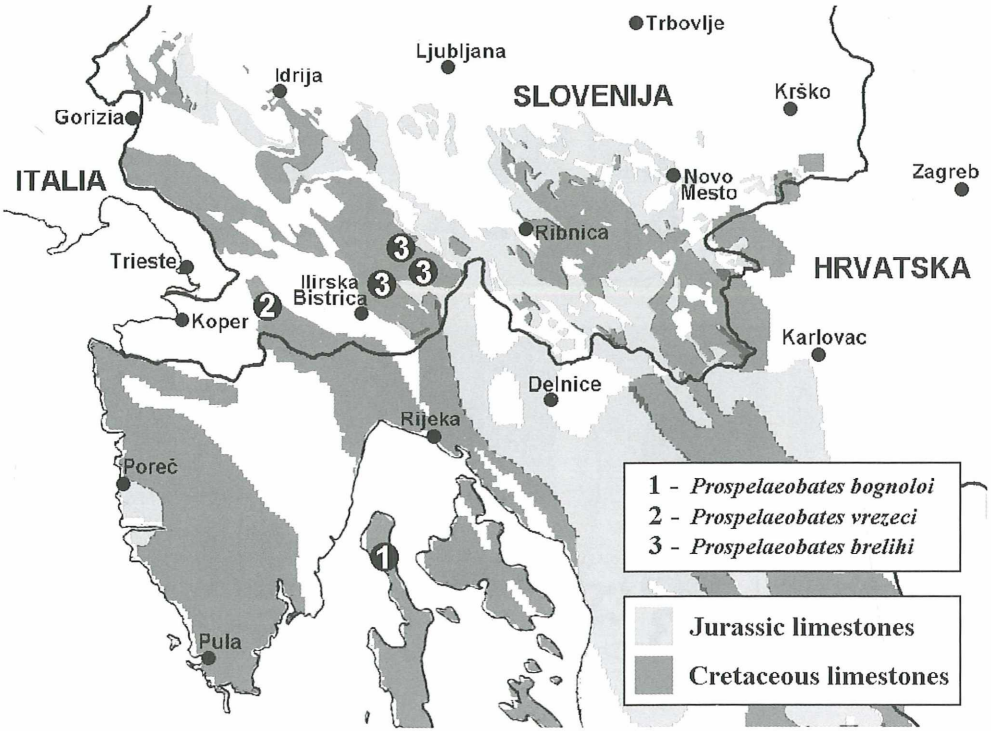


Fig. 37: *Prospelaeobates*, distribution.

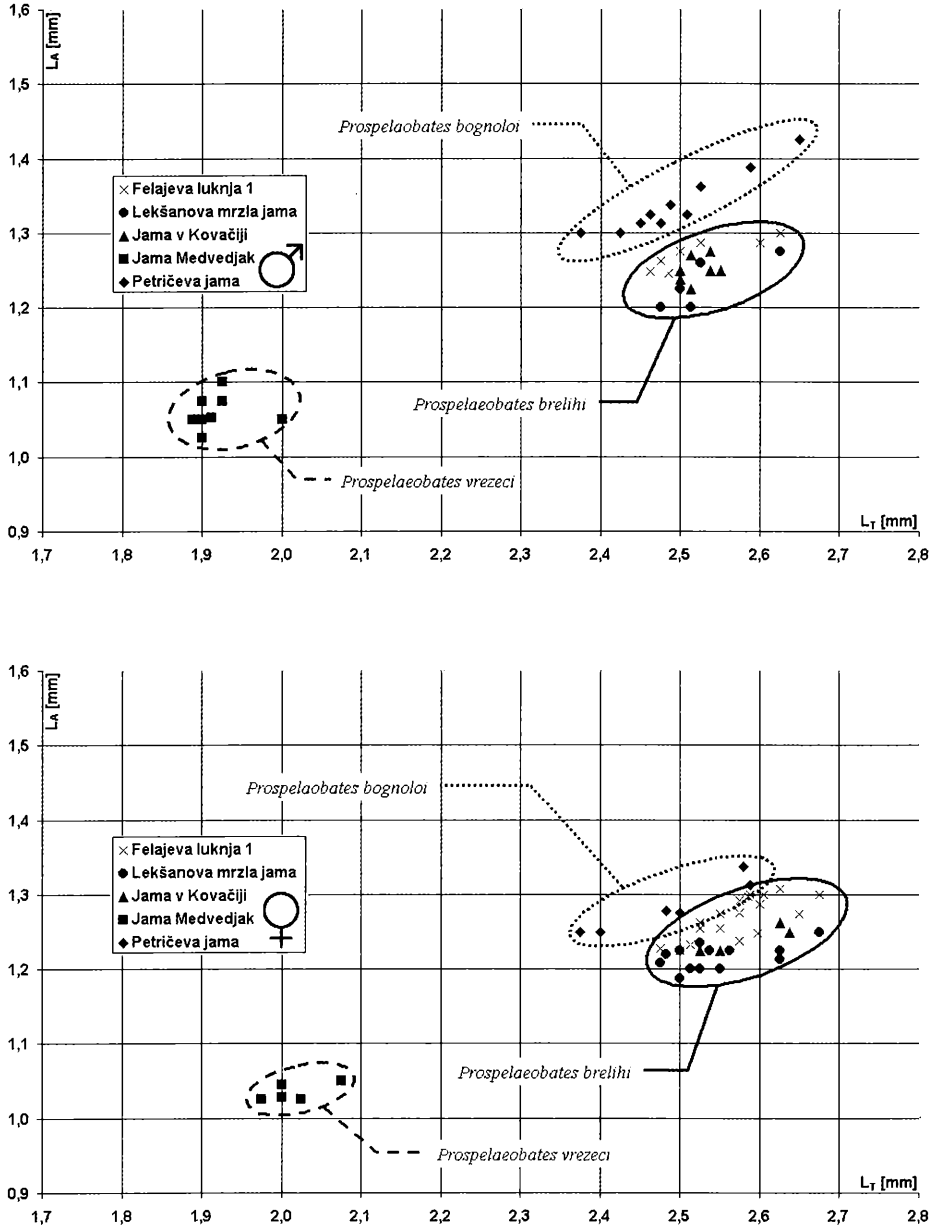


Fig. 38: *Prospelaeobates*, external morphology. L_T: body length. L_A: length of antenna.

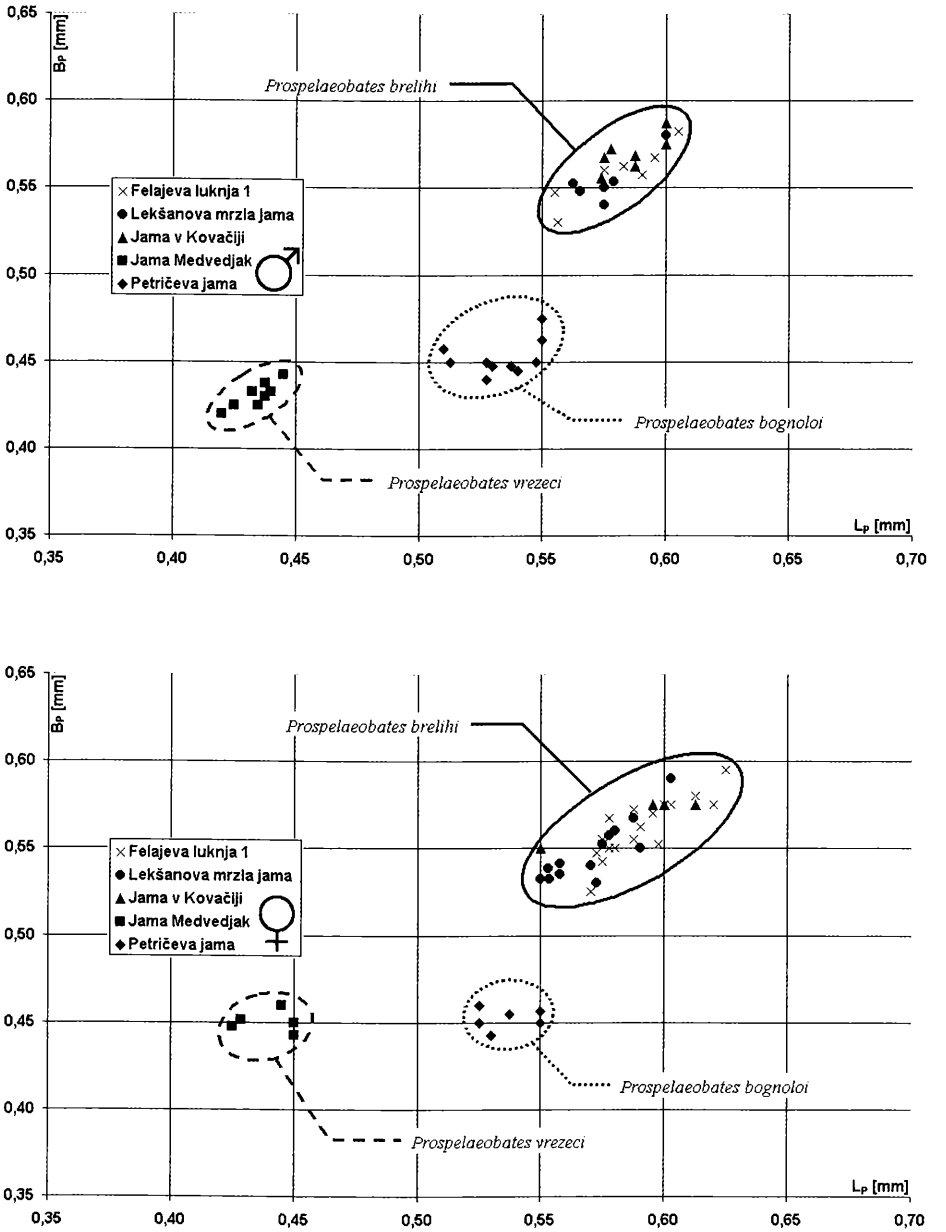


Fig. 39: *Prospelaeobates*, shape of pronotum. L_P: length of pronotum. B_P: width of pronotum.

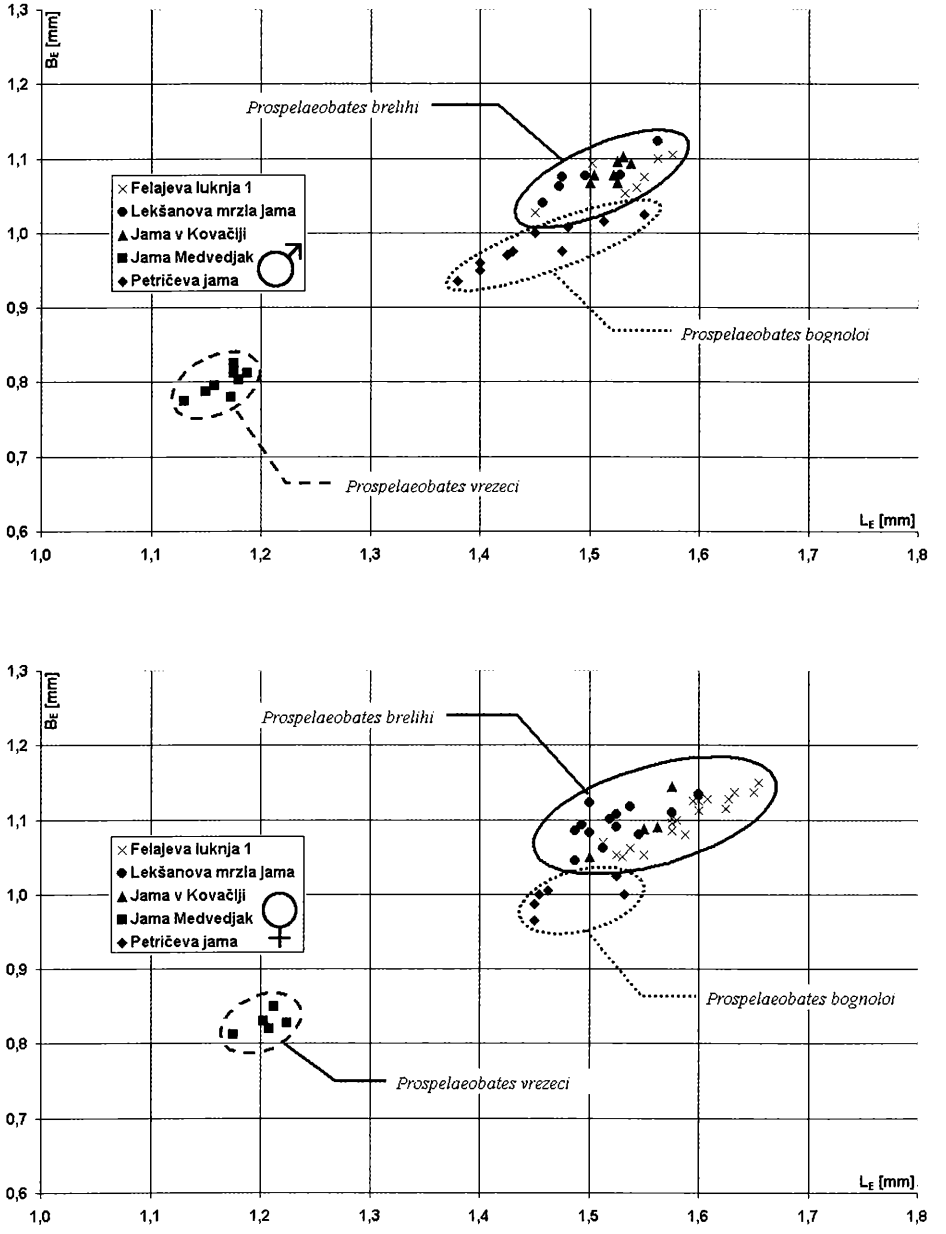


Fig. 40: *Prospelaeobates*, shape of elytra. L_E: length of elytra. B_E: width of elytra.

References

Giachino, P.M., Etonti, M., 1996: *Prospelaeobates* gen. nov. e due sp. n. di Leptodirinae delle isole del Quarnero e dell'Istria (Coleoptera: Cholevidae). *Acta Entomologica Slovenica*, 4 (2), Ljubljana: 63-71.

Jeannel, R., 1924: Monographie des Bathysciinae. *Arch. Zool. exp. génér.*, 63, Paris: 1-436.

Newton, A.F., 1998: Phylogenetic problems, current classification and generic catalog of world Leiodidae (including Cholevidae). In: Giachino P.M. & Peck S.B. (eds.): Phylogeny and evolution of subterranean and endogean Cholevidae (=Leiodidae Cholevinae). Proc. XX I.C.E., Firenze – ATTI Mus. Reg. Sci. Nat., Torino pp. 41-178.

Polak, S., 2002: New confirmations of the common North - West Dinaric troglobitic Leptodirinae fauna (Coleoptera, Cholevidae). XVI International Symposium of Biospeleology. Verona, Italy 8-15 September 2002. Museo Civico di Storia Naturale di Verona, Università degli Studi – Verona.

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