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Discovery of a New Trechodine (Coleoptera, Trechinae) in the Russian Far East

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Abstract A new genus and new species of trechodine trechid beetle is described from the southern part of the Sikhote-Alin Mountains in the Russian Far East, under the name of *Eotrechodes larisae*. It is closely similar to *Thalassophilus* WOLLASTON distributed over Europe and the Macaronesian islands, though its true affinity is not certain. *Eotrechodes* is the first representative of the subtribe Trechodina in East Asia north of 30°N.

An almost unbelievable event in the study of the carabid subfamily Trechinae was recently made in the Russian Far East. It is the discovery of a new representative of the subtribe Trechodina at the southern part of the Sikhote-Alin Mountains.

This subtribe has its main distributional range in the Southern Hemisphere, and in East Asia, only a small number of species have sporadically been known in the regions south of 30°N, mostly south of 20°N, that is, Luzon in the Philippines (JEANNEL, 1926, pp. 488, 491; UÉNO, 1988), Thailand (DEUVE, 1987, p. 145; UÉNO, 1989, 1990), Myanmar (BATES, 1892, p. 298; JEANNEL, 1926, pp. 488, 490), and East Nepal (UÉNO, 1981). It has been unknown from such northern regions as Mainland China, Taiwan, Japan and Korea, although the trechid fauna is already clarified fairly well especially in Japan and Taiwan. It is therefore most unexpected that a trechodine should occur in the Primorskij Territory at a latitude of more than 43°N.

In the summer of 1994, one of the authors (SUNDUKOV), who is carrying on the

faunistic survey of carabid beetles on Mt. Olkhovaya at the northern part of the Partizanskij Range, collected three specimens of a strange trechid from beneath stones lying on the banks of a narrow stream. In October, he took this collection along to his supervisor (LAFER) at Vladivostok, and a close examination revealed that the beetle must belong to a new species of the tribe Trechodini theretofore unknown from anywhere in Northeast Asia. Very unfortunately, the specimens kept on a layer of cotten wool were considerably damaged by mold mites, which had eaten up the interior including the genitalia of one of the two males known and had dismembered some antennae and legs, but as a whole, they could afford close taxonomic study.

In view of the complete basal borders of the elytra and the absence of copulatory piece, the Primorskij species should be classified into the subtribe Trechodina of the tribe Trechodini (cf. CASALE & LANEYRIE, 1982, pp. 9-11, 36-47), but its generic assignment is not easy. In general appearance, it resembles the members of *Thalassophilus* WOLLASTON (1854, p. 71), especially to its type species, *T. whitei* WOLLASTON (1854, p. 71, pi. 2, fig. 5; JEANNEL, 1926, pp. 514, 518, fig. 300; MACHADO, 1992, p. 144, figs. 45-46) from Madeira and the Canaries. It is, however, different from the western genus in cephalic and male genitalic conformation, as will be noted on later pages. It does not seem to have a direct relationship to *Trechodes* BLACKBURN (1901, p. 119; JEANNEL, 1926, pp. 479, 484) and *Himalotrechodes* S. UÉNO (1981, p. 61), to either one of which belong the trechodines hitherto known from South Asia. It is, however, possible that other species of the same subtribe will be found in future in the wide intervening areas of trechodine distribution in East Asia, since occurrence of trechodines is always sporadical in that part of the world. Under the present situation, the best way for the present authors to do is to erect a new genus for the reception of the Primorskij species and to leave the phylogenetic problem for future investigations. The new name to be given for the new trechid is *Eotrechodes larisae* in dedication to Larisa SUNDUKOVA, who has encouraged and helped her husband's survey of carabid beetles on Mt. Olkhovaya.

The abbreviations employed in this paper are the same as those explained in previous papers of the first two authors'.

Genus ***Eotrechodes*** gen. nov.

Type species: *Eotrechodes larisae* S. UÉNO, LAFER et SUNDUKOV, sp. nov.

Belonging to the subtribe Trechodina and similar in many respects to *Thalassophilus*, but the genae are pubescent, the labrum is not deeply cleft, the submentum is only sexsetose and the mentum bears a pair of additional setae, each elytral apex is widely rounded independent of the other, and the aedeagus is short, high, simply rounded at the apex of short apical lobe, and devoid of sclerotized teeth.

Relatively small trechodine of elongate body form, with fairly long antennae and rather short legs; fore body small, hind body large, elongate and nearly parallel-sided. Body glabrous on the dorsal surface but sparsely covered with suberect pubescence

on the ventral surface; microsculpture present throughout. Inner wings fully developed. Colour dark brown, with lighter elytra and pale appendages.

Head subquadrate, gently transverse, with deep frontal furrows not angulate at middle; two pair of supraorbital pores lying on lines slightly convergent behind, the anterior pair not far apart from the posterior; eyes small but completely faceted, convex beyond the contour of genae, the latter tumid and sparsely pubescent; neck very wide. Labrum transverse, with the apical margin shallowly emarginate and sexsetose. Mandibles short and stout, though falcate and acute at the apical parts, tridentate, with premolar tooth sharp on right mandible. Mentum not fused with submentum, with a short seta on each side in addition to the ordinary pair; epilobes sharply protrudent; mentum tooth porrect, simply triangular and rather narrow; submentum sexsetose including the pair close to buccal fissures; ligula truncated at apex, with a pair of long and two pair of short setae; paraglossae fairly broad and rather short, straightly divergent anteriad. Maxillae fairly long though stout, with lacinia moderately curved at the apical part. Palpi short and stout; penultimate segments widely dilated towards apices, quadrisetose in labial palpus, almost glabrous but provided with one or two short hairs on the external face near the apex in maxillary palpus; apical segments elongated subconical with blunt extremities, slightly longer than penultimate segment in both palpi. Antennae long, filiform and fairly stout.

Pronotum small, transverse obtrapezoidal, with completely bordered sides and very obtuse hind angles; two pair of marginal setae present, at the widest part and slightly before hind angles, respectively; median line deeply impressed on the disc, though not reaching the two borders; apical transverse impression vague; basal transverse impression deep, linear and continuous, forming a wide chevron; basal foveae small and mal-defined, not externally delimited by postangular carinae.

Elytra ample, more than three times as long as pronotum, nearly parallel-sided, and widely depressed above, with apices separately rounded and forming a large re-entrant angle at suture; shoulders square; basal borders complete, with marginal gutters merging into sutural striae at the innermost; inner striae entire and deeply impressed, outer ones obliterated; scutellar striole absent; apical stride deep though short, strongly curved, and merging anteriad into stria 3; apical carina short but prominent; stria 3 with two setiferous dorsal pores; preapical pore situated on interval 3 adjoining stria 2 within the field of apical striole; basal pore lying on basal border at the base of interval 3, but usually devoid of seta; two apical pores lying side by side along apical border; marginal umbilicate pores aggregated and regularly ranged.

Ventral surface somewhat uneven; presternum with sparse hairs at the median part; venter of hind body sparsely pubescent, the pubescence becoming denser on the median parts of abdominal sternites; anal sternite with a pair of marginal setae in *$*, two pairs in $. Legs rather short; protibiae moderately dilated towards apices, slightly curved inwards at the apical parts, externally grooved, and provided with rows of hairs; tarsi fairly short, segment 4 with a hyaline ventral apophysis in pro- and mesotarsi; in (J, two proximal segments of each protarsus rather widely dilated, inwardly

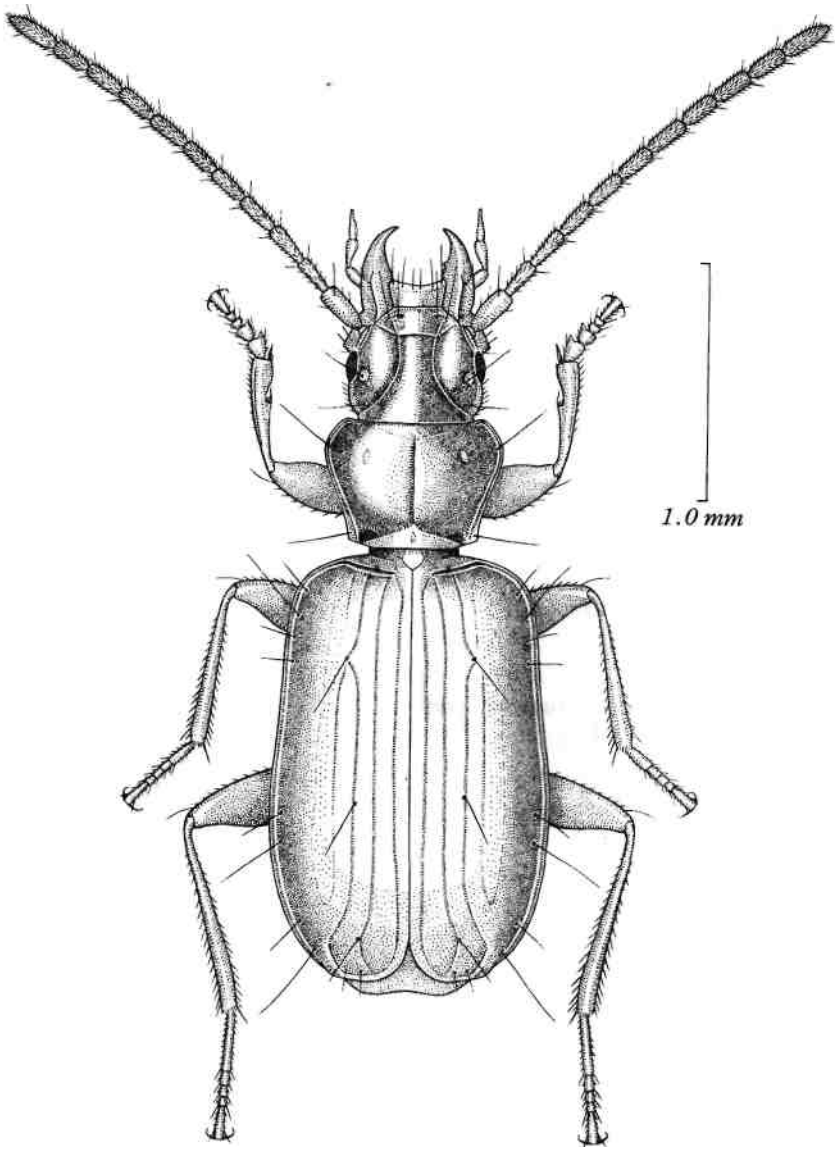

Fig. 1. *Eotrechodes larisae* S. UÉNO, LAFER et SUNDUKOV, gen. et sp. nov., ♂, from Mt. Olkhovaya of the Partizanskij Range.

denticulate at apices, and furnished beneath with adhesive appendages.

Aedeagus short and high, gutter-shaped, widely open on the dorsal side and surmounting membraneous inner sac, with asymmetrical lateral walls highest at about middle; basal part abruptly bent ventrad and formed by two asymmetrical lobes

protruded anteriorly; apical part curved to the left, with short apical lobe simply rounded at the tip; inner sac inerm though scaly. Styles conspicuously asymmetrical; left style much larger than the right, with large subtriangular apical part connected with small basal part by a contorted peduncle; right style short, especially at the apical part; parameral setae numerous, consisting of seven or eight setae of unequal length and thickness.

Range. Known so far only from the southern part of the Sikhote-Alin Mountains in the Primorskij Kray of the Russian Far East.

Notes. As was noted in the introduction of this paper, the type species of this new genus closely resembles certain members of *Thalassophilus*, not only in facies but also in the elytral striation and chaetotaxy as well as in the supernumerary of parameral setae. Of the seven species of *Thalassophilus* hitherto described, four Macaronesian and one Spanish species are more or less subterranean, usually apterous and often anophthalmic (JEANNEL, 1926, pp. 515, 519; JEANNEL, 1938, p. 3; MACHADO, 1990, p. 370; ERBER, 1990, pp. 1, 6; OROMI & BORGES, 1991, p. 2), whereas the remaining two are riparian, with full wings and perfectly faceted eyes. One of the two epigean species, *T. longicornis* (STURM, 1825, p. 83, pi. 151, figs, *a, A;* JEANNEL, 1926, pp. 514, 515, figs. 295-299, 301), is widely distributed in Europe and is the best known member of the genus. If *Eotrechodes* is really related to *Thalassophilus* as is indicated by their outward similarity, they would provide another good example of Euro-Siberian distribution of riparian trechids just like *Trechoblemus* and *Lasiotrechus,* even though *T. longicornis* has been unknown from the Siberian part of Russia. There are, however, several important peculiarities opposing to this conclusion. The pubescent genae, shallowly emarginate labral apex, different labial chaetotaxy, and large re-entrant angle of elytral apices are characteristic of *Eotrechodes* and are unknown in any species of *Thalassophilus.* Besides, the aedeagus is short and high with a very short simple apical lobe in *Eotrechodes,* which is very unusual for a member of the Trechodina. In *Thalassophilus* and most other genera of the subtribe, with the exception of the New Caledonian genus *Sporades* (cf. UENO, 1966), the apical part of aedeagus is more or less prolonged and either reflexed or dorsally hooked at the extremity. This is true even in such specialized genera as *Canarobius* and *Spelaeovulcania* from Canary lava caves (MACHADO, 1987, pp. 323-334, 1992, pp. 138-151).

It should be noted here that most characteristics common between *Eotrechodes* and *Thalassophilus* are plesiomorphic. These include elongate body form, unmodified pronotal base, unmodified elytral striation including apical striole, pubescent venter, and supernumerary of parameral setae. Besides, their distributional ranges are isolated at the eastern and western sides of the Eurasian Continent, respectively, both distant to the north from the general subtribal range. All these facts seem to indicate that the two genera may represent the remnants of old fauna that existed in the Northern Hemisphere in the past. However, this does not necessarily mean that they have been derived from a common ancestor. It seems more plausible, at least to the present authors, that they are the descendants of two different ancestral stocks that dispersed

northwards along either side of the continent.

Eotrechodes larisae S. UÉNO, LAFER et SUNDUKOV, sp. nov.

(Figs. 1-3)

Length: 2.85-2.95 mm (from apical margin of clypeus to apices of elytra); 3.15-3.25 mm (including mandibles).

Dark brown, head usually black except for clypeus, elytra brown, translucent, always evidently lighter than fore body, shiny throughout, with weak iridescence on elytra; labrum and mandibles reddish brown; palpi, antennae, epipleura and legs yellowish brown.

Head large, subquadrate, wider than long, with deep frontal furrows moderately arcuate throughout; frons and supraorbital areas moderately convex, sometimes transversely wrinkled inside each frontal furrow; anterior supraorbital pore foveolate; microsculpture sharply impressed, consisting mostly of wide meshes but partially of isodiametric ones; eyes small though moderately convex, either a little longer than (etc?) [or as] long [as] (?) genae, which are about four-fifths as long as eyes in *$;* neck constriction sharply marked at the sides; antennae long and fairly stout, usually reaching the middle of elytra, segment 2 the shortest though only slightly shorter than 3, which is slightly shorter than 4, segment 5 longer than 4 or 6 but evidently shorter than the terminal, which is the longest, segments 6-9 each cylindrical and more than twice as long as wide.

Pronotum small, transverse obtrapezoidal, widest at about three-fourths from base or slightly before that level, and much more gradually narrowed towards base than towards apex; PW/HW 1.18-1.24 (M 1.21), PW/PL 1.33-1.38 (M 1.35), PW/PA 1.32-1.33 (M 1.32), PW/PB 1.33-1.34 (M 1.34); sides narrowly bordered throughout, rather strongly but briefly arcuate in front, almost straightly convergent posteriad, and briefly sinuate just before hind angles, which are nearly rectangular though clearly rounded at the tips; apex slightly emarginate, only slightly wider than base, PA/PB 1.01-1.02 (M 1.01), with front angles rounded; base straight at middle, anteriorly oblique on each side and slightly emarginate; disc gently convex, with a small oblong foveole on each side at apical two-sevenths; median line deepened posteriad but not extending beyond basal transverse impression; microsculpture distinct, consisting of irregular transverse lines partially forming wide meshes, especially at the posterior lateral parts; basal area either smooth or somewhat uneven; no postangular carinae.

Elytra large, elongate, very gradually dilated posteriad from square shoulders, and widest at about apical third; EW/PW 1.58-1.61 (M 1.59), EL/PL 3.26-3.38 (M 3.33), EL/EW 1.52-1.60 (M 1.55); bases transverse, with basal borders slightly recurved and straightly extending to near scutellum; shoulders prominent; sides rather widely reflexed throughout, nearly parallel to each other in basal third behind shoulders, gently and almost straightly divergent posteriad in middle third, and then gently arcuate to apices, each one of which is widely rounded; dorsum widely depressed, with gentle

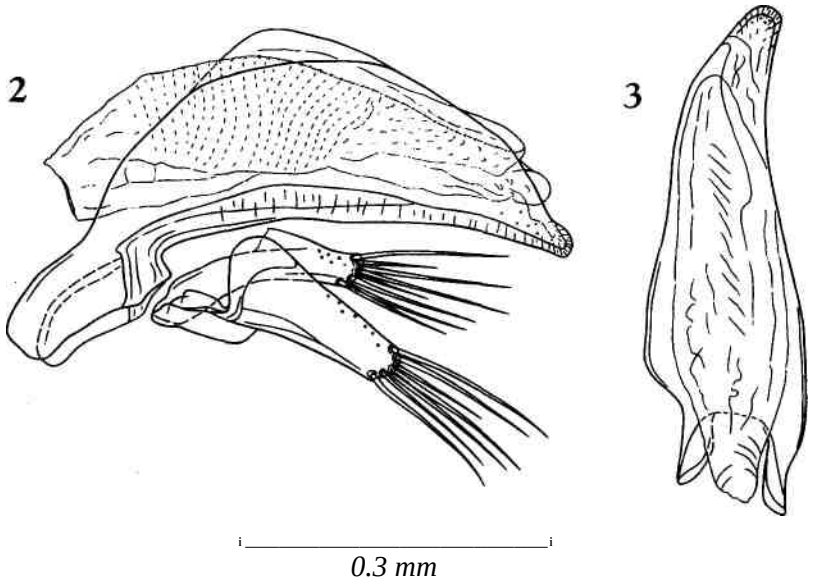

Fig. 2-3. Male genitalia of *Eotrechodes larisae* S. UÉNO, LAFER et SUNDUKOV, gen. et sp. nov., from Mt. Olkhovaya of the Partizanskij Range; left lateral view (2), and dorso-apical view of aedeagus (3).

apical declivity; microsculpture formed by fine transverse lines though largely obliterated; striae 1-3 entire, deeply impressed and impunctate, 4 also deep but usually obliterated in basal part before the anastomosis with stria 3 at the level of anterior dorsal pore, stria 5 much shallower than inner ones and fragmentary, 6-8 vestigial and almost completely vanished though vestiges of stria 8 are usually perceptible near the middle and apical sets of marginal umbihcate pores; stria 3 outwardly curved at the apical part and merging into apical striole without forming anastomosis with stria 2, which extends to apex through an outward curve; intervals 1-4 rather strongly convex, almost costate in the middle; stria 3 with two setiferous dorsal pores at about 1/5 and 4/7 from base, respectively; preapical pore lying in the field of apical striole, either equally distant from apex and from suture or nearer to apex than to suture, and always nearer to apical striole than to suture.

Legs as described under the genus; tarsomere 1 about as long as tarsomeres 2-3 together in mesotarsus, slightly longer than tarsomeres 2-4 together in metatarsus.

Male genital organ moderately sclerotized. Aedeagus three-tenths as long as elytra, short, high, and gently arcuate, with the dorsal margin of left lateral wall semicircularly rounded in profile; right lateral wall obviously higher than the left; basal lobes elongate and asymmetrical, left lobe being larger and a little longer than the right, each slightly reflexed outwards; apical part moderately curved to the left, gradually narrowed towards widely rounded apex in dorsal view, briefly produced into rather a broad lobe

and widely rounded at the tip in lateral view; ventral margin widely but slightly bisinuate in profile. Inner sac wholly scaly though devoid of copulatory piece and sclerotized teeth. Styles broad, left style much larger and broader than the right, bearing either seven (left) or eight (right) apical setae of unequal size.

Type series. Holotype: ♂, allotype: ♀, paratype: 1♂, 21-VII-1994, Yu. N. SUNDUKOV leg. The holotype and the paratype are deposited in the collection of the Laboratory of Entomology, Institute of Biology and Pedology, Vladivostok. The allotype is preserved in the collection of the Department of Zoology, National Science Museum (Nat. Hist.), Tokyo.

Type locality. Mt. Olkhovaya, ca. 700 m in altitude, at the northern part of the Partizanskij Range of the southern part of the Sikhote-Alin Mountains, in Partizanskij Co., Primorskij Kray, Russian Far East.

Notes. As was already mentioned in the introduction, this interesting species was discovered on the southern slope of Mt. Olkhovaya of the Alexeevskij Ridge, a western branch at the northernmost part of the Partizanskij Range. Its location is about 18 km southwest of the village of Lazo in a bee-line. The three specimens known were collected on the pebbly bank of the middle course of the Olkhovy Stream at an altitude of about 700 m. This collecting site lies in a secondary mixed forest dominated by *Tilia amurensis* and *Abies nephrolepis*, and was dimly shaded by their leaves on that hot day. The stream-bed was rather narrow at that particular point, only 2.0-2.5 m wide. The beetles were found from under stones 50-60 cm removed from the water edge. Incidentally, the Olkhovy Stream is a tributary of the Alexeevka River which empties into the Partizanskaya River. It is therefore possible that other localities of *Eotrechodes* could be found in the future at the northeastern part of the Partizanskaya Basin.

要　　約

上野俊一・G. Sh. LAFER・Y. N. SUNDUKOV：ロシア沿海州におけるミズギワチビゴミムシの発見．——ミズギワチビゴミムシ亜族の甲虫類は，主として南半球に分布し，北半球からの記録がひじょうに少ない．とくに東南アジアでは，北緯20°以北における記録が皆無で，日本や朝鮮半島にはおそらく分布しないものと考えられてきた．したがって，その1種がさらに北方の沿海州で発見されたことは，さまざまな観点から特筆するに値する．このミズギワチビゴミムシは，外見がヨーロッパとマカロネシア諸島に分布する*Thalassophilus*属のものによく似ているが，いくつかの重要な差異が認められるので，新属新種と認め，*Eotrechodes larisae*と命名して記載した．両属の類似点は，すべて祖先的な形質だと考えられるので，これらのチビゴミムシはおそらく別個に遺存されたものだろう．見掛けほど直接的な類縁関係は，多分ないように思われる．

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