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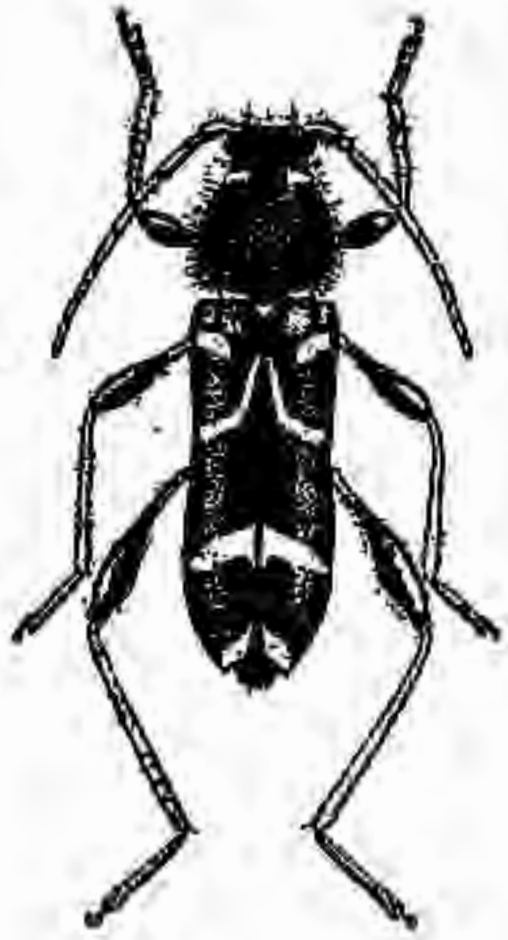

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A new beetle family, Decliniidae fam.n., from the Russian Far East and its taxonomic relationships (Coleoptera Polyphaga)

Новое семейство жесткокрылых Decliniidae fam.n. с Дальнего Востока России и его таксономические связи (Coleoptera Polyphaga)

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KEY WORDS: *Declinia relicta* gen. et sp.n., Decliniidae fam.n., taxonomic relationships, Russian Far East.

КЛЮЧЕВЫЕ СЛОВА: *Declinia relicta* gen. et sp.n., Decliniidae fam.n., таксономические связи, Дальний Восток России.

ABSTRACT: Based on the ♀♀ only, the beetle *Declinia relicta* gen. et sp.n. is described from the Far East of Russia, displaying a unique combination of characters warranting a new family, Decliniidae fam.n. This new family seems to be either a member of the Byrrhoidea s.l. or a representative of the superfamily Eucinetoidea, or an independent intermediate lineage near the common stem of these three groups.

РЕЗЮМЕ: По одним лишь ♀♀ с Дальнего Востока России описывается жук *Declinia relicta* gen. et sp.n., уникальная комбинация признаков которого позволяет выделить его в новое семейство Decliniidae fam.n. Это новое семейство, кажется, либо член Byrrhoidea s.l., либо представитель надсемейства Eucinetoidea, либо особая промежуточная эволюционная ветвь, стоящая у основания общего ствола этих трех групп.

1. Introduction.

Discovery, not creation due to taxonomic manipulations, of a new family can be termed as quite an event in modern entomology, let alone coleopterology. Moreover, when such a discovery refers to the Palearctic fauna, this is certainly extraordinary. Every year, hundreds of new beetle species and a few dozen new genera are described, this surely reflecting the fact that insect alpha-taxonomy is still in demand. This is quite natural, for the Insecta represents to most speciose class among all living creatures, with the estimated diversity possibly amounting to over a million recent species.

The Coleoptera is the most diverse insect order believed to encompass over 350,000 described species scattered among 156 families [Lawrence, 1991]. One of the largest family groups currently comprising 32 beetle families is known as the Elateriformia, with its outgroup represented by the Eucinetoidea (further 3 families). Recently this complex, especially Elateriformia, received special attention due to the discovery, not erection, of Rhinorhipidae, a new family from Australia [Lawrence, 1988]. Incidentally, we focus now on the same complex in connection with the discovery of another new family, this time deriving from the Far East of Russia.

The paper is devoted to the description of a new beetle species, genus, and family from the Russian Far East. Based solely on the female sex available to the authors, the status of this new family, Decliniidae fam.n., is extensively discussed in relation to other constituents of the series Elateriformia and Eucinetoidea.

2. Description of new taxa.

Declinia **gen.n.**

Type-species: *Declinia relicta* sp.n.

Body rather broad (Fig. 1), somewhat convex dorsally. Head hypognathous, but part of frons and vertex rather strongly protruding anteriorly (Fig. 2). Eyes well-developed, more or less rounded, slightly convex, rather finely faceted, very broadly separated, lacking interfacetal setae; with neither epicranial suture nor endocarina; frontoclypeal suture usually distinct, impressed. Tempora short but distinct, transverse ridge behind tempora present but incomplete. Mandibles rather short, unidentate at apex (Fig. 3). Mola rather poorly-developed. Galea and lacinia rather well-developed, latter considerably narrower than former, both ending about same level, with the external lobe being slightly longer than internal one (Fig. 4). Segment 4 of maxillary palp more or less cylindrical or oblong-oval, apically subtruncate. Mentum very well-developed, sclerotized, rounded anteriorly, covering mouthparts from below (Figs 5-6). Labial lobules short and broad. Last segment of labial palp considerably broader than preceding one, laterally only slightly rounded, apically either very gently rounded, almost squarely truncate (Fig. 6). Corpotentorium present. Laminotentoria absent, possibly weakly developed at best.

Antennae (Fig. 7) fitting into very deep, long and rather narrow antennal grooves reaching to rear part of head and delimited externally by internal ocular margin. Antennomeres 6-11 distinctly broadened, joints 6-10 rather serratate, being broadened considerably asymmetrically. Antennomeres 1-2 rather broad; joints 3-5 narrow, filiform, joint 3 being rather strongly elongated.

Pronotum very strongly transverse, considerably broader than head and somewhat more narrow than elytral humeri. Lateral margins of pronotum somewhat explanate and flattened, not fully even, usually more or less visibly margined. Base of pronotum at least medially margined, shallowly bisinuate. Fore margin of pronotum more or less straight or slightly rounded.

Scutellum rather large, more or less roundly-triangular (Fig. 1). Elytra more or less confusedly punctured, with traces of several longitudinal striae rather displayed as caudally shortened hachures, without ventral interlocking tongue in front of apex. Elytral apices somewhat pointed. Elytral epipleura well-developed, at level of visible sternite 1 gradually tapering, but at level of sternites 4 and 5 distinctly broadened (Fig. 12), this feature being uncharacteristic at least of the bulk of beetle groups we know. Bases of epipleura with well-developed impressions for femora to fit into.

Prosternum short, in front of procoxae considerably shorter than their longitudinal diameter (Fig. 8). Propleuron very well-developed and external, with a short pleural flange extending anteriorly and lying in between notum and sternum at anterior edge of prothorax. Prosternal process broad, not less than 0.4 times as broad as transverse diameter of coxa, posteriorly fitting into a well-developed, transverse cavity on mesothorax. Procoxal cavities open posteriorly (Fig. 8). Promesothoracic interlocking device barely developed. Mesosternal process separating mesocoxae wide, not less than 0.5 times as broad as transverse diameter of coxa, completely divided by a longitudinal suture. Trochantin of mesocoxae well-developed. Mesepimera reaching mesocoxae. Metasternum well-developed, a little longer than visible abdominal sternites 1-2, with a well-developed median (longitudinal) suture. Transverse metasternal suture more or less visible. Metepisterna broad, in anterior part impressed and more or less parallel-sided, not more than 2.7 times as long as broad, partly closing mesocoxal cavities laterally. Metacoxae divided by a narrow process of visible abdominal sternite 1. Metacoxal plates rather broad, rather abruptly tapering at mesal third and more or less parallel-sided for lateral two-thirds (Fig. 8). Legs rather short, with large trochanters; femora either subequal in length to tibiae or a bit longer, attached more or less obliquely to trochanters, those of fore and middle legs considerably angularly broadened toward middle, considerably thicker than straight tibiae, the latter fitting into grooves on internal femoral margin. Tibiae with two short, weakly developed spurs. Tarsi 5-segmented, don't fitting into tibiae short, ca. 0.3 times as long as tibiae, segments 1-4 considerably broadened, with a more or less well-developed felty pad, without membranous lobes; segment 4 more or less distinctly bilobed; last segment somewhat shorter than preceding segments combined; claws simple. Wings with a more or less well-developed, short, pigmented, subtriangular radial cell not very distinctly closed in its promixal part (Fig. 9). Wedge cell absent. Anal lobe well-developed. Wing folding of dascilloid type. Metendosternite with a well-developed stem, a pair of somewhat curved, long, lateral processes and a pair of ventrolateral processes (Fig. 11). Abdominal ventrite 1 short, ventrites 2-3 somewhat longer, 1-3 connate, fixed immovably, 4-5 movable. Spiracle on segment 8 reduced.

Ovipositor short and broad, moderately sclerotized. Coxites divided into 2 subequal lobes, the basal one moderately broad, apical one much narrower and palpiform, with stylus represented by group of lateral setae at apical third; valvifers subequal in length to coxites. Bursa well anterior to common oviduct, with a sclerotized plate and with simple accessory gland attached at its base. Colleterial glands absent.

Declinia relicta sp.n.
Figs 1-13.

Holotype: ♀, Russian Far East, Maritime Prov., Ussuriysk Distr., Kamenushka, 27.V.1990 leg. N. Nikitsky. - Paratypes: ♀, same locality, 20.V.1990; ♀, same locality, 11.VI.1984; ♀, same locality, 6.VI.1984; ♀, same locality, 18.VI.1984; ♀, same locality, 23.VI.1984; ♀, Shkotovo Distr., Ussuriysky Reserve, "Peyshula", 6.VII.1982, all leg. N. Nikitsky; ♀, Khasan Distr., "Kedrovaya Pad" Reserve, 10-15.VI.1987, leg. D. Fedorenko; ♀, Khabarovsk Prov., upper reaches of Amrun, Suluk & Kuyuk rivers, 1.VII.1976, leg. Kabakov; ♀, Ussuri Area, leg. Emelyanov; ♀, Magadan Area, floodplain of Arman River, 3.VIII.1965, leg. L. Ivliev.

Holotype and most of paratypes are housed in the Zoological Museum of the Moscow State University, two paratypes are kept in the Australian National Insect Collection, three last-mentioned paratypes are in the collection of the Zoological Institute of the Russian Academy of Sciences, St.-Petersburg.

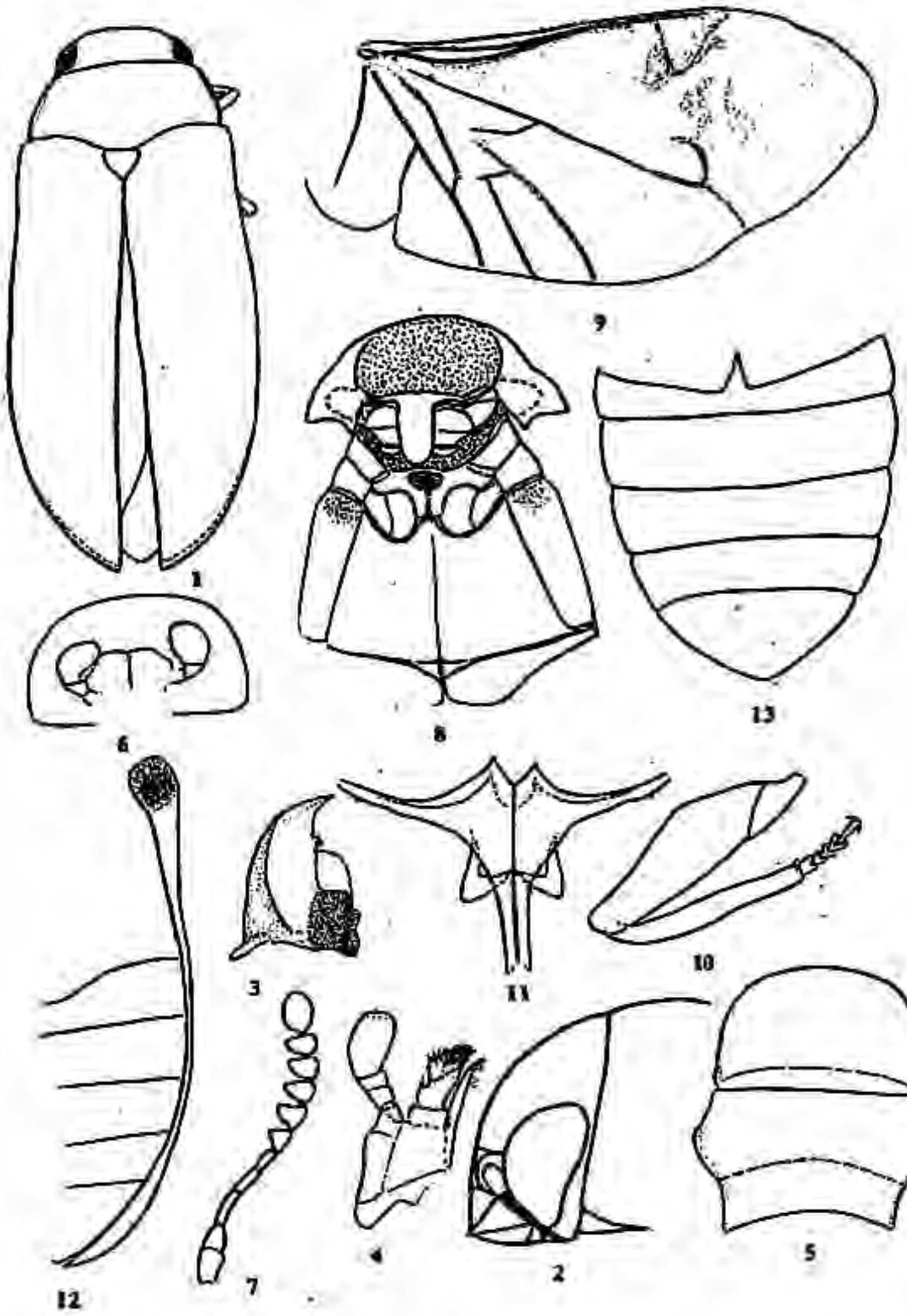
Description: Body rather broad, more or less elongate and convex (Fig. 1). Surface shining, dorsally clothed with very short, adpressed pubescence, which is more sparse on elytra than on pronotum. Rear margin of head as well as both pronotum and elytra black to brown; frontal part of head, mouthparts, antennae, legs and usually part of abdomen red-brown to red-yellow; elytral epipleura, lower parts of prothorax as well as part of metathorax, metepisterna and often mesepimera somewhat paler than main dorsal background.

Head (including eyes) 0.5-0.6 times as long as broad. Interocular isthmus about twice as great as transverse ocular diameter. Cephalic punctuation generally rather fine, in medial part more sparse, with distance between punctures being subequal to diameter of a puncture, laterally more dense. Antennal insertions exposed, located on sides of head near front of eye.. Tempora 0.2-0.25 times as long as longitudinal ocular diameter. Mandibles about as long and broad (Fig. 3). Last segment of maxillary palps distinctly elongate, longer than preceding three segments combined (Fig. 4). Last segment of labial palps considerably broader than preceding segments, in shape resembling last segment of maxillary palps.

Mentum ca. 1.7-1.9 times as broad as long (Fig. 5). Antennae (Fig. 7) barely surpassing base of elytra; antennomere 1 rather broad, more or less roundly-triangular, 1.1-1.2 times as long as broad; antennomere 2 subtriangular, ca. 0.75 times as long as antennomere 1 and about as long and broad; antennomere 3 strongly elongate, 2.1-2.3 times as long as broad, considerably longer and about half as broad as antennomere 2; antennomere 4 ca. 0.8-0.9 times as long as antennomere 3, about twice as long as broad; antennomere 5 similarly narrow, longitudinal, only a little shorter than antennomere 4; antennomere 6 enlarged triangularly, subequal in length to antennomere 5, but 1.8-1.9 times broader, about long and broad; antennomere 7 considerably broader than 6, but subequal in length, 1.3-1.5 times as broad as long; antennomeres 8-10 similarly long and broad, subequal in length to antennomere 6, each 1.5-1.8 times as broad as long; antennomere 11 oval, 1.7-1.9 times as long as 10th, 1.15-1.3 times as long as broad.

Pronotum convex, strongly transverse, 2.2-2.3 times as broad as long, 1.4-1.6 times broader than head with eyes (Fig. 1), broadest near base, distinctly and roundly narrowing anteriorly, with distance between fore corners being ca. 0.8 times as long as that between rear corners. Latter obtusedly rounded, but better expressed than completely rounded fore corners. Rear edge of pronotum margined only medially, whereas fore margin margined only laterally. Pronotal punctuation about same size as on head, punctures not large, anteriorly near middle of disk often more sparse than posteriorly where distance between punctures usually a little greater than, more seldom less than or subequal to, their diameter. Larger punctures on pronotum are interspersed by extremely small, sparse punctures. Base of pronotum very shallowly bisinuate, without well-expressed basal impressions.

Scutellum very weakly transverse, rather densely and more finely punctured than both pronotum and, especially, elytra. Elytral punctuation more or less irregular, rather rough, considerably coarser than on pronotum, distance between punctures varying considerably from specimen to specimen, being sometimes a little greater, sometimes considerably less than diameter of a puncture. Elytra more or less convex, at humeri angularly rounded, 1.8-2.0 times as long as broad, 1.1-1.17 times broader than



Figs. 1-13. *Declinia relicta* gen.n., sp.n., ♀ paratype: 1 - habitus (dorsal), 2 - head (lateral), 3 - mandible, 4 - maxilla; 5-6 - labium (ventral & dorsal, resp.), 7 - antenna, 8 - thorax (ventral, with the prothorax slighly drawn away from the mesothorax), 9 - wing; 10 - middle leg, 11 - metendosternite, 12 - abdomen and elytral epipleura (sketch), 13 - abdomen (ventral).

base of pronotum, first somewhat broadening caudad, but apically attenuating and more or less pointed at tip. Traces of several striae on each elytron, very poor, not as any regular row of punctures, translucent traces of rows of punctures visible.

Prosternum in front of procoxae ca. 0.4 times as long as longitudinal diameter of coxa, latter ca. 2.2-2.4 times as broad as long and 2.2-2.4 times as broad as prosternal process (Fig. 8); latter broad, only about twice as long as distance between coxae, margined on sides and at tip, strongly elongate, considerably surpassing rear margin of prothorax and fitting into a deep, transverse cavity on mesothorax, the cavity being 1.7-2.0 times as broad as long. Mesosternum in front of mesocoxae ca. 0.3-0.33 times as long as longitudinal diameter of coxa. Mesosternal process between mesocoxae divided by a longitudinal suture, ca. half as wide as transverse diameter of coxa, reaching posterior 3rd or 4th of coxa. Posteriormost parts of mesocoxae divided by a broad, undivided metasternal process. Metasternum well-developed, in length subequal to or a bit longer than abdominal ventrites 1-2 combined. Mesal part of metasternum glabrous, shining, rather delicately and moderately densely punctured; sides of metathorax and metepisterna more or less dull, with a rough, transversely rugose sculpture, wrinkles thereby being more or less strongly shining. Metepisterna 2.6-2.7 times as long as broad.

Pro- and mesofemora triangularly broadened toward midlength, metafemora more or less simple (Fig. 10). Tibial spurs very short and poorly-developed, usually taking up not more than 1/2 length of tarsomere I. Tarsi short, ca. a third as long as tibiae. Tarsomeres 1-3 more or less slightly but visibly broadened, tarsomere 4 enlarged more strongly than 3rd, tarsomere I either subequal in width and length or very feebly longitudinal, slightly longer than 2nd and distinctly narrower than at least tarsomeres 3 and 4, both latter distinctly broadened and lobate, usually more or less barely differing in size from one another and from tarsomere I; tarsomere 5 deeply fitting dorsally into a depression on 4th, only slightly shorter than preceding tarsomeres combined. Visible abdominal sternite I ca. 0.4 times as long as 2nd, latter being subequal to or a little shorter than 3rd; sternite 4 ca. 0.75 times as long as 2nd, sternite 5 ca. 1.5 times as long as 4th (Fig. 13). Abdominal ventrites 1-3 medially more or less shining, on sides more dull, distinctly shagreened; both ventrites 4 and, especially, 5 more or less dull; all abdominal ventrites rather finely and not very densely punctured. Underside clothed with short and rather sparse pubescence, somewhat more dense on abdomen than on thorax.

3. Declíniidae, fam.n. and its taxonomic relationships.

A new family, Declíniidae fam.n., is based upon the monotypic *Declínia* gen.n., from the Far East of Russia. The new genus exhibits a unique combination of characters warranting its recognition as a new family. More precisely, in the system proposed by Lawrence [1988], the family Declíniidae fam.n. seems to occupy a position intermediate between the superfamily Eucinetoidea (with the families Clambidae, Eucinetidae, Scirtidae) and the series Elateriformia containing Dascilloidea (Dascillidae, Rhipiceridae), Byrrhoidea (Buprestidae, Byrrhidae, Dryopidae, Lutrochidae, Elmidae, Heteroceridae, Limnichidae), Psephenoidea (Psephenidae, Callirhipidae, Eulichadidae, Cneoglossidae, Ptilodactylidae, Chelonariidae), Elateroidea (Rhinorhipidae, Artematopidae, Elateridae, Cebrionidae, Cerophytidae, Throscidae, Eucnemidae, Brachypsectridae, Plastoceridae, as well as the families of the superfamily Cantharoidea accepted by numerous specialists).

The concept of Elateriformia used in this paper corresponds to the "elateriform lineage" of Lawrence and Newton [1982] and the infraorder Elateromorpha of Ponomarenko and Zherikhin [1988]; however one of us (JFL) would exclude Scarabaeoidea from that assemblage [Kukalova-Peck, Lawrence, 1993]. What seems noteworthy in this connection is that the traditional view of a probably riparian origin of Elateriformia [e.g. Crowson, 1982; Lawrence, Newton, 1982; Kirejtshuk, 1991, etc.], which we share, implies that the new form described herein is to be treated as a relict that has retained certain archaic traits not only in its morphology, but also in its biology (see below).

Declínia differs from the superfamily Eucinetoidea sensu Lawrence [1988] both by the rather broad prosternal process not less than 0.4-0.5 times as broad as the coxal transverse diameter (the process is much narrower in the Eucinetoidea) and by the broad mesosternal process only ca. 0.5-0.6 times as broad as the coxal transverse diameter. Also, the procoxae in *Declínia* are non-protruding, the metepisterna are somewhat more elongate (ca. 2.6-2.7 times as long as broad) than in most Eucinetoidea. The antennae with five slightly serrate and dilated preapical segments also distinguishes *Declínia* from all Eucinetoidea known to us. The very deep antennal groove on the ventral side of the head strongly resembles that in New Zealand Atopidinae of the family Scirtidae, but in *Declínia* it is more narrow and fails to reach the mandibles. Indeed, it is the superfamily Eucinetoidea that *Declínia* seems to be quite closely related to,

judging from the patterns of wing venation and folding [cf. Kukalova-Peck, Lawrence, 1993], the presence of an anal lobe on the wing, the structure of the metendosterite, tarsi, and some other features.

Unlike Dascilloidea, *Declinia* has neither median endocarina (on head) nor exocone ommatidia, the sensory elements on the antennae begin from the antennomere 5, not 3, as in Dascilloidea. The lateral processes of the metendosternite in *Declinia* are more strongly developed, and both pro- and mesocoxae are more strongly separated (see above under Eucinetoidea), as compared to Dascilloidea.

From most of Byrrhoidea (except for the Elmidae which differ in having a byrrhoid type of wing folding and long, slender tarsi), *Declinia* differs in the elytral epipleura more or less gradually tapering at about level of the abdominal ventrite 1 (but then again rather strongly broadening toward the apex, this being developed to such an extent in neither Elmidae nor any other genus of Elateriformia studied by us), dascilloid type of wing folding (occurring only in few Buprestidae which, like other members of the family, are always distinguishable, however, by the membranous lobes on the tarsi, by the prosternum in front of the procoxae comparatively long, not shorter than the prosternal process), etc.

Declinia differs from Psephenoidea by the non-exocone type of ommatidia, presence of sensory elements on the antennae starting from antennomere 5, more or less traceable transverse metathoracic suture (present only in some Psephenidae), long lateral branches of the metendosternite (characteristic of some Ptilodactylidae only), dascilliod pattern of wing folding (uncharacteristic of Psephenoidea), etc.

Finally, *Declinia* differs from Elateroidea by the non-exocone type of ommatidia (also characteristic of Eucnemidae, which are distinguished, however, by the absence of a separated labrum, invariable presence of a strongly developed ventral interlocking device of the pro- and mesothorax, etc.), more or less evident transverse metasternal suture, dascilloid pattern of wing folding (instead of an elateroid one in all Elateroidea but Artematopidae, the latter family being well-distinguishable by the elytral ventral interlocking tongue and membranous lobes on the tarsi), ♀ abdominal sternite 8 without a narrow, rod-like "spiculum ventrale" characteristic both of all Elateroidea but Rhinorhipidae and of all Psephenoidea but Psephenidae.

The Cantharoidea (considered as a series of families within Elateroidea by Lawrence [1988]) differ from *Declinia* by the long mandibles (2-3 times as long as broad), exocone type of ommatidia, elateroid pattern of wing folding, strongly reduced or totally absent intercoxal process of abdominal ventrite 1.

An evaluation of phylogenetic relationships of the new genus under study with other beetle groups is hampered by the presence in our material of neither males nor larvae of *Declinia relicta*. Yet, as based on a provisional analysis of 75 imaginal characters (Characters 1-64, 72-82 from the character matrix used by Lawrence [1988]), we consider the Declinidae fam.n. as more closely related to Eucinetoidea, Dascilloidea, Byrrhoidea and Psephenoidea than to Elateroidea and Cantharoidea. Incorporation of the Declinidae into a superfamily is rather problematic. There seem to be three alternatives reflecting the most probable taxonomic position of the Declinidae: it can be incorporated either into the Byrrhoidea s.l. or into the Eucinetoidea, or it can be intermediate between these groups and, perhaps even given the rank of an independent superfamily, placed near their common stem.

A more profound phylogenetic analysis by the same authors of these relationships will be the subject of a separate publication [Lawrence et al., in preparation]. It will be partly based on the following presumed plesio- vs. apomorphies of *Declinia*.

The main plesiomorphies of the Declinidae: eucone or acone type of ommatidia; well-developed labrum and mandibles; mola more or less evident, though not sharply expressed; maxillary lobes more or less well-developed; frontoclypeal suture and lateral pronotal rim developed; rear corners of pronotum neither extended nor pointed; ventral interlocking device of pro- and mesothorax only poorly developed; propleuron very well-developed and external, with an anterior pleural flange extending forward and lying in between notum and sternum at fore edge of prothorax (a condition unique in Polyphaga but occurring in Archostemata, Adephaga and Myxophaga); procoxae transverse, not protruding, their trochantins well-expressed; rear margin of prosternal process unmodified; mesothoracic cavity well-developed; elytral ventral interlocking tongue absent; elytral epipleura well-developed throughout their length (uncertain); transverse metasternal suture more or less well-developed; longitudinal metasternal suture well-developed; mesocoxal cavities partly closed by metepisterna (usually occurring in non-Polyphaga and only rarely in Polyphaga); metacoxal plates well-expressed; tarsi without membranous lobes; tarsomere 4 bilobed below and not reduced; claws simple; radial cell more or less well-expressed

(although outline of its interior crossvein not very distinct); wing folding of a dascilloid pattern (uncertain); intercoxal process of abdominal ventrite 1 more or less well-developed; ovipositor moderately long, with distinctly separated coxites; ♀ abdominal segment 8 with neither narrow styliform "spiculum ventrale" nor pair of anterolateral projections; pair of colleterial glands absent; complex accessory gland absent.

The main presumed apomorphies of the Decliniidae: absence of endocarina; short mandibles with a unidentate apex; very deep antennal groove; five more or less serrulate dilated antennomeres; mentum very well-developed, covering mouthparts from below making them almost invisible (also occurring in some Artematopidae); elytra without well-expressed rows of punctures (but translucent rows of punctures remaining); tibial spurs strongly reduced; wing venation reduced, with radial cell indistinctly closed, wedge cell absent and anal lobe present; tarsi very short as compared to tibiae (perhaps another apomorphy); three ventrites connate; spiracle on abdominal segment 8 reduced; bursa with a sclerotized plate and lying well anterior to common oviduct.

As noted above, *Declinia* occupies a position intermediate between certain basal Elateriformia and the superfamily Eucinetoidea sensu Lawrence [1988]. Due to a unique combination of features of various superfamilies, it certainly warrants the rank of a separate family, although its ultimate position is still unclear.

Lawrence [1988] based his cladistic analysis of the Elateriformia on 87 imaginal and 24 larval characters. However, he confessed himself that removal even of a few larval features from analysis would lead to certain changes and recombinations in his system, making the latter look more like that of Crowson [1971, 1972, 1973, 1978, 1981, 1982].

It is noteworthy that one of the most "fragile" groups readily collapsing if only a few parameters are changed (e. g. removal of some larval characters) is the Psephenoidea. Similarly, the familial composition of Elateroidea is not finally settled, judged alone from the status of the Artematopidae. Like the psephenoid complex which is sometimes still treated within the superfamily Dryopoidea [sensu Crowson, 1981; Lawrence, 1991: 182], the Artematopidae was first referred to the family Dascillidae [Jacobson, 1905-16; Arnett, 1973; etc.], later to a superfamily of its own, Artematopoidea, also encompassing the Callirhipidae and Brachypsectridae [Crowson, 1973, 1981].

At present, both Artematopidae and Brachypsectridae are often placed within the superfamily Elateroidea [Lawrence, 1988, 1991], this in part being based on larval characters.

All the above demonstrates unstable allocations of a number of elateriform families, this additionally hampering the comprehension of the phyletic relationships of Decliniidae and some other families.

As noted above, we have neither male nor larva of *Declinia relicta* at our disposal. The female, however, seems to display a number of unique combinations shared with none of the other elateriform or eucinetoid families. Some of such features are absent from Lawrence's [1988] character matrix, some more could not be checked throughout the constituent genera due to unavailability of comparative material. These characters are as follows: head broad, semi-circular in dorsal view, its posterior half strongly drawn forward and somewhat down, its anterior half directed down; antennal grooves very deep but relatively narrow, reaching to rear margin of head; transverse ridge behind the tempora is much less distinct, especially ventrally, where the ridge in Scirtidae; five preapical antennomeres asymmetrically distinctly enlarged; mentum very well-developed, covering the mouthparts from below; pro- and mesosternal processes broad, latter process divided by a longitudinal suture; pro- and mesofemora more or less triangularly enlarged toward middle of exterior margin; tibiae rather slender, fitting into femora; tarsi very short (a third as long as tibiae), not fitting into tibiae, considerably enlarged, with at least penultimate tarsomere distinctly bilobed; elytral epipleura first more or less gradually tapering near base of abdomen, then again rather strongly broadening toward abdominal apex; transverse metasternal suture more or less visible; metepisterna and elytral epipleura at base with more or less well-developed impressions for mesofemora to fit into.

In dorsal aspect, the beetle resembles also some Scirtidae but, viewed ventrally, it looks more like various families of the Byrrhoidea and Elateriodea and some families of the Psephenoidea, still exhibiting a number of differences from all of them (see above). In addition to certain Elateriformia, *Declinia* also resembles members of such families as Nosodendridae (Derodontoidea), Dermestidae or Anobiidae (Bostrichoidea) sensu Lawrence [1991].

In contrast to Nosodendridae (including only the genus *Nosodendron*), *Declinia* has a hypognathous, not prognathous, head, its antennae are attached freely and remain uncovered by a lateral, projecting margin of the frons, as is the case in Nosodendridae, and the antennae lack a 3-segmented asymmetrical club. Similarities in the wing are probably plesiomorphic, whereas those involving the thorax, legs and mouthparts all appear to be

adaptations involving body compaction and concealment/protection of appendages.

The Dermestidae we know of either have a head distinctly bent down or an ocellus between the eyes, the latter character being usually combined with the former. A dermestid tarsus is longer, proportionate to tibiae, more than a third as long, without transversely enlarged tarsomeres. In contrast, the posterior half of the head in *Declinia* is drawn forward and somewhat down, while the anterior half is bent down; there is no ocellus between the eyes.

Unlike *Declinia*, the Anobiidae we are familiar with have no or almost no elytral epipleura, while usually the head is more or less strongly bent down.

4. Biological observations.

Personal biological observations are restricted to the fact that the beetle *Declinia relicta* has been captured solely by screen window-trapping in forest communities on swampy soils in the southern Maritime Prov., Russian Far East. Flying beetles were observed from the end of May until July, being perhaps riparian in their bionomics. Apparently, *Declinia relicta* is not associated with running water, displaying no elmid-like leg structure.

5. Conclusions.

Summing up, the following general ideas on the presumed origin of Decliniidae can be presented here. Quite possibly, this family might have evolved from a group close to Eucinetoidea, not inconceivably Scirtidae within this superfamily, which we regard after Lawrence (1988) also as a possible ancestor of the entire Elateriformia complex. Hence, *Declinia relicta*, this obviously relict fragment of the Decliniidae, could have originated from a scirtidae-like ancestor as an independent lineage, perhaps even of a superfamilial rank, from the common ancestor of the Byrrhoidea s.l., the Buprestidae, Byrrhidae and dryopoid complex proper included. The fact that the male and larvae are unknown prevents any more conclusive analysis.

As noted above, a cladistic analysis of the relationships of Decliniidae among the Polyphaga is in preparation.

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