

A NEW GROUND-BEETLE GENUS, *DALATAGONUM* GEN. N. (COLEOPTERA, CARABIDAE, PLATYNINI), FROM VIETNAM

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A new carabid genus, *Dalatagonum* gen. n., and nine new species: *D. calathoides* sp. n. (type species), *D. blattoides* sp. n., *D. ellipticum* sp. n., *D. sericeum* sp. n., *D. elongatum* sp. n., *D. anichkini* sp. n., *D. bidoupense* sp. n., *D. simile* sp. n., and *D. broteroides* sp. n. are described from Vietnam. A key to the species of genus *Dalatagonum* is given. All the species are wingless and dwell in leaf-litter in the montane broad-leaved forests.

KEY WORDS: Coleoptera, Carabidae, taxonomy, new genus, new species, South-East Asia, Vietnam.

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Из Вьетнама описаны новые для науки род *Dalatagonum* gen. n. и 9 видов жужелиц: *D. calathoides* sp. n. (типовой вид рода), *D. blattoides* sp. n., *D. ellipticum* sp. n., *D. sericeum* sp. n., *D. elongatum* sp. n., *D. anichkini* sp. n., *D. bidoupense* sp. n., *D. simile* sp. n. и *D. broteroides* sp. n. Дана определительная таблица видов рода *Dalatagonum*. Все виды рода являются бескрылыми и обитают в подстилке горных широколиственных лесов.

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INTRODUCTION

Platynini among highly diverse carabid tribes is especially species-rich in tropical regions of the world. But two larger regional platynine faunas, those of New Guinea (Darlington, 1952, 1971; Baehr, 1995, 1998, 2000, 2001, 2009, etc.) and, especially, Japan (Habu, 1978) are best elaborated in South and South-East Asia, whereas the others which cover Indochina, Vietnam in particular, are hardly so. The great majority of platynines described from there belongs to a speciose and heterogenous genus, *Colpodes* auct., this being predominantly Oriental in distribution. Taken in a very broad sense, the genus was keyed by Louwerens (1953), whereas it was not until recently that the name *Colpodes* MacLeay, 1825, was shown to cover a very peculiar and highly restricted species-group only (Liebherr, 1998). Noteworthy is also the fact that few smaller platynine groups were reviewed or revised from the region in question and adjacent lands (Schmidt, 1995, 1996a; Morvan, 1999a, b, 2002; Baehr, 2002, 2009; Liang & Imura 2003) against the background of many new genera and countless new species described mainly from Himalayas and China (Schmidt, 1996b, 2000a, b, 2001a-c, 2004, 2005, 2008, 2009; Liang & Cavanaugh, 2005).

During two short-term expeditions of the Russia-Vietnam Tropical Center to Bi Doup – Nui Ba Nature reserve in the southern part of Central Vietnam I collected a few, wingless, platynine species of soil-dwelling habits, these often occurring syntopically. All of them, together with another species from Central Vietnam, proved to be new and closely allied members of a new peculiar genus described below.

Descriptions include more or less standard indices PW/HW, PW/PL, EL/EW, EW/PW and MESW/[MES]L, as well as LMT1/[LMT]2-4, based on the following parameters measured in one to ten specimens per each species studied: total body length (BL) from the apices of mandible(s) to the apex of elytra, head width across eyes (HW), pronotum width (PW) and length (PL), elytral width (EW) and length (EL), latter for convenience measured from the apex of elytron to the posterior edge of its basal border; the width (ESW) and length (ESL) of metepisternum measured along its anterior margin and inner margin, respectively, and the lengths of meta-tarsomeres 1 (LMT1) and 2-4 (LMT2-4). The standard tarsomere setae are named after Schmidt (2008).

The holotypes and some part of paratypes are deposited in the Zoological Museum of the Moscow state University (ZMMU), the remaining paratypes are kept in the author's reference collection at A.N. Severtzov Institute of Ecology and Evolution, Russian Academy of Sciences, Moscow (SIEE).

DESCRIPTIONS OF NEW TAXA

Genus Dalatagonum Fedorenko, gen. n.

Type species: Dalatagonum calathoides sp. n., designated here.

DESCRIPTION. Body (Figs 6-13) small- to medium-sized, 4-10 mm long, oval or oblong-oval, and impunctate. Dorsum dark, piceous to black, without metallic luster, shining, often less so on head due to a little coarser microsculpture. Antennae

and mouthparts including labrum reddish-yellow, mandibles infuscate a little. Explanate side margin and basal margin of pronotum, narrow side margin, apex and suture of elytra, as well as apical margin of last abdominal sternite, either much or indistinctly paler; former and latter patterns accompanying reddish-yellow legs and infuscate femora or entire legs, respectively.

Microsculpture meshed, isodiametric and usually conspicuous on head and over elytral side gutter, finer (especially on pronotum) and strongly transverse on discs of pronotum and elytra; meshes only slightly transverse near front margin of pronotum and strongly oblique over its posterolateral area, including anterolateral lobes, where they form concentric ascending arcs, becoming clearly longitudinal within explanate side margins of some congeners' pronota.

Head rather thick posteriorly, without neck-constriction, even and smooth dorsally; eyes rather small, slightly flattened to very flat; supra-ocular setae two, posterolateral one situated about level to eye back margin, supra-ocular groove shallow to indistinct. Frontal sulci very short, adjoining clypeus, very superficial to indistinct. Labrum 6-setose, subquadrate, with a lightly sinuate front margin. Mandibles of unmodified general structure but more or less long, narrow and straight-line along their outer edges, but for apices. Maxillary palpi long, last palpomere either longer or shorter than penultimate one; stipes unisetose basally. Submentum bisetose, with deep or very deep labial pits; tooth of mentum bordered, pointed, long, slightly shorter than lateral lobes, with one pair of setae drawn together at its base. Antennae more or less long, surpassing pronotal base by last one to a little more than three joints, longest in *D. ovipennis* and shortest in *D. ellipticus*, pubescent from joint 4 onward; antennomeres 1-3 without additional setae, those 2 to 4 of increasing length.

Pronotum more or less trapezoidal in most congeners, i.e. broadest slightly before base to behind middle, (much) more strongly contracted forward than basad, rounded at sides, with side margin (conformable to notopleura) increasingly explanate basad, very wide basally, hardly to strongly reflexed and extended into widely rounded lobes surpassing base. Base very wide, almost as wide as elytra, and tripartite due to a straight and narrow base proper supplied with [baso]lateral lobes. Lateral setigerous pores reduced to one, anterior, pore, this often being distant far from side margin, or (sometimes) totally. Anterior margin narrowly or very narrowly bordered, often very shallow at middle, side border narrow, disappearing near or before base, latter unbordered. Mid-line shallow to moderately deep, obsolete anteriorly and often also posteriorly. Both front and basal transverse impressions very shallow or obliterate. Basal foveae indistinct or almost so. Surface even and smooth, often finely longitudinally strigose just before base and sometimes also behind anterior margin. Prosternal process unbordered, with a carinate posterior edge.

Elytra rather convex, adnate but at extreme apices, resulting in a small re-entrant angle, sides rounded, no preapical sinuation, side border apically uninterrupted opposite interval 3, base mostly wide, somewhat pedunculate, truncate or oblique outwards (Figs 2, 3), humeri angulate, without denticle, slightly rounded apically, mostly invisible in dorsal view as being covered by lateral lobes of pronotum. Base flat to concave, mostly wide, its border strongly arcuate (convexity backwards); humeral

angle, *i.e.* that between basal and side borders, slightly acute. Striae deep and impunctate, intervals flat to convex on disc, more convex and narrower both laterally and apically, either 7th or 8th starting from humeral angle. In former case, stria 7 basally either free or adjoining stria 8. Prescutellary setigerous pore situated at base of a straight stria 2 just behind basal border, stria 1 basally curved outwards and adjoining the pore; prescutellary stria ranging (often individually) from entire and deep to obsolete. Dorsal setigerous pores and apical presutural pore missing, two preapical setigerous pores adjoining stria 7; umbilicate series uninterrupted and composed of 15-16 pores, this number being almost invariable both individually and between species. Scutellum very large, wide, slightly obtusangular.

Wings totally reduced resulting in very short metapleura, these hardly subdivided into episternum and epimeron; former varying from scarcely wider than to almost twice as wide as long, with (sub)equally long inner and outer margins.

Legs long to (rarely) short. Protibia with a conspicuous longitudinal sulcus bearing mostly one, very small, preapical seta. Metacoxa bisetose along outer margin, metatrochanter and metafemur asetose, but two exceptions as follows: a rudimentary seta (or its pore alone when the seta is reduced or abraded) is often observed in metafemur of D. calathoides, while a well-developed medial seta on femur combined with a rudimentary metatrochanteral seta is present in D. broteroides). Apical movable spurs, as well as elongated spiniform setae (hereafter spines) long in meso- and metatibia, shorter spur surpassing basal half of tarsomere 1; antero- and postero-external ridges of the tibiae armed with sparse spines, anteroexternal ones being 5-6 in number, strongest, longer than width of tibia. Mesotibia externally with one or two smaller preapical spines. Tarsomeres 1-2 or 1-3 bisulcate in fore and two hind leg pairs, respectively, outer sulcus being conspicuous while inner one weak or very weak, especially so in hind legs. Metatarsomere 4 apically truncate in lateral view and hardly emarginate in ventral view, with indistinct to extremely short inner lobe, pro- and mesotarsomere 4 slightly to moderately bilobed, anterior (outer) lobe being slightly to almost indistinctly longer and wider than inner one. Meso- and metatarsomeres of increasing length, metatarsomere 1 hardly shorter to slightly longer than those 2 to 4 combined. Latero-apical setae (LAS) developed on tarsomeres 1-4, dorso-apical setae (DAS) absent from tarsomeres 3-5, inner ventro-apical setae (IVAS) scale-like in pro- and mesotarsomere 4. Claw joint asetose ventrally. Claws simple. Protarsomeres 1-4 dilated in *J*, those 1 to 3 mostly longer than wide.

Abdomen. Sternites with one pair of paramedial setae, 7th bisetose in σ and quadrisetose in \circ . Male tergite 9 (ring sclerite) of peculiar shape in different species (Figs 6-12). Penis (Figs 21-37) almost symmetric, membranous dorsally throughout its length but basally, with a fairly narrow apical lamella; endophallus without large spines or sclerites, except for one species bearing a compact cluster of medium-sized teeth. Parameres equally long. Female gonosubcoxite IX with a row of sparse setae along apical margin, gonocoxite IX bearing one dorsal and 2-3 outer (ventral) ensiform setae (Fig. 5). Female reproductive tract (Fig. 4): *bursa copulatrix* without sclerites, when empty, oblique to the left anteriorly due to invaginated base, spermatheca spindle-shaped and annulated.



Figs. 1-5. *Dalatagonum* spp. 1-3 – *D. ellipticum* sp. n.: 1 – labium, ventral aspect, 2, 3 – bases of pronotum and elytra, dorsal aspect; 4 – *D. elongatum* sp. n., female reproductive tract, ventral aspect; 5 – *D. blattoides* sp. n., female gonocoxite IX, ventral aspect. Scale bar = 1mm.

DIAGNOSIS AND TAXONOMICAL NOTES. New genus shows a particular combination of characters. Among them, the body shape, size and proportions, totally reduced wings, adnate elytra, short metapleura, strongly reduced chetomes of both pronotum and elytra, as well as rather strong armature of meso- and metatibiae result in a very characteristic appearance of most congeners. This hardly differs from what the members of the genus *Laevagonum* Darlington, 1952 from New Guinea show, but for conspicuously lobed pro- and mesotarsomere 4 in *Dalatagonum*. This difference, together with widely separated ranges of the two genera, suggests their



Figs. 6-12. *Dalatagonum* spp., male tergite IX (ring sclerite), ventral aspect. 6 - D. *blattoides* sp. n.; 7 - D. *ellipticum* sp. n.; 8 - D. *elongatum* sp. n.; 9 - D. *calathoides* sp. n.; 10 - D. *anichkini* sp. n.; 11 - D. *bidoupense* sp. n.; 12 - D. *simile* sp. n. Scale bar = 1mm.

independent origins and the development of soil-dwelling habits in parallel. At least some characters emerged from this evolution are certain to have been correlated. Thus, wing reduction resulted in the adnate elytra, short metapleura and longer mesopleura, with two hind leg pairs shifted backwards. These becoming longer and furnished with a strong armature over metatibiae appear to have followed to push the body through leaf-litter more effectively. Almost or totally reduced dorsal chetomes of elytra and pronotum might have also been added to, since this combination is observed among wingless platynines elsewhere, *e.g.*, in *Montagonum* Darlington, 1952, *Nebriagonum* Darlington, 1952, *Fortagonum* Darlington, 1952, *Herculagonum* Baehr, 2002, *Dyscolus bardoni* Moret, 1993, *D. onorei* Moret, 1993, etc.

So far as I am aware, there are no close relatives of *Dalatagonum* but perhaps *Hannaphota* Landin, 1955 in the Oriental fauna. This little-known and monotypic genus has recently been transferred from Pterostichini to Platynini (Will, 2005). Both genera share many characters as follows: a narrow head with flattened eyes, fairly long mandibles, the pronotum narrowly bordered throughout but basally, with sides and hind angles rounded, only one, anterolateral setigerous pore inserted in a deep pit, very large mesoscutellum, no prescutellary stria on elytra, and a bilobed tarsomere 4. Yet differences in body shape, as well as in the structure of pronotum, in leg armature and elytral chetotaxy, together with no species being known to fill the gap between the two taxa, imply quite separate status of both. This evidence makes me to recognize *Dalatagonum* as full genus rather than something else, *e.g.* a subgenus of *Hannaphota*, until otherwise demonstrated.

Only one species of the new genus, *D. broteroides* sp. n., displays all features of the genus, combined with the appearance of *Agonum (Europhilus)* or *Broter* Andrewes, 1923. The latter is a monobasic Oriental genus considered as a peculiar member of the subtribe Atranopsina of the tribe Sphodrini (Schmidt, 1996).

COMPOSITION. The genus is subdivided into two species-groups, the *blattoides*-group and the *calathoides*-group, composed of three and five species, respectively.

DISTRIBUTION. The genus range covers montane areas within Lam Dong and Khanh Hoa Provinces in Central Vietnam. The occurrence of one species in Kon Tum Province suggests a wider distribution, in Vietnam at any rate.

ETYMOLOGY. New name derives from the combination of Dalat Plateau (the region where eight of nine species are described) and *Agonum*, a ground-beetle genus.

LIFE HISTORY. The congeners inhabit montane subtropical broad-leaved forests where they have been taken either by hands or in pitfall traps at the altitudes ranging between 1400 and 1900 m a.s.l. The species dwell in leaf litter and mostly occur beneath various tree remains, *e.g.* branches in pieces or bark fragments, often together with both one another and wingless members of the lebiine genus *Amphimenes* Bates, 1873. The adults of both genera thus show great similarity in appearance and habits, including in being very agile to escape from danger. Two species, *D. blattoides* sp. n. and *D. elongatum* sp. n. are common while the others occur less frequently, some of them being rare.

Key to the species

2.	Pronotum with anterolateral seta, pronotal explanate side margin and legs reddish-
	yellow
-	Pronotum without anterolateral seta. Body black sericeous, legs red, femora and
	coxae infuscate to reddish-brown. BL 5.6 mm D. sericeum sp. n.
3.	Larger, 6.4-7.7 mm long D. blattoides sp. n.
_	Smaller, 4.3-4.9 mm long, and a little stouter
4.	Body large, 9-10 mm long. Explanate side margin of pronotum abruptly and
	rather strongly reflexed all along. Elytral interval 7 subcarinate basally. Mesotibia
	with one preapical spine externally
_	Smaller. BL under 8.6 mm
5.	Body <i>Calathus</i> -like, elvtral base, as well as pronotum relative to elvtra, wider,
	Pronotal side margin strongly explanate basally but moderately reflexed at best
	Eves slightly flattened 6
_	Body <i>Europhilus</i> -like 8.6 mm long elytral base and pronotum narrow pronotal
	side margin slightly explanate but strongly reflexed. Eves small and flat
	D brateraides sn n
6	Larger 6.7-8.1 mm long Proportium parrow (FW/PW=1.18-1.3 mean 1.23) with
0.	small basolateral lobes and a distinctly reflexed side margin Mesotibia externally
	with one preapical spine
	Smaller 4.0.5.6 mm long. Elytral base subtruncate
-	Elistra shortor (EL/EW-1.27) proportum parrowar (EW/DW-1.24) with small
1.	Eight sholter (EE/E w -1.27), pionotum nanower (E w /1 w -1.24), with sinan
	basolateral lobes and a distinctly reflexed side margin D. anichkini sp. n.
_	Elytra longer (EL/EW=1.39-1.5), pronotum wider (EW/PW under 1.15), with
	larger basolateral lobes and a non-reflexed side margin. Mesotibla with one
~	preapical spine externally
8.	Apical lamella of penis rather long, endophallus without large teeth (Figs 29,
	36) D. bidoupense sp. n.
-	Apical lamella of penis shorter, endophallus with a compact cluster of large
	teeth (Figs 30, 37). Other differences see in the description D. simile sp. n.

The blattoides-group

DIAGNOSIS. Body small- to medium-sized for the genus and stout, *Amara*like, due to wide bases of both pronotum and elytra. Pronotum trapezoidal, broadest a little before base, more than twice as wider as head (PW/HW=2.06-2.33) and as wide as or hardly narrower than elytra (EW/PW=1.0-1.09), strongly contracted forward, side margin very strongly explanate posteriorly but non-reflexed. Elytra subovate, much more strongly contracted apicad than basad, front margin oblique a little backwards from peduncle to humerus, basal border adjoining striae 1-7 (Fig. 2) and moderately arcuate, its starting point near suture situated much anterior to humeral angle. Pronotal anterolateral seta present or reduced. Last labial palpomere longer than penultimate one.

COMPOSITION. The group comprises three sympatric species.



Figs. 13-18. Dalatagonum spp., body, dorsal aspect. 13 – D. blattoides sp. n.; 14 - D. ellipticum sp. n.; 15 - D. sericeum sp. n.; 16 - D. elongatum sp. n.; 17 - D. calathoides sp. n.; 18 - D. broteroides sp. n.

Dalatagonum blattoides Fedorenko, sp. n.

Figs 2, 5, 6, 13, 21, 31

MATERIAL. Holotype – σ , South Vietnam, Lam Dong Prov., Bi Doup – Nui Ba Nature Reserve, 12°07' N, 108°39'20" E, Bi Doup Mt., northern slope, h=1700-1900 m, 10.IV 2008 (leg. D Fedorenko) (ZMMU). Paratypes: 9 σ , 5 \circ , same locality, 10 and 12.IV 2008; 3, 6 and 9.V 2009; pitfall traps, 19-22.IV 2008 and 3-9.V 2009; 1 σ , 3 \circ , same data, but 12°10'44" N, 108°40'44" E, env. Long Lanh, h=1400-1600 m, 17-20.IV 2008 and 7.V 2009; 2 \circ , 12°11' N, 108°42' E, 4 km SSE of Hon Giao Mt., h=1500-1700 m, 7-8.IV 2008 and 5.V 2009.

DESCRIPTION. BL 6.4-7.7 mm. Oval, dorsum black or dark brown, mouthparts, explanate notopleura, elytral epipleura, posterior third to half and sides of last abdominal sternite, as well as legs, reddish-yellow, metacoxae excluded; pronotal side margin reddish-yellow to red; anterior and basal margins of pronotum, scutellum, side margin and usually suture of elytra reddish or reddish-yellow. Microsculpture composed of transverse, moderately wide meshes, less sharp on elytra than on pronotum. Head with frontal sulci short and very superficial, supraocular furrow indistinct, eyes slightly flattened, about twice as long as tempora. Posterior supraorbital seta situated level to or a little before eye back margin. Mandibles moderately long. Last labial palpomere only slightly longer than penultimate one. Pronotum 1.53-1.6 (mean 1.56) times as wide as long, 2.13-2.33 (mean 2.25) times as wide as head, sides strongly and regularly rounded throughout. Front margin straight or hardly arcuate, with an uninterrupted border, front angles protruding, with narrowly rounded apices. Base straight, slightly narrower than lateral lobes, these surpassing base far, almost straight-line, oblique slightly backwards; hind angles widely rounded. Side margin strongly and increasingly explanate basad, non-reflexed, with side border obsolete just before hind angles. Disc convex anteriorly and rather flat in basal half. Mid-line distinct but rather shallow and obsolete at extremities. Basal foveae wide and almost indistinct, often with an ill-defined rounded protuberance at its posterolateral margin. Anterolateral setigerous pore situated in a deep pit and remote far, ca 5-7 pore diameters, from side border. Elytra 1.33-1.43 (mean 1.39) times as wide as long, 1.0-1.08 (mean 1.03) times as wide as pronotum, ovate, broadest slightly behind humeri, with a small re-entrant angle apically. Basal border rather strongly arcuate. Striae moderately deep, a little deeper apicad. Intervals subequally wide basally, almost flat on disc, distinctly convex both laterally (7th and 8th) and before apex. Umbilicate series predominantly composed of 16 setigerous pores. Prescutellary stria varying from obsolete in anterior 1/2-2/3 to completely reduced; when present, rudimentary, rarely as deep as stria 1. MESW/L ranging between 1.47 and 1.93 (in five specimens measured). Legs long, mostly with mesotarsus and mesotibia subequally long, and metatarsus slightly longer than metatibia. Armature of meso- and metatibiae strongest for the genus, outer ridge of mesotibia with one spine preapically. Tarsi bisulcate, with inner (posterior) sulci fairly weak in metatarsi. Metatarsomere 1 as long as or slightly longer than those 2 to 4 combined. Apical

lobes of tarsomere 4 moderately long. Male ring sclerite subtriangular basally (Fig. 6). Ventral sclerotized part of penis narrow, apical lamella small, narrow, rounded apically (Figs 21, 31). Female gonocoxite IX with three ventral ensiform setae (Fig. 5).

DISTRIBUTION. Known from Bi Doup – Nui Ba Nature Reserve only.

ETYMOLOGY. Derives from the combination of *Blatta*, a cockroach genus, and *-oides*, due to similarity between the species and a small cockroach in both habits and appearance, including in a strong spiny armature of the tibiae.

Dalatagonum ellipticum Fedorenko, sp. n.

Figs 1, 7, 14, 22, 32

MATERIAL. Holotype – σ , South Vietnam, Lam Dong Prov., Bi Doup – Nui Ba Nat. Res., 12°07′ N, 108°39′20″ E, Bi Doup Mt., N. slope, h=1700-1900 m, 12.IV 2008 (leg. Fedorenko) (ZMMU). Paratypes: 9 σ , 5 φ , same locality, 12 and 19-22.IV 2008, 3 and 9.V 2009; 1 σ , same data, but 12°10′44″ N, 108°40′44″ E, env. Long Lanh, h=1400-1600 m, 29.III-20.IV 2008, pitfall traps.

DESCRIPTION. Very similar to the previous species, but much smaller, 4.3-4.9 mm long and a little stouter. Dorsum largely paler due to suture, side margin and, especially, apex of elytra more widely pale, and often pronotum brown in addition. Elytral microsculpture often as sharp as or even sharper than pronotal one. Frontal sulci almost indistinct. Last labial palpomere conspicuously longer than penultimate one. Pronotum 1.51-1.6 (mean 1.56) times as wide as long, 2.06-2.16 (mean 2.11) times as wide as head, almost parallel-sided in basal half. Anterior border very shallow to subinterrupted medially, front angles slightly more widely rounded at apices. Side margin sometimes slightly reflexed, side border reaching hind angles. Mid-line conspicuous and often reaching base. Basal foveae indistinct. Anterolateral setigerous pore about 3-4 pore diameters distant from side border. Elytra 1.29-1.33 (mean 1.31) times as wide as long, 1.03-1.09 (mean 1.06) times as wide as pronotum, widely rounded apically, without or with an almost indistinct reentrant angle. MESW/L= 1.54 and 1.59 (in two specimens measured). Umbilicate series composed of 15 setigerous pores. Prescutellary stria indistinct or almost so, exceptionally (in one specimen) entire and as deep as stria 1. Legs, especially tarsi, short, male protarsomeres 1-3 about as long as wide; mesotarsus much shorter than mesotibia, metatarsus usually shorter than, sometimes as long as, metatibia. Armature of meso- and metatibiae strong, but less strong than above. Metatarsomere 1 about as long as the following three combined. Pro- and mesotarsomere 4 rather strongly lobed, lobes as long as 1/2 tarsomere 5. Male ring sclerite almost parallel-sided, with base widely rectangular and truncate (Fig. 7). Penis (Figs 22, 32) with apical lamella large, triangular, rounded apically. Female gonocoxite IX with two ventral ensiform setae.

DISTRIBUTION. Known from two close localities within Bi Doup – Nui Ba Nature Reserve.



Figs. 19-20. Dalatagonum spp., body, dorsal aspect. 19 - D. bidoupense sp. n.; 20 - D. simile sp. n.

Dalatagonum sericeum Fedorenko, sp. n. Fig. 15

MATERIAL. Holotype – \Im , South Vietnam, Lam Dong Prov., Bi Doup – Nui Ba Nat. Res., 12°11' N, 108°42' E, ~4 km SSE of Hon Giao Mt, h=1500-1700 m, 5.V 2008 (leg. Fedorenko) (ZMMU).

DESCRIPTION. BL 5.6 mm. Oval, dorsum black, mouthparts and antennae reddish-yellow. Legs red, coxae and femora infuscate to reddish-brown, extremities excluded; explanate side margin of pronotum translucent with reddish; elytral epipleura, elytral side margin very narrowly reddish-brown in basal half and a little more widely so apically; epipleura brown. Microsculpture composed of transverse meshes, moderately wide on pronotum and very narrow on elytra, resulting in sericeous, slightly iridescent, luster of latter. Head, mouthparts and antennae same as in D. ellipticum, frontal sulci absent. Pronotum 1.63 times as wide as long, 2.23 times as wide as head, same as in D. blattoides, except for as follows: anterior marginal border very shallow medially, base slightly broader than lateral lobes, side border reaching hind angles, basal foveae reduced and replaced by a rounded protuberance merging into disc anteriorly; no lateral setigerous pores. Elytra same as in D. ellipticum, 1.39 times as wide as long, 1.02 times as wide as pronotum, with an almost indistinct re-entrant angle apically. Striae deep, intervals convex on disc and very convex laterally and before apex. Umbilicate series comprises 16 setigerous pores. Prescutellary stria reduced to a short posterior remnant on left elytron, obsolete anteriorly and shallow in right one. Legs same as in D. ellipticum, but slightly longer, tarsi excluded, and armature of meso- and metatibiae stronger a little.

DISTRIBUTION. Known from type locality only.

The calathoides-group

DIAGNOSIS. Body medium- to big-sized for the genus and slender, *Calathus*or, rarely, *Europhilus*-like. Pronotum subquadrangular to trapezoidal, broadest much before base or at middle; base narrower than above, with side margin less strongly explanate posteriorly and hardly to very strongly reflexed. Elytra more or less elliptic, moderately wide to narrow at bases, sides more strongly rounded than in the *blattoides*-group and more strongly contracted towards humeri; bases subtruncate (*D. bidoupense*, *D. simile*, *D. anichkini*) or clearly sloping forwards from peduncle in the remaining species, basal border strongly arcuate and of the same level at extremities; stria 7 starting at a short distance or directly from side border (Fig. 3). Pronotal anterolateral seta present. Dorsum dark, pronotal side hardly translucent with red at best, legs infuscate. Last labial palpomere indistinctly longer (*D. bidoupense*, *D. simile*, *D. anichkini*) or conspicuously shorter (*D. elongatum*, *D. calathoides*, *D. broteroides*) than penultimate one.

COMPOSITION. Six species.

Dalatagonum elongatum Fedorenko, sp. n.

Figs 4, 8, 16, 24-27, 33

MATERIAL. Holotype – σ , South Vietnam, Lam Dong Prov., Bi Doup – Nui Ba Nat. Res., 12°10′44″ N, 108°40′44″ E, env. Long Lanh, h=1400-1600 m, 14-15.IV 2008 (leg. Fedorenko) (ZMMU). Paratypes: 5 σ , 3 \circ , same data but 1-6 and 14-15.IV 2008; 2 σ , 4 \circ , same locality, but 12°07′ N, 108°39′20″ E, Bi Doup Mt, N. slope, h=1700-1900 m, 16, 19-22.IV 2008, 3-9.V 2009; 2 σ , 4 \circ , 12°11′ N, 108°42′ E, ~4 km SSE of Hon Giao Mt, h=1500-1700 m, 29.IV, 5 and 8.V 2009. Other material: \circ (immature), Khanh Hoa Prov., Hon Ba Mt, ~1400 m, IV 2003 (leg. A Borisenko).

DESCRIPTION. Body oblong-oval and large, 9.0-10.0 mm long. Dorsum black, explanate side margin of pronotum translucent with brown, legs and sometimes also mandibles and labrum brown; tarsi, mouthparts and antennae red. Microsculpture composed of strongly transverse, but rather distinct meshes, finer and much smaller on pronotum than on elytra. Head elongated, frontal sulci mostly distinct, albeit shallow, eyes varying in both size and shape, usually slightly to distinctly flattened and *ca* thrice as long as tempora. Posterior supraorbital seta situated level to eye back margin. Mandibles long, Last labial palpomere considerably shorter than penultimate one. Antennae long, surpassing pronotal base by ca last three joints, antennomere 3 twice as long as 2nd and slightly shorter than 4th. Pronotum 1.25-1.35 (mean 1.29) times as wide as long, 2.0-2.14 (mean 2.06) times as wide as head, subtrapezoidal, strongly contracted forward, sides strongly and regularly rounded throughout. Front margin straight or hardly arcuate, narrowly bordered, front angles a little protruding, with narrowly rounded apices. Base straight, wider than lateral lobes, latter moderately large, very regularly rounded and surpassing base far. Side margin strongly and increasingly explanate basad, abruptly reflexed, thus forming a sharp borderline

with disc convexity, flat throughout, except for where anterolateral lobes merging into rather large basal foveae; side border obliterated much before hind angles. Disc convex. Mid-line shallow to moderately deep, abbreviated at extremities. Base often (and sometimes also apex) finely longitudinally strigose or rugulose. Rather weak



Figs. 21-27. *Dalatagonum* spp. 21 – *D. blattoides* sp. n., penis, left lateral aspect; 22 – *D. ellipticum* sp. n., penis, left lateral aspect; 23 – *D. calathoides* sp. n., penis, left lateral aspect; 24-27 – *D. calathoides* sp. n.: 24 – penis, left lateral aspect, 25-26 – right paramere, 27 – left paramere. Scale bar = 0.5 mm.

basal and front transverse impressions occasionally distinct as well. Anterolateral setigerous pore about three pore diameters distant from side border. Elytra 1.49-1.62 (mean 1.57) times as wide as long, 1.09-1.19 (mean 1.13) times as wide as pronotum, ranging from oblong-oval, broadest before middle, subequally contracted forwards and backwards, with a rather widely rounded apex to elongated suboval, broadest in anterior third and more strongly contracted to narrowly rounded apex; latter with a small re-entrant angle. Basal border rather strongly arcuate. Striae deep, increasingly so apicad. Intervals slightly convex basally, very convex before apex, 7th and 8th very convex throughout and narrower than 6th basally, 7th subcarinate in basal third but humeral angle. Umbilicate series composed of 16 setigerous pores. Prescutellary stria varying in both length and depth, usually deep, entire or abbreviated anteriorly, more rarely rudimentary, short and shallow, exceptionally indistinct. Metepisternum slightly shorter than long, MESW/L=1.12 (one specimen measured). Legs long, meso- and metatarsi about as long as respective tibiae, these supplied with a fairly weak armature, outer ridge of mesotibia with one preapical spine. Tarsomeres 1-3 bisulcate, sulci deepest in mesotarsi, inner sulci weak in mesotarsi and indistinct or almost so in metatarsi, outer sulci very shallow over metatarsomere 1, this shorter than those 2 to 4 combined. Apical lobes of tarsomere 4 rather short. Male ring sclerite widely quadrangular basally (Fig. 8). Ventral sclerotized part of penis moderately wide, lightly sinuate dorsally on left side, apical lamella very long, narrow, pointed and bent downwards at almost right angle (Fig. 24). Female gonocoxite IX with two ventral ensiform setae (Fig. 4).

DISTRIBUTION. Known from a limited area within two neighboring Vietnamese provinces, Lam Dong and Khanh Hoa.

Dalatagonum calathoides Fedorenko, sp. n.

Figs 3, 9, 17, 23, 34

MATERIAL. Holotype – σ , South Vietnam, Lam Dong Prov., Bi Doup – Nui Ba Nat. Res., 12°07' N, 108°39'20" E, Bi Doup Mt., N. slope, h=1700-1900 m, 19-22.IV 2008 (leg. Fedorenko) (ZMMU). Paratypes: 6 σ , 4 \circ , same data, but 10-12, 19-22.IV 2008, 3-5 and 9.V 2009; 1 σ , 2 \circ , same locality, 12°10'44" N, 108°40'4" E, env. Long Lanh, h=1400-1600 m, 9-10, 17-18.IV 2008 and 7.V 2009.

DESCRIPTION. Body oblong-oval, 6.7-8.1 mm long. Dorsum black or dark brown, without or with light iridescent luster. Pronotal side margin usually slightly paler, especially so basally. Elytra often slightly paler at bases as well as pronotum brown basally or entirely. Mouthparts, antennae and legs red or reddish-yellow, femora infuscated up to dark brown except at extremities. Microsculpture strongly transverse and fine, particularly on each side from pronotal mid-line. Eyes slightly to rather strongly flattened, about twice as long as tempora. Posterior supraorbital seta situated level to eye back margin. Frontal sulci rounded, shallow but mostly distinct and posteriorly adjoining a V-shaped furrow composed of a few small and very shallow depressions. Mandibles rather long. Last labial palpomere a forth shorter than penultimate one. Antennae long, surpassing pronotal base by more than



Figs. 28-30. *Dalatagonum* spp., penis, left lateral aspect. 28 - D. *anichkini* sp. n.; 29 - D. *bidoupense* sp. n.; 30 - D. *simile* sp. n. Scale bar = 0.5 mm.

three joints, antennomere 3 twice as long as 2nd and slightly shorter than 4th. Pronotum 1.28-1.38 (mean 1.32) times as wide as long, 1.9-2.02 (mean 1.96) times as wide as head, almost of the same shape as in *D. elongatum*, except as follows: front angles non-protruding, baso-lateral lobes smaller, only slightly surpassing base, poorly rounded posteriorly, often with an almost straight posterior margin; side margin only lightly reflexed, basal foveae rather large and very superficial to indistinct, side border obsolete just before hind angles, disc less convex, only 1.5-2 pore diameters between anterolateral setigerous pore and side border. Elytra 1.35-1.47 (mean 1.39) times as wide as long, 1.18-1.30 (mean 1.23) times as wide as pronotum, oval to regularly ovate, with a conspicuous to indistinct re-entrant angle apically. Basal border rather strongly arcuate. Striae deep, increasingly so apicad. Intervals slightly convex basally and convex before apex, 7th both very convex and conspicuously narrower than 6th in basal forth only. Umbilicate series comprising 16 setigerous pores.

Prescutellary stria varying from deep and abbreviated only just behind basal border to indistinct. Metepisternum short, MESW/L=1.7-1.71 (in two specimen measured). Legs long, tibiae and tarsi subequally long in two hind leg pairs. Armature of meso-and metatibiae moderately strong, outer ridge of mesotibia with two preapical spines, exceptionally with three unilaterally. First two or three tarsomeres bisulcate in fore and two hind legs, respectively; outer sulci mostly weak to indistinct in metatarsi; metatarsomere 1 slightly shorter than those 2 to 4 combined. Apical lobes of tarsomere 4 rather short. Male ring sclerite constricted basad (Fig. 9). Ventral sclerotized part of penis moderately wide, lightly sinuate dorsally in the middle of left side, apical lamella widely triangular, pointed and somewhat bent downwards in lateral view, but narrowly rounded in ventral view (Figs 23, 34). Female gonocoxite IX with three ventral ensiform setae.

DISTRIBUTION. Known from two close localities within Bi Doup – Nui Ba Nature Reserve.

Dalatagonum anichkini Fedorenko, sp. n.

Figs 10, 28, 35

MATERIAL. Holotype – σ , Central Vietnam, Kon Tum Prov., N[orthern]. part, Ngoc Linh Nature Reserve, Ngoc Linh env., pitfall trap, V 2006 (leg. A. Anichkin) (ZMMU).

DESCRIPTION. BL 5.6 mm. Dorsum black, with light sericeous and iridescent luster, explanate side margin of pronotum hardly translucent with reddish in basal half, body appendages reddish-vellow, coxae and femora infuscate up to dark brown. extremities excluded. Microsculpture very fine on pronotal disc while distinct on elvtra, composed of strongly transverse and very narrow meshes, these transformed into dense transverse lines on elytral disc. Frontal sulci distinct, wide, extended into clypeus, slightly divergent, eyes flattened a little and about twice as long as tempora. Posterior supraorbital seta situated level to eye back margin. Mandibles rather long, Last labial palpomere almost indistinctly longer than penultimate one. Antennae moderately long, surpassing pronotal base by last two joints, antennomere 3 three fourths longer than 2nd and hardly shorter than 4th. Pronotum 1.29 times as wide as long, 1.82 times as wide as head, fairly convex, subquadrate, slightly contracted forward, sides strongly and regularly rounded throughout. Front margin straight, front angles almost non-protruding, narrowly rounded at apices, anterior border entire, shallow medially. Base straight, as long as lateral lobes, these fairly small, more or less regularly rounded. Side margin increasingly explanate basad, lightly and gradually reflexed, basal foveae large, shallow anteriorly, deeper basad, rather deep basally, at bottom with a small protuberance oblique posterolaterad; side border obliterated a little before hind angles. Mid-line deep medially, reaching base, abbreviated anteriorly. Basal transverse impression shallow but rather distinct. Anterolateral setigerous pore about one pore diameter distant from side border. Elytra shortly oval, 1.27 times as wide as long, 1.24 times as wide as pronotum, broadest at middle, with a small re-entrant angle apically. Basal border rather strongly



Figs. 31-34. *Dalatagonum* spp., penis, ventral aspect. 31 - D. *blattoides* sp. n.; 32 - D. *ellipticum* sp. n.; 33 - D. *elongatum* sp. n.; 34 - D. *calathoides* sp. n. Scale bar = 0.5 mm.

arcuate. Striae subequally deep throughout, shallower basally. Intervals slightly convex, 7th and 8th as wide and convex as others. Umbilicate series composed of 16 setigerous pores. A posterior remnant of prescutellary stria hardly traceable. Prescutellary setigerous pore rather far, about two pore diameters, distant from basal border. Metepisternum a half wider than long (MESW/L=1.12). Legs moderately long, tarsi shorter than respective tibiae. Armature of meso- and metatibiae weak, outer ridge of mesotibia with one/two preapical spines. First two or three tarsomeres bisulcate dorsally in fore and two hind leg pairs, respectively; metatarsomere 1 much shorter than those 2 to 4 combined (LMT1/2-4=0.81). Apical lobes of tarsomere 4 moderately long. Male ring sclerite subtriangular, with a fairly narrow base (Fig. 10). Ventral sclerotized part of penis narrow, apical lamella narrowly triangular, rounded apically in ventral view (Figs 28, 35).

DISTRIBUTION. Type locality only.

ETYMOLOGY. The species name is given after my friend and colleague Dr. Alexander Anichkin from the Russia-Vietnam Tropical Center (Ho Shi Minh, Vietnam), who collected this species.

Dalatagonum bidoupense Fedorenko, sp. n.

Figs 11, 19, 29, 36

MATERIAL. Holotype – σ , South Vietnam, Lam Dong Prov., Bi Doup – Nui Ba Nat. Res., 12°07' N, 108°39'20" E, Bi Doup Mt, N. slope, h=1700-1900 m, 12.IV 2008 (leg. Fedorenko) (ZMMU). Paratypes (SIEE): 2 σ , 2 \circ , same data, but 10-12.IV 2008; 6.V 2009; 3-9.V 2009; 2 \circ , pitfall traps, 19-22.IV 2008 and 3-9.V 2009; 1 σ , 12°11' N, 108°42' E, ~4 km SSE of Hon Giao Mt, h=1500-1800 m, 13.IV 2008.

DESCRIPTION. Body oval, 4.9-5.6 mm long. Dorsum black, mostly with side margin, base and usually also apex, latter narrowly, translucent with brown or reddish; pronotum and elytral base often brownish; labrum reddish-brown, mouthparts and antennae reddish-yellow; legs reddish-yellow or red, coxae and femora dark brown or black, extremities of the latter excluded. Microsculpture transverse and distinct on pronotal disc and elytra, sometimes fine over the latter. Eyes rather convex together with fairly short tempora. Posterior supraorbital seta situated level to eye back margin. Frontal sulci rounded, shallow but conspicuous, sharply curved inwards behind, thus (almost) enclosing a subconvex transverse rectangle or pentagon bordering on frontoclypeal suture. Mandibles moderately long. Last labial palpomere almost a third longer than penultimate one. Antennae moderately long, surpassing pronotal base by last two joints, antennomere 3 almost two thirds longer than 2nd and about a forth shorter than 4th, Pronotum 1.41-1.51 (mean 1.45) times as wide as long, 1.92-2.03 (mean 1.98) times as wide as head, wide, subtrapezoidal, strongly contracted forward, sides mostly poorly rounded in basal half, almost parallel-sided there or slightly converging basad. Front margin lightly bisinuate due to front angles scarcely protruding and narrowly rounded at apices. Anterior border extremely fine or obliterated medially. Base shorter than lateral lobes, these large, surpassing base far, mostly with back margin poorly rounded and oblique a little backwards. Side margin strongly explanate, but hardly reflexed throughout or only at middle following baso-lateral lobes extended into disc convexity, basal foveae indistinct or almost so; side border obliterated just before hind angles. Disc convex. Mid-line rather shallow, obsolete anteriorly, but usually reaching base. Sometimes a rudimentary front transverse impression traceable. Anterolateral setigerous pore situated in a deep pit, about two pore diameters, or less than one pit diameter, distant from side border. Elytra 1.39-1.50 (mean 1.44) times as wide as long, 1.08-1.15 (mean 1.11) times as wide as pronotum, oval, subtruncate at bases, without or with an almost indistinct re-entrant angle apically. Basal border rather strongly arcuate. Striae deep, increasingly so apicad. Intervals slightly convex basally, increasingly convex back- and outwards, 7th and 8th convex throughout, former at base distinctly narrower and more



Figs. 35-37. *Dalatagonum* spp., penis, ventral aspect. 35 - D. *anichkini* sp. n.; 36 - D. *bidoupense* sp. n.; 37 - D. *simile* sp. n. Scale bar = 0.5 mm.

convex than 6th. Umbilicate series composed of 15 setigerous pores. Prescutellary stria entire to totally reduced. Metepisternum short, MESW/L=1.60-1.71 (in two specimens measured). Legs rather long, meso- and metatarsi much or slightly shorter than respective tibiae, these with moderately strong armature, mesotibia bearing one preapical spine externally. Tarsomeres 1-2 or 1-3 bisulcate in fore and two hind legs, respectively, protarsomere 2 almost indistinctly sulcate; metatarsomere 1 1.05-1.17 times as long as those 2 to 4 combined. Apical lobes of tarsomere 4 rather long. Male ring sclerite as in Fig. 11. Ventral sclerotized part of penis wide, apical lamella long and narrowly rounded apically (Figs 29, 36).

DISTRIBUTION. Known from two localities in Lam Dong Province.

Dalatagonum simile Fedorenko, sp. n.

Figs 12, 20, 30, 37

MATERIAL. Holotype – &, South Vietnam, Lam Dong Prov., Bi Doup – Nui Ba Nat. Res., 12°07' N, 108°39'20"E, Bi Doup Mt, N. slope, h=1700-1900 m, 12.IV 2008 (leg. Fedorenko) (ZMMU).

DESCRIPTION. Almost identical to the preceding species, but for a peculiar structure of the penis, as well as the smallest differences as follows. BL 5.6 mm. Dorsum and femora dark brown, pronotum paler, except for on disc. Anterior part of frons with a shallow irregular depression in form of an inverse 5-point star truncated anteriorly. Pronotum 1.42 times as wide as long, 2.04 times as wide as head, strongly and equally rounded at sides. Elytra 1.4 times as wide as long, 1.04 times as wide as pronotum, apical re-entrant angle indistinct. Striae deeper. Intervals convex basally, very convex before apex as well as 7th and 8th throughout. Prescutellary stria obliterated in its basal half. Male ring sclerite as in Fig. 12. Apical lamella of penis shorter (Figs 30, 37), endophallus of particular structure, with a compact cluster of about ten large teeth.

DISTRIBUTION. Known from type locality only.

Dalatagonum broteroides Fedorenko, sp. n.

Fig. 18

MATERIAL. Holotype – , South Vietnam, Lam Dong Prov., Bi Doup – Nui Ba Nat. Res., 12°07′ N, 108°39′20″E, Bi Doup Mt, N. slope, h=1700-1900 m, 16.IV 2008 (leg. Fedorenko) (ZMMU).

DESCRIPTION. Body oblong-oval, 8.6 mm long. Brown rather pale, head brown, pronotum dark brown, explanate side margin translucent with reddish-yellow. Mouthparts, antennae and legs reddish-yellow, mandibles darker apicad, femora almost indistinctly infuscate (pale body color, together with hardly infuscate femora, surely results from the specimen being immature). Microsculpture distinct, meshes moderately transverse, much smaller on pronotum than on elvtra while varving on latter from slightly to strongly transverse. Head elongated, eyes very small and flat, as long as tempora, posterior supraorbital seta situated much behind eye back margin; frontal sulci short and shallow, another similar depression on each side behind them. Mandibles very long, Last labial palpomere almost a forth shorter than penultimate one. Antennae long, surpassing pronotal base by last three joints, antennomere 3 twice as long as 2nd and indistinctly shorter than 4th. Pronotum very narrow, 1.03 times as wide as long, 1.68 times as wide as head, subquadrate, subequally contracted forwards and backwards, sides equally rounded throughout. Front margin straight, narrowly bordered, front angles small, hardly protruding, rounded apically. Base straight and narrow, much wider than lateral lobes, these almost indistinct if any, merged into very widely rounded hind angles, hardly surpassing base. Side margin slightly explanate but strongly reflexed, especially so basally; basal foveae large and shallow, merging into a deep and wide gutter between reflexed side margin and base; side border obliterated much before hind angles. Disc convex. Mid-line moderately deep, reaching and deeper before base, abbreviated anteriorly. Anterolateral setigerous pore less than two pore diameters distant from side border. Elytra regularly oblong-oval, 1.51 times as wide as long, 1.4 times as wide as pronotum, almost parallel-sided in middle third, broadest behind middle, subequally contracted forwards and backwards, with a small re-entrant angle at apex. Basal border strongly arcuate, its starting point at

suture situated a little behind level of humeral angle. Striae subequally deep throughout, intervals almost flat basally, slightly more convex apicad, 7th and 8th basally a little more convex and slightly narrower than 6th. Umbilicate series composed of 16 setigerous pores. Prescutellary stria entire but subinterrupted in left elytron while obliterated in its basal half in right one. Metepisternum short. Legs of moderate length, tibiae and tarsi subequally long in hind two leg pairs. Armature of mesoand metatibiae fairly weak, outer ridge of mesotibia with two spines in apical half. Tarsomeres 1-3 bisulcate, inner sulci very shallow in hind legs, first metatarsomere 0.83 times as long as than 2nd to 4th combined. Apical lobes of tarsomere 4 very short.

DISTRIBUTION. Known from type locality only.

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