

## Two new species of subfamily Doryctinae (Hymenoptera: Braconidae) from China

## Два новых вида подсемейства Doryctinae (Hymenoptera: Braconidae) из Китая

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Two new doryctine species belonging to the genera *Dendrosoter* Wesmael (*D. hainanicus* sp. nov.) and *Dendrosotinus* Telenga (*D. taiwanicus* sp. nov.) are described from China. The genus *Dendrosoter* Wesmael is recorded for the first time for the fauna of China.

Из Китая описаны два новых вида подсемейства Doryctinae, относящиеся к родам *Dendrosoter* Wesmael (*D. hainanicus* sp. nov.) и *Dendrosotinus* Telenga (*D. taiwanicus* sp. nov.). Род *Dendrosoter* Wesmael для Китая указывается впервые.

**Key words:** Ectoparasitoids, first record, China, Hymenoptera, Braconidae, *Dendrosoter*, *Dendrosotinus*, new species

**Ключевые слова:** Эктопаразитоиды, первая находка, Китай, Hymenoptera, Braconidae, *Dendrosoter*, *Dendrosotinus*, новые виды

## INTRODUCTION

Fauna of the parasitoid wasps of the family Braconidae from China is one of the most peculiar and diverse in the Palaearctic Region. One of the reasons of such faunistic richness of these parasitoids is the location of China at the border of the Palaearctic and Oriental zoogeographic regions and the complex geological and floristic composition that occurs within this country. Data on braconids of the subfamily Doryctinae of this country were published in several papers (Chao, 1956, 1977, 1978; Chao & Chen, 1965; Belokobylskij, 1996, 2002; Belokobylskij & Chen, 2002, 2004a, 2004b, 2005a, 2005b, 2006; Wang et al., 2009; Belokobylskij & Maeto, 2009) and in one monograph (Chen & Shi, 2004), but taxonomy of this subfamily in China is still far from being settled. In the present paper, two new species of the genera *Dendrosoter* Wesmael, 1838 and *Dendrosotinus* Telenga, 1941 are described. One species assigned to

the genus *Dendrosotinus* has been already described from China (Shi, 2006); however its actual placement is doubtful. A *Dendrosoter* is here recorded for China for the first time.

The nomenclature for wing venation, terminology of morphological features, measurements and sculpture follow Belokobylskij & Tobias (1998). The following abbreviations are used – for morphology: POL, postocellar line; OOL, ocular-ocellar line; Od, maximum diameter of lateral ocellus; for institutions: BMNH, The Natural History Museum (London); HNHM, Hungarian Natural History Museum (Budapest).

## TAXONOMIC PART

Genus *Dendrosoter* Wesmael, 1838

*Dendrosoter* Wesmael, 1838 is a small and morphologically distinctive doryctine genus whose members parasitise coleopteran larvae of the families Scolytidae (mainly), Cur-

culionidae, Cerambycidae, Bostrichidae and Buprestidae (Shenefelt & Marsh, 1976; Belokobylskij & Maeto, 2009). Species of this genus are distributed in the Afrotropical (8 species), Nearctic (5), Palaearctic (4) and Oriental (4) regions (Shenefelt & Marsh, 1976). The Nearctic *D. sulcatus* Muesebeck, 1938 was introduced to Australia, but its native occurrence in this region is unknown (Belokobylskij et al., 2004). Four species of this genus have been recorded in the Oriental Region, three of which have only been known from India (Nixon, 1939), including *D. middendorffi* (Ratzeburg, 1848) which is also widely distributed in the Palaearctic Region, and *D. enervatus* Marsh, 1965 from Philippines (Luzon) (Marsh, 1965). This genus is here recorded for the first time for the fauna of China. Below, a new peculiar species of *Dendrosoter* characterised by reduction of the first radiomedial vein is described from this country.

***Dendrosoter hainanicus* sp. nov.**  
(Figs 1–9)

*Type material.* *Holotype.* Female, "China, Hainan I., Tien Fong Mts., [19]83, Boucek"; BMNH.

*Description.* Female. Body length 2.3 mm; fore wing length 2.1 mm.

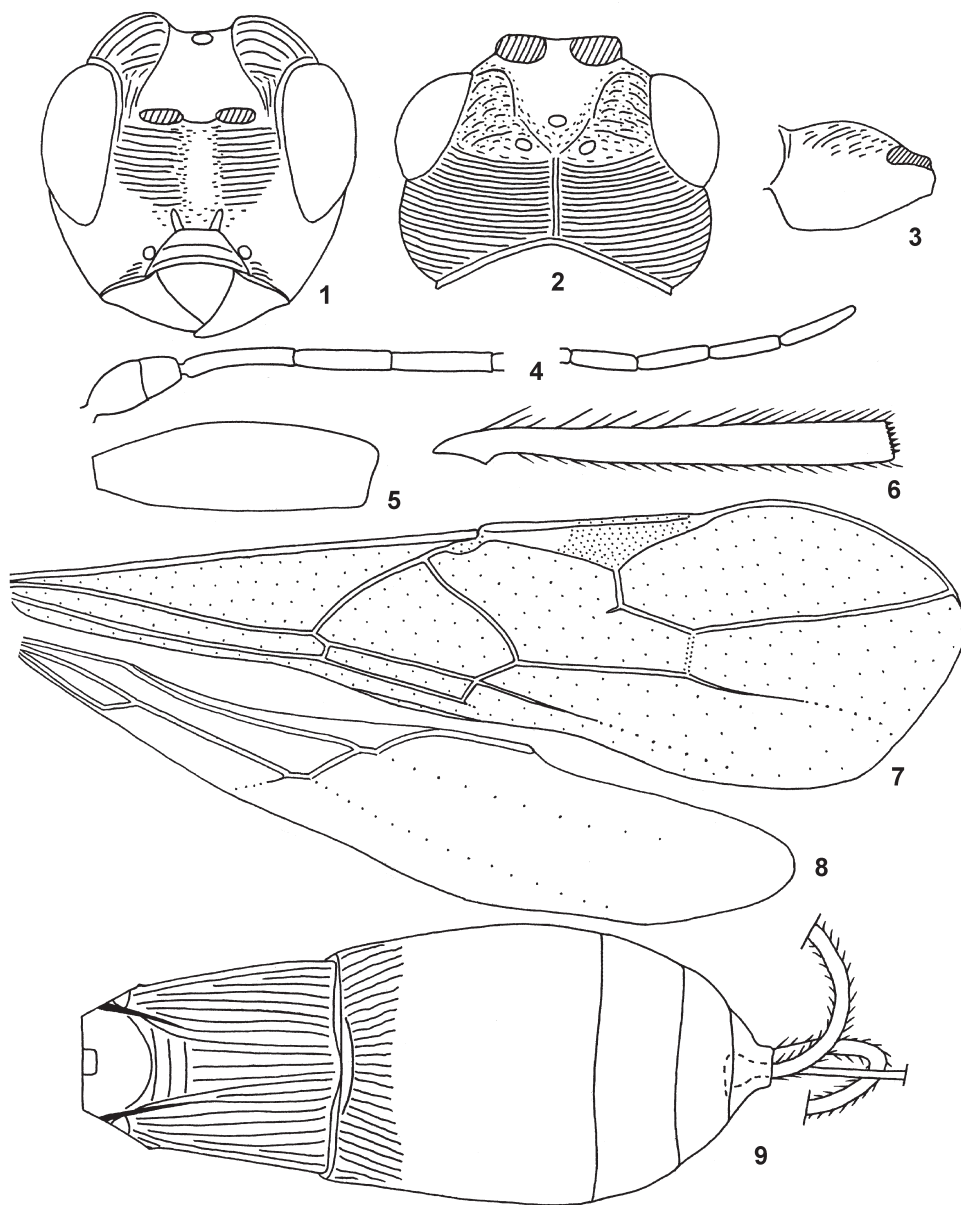
*Head* width 1.5 times its median length. Head behind eyes weakly convex anteriorly, roundly narrowed posteriorly; transverse diameter of eye almost equal to length of temple (dorsal view). Ocelli small, arranged in triangle with base 1.4 times its sides. POL 2.8 times Od, almost equal to OOL. Vertex with rather distinct longitudinal median furrow from ocellar triangle to occipital carina. Frons laterally with high collus-like swellings (protuberances). Eye hairless, 1.1 times as high as broad. Malar space height 0.4 times height of eye, 0.7 times basal width of mandible. Face width almost equal to height of eye and 1.2 times height of face and clypeus combined. Malar suture absent. Clypeal suture shallow and complete. Hypoclypeal depression small and round, its width 0.6 times distance from edge of depression to eye, 0.3 times width of face. Oc-

cipital carina obliterated ventrally at long distance before reaching hypostomal carina. Hypostomal flange very narrow. Postgenal bridge very wide. Head below eyes roundly narrowed.

*Antennae* slender, filiform, 25-segmented, 1.3 times longer than body. Length of scape 1.6 times its maximum width, 1.6 times longer than pedicel. First flagellar segment weakly curved, 7.0 times longer than its apical width, 1.2 times longer than second segment. Penultimate segment 4.5 times longer than wide, 0.6 times as long as first segment, 0.9 times as long as apical segment; the latter pointed apically.

*Mesosoma.* Length 1.8 times its height. Neck of pronotum short. Pronotal carina distinct, widely separated medially from posterior margin of pronotum. Mesoscutum distinctly and convex-roundly elevated above pronotum (lateral view), about as long as maximum width (dorsal view). Notauli rather deep, complete, crenulate, joined to each other in posterior 0.6 of mesoscutum. Mesoscutum without median depression. Prescutellar depression rather deep, weakly and roundly curved posterolaterally, with high median and two lateral carinae, additionally finely striate and smooth between striation, 0.3 times as long as the convex scutellum. Sternaulus rather shallow, posteriorly with small, deep and round depression, almost smooth, weakly curved, running along anterior half of lower part of mesopleuron, connected with prepectal carina. Subalar depression rather shallow, wide, rugulose, but upper almost smooth. Metanotum without tooth. Metapleural lobes distinct, rather wide, pointed apically.

*Wings.* Length of fore wing 3.3 times its maximum width. Radial cell not shortened. Metacarp 1.1 times longer than rather narrow pterostigma. Radial vein arising behind middle of pterostigma. First radial abscissa forming distinct and very obtuse angle with second abscissa. Second radial abscissa 1.9 times longer than first abscissa, 0.3 times as long as very weakly curved third abscissa,



**Figs 1–9.** *Dendrosoter hainanicus* sp. nov., holotype. **1**, head, front view; **2**, head, dorsal view; **3**, hind coxa; **4**, basal and apical segments of antenna; **5**, hind femur; **6**, hind tibia; **7**, fore wing; **8**, hind wing; **9**, metasoma, dorsal view.

0.65 times as long as the trace of first radiomedial vein. First radiomedial vein absent for the most of its length, shortly present near radial vein. Second radial and second medial abscissae distinctly convergent distally. First medial abscissa weakly S-curved. Me-

diocubital vein weakly curved to anal vein in apical half. Distance from nervulus to basal vein almost equal to nervulus length. Parallel vein interstitial. Brachial cell strongly and linearly closed at level of recurrent vein; posterior abscissa of anal vein (behind bra-

chial vein) present, but unsclerotized. Hind wing about 5.0 times longer than wide. First abscissa of costal vein about 0.5 times as long as second abscissa. First abscissa of mediocubital vein 0.65 times as long as second abscissa. Recurrent vein unsclerotized, weakly curved, interstitial.

*Legs.* Fore tibia with three spines arranged in single row. Hind coxa with weak basoventral angle and without tubercle. Hind femur 3.3 times longer than maximum width. Hind tibia apically with four spines on outer margin. Hind tarsus weakly shorter than hind tibia. Hind basitarsus 0.55 times as long as second–fifth segments combined. Second tarsal segment about 0.5 times as long as basitarsus, 1.25 times longer than fifth segment (without pretarsus).

*Metasoma* 0.8 times as long as head and mesosoma combined. First tergite distinctly and almost linearly widened toward apex, with rather large dorsope, spiracular tubercles indistinct; length of tergite 1.15 times its apical width; apical width twice its basal width. Second suture absent. Length of second and third tergites combined equal to basal width of second tergite, 0.85 times maximum width of these tergites. Second tergite with smooth and very narrow basal area, without separate laterotergites. Ovipositor sheath 1.55 times longer than metasoma, 0.7 times as long as body, 1.8 times longer than mesosoma, 0.8 times as long as fore wing.

*Sculpture and pubescence.* Vertex finely, densely and weakly undulately strigose, partly with very fine reticulation between striae. Frontal protuberances coarsely and densely striate; frons smooth between protuberances. Face finely and densely striate, very finely to smooth striate medially. Temple finely, densely and curvedly striate in upper 0.7, almost smooth to smooth in lower 0.3. Mesoscutum densely rugose and with undulate striae, with undulate median carina in posterior 0.4. Scutellum finely and densely rugulose-punctate. Mesopleuron mostly smooth. Metapleuron rugose-reticulate in posterior half, finely rugulose in anterior half. Propodeum with

distinctly marginate areas, basolateral and posterior areas smooth, but rugulose along carinae; areola rather long and narrow, transversely rugose-striate in anterior half, almost smooth in posterior half. Hind coxa dorsally rather finely striate in upper part, but mostly smooth. Hind femur smooth. First metasomal tergite with convergent and complete dorsal carinae. First tergite entirely and second–third tergites in basal 0.2 coarsely striate, first tergite additionally transverse rugose-striate in mediobasal 0.3 (between dorsal carinae). Remaining tergites smooth. Vertex with short, rather dense and semi-erect setae directed forwards. Mesonotum entirely with very dense, short and semi-erect white setae. Hind tibia dorsally with semi-erect, rather dense and short setae; length of these setae 0.55–0.65 times maximum width of hind tibia.

*Colour.* Body brownish yellow with dark spots above sternauli and on the middle of metasoma; head yellow. Antennae dark reddish brown to black, two basal segments yellow. Palpi and legs pale yellow. Ovipositor sheath almost black. Fore wing faintly infusate. Pterostigma light brown, pale yellow in basal 0.3.

Male unknown.

*Distribution.* China, Hainan Island.

*Discussion.* This new species is similar to *D. enervatus* Marsh from Philippines (Marsh, 1965) by having the first radiomedial vein mostly absent. However, *D. hainanicus* **sp. nov.** distinctly differs from *D. enervatus* in having the excavation of the frons not extending over the vertex to the occipital carina (vs. distinctly extending in *D. enervatus*), the face high (vs. not high), the ocellar triangle with its base larger than its sides (vs. not large), the mesoscutum long (vs. short), the first metasomal tergite and ovipositor long (vs. distinctly short), the radial vein arising behind middle of pterostigma (vs. arising from the middle of pterostigma), and the second radiomedial cell long (vs. short). The new species differs from Indian *D. thelepte* Nixon, 1939 (Nixon, 1939) in having the first flagellar segment

distinctly longer than second segment (vs. slightly longer in *D. thelepte*), the radial vein arising behind middle of pterostigma (vs. arising before middle of pterostigma), the first radiomedial vein highly reduced (vs. entirely developed), the ovipositor sheath much longer than metasoma (vs. slightly longer), and the mesosoma long (vs. shorter). *Dendrosoter hainanicus* **sp. nov.** clearly differs from all Palaearctic species of *Dendrosoter* in the reduction of the first radiomedial vein in fore wing and in the shape of the ocellar triangle with its base larger than its sides.

#### Genus *Dendrosotinus* Telenga, 1941

The genus *Dendrosotinus* Telenga, 1941 was described for the type species *Dendrosoter ferrugineus* Marshall, 1888 and three more additional species (Telenga, 1941), all of which now are placed in other genera. Several additional Afrotropical (2), Palaearctic (2) and Oriental (1) species were included later in this genus (Shenefelt & Marsh, 1976; Belokobylskij, 1983, 1993). The subgenus *Eodendrus* Belokobylskij, 1998 was erected in this genus for the type species *Dendrosotinus eous* Belokobylskij, 1988 (Belokobylskij, 1998), but it was subsequently raised to genus level (Belokobylskij et al., 2005a).

Van Achterberg (2003) revised European species of this genus and treated *Gildoria* Hedqvist, 1974 (earlier synonymised with *Dendrosotinus*: Belokobylskij, 1993) as a valid genus. He recorded in *Gildoria* ten Western Palaearctic species and kept only one species (*D. ferrugineus*) in *Dendrosotinus*. Nevertheless, the morphological features proposed by this author for separating these two closely related taxa (shape of the first antennal segment, position of the recurrent vein and size of the brachial cell of the fore wing, shape and condition of the second metasomal suture) noticeably vary within them. The new species described below from Taiwan has an intermediate position between the two aforementioned

genera which does not allow to include it with confidence in any of the above genera. An additional study is therefore required to clarify the actual relationships among members of *Gildoria* and *Dendrosotinus*, though the new species has been here placed within the latter genus.

One species of the genus *Dendrosotinus* Telenga, *D. wuyiensis* Shi, 2006, has been described (in Chinese) from Fujian Province of China (Shi, 2006), but according to the figures it is possibly a member of the genus *Ontsira* Cameron, 1900. A new species, *D. taiwanicus* **sp. nov.**, which is closely related to *D. ferrugineus* (Marshall), is described below from the Island of Taiwan.

#### *Dendrosotinus taiwanicus* **sp. nov.** (Figs 10–21)

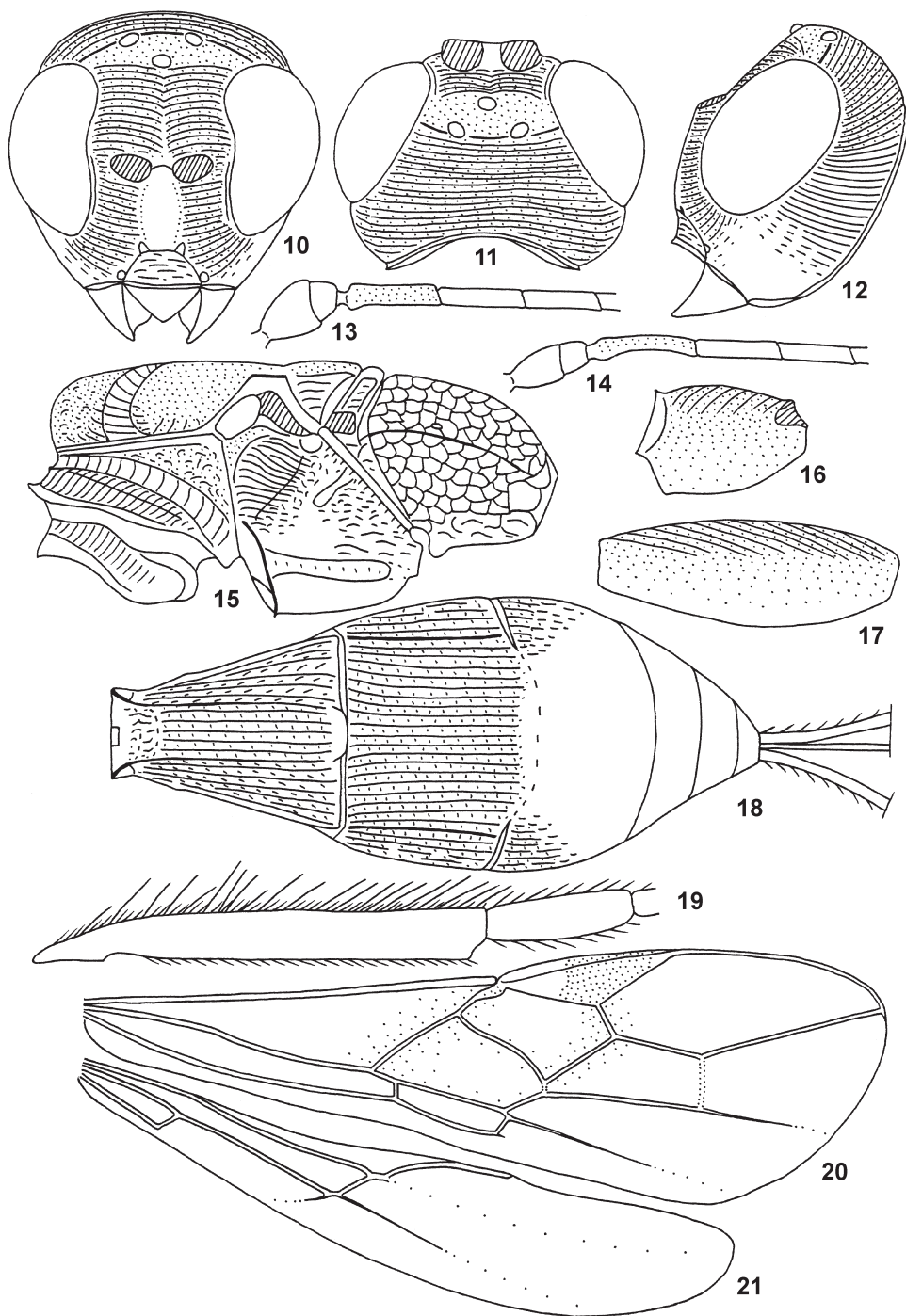
*Type material.* *Holotype.* Female, "Formosa, Sauter", "Fuhosho, 1909. VIII"; HNHM.

*Description.* Female. Body length 4.1 mm; fore wing length 3.0 mm.

*Head* width 1.55 times its median length. Head behind eyes very weakly convex anteriorly and roundly narrowed posteriorly. Transverse diameter of eye 2.2 times longer than temple. Ocelli medium size, placed on distinct and wide ridge developed on border of vertex and frons, arranged in triangle with base 1.5 times its sides. POL 2.6 times Od, almost equal to OOL. Eye hairless, with very fine emargination opposite antennal sockets, 1.2 times as high as broad. Malar space height 0.3 times height of eye, 0.65 times basal width of mandible. Face width 0.8 times height of eye and 1.1 times height of face and clypeus combined. Malar suture absent. Clypeus with distinct and short lower flange. Clypeal suture narrow and deep. Hypoclypeal depression round, its width about 0.8 times distance from edge of depression to eye, 0.4 times width of face. Occipital carina complete dorsally, obliterated ventrally at short distance before reaching hypostomal carina.

*Antennae* slender, setiform, more than 36-segmented (apical segments missing). Scapus short and thick, 1.4 times longer





**Figs 10–21.** *Dendrosotinus taiwanicus* sp. nov., holotype. **10**, head, front and weakly dorsal view; **11**, head, dorsal view; **12**, head, lateral view; **13**, five basal segments of antenna, lateral view; **14**, five basal segments of antenna, dorsal view; **15**, mesosoma, lateral view; **16**, hind coxa; **17**, hind femur; **18**, metasoma, dorsal view; **19**, hind tibia and basitarsus; **20**, fore wing; **21**, hind wing.

than its maximum width. First flagellar segment very weakly widened, weakly curved, weakly convex and finely granulate on outer side, almost flat and finely coriaceous or smooth on inner side, 5.3 times longer than its maximum width, 1.2 times longer than second segment. Subapical segments about 4.0 times longer than wide.

*Mesosoma* not depressed, its length 2.1 times maximum height. Pronotum short, dorsally with weakly convex lobe, with rather distinct pronotal keel; side of pronotum with coarse, curved and oblique submedian carina. Mesoscutum strongly and convex-roundly elevated above pronotum. Median lobe of mesoscutum distinctly protruding forwards. Notauli rather wide, deep anteriorly and shallow posteriorly, coarsely crenulate-rugulose. Prescutellar depression rather deep, narrow, with seven coarse carinae, finely coriaceous between carinae, 0.3 times as long as convex scutellum. Prepectus with two distinct lateral longitudinal carinae near outer sides of coxae. Subalar depression shallow, wide, coarsely and widely rugose-reticulate. Sternaulus distinct, shallow anteriorly and deep posteriorly, straight, narrowly and very finely crenulate, connected with prepectal carina anteriorly, running along anterior 0.7 of lower part of mesopleuron. Propodeum without lateral tubercles.

*Wings.* Fore wing 3.4 times longer than its maximum width. Pterostigma 3.7 times longer than wide. Radial vein arising weakly behind middle of pterostigma. Radial cell not shortened. Metacarp 1.25 times longer than pterostigma. Second radial abscissa 2.4 times longer than first abscissa, 0.5 times as long as the straight third abscissa, 1.2 times longer than first radiomedial vein. Second radiomedial cell rather short, not narrowed distally, 2.6 times longer than its maximum width, 1.35 times longer than rather narrow brachial cell. Recurrent vein distinctly postfurcal, about 5.5 times longer than second abscissa of medial vein. Distance from nervulus to basal vein 1.5 times nervulus length; nervulus straight and almost perpendicular to mediocubital vein. Par-

allel vein almost interstitial. Brachial cell distally closed sharply and almost linearly; apical vein of longitudinal anal vein behind brachial vein distinct and short. Hind wing with three hamuli, about 5.0 times longer than wide. First abscissa of costal vein 0.7 times as long as second abscissa. Radial cell almost parallel-sided. First abscissa of mediocubital vein 0.6 times as long as second abscissa. Recurrent vein weakly curved toward apex of wing, weakly antefurcal.

*Legs.* Fore tibia with distinct and coarse spines arranged in single row. Hind coxa with very small basoventral tubercle. Hind femur without dorsal protuberance, 3.0 times longer than wide. Hind tibia with six spines on its apical outer margin. Hind tarsus almost as long as hind tibia. Basitarsus widened, with distinct ventral keel, 0.55 times as long as second-fifth segments combined. Second tarsal segment 0.6 times as long as basitarsus, 1.2 times longer than fifth segment (without pretarsus).

*Metasoma* 0.9 times as long as head and mesosoma combined. First tergite with rather large dorsope, with very small spiracular tubercles in basal 0.3; tergite distinctly and linearly widened from base to apex. Maximum width of first tergite 2.4 times its minimum width; length of tergite 1.2 times its apical width. Second suture deep and weakly curved laterally and very shallow (almost indistinct) on large median part. Median length of second and third tergites combined 1.4 times basal width of second tergite, 1.1 times their maximum width. Ovipositor sheath 1.3 times longer than metasoma, 1.6 times longer than mesosoma, 0.85 times as long as fore wing.

*Sculpture and pubescence.* Vertex medially distinctly and rather dense and laterally finely and very densely transversely striate, with very dense and fine granulation or reticulation between striae, striae curved laterally, very densely granulate and with indistinct striation around ocelli; frons entirely and densely rugulose-granulate. Face densely and regularly transversely striate, partly with fine additional granulation,

striae below semi-circular; temple densely and distinctly semi-circularly striate and partly with reticulation, widely smooth below. Mesoscutum rather distinctly and densely rugulose-reticulate, partly with additional fine granulation. Scutellum densely and finely rugulose-granulate. Mesopleuron distinctly striate-rugose in upper half and posteriorly, finely reticulate to mostly smooth on lower half. Propodeum without delineated areas, entirely small rugose-areolate. Hind coxae striate dorsally, finely coriaceous to almost smooth laterally. Hind femur dorsally distinctly striate with granulation, laterally densely and rather finely coriaceous. First and second tergites entirely and third in basolateral 0.25 distinctly striate, with distinct and dense rugulosity or granulation between striae, third tergite laterally rather finely rugulose-reticulate in apical 0.25. Remaining tergites smooth. Vertex mostly with rather dense, short and semi-erect white setae, shortly glabrous near ocelli. Mesoscutum entirely with very dense, short and white semi-erect setae. Metapleuron medially widely glabrous. Hind tibia dorsally with dense, numerous and short recumbent setae and with rather long, more or less sparse and semi-erect setae; length of long setae 0.9–1.2 times maximum width of hind tibia.

**Colour.** Head yellow, infusate dorsally. Mesosoma light reddish brown, prothorax mostly yellow. Metasoma light reddish brown, brownish-yellow apically, yellow ventrally. Antenna black, three or four basal segments yellow or brownish yellow. Palpi pale yellow. Legs yellow, tarsi very faintly infusate. Ovipositor sheath brown in basal 0.7 and black in apical 0.3. Fore wing hyaline, with rather distinct obscuration around basal and first abscissa of radial veins and around brachial cell. Pterostigma brown, yellow in basal 0.3 and apically.

Male unknown.

**Distribution.** Taiwan Island.

**Discussion.** This species is very similar to the West Palaearctic *D. ferrugineus* (Marshall, 1888) and probably represents

its sister and vicariant East Palaearctic species. *Dendrosotinus taiwanicus* **sp. nov.** differs from *D. ferrugineus* in having the temple short (transverse diameter of eye 2.2 times longer than temple vs. 1.5–1.6 times in *D. ferrugineus*), the first flagellar segment weakly widened and long (vs. distinctly widened and short), the hind femur narrow (3.0 times longer than wide vs. 2.5–2.8 times in *D. ferrugineus*), the ovipositor sheath distinctly longer than metasoma and mesosoma (vs. equal to or weakly longer), the mesopleuron smooth around sternaulus (vs. distinctly granulate), and the hind tibia dorsally with numerous dense short setae and sparse rather long setae (vs. only with short and dense setae).

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