

A new subgenus of *Eotachys* JEANNEL, 1941 (Coleoptera: Carabidae), and a new *Eotachys* species from Madagascar

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Abstract

The new subgenus *Jeannelys* subgen.n. is established for *Eotachys* species with the dorsal pore of the elytra joining stria 4. *Eotachys* (s.str.) *enormis* sp.n. is described from Madagascar. A key to distinguish the *Eotachys* species of the Madagascan region is given.

Key words: Coleoptera, Carabidae, Trechinae, Bembidiini, Tachyina, new species, new subgenus, Madagascar, determination key.

Zusammenfassung

Die neue Untergattung *Jeannelys* subgen.n. wird für jene *Eotachys*-Arten eingeführt, die den Dorsalpunkt der Flügeldecken am 4. Streifen tragen. *Eotachys* (s. str.) *enormis* sp.n. wird aus Madagaskar beschrieben. Die *Eotachys*-Arten der madagassischen Region werden in einer Bestimmungstabelle aufgeschlüsselt.

Introduction

The sole specimen based on which a new species is described herein, was part of a recent investigation of Madagascan material and striking at first glance by its enormous size and unique shape of aedeagus.

There are various disputes concerning the status of *Eotachys* JEANNEL, 1941, if treated as synonym to *Paratachys* CASEY, 1918 or as a separate genus or subgenus of *Tachys* STEPHENS, 1829. JEANNEL (1941: 424, 426) established *Eotachys* as a separate genus and designated *Elaphrus bistriatus* DUFTSCHMID 1812 as the type species (see also LORENZ 1998: 82). Later, in his treatment of the Madagascan subregion (JEANNEL 1946: 338–344) he included seven species. BASILEWSKY (1968: 525–531) confirmed the status of *Eotachys* as a genus and described two further species for the Malagasy fauna, while three of JEANNEL'S (1946) species were transferred to *Polyderis* MOTSCHULSKY, 1862 or *Tachys* DEJEAN, 1821, respectively. Already BASILEWSKY (1968: 525–531) divided *Eotachys* into two lineages, one representing the typical *Eotachys*, which carries the dorsal pore of the elytra at stria 3, the other lineage with the dorsal pore at stria 4. The latter species group includes four species of the Malagasy region. It is morphologically well defined and described as a separate subgenus below.

ERWIN (1971: 236) synonymized *Eotachys* JEANNEL, 1941 with *Paratachys* CASEY, 1918, which was subsequently followed by SCIAKY & VIGNA TAGLIANTI (2003: 91). COULON (2004),

in his revision of the Palaearctic species, again treated *Eotachys* as a separate genus, based on the definition of *Paratachys* by CASEY (1918: 3, 174) who explicitly mentions the entire elytral stria 8.

The type species of *Paratachys* is *Paratachys austinius* CASEY, 1918, by original designation (CASEY 1918: 174). According to the original description of *Paratachys austinius*, this species possesses an entire elytral stria 8. Although the value of this character in a phylogeny of Tachyina might be under dispute, it is undisputed that at present the shaping of stria 8 has an immanent systematic significance. For example, also TORIBIO (2013: 173ff), in his revision of the Iberian species, treats *Eotachys* as a genus different from *Paratachys*. LORENZ (2005: 212) synonymized *Eotachys* and *Macrotachys* KULT, 1961 with *Paratachys* CASEY, 1918, which he treated as a subgenus of *Tachys* DEJEAN, 1821.

The definitions of tachyine genera still need a reconsideration based on their phylogenetic relationships on a global scale. In the meantime I follow the opinions of COULON (2004: 66–67) and COULON & WRASE (2009: 183 ff.) and treat *Eotachys* as a separate genus.

Material and methods

The holotype of *Eotachys enormis* sp.n. is dry mounted on a paper card. For preparation of the key, specimens of most species were examined, but the morphological characteristics of *E. (Jeannelys) mameti* and *E. (Jeannelys) euryodes* were obtained from the literature.

Measurements were taken with a calibrated Leica ocular scale at absolute magnifications of 39.1× for pronotal length and width, and 19.4× for all other measurements. All measurements in millimetres. Body length is measured from apex of mandible to apex of elytra. Maximum body width is situated just behind mid-length of elytra. Pronotum length is measured along median line from anterior edge to posterior one. Maximum pronotum width is measured normal to midline (situated before middle).

Terminology of elytral setae is used after ERWIN (1972: 12, fig. 3; 1974: 4, fig. 2). As acronyms eo for “ombilical” setiferous pores along margin of elytron, and ed for dorsal setiferous pores on disc of elytron are used. I do not follow the use of the term “interneur” (ERWIN 1974: 3–5) instead of the commonly used “stria”, as this just shifts the problem of descriptive and structural terms to another level and leads to more confusion, because “interneur” might be confused with the “interval” that describes the space between two striae. “Stria” is useful as a descriptive term; it describes what one can see and is sufficient for this plesiomorphic elytral structure.

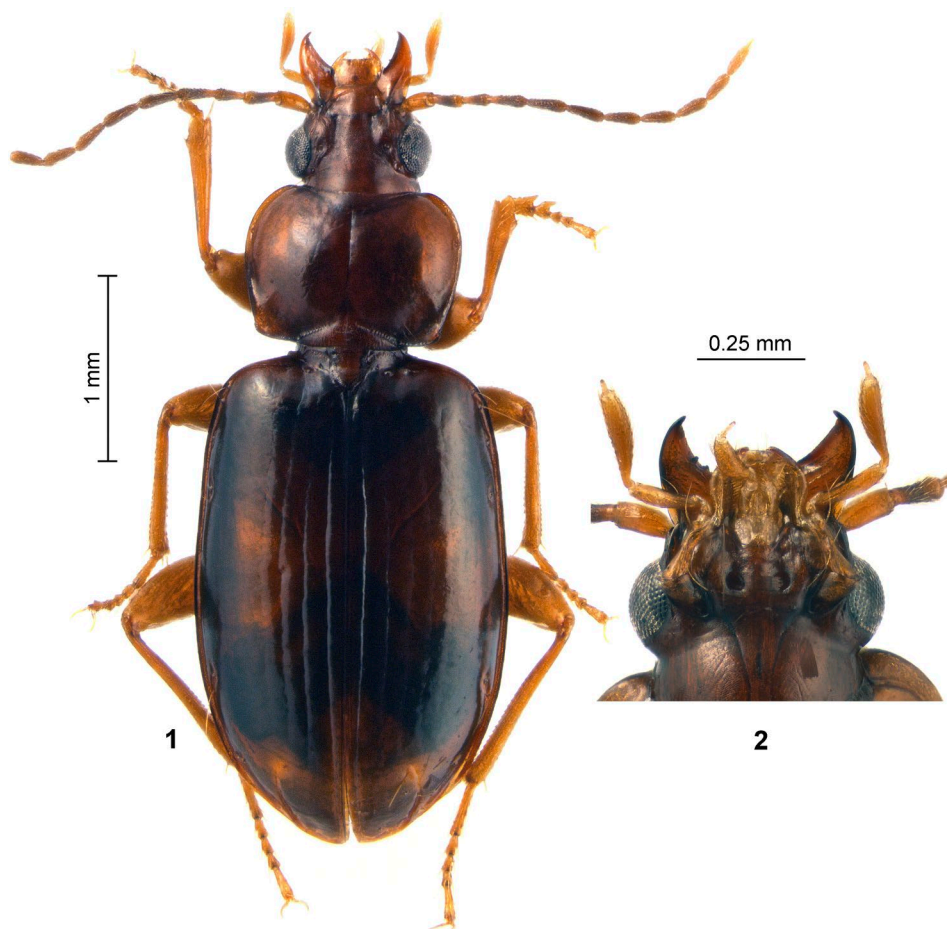
Taxonomy

Eotachys JEANNEL, 1941

Jeannelys subgen.n.

Type species: *Eotachys fasciatus* (MOTSCHULSKY, 1851) (= *Trechus fasciatus* MOTSCHULSKY, 1851) herein designated.

Recognition: A group of *Eotachys* species which are characterized by the dorsal pore inserted to stria 4 and by the male’s protarsomeres 1 and 2 that are slightly enlarged and minutely denticulated at medial (anterior) margin.



Figs. 1–2: *Eotachys* (s.str.) *enormis* sp.n., holotype (male): (1) Habitus, dorsal view. (2) Head, ventral view.

Description: Surface without pubescence. Head (Fig. 1): Eyes well developed; two supraorbital setae on each side. Scapus dorsally with one big seta in the middle and three smaller ones distally; antennomeres 2–11 pubescent with fine hairs. Antennal insertion behind base of mandibles, below level of clypeus; form of mandibles symmetric; right mandible with a short denticle near middle. Head without clypeo-postocular furrow.

Pronotum (Fig. 1) with one marginal seta before middle and a postangular seta.

Elytra (Fig. 1): Form slightly convex, not truncated at apex; elytral stria 8 obsolete, impressed only between umbilical pores 5 and 6, and 7 and 8 respectively. Elytral recurrent groove long and slightly arcuate, about in the middle of elytra, in a virtual prolongation of stria 4, reaching just beyond the third preapical pore (ed6); 4 posthumeral (eo1–4) and 4 preapical (eo5–8) umbilical pores, distance between eo1 and eo2 narrow, between eo3 and eo4 about twice as long as the previous, between eo2 and eo3 slightly shorter than distance between eo3 and eo4; pores eo1–3 joining elytral margin, eo4 spaced inwardly at a virtual stria 8.

Two very fine preapical pores (ed7, ed8) just before apex and another one (ed6) at the end of the recurrent groove. One dorsal pore (ed4) joining stria 4.

Ventral surface: Mentum with two big round and deep foveae (Fig. 2); last palpomere of maxillary and labial palpus subulate; precoxal cavities closed, mesepisternum not reaching mesocoxal cavity; abdomen with six sterna visible, ventral sternum 3–5 with a paramedian setiferous pore on each side; sterna 2 and 3 medially fused; suture between sterna 1 and 2 without foveae; peduncle without fovea.

Legs: Foretibia markedly notched apicolaterally, distal end with a deep incision on flexor side. All claws simple.

Subgeneric epithet: Combination of the surname of the great Entomologist René Gabriel Jeannel (1879–1965) and the last letters of *Tachys*. Gender masculine.

Included species: *Eotachys (Jeannelys) fasciatus* (MOTSCHULSKY, 1851), *Eotachys (Jeannelys) blemoides* JEANNEL, 1946, *Eotachys (Jeannelys) mameti* (ALLUAUD, 1933), and *Eotachys (Jeannelys) euryodes* (BATES, 1892) from Madagascar. Further species from other zoogeographical regions will probably be included in the future.

Eotachys (s. str.) enormis sp.n. (Fig. 1–7)

Material examined: Holotype (male): Madagascar, Andasibe National Park, Lokato, near Andasibe, 10.X.2007, leg. Zd. Mracek, in coll. Dostal (Vienna).

Recognition: A very large species of *Eotachys* distinguishable by its strongly chitinized aedeagus.

Description: Measurements: body length 4.41 mm, body width 1.71 mm, length of pronotum 0.85 mm, maximum pronotum width 1.22 mm.

Colour: Unicolorous reddish-brown, but some areas appearing paler due to transparency of integument (Fig. 1). Antennae and mouthparts lighter, yellowish-brown, antennomeres 2 to 11 darkened.

Microsculpture: Frons with fine, isodiametric microreticulation, clypeus with moderately transverse meshes, neck with distinctly transverse, very fine meshes. Labrum isodiametrically microreticulated. Lower surface of head finely microreticulated. Pronotum (upper and lower surface) and elytra with extremely fine, iridescent microreticulation. Scutellum with isodiametric microreticulation.

Head (Fig. 1): Antenna long, reaching just beyond posthumeral pore 4; antennomeres 1, 2, and 4–11 of approximately the same length, about 3.7× as long as wide, antennomere 3 distinctly shorter than antennomere 2, distinctly wider than long. Mandibles medium-sized, as long as head from anterior edge of clypeus to mideye-level, outside almost equally bent inwards, inner side more or less straight, both with acute apex; left mandible hardly broader than right one, without denticulation; right mandible with two very tiny basal denticulations and a distinct tooth before middle. Labrum 6-setose, anterior margin straight. Clypeus with one pair of distinct setiferous pores, anterior margin straight, unbordered. Frontal furrows shallow and broad, indistinctly limited. Postorbital furrow behind supraorbital seta fine. Neck not constricted, unpunctured. Eye slightly spherical. Postorbital area not developed; posterior edge of eye and neck forming an obtuse angle.

Ventral surface of head (Fig. 2): Submentum and mentum fused; submentum with two pairs of setae. Mentum with two big, round and deep foveae, with one pair of lateral

setae and one pair of basal setae; median tooth short and triangular; lateral lobes acutely, triangularly produced, with sharp apex, inner margins bordered, sides rounded, unbordered. Apex of glossa 4-lobulate, trisetose. Penultimate palpomeres pubescent, slender spindle-shaped; those of labial palpi somewhat bulbous, enlarged, widest in basal half, longer than preceding ones.

Pronotum (Fig. 1): 0.68× as long as wide, widest before middle, disc convex. Anterior angle broadly rounded and hardly produced forward, posterior one round, obtuse-angled, laterally very slightly produced. Sides continuously rounded from anterior angle to posterior one, more straight basally, but not sinuate before base. Anterior margin finely bordered at sides, in the middle unbordered. Sides bordered with a broad marginal channel, base bordered at sides only. Anterior transverse furrow obsolete in the middle, slightly impressed paramedianly, and joining anterior margin at sides. Median line fine and sharp, but not impressed. Basal transverse furrow at sides distinctly impressed and regularly and finely punctured, in the middle obsolete. Epipleura broad. Proepisternum broad, separated from prosternum by a distinct suture. Prosternum unbordered along anterior margin, bordered in front of procoxae; prosternal process between procoxae flattened and unbordered, without setae.

Elytra (Fig. 1, 3) 1.61× longer than wide, more or less oval, disc and sides slightly convex. Basal border not reaching scutellar pore. Scutellar striole missing. Scutellar pore present and not attached to any stria. Elytron with 3 slightly impressed, not line-like, unpunctured striae; striae 4 and 5 not impressed, but traces still recognizable by the change of microstructure. Stria 1 deepest, ending anteriorly in great distance to scutellum, the following ones are getting shorter anteriorly and become more shallowly impressed. Stria 8 obsolete, impressed only between umbilical pores 5 and 6, and 7 and 8, respectively. Recurrent groove long and slightly arcuate, positioned in about middle of elytra in a virtual prolongation of stria 4, reaching just beyond third preapical pore ed6. Four posthumeral (eo1–4) and four preapical (eo5–8) umbilical pores, distance between eo1 and eo2 small, between eo3 and eo4 about twice as long, between eo2 and eo3 slightly shorter than between eo3 and eo4. Pores eo1–3 joining elytral margin, eo4 spaced inwardly at a fictive stria 8. Two very fine preapical pores just before apex (ed7 and ed8) and another one at the end of the recurrent groove (ed6). One dorsal pore (ed4) joining stria 3.

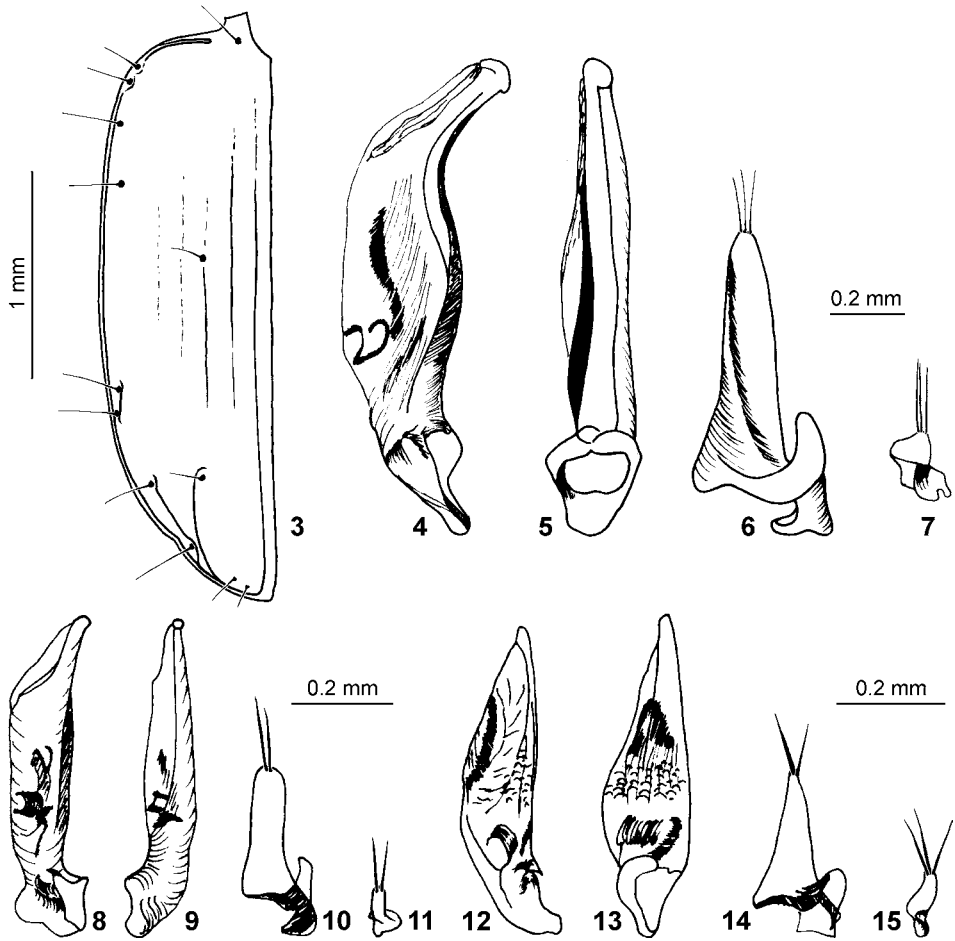
Legs (Fig. 1): Anterior tarsomeres 1 and 2 on the medial (anterior) side enlarged to a big denticle; tarsomere 4 apically truncated, not bilobed. Tarsomere 1 of hind leg as long as tarsomeres 2–4.

Venter: Abdominal sterna 3–5 with pairs of paramedian setiferous pores. Sternum 2 and 3 fused in middle; suture between sterna 1 and 2 and peduncle without foveae.

Male genitalia (Figs. 4–7): Median lobe of aedeagus (Figs. 4, 5) laterally flattened, ventrally strongly sclerotized, enlarged in the middle, apical third distinctly bent ventrally, dorsal opening occupying about the apical third; apex knob-like, with a small denticle. Internal sac basally with a bent U-shaped sclerite which is connected with a rather sclerotized membranous structure. Left paramere (Fig. 6) long, triangular, about 0.6× as long as median lobe, with a basal hook; its apex truncated, with 3 setae. Right paramere (Fig. 7) strongly reduced, about one fourth as long as left paramere, its base more or less normally attached to the vertical lobe, which has the shape of an almost equilateral triangle; apex truncated, with 3 setae.

Female genitalia: Unknown.

Geographical distribution: Central Madagascar.



Figs. 3–15: (3–7) *Eotachys* (s.str.) *enormis* sp.n., holotype (male): (3) Left elytra. (4) Median lobe, left lateral view. (5) Median lobe, ventral view. (6) Left paramere, lateral view. (7) Right paramere, lateral view. (8–15) Genitalia of males, (8–11) *Eotachys* (s.str.) *asemus* and (12–15) *Eotachys* (s.str.) *mirei*: (8, 12) Median lobe, left lateral view. (9, 13) Median lobe, ventral view. (10, 14) Left paramere, lateral view. (11, 15) Right paramere, lateral view.

Specific epithet: Latin adjective: *enormis*, *e* = out of norm, in this case it refers to the extraordinary size, which outclasses all other species of this genus.

Differential diagnosis: The new species is a typical representative of the subgenus *Eotachys* and is differentiated from all other species by its remarkable size. *Eotachys dentatus* (ANDREWES, 1925) is distinguishable by the dentate subhumeral margin of the elytra, the more anteriorly inserted second dorsal pore ed6, and 8 visible striae which are at least indicated by a row of coarse punctures. *Eotachys mirei* BASILEWSKY, 1968 has the sides of pronotum slightly sinuate before base, the disc of pronotum is distinctly isodiametrically microreticulated, and the elytron has seven distinct striae, of which striae 1–3

are distinctly impressed. *Eotachys asemus* BASILEWSKY, 1968 has a darker colour, the pronotum is slightly more transversal, the hind angles of the pronotum are more rectangular, and the sides of elytra are more rounded.

Regarding the structures of the male genitalia, the size is remarkable in the new species in comparison to the two following ones. *Eotachys asemus* (Figs. 8–11) has a more tube-shaped median lobe which is more or less straight and apically slightly bent ventrally, laterally less flattened; the apex is shortly rounded, knob-shaped. The left paramere is elongated rectangular, with a broadly rounded apex. *Eotachys mirei* (Figs. 12–15) has a median lobe that is more bullously enlarged before middle, almost round in cross-section, not flattened laterally; the apex is narrowly rounded, without knob. The lobe of the left paramere is triangular with an acute apex.

Key to the *Eotachys* species of the Madagascan Region

- 1 Dorsal pore of elytra inserted on stria 3. (*Eotachys* s.str.) 2
- Dorsal pore of elytra inserted on stria 4 or in interval 4. (*Jeannelys* subgen.n.) 5
- 2 Body length above 4 mm. Subhumeral margin of elytra not denticulate. Pronotum disc with extremely fine transversal microstructure; hind angles obtuse; sides continuously rounded, not sinuate before base. Elytron with 3 distinct striae and traces of striae 4 and 5; Central Madagascar. ***E. (s.str.) enormis* sp.n.**
- Body length below 3 mm. 3
- 3 Humeral margin of elytra distinctly dentate; posterior dorsal pore at apical third; 8 striae visible, at least as rows of coarse punctures. Colour yellowish-brown, sometimes with a faint dark band behind middle of elytra. Body length 2 mm. East Asia, Mauritius. ***E. (s.str.) dentatus***
- Humeral margin of elytra not dentate; hind posterior pore joining recurrent groove; less than 8 striae visible. 4
- 4 Pronotum with distinct, coarse isodiametric microsculpture. Colour uniformly reddish brown. Body length 2.6–2.9 mm. Central and East Madagascar, Nosi Be. ... ***E. (s.str.) mirei***
- Pronotum glossy, more or less iridescent, with very fine and transverse microsculpture. Colour uniformly dark brown. Body length 2.25–2.5 mm; North and East Madagascar. ***E. (s.str.) asemus***
- 5 Pronotum distinctly transverse, base as wide as anterior margin. Elytra wide, less than 1.5× as long as wide; striae distinctly punctured. Body length 2.2–2.4 mm. West Madagascar. ***E. (Jeannelys) fasciatus***
- Pronotum less transverse, base slightly narrower than anterior margin. Elytra longer, more than 1.5× as long as wide. 6
- 6 Elytral striae deep, distinctly punctured. Colour dark brown, iridescent; antenna dark with pale base. Body length 2.5 mm. Mauritius, Reunion. ***E. (Jeannelys) mameti***
- Elytral striae shallow, indistinctly punctured. Colour entirely testaceous. 7
- 7 Sides of pronotum deeply and longly sinuate. Elytra narrower, sides parallel. Body length 2.5 mm. Central and East Madagascar. ***E. (Jeannelys) blemoides***
- Sides of pronotum shortly sinuate. Elytra wider, oblong. Length 3 mm. South Asia, Mauritius, Reunion. ***E. (Jeannelys) euryodes***

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