

Z.Arb.Gem.Öst.Ent.	58	45- 52	Wien, 28. 4. 2006	ISSN 0375-5223
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A new species and a new record of *Thopeutica* CHAUDOIR, 1861 from Polillo Island, Quezon Province, the Philippines (Coleoptera: Cicindelidae)

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Abstract

Thopeutica (s.str.) *pangantihoni* sp.n. from Polillo Island (Quezon Province, the Philippines) is described and illustrated. The new species belongs to stem 5 in the *Thopeutica stenodera* species group (sensu CASSOLA & WARD 2004) and is closely related to *T.* (s.str.) *zetteli* CASSOLA & WARD, 2004 from Catanduanes Island. In addition, a second species of *Thopeutica* is recorded from Polillo Island, *T.* (s.str.) *interposita* (W. HORN, 1892).

Key words: Cicindelidae, tiger beetle, *Thopeutica*, new species, new record, Philippines, Polillo Island.

Zusammenfassung

Thopeutica (s.str.) *pangantihoni* sp.n. von der Insel Polillo (Provinz Quezon, Philippinen) wird beschrieben und abgebildet. Die neue Art gehört zum Stamm 5 der *Thopeutica stenodera*-Artengruppe (sensu CASSOLA & WARD 2004) und ist mit *T.* (s.str.) *zetteli* CASSOLA & WARD, 2004 von Catanduanes nächstverwandt. Zusätzlich wird eine zweite *Thopeutica*-Art von der Insel Polillo nachgewiesen, *T.* (s.str.) *interposita* (W. HORN, 1892).

Introduction

Tiger beetles (Cicindelidae) are an important insect family for biodiversity assessment and conservation aspects (CASSOLA & PEARSON 2000). The tiger beetle fauna of the Philippines is well known for a high degree of endemism, as almost 90 % of the species are distributionally restricted to this country. *Thopeutica* CHAUDOIR, 1861 is the largest genus in the Philippines and one of the most exclusive, because it is zoogeographically restricted to the Philippines and Sulawesi, Indonesia, and contains no species common to both countries (CASSOLA 1991, CASSOLA & WARD 2004). Recently, CASSOLA & WARD (2004) revised the Philippine species of *Thopeutica*. At that time, the country's fauna contained 26 species in two subgenera (four in *Philippinella* CASSOLA & WARD, 2004, 22 in the nominotypical subgenus). Obviously, *Thopeutica* specimens hardly can overcome sea channels, because all except two species seem to be geographically restricted to one island or to very few islands, which then were connected by Pleistocenic land bridges (dubious label data not considered). This paper treats two *Thopeutica* species from Polillo Island (Quezon Province), an island from where this genus was hitherto unknown. Polillo

is situated east of Luzon and is zoogeographically closely associated with the central part of this island, which is entomologically the best-explored one in the Philippine archipelago. Polillo and Luzon were connected by a land bridge during Pleistocene cold epochs, when the sea level had dropped by up to 140 metres. This large Pleistocenic island is called "Greater Luzon" and additionally has contained today's areas of Catanduanes, Marinduque, and some minor islands (see HEANEY 1986, ONG & al. 2002). This results in a similar fauna on species level, although some endemic species have been described from Polillo.

During a short expedition to Polillo by Clister V. Pangantihon (University of San Carlos) and the second author in 2003, two species of *Thopeutica* (s.str.) were collected in good numbers. The first species was identified as *Thopeutica interposita* (W. HORN, 1892) – despite some minor deviations in the colour pattern. The second species is described as new and named *Thopeutica pangantihoni* sp.n.

The description below follows the standards given in CASSOLA & WARD (2004).

***Thopeutica* (s.str.) *pangantihoni* sp.n.** (Figs. 1–2, 5–10)

Etymology: This new distinctive *Thopeutica* species is cordially dedicated to Clister V. Pangantihon, BSc student of Biology at the University of San Carlos, Cebu City, who not only helped in collecting the type series at Polillo Island, but proved to be a most efficient tiger beetle collector when in the field.

Type locality: Philippines, Quezon Province, Polillo Island, Panukulan, water shed area west of town.

Type material: Holotype (male), allotype (female), and paratypes (31 males, 38 females) labelled "Philippinen: Polillo Is.\ Panuculan, water shed\ area, 14.-15.2.2004, leg.\ Zettel & Pangantihon (367)", holotype, allotype, and some paratypes in the University of San Carlos (Biological Collections), Cebu City, Philippines, further paratypes in the collections of the authors, in the Museum of Natural History, University of the Philippines, Los Baños, Philippines, and in the Natural History Museum, Vienna, Austria.

Diagnosis: A small *Thopeutica* (s.str.) species, clearly belonging to stem 5 in the *T. stenodera* species group (sensu CASSOLA & WARD 2004); head dark, with some metallic hue and with green-bluish reflections on clypeus, antennal plates, suborbital declivity, and often on vertex too; pronotum subsquare, rounded on disc and on sides, dark golden-greenish, with green-blue metallic reflections on transversal grooves, along sides, and on posterolateral tubercles; disk, front and hind lobe of pronotum finely, but evenly and clearly shagreened; elytron dull black, basically six-spotted in both sexes: a small, roundish humeral dot on shoulder, a small narrow transverse posthumeral dot, a narrow, subtriangular transverse middle band (usually connected with rounded discal dot in centre of elytron to form narrow transverse horizontal line), a narrow, small, transverse, pre-apical dot and a transverse apical spot covering elytral apex except for black margin. Females without elytral mirror spot. Sutural spine small but evident in both sexes. Aedeagus conspicuously widened close to midlength.

Description: Length: 8.6–9.5 mm (without labrum), females in average larger than males.

Head dark bronze, almost black, with green-bluish reflections on clypeus, antennal plates, sides of vertex, and suborbital declivity; genae violet blue; head fully glabrous except

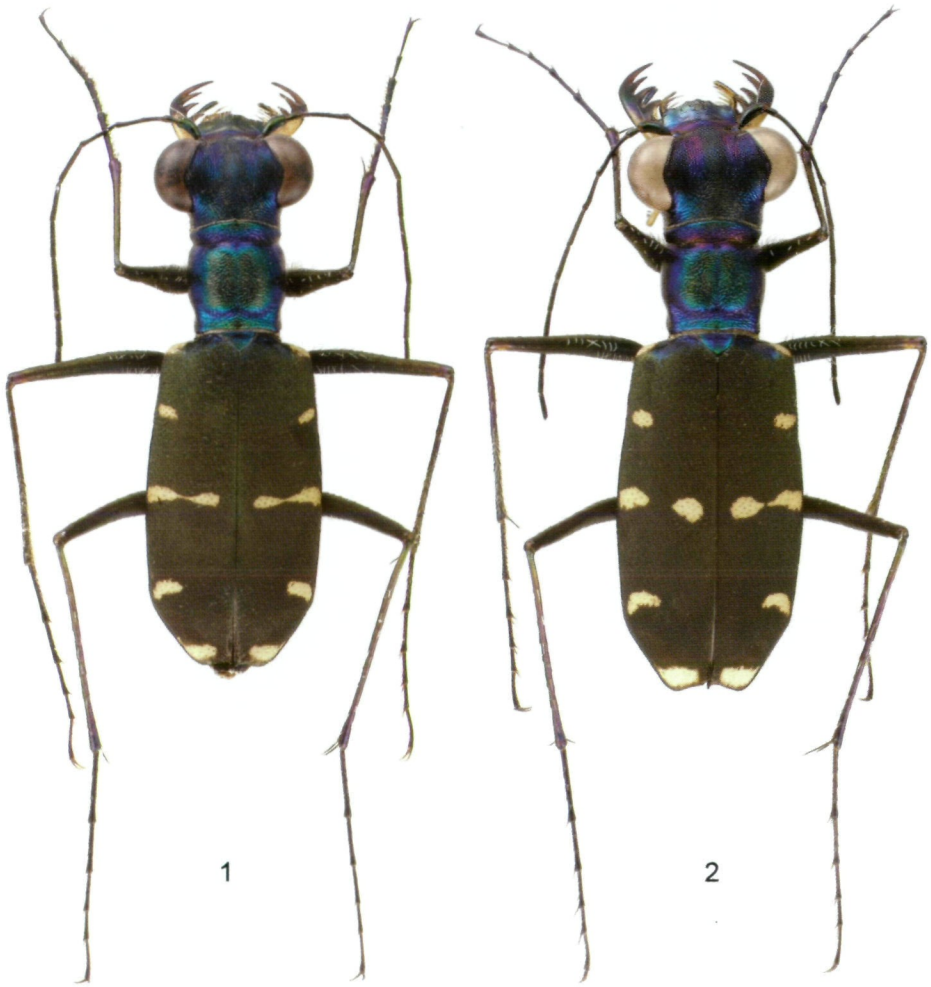
species	sex	n	L	L	W	W	L : W	L : W
			min – max	average	min – max	average	min – max	average
<i>T. zetteli</i>	males	8	1.57 – 1.74	1.68	1.54 – 1.76	1.67	0.97 – 1.03	1.01
<i>T. pangantihoni</i>	males	10	1.61 – 1.77	1.72	1.55 – 1.69	1.64	1.03 – 1.07	1.04
<i>T. zetteli</i>	females	5	1.66 – 1.77	1.70	1.70 – 1.85	1.76	0.95 – 0.99	0.96
<i>T. pangantihoni</i>	females	10	1.77 – 1.87	1.82	1.72 – 1.85	1.76	1.01 – 1.07	1.03

Tab. 1: Measurements of pronotum in *T. zetteli* and *T. pangantihoni* sp.n.: n = number of randomly selected specimens measured; L = median length of pronotum in dorsal view; W = maximum width of pronotum in dorsal view; min = minimum value; max = maximum value.

for two pairs of setae or setigerous punctures on fixed loci near dorsal eye margins. Striation extremely fine on frons, stronger on vertex and suborbital declivity, waved and oblique to transverse posteriorly on neck. Eyes pale yellow to brownish, globose. Labrum (Figs. 5, 6) much wider than long, weakly tridentate in middle of anterior margin, with central tooth usually acute and more protruding than obtuse submedial teeth (but reduced in a few small-sized specimens), completely metallic dark golden-bronze with greenish reflections; 6–11 (usually 8–10) submarginal setae in some distance from anterior edge, and 0–3 (usually 1–2) discal setae located behind medial pair of submarginal setae. Mandible basally whitish to testaceous, distally infuscated on outer part and more or less dark rufous on inner part and on teeth. Labial and maxillary palpi slender, yellow to testaceous, the last joint dark metallic green with extreme tip leucine to testaceous. Antenna slender, almost glabrous, in male reaching posterad nearly to midlength of elytron, in female slightly shorter, reaching posterad to about basal fourth of elytron; antennomeres 1–4 dark metallic, with green to violet reflections, with single long white seta close to tip of scape, with 1–4 spiniform setae on anterior margin of antennomere 3, and with 1–2 such setae on antennomere 4; antennomeres 5–11 dark, dull brownish-black, finely and evenly pubescent.

Thorax: pronotum subsquare, approximately as wide as long (measurements see Tab. 1), slightly rounded at sides and restricted posteriorly, fully glabrous; rims of front and hind lobes golden-green, transversal grooves and posterolateral tubercles blue to violet, disc with strong golden-green reflections; surface of disc, front and hind lobe finely but evenly and clearly sculptured and shagreened, sides of middle lobe slightly less shagreened; posterolateral tubercles poorly developed. Scutellum with bluish-green reflection. Episterna violet-black, smooth, with some white erect setae near anterior edge. Female mesepisternal coupling sulcus developed as deep pit near and below mesepimeral rim.

Elytra a bit wider than head with eyes, convex, slightly rounded along sides, with well-marked shoulders; dull black, with some bluish-green reflection on declined area of base



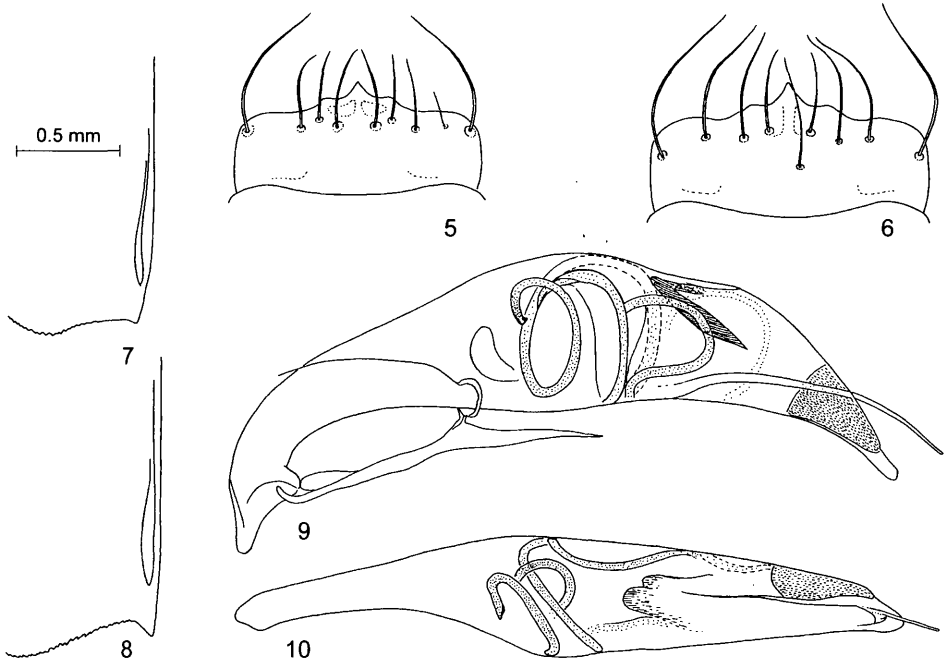
Figs. 1-2: *Thopetica pangantihoni* sp.n.: (1) habitus of male; (2) habitus of female.

only. Elytral punctures extremely fine and shallow, only poorly apparent in anterior half of elytra; female elytral mirror lacking. Apical border (Figs. 7, 8) slightly emarginated, with small but evident sutural spine in both sexes. Epipleura black, more or less metallic. White to yellowish elytral markings consisting in both sexes of the ordinary basic six spots: a small, roundish humeral dot on shoulder; a small transverse posthumeral dot; a narrow, subtriangular transverse middle submarginal spot (usually narrowly connected with rounded discal dot near suture to form a narrow transverse horizontal band, in few specimens narrowly interrupted on one side, in four specimens [= 6 %] interrupted on both sides); a narrow, small, transverse, pre-apical dot; and a transverse apical spot covering elytral apex except for the narrow black margin.



Figs. 3-4: (3) *Thopetutica zetteli*, habitus of male paratype from Catanduanes Island; (4) *T. interposita*, habitus of male specimen from Polillo Island.

Underside: Sternal pieces black; mesepimeron, metasternum, posterior part of mesepisternum, and sternum covered with white decumbent hairs. Abdominal sternites black, with some bluish reflections, last three externally visible ones covered with fine decumbent pubescence. Trochanters rufescent; femora metallic dark bronze with violet reflections above and green reflections below, with some rows (especially evident on the front legs) of white, curved hairs; "knees" narrowly metallic dark brown, tibiae and tarsi more or less tinged with metallic dark violet, with a few rows of short, spiniform setae; fore and middle tibiae additionally with numerous short white hairs on apical half.



Figs. 5-10: *Thopeutica pangantihoni* sp.n.: (5) labrum of male; (6) labrum of female; (7) apex of elytron of male; (8) apex of elytron of female; (9) aedeagus and left paramere, lateral view; (10) aedeagus, dorsal view.

Aedeagus (Figs. 9, 10) fusiform, arched, tapering, slightly inflated at midlength, ending in straight or very weakly curved apex; inner sac typical of the genus *Thopeutica* (see CASSOLA 1991, CASSOLA & WARD 2004), with very long, evolved flagellum which describes several convolutions. Parameres very slender and acute.

Comparative notes : Using the classification by CASSOLA & WARD (2004), *T. pangantihoni* sp. n. is obviously a member of stem 5 of the *T. stenodera* group. Species of this stem are characterized by the shape of the aedeagus which is basally to medially more or less inflated. Within this stem, the new species is very similar to *T. zetteli* CASSOLA & WARD, 2004, which was described from Catanduanes. Important characteristics in common are a similar body size, the identical shape of the aedeagus, and the lack of elytral mirror spots in females. Both species differ from all other Philippine species of the subgenus *Thopeutica* in the position of the discal spot on the elytron, which is approximately at the same level with the third lateral spot (or even slightly in front of it), but distinctly behind this spot in other species (comp. Figs. 1–3 with Fig. 4). A similar position is found in the subgenus *Philippiniella* CASSOLA & WARD, 2004, and the narrow, transverse, elytral marking of *T. pangantihoni* sp.n. (Figs. 1, 2) resembles in a curious way those of species of this subgenus, especially of *T. (P.) aenula* (W. HORN, 1905). Differences between *T. pangantihoni* sp.n. and *T. zetteli* are recognized in the colour of head and pronotum (Figs. 1–3), and in the more obviously shagreened and more elongate pronotum of *T. pangantihoni* sp.n. The ratio length/width of the pronotum clearly separates females and

does not show overlapping in males (see Tab. 1). Usually the armature of the labrum is also diagnostic, because in *T. pangantihoni* sp.n. the submedial teeth are obtuse and much shorter than the median tooth, while they are relatively sharp and similar in size to the median tooth in *T. zetteli*. However this characteristic is not applicable to small specimens of both species which tend to have a general reduction of the labral dentation.

As a consequence of the discovery of this new species, the key to stem 5 of the Philippine *Thopeutica* (CASSOLA & WARD 2004) has to be modified as follows:

- 1a. Head and pronotum primarily metallic green, cuprous, blue or violet. Females without elytral mirror spots. 2
- 1b. Head and pronotum primarily black, although usually with metallic highlights. Females with or without elytral mirror spots. 3 (continued in CASSOLA & WARD 2004)
- 2a. Pronotum smooth or with just a few irregular shallow wrinkles, without any shagreened appearance. *T. interposita*
- 2b. Pronotum blue-violet, with a slightly shagreened appearance. *T. zetteli*
- 2c. Pronotum golden-greenish, clearly shagreened. *T. pangantihoni* sp.n.

Habitat notes: *Thopeutica pangantihoni* sp.n. and *T. interposita* were collected in a water shed area close to the town of Panukulan. The hilly area is characterized by a degraded forest and a small, winding, and in most sections slowly flowing stream, which is the main water source of the town. In one of the examined sections, there is a steep water fall. Both species of *Thopeutica* were found on shaded, steep banks of this stream, but were usually absent from light places or flat banks. The species were relatively common on both rocky and soily banks. Although *T. pangantihoni* sp. n. and *T. interposita* were recognized as two distinct species in the field, no obvious differences in their habitat preferences were observed.

***Thopeutica* (s.str.) *interposita* (W. HORN, 1892) (Fig. 4)**

New material examined: 17 males, 22 females labeled "Philippinen: Polillo Is.\ Panukulan, water shed\ area, 14.-15.2.2004, leg.\ Zettel & Pangantihon (367)", deposited in the University of San Carlos (Biological Collections), Cebu City, Philippines, in the Museum of Natural History, University of the Philippines, Los Baños, Philippines, and in the collections of the authors.

Notes: This species is recorded from several provinces in northern and central Luzon and has a considerable intraspecific variability (CASSOLA & WARD 2004). A typical specimen from Polillo is depicted in Figure 4. For notes on the habitat see under *T. pangantihoni* sp.n.

Acknowledgements

We wish to thank Mr. Clister Pangantihon (University of San Carlos) for his great collecting efforts, which supplied the majority of the type specimens; Dr. Harald Schillhammer (Natural History Museum Vienna) for preparation of the habitus photographs; and Dr. Peter Cate (Vienna) for a linguistic review of the English text.

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Jahr/Year: 2006

Band/Volume: [58](#)

Autor(en)/Author(s): Cassola Fabio, Zettel Herbert

Artikel/Article: [A new species and a new record of *Thopeutica* Chaudoir, 1861 from Polillo Island, Quezon Province, the Philippines \(Coleoptera: Cicindelidae\). 45-52](#)