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A remarkable new species of the genus *Ganyopis* from Malacca, Malaysia (Curculionidae: Conoderinae, Mecopini)

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Abstract
Ganyopis notabilis sp. nov. is described and figured. It represents the fourth described species of *Ganyopis* and the second known from Malacca (Malaysia). Some morphological notes on the genus are also provided.

Keywords*:* Conoderinae, Malacca, Mecopini, morphology, species discovery.

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Introduction

The genus *Ganyopis* Pascoe,1871 belongs to the subfamily Conoderinae Schoenherr,1833, one of the largest and most peculiar subfamilies of weevils. Some tropical groups have an appearance and behavior that imitate certain flies and ants (Hespenheide 1984, 2002; Kojima & Lyal 2002), and interesting behavior related to mating have been observed in some Oriental species, such as marked territoriality and contests between males in the presence of conspecific females (Lyal 1986). These peculiar morphological and behavioral characteristics have always attracted the attention of weevil taxonomists (Pascoe 1871a, 1871b; Heller 1894, 1895), but their classification is still not stable and in need to continued study (Kojima & Lyal 2002; Anzaldo 2017). After the early work of Schoenherr (1825, 1826, 1837), the first classification of the Conoderinae was made by Lacordaire (1866), where the Old World and African Conoderinae were distinguished from those of the New World, based mainly on the morphological characters of the prosternum, metanepisternum and antennae. The members of the subfamily are grouped (Alonso-Zarazaga & Lyal 1999) into fifteen tribes: Arachnopodini Lacordaire, 1866, Campyloscelini Schoenherr, 1845, Conoderini Schoenherr,1833, Coryssomerini C.G. Thomson,1859, Coryssopodini Lacordaire, 1866, Lechriopini Lacordaire, 1866, Lobotrachelini Lacordaire, 1866, Mecopini Lacordaire, 1866, Menemachini Lacordaire, 1866, Othippiini Morimoto, 1962, Peloropodini Hustache, 1932, Piazurini Lacordaire, 1866, Sphadasmini Lacordaire, 1866, Trichodocerini Champion, 1906 and Zygopini Lacordaire, 1866 (Alonso-Zarazaga & Lyal 1999). The genus *Ganyopis* is currently placed in the tribe Mecopini (Alonso-Zarazaga & Lyal 1999; Pancini 2022) established to accomodate a small group of Old World Conoderinae including the genera *Mecopus* Schoenherr, 1825 and *Macrobamon* Lacordaire, 1866 (= *Odoacis* Pascoe, 1865) which possesses, unlike those of the New World, a non-canaliculate prosternum, antennal funicle composed of six segments and the first segment of the club elongate, as well as a thin metanepisternum interposed between the metacoxae and the lateral margin of the elytra. However, *Ganyopis* and its most closely related genus, *Agametis* Pascoe, 1870 have a canaliculate prosternum delimited by distinct lateral carinae, and a ventrally produced posterior margin of the mesoventrite. Unfortunately, Lacordaire's classification had been based on knowledge of only a small number of genera and species (Pascoe 1871a; Heller 1894).

When describing (Pascoe 1871) the genus *Ganyopis* and its type species *G. leucura* Pascoe, 1871 this English author noted the inadequacy of the Lacordaire's (1866) classification, therefore considering this group of weevils poorly known. However, this author did not introduce any new classification for the Old World Zygopinae, but simply modified the Lacordaire (1866) keys to include *Ganyopis* and *Agametis*, which have antennae composed of six segments, and a canaliculate prosternum. Moreover, he grouped some genera in a complex of "aberrant" Zygopinae, differentiating them

from the "true" Zygopinae by having a very thin metanepisternum, and much smaller eyes. Heller (1894) greatly appreciated Lacordaire's work, but he too, like Pascoe, considered his classification inadequate, due to the little material available to him, again preferring not to make substantial systematic changes. In the keys provided by Heller (1894), the Old World Conoderinae are separated from those of the New World only by the lack of prosternal canal, and by their six-articulated antennae. No changes are proposed for the Oriental species described in the same work, which have a canaliculate prosternum, such as *Ganyopis vandepolli* Heller, 1894and *Agametis rosea* Heller, 1894. In the absence of further systematic studies, the classification in five tribes of the Conoderinae of the Old World by Lacordaire (1866), was later adopted also by Heyne & Taschenberg (1908); however, the concept of Mecopini remained confused, and in the catalogs of Hustache (1934) and Blackwelder (1947), *Hedycera* Pascoe, 1870 is listed under the Mecopini, otherwise distributed in the Old World, and later transferred to Lechriopini in Wibmer & O'Brien (1986). According to Alonso-Zarazaga & Lyal (1999), Mecopini consists of twenty-two genera, present almost exclusively in the Indo-Malayan and Indo-Australian regions, with a few exceptions in the Palearctic and Afrotropical region. The references related to *Ganyopis* are poor. Following the Pascoe (1871) original description of *G. leucura* (so far known from Sumatra and Malacca), Heller (1894) described *G. vandepolli* from Borneo, and recently Pancini (2022) described *G. rubiginosa* Pancini, 2022 from Sulawesi. The new species here described was brought to my attention by our colleague Robert S. Anderson (Ottawa) during time he spent at the Natural History Museum, London, UK (NHMUK). It represents the fourth described species of *Ganyopis* and the second one known from the region of Malacca, Malaysia.

Material and Methods

Specimen morphology was observed under an LW-Scientific Z-2 stereomicroscope. Photos were taken with a Canon M-100 digital camera mounted on a macro bellows equipped with a Nikkor 50 mm enlarging lens. All images were stacked using a licensed version of the software Zerenestacker 8. Classification follows Alonso-Zarazaga & Lyal (1999), the morphological terminology used herein follows largely Lyal (accessed 2023). The holotype of the new species here described, was not dissected due to the frailty of the specimen.

Collection acronyms:
NHMUK The Natural History Museum, London, UK-Lorenzo Pancini private collection, Florence, Italy.
MSNG Collections of the Museo Civico di Storia Naturale "Giacomo Doria", Genoa, Italy.
MTD Museum für Tierkunde, Dresden, Germany

The following symbols and abbreviations are used in the text: / = Different line / / = Different labels
EL = Maximum length of elytra
EW = Maximum width across the elytra at the humeri.
PL = Maximum length of pronotum
PW = Maximum width of pronotum
RL = Maximum length of rostrum
RW= Maximum width of rostrum
TL = Length of the body in dorsal view, from the vertex to the apices of elytra

Ganyopis notabilis sp. nov.

(Figs 1A, B)

Holotype. 1 ♀, **Malaysia:** Malacca // Casteln // Fry Coll. / 1905. 100. // 25224// HOLOTYPE / *Ganyopis notabilis* / Pancini, 2023 (NHMUK).

Diagnosis. *Ganyopis notabilis* sp. nov.is easily recognizable from the other congeneric species by the anterolateral prominences on the pronotum, just behind the eyes, which are strongly developed, triangular in shape and anteriorly protruding beyond the apical margin of the pronotum. Furthermore, the elytra are slightly sinuate in the apical third (while linear to sub-linear in the other species), the humeri are nearly contiguous with the posterolateral side of the pronotum (while in *G. leucura* they are distinctly wider than the pronotum, and in *G.vandepolli* and *G. rubiginosa*, the humeri are obtusely angled and laterally protruding). The new species is also recognizable by the head with a small bulged semicircular area on the vertex, pronotum without dorsomedial carina, first article of metatarsus strongly developed, and second and third antennal segments of equal length.

Description. Holotype ♀. Body elongate. TL 11.5 mm, EW 3.9 mm. Integument reddish-brown, dorsally darker. Head and metarostrum densely covered with pale-yellow lanceolate scales, raised and darker on the interocular crest; antennae covered with scattered whitish poliform scales. Vestiture of elytra and pronotum primarily comprised of yellow-ocher scales; dorsally the scales are very small, rounded and mostly concentrated in the punctures; laterally the scales are more dense, longer and elliptical. Pronotum with a median longitudinal line of pale-blue scales. Elytrae with a black sutural lineup to the apical third,anda V-shaped patch of raised brown scales just before declivity; scutellum densely covered with yellow-ocher scales; intervals three and four with a thin line of pale-blue scales; interval seven with a small spot of dense pale- yellow scales in the middle; interval ten with an elongated subbasal patch of black scales; declivity and the two spine-like prominences just before, densely covered with yellow-ocher lanceolate scales, with scatterred small spots of pale-yellow scales; lateral margin of the elytra bordered by a thin line of piliform white scales. Lateral sclerites and ventral side densely covered with whitish elliptical scales,

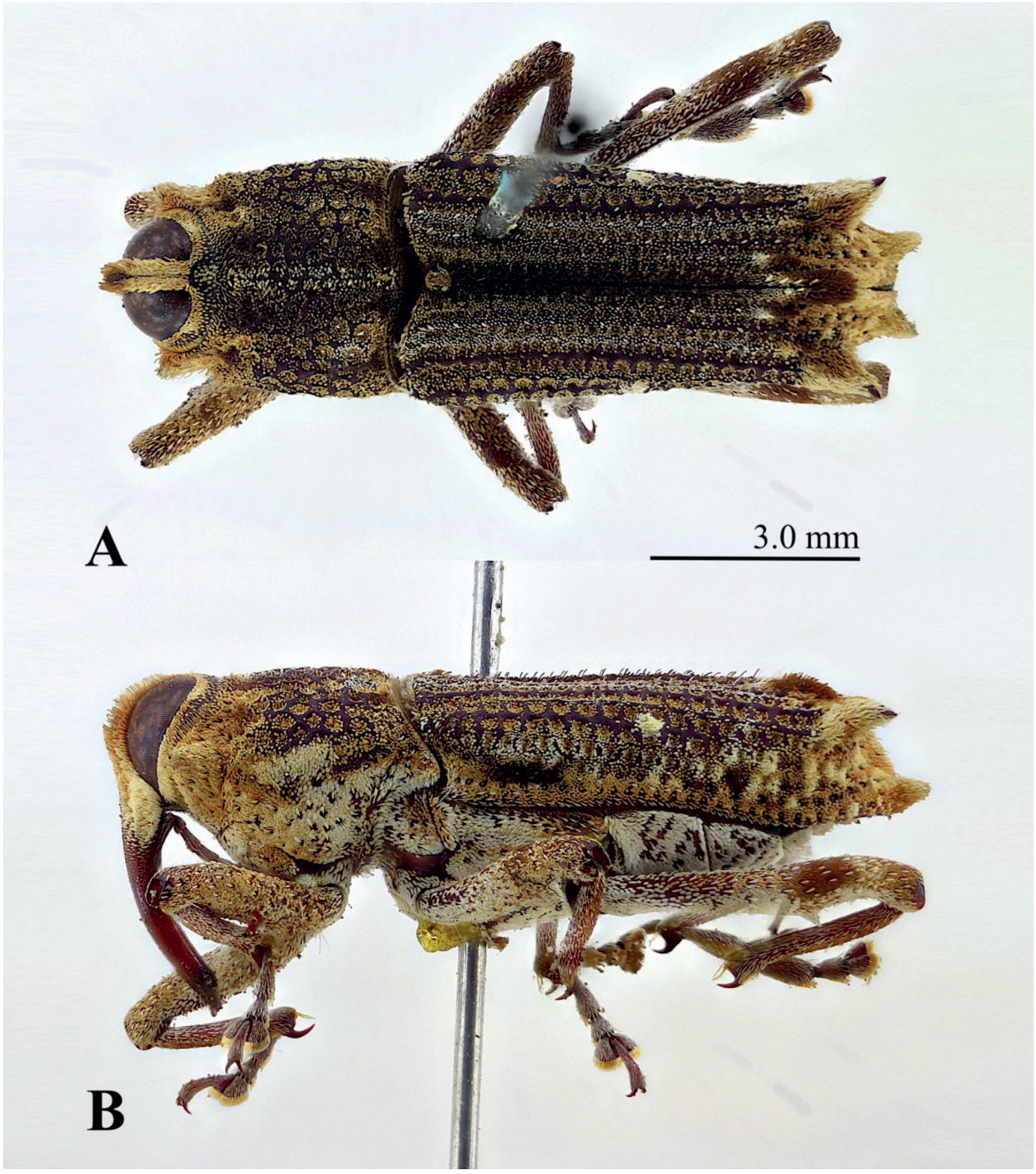

Fig. 1A, B – *Ganyopis notabilis* sp. nov.; **A**, Holotype female, dorsal view; **B**, Holotype female, lateral view.

with scattered small punctures, each bearing one pale-white elliptical scales, central portion of second, third and fourth ventritesglabrous. Legs mostly covered with dense, oval yellow-ocher scales, whitish, thinner and longer on tibiae; femorae with scattered small punctures, each bearing one pale-white elongate scale, metafemur with large brown scaled spot on dorsal side, inner side of mesofumur and metafemur covered with oval white scales. Tarsi covered with thin, elongate whitish scales. Head with a small, semi-circular bulged area on the vertex; eyes large, suboval, finely faceted; interocular space raised, with a thin, median carina, sharply widened in the middle, with a crest of long, raised lanceolate scales on on both sides; rostrum weakly arcuate, longer than pronotum, RL 3.0

mm,RW 0.9 mm; metarostrum subtriangular, raised at the base, dorsally contiguous to the interocular crest, with five carinae up to antennal insertion, central carina shiny, thin, distinct, lateral carinae weak, almost entirely covered with scales; prorostrum smooth, with small, scattered, shallow punctures, moderately widened and strongly depressed at apex;scrobe lateral-oblique; scapeinserted near middle,not reaching eye, slightly arcuate, clavate at apex. Antennae moderately long, segment one conical, segment two slightly clavate, 2.0 times as long as segment one, segment three same as two, segments four, five and six moniliform, of equal length, 0.8 times as long as segment one; club compact, oblong with rounded apex. Pronotum subquadrate, PL 2.8mm, PW 3.7mm, flat in lateral view, with weakly bisinuate base, abruptly constricted at apex and at anterolateral pleural margin, with two large postocular prominence, just befhind the eyes, triangular in shape, directed anteriorly beyond the apical margin; pronotal disc with coarse, large, shallow punctures, which are entirely covered by scales in the posterolateral side. Scutellum rounded, slightly raised. Elytra sublinear, EL 7.8mm, slightly wider than pronotum, humeri rounded, slightly sinuate in apical third, mucronate at apex, with two large spine-like prominence just before declivity on elytral intervals four and six, strongly rounded at base, imbricate on pronotum, flat in lateral view, raised before declivity, which is steeply declivous,lateral margin slightly sinuate above ventrite one. Ten striae visible, tenth stria reaching level of mesocoxae, with punctures large, circular, slightly smaller in striae one to four; Elytral intervals narrower than the striae, intervals five, six and seven slightly convex and glabrous until declivity. Lateral sclerites with sutures partially covered by scales; mesanepisternum broad, triangular, mesepimeron sub-elliptical, metanepisternum narrow, linear, slightly enlarged on anterior side, lateral portion of metaventrite wide and sub-rectangular. Femora toothed, sub-linear, ventrally curved to distal apex, metafemur longer than others, not exceeding elytral apex; tibiae linear, mesotibia and metatibia equal in lenght, protibia slightly shorter; all tibiae with well-developed uncus and two long, thin spurs on the inner apical margin. Tarsi with tarsomere five long, with simple claws; protarsus and mesotarsus equal in length, with tarsomere one slightly shorter than two and three together, tarsomere two trapezoidal, tarsomere three transverse; metatarsus longer than the other tarsi, with tarsomere one distinctly wider than tarsomere two, conical, longer than two and three together. Venter with basisternum canaliculate, bordered by two thin, smooth carinae; procoxae contiguous; mesosternum glabrous, with small punctures, each bearing a decumbent scale, posterior margin coverd by scales, sligthly produced ventrally, with a median depression and slightly raised posterolateral margins, metaventrite broad, slightly longer than ventrite one, projected posteroventrally over premetacoxal area; discrimen distinct; ventrites with deep sutures, hardly visible in middle between ventrite one and two, ventrite one twice as long as two, slightly depressed, intercoxal process with rounded anterior margin,ventrite two strongly convex, slightly longer as ventrites three and four together, wich are equal in lenght, ventrite five as long as ventrite three and four together.

Etymology. The specific epithet "*notabilis*" (Latin adjective: notable) refers to the characteristic feature of the anteriorly directed pronotal tubercles, which distinguish this species from any other congeneric species.

Morphological notes. *Ganyopis* is very similar in appearance to the genus *Agametis* in having an elongate body with linear to sublinear elytra, canaliculate prosternum and the posterior margin of the mesoventrite ventrally produced. It is easily distinguished from *Agametis* by having shorter and more robust antennae, with the second segment about twice as long as the first and the sixth subcontiguous with the club, rostrum raised at base, forming a crest between the eyes, elytra singularly mucronate at apex, with basal margin slightly overlapping the base of the pronotum, and with two large spine-like prominences just before the declivity. Moreover, the males of *Ganyopis* have an elliptical to sub-elliptical fovea, or a shallow longitudinal apical groove, on the external apical margin of the protibiae.

According to Kojima & Lyal (2000), the genera *Agametis* and *Ganyopis* should be removed from the Mecopini and placed in a new tribe. Furthermore, affinities with the New World tribe Zygopini are noted, but no study has yet been published, and the reasons for these suggested changes are not known to me. However, during the preliminary preparation of the description of the new species, it was possible to differentiate *Ganyopis* and its most closely related genus, *Agametis* from the eleven examined genera of Mecopini on the basis of the modifications of the prosternum and metaventrite, which represent characters of importance for the identification of tribes and genera of Conoderinae. In *Ganyopis,* the rostral canal is present on the prosternum up to the procoxae, and is open, moderately wide, covered with dense scales and bordered by two smooth, slightly raised carinae; the mesoventrite is long, almost glabrous, with a scaly, trapezoidal or square-shaped posterior margin, slightly ventrally produced, with a posteromedial depression. These modifications of the prosternum and mesoventrite seem similar to those present in some genera of Neotropical Conoderinae belonging to the tribe Zygopini, such as *Peltophorus* Schoenherr, 1845 and *Philinna* Champion, 1906, but not in the shape of a channel to receive the rostrum. However, no rigorous comparison has yet been made with specimens belonging to these genera.

The following comparative materials were examined:
Ganyopis leucura: 2 ♀♀: Sumatra / Palembang // DONKIER (MSNG); 1 ♂: Malacca / Wallace // det. Heller 1893-1912 (MSNG); 1 ♀: Soekaranda / Lankat-Deli / O. Sumatra (MSNG); 1 ♂: Laos / Det. Heller 1893-1912 (MSNG).

Ganyopis vandepolli: 1 Sintype ♂: Brunei, N. Borneo / Waterstradt (MSNG); 1 Sintype ♀: Borneo / Doesonlanden // (WAHANES) (MSNG); 1 Sintype ♂: Brunei, N. Borneo / Waterstradt (MSNG); 1 ♀: Indonesia, Barat prov. / Singkawang reg., Mt. Bawang /1000-1500 a.s.l., Madi vill. env. / 15-1-2019, local collector (LPPC).

Ganyopis rubiginosa: Holotype ♂: Indonesia: Sulawesi / Kamarora vill. env. / 03-21-2017 / local collector (MSNG); 2 paratypes ♂♂: Indonesia: Sulawesi Utara / Gng. Ambang F.R. / nr. Kotanobagu / 4 feb. 1985 / 1200 m // R. Ent. Soc. Lond. / Project Wallace / B.M. 1985-10 // 141-30 (NHMUK); Indonesia: Sulawesi / Kamarora vill. env. / 03-21-2017 / local collector (MTD) / 03-21-2017 / local collector (MTD).

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