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A new species of *Gaindaphodius* Král and Mencl from Nepal  
(Coleoptera: Scarabaeidae: Aphodiinae)

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# A new species of *Gaindaphodius* Král and Mencl from Nepal (Coleoptera: Scarabaeidae: Aphodiinae)

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**Abstract.** A new species from Nepal, *Gaindaphodius marigold* (Coleoptera: Scarabaeidae: Aphodiinae), is described, illustrated and compared with *G. gainda* Král and Mencl, 2024, the only other species in the genus *Gaindaphodius* Král and Mencl, 2024.

**Key words.** Taxonomy, Scarabaeoidea, Asia, Bagmati Pradesh, Terai, coprophagy.

**ZooBank registration.** urn:lsid:zoobank.org:pub:C18D0E89-34D2-452F-B836-BA6A1A6411C5

## Introduction

Král and Mencl (2024) established the Aphodiini genus *Gaindaphodius* for *G. gainda* Král and Mencl, 2024. The genus is characterized mainly by the presence, in females, of a brush of fine, short setae covered by a yellowish waxy coating on the second abdominal ventrite. The function of this structure has yet to be defined (Král and Mencl 2024). A lucky trip to Nepal gave me the opportunity to collect and study specimens of a species which turned out to be undescribed, a second species of the genus *Gaindaphodius*.

## Materials and Methods

Terminology of external morphology, male genitalia and the epipharynx is according to Dellacasa et al. (2001). Specimen measurements are given in the corresponding diagnostic features. Characters and character states of *Gaindaphodius gainda* have been examined through the numerous and clear photos present in Král and Mencl (2024). Initialisms of the collections in which the material is retained are as follows:

**DCCG** Giovanni and Marco Dellacasa private collection, Genoa (Italy)  
**NHMUK** Natural History Museum, London (United Kingdom)  
**NMPC** National Museum (Natural History), Prague (Czech Republic)  
**SZCM** Stefano Ziani private collection, Meldola, Forlì (Italy)

## Systematic Account

Superfamily Scarabaeoidea Latreille, 1802  
Family Scarabaeidae Latreille, 1802  
Subfamily Aphodiinae Leach, 1815  
Tribe Aphodiini Leach, 1815  
Genus *Gaindaphodius* Král and Mencl, 2024

### *Gaindaphodius marigold* Ziani, new species

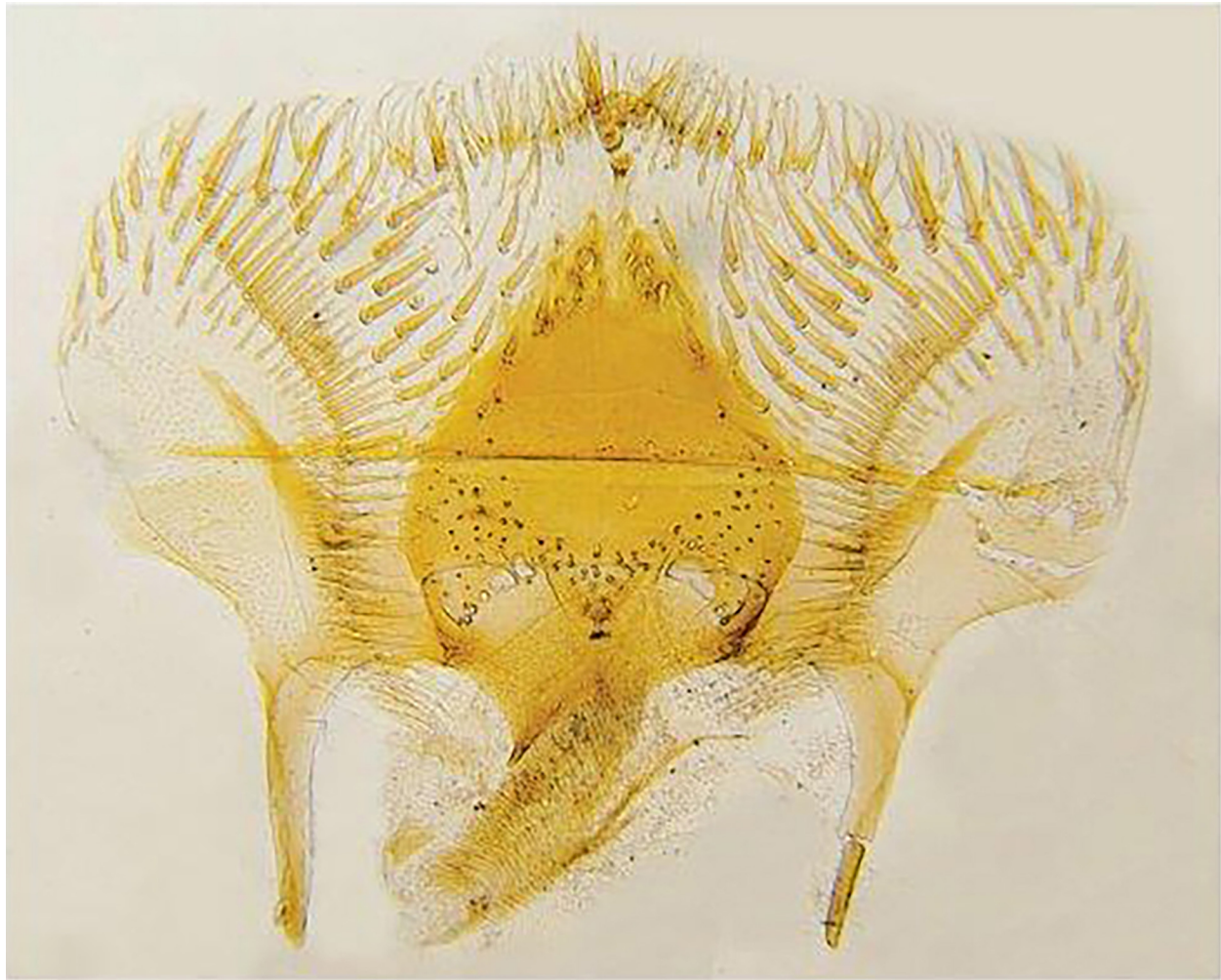
(Fig. 1–5)

**Type locality.** NEPAL: Bagmati Pradesh: near Megghauli (Chitwan District), 150 m, 27°33'33"N 84°13'28"E.

**Type series.** Holotype ♂ and allotype: NEPAL: Bagmati Pradesh, nearby of Megghauli (Chitwan District), 150 m, 27°33'33"N 84°13'28"E, 31.iii.2024, S. Ziani leg.. 38 paratypes: same data as holotype; 4 paratypes: NEPAL: Bagmati Pradesh, nearby of Jagatpur (Chitwan District), 170 m, 27°33'51"N 84°19'59"E, 31.iii.2024, S. Ziani leg.



**Figure 1.** *Gaidaphodius marigold* n. sp., paratype ♂ (Nepal, Bagmati Pradesh), habitus. Photos by A. Degiovanni, edited by G. Fiumi.



**Figure 2.** *Gaidaphodius marigold* n. sp., holotype ♂ (Nepal, Bagmati Pradesh), epipharynx. Photos by A. Degiovanni, edited by G. Fiumi.

**Type depository.** Holotype and allotype in NMPC; paratypes in NHMUK, DCCG and SZCM.

**Type labelling.** Holotype bears two labels, as follows. 1st, white, printed in black “NEPAL–Bagmati Pradesh / nearby of Meghauli (Chitwan) / 27°33'33"N 84°13'28"E 150m / 31.iii.2024 S. Ziani leg.”; 2<sup>nd</sup>, red, printed in black “Holotype / *Gaidaphodius* / *marigold* mihi / S. Ziani 2024”.

**Etymology.** The specific name refers to the predominant light orange colour of the new species. In Nepali culture, the yellow/orange marigold flower (*Calendula* sp.) is a symbol of energy, enthusiasm and creativity, and is also used in religious ceremonies and to welcome foreign people. The name, taken from the Nepalese मैरीगोल्ड (“*Mairigōlḍa*”), that means *Calendula* L., is applied as a noun in apposition.

**Description (Fig. 1).** **Holotype** ♂. Oblong, strongly convex, shiny. Total body length 7.6 mm. Yellow or light orange, with anterior edge of clypeus, external edge of protibiae, apex of protibial spur, basal edge of pronotum, apex of meso- and metatibae, and scutellum brownish black. In addition: head with a blackish oval spot above frontal suture; pronotum with a blackish spot laterally, on each side and a symmetrical posteromedian spot, always blackish brown, heraldry halberd shaped, with the base reaching pronotal base; elytra with a blackish band place at middle of length, interrupted on elytral disc and reaching externally ninth interstria, and humeral and preapical blackish spots. Pubescence yellow. **Head.** Head with epistome gibbous; clypeus very thinly bordered, margin distinctly upturned, very slightly or not at all emarginate at middle, not sinuate at sides; genae rounded,

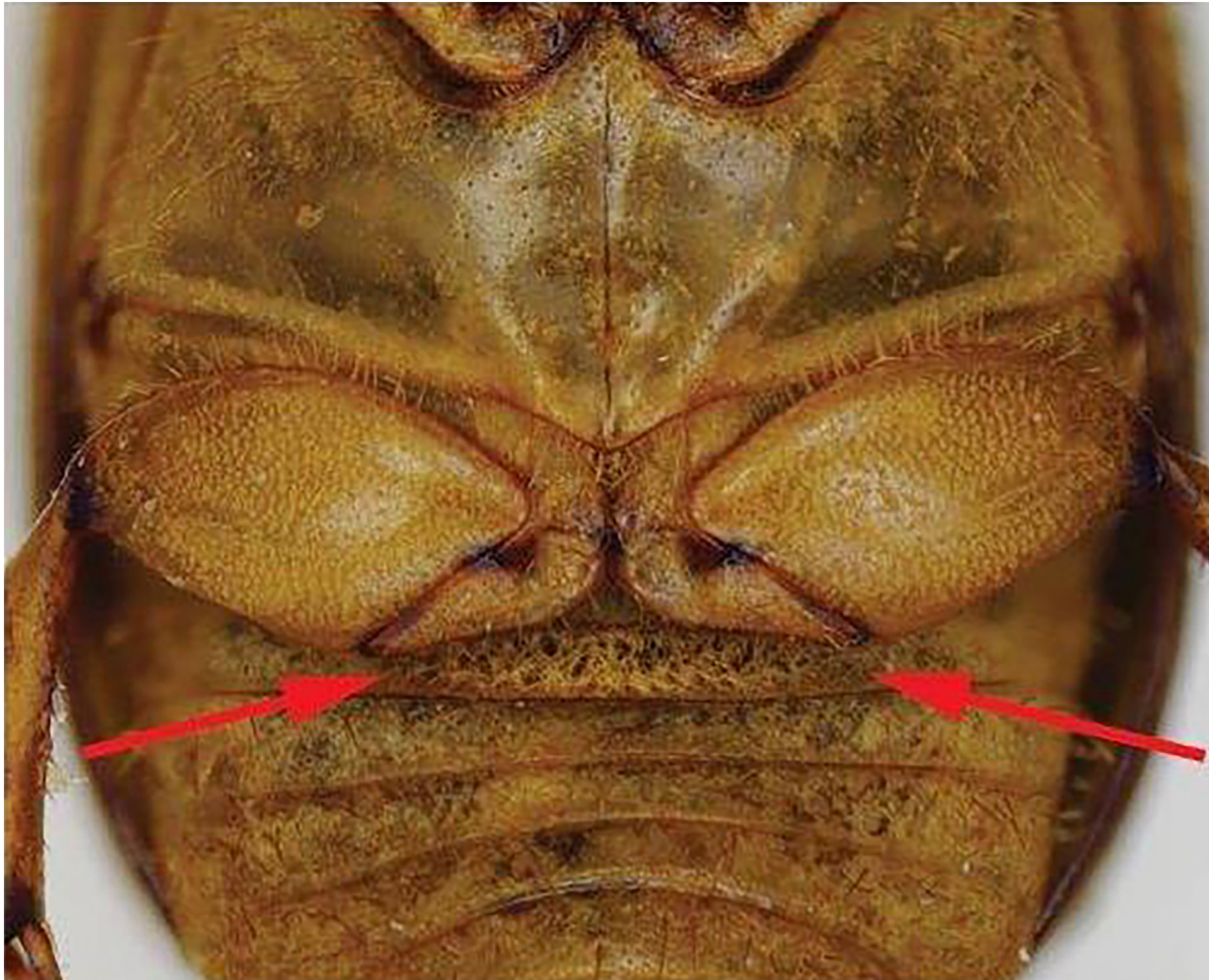


**Figure 3.** *Gaindaphodius marigold* n. sp., holotype ♂ (Nepal, Bagmati Pradesh), aedeagus. **a)** Lateral view. **b)** Dorsal view. Photos by A. Degiovanni, edited by G. Fiumi.

not auriculate, with yellow bristles, protruding from eyes external edge; frontal suture impressed, trituberculate, lateral tubercles weak, central one developed, horn-shaped, almost sharp apically, slightly curved backward; clypeal surface very shallowly and regularly punctate. **Pronotum.** Convex, irregularly and sparsely punctate; anteromedian fovea present, even if barely discernible; lateral pronotal margin obliquely truncate and slightly sinuate before posterior angles, the latter rounded; lateral and posterior margins distinctly bordered, the former with short setae infuscate on propleuron but visible from above. **Scutellum.** Small, triangularly widened, almost amygdaliform, strongly punctate on basal half, smooth apically. **Elytra.** Elongate, convex, sides nearly parallel at middle, not denticulate at shoulders; striae strongly impressed and crenulate; interstriae convex, finely sparsely punctate, pre-apically with short yellow setae. **Metasternal plate.** Slightly concave, glabrous, barely and sparsely punctate. **Abdominal ventrites.** Pubescent, with yellow sparse setae. **Legs.** Protibiae with three external teeth, apical spur stout, bent down- and outward, as long as or slightly shorter than first two tarsomeres combined; ventromedial carina with a series of various sized denticles, the one at apex longer than others; mesotibiae relatively short and widened apically, with two spurs at apex, the inferior one shorter than the upper one, clearly truncate, almost hooked apically; metatibiae more elongate than mesotibiae, with the apical fringe of spinules stout and, approximately, of the same length, upper spur shorter than the first tarsomere, the latter longer than following two combined. **Epipharynx.** Feebly sinuate at front margin (Fig. 2); epitorma drop-shaped; corypha with short, rather stout apical celtes, moderately protruding beyond frontal margin; pedia densely pubescent; chaetopariae short and dense. **Aedeagus.** Slender, with paramera acuminate and, in lateral view, distinctly curved apically (Fig. 3a,b). Macropterous.



**Figure 4.** *Gaidaphodius marigold* n. sp., allotype (Nepal, Bagmati Pradesh), habitus. Photos by A. Degiovanni, edited by G. Fiumi.



**Figure 5.** *Gaindaphodius marigold* n. sp., paratype ♀ (Nepal, Bagmati Pradesh), detail of abdomen, ventral view. Photos by A. Degiovanni, edited by G. Fiumi.

**Allotype (Fig. 4).** Total body length 7.0 mm. Frontal suture of head with tubercles less developed, especially the central one. Apical spur of protibiae shorter, reaching only half of second tarsomere. Pronotal punctation closer than that of holotype; anteromedian fovea absent. Inferior spur of mesotibiae short but not apically truncate. Metasternal plate almost flat. Second abdominal ventrite with a brush of fine, short and very close setae, light yellow, covered by what looks like waxy coating, yellow and fine (Fig. 5, marked by two red arrows).

**Variation.** The specimens belonging to the type series show a uniformity in black patterns of the upper surface, which is rather astonishing in a species with such chromatic characteristics. Significant differences, however small, can be observed only in the elytral band, more or less extended but always interrupted near suture and in the shape of the pronotal posteromedian pattern, in a few specimens less extended. The total length of the body ranges from 5.9 to 7.9 mm.

**Distribution and ecology.** *Gaindaphodius marigold* new species is known from two Nepalese localities, both in Bagmati Pradesh, not far apart and very close to the border of Chitwan National Park. It is coprophagous, and all the specimens of the type series have been collected in dung from the Indian rhinoceros (*Rhinoceros unicornis* L.).

**Diagnosis.** This new species undoubtedly belongs to the genus *Gaindaphodius* Král and Mencl, 2024 due to the presence of the characteristic brush on the second abdominal ventrite (Král and Mencl 2024). It is the second known species in the genus, after the type species *G. gainda* Král and Mencl, 2024. *Gaindaphodius marigold* new



**species** is also similar to *G. gainda* in having the pronotal black pattern heraldry halberd shaped, and the black spot on head. Differences between the two species are as follows. First, the overall color of the upper surface of the body: head, pronotum and elytra are dark red in *G. gainda*, ochre yellow/light orange in *G. marigold*. In addition, the new species shows black spots on pronotal sides, on shoulders and at elytral apex, and always blackish, a band interrupted on elytral disc. Underside, *G. gainda* presents protibiae, meso- and metafemura, meso- and metatibiae, meso- and metasterna blackish, whereas *G. marigold* features an uniform colour yellow ochre. Furthermore, in males of *G. gainda* the pronotal punctation is limited to the basal and lateral part, while in males of *G. marigold* it is present, even if spaced and irregular, across the entire pronotal surface. Lastly, the total body length of *G. gainda* (from 11.2 mm to 11.9 mm) is clearly larger than that of *G. marigold* (from 5.9 mm to 7.9 mm).

## Discussion

From a biogeographical point of view, the distribution of *G. marigold* presents an unusual situation: it has been collected in the same Nepalese province (Bagmati) and in the same district (Chitwan) in which *G. gainda* has been collected. The type locality of *G. gainda* is just over ten kilometres from the type locality of *G. marigold*. The critical difference is that one species has been sampled in late autumn, the other in spring. It can be reasonably assumed that the November taxon does not appear in March, and vice versa. Since *G. marigold* is an adelphotaxon of *G. gainda*, the question to be asked is: does it make sense to speak of temporal (or phenological) vicariance? If that were the case, the biogeographical relationship between these sister species would not be a geographical vicariance – as they share the same distribution, not an ecological vicariance – as they share the same biota, but a vicariance that contemplates a different phenology.

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This paper is dedicated to the memory of Giovanni Dellacasa (Genoa – Italy), recently passed away, a well-known worldwide specialist of Aphodiini.

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