

Two new *Carabus* Linnaeus, 1758 species from Vietnam (Coleoptera Carabidae)

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ABSTRACT Two new *Carabus* Linnaeus, 1758 (Coleoptera Carabidae) belonging to subgenus *Apotomopterus* Hope, 1838 are described and depicted: *C. (Apotomopterus) tenuicostatus* n. sp. and *C. (Apotomopterus) artemisioides* n. sp. The two new species come from the mountains of North-Western Vietnam, Lai Chau Province.

KEY WORDS Coleoptera; Carabidae; *Carabus*; *Apotomopterus*; new species; Lai Chau; Vietnam.

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INTRODUCTION

The *Apotomopterus* Hope, 1838 is the larger subgenus of the genus *Carabus* Linnaeus, 1758 (Coleoptera Carabidae) in terms of number of species. It is mainly distributed in the subtropical regions of China and reach its Southern distribution limit in the Northern part of Southeastern Asian Countries.

In this paper two new *Apotomopterus* species from Northwest Vietnam, Lai Chau province are described and depicted: *C. (Apotomopterus) tenuicostatus* n. sp. and *C. (Apotomopterus) artemisioides* n. sp. The two new species coexist in their typical locality and are sympatric with *C. (Apotomopterus) tonkinensis* Deuve, 1990. This fact is very important as it confirms their status of separate species.

To date, only 6 species of *Carabus* were known from Vietnam, all of them belonging to the subgenus *Apotomopterus* (Jong Kyun Park, 2006; Kleinfeld, 2019; Deuve, 2021) therefore the description of the present two new species is very significant for the fauna of this country.

RESULTS

Systematics

Ordo COLEOPTERA Linnaeus, 1758
Subordo ADEPHAGA Schellenberg, 1806
Familia CARABIDAE Latreille, 1802
Subfamilia CARABINAE Latreille, 1802
Genus *Carabus* Linnaeus, 1758
Subgenus *Apotomopterus* Hope, 1838

Carabus (Apotomopterus) tenuicostatus n. sp.
<https://zoobank.org:act:DF8068A8-8FA0-48E6-9099-3699C6A9770B>

MATERIAL EXAMINED. Holotype male: Vietnam, Lai Chau, Tam Duong, IX.2022. Paratypes: 5 males and 7 females: same data as the holotype. The holotype is temporarily housed at the author's collection (Prepotto, Udine, Italy) waiting to be definitively deposited in a public Institution (Figs. 1–5).

DESCRIPTION OF HOLOTYPE. Male. Very elongate and slender shape. Length including mandibles: 27.5 mm, maximum width of elytra: 7.4 mm. Dor-

sal side black, elytra mat; head and pronotum rather shine. Ventral side and appendixes black. Head of medium-large size; eyes big and very prominent; frons and vertex smooth, not punctured; neck very faintly wrinkled. Labrum strongly bilobated. Mandibles quite long and strong. Mentum tooth obtuse and acuminate, shorter than the lateral lobes. Very long and thin palpi; preapical segment of labial palpi with one to three setae. Submentum with a lateral setae. Very long and thin antennae, third and fourth antennomere with a basal depression.

Pronotum small of elongated shape, slightly transverse (1.12 times as broad as long), sinuated; sides uniformly margined and fully bent upwards; hind angles very short, slightly protruding behind the pronotum base; disc with a very characteristic protuberance of a “papilionid” shape; surface of pronotum slightly but homogeneously punctured and wrinkled.

Elytra long oval, very elongated; very narrow shoulders; triploid type of sculpture of elytra: primary and secondary keels quite convex, very rarely interrupted by small foveae only near the elytral apex; tertiary intervals disrupted into aligned grains.

Aedeagus. In lateral view (Fig. 4), the median lobe is strongly curved at right angles forward to the base; the median portion is very thin and elongated, sub-rectilinear; the apex is very long and strongly curved to the left and has a very characteristic flattened spatula shape. In frontal view (Fig. 5) the apex is very elongated and abruptly curved to the left.

VARIABILITY. Very limited variability. Males length including mandibles: 26–28 mm, females length including mandibles: 27–30 mm. In the female (Fig. 2), the subapical sinuation is very strong, forming a tooth acutely angled, sharp, prominent, diverging and clearly bent upwards (Fig. 3).

ETYMOLOGY. The given name intends to emphasize the peculiar elytral sculpture formed the primary and secondary intervals in thin and slightly raised ribs.

REMARKS. The new species has clear affinities with *C. (Apotomopterus) tonkinensis* (Figs. 6–8) with which it is sympatric. From the latter it is easily distinguishable for numerous morphological characteristics: shape of the pronotum, elytral sculpture, shape of the aedeagus, etc.

Carabus (Apotomopterus) artemisioides n. sp.

<https://zoobank.org:act:9B1E0E18-487D-4693-9BD3-E180A647CBCF>

MATERIAL EXAMINED. Holotype male: Vietnam, Lai Chau, Tam Duong, VII.2022. Paratypes: 1 female same data as the holotype; 2 males and 2 females same data as the holotype except a specimen found in IX.2022. The holotype is temporarily housed at the author’s collection (Prepotto, Udine, Italy) waiting to be definitively deposited in a public Institution (Figs. 9–13).

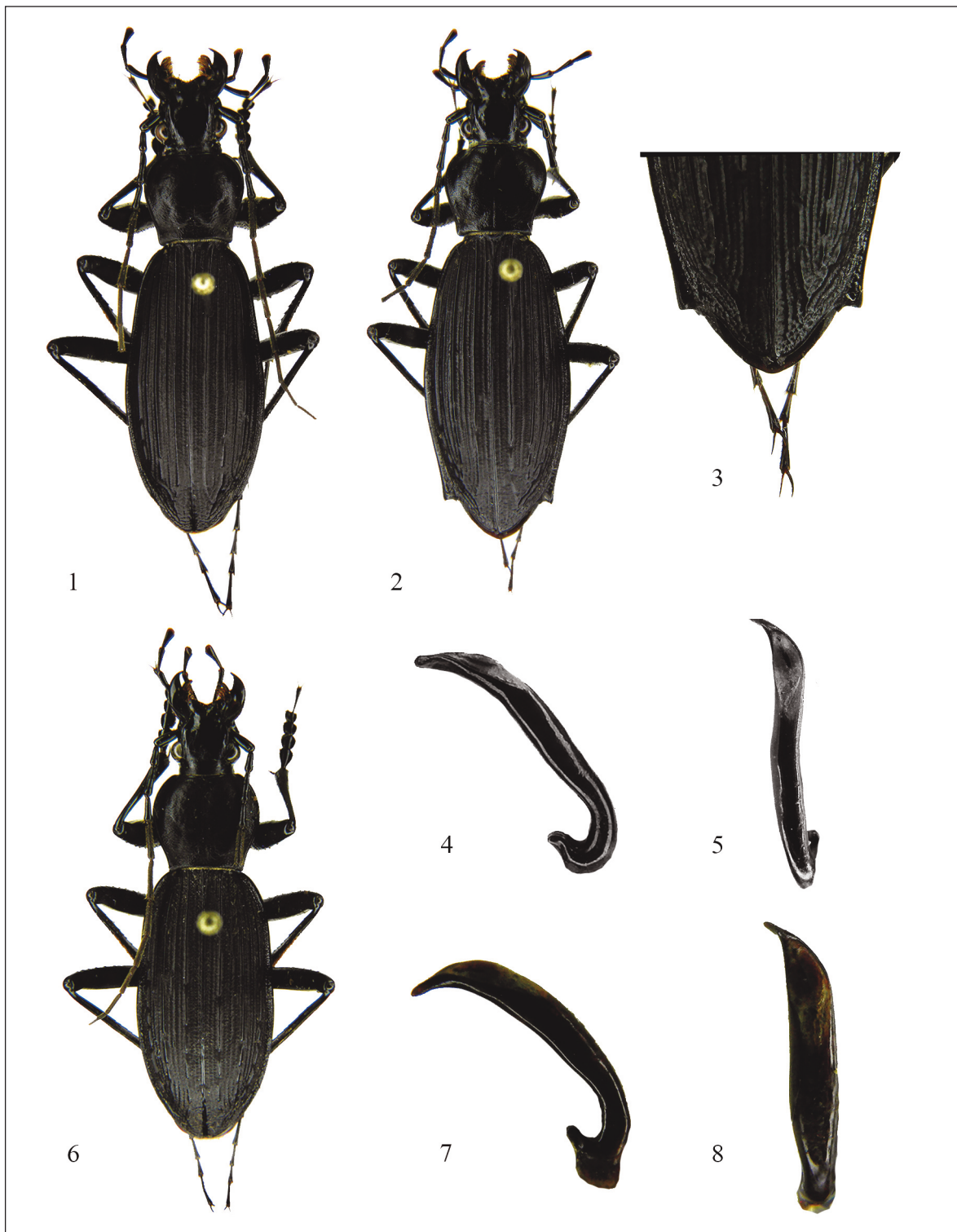
DESCRIPTION OF HOLOTYPE. Oval shape, quite large and stout. Length including mandibles: 32 mm, maximum width of elytra: 9.1 mm. Dorsal side black, uniformly mat. Ventral side and appendixes black. Head of medium size, very short neck; eyes large and quite prominent; frons and vertex punctured and strongly wrinkled. Labrum moderately bilobated. Mandibles quite short and strong. Mentum tooth bifid, shorter than the lateral lobes. Very long and thin palpi; preapical segment of labial palpi with two to three setae. Submentum with a lateral setae. Very long and thin antennae, all the antennomere simple, without a basal depression.

Pronotum big, transverse (1.24 times as broad as long), sides regularly rounded, not sinuated; sides uniformly margined and fully bent upwards; hind angles short, slightly protruding behind its base; flat disc; surface of pronotum strongly punctured and wrinkled.

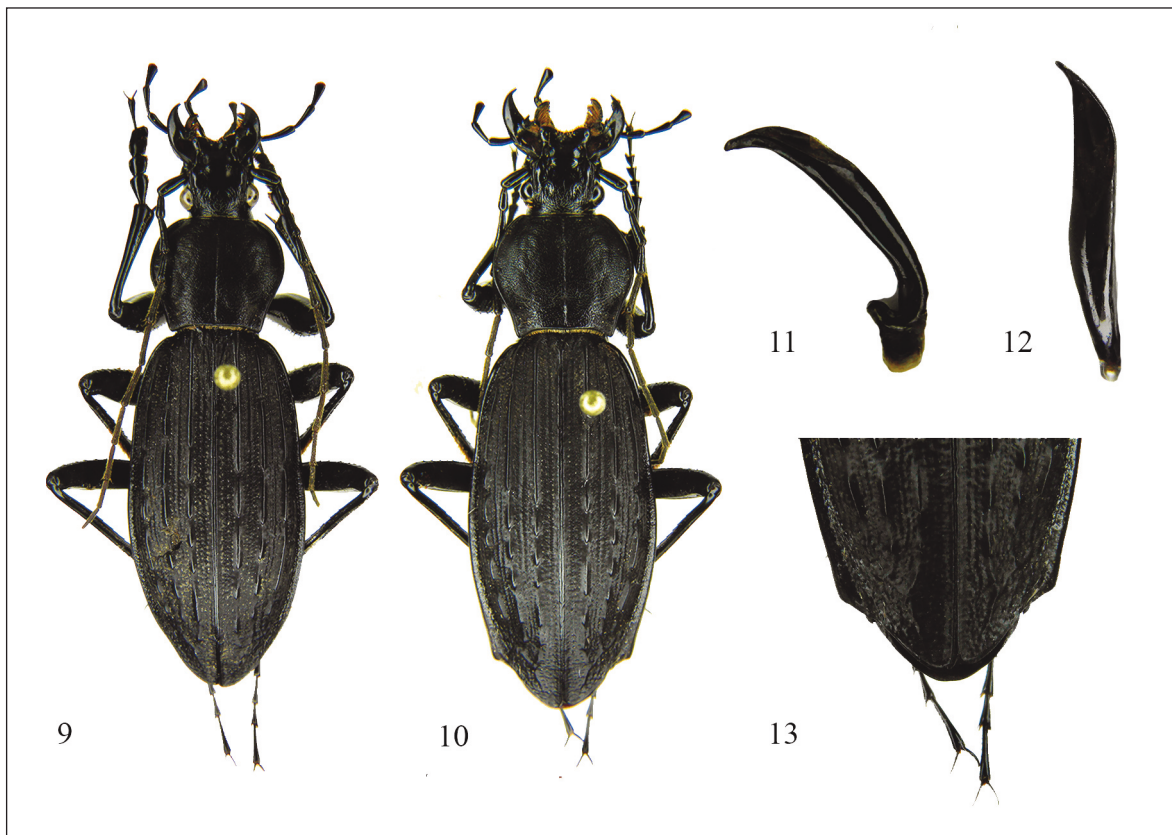
Elytra oval, quite stout; shoulders prominent; triploid heterodyname type of sculpture of elytra: primary intervals in the form of highly raised keels, frequently interrupted in rather long segments; secondary intervals in the form of series of perfectly aligned grains; tertiary intervals forming a series of non-aligned grains frequently doubled.

Aedeagus. In lateral view (Fig. 11), the median lobe of the aedeagus is large and quite long, sub-rectilinear; the apex is curved to the left forming a short spatula. In frontal view (Fig. 12) the apex is moderately elongated and moderately curved to the left.

VARIABILITY. Very moderate variability. Males length including mandibles: 31–32 mm, females length including mandibles: 33–35.5 mm. In the female (Fig. 10) the subapical sinuation is very



Figures 1–5. *Carabus (Apotomopterus) tenuicostatus* n. sp. from Vietnam, Lai Chau, Tam Duong, IX.2022. Fig. 1: holotype. Fig. 2: paratype female. Fig. 3: paratype female, detail of elytra apex. Fig. 4: paratype male, aedeagus lateral view. Fig. 5: idem, aedeagus frontal view. Figures 6–8. *Carabus (Apotomopterus) tonkinensis*. Fig. 6: male from Vietnam, Lai Chau, Tam Duong, IX.2022. Fig. 7: idem, aedeagus lateral view. Fig. 8: idem, aedeagus frontal view.



Figures 9–13. *Carabus (Apotomopterus) artemisioides* n. sp. from Vietnam, Lai Chau, Tam Duong, VII.2022. Fig. 9: holotype. Fig. 10: paratype female. Fig. 11: paratype male aedeagus lateral view. Fig. 12: idem, aedeagus frontal view. Fig. 13. paratype female, detail of elytra apex.

strong, forming a tooth obtusely angled, rounded and moderately bent upwards (Fig. 13).

ETYMOLOGY. The given name recalls the similarity of the elytral sculpture of the new species with *C. (Apotomopterus) artemis* Kleinfeld, 1999.

REMARKS. *Carabus (Apotomopterus) artemisioides* n. sp. is sympatric with *C. tonkinensis* and *C. tenuicostatus* n. sp. but is immediately distinguishable from both due to its larger size, the shape of the pronotum, the shape of the aedeagus, the subapical sinuation shape of the female's elytra.

It is interesting to note that the shape of the pronotum of *C. artemisioides* n. sp. curiously recalls that of *C. (Apotomopterus) vitalisi* Lapouge, 1916. Compared to the latter (also present in Vietnam) the new species is immediately recognizable

due to its smaller size, the different elytral sculpture, the shape of the aedeagus and the stronger subapical sinuation of the female's elytra.

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