

The Himalayan ground-beetle genus *Aparupa* (Carabidae) with three new species

A. CASALE Istituto di Entomologia della Università degli studi, Turin, Italy

ABSTRACT. A key is provided for the determination of the seven species of *Aparupa* Andrewes including three new species, *nepalensis* and *lateromarginalis* from Nepal, and *andrewesi* from northern India.

Introduction

The genus *Aparupa* Andrewes (1930) (type-species *exophthalmica* by original designation) is known from Sikkim, Tibet, Nepal and northern India. Its constituent species are medium-sized black carabid beetles. Andrewes considered *Aparupa* to be 'an aberrant form of the Anchomenini'. However, from the recent work of Habu (1973, 1978), and from the structure of the male genitalia (described here), *Aparupa* appears to be closely allied to *Agonum* Bonelli or even to be a subgenus or species-group within *Agonum*. Pending a more complete revision of the Asiatic Platynini (= Agonini or Anchomenini *auctorum*), the separate generic status of *Aparupa* is maintained here.

This paper describes two new species of *Aparupa* from Nepal and one from Darjeeling. The two Nepalese species were collected with other Carabidae at 2000–3000 m during the Italian 'Zanskar 77' expedition to Turkey, Iran, Afghanistan, Pakistan, India, Nepal and Sikkim. Other Carabidae collected by this expedition have been discussed elsewhere (Casale, 1979a, b). The third new species, *andrewesi*, is described from a single specimen in the collection of the British Museum (Natural History), London (BMNH).

Key to species

- 1 Elytra without dorsal pores on third interval. Pronotal base rounded and sinuate near basal angles. Length 10.7 mm. Nepal

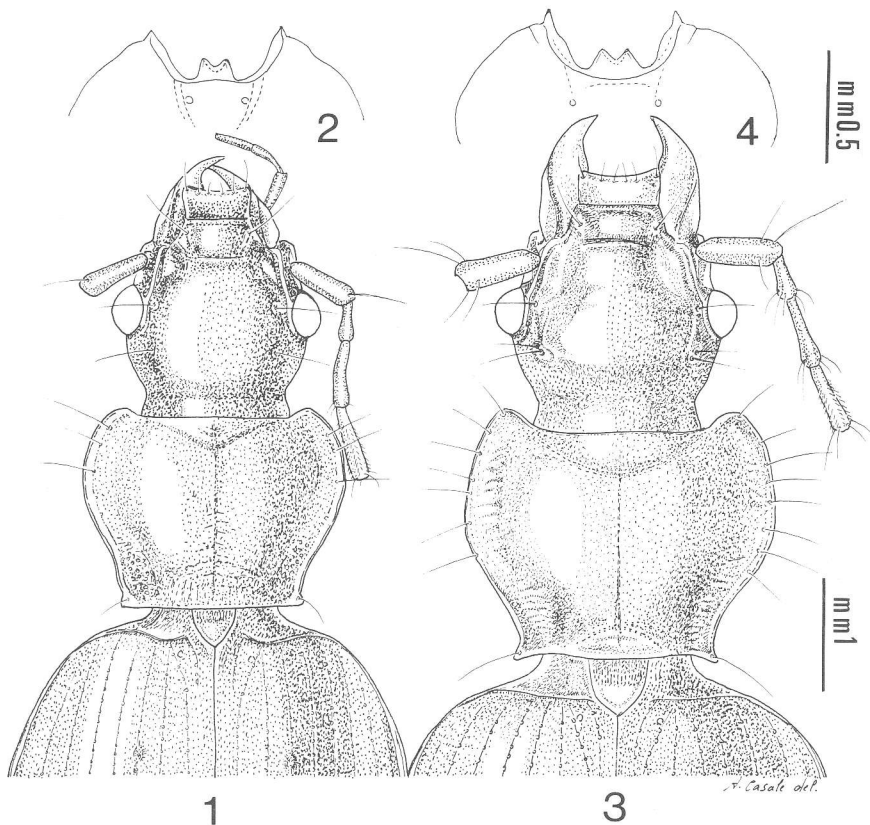
matsumurai Habu

Correspondence: Dr A. Casale, Istituto di Entomologia della Università degli studi, Via Pietro Giuria 15, 10126 Torino, Italy.

- Elytra with dorsal pores on third interval. Pronotal base truncated or oblique, neither rounded nor sinuate near basal angles 2
- 2 Pronotum without lateral pores. Length 11.5 mm. Northern India *andrewesi* sp.n.
- Pronotum with lateral pores 3
- 3 Head with two supraorbital setae on each side . 4
- Head with 3–6 supraorbital setae on each side . 6
- 4 Sides of pronotum not sinuate, very large and explanate, with one lateral and one hind seta. Nepal *lateromarginalis* sp.n.
- Sides of pronotum sinuate before hind angles . . 5
- 5 Sides of pronotum bisetose. Elytra with vague greenish blue reflections and with two pores on interval 3. Legs ferruginous. Length 10.5–12 mm. Sikkim *exophthalmica* Andrewes
- Sides of pronotum with numerous setae. Elytra black, with three pores on interval 3. Femora piceous. Length 8.5–9.5 mm. Nepal
- nepalensis* sp.n.
- 6 Head with 6 supraorbital setae on each side. Elytra metallic green or greenish blue. Joint 1 of meso- and metatarsi without external sulcus. Length 9.5–10.5 mm. Sikkim
- villosa* Andrewes
- Head with 3–4 supraorbital setae on each side. Elytra dark aeneous. Joint 1 of meso- and metatarsi with internal and external sulcus. Length 9–10 mm. Tibet *beethami* Andrewes

Aparupa nepalensis sp.n. (Figs. 1, 2, 5 and 12)

Length 8.5–9.5 mm. Width 3.5–4 mm. Black, shiny; labrum, mandibles, segment 1 of antennae, sutura and lateral margins of elytra reddish brown; femora piceous, except at base and apex which are reddish; palpi, joints 2–11 of antennae, tibiae and tarsi ferruginous. Underside black. Head small, convex; clypeus and front forming together a smooth boss,



FIGS. 1–4. *Aparupa* species: adults and labial teeth. 1–2, *nepalensis*, ♂ holotype; 3–4, *beethami*, ♀ paratype.

behind which is a deep transverse impression; dorsal side not punctate; neck very constricted, temporae about one and one-half times as long as eyes, gradually contracted to neck restriction. Eyes small, but very prominent, hemispherical, with two supraorbital setae. Labium (Fig. 2) with tooth stout and bifid.

Pronotum convex, cordate, a third wider than long, widest before middle, base truncate, front angles rounded; sides bordered and explanate, each with 3–4 lateral setae, sinuate and reflexed before hind angles which are right or slightly prominent. Basal area rugose-carinate, disk obsoletely and transversely rugose; basal foveae extremely deep, fully punctate; median line and front transverse impression both very distinct. Elytra ovate, moderately convex though flat on the disk, basal border emarginate and conspicuous,

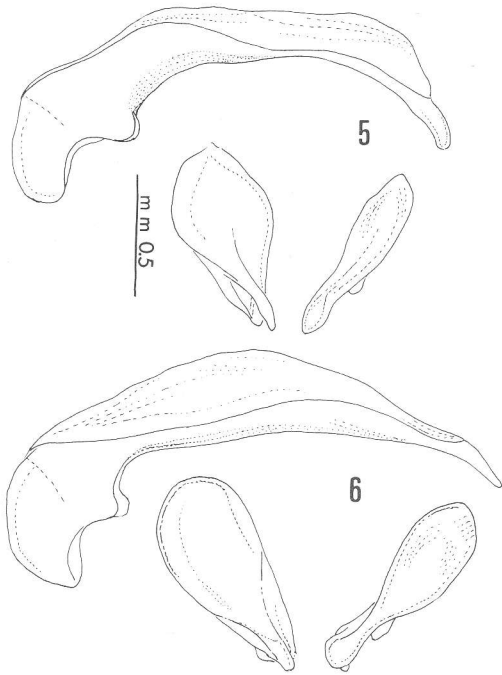
shoulders and sides rounded; striae fine, deep, clearly punctate; scutellary striole and basal umbilicate pore present; intervals flat, 3 with three pores, first one adjoining stria 3, second and preapical pores adjoining stria 2; marginal series not interrupted, composed of 15–20 pores; apical pores present. Wings atrophied.

Protibiae without external sulcus; meso- and metatarsi with joint 1 externally sulcate, no internal sulcus; pro- and metatarsi with joint 4 deeply bilobed; segments 1–3 of ♂ fore tarsi slightly wider than in ♀.

Prosternal process unborded, carinate behind; sternite 6 of ♂ with two setae on either side.

Aedeagus (Fig. 5) with ventral side strongly bisinuate, apex short and rounded. Styluses as in Fig. 12.

Holotype ♂, Nepal, Kathmandu Valley,



FIGS. 5–6. *Aparupa* species: ♂ genitalia of holotypes. 5, *nepalensis*; 6, *lateromarginalis*.

Kakani Pass, 2000 m, 11.v.1977 (*Gobetti*).

Paratypes. 1♀, data as holotype; 1♀, Nepal, Kathmandu Valley, Nagar Kott, at 2800 m, 10.v.1977 (*Gobetti*). (All specimens in author's collection.)

Remarks. This new species is allied to *A. villosa* Andrewes, but is easily distinguished from it by the head having only two supra-orbital setae, the pronotum having 3–4 lateral setae on each side and the elytra being black, with three pores on interval 3 and without any pores on interval 5. *A. beethami* Andrewes (Figs. 3, 4 and 13) is very different, the head having three or four supraorbital setae, the prothorax with sharp, acute and reflexed hind angles and interval 3 of the elytra with about six pores. In *A. exophthalmica* Andrewes the legs are completely ferruginous, the prothorax has its basal sides oblique and the elytra have interval 3 with two pores, both adjoining stria 2.

Aparupa lateromarginalis sp.n. (Figs. 6, 7, 8 and 11)

Length 10–11 mm. Width 3.5–4 mm. Black, shiny, elytra with blue reflections; labrum,

mandibles, antennae, tibiae, tarsi and lateral margin of pronotum and elytra reddish brown; femora (except at base) piceous. Underside piceous black.

Head elongate, convex; frontal foveae curved and deep, neck moderately constricted; eyes very small and prominent; two supra-orbital setae. Labium (Fig. 8) with tooth very prominent and bifid. Pronotum extremely large and transverse, a third wider than long, base with sides moderately oblique, front angles rounded but prominent; sides bordered, curved, not sinuate, large and explanate, very reflexed to hind angles which are obtuse; one lateral and one hind seta on each side; disk moderately convex, median line fine, basal foveae large and very deep, rugose-punctate.

Elytra large, short and flat; shoulders conspicuous, prominent, but rounded; striae very deep, impunctate; scutellary striole short; intervals flat, 3 with three pores, one at a fifth, adjoining stria 3, the other ones at two-fifths (or near the middle) and before the apex, adjoining stria 2. Basal umbilicate pore present. Microsculpture wanting. Wings atrophied. Protibiae without external sulcus; meso- and metatarsi sulcate; all tarsi with joint 4 deeply bilobed; segments 1–3 of ♂ for tarsi wider than in ♀.

Prosternal process and sternite as in *A. nepalensis*.

Aedeagus (Fig. 6) gently curved; apex long, slender and pointed. Parameres large and rounded. Styluses as in Fig. 11.

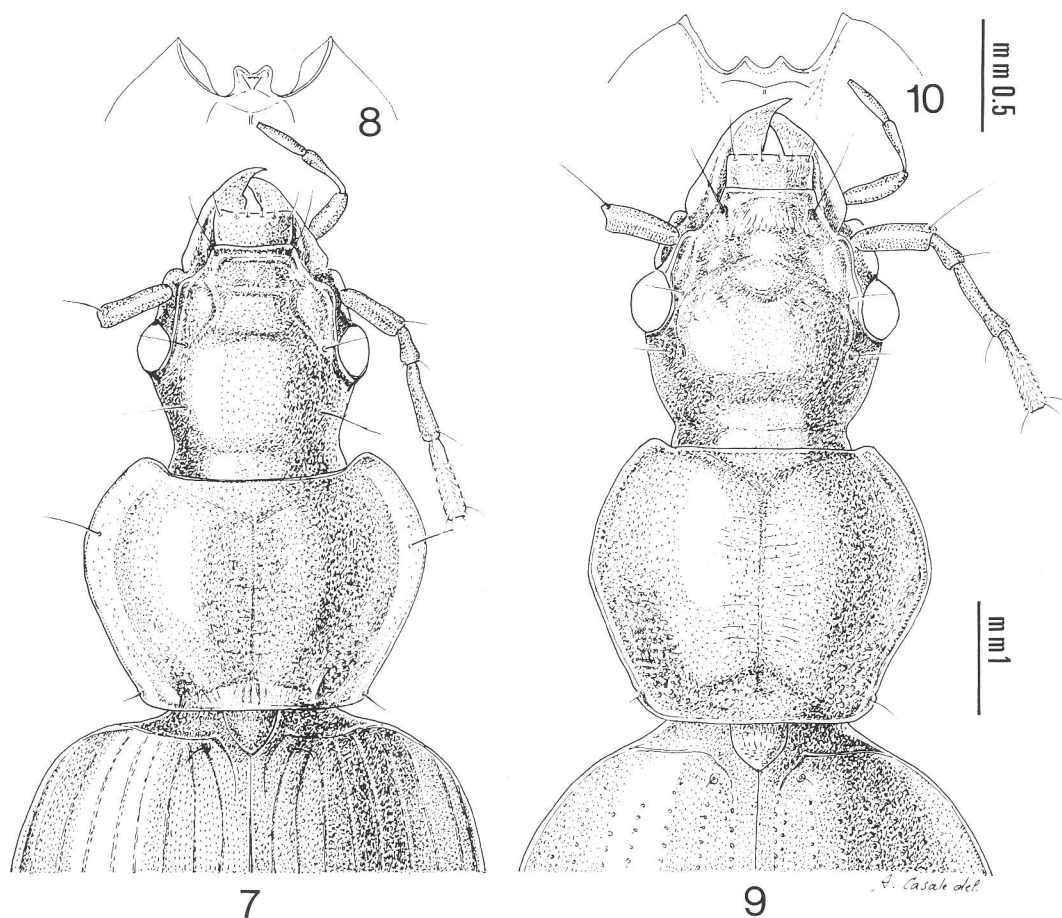
Holotype 1♂, Nepal, Kathmandu Valley, Kakani Pass, 2000 m, 11.v.1977 (*Gobetti*) (in author's collection).

Paratypes. 17 specimens, data as holotype (in author's collection and in BMNH, London).

Remarks. This species is very different from the other species of *Aparupa*, in the pronotum having very large, explanate and reflexed borders, the elytra having prominent shoulders, and in the general morphology of the body and aedeagus. However, in the characters of the head, labium, prosternum and genitalia, I find no reason to exclude this species from *Aparupa*.

Aparupa andrewesi sp.n. (Figs. 9, 10 and 14)

Length 11.5 mm. Width 4.5 mm. Black, shiny, labium, mandibles and elytra reddish brown;



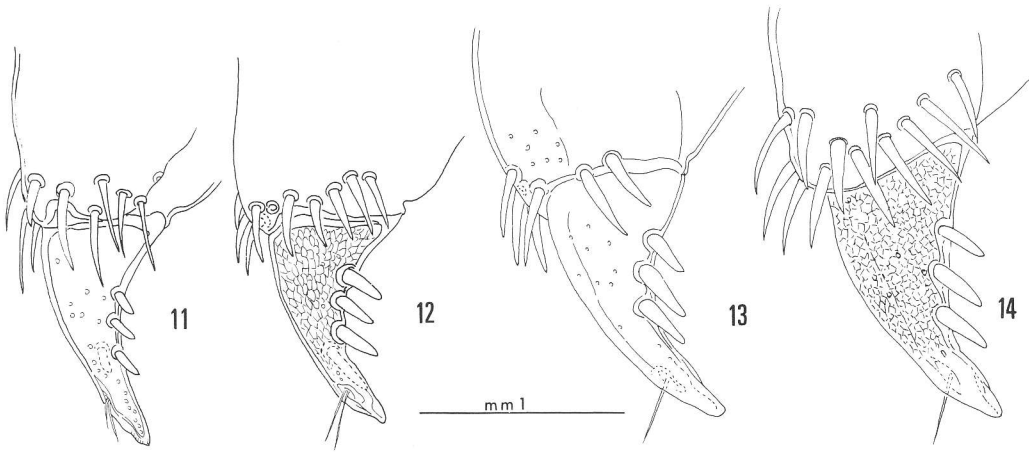
FIGS. 7-10. *Aparupa* species: adults and labial teeth. 7-8, *lateromarginalis*, ♂ holotype; 9-10, *andrewesi*, ♀ holotype.

antennae, palpi and legs ferruginous, ventral side piceous.

Head large, neck very constricted, frontal foveae deep, extending onto clypeus, bounded outwardly by curved ridge, middle of clypeus and front forming a raised boss behind which is a curved impression; very deep impression with some transverse striae between eyes; dorsal side not punctate, clypeus rugose. Eyes extremely prominent, hemispherical, with two supraorbital setae. Labium (Fig. 10) with tooth small, slightly prominent, strongly bifid. Pronotum convex, widest near middle, base oblique, equal to apex; front angles rounded; sides bordered, curved, very faintly sinuate and reflexed before hind angles which are obtuse but prominent; front transverse

impression distinct, hind transverse impression and median line deep; disk convex, with some faint transverse lines; basal foveae deep, very large, rugose-punctate. Basal setae present, lateral setae wanting. Elytra convex, ovate, shoulders and sides very rounded; striae very faintly impressed and formed chiefly by punctures, interval 3 with only a median and a pre-apical pore, both adjoining stria 2; marginal series not interrupted, scutellary striae impressed, adjoining stria 1. Basal umbilicate pore present. Microsculpture pattern of elytra in form of very wide mesh, that of pronotum and head similar but almost invisible. Wings atrophied.

Protibiae without external sulcus; meso- and metatarsi with joints 1 and 2 externally



FIGS. 11–14. *Aparupa* species: ventral view of apical segment of left stylus. 11, *lateromarginalis*, ♀ paratype; 12, *nepalensis*, ♀ paratype; 13, *beethami*, ♀ paratype; 14, *andrewesi*, ♀ holotype.

sulcate, no internal sulcus. Pro-, meso- and metepisterna punctate; sternite 6 of ♀ with two setae on either side.

Styluses as in Fig. 14.

Male unknown.

Holotype ♀, India, Darjeeling, Ghoom, 26.v.1931 (Cameron) (BMNH, London). The specimen also has a label 'Aparupa sp.n.' written by Andrewes.

Remarks. This species differs from all known species of *Aparupa* in that the pronotum is without lateral pores, the elytra have only two dorsal pores on the third interval, and also in the morphology of the head, prothorax and styluses. It shows, however, some affinities with *A. exophthalmica* Andrewes from Sikkim and *A. matsumurai* Habu from Nepal.

Acknowledgments

I wish to thank the following for their help: Mr and Mrs Gobetti, Mr P. Oliaro, and Mr M. Perello who funded the 'Zanskar 77' Expe-

dition to the Himalayas, Mr M. E. Bacchus (BMNH, London) who generously loaned material, and Dr A. Habu (National Institute of Agricultural Science, Tokyo) who gave useful advice.

References

- Andrewes, H.E. (1930) The Carabidae of the third Mount Everest Expedition, 1924. *Transactions of the Entomological Society of London*, **78**, 1–44.
- Casale, A. (1979a) Carabidi nuovi o poco noti della regione afgana ed himalayana (Coleoptera, Carabidae) (1 parte). *Fragmenta Entomologica*, **15**, 79–96.
- Casale, A. (1979b) Trechinae nouveaux du Népal (Col., Carabidae). *Entomologica Basiliensia*, **4**, 187–192.
- Habu, A. (1973) On a collection of Carabidae from Nepal made by the Hokkaido University Scientific Expedition to Nepal Himalaya, 1958 (1). *Bulletin of the National Institute of Agricultural Science (Japan)*, Ser. C, **27**, 81–132.
- Habu, A. (1978) *Fauna Japonica. Carabidae: Platynini (Insecta: Coleoptera)*. Tokyo.

Accepted 14 November 1979