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Ergebnisse der Bhutan-Expedition 1972 des Naturhistorischen Museums in Basel

Coleoptera: Fam. Byturidae

By T. Sen Gupta

Abstract: Chief adult and larval characters of *Byturus* are given and 2 new species are described: *Byturus wittmeri* (Nepal) and *B. bhutanicus* (Bhutan).

Byturidae is a sharply defined small family of Clavicornia. GROUVELLE (1919) listed two genera *Byturus* and *Satorystia* under this family, ARNETT (1968) included the genus *Byturellus* to it, CROWSON (1955) noted phloeophilid genus *Xerasia* and dascillid genera *Dascillocyphon*, *Platydasillus* and *Byturodes* as also belonging to the family Byturidae. This family is mainly Holarctic in distribution, also recorded from Indio-Malayan and Neotropical regions. CROWSON (1955) noted that characters of Byturidae have several similarities with Heteromera, yet the relationship to Biphyllidae in Clavicornia seems nearest, as shown by tarsal formula 5-5-5 in both the sexes, transverse non-projecting front coxae, wing venation with front anal vein running into subcubital fleck. The toothed tarsal claws and pseudotetramerous tarsi of adults suggest some sort of association with plant; larvae are known to feed the fruit head of species of *Rubus* and *Geum*. In this paper detailed morphological characters of adults and larvae of *Byturus* are given below with descriptions of two new species of *Byturus* from Bhutan and Nepal. It may be worth mentioning that this family is being recorded here for the first time from the Indian subregion.

Chief adult characters of *Byturus* Latr.

General appearance (Figs. 1, 4) rather dull and pubescent, usually larger than and more convex than cryptophagid beetles, with toothed claws, and membranous lobes on first three tarsal segments

Head: Slightly transverse, eyes moderately developed, without fronto-clypeal suture and transverse line on vertex, antennal insertions partly hidden under sides of frons. On ventral side gular sutures widely

separated, anterior part of gular region sometimes with a transverse groove, without longitudinal grooves, sometimes with a pair of slightly defined grooves present on outer sides of maxillary articulations, probably represent antennal grooves.

Antenna: (Fig. 1) 11-jointed, with scape normal and a distinct 3-jointed club.

Mouth parts: Mandible with 2 or 3 apical teeth, mola well developed and moderately projecting. Maxilla with separate lacinia and galea, lacinia narrow and hairy with two apical spines, galea elongate and hairy at apex, palpi elongate, segments 2 and 3 more or less equal, apical segment elongate, sometimes somewhat short and club-shaped but never securiform. Labium well developed, with transverse mentum, palpi elongate with apical segment not securiform, ligula membranous, well developed and strongly bilobed.

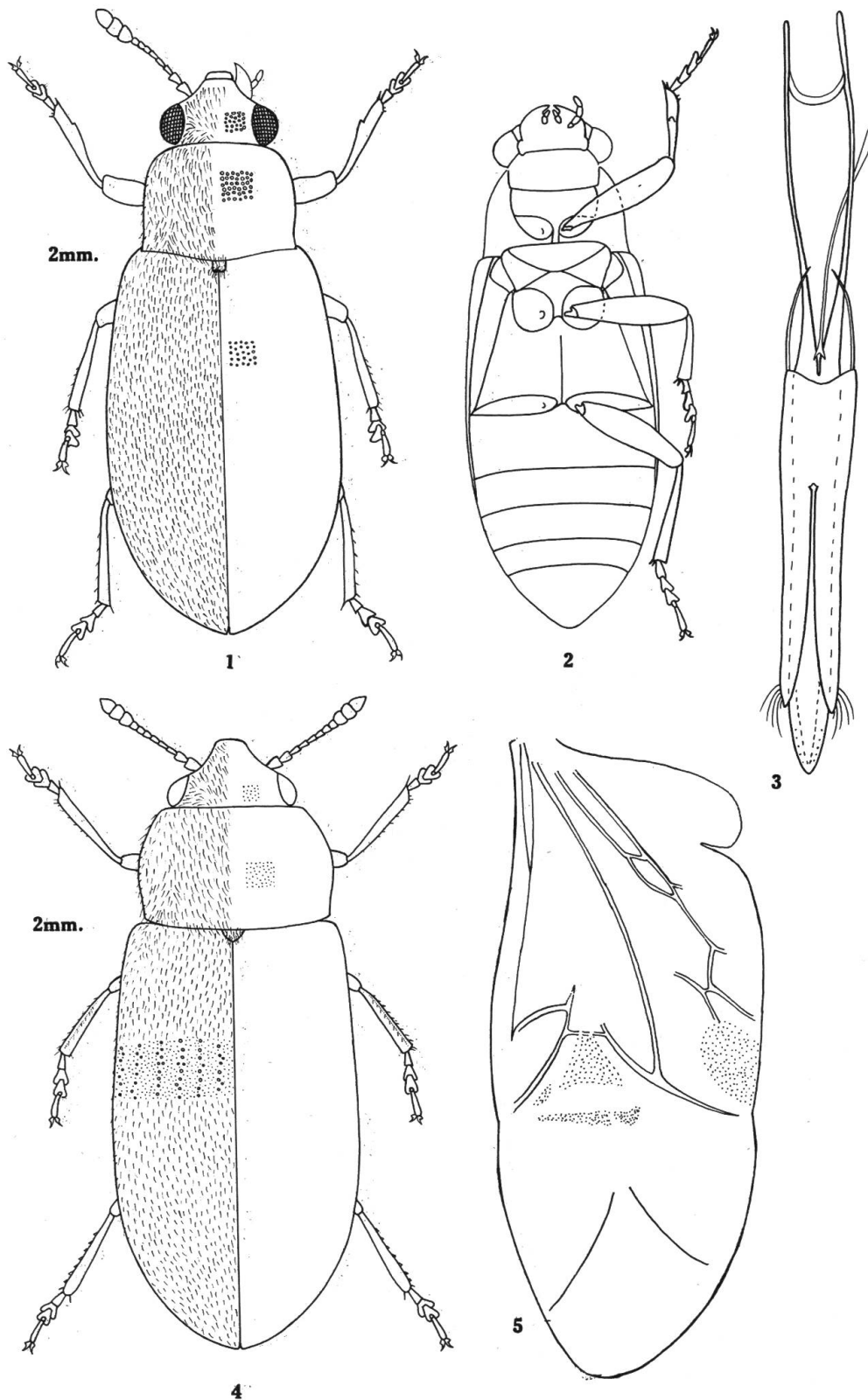
Prothorax: (Figs. 1, 2) Transverse, lateral margins curved and smooth, pronotum without prebasal impressions, front coxal cavities slightly transverse with partially exposed trochantins, the cavities internally as well as externally closed behind, coxae closely situated and prosternal process rather narrow.

Elytra and wing: (Fig. 4) Elytra elongated, moderately narrowed towards apex, usually densely pubescent, epipleura narrow and almost complete up to the apex. Wing (Fig. 5) with 4 anal veins, front one running into subcubital fleck, with anal cell, radial cell and r-m cross vein.

Meso- and metathorax: (Fig. 2) Mesosternum rather short, coxae almost contiguous, sternal fitting between them with a single internal projection from metasternum, cavities closed outwardly by sterna, without pits or cavities on meso- and metasterna. Metasternum transverse, metacoxae rather closely situated, median impressed line extending half or two-thirds of its length. Metendosternite (Fig. 6) well developed, with moderately separated anterior tendons and narrow lateral plates.

Legs: (Fig. 2) Moderately long, trochanters short-heteromeroid, femora swollen in middle, tibiae long and broadened at apex with two normal spurs, outer edges of tibiae usually with rows of short spines, tarsal formula 5-5-5 in both sexes, first 3 segments with membranous lobes, segment 1 smaller than segment 2, segment 4 minute, claws with a tooth on basal half, empodium well developed and bisetose.

Abdomen: Completely covered with elytra. All ventrites freely articulated and more or less equal in length, ventrites 1 without femoral



Figs. 1-5. 1-3: *Byturus wittmeri* n. sp. ♂. 1, dorsal view. 2, ventral view. 3, aedeagus. 4, *Byturus bhutanicus* n. sp. ♀, dorsal view. 5, *Byturus tomentosus* F., wing.

lines. Seven pairs of spiracles lying on edges of tergites. Aedeagus (Fig. 3) uninverted and of somewhat heteromeroid-type, apex of tegmen bilobed but without articulated parameres, tegmen with a detached anterior median ventral piece. Ovipositor well developed, with separate paraprocts, valvifers, coxites and styli, the latter attached either laterally or at apex of coxites.

Chief larval characters of *Byturus*

General appearance elongated-fusiform, broadest near middle, dorsal surface with a few moderately long simple setae, without tuberosities but sparsely granulated, each tergum with two transverse granulated keels, urogomphi hooked.

Head: Slightly transverse, lateral margins curved and smooth, vertex evenly pigmented and not granulated, frontal suture distinct and Cucujoid-type, without endrocarina and metopic suture, clypeus transverse and fused with frons, labrum articulated with clypeus. Ocelli 6 on each side of head. Hypostomal rods rather distinct and diverging posteriorly. Antennae (Fig. 8) short, length of joints about 2:3:2, basal joint transverse, sensory appendage about two-thirds of the length of joint 3. Mandible (Fig. 9) with two apical teeth, one of them dentate on inner margin, mola well developed and projecting, without protheca. Maxillary mala (Fig. 7) slightly obtuse with three apical short and stout spines, dorsal row of 10 setae on inner margin extending to the base of mala, palpi distinctly longer than mala, length of palpal segments almost equal, without rounded process on inner margin of stipes. Cardo well developed, forming a sharp angle with stipes; maxillary articulating area well developed. Labium with prementum rather short and broad, palpi two-segmented, apical segment longer than basal one. Hypopharynx and hypopharyngeal bracon well developed.

Thorax and abdomen: Thoracic segments progressively narrower in front, pronotum slightly longer than mesonotum and without transverse keeled lines towards front, meso- and metanota and abdominal tergites with a transverse pigmented area and anteriorly with two transverse granulated keeled lines and in middle region with two transverse rows of simple moderately long setae (Fig. 11). Abdominal segments 6–9 progressively narrower and somewhat equal in length. Each urogomphus short, distinctly separated and hooked, without pregomphal processes. Segment 10 forming a projecting apically bilobed cylindrical pygopod.

Spiracles and legs: All spiracles placed on body surface and bicameral. Legs moderately long, coxae rather closely situated and large, claws toothed and with single transungular seta (Fig. 10).



Figs. 6–11. 6, Metendosternite of *Byturus wittmeri* n.sp. ♂. 7–11: Larva of *Byturus tomentosus*: 7, maxilla. 8, antenna. 9, mandible. 10, tarsal claw. 11, pro- and mesothorax.

1. *Byturus wittmeri* n. sp.

General appearance (Fig. 1) rather narrow elongate, elytra, pronotum, legs, antennae and mouth parts reddish brown and head black, dorsal surface covered with dense recumbent pubescence. Head transverse, covered with whitish long pubescence directed posteriorly, that of near base of eyes projected inwards, anterior part of clypeus slightly paler and blackish brown, punctation distinct but slightly smaller and sparser than pronotum. Eyes black, large, projected and finely faceted. Antenna as long as width of head across eyes. Antennae rather slender, segments 3–6 slightly paler and shiny, scape slightly longer than width, pedicel almost equal in length to scape but slightly narrower, segments 3–5 elongate, narrower than pedicel and equal, segments 6–8 short and equal, segments 9–11 forming an elongate club, segments 9 and 10 slightly longer than wide and apical segment narrowed at apex. Pronotum slightly transverse (ratio 2:2.6), front angle broadly rounded, hind angles slightly projected and acute, lateral margins rounded and slightly sinuate near posterior one-third. Pronotum covered with dense, moderately long pubescence, directed posteriorly and towards middle line, that of near posterior angles directed outwardly and posteriorly. Punctation on pronotum distinct, deep and dense. Scutellum slightly transverse, darker, covered with dense pubescence and appears to be slightly bilobed at apex. Elytra elongate (ratio 6.5:4), broadest across below the middle and narrowed in front and behind, covered with rather short and less dense pubescence, punctation less deep and sparser than on pronotum. Ventral side of head, prosternum, meso-metasterna, coxal cavities and trochanters black, and proepisterna, elytral epipleura and abdominal sternites reddish brown. Ventral surface covered with dense whitish, recumbent pubescence, punctation fine and covered under pubescence. Aedeagus as figured (Fig. 3). ♂ can be easily distinguished from ♀ by its front tibiae markedly narrowed at base and abruptly broadened from middle, and armed with a spine on ventral side (Fig. 2), whereas in ♀ tibiae normal and devoid of such spine.

Measurement: Total length 4.6 mm, width of head across eyes 1 mm, length of antenna 1.05, width of prothorax across base 1.2 mm, and length of elytra 3.45 mm.

Holotype ♂ and 9 paratypes (4 ♂ and 5 ♀), Nepal, Thodung via Those, 3100 m, 29.–31.5.1076, W. Wittmer and C. Baroni Urbani. Holotype and 6 paratypes are deposited in the Museum d'Histoire Naturelle, Basel, Switzerland, and 3 paratypes (Register number 8052/H₄A, 8053/H₄A, 8054/H₄A) in Zoological Survey of India, Calcutta, India.

Remark: This species can be easily distinguished for its head and prosternum being black. Unlike, Japanese species *Byturus atricollis* Reitter it has brown pronotum, prothorax slightly transverse and its lateral margins sinuate near base.

***Byturus bhutanicus* n.sp.**

General appearance (Fig. 4) broadly elongate, slightly larger and less hairy than *B. wittmeri* n.sp., dorsal surface uniformly brown and covered with dense pubescence. Head transverse, covered with dense, whitish, moderately long pubescence, directed posteriorly and towards middle, that near of eyes and front part of clypeus directed inwards, punctation finer, denser and less distinct than *B. wittmeri*. Eyes black, finely faceted, rather small and less projected. Antenna as long as width of head across eyes, slender, reddish brown, scape slightly larger than pedicel, segment 3 narrower than pedicel, segments 3–5 narrow, elongate and equal, segments 6–8 short and equal, segments 9–11 forming an elongate club, segments 9 and 10 slightly transverse and apical segment longer than broad and narrowed at apex. Prothorax strongly transverse (ratio 2:3), front margin straight, front angles broadly rounded, hind angles obtusely rounded, lateral margins rounded and its posterior one-third slightly sinuate. Pronotum covered with dense, moderately long pubescence, directed posteriorly and slightly towards middle line, that near of posterior angles directed slightly outwardly and posteriorly. Punctation on pronotum similar to that on head. Scutellum hidden under dense pubescence and transverse. Elytra elongate (ratio 4:6), broadest across posterior one-third, covered with whitish, dense and slightly shorter pubescence than on pronotum, directed posteriorly, punctation fine, irregular and rather indistinct and overlapped by irregular rows of darker and larger punctures. Ventral surface including legs uniformly brownish, finely punctured and covered with dense and fine pubescence.

Measurement: Total length 5.25 mm, width of head across eyes 1.1 mm, length of antenna 1.1 mm, width of prothorax across middle 1.6 mm, and length of elytra 3.15 mm.

Holotype ♀ and 3 paratypes ♀, Gogona, Bhutan, 3100 m., 10.–12.6.1972. Holotype and 1 paratype deposited in Museum d'histoire Naturelle, Basel, Switzerland, and 2 paratypes (Register number 8055/H₄ A, 8056/H₄ A) in Zoological Survey of India, Calcutta.

Remark: Male unknown. This species can be easily separated from *Byturus wittmeri* sp.n. by its dorsal surface being uniformly brown;

prothorax markedly transverse, eyes less projected and smaller, punctation on dorsal surface finer, and ventral surface uniformly brownish. Unlike Japanese species *Byturus affinis* Reitter scutellum transverse and lateral margins of prothorax sinuate near base.

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