

**CRITICAL ECOSYSTEM**  
PARTNERSHIP FUND

**Western Ghats  
Special Series**

**RARE FUNGUS FEEDING DARKLING BEETLE,  
*BYRSAX CORNUTUS* FABRICIUS, 1792  
(COLEOPTERA: TENEBRIONIDAE: BOLITOPHAGINI)  
FROM THE WESTERN GHATS, INDIA**

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Beetles of the tribe Bolitophagini are associated with fruiting bodies (conks) of bracket fungi throughout their lives. The larvae always tunnel inside the conk and feed on its tissue while adults usually are surface feeders; consuming the spores after sweeping them with their mouthparts to the mouth. The adults are mainly seen on the surface of the hymenium (the fertile layer of the fruiting body), although some species hide in the larval tunnels during the day. Bolitophagines usually feed on the same fruiting body associated with dead trees and develop in it until the fungi are completely destroyed and decayed (Jung et al. 2007).

Members of a genus of the tribe, *Byrsax*, live in the fruiting body of various bracket fungi, including the wood-decaying white-rot bracket fungus *Ganoderma applanatum* (Persoon) Patouillard 1889, popularly known

as Artist's Conk (Hawkeswood 2003).

Distribution of the genus stretches across the Palaearctic (Russian Far East, Japan, Korea, China), Oriental (India, Sri Lanka, Vietnam, Indonesia, Malaysia, Philippines) and Australian (eastern Australia, Papua New Guinea) realms (Gebien 1939; Kaszab 1979a,b, 1980; Jung et al. 2007; Löbl et al. 2008; Matthews & Bouchard 2008). Cryptic brownish-grey coloration of adults that matches the color of host fungi and secretive habits of *Byrsax* species lead them to be often overlooked by collectors (Hawkeswood 2003). Twenty seven species of the genus *Byrsax* are known worldwide (Gebien 1939; Löbl et al. 2008). Two species namely, *Byrsax cornutus* Fabricius, 1792 (Gebien 1925) and *B. tuberculatus* Gravelly, 1915 (Kaszab 1979a) are reported from India (Image 1). *Byrsax tuberculatus* (Image 2) is known to occur in Nepal, India (Arunachal Pradesh, Kerala: Kumily), Sri Lanka (Colombo, Peradeniya, Kandy, Dikoya, Kitulgala, Galle), Thailand, Vietnam, Malaysia, Java, Borneo and the Philippines. *Byrsax cornutus* occurs in India and Sri Lanka (Image 1). The present work includes a first report of *Byrsax cornutus* from the Western Ghats with diagnostic description, key to the two *Byrsax* species from India along with an illustration of their distribution from the Indian subcontinent.

**Materials and Methods:** Specimens were collected with light traps and from leaf litter present close to a decaying log with rich growth of *Ganoderma applanatum* during 2006–2009 period. Identification up to the genus



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**Competing Interest:** None.

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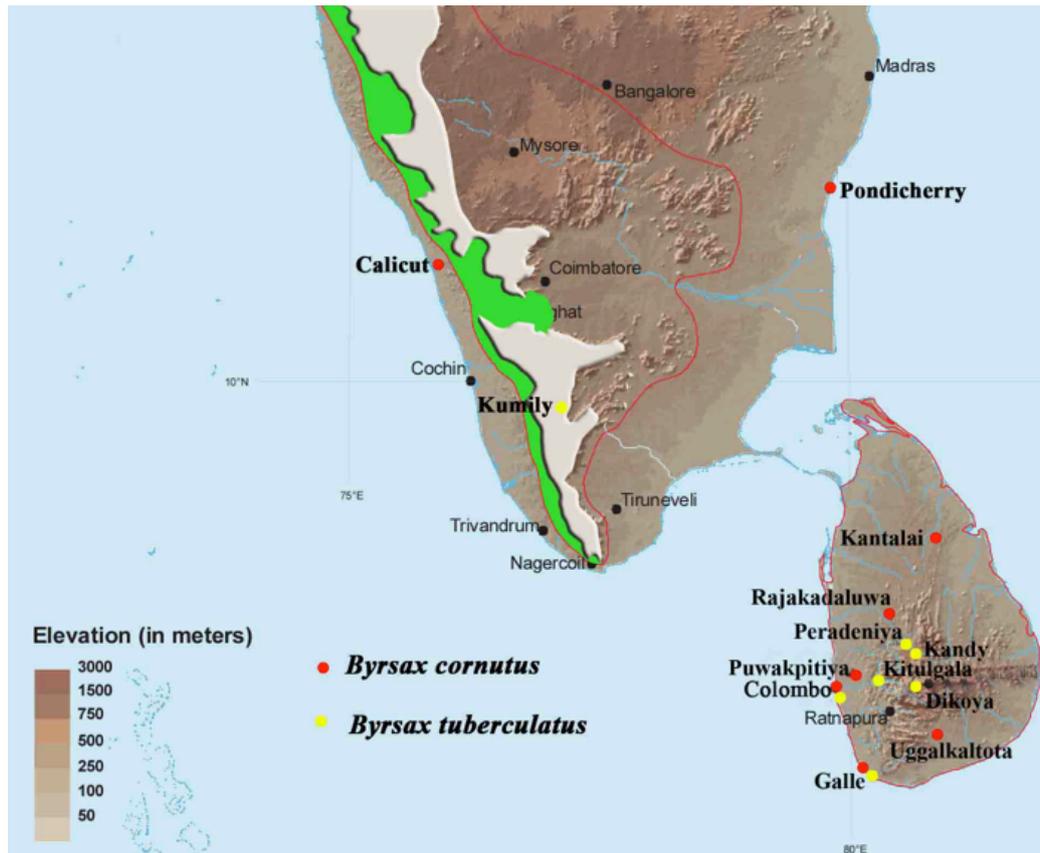


Image 1. Map of the Western Ghats and Sri Lanka indicating distribution of *Byrsax cornutus* and *B. tuberculatus*.

and species level was done with the key of Gebien (1925) and by comparing with verified specimens in the Coleoptera Collection of the Hungarian Natural History Museum, Budapest, Hungary. Specimens from the present study are deposited in the coleopteran collections of Litter Entomology Research Unit, St. Joseph's College, Devagiri, Calicut (SJC).

#### *Byrsax cornutus* (Fabricius, 1792)

(Image 3)

Synonyms: *Byrsax horridus* Olivier, 1795; *Byrsax tuberculifer* Motschulsky, 1863 (Gebien 1925).

**Materials Examined:** BC-2009-01 SJC, 22.vii.2009, one female, Omassery, Kerala, India (11.3666°N & 75.9333°E; 22m elevation), light attracted specimen, coll. C. Arunraj (Image 3); BC-2006-02 SJC, 06.xii.2006, one male, Malaparamba (11.3000°N & 75.8500°E; 13m elevation), litter collection, Berlese extraction, coll. K.V. Vinod.

**Body:** Oval, strongly convex, strongly sculptured and tuberculate. usually covered with lighter brown encrustation of fungal spores. Spore mass usually filling and obscuring dorsal punctation of pronotum and

elytra.

**Color:** Blackish-brown.

**Head:** Frons of male with a pair of curved and flattened horns; length of horn varying from shorter than interocular distance to as long as length of pronotum. Female without horns. Eyes large, oval, excised by frontal canthus. Labrum subquadrate, setal pattern symmetrical, antennae barely longer than head width, antennomeres gradually expanding apically, last seven antennomeres forming a large asymmetrical club. Mandibles bidentate with long teeth, molar surface with fine striations. Maxilla without lacinial uncus, palpi with apical segments fusiform. Mentum trapezoidal.

**Pronotum:** Surface with coarse punctation and with strong protuberances and tubercles varying in size, lateral parts strongly explanate, sides strongly serrate, with a semicircular excision near posterolateral angles.

**Elytra:** Highly convex, with coarse punctation and strong protuberances and tubercles. Three protuberances on each elytron much larger and arranged in two parallel rows, other tubercles much smaller. Lateral parts strongly explanate, sides strongly serrate.

**Venter:** Procoxal cavities closed internally and

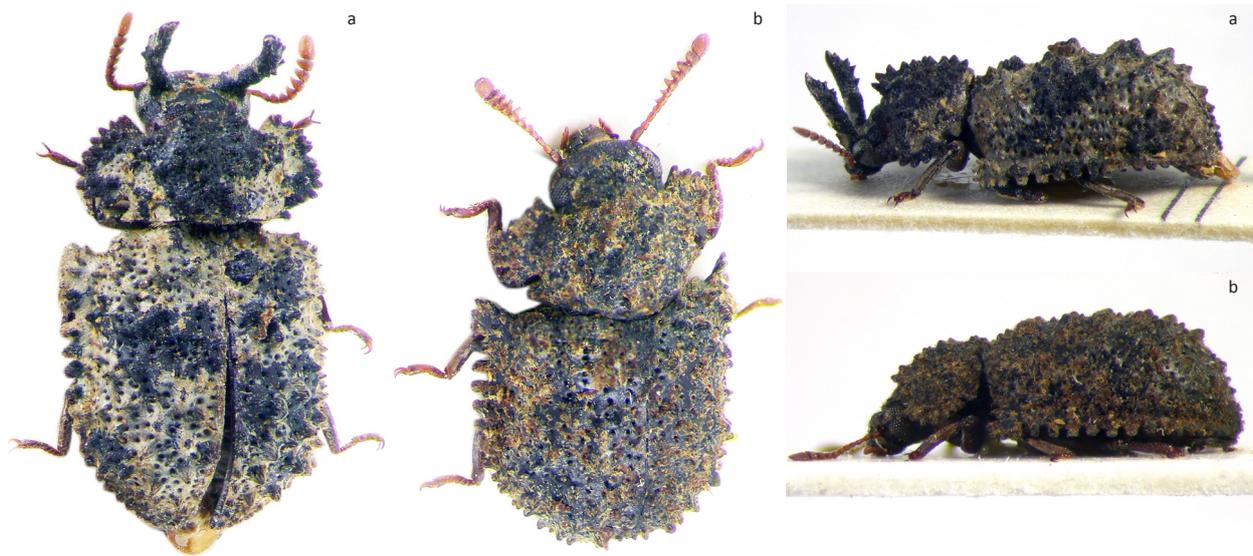


Image 2. *Byrsax tuberculatus*. a - male; b - female. © Tamás Németh, Budapest

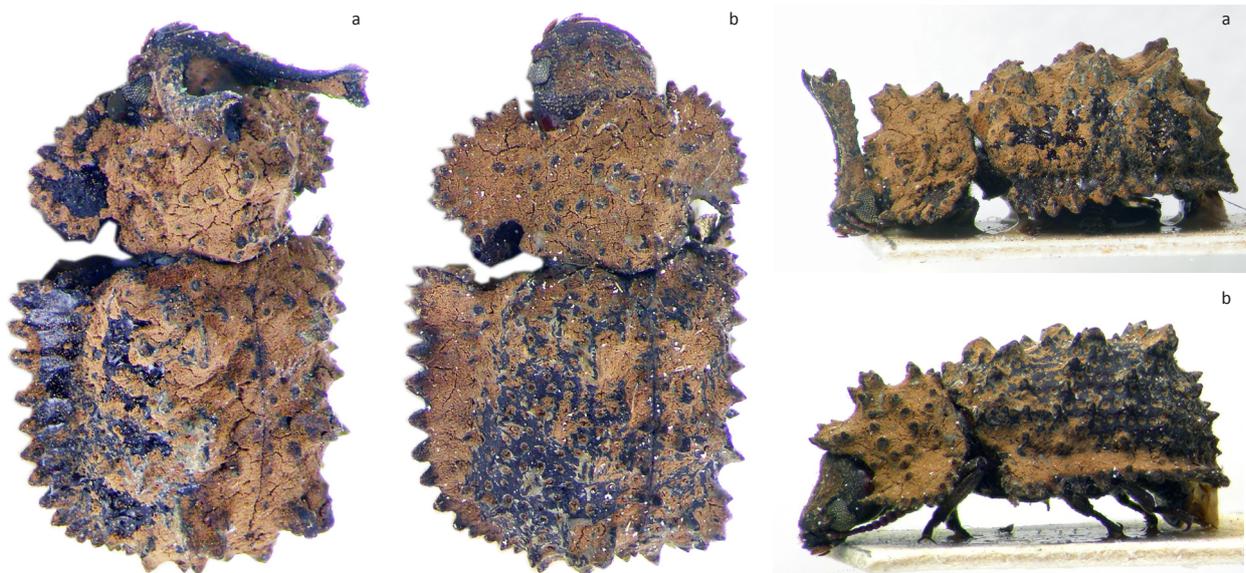


Image 3. *Byrsax cornutus*. a - male; b - female. © Tamás Németh, Budapest

externally. Mesocoxal cavities partly closed by mesepimeron. Membranes present between last three abdominal ventrites.

**Legs:** Not fossorial, tibiae with longitudinal carinae, subapical tarsomeres very short, obliquely truncate, plantar surfaces with long sparse setae. Tarsal formula 4-4-4 (in contrast with 5-5-4 as normal in the family Tenebrionidae).

**Measurements (in mm; 1 male and 1 female):** TL = 6–6.2, TW = 2.6–2.9, PL = 2.5–2.8, PW = 1.9–2.1, EL = 4.2–4.4.

**Habitat:** On fruiting bodies of bracket fungi, also leaf

litter around them; attracted to light.

**Distribution:** India (Kerala: Kozhikode; Pondicherry); Sri Lanka (Colombo, Kantalai, Rajakadalawa, Puwakkpitiya, Uggalkaltota, Galle). Occurrence in Sumatra (Gebien 1925) is doubtful.

**Remarks:** *Byrsax cornutus* is active after sunset. During the day it remains motionless, but starts walking upon exposure to sunlight to find shelter. On handling it produces a very strong, distinctive odour caused by the secretion of abdominal defensive glands.

Dorsal surface of the beetle is strongly sculptured and tuberculate, and capable of holding a compact layer of

Key to species of *Byrsax* from India

Each elytron with three prominent, large protuberances and numerous much smaller tubercles; six protuberances on two elytra arranged in two parallel rows. Fore and middle protuberances are longitudinal, hind one transverse. Pronotum with a pair of large, three- or four-peaked tubercles situated at middle, and two pairs of smaller tubercles before scutellum. Body longer (6.0–7.5 mm) ..... *B. cornutus*

Elytra with numerous smaller tubercles subequal in size. Pronotum with numerous small tubercles, the largest situated just behind anterior margin. Body shorter (4.5–5.5 mm) ..... *B. tuberculatus*

spores of the host fungi. This, along with the body form, provides a perfect camouflage; the motionless beetle looks like a simple hump and is very hard to recognize in its environment of rugged fruiting bodies and parts of rotten wood.

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