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A NEW SPECIES OF *THECOLAX* WESTWOOD (CHALCIDOIDEA : PTEROMALIDAE) PARASITISING WOOD BORING BEETLES FROM INDIA

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INTRODUCTION

Theocolax Westwood belongs to the subfamily Cerocephalinae of Pteromalidae, members of which are parasites of small beetles associated with stored grains or anobiid beetles attacking dead wood. There are 6 species known under the genus in the world, out of which four occur in the Oriental Region (Noyes, 2001, (Table 1)). From the Indian subcontinent only *Theocolax elegans* (Westwood) is known which is commonly found together with Pteromalid parasites *Anisopteromalus calandrae* (Howard) and *Cerocephala dinoderi* Gahan, attacking small beetle pests infesting stored grains (Boucek *et al.*, 1979, Sureshan & Narendran, 2003). During the faunistic survey of Lonar Crater Wild life sanctuary of Buldhana district, Maharashtra (19°59" N; 76°34" E) by the Zoological Survey of India, Western Regional Station, Pune, one species of *Theocolax* was reared from pieces of dead wood of *Ficus* plant, which was heavily infested with wood boring beetles. The wood was infested with larger and smaller beetle larvae, the presence of which was indicated by numerous smaller and larger holes. On detailed examination it was revealed that the specimens of *Theocolax* emerged from the wood belong to an undescribed species, which is described hereunder. From the dead wood two beetle specimens of the family Cerambycidae viz. *Olenecamptus bilobus* Fabricus also emerged. Since beetles of the family Cerambycidae are not yet reported as hosts for *Theocolax* species, the possibility of the new species parasitising such beetles is excluded. Since the wood is infested with smaller beetles, probably of the family Anobiidae, it is assumed that the new species attack such beetles in dead wood.

The following abbreviations are used in the text : F1-F5–Funicular segments 1 to 5; OOL–Ocellocular distance; POL–Postocellar distance; SMV–Submarginal vein; MV–Marginal vein; PMV–Postmarginal vein; STV–Stigmal vein; T1, T2–Gastral tergites 1 and 2.

Table 1. : *Theocolax* species of the world.

Species	Host	Distribution
<i>Theocolax backeri</i> (Crawford, 1915)	Larval/pupal parasites of Scolytidae.	Philippines (Oriental)
<i>Theocolax elegans</i> (Westwood, 1874) (Brachypterous, macropterous and apterous forms known)	Larval or nymphal parasites of beetles associated with stored grains, common host : <i>Sitophilus oryzae</i> (rice weevil); other hosts : <i>Sitophilus granarius</i> , <i>S. linearis</i> , <i>S. zeamais</i> , <i>Sitotroga cerealella</i> , <i>Stegobium paniceum</i> , <i>Zabrotes subfasciatus</i> , <i>Bruchus analis</i> , <i>Bruchus chinensis</i> , <i>Callosobruchus maculatus</i> , <i>Acanthoscelides obtectus</i> , <i>Stegobium paniceum</i> , <i>Caulophilus latinasus</i> , <i>Caulophilus oryzae</i> , <i>Cryptolestes ferrugineus</i> , <i>Lasioderma serricorne</i> , <i>Prostephanus truncatus</i> , <i>Rhyzopertha dominica</i> , <i>Sphenophorus</i> , Chrysomelidae, Curculionidae, Scolytidae, Bostrichidae, Anobiidae, Gelechiidae	Cosmopolitan
<i>Theocolax formiciformis</i> Westwood, 1832 (Micropterous and Macropterous forms known)	Common parasite of <i>Anobium</i> sp. (Coleoptera) in dead wood. Other hosts : <i>Sitophilus granarius</i> , <i>Trypomyia carpini</i> , <i>Anobium punctatum</i> , <i>Hylesinus fraxini</i> , <i>Lyctus brunneus</i> , <i>Anobium</i> .	Western and Central Europe (Widely distributed), New Zealand, Nearctic, Australasian.
<i>Theocolax fasciata</i> (Ishii, 1956)	Not known	Japan
<i>Theocolax frater</i> (Girault, 1913)	Not known	Australia
<i>Theocolax phloeosini</i> Yang, 1989	Larval/pupal parasite. Recorded hosts : <i>Scolytus seulensis</i> , <i>S. butovitschi</i> , <i>S. schevyrewi</i> , <i>Phloeosinus aubei</i>	China (Oriental)

Theocolax radhakrishnani sp. nov.

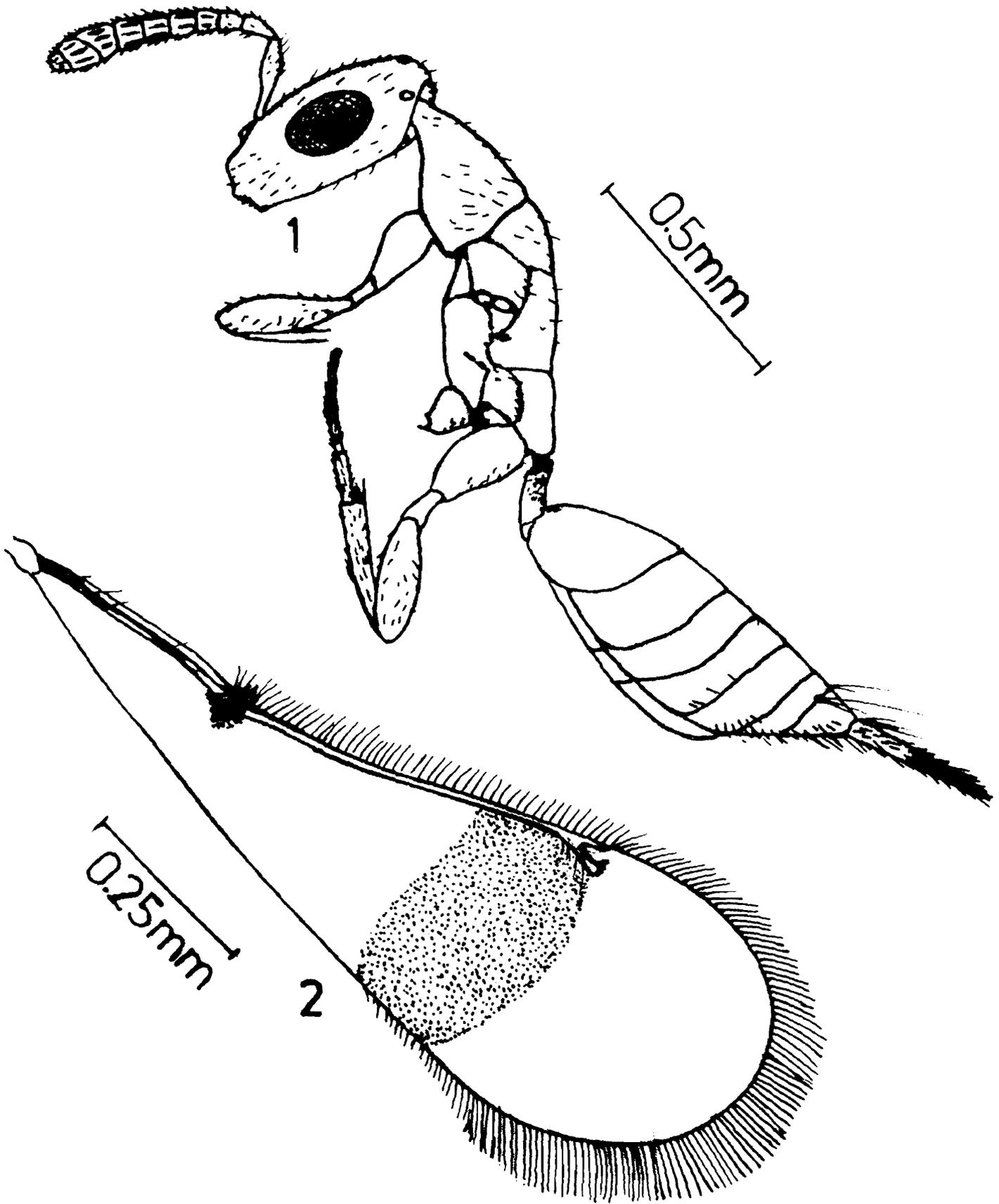
(Figs. 1-2)

Holotype : Female, Length 2 mm (including ovipositor). Dark brown; dorsal part of head, tip of antenna, mesosoma except propodeum, gaster and tip of ovipositor blackish; fore and hind coxae yellowish white; tegulae brown; wings hyaline with a brown transverse infumation below stigma.

Head : (Fig. 1) Almost rectangular in facial view, longer than wide, parallel sided, mostly smooth and polished except with small scattered piliferous punctures; face below level of antennal insertion finely reticulate with denser setae. In front view head 1.23x as long as wide; eyes separated 1.4x by their height; malar space 0.8x as long as eye; eyes 1.6x as long as wide in profile. In dorsal view head 1.8x as wide as long; temple length almost equal to eye length, ocelli small, POL 1.3x OOL, occipital carina fine, but distinct, almost touching posterior ocelli. Antennae inserted well below middle of face, scape as long as eye, maximum width of scape in middle, pedicel plus flagellum 1.3x head width, pedicel longer than F1, funicular segments becoming wider towards tip; F1–F3 equal in length, F4 and F5 equal but a little longer than F3, club a little shorter than three preceding segments combined.

Mesosoma : (Fig. 1) Pronotum bell shaped, 1.25x as long as wide in dorsal view, smooth and polished with scattered sparse white hairs, neck region distinctly but finely reticulate. Mesoscutum 1.3x as wide as long, polished with sparse piliferous punctures, notauli incomplete, in the form of fine groove with minute cross carinulae. Scutellum medially 1.21x as long as mesoscutum, and 1.2x as wide as long, polished, with 3 setae laterally on either side. Dorsellum very narrow. Propodeum uniformly and distinctly reticulate, medially as long as mesoscutum, median area almost flat, no median carina and plicae, callus with very small hairs; spiracles very small. Mesopleuron uniformly and finely reticulate. Metapleuron smooth and shiny. Forewing (Fig. 2) 3.2x as long as wide without discal setae; marginal fringe very long, a tuft of black bristles at parastigma, a broad brown infumation embracing apical half of MV and all of the STV and extending across the wing and a slight brownish infumation below parastigmal bristles. Relative lengths of SMV 14.5, MV 21, PMV 2 and STV 1.5. Relative lengths of hind coxa 9, femur 11, tibia 14 and tarsus 14, fore and hind femora a little swollen, hind tibia with 2 unequal spurs.

Metasoma : (Fig. 1) Distinctly petiolate, petiole long, only a little shorter than hind coxa in profile, gaster (without petiole and with ovipositor) 1.23x as long as head plus mesosoma combined, petiole distinctly reticulate, the first sternite is produced forwards under the elongate petiole and both sclerites are strongly sclerotised. In dorsal view they appear as one petiole which is more wide subapically with two small lateral spines and fine carinae on either sides; exerted part of ovipositor little shorter than half length of gaster (without petiole, including ovipositor),



Figs. 1-2. : *Theocolax radhakrishnani* sp. nov. Female : 1. body in profile; 2. forewing.

cerci long, posterior margin of T1 deeply notched in the middle as in *T. elegans*, posterior margin of T2 slightly emarginated, the remaining tergites almost straight.

Male : Length 1.2 mm. Closely resembles female, but differs in smaller size, shorter gaster and funicular segments of antenna more globular except first and second.

Material examined : HOLOTYPE : Female : INDIA : Maharashtra, Buldhana district, Lonar crater wild life sanctuary, 19.xi.2003, ex. Dead wood infested with wood boring beetles. PARATYPES : 1 Male, 3 Female, other data same as that of holotype. The type specimens are kept in the collections of Western Regional Station, Zoological Survey of India, Pune.

Biology : Not known. Reared from dead wood of *Ficus* plant extensively infested with wood boring beetles.

Etymology : The species is named after Sri. C. Radhakrishnan, Joint Director, Western Ghats Field Research Station, Zoological Survey of India, Calicut.

Remarks : The new species resembles *Cerocephala* species in having the peculiar longer petiole of the gaster and the long ovipositor. But it is placed in *Theocolax* because of the peculiar, elongate and rather long head, which is considered as the main character of the genus (Boucek, 1988). Boucek (1988) opined that *Theocolax frater* (Girault) with a long petiole may prove to belong to *Cerocephala*, but it seems to have a strong median carina and plicae on the propodeum and according to Gahan (1946) *T. frater* differs from *T. elegans* mainly in having the first funicular segment wider than long. Though the new species possesses an elongate petiole, the propodeum is without median carina and plicae and the first funicular segment longer than wide unlike in *T. frater*.

The new species can be readily distinguished from other species in having a long gastral petiole and distinctly elongate ovipositor. However in general morphology it closely resembles *T. elegans* (Westwood), but differs from *T. elegans* in having a long gastral petiole (only little shorter than hind coxa), long ovipositor, occipital carina almost touching the posterior ocelli and longer pronotum in *T. elegans*, the petiole is small, only a little longer than half of hind coxa, ovipositor very short, only 0.2x as long as gaster, posterior ocellus separated from the occipital carina by its diameter and pronotum shorter, almost as long as broad.

SUMMARY

A new species of *Theocolax* Westwood viz. *T. radhakrishnani* is described from India and its affinities with other known species are discussed. The specimens of this species emerged from wood infested with anobiids.

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