



## A new genus and species of Pteromalidae (Hymenoptera: Chalcidoidea) parasitic on Ghoon borers of Bamboo in Karnataka (India)

T. C. NARENDRAN, O. K. REMADEVI<sup>1</sup>, RAJA MUTHUKRISHNAN<sup>1</sup>  
and C. ABDULLATHEEF<sup>1</sup>

Systematic Entomology Laboratory, Department of Zoology,  
University of Calicut, Calicut 673 635, Kerala, India.

<sup>1</sup>Institute of Wood Science & Technology, Bangalore 560 003, Karnataka, India.

E-mail: drtenarendran@yahoo.com

---

**ABSTRACT:** *Cyrtophagoides ghoonbori* Narendran gen. & sp. nov. is described as a parasitoid of the Ghoon borer, *Dinoderus* sp., of Bamboo in Karnataka, India and compared to related genera. *Heydonia indica* Narendran (Pteromalidae) is newly reported from the tunnels of *Dinoderus* sp. and *Dendrocalamus strictus* (Rosch.) (Pteromalidae) is newly reported from India.

**KEY WORDS:** *Cyrtophagoides ghoonbori*, *Heydonia*, *Dinoderus*, *Dendrocalamus*

---

*Bambusa bamboos* (L.) Voss (Poaceae: Bambusoideae) is used for a variety of purposes including building materials, furniture, paper pulp, agricultural implements, household utensils and medicinal use (Rao *et al.* 1998). The Ghoon borer, *Dinoderus* sp. (Coleoptera: Bostrichidae) bores into cut bamboo at spots where the external rind has been severed or removed or into the exposed transverse sections of cut ends and into the internal walls of the terminal internodes of hollow bamboo. The entrance tunnel extends for a fraction of an inch towards the center in a solid column and between the walls. The tunnels are finely packed with fine flowery dust. Specimens of the new genus of Chalcidoidea described in this paper were collected when they emerged from the tunnels of the Ghoon borers and are therefore presumed to be parasitoids of *Dinoderus* sp. The following species of Chalcidoidea are known to be associated with

*Dinoderus* from India: *Endobia donacis* Erdos (Eurytomidae), *Metapelma indica* Girault (Eupelmidae) and *Cerocephala dinoderi* Gahan (Pteromalidae) (Subba Rao & Hayat, 1986; Boucek, 1988; Boucek *et al.*, 1979; Noyes, 2003). We also newly report *Heydonia indica* Narendran from *Dinoderus* sp. associated with *B. bamboos* and *Dendrocalamus strictus* (Rosch.) from India.

Only future studies can reveal the importance of these chalcids as biological control agents of the ghoon borers of bamboo.

### Abbreviations used:

MV: Marginal vein  
OOL: Ocellocular distance  
PMV: Postmarginal vein  
POL: Postocellar distance

- DZUC : Department of Zoology,  
University of Calicut
- NZSI : National Zoological collections  
of Zoological Survey of India,  
Kolkata.
- Cyrtophagoides* Narendran  
gen.nov.
- Type species : *Cyrtophagoides ghoonbori*  
Narendran sp. nov.

Diagnosis: Female: head with occiput not margined; gena without hollow above base of mandible; clypeus strigose, its apical margin transverse (Fig.2). Both mandibles bidentate. Antennae (Fig.1) inserted well above lower margin of eyes, distance between torulus and oral margin less than that between torulus and anterior ocellus (17:25), distance between toruli about equidistant between torulus and eye; antennal formula 11263; anelli transverse; flagellum somewhat stout but not stouter than pedicel, with one or two rows of sensillae per funicular segment (Fig.1); sutures of clava not oblique. Mesosoma depressed. Pronotum large, somewhat bell shaped (Fig.4); collar not clearly differentiated, dorsal part rounded off anteriorly. Mesoscutum shorter than pronotum, broader than long; notauli incomplete. Scutellar frenum weakly indicated (visible only under certain angle of illumination). Propodeum medially not produced beyond bases of hind coxae, its posterior margin therefore nearly straight, without a nucha, median carina weak, indistinct posteriorly; spiracular sulci indistinct, spiracles rather small,

subcircular, nearer to metanotum than to middle of propodeum (Fig.4), callus not pilose, postspiracular area rather large, mostly reticulate. Mesepisternum strongly reticulate. Prepectus larger than tegula. Hind coxa bare dorsally; hind tibia with two apical spurs, one shorter than other (Fig.1). Forewing (Fig.1) with speculum open below; MV 2.36x as long as STV, subequal to SMV, about 1.4x as long as PMV; stigma small. Gaster sessile, ovate, somewhat pointed apically; ovipositor sheaths projecting slightly beyond last tergite; tip of hypopygium extending well beyond midlength of gaster (Fig.1).

Etymology: The genus name is a combination of letters from *Cyrtoptyx* Delucchi and *Psychophagoides* Graham. Masculine gender.

Discussion. This new genus belongs to the Subfamily Pteromalinae. Though it resembles several described genera of Pteromalidae, it does not fit the genera keyed in Sureshan & Narendran (2004), Boucek & Heydon (1997), Boucek and Rasplus (1991), Boucek (1988), Mani (1989), Farooqui & Subba Rao (1985), Dzhannokmen (1978), Graham (1969) and Nikolskaya (1963). However, it comes very close to the European genera *Psychophagoides* Graham and *Cyrtoptyx* Delucchi. It is similar to *Psychophagoides* in having: 1) occiput not margined 2) clypeus strigose 3) antennae inserted above lower eye margin; 4) sutures of clava not oblique; 5) notauli incomplete; 6) propodeal sculpture reticulate and 7) hind tibia with two apical spurs. The new genus differs from *Psychophagoides* as follows:

<i>Cyrtophagoides</i> Narendran gen.nov.	<i>Psychophagoides</i> Graham
1) Both mandibles bidentate.	1) Left mandible tridentate and right mandible quadridentate.
2) Lower margin of clypeus entire.	2) Lower margin of clypeus shallowly emarginated
3) Flagellum not stouter than pedicel.	3) Flagellum stouter than pedicellus.
4) Pronotum large and bell shaped.	4) Pronotum short and not bell shaped
5) Propodeal nucha absent	5) Propodeal nucha represented by a small subtriangular area.
6) MV 2.36x as long as STV.	6) MV 1.9x as long as STV.
7) Gaster petiole absent	7) Small transverse petiole present

In the key to species of Pteromalidae by Sureshan and Narendran (2004), the new genus comes very close to *Cyrtotypx* Delucchi but differs as follows:.

<i>Cyrtophagoides</i> Narendran gen.nov.	<i>Cyrtotypx</i> Delucchi
1) Antennal formula 11263	1) Antennal formula 11353
2) Pronotum large and bell shaped.	2) Pronotum not so large and bell shaped.
3) Fore femur and hind femur stout.	3) Fore femur and hind femur not so stout.
4) Mesosoma depressed from dorsal side	4) Mesosoma not depressed from dorsal side
5) Lower margin of clypeus entire	5) Lower margin of clypeus shallowly emarginated
6) Propodeum without nucha	6) Propodeum with a small nucha
7) MV subequal in length to costal cell	7) MV distinctly shorter than costal cell
8) Parasitic on Bostrichidae.	8) Parasitic on Tephritidae and Curculionidae.

The new genus can be separated from all the 17 genera resembling it by the character matrix (Table 1) given below.

- |   |  |
|---|--|
| 1. <u>Mandibular dentition</u> : (Maximum number of teeth in one mandible) State 1: Quadridentate. State 2: Tridentate. State 3: bidentate. State 4: Variable or missing data.  | 7. <u>Micropilosity on clava</u> : State 1: Present. State 2: Absent. State 3: Missing data.   |
| 2. <u>Lower margin of clypeus</u> : State 1: Transverse (non emarginated). State 2: Shallowly or well emarginated. State 3: Deeply incised. State 4: Slightly obtuse or rounded. State 0: Variable or missing data.   | 8. <u>Occiput</u> : State 1: With a cross carina. State 2: Without a cross carina.   |
| 3. <u>Antennal formula</u> : State 1: 11263. State 2: 11353. State 3: Variable (either 1 or 2).   | 9. <u>Pronotum</u> : State 1: Large and bell shaped. State 2: Not large and bell shaped. State 3: Large but not bell shaped.   |
| 4. <u>Location of antennal toruli</u> : State 1: Below level of lower margin of eyes. State 2: At level of lower margin of eyes. State 3: Above level of lower margin of eye and near and below middle of frons. State 4: At middle of frons. State 5: Above middle of frons. | 10. <u>Cross carina on Pronotum</u> : State 1: Absent. State 2: Present.   |
| 5. <u>Flagellum width</u> : State 1: Stoutier than pedicel. State 2: Not stoutier than pedicel. State 0: Missing data.  | 11. <u>Propodeal nucha</u> : State 1: Absent. State 2: Nucha represented by a short subtriangular area. State 3: With a small nucha.   |
| 6. <u>Apex of clava</u> : State 1: Without a spine or spicule or acutely pointed. State 2: With a spine or spicule or acutely pointed.  | 12. <u>Marginal vein of Forewing</u> : State 1: Not thickened. State 2: slight uniform thickening. State 3: Thickened towards base only. State 4: Thickened towards apex. State 0: Variable. |
|   | 13. <u>Length of MV:Costal cell</u> : State 1: Subequal to CC. State 2: Shorter than CC. State 3: Longer than CC.  |
|   | 14. <u>Presence of macula on Forewing disc</u> : State 1: Absent. State 2: Present. State 3: Variable or missing data.   |
|   | 15. <u>Forefemur</u> : State 1: Stout. State 2: Not stout. State 3: Variable or missing data.  |
|   | 16. <u>Hind femur</u> : State 1: Stout. State 2: Not stout.  |

**Table 1. Character State matrix for females of 17 genera resembling *Cryptophagoides* g. nov.**

GENUS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1. <i>Cryptophagoides</i>	3	1	1	3	2	1	2	2	1	1	1	2	1	1	1	1	1	2	3	1
2. <i>Prychophagoides</i>	1	2	1	4	1	1	2	2	2	1	2	2	2	1	1	1	2	2	1	2
3. <i>Cyrtoptyx</i>	0	2	2	3	1	1	1	2	2	2	1	1	2	1	2	2	2	2	1	2
4. <i>Chlorocyclus</i>	3	0	1	3	1	1	2	2	3	1	1	1	2	1	2	2	2	1	4	1
5. <i>Norbanius</i>	0	0	1	3	1	2	2	2	3	1	1	1	2	1	2	1	2	2	4	2
6. <i>Anorbanius</i>	0	1	1	1	1	1	1	2	2	1	1	1	2	1	1	1	2	2	4	2
7. <i>Cheiropachus</i>	0	2	1	3	1	1	2	2	2	1	1	1	2	2	1	1	2	2	4	1
8. <i>Lariophagus</i>	2	2	1	4	1	1	2	2	2	1	3	1	2	1	2	2	2	1	4	1
9. <i>Trichomalopsis</i>	1	0	1	3	1	1	2	1	2	2	2	1	2	1	2	2	2	1	4	1
10. <i>Mesopolobus</i>	0	0	2	3	1	1	2	1	2	1	1	1	2	0	3	3	2	1	4	1
11. <i>Homoporus</i>	1	0	0	0	1	1	2	2	2	1	3	1	2	1	1	1	2	1	4	1
12. <i>Hobbya</i>	1	3	1	3	1	1	2	2	2	1	3	2	2	1	2	2	2	1	4	1
13. <i>Pachyneuron</i>	1	2	0	3	1	1	2	2	2	1	3	4	2	1	2	3	2	1	4	2
14. <i>Stinoplus</i>	0	2	1	3	1	1	2	1	2	1	2	2	2	1	2	3	2	1	4	2
15. <i>Spintherus</i>	1	2	1	3	1	1	2	2	2	1	3	2	2	1	2	3	2	1	4	2
16. <i>Pteromalus</i>	2	0	1	3	1	1	2	2	2	1	3	1	2	1	2	2	2	1	1	2
17. <i>Propicrosextus</i>	3	1	1	3	1	1	2	2	2	1	3	1	2	1	2	2	2	1	4	2

State 3: Variable or missing data.

17. Mesosoma: State 1: Depressed. State 2: Not depressed.
18. Apical spur/spurs of hind tibia: State 1: With 1 spur. State 2: With 2 spurs.
19. Frenal line: State 1: Distinct on all sides. State 2: Marked on sides only. State 3: Weakly marked on all sides. State 4: Absent.
20. Prepectus: State 1: Larger than tegula. State 2: Smaller than tegula. State 0: Missing data.

***Cyrtophagoides ghoonbori* Narendran sp.nov.**

Female: length 2-2.25mm. Black with slight metallic green tinge; eye pale gray, often with black round patch or completely black; ocelli pale yellow; antenna dark brown with scape and pedicellus pale brownish yellow; legs pale yellow with hind coxa black except apex pale; pretarsi dark brown; fore and hind wings hyaline with veins pale brown.

Head: width in dorsal view 2.01x median length (74:36) and in anterior view 1.21x length (68:56), as broad as or 1.05x as broad as mesoscutum; oral foramen 0.4-0.42x maximum width of head in front view; occiput not margined; gena without a hollow; clypeus moderately strigose; antennal toruli situated well above level of lower margin of eyes; inter antennal area slightly bulged; clypeus weakly differentiated (careful observation needed under certain angle of illumination); frons and face densely reticulate; POL 2.2x OOL; scrobe shallow and strongly reticulate; temple 0.25x as long as width of eye, converging, eyes separated by 1.5x own length; malar space one third length of eye (5:15). Mandibles bidentate. Antenna with scape slightly shorter than eye (14:15), hardly reaching anterior ocellus; combined length of pedicellus and flagellum slightly shorter than width of head (13:14); pedicellus 1.64x as long as broad and ghoonbori, slightly shorter than twice length of F1; relative measurements of length: width of segments: scape= 51:9; pedicel= 18:11; F1-F6 = 11:7, 15:7, 12:10, 10:10,

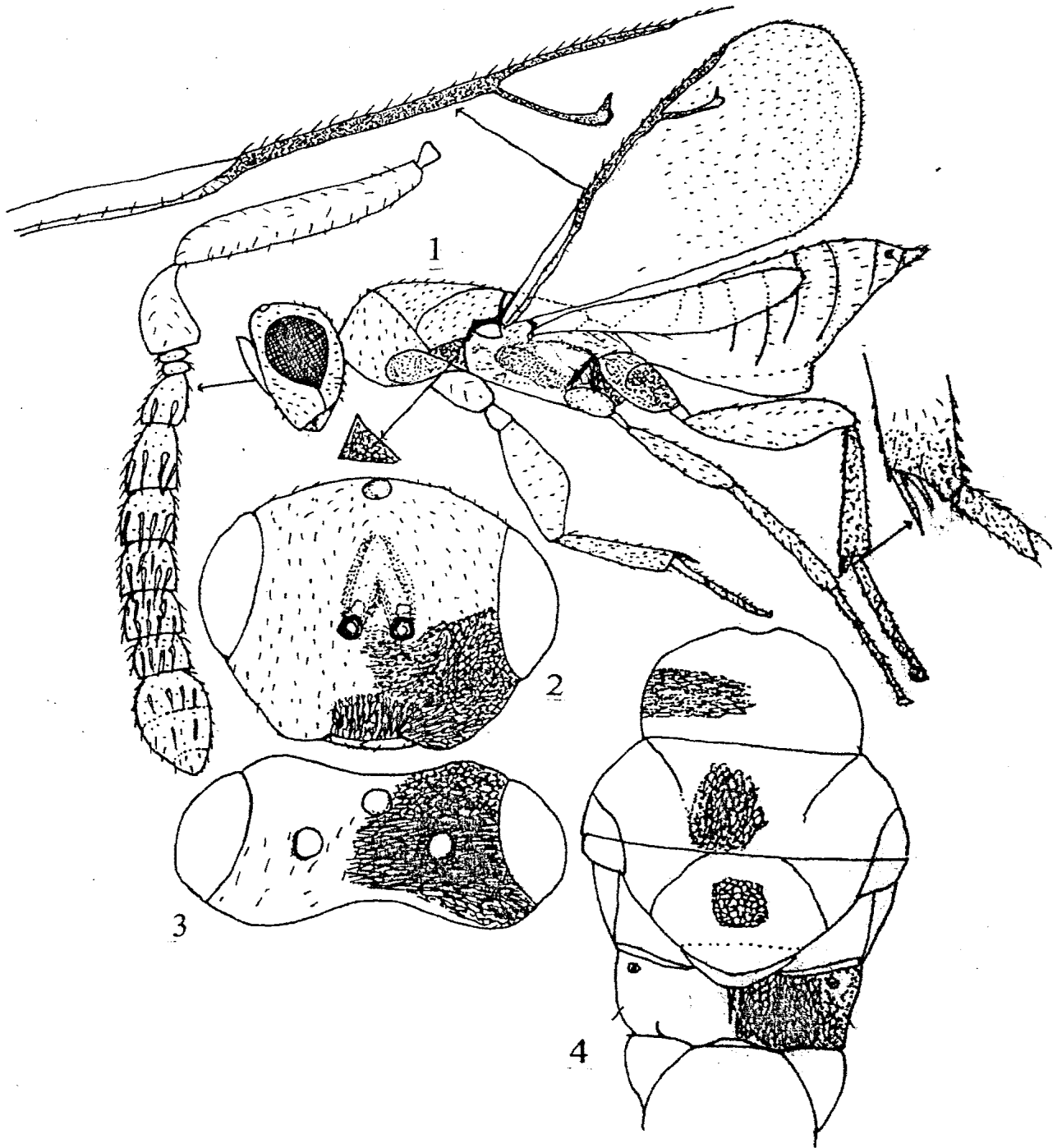


Fig. 1. *Crytophagoides ghoonbori* Narendran sp. nov. Female. 1: Body profile; 2: Head front view; 3: Head dorsal view; 4: Mesosoma dorsal view

9:11, 8:11; clava=22:14; clava without micropilosity, spiculum or seta; sensilla on funicular segments mostly in single or double rows as in figure 1.

Mesosoma: 1.33-1.4x as long as broad. Pronotum slightly sloping anteriorly without definite collar, without transverse carina or ridge. Mesonotum with mesoscutum 2.4-2.7x as broad as long, its reticulation raised slightly above general surface; scutellum subequal in length to mesoscutum, distinctly wider than long (34:25), frenal line weak; dorsellum a convex, transverse strip, finely reticulate. Propodeum about 0.64x as long as scutellum; median carina weak, indistinct posteriorly; plica indicated only by a short carina posteriorly; surface longitudinally strigose-reticulate; spiracular sulci indistinct. Mesopleuron with mesepisternum strongly reticulate; mesepimeron partly smooth and shiny. Legs stout; fore femur 2.6x as long as broad; hind femur 3x as long as broad; hind tibia with 2 apical spurs of unequal size. Forewing 2.23-2.25x as long as broad; costal cell with dorsal surface bare, ventral surface with a row of hairs on distal half; basal cell virtually bare, open below; relative lengths of MV=52, PMV=38; STV=22; marginal fringe present but short as in figure 1.

Metasoma: Sessile, subequal in length or slightly longer than mesosoma; 1.4-1.9x as long as broad, slightly sunken dorsally and convex ventrally; T1 occupying slightly less than one-third length of gaster, its hind margin weakly curved (convex); ovipositor sheaths projecting slightly.

Holotype: Female, India: Karnataka, Bangalore, 12°58'N 77°35'E, 6-vi-2007, Raja Muthukrishnan. Paratypes: 5 females with same data as holotype. The holotype and paratypes are deposited in DZUC pending transfer to NZSI.

Biology: Emerged from the tunnels of Ghoon borer (*Dinoderus* sp.: Bostrichidae) on *Bambusa bamboos* (L.) Voss.

Etymology: The species name *ghoonbori* is an arbitrary combination of letters but its pronunciation gives the impression of the common English name of the host Ghoon-borer.

## New Record

We hereby newly report *Heydonia indica* Narendran from the tunnels of Ghoon borer, *Dinoderus* sp. associated with *B. bamboos* and *Dendrocalamus strictus* (Rosch.) from India.

## ACKNOWLEDGEMENT

The senior author (T. C. Narendran) thanks the University of Calicut, particularly Dr. K. P. Janardhanan, Head of the Department of Zoology, University of Calicut, for facilities. The other authors acknowledge the Director, Wood Science Institute, Bangalore, for facilities and encouragement. We are thankful to the unknown referee for the very useful suggestions and tract changes which we have incorporated.

## REFERENCES

- Bouček, Z., Subba Rao, B. R. and Farooqi, S. I. 1979. A preliminary review of Pteromalidae (Hymenoptera) of India and adjacent countries. *Oriental Insects*, 12: 433-467.
- Bouček, Z. 1988. *Australasian chalcidoidea (Hymenoptera). A biosystematic revision of Genera of fourteen families, with a reclassification of species.* CAB International. Wallingford, Oxon, UK. 1-832.
- Bouček, Z and Rasplus, J. Y. 1991. Illustrated key to West-Palaearctic genera of Agronomique, Paris 75007. pp 1-140.
- Bouček, Z and Heydon, S. L. 1997. Pteromalidae. pp. 541-692. In: Annotated key to the genera of Nearctic Chalcidoidea (Hymenoptera) (Eds. G. Gibson, J. T. Hubner & J. B. Woolley) National Research Council of Canada. Monograph Publishing Programme. Ottawa, Canada. Pp.1-794.
- Dzhanokmen, K. A. 1987. 5. Family Pteromalidae pp. 88-411. In: Keys to the Insects of the European part of the USSR Vol. iii. Part ii. 1-1317 (Ed. G. S. Medvedev). Amerind Publishing Co. Pvt. Ltd. New Delhi-1987.
- Farooqi, S. I. and Subba Rao, B. R. 1985. Family Pteromalidae, pp. 254-263. In: The Chalcidoidea (Insecta: Hymenoptera) of India and the adjacent

- countries. Part 1. Review of Families and the keys to families and genera. *Oriental Insects*, **19**: 161-310. & 15pp.
- Graham, M. W. R. deV. 1969. The Pteromalidae of North Western Europe (Hymenoptera: Chalcidoidea). *Bulletin of the British Museum (Natural History) Entomology Supplement*, **16**: 1-908.
- Masi, M. S. 1988. Chalcidoidea (Hymenoptera) Part 1. The Fauna of India and The Adjacent Countries. (Ed. The Director Zoological Survey of India, Kolkatta), 1- 1067.
- Nikolskaya, M. N. 1963. The Chalcid Fauna of the USSR. (Chalcidoidea). (Translated from Russian Khal'tsidy fauny sssr, 1952). Published for the National Science Foundation, Washington, D. C. by the Israel Programme for Scientific Translations. Jerusalem. 1-593.
- Noyes, J. S. 2003 (Revised 2007). Universal Chalcidoidea Database. Available at [www.nhm.ac.uk/research-curation/projects/chalcidoids](http://www.nhm.ac.uk/research-curation/projects/chalcidoids)
- Rao, A. N., Ramanatha Rao, V. and J. T. Williams (Eds). 1998. Priority Species of Bamboo and Rattan, Published by International Plant Genetic Resource Institute, Rome, India Serdang, Malaysia IPGRI-APO Serdang.
- Subba Rao, B. R. and Hayat, M. 1986. A Catalogue of Chalcidoidea of India and Adjacent Countries. *Oriental Insects*. **20**: 1-439.
- Sureshan, P. M. and Narendran, T. C. 2004. Key to the Genera of Pteromalidae of India and the Adjacent Countries (Hymenoptera: Chalcidoidea). Edited by the Director Zoological Survey of India, Kolkatta. Occasional Paper **229**: 1- 56.

**(Received: 17.03.2008; Revised: 05.04.2008; Accepted: 26.05.2008)**