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TAXONOMIC STUDIES ON A COLLECTION OF PTEROMALIDAE (HYMENOPTERA : CHALCIDOIDEA) FROM PATNA AND NEARBY DISTRICTS OF BIHAR WITH THE DESCRIPTION OF TWO NEW SPECIES

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INTRODUCTION

Pteromalidae is one of the largest and taxonomically difficult families of Chalcidoidea (Hymenoptera Parasitica) members of which are distributed in all biogeographical regions of the world. Majority of Pteromalidae are primary or secondary parasitoids attacking a large range of insect orders in their various stages of development, thereby playing a vital role in the control of insect pests in nature. Many species of Pteromalidae were employed successfully in biological control programmes all over the world hence they also form a rewarding group of insects for various aspects of scientific studies like systematics, Biology, Ethology, ecology etc.

The family Pteromalidae contains over 3500 described species under 588 genera world wide (Noyes, 2003). When compared to the other parts of the world, the knowledge on the Pteromalid fauna of Indian subcontinent is still far from satisfactory. Boucek *et al.* (1979) provided a more complete picture of the Pteromalid fauna of Indian subcontinent which was supplemented by works of Farooqi & Subba Rao (1985, 1986), Sureshan (2003, 2007), and Sureshan & Narendran (2003, 2004). Currently 224 species of Pteromalidae under 101 genera and 18 subfamilies are reported from the Indian subcontinent, out of which Indian fauna is represented by 196 species under 91 genera and 18 subfamilies. When compared to the other parts of the country only fragmentary information is available on the Pteromalid fauna of the state of Bihar. 10 species of

Pteromalidae belonging to 10 genera and 5 subfamilies are reported from the state of Bihar (including the present state of Jharkhand).

The present paper is based on the study of collection of Pteromalidae made from some southern districts of Bihar near to Patna viz. Vaishali, Patna, Muzaffarpur, Gaya, Nalanda, Samasthipur, Chapra, Saran, Bhojpur and Jahanabad. Collections were made from the field employing an insect net specially made for the purpose and an aspirator. Specimens were also collected by rearing the suspected hosts (immature stages such as pupae, larvae, egg, etc.) in the laboratory. The specimens were properly preserved following standard procedures. The preserved specimens were identified following recent literature on Pteromalidae (Boucek, 1988, Boucek & Rasplus, 1991, Gibson *et al.*, 1993, Sureshan, 2003, Sureshan & Narendran, 2004 and Graham, 1969). The morphological terminology and the classification of the family given by Boucek 1988 is followed here. Altogether 34 species of Pteromalidae belonging to 25 genera and 7 subfamilies are reported here from Bihar which includes the species already known from the state. Two new species are described based on the present collections. The collections are deposited in Zoological Survey of India, Gangetic Plains Regional Centre, Patna, Bihar.

Following abbreviations are used in the text : ANIC- Australian National Insect collection, Canberra, Australia; BMNH-The Natural History Museum, London, UK; F, Female, F1-F6-Funicular segments 1 to

6; IARI-Division of Entomology, Indian Agricultural Research Institute, New Delhi; M- Male, MCSG-Museo Civico di Storia Naturel, Genova, Italy; MV-Marginal vein; NM-Entomologické oddelení, Národní Museum, Praha, CSSR; NRS-Naturhistoriska Riksmuseet, Stockholm, Sweden; OOL-Ocellocular distance; PMV-Post marginal vein; POL-Postocellar distance; QM-Queensland Museum, Brisbane, Australia; SMV-Submarginal vein; STV-Stigmal vein; T1-T5-Gastral tergites 1 to 5; USNM-United States National Museum of Natural History, Washington DC, USA; UZIL-Universitetets Zoologiska Institutionen, Lund, Sweden; ZSI- Zoological Survey of India, Calcutta, India. ZSIC- Zoological Survey of India, Western Ghats Regional Centre, Calicut, India.

SYSTEMATIC ACCOUNT

Order	HYMENOPTERA
Suborder	APOCRITA (Parasitica)
Superfamily	CHALCIDOIDEA
Family	PTEROMALIDAE
Subfamily	PTEROMALINAE

1. *Anisopteromalus calandrae* (Howard)

1881. *Pteromalus calandrae* Howard. *Ann.Rept.U.S.Dept. Agr. for 1880*. 273. M. USA. Texas. (USNM, presumably lost).
1951. *Anisopteromalus calandrae* (Howard). Peck, Transferred to *Anisopteromalus*. *U.S. Dept. Agr. Monogr. 2* : 564.
1979. *Pteromalus oryzae* Cameron, 1881. Syn. Boucek *et al. Oriental Ins.* 12 : 435.
1937. *Neocatolaccus indicus* Ayyar & Mani, Syn. Boucek *et al. 1979. Oriental Ins.* 12 : 436.
1913. *Neocatolaccus australiensis* Girault. Syn. Boucek 1988 *Australasian Chalcidoidea*. : 414.

Diagnostic characters: Body bluish black or dark greenish with metallic reflection. Coxae concolorous with thorax, femora brown except distal part and remainder of legs testaceous. Anterior margin of clypeus shallowly emarginate. Antennae with 3 anelli and 5 funicular segments, third anellus largest. Propodeum with short but distinct nucha, median carina indicated only anteriorly; plicae indicated only by the anterior plical foveae. Gaster with T1 subangularly produced, T1-T3 covering most of gaster.

Material examined : 4 F, Patna district, Rajendra Nagar, 28.ii.2009, coll. P.M. Sureshan. (Reg. no. A. 1333).

Distribution : India : Kerala, Bihar (present record) Orissa, Tamil Nadu, West Bengal. Cosmopolitan.

Remarks : Common parasite of beetles associated with stored products.

2. *Chlorocytus indicus* Sureshan

2000. *Chlorocytus indicus* Sureshan. *Rec. zool.Surv. India.* 98(2) : 143. F.M, India : Kerala (ZSIC).
2003. *Chlorocytus indicus*. Sureshan. *Rec. zool.Surv. India.* Occ. Paper. 205 : 25.

Diagnostic characters : Female length : 2.2 mm. Bright metallic bluish green; antenna with scape and pedicel testaceous, remainder brown. Fore and mid coxae brown; hind coxae concolorous with thorax, remainder of legs yellow with tips of tarsi brown. Head 1.3x as broad as thorax in dorsal view, antenna with pedicel plus flagellum length 1.2x head width; pronotal collar sharply carinate anteriorly; propodeum with fine complete median carina. Forewing with basal vein setate. Gaster longer than head plus thorax combined.

Material examined : 1 F, Vaishali dist., Bidarpur, 29.iii.2009, coll. P.M. Sureshan (Reg. No. A. 1256).

Distribution : India : Kerala, Bihar (current study).

Remarks : First record of the species from Bihar subsequent to the original description.

3. *Dinarmus acutus* (Thomson)

1878. *Dinarmus (Dinarmus) acutus* Thomson. *Hym. Scand.* 5 : 56.F, Boheman. (UZIL).

Diagnostic characters : Female : Length 2.1-3.3 mm. Dark metallic blue; coxae concolorous with thorax, femora and rest of legs brown, hind femora blackish; anterior margin of clypeus with two small teeth; antennae with third anellus not longer than second, pedicel as long as F1; propodeum with nucha long; forewing with PMV as long as MV; gaster short, non collapsing, 0.7x as long as head plus thorax combined.

Material examined : 1F, Vaishali dist., Hajipur, Chakia, 5.ii.2009 (Reg. No. A1199); 1 M, Patna dist., Fathua, Rasulpur, 28.ii.2009, coll. P.M. Sureshan (Reg. No. A. 1234).

Distribution : India : Kerala, Karnataka, Maharashtra, Orissa, Bihar (current study); Sri Lanka, Europe.

Remarks : Uncommon species parasitizing Bruchid beetles.

4. *Dinarmus basalis* (Rondani)

1877. *Entedon basalis* Rondani., *Boll. Soc. Ent. Ital.* 9 : 174. M. Italy. (Lectotype, Florence Mus).

1974. *Dinarmus basalis* (Rondani) : Boucek, transferred to *Dinarmus*. *Redia* 55 : 245-246.

Diagnostic characters : Dark green with brassy reflection, antennae yellowish brown; coxae concolorous with thorax, femora brown, remainder of legs testaceous. Anterior margin of clypeus shallowly emarginate; antennae with scape hardly reaching median ocellus, pedicel shorter than F1, third anellus longest. Forewing with PMV longer than MV. Gaster ovate, dorsally flat.

Material examined : Nil.

Distribution : India : Kerala, Delhi, Andhra Pradesh, Bihar, Haryana, Rajasthan.

Remarks : Parasities of bruchid beetles. Reported from Dholi (Samasthipur dist, Bihar) (Boucek *et al.*, 1979).

5. *Dinarmus colemani* (Crawford)

1913. *Bruchobius colemani* Crawford. *Proc. U.S. Natn. Mus.* 45 : 250. F, India (Bangalore). (USNM).

1956. *Dinarmus colemani* (Crawford). Delucchi, transferred to *Dinarmus*. *Z. Angew. Ent.* 39 : 240.

Diagnostic characters : Length. 2.4 mm. Bluish black with metallic reflection, gaster brownish black, head narrow in profile, anterior margin of clypeus almost straight, slightly projecting ; antennae with third anellus longest, pedicel little shorter than F1; propodeum with nucha long ; forewing with stigma moderately capitate; PMV little shorter than MV; gaster ovate, slightly collapsing, sub equal to head and thorax combined.

Material examined : Nil.

Distribution : India : Kerala, Bihar, Delhi, Karnataka, Tamil Nadu, Orissa; Bangladesh.

Remarks : Uncommon species, parasitoid of *Callosobruchus chinensis* and other bruchid beetles in stored products. Reported from Dholi (Samasthipur dist) of Bihar (Boucek *et al.*, 1979).

6. *Dinarmus maculatus* (Masi)

1924. *Sphaerakis maculata* Masi. *Ann. Mus. Civ. Stor. Nat. Giacomo Doria* 51 : 157. Myanmar. (MCSG).

1979. *Dinarmus maculatus* (Masi): Boucek, *et al.*, transferred to *Dinarmus*. *Oriental Ins.* 12(4) : 412.

Diagnostic characters : Female : Length 2.5-3 mm.

Metallic blue with bronzy patches on vertex and thorax, gaster darker; coxae concolorous with thorax, femora and median part of tibiae brown, base and apical part of tibiae and all tarsi yellow; anterior margin of clypeus almost straight, not projecting ; POL sub equal to OOL; antennal scape reaching up to middle of median ocellus; third anellus as long as first and second combined; forewing with PMV as long as or slightly longer than MV; gaster cordiform.

Material examined : 32 F, 3 M (in alcohol), 1 F (on card), Bihar, Patna dist., Fathipur, 13.vi.2009, Reg. No. (A. 1330, 1334); 2 F, Chapra dist., Sonapur, 30.ix.2009, coll. P.M. Sureshan. (Reg. No. 1335).

Distribution : India (Kerala, West Bengal, Maharashtra, Orissa, Bihar (present record); Myanmar.

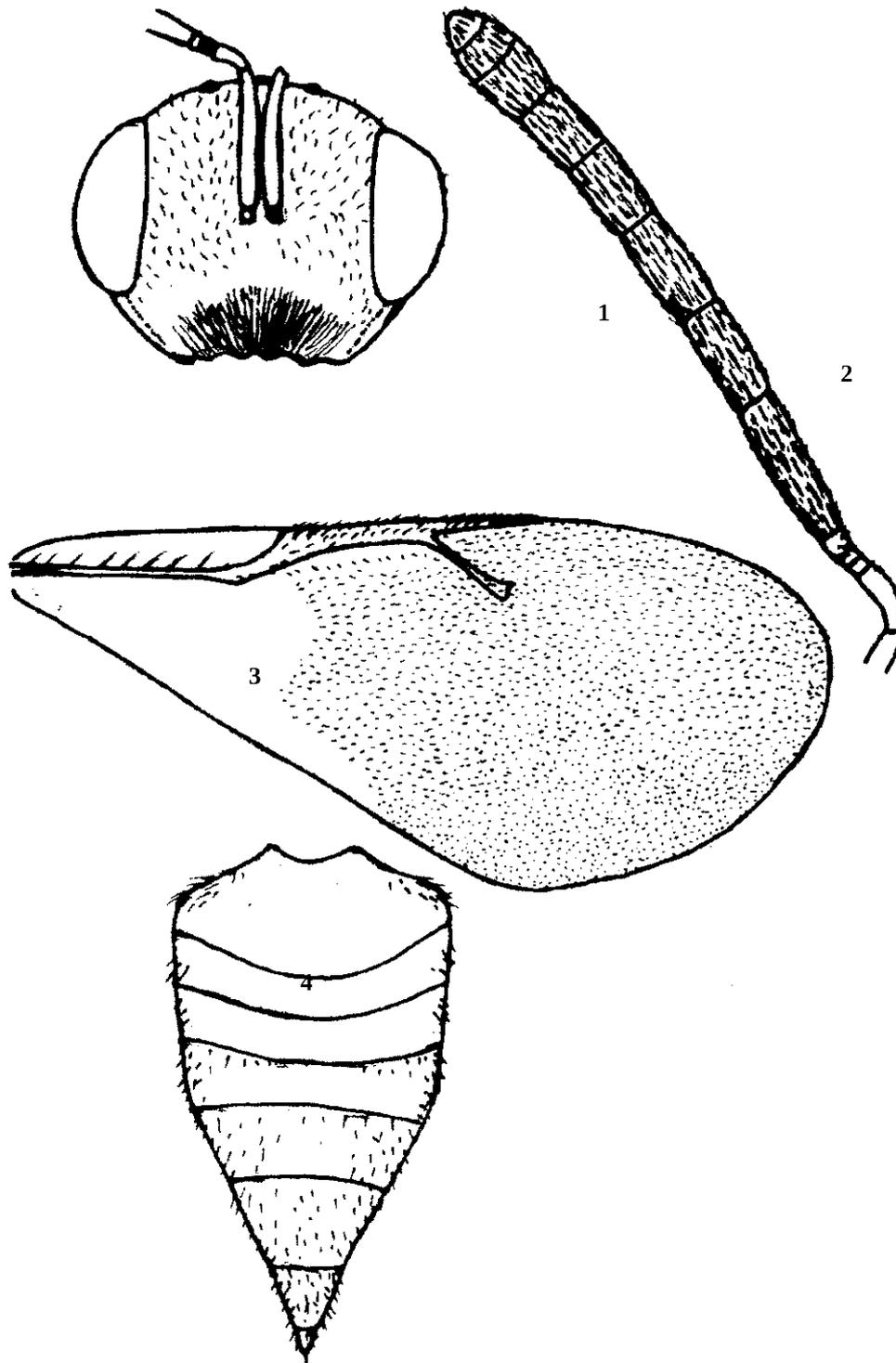
Remarks : Common species, parasitic on Bruchid beetles.

7. *Ischyroptyx biharensis* sp.nov.

(Photo 1, 2; Figs. 1-4)

Holotype : Female : Length 3.1 mm. Color black without metallic reflection, gaster slightly brownish ventrally with metallic reflection. Scape, pedicel and anelli pinkish brown, rest of antenna brownish black; ocelli brownish black; eye dark coffee brown. All coxae and femora concolorous with thorax, tibiae and tarsi pale yellowish white with base of tibia slightly darker, tips of tarsi black. Tegulae black, wings hyaline, veins pale brown. Hairs on the body silvery white.

Head : (Fig. 1) 1.2x as broad as mesoscutum, 2.4x as broad as long (in dorsal view); POL 1.6x OOL; temple length 0.5 eye length. Head uniformly and minutely reticulate, reticulation sharp. In front view head width 1.3x height; eyes separated 1.3x their length, eye length 1.4x width (in profile); gena minutely but distinctly reticulate, malar groove faintly indicated. Scrobe moderately deep. Anterior margin of clypeus deeply incised, clypeus radiately striated, striae extending little to the genal area, face with distinct white hairs, moderately dense. Antennae (Fig. 2) inserted slightly below middle of face, scape exceeding median ocellus, little more than the ocellar diameter. Scape length 0.8x eye length, pedicel plus flagellum slightly longer than width of head ; pedicel length 2.4x width, anelli three,



Figs. 1-4. *Ischyroptyx biharensis* sp. nov. Female: 1, Head front view; 2, Antenna (without scape); 3, Forewing; 4, Gaster dorsal view.

length together 0.7x as long as pedicel, third anellus quadrate, flagellum slightly broadening towards tip, club 1.7x as long as preceding segment. Relative lengths of F1-F5: 11, 9, 8, 6, 6; funicular segments with numerous minute sensillae.

Thorax : Moderately convex, clothed with white broad and long hairs. Pronotum uniformly reticulate, lateral panel transversely striated, anterior margin round except for a faint irregular carina only in the middle. Mesoscutum distinctly reticulate punctuate, 1.6x as broad as long, notauli faintly indicated, incomplete, reaching only up to middle. Scutellum similarly sculptured as on mesoscutum, 1.1x as broad as long, frenum not indicated, axilla reticulate, axillula longitudinally strigose. Dorsellum narrow, finely reticulate. Propodeum without plicae, median carina faintly indicated, incomplete, finely reticulate, almost smooth, basal part with small carinulae, spiracles large and oval, touching hind margin of metanotum, callus with patch of dense white hairs. Propodeum 4x as broad as median length. Prepectus reduced, triangular, fine. Metapleuron reticulate Mesopleuron reticulate with upper mesepimeron shiny. Hind coxa reticulate, femora slightly enlarged, tibia with 2 unequal spurs. Relative lengths hind coxa 19, femur 30, tibia 36, tarsus 26. Forewing (Fig. 3) length 2.4x width, marginal fringe small, pubescence small, basal part almost bare, speculum open below, costal cell hairy towards tip, otherwise with irregular rows of hairs (one or two) on the upper margin; MV 1.7x STV and 5x as long as the basal width. Stigma moderately capitate. Relative lengths of SMV 40, MV 20, STV 12, PMV 14.

Gaster (Fig. 4) sessile, spindle shaped, in dorsal view 1.8x as long as broad, as long as head plus thorax combined; posterior margins of T1 and T2 slightly curved, other tergites straight, hypopygium reaching middle of T4; tergites covered with white hairs on the sides.

Holotype : Female : India : Bihar, Vaishali district, Hajipur, 15.x.2009, coll. P.M.Sureshan, (Reg. No. A.1338)

Remarks : This species differs from the only described species *Ischyroptyx ligusticus* (Masi) in having forewing with long MV which is 1.7x STV and 5x as long as the basal width; antennae inserted slightly below middle of face and general body colour. (in

ligusticus MV short only 1.4x as long as STV and 3.8x as long as basal width. Antennae inserted slightly above middle of face and general body colour different.

8. *Lariophagus distinguendus* (Forster)

1841. *Pteromalus distinguendus* Forster. *Beitrage Zur Monogr. Pterom. Nees*. 1 : 17. M. Germany. (NRS).

1921. *Lariophagus distinguendus* (Forster). Gahan. transferred to *Lariophagus*. *Proc. ent. Soc. Wash.* 22 : 239.

Diagnostic characters : Body bluish black, coxae concolorous with thorax, rest of legs yellowish brown. Clypeus narrowly emarginate. Head finely reticulate, densely pubescent. Malar space about two thirds the height of eye. Apical margin of forewing without cilia. Gaster dorsally convex.

Material examined : 1 F. Vaishali dist., Hajipur, 15.x.2009, coll. P.M. Sureshan.

Distribution : India : Kerala, Tamil Nadu, Bihar (present study). Cosmopolitan.

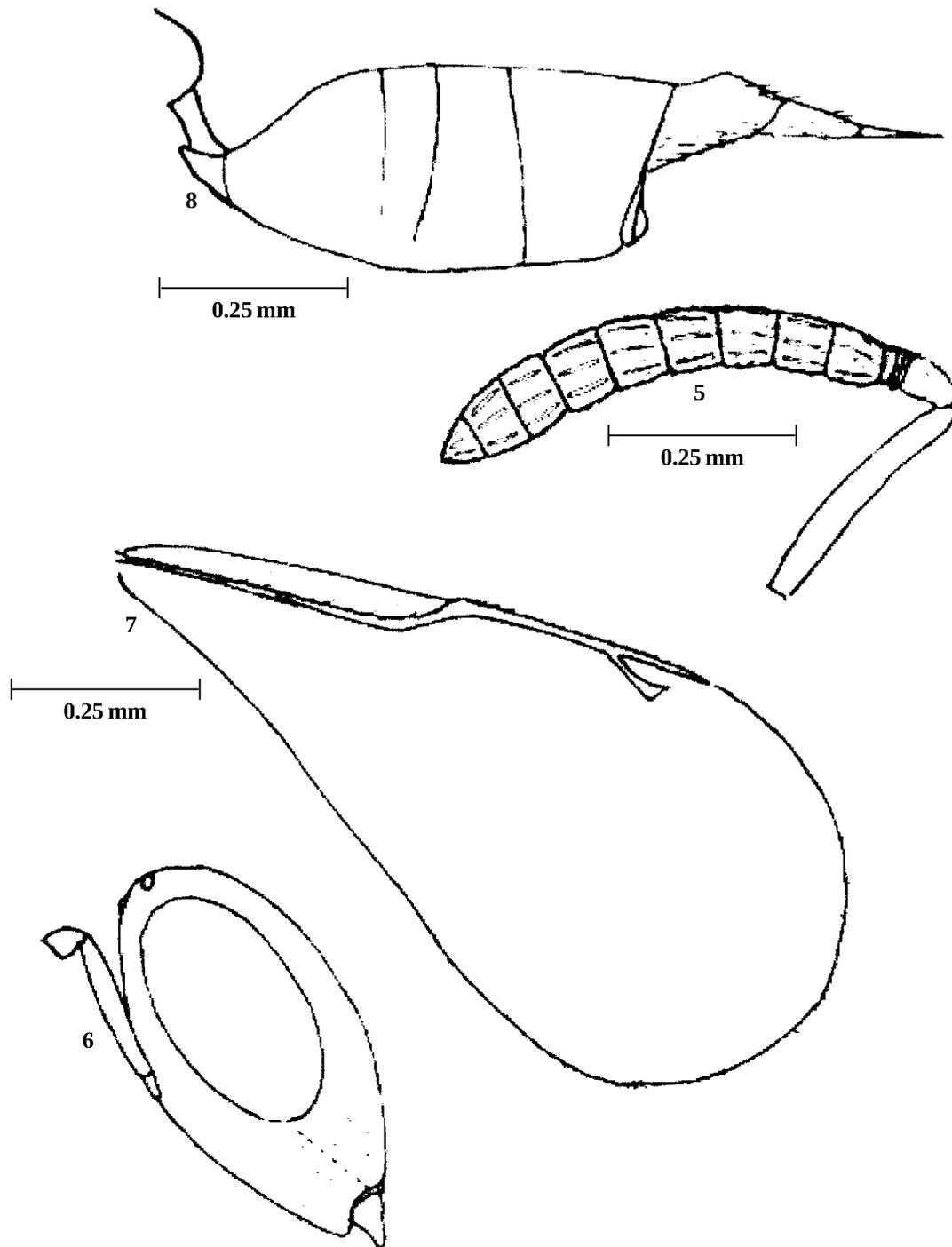
Remarks : A widely distributed parasite of beetles associated with stored grain.

9. *Merismomorpha intermedia* sp.nov.

(Photo 3; Figs. 5-8)

Holotype : Female. Length 1.71 mm. Head, thorax and petiole bluish black; gaster metallic blue. Antennae with scape pale brown, remainder brown; ocelli brown. Eyes coffee brown. Fore and hind coxae concolorous with thorax, mid coxae brown, remainder of legs testaceous. Tegulae and veins brown. Wings hyaline.

Head : (Fig. 6) finely engraved reticulate, little coarser on face above lower margin of eyes and vertex. Pubescence sparse and small. Anterior margin of clypeus sharply angulate, almost finely reticulate except for the short striae not extending out. In dorsal view head 1.2x as broad as thorax and 2.24 x as broad as long; POL slightly longer than OOL. In front view head width 1.2x height. Eye length 1.5x width; malar space 0.4x eye length (in profile). Antennae (Fig. 5) with scape 0.7x eye length, just short of reaching median ocellus, pedicellus plus flagellum 0.8x head width, club 1.4x as long as two preceding segments combined, funicular segments gradually broadening towards tip, pedicel slightly longer than F1, all funicular segments almost equal in length, each with one row of long sensillae, anelli transverse, third little thicker than others. Head



Figs. 5-8. *Merismomorpha intermedia* sp. nov. Female: 5, Antenna; 6, Head in profile; 7, Forewing; 8, Gaster in profile.

finely engraved reticulate, little coarse on face above lower margin of eyes; anterior margin of clypeus sharply acuminate, almost finely reticulate except of short fine striae on sides, not extending outside; malar grooves faintly indicated, almost indistinct; genal area very finely reticulate; temples roundly converging, 0.5x as long as eye; occiput without carina.

Thorax : Pronotal collar not margined anteriorly, moderately reticulate. Mesoscutum with mid lobe moderately raised reticulate, side lobes finely and transversely striate reticulate. Scutellum similarly reticulate as on mid lobe of mesoscutum., notauli deep and complete. Mesoscutum 2.3x as broad as long. Scutellum 1.2x as long as broad and 1.4x as long as mesoscutum medially. Propodeum width 2.2x median length, length of median triangular area little shorter than width (9/10.5). Axillae finely striate reticulate, frenum not marked, frenal area finely reticulate. Propodeum with median area moderately reticulate, marked with distinct plicate, median carina distinct and complete, nucha and sides of propodeum finely striate reticulate, callus less hairy. Forewing (Fig. 7) length 2x width; marginal fringe small, discal pubescence sparse, less distinct, few long hairs just below the marginal vein. Costal cell with one row of hairs in the middle, basal half of forewing almost bare, PMV 0.5x as long as MV. Relative lengths of SMV 20, MV 14, PMV 7, STV 4.

Gaster (Fig. 8) Petiole shorter than hind coxae, with a longer extension of first gastral sternite. in dorsal view 2.5x as long as wide. Gaster (including petiole) 0.9x as long as head plus thorax combined in profile. Hind margin of T1 and T2 incised in the middle, hind margin of T3 emarginate, exposed part of T4 2x T3 dorsally. Ovipositor exerted out.

Male : Unknown.

Holotype : Female : India : Bihar, Chapra district, Sonapur (Scrub jungle), 11.vii.2009, coll. P.M. Sureshan (Reg. No. A. 1323).

Remarks : In having distinctly angulate clypeus, similar forewing venation, short gastral petiole with longer extension of gastral sternite, distinctly convex lower face, and posterior margins of T1 and T2 incised in the middle this species resembles *M. minuta* Sureshan but differs from it in having gaster with exposed part of T3 equal to T4 (in profile), and 0.5x T4 medially and

propodeum with median carina distinct. (in *minuta* gaster with exposed part of T3 medially 2..6x T4 and distinctly longer than T4 (in profile), propodeum with median carina not indicated. This species resembles *M. elongate* Sureshan in the nature of propodeum, angulate clypeus but differs in having shorter petiole, different gaster and forewing venation. In the nature of forewing venation and gaster it also resembles *M. truncata* Sureshan but *truncata* has a truncate clypeus, longer petiole and hind margin of T1 and T2 not incised in the middle. *M. yousufi* Ahmad & Agarwal differs from this species in having POL 1.6x OOL, eye length 2 x width, mesoscutum with notauli not complete, pronotum anteriorly carinate, propodeum with plicae and median carina not distinct, gaster longer than head plus thorax combined and clypeus with striae radiating out side.

10. *Merismomorpha minuta* Sureshan

2000. *Merismomorpha minuta* Sureshan. *Rec. Zool. Surv. India*. 98(3) : 105. F. India : Kerala. (ZSIC).

Diagnostic characters : Length 1.5-2.1 mm. Head and mesosoma bluish black; gaster mainly metallic bluish black except T1 and ventral part dark brown, coxae and femora brown, remainder of legs testaceous; POL 1.3x OOL; lower margin of clypeus angulate; antennae inserted little above middle of face; pedicel as long as F1. Propodeum with median carina absent. Forewing with PMV 0.65x as long as MV. Gaster short, ovate, petiole short, widened medially, embraced by a long extension of first gastral sternite, gaster slightly longer than head plus thorax combined.

Material examined : 1F, Vaishali dist., Hajipur, Chakia, 5.ii.2009, (Reg. No. 1325); 1 F, Saran dist., Rampur, Emi, 11.vii.2009, coll. P.M. Sureshan (Reg. No. 1324).

Distribution : India : Kerala, Bihar (present record).

Remarks : Uncommon species. Recorded for the first time after original description.

11. *Metastenus indicus* Sureshan & Narendran

2002. *Metastenus indicus* Sureshan & Narendran. *Rec. Zool. Surv. India* 100(3-4) : 125. F, M, India (Kerala). (ZSIC).

Diagnostic characters : Length : 1.6-1.8mm. Black; antennae testaceous; fore and hind coxae concolorous with thorax, mid coxae and all femora dark brown; hind tibiae and tarsi yellow; fore and mid tibiae and tarsi

testaceous except proximal two third of former brown; POL little longer than OOL; antennae inserted below centre of face; both mandible with three teeth; anterior margin of pronotal collar not carinate; propodeum with nucha short, finely reticulate, plicae very fine, almost indistinct. Gaster little longer than head plus thorax combined.

Material examined : 2 F, Gaya dist., Chakand, 100 km south of Patna, 6.ii.2008, 2 F, Patna, dist., Fathua, 9.i.2008, (Reg. No. 1320) coll. P.M. Sureshan.

Distribution : India : Kerala, Orissa, Bihar (present record).

Remarks : Uncommon species. First time reported subsequent to original description.

12. *Norbanus acuminatus* Dutt & Ferriere

1961. *Norbanus acuminatus* Dutt & Ferriere. *Ind. Journal. Agric. Sci.* 31 : 141. F. India; Barrackpore. (ZSI).

Diagnostic characters : Length : 6-6.2. mm. Head and thorax bluish black, gaster brown with greenish coppery shine; antennae brownish black, legs brown, coxae and femora blackish; head 1.2x as wide as mesoscutum; POL at most as long as OOL; anterior margin of clypeus weakly emarginate; antennae with second anellus twice as long as first, clava almost equal to preceding two segments combined; gaster elongate, ovate, 1.2x as long as head plus thorax combined.

Material examined : 2 F, 2 M, Vaishali dist., Hajipur, 15.x.2009, coll. P.M. Sureshan, Reg. No. A1339.

Distribution : India : Kerala, West Bengal, Bihar (present record).

Biology : Parasitic on *Nupserha bicolor* Thoms. (Coleoptera).

Remarks : Uncommon species.

13. *Notoglyptus scutellaris* (Dodd & Girault)

1915. *Merismus scutellaris* Dodd & Girault, in Girault. *Mem. Qd. Mus.* 3 : 328. Queensland. (QM).

1988. *Notoglyptus scutellaris* (Dodd & Girault) : Boucek, transferred to *Notoglyptus Australasian Chalcidoidea* : 466.

Diagnostic characters : Length 1.3 mm. Head, thorax and petiole dark green, gaster brown; antennae with scape yellow, remainder brown; legs yellow; clypeus separated from face by obscure sulcus, anterior margin nearly straight, slightly reflexed; pronotal collar finely

carinate, scutellum coriaceous with distinct discal fovea; propodeum with nucha not bordered by carina anteriorly; gastral petiole length 1.2x width with weak median carina, gaster length 1.3x width.

Material examined : 1 F, 1 M, Chapra dist., Sonapur, 30.ix.2009, coll. P.M. Sureshan.

Distribution : India (Delhi, Orissa, Bihar (present record) Kerala, Uttar Pradesh); Italy, Japan, America, Australia.

14. *Oniticellobia longigastra* Sureshan & Narendran (Photo 4)

1994. *Oniticellobia longigastra* Sureshan & Narendran. *Rec. Zool. Sur. India.* 94(1) : 113. F, M. India (Kerala) (ZSIC).

Diagnostic characters : Length 2.5-5 mm. Body shiny black with greenish gloss; coxae concolorous with thorax, rest of legs reddish testaceous, tarsi paler with tips brown; antennae with third anellus as long as first and second combined; POL 1.5x OOL; ocelli moderate, median from lateral by 1.5x of its maximum diameter; gaster long, acuminate, 1.4x as long as head plus thorax combined, epipygium 2.5x as long as broad.

Material examined : 2F, Bihar, Chapra district, Sonapur, 11.vii.2009, coll. P.M. Sureshan. (Reg. No. 1316, 1321).

Distribution : India : Kerala, West Bengal, Orissa, Bihar. (Present record); Sri Lanka.

Remarks : Specimens from Bihar show some variation such as antennae uniformly testaceous except club dark brown, gaster narrow and more elongatedly pointed than specimens collected elsewhere in India. Uncommon species.

15. *Oxysychus coimbatorensis* (Ferriere)

1939. *Dinarmus coimbatorensis* Ferriere, *Bull. Ent. Res.* 33 : 164. India : Coimbatore. (BMNH).

1979. *Oxysychus coimbatorensis* (Ferriere). Boucek *et al.*, transferred to *Oxysychus Oriental Ins.* 12(4) : 449.

Diagnostic characters : Length 2.5-5 mm. Head and thorax dark bluish green, gaster aeneous shining green at base, coxae green, femora black with metallic reflection, tibiae brown, tarsi paler. Body stout, covered with distinct white pubescence; antennae with F1 2x as long as pedicel. Thorax convex, scutellum broadly rounded at tip; propodeum without median carina.

Forewing with MV 3x STV; PMV almost 2x STV. Gaster elongate, longer than head plus thorax combined.

Material examined : Nil.

Distribution : India : Kerala, Tamil Nadu, Delhi, Bihar, Andhra Pradesh.

Remarks : Reported from Pusa in Bihar (Boucek *et al.*, 1979).

16. *Pachyneuron groenlandicum* (Holmgren)

1872. *Pteromalus groenlandicus* Holmgren. *Ofvers Kungl. Vet. Akad. Forh.* 29 : 100.

1939. *Pachyneuron karnalensis* Mani. *Ind. J. Ent.* 1 : 85. Syn. by Boucek *et al.*, *Oriental Ins.* 12 : 452.

1955. *Pachyneuron umbratum* Delucchi. *Z. Angew. Ent.* 38 : 132-133.

1977. Syn. by Hedqvist, *Ent. Scand.* 8 : 238.

1974. *Pachyneuron bakrotus* Mani & Saraswat. *Mem. School. Ent. Agra* No. 3 : 102.

1979. Syn. by Boucek *et al.*, *Oriental Ins.* 129(4) : 452.

Diagnostic characters : Length : 2.3 mm. Body bluish black with metallic reflection; antennae dark brown, scape paler, coxae concolorous with thorax, remainder of legs brown, clypeus lightly emarginate or truncate anteriorly; antennae with scape reaching median ocellus. Scutellum with a faint frenum. Propodeum with nuchal area polished, median carina absent. Forewing without speculum, few hairs on the basal hairline; gaster shot, petiole widened towards the end.

Material examined : 1 F, Patna dist., Saguni, 6.ii.2008, (Reg. No. 1318) coll. P.M. Sureshan. 1 F, Gaya dist., Chakand, 100 kms. Patna, 6.ii.2008, Reg. No. A. 1116, coll. P.M. Sureshan.

Distribution : India : Delhi, Himachal Pradesh, Kerala, Haryana, Jammu & Kashmir, Orissa, Tamil Nadu, Karnataka.

Remarks : First record of the species from Bihar.

17. *Pachyneuron leucopiscida* Mani

1939. *Pachyneuron leucopiscida* Mani. *Ind. J. Ent.* 1 : 86. M, F. India : Coimbatore. (IARI).

1953. *Pachyneuron cremifaniae* Delucchi. Syn. by Boucek *et al.*, 1979. *Oriental Ins.* (1294) : 453.

Diagnostic characters : Length : 1.5 mm. Body dark metallic blue, gaster brownish black, coxae concolorous with thorax basal two thirds of femora reddish brown, rest of legs honey yellow. Anterior margin of clypeus weakly emarginated, antennal scape just reaching front

ocellus, POL 2x OOL. Pronotal collar finely carinate anteriorly; propodeum with nucha almost smooth and marked off by a distinct constriction. Gaster fusiform, T1 occupying nearly half length of gaster, petiole longer than hind coxa, reticulate.

Material examined : Nil.

Distribution : India : Kerala, Bihar, Tamil Nadu, Delhi.

Remarks : Originally described from the material collected from Pusa, Bihar with *Dactylopius* sp. on cotton (Boucek *et al.*, 1979).

18. *Propicroscytus mirificus* (Girault)

1915. *Arthrolysis mirificus* Girault. *Mem. Qd. Mus.* 4 : 191. Australia (Queensland) (QM).

1981. *Propicroscytus indicus* Subba Rao. Syn. by Boucek, 1988 : Australasian Chalcidoidea : 410.

Diagnostic characters : Length 2.5-4 mm. Head and thorax black or bluish black, gaster pale to dark yellow, sides and middle with brown streaks longitudinally, antennae dark brown with scape, pedicel and anelli testaceous, legs including coxae yellow with tips of tarsi brown; clypeus slightly emarginate anteriorly; POL almost equal to OOL; pronotum distinctly at lower level, notauli indicated only anteriorly; gaster lanceolate, 1.2x as long as head plus thorax combined.

Material examined : 1F, Vaishali dist., Bidarpur, 29.iii.2009, coll. P.M. Sureshan (Reg. No. 1235). 1F, Vaishali dist., Hajipur, 15.x.2009, coll. P.M. Sureshan (Reg. No. A. 1340).

Distribution : India (Andhra Pradesh, Karnataka, Kerala, Maharashtra, Orissa, Bihar (present record), Uttar Pradesh. South China, East Malaysia, Indonesia, Sri Lanka.

Remarks : Parasitic, sometimes secondarily on gall midges in rice and stems of some other grasses. Commonly occurring in paddy fields and adjacent grassy vegetations.

19. *Psilocera vinayaki* Sureshan & Narendran

1995. *Psilocera vinayaki* Sureshan & Narendran. *J. Ecobiol.* 7(3) : 209. F.M, Inida : Kerala.(ZSIC).

Diagnostic characters : Length 1.6 mm. Head and thorax black, gaster metallic green with brownish reflection ventrally; coxae concolorous with thorax, remainder testaceous with tips of tarsi brown; POL : OOL 14 : 13. antennal scape hardly reaching lower

margin of median ocellus, flagellum less clavate. Gaster length 3x that of scutellum.

Material examined : 1 F, Vaishali dist., Gatarotola, 31.i.2009, coll. P.M. Sureshan (Reg. No. 1198).

Distribution : India : Kerala, Bihar (present record).

Remarks : Uncommon species reported for the first time from Bihar, subsequent to original description.

20. *Pteromalus puparum* (Linnaeus)

1758. *Ichneumon puparum* Linnaeus. *Syst. Nat. 10th Edt.* 567. M.F. Sweden (Linn. Society, London).

1795. *Pteromalus puparum* (Linnaeus) : Swederus, transferred to *Pteromalus* *Akad. Handl.* 16 : 203.

Diagnostic characters : Length 2.4-3 mm. Dark metallic blue, antennae brown, scape testaceous. Coxae concolorous with thorax, femora dark brown except tips, remainder of legs testaceous; POL as long as OOL; temple wide, length 0.6x eye length; anterior margin of clypeus shallowly emarginate; antennae with F1 longer than pedicel, funicular segments longer than wide, propodeum with nucha long, gaster ovate, shorter than head and thorax combined.

Material examined : Nil.

Distribution : India (Kerala, Uttar Pradesh, Orissa, Bihar, Assam). Cosmopolitan.

Remarks : Parasitic in the pupae of various butterflies. Reported from Pusa, Bihar. (Boucek *et al.*, 1979).

21. *Pteromalus semotus* (Walker)

1834. *Eutelus semotus* Walker. *Ent. Mag.* 2 : 367. F. England. (BMNH).

1965. *Habrocytus semotus* (Walker) : Syn. By Boucek, : *Sb. faun. Praci ent. odd. ndr. Mus. Praha* 11 : 8, 35.

1978. *Pteromalus semotus* (Walker) : Syn. By Boucek & Graham : *Entomologist's Gaz.* 29 : 225-235.

Diagnostic characters : Length 1.9-2.8 mm. Dark metallic green with golden reflection, antennae testaceous, coxae concolorous with thorax, femora brown, rest of legs pale yellow; POL 1.8x OOL; temple 0.4x as long as eye; anterior margin of clypeus weakly emarginate; antennae with pedicel little longer than F1. Forewing with MV short, 1.1-1.6x STV, gaster 1.1x as long as head plus thorax. combined.

Material examined : 1 F, Patna dist., Saguni, 50 km South of Patna, 6.ii.2008, Reg. No. A. 1238), 1F, Gaya

dist., Chakand, 100 km. South of Patna, 6.ii.2008, coll. P.M. Sureshan.

Distribution : India (Kerala, Orissa, Bihar (present record) cosmopolitan.

Remarks : Primary or secondary parasite in pupae of various Lepidoptera, less often certain beetles (Curculionidae).

22. *Sphegigaster stepicola* Boucek

1965. *Sphegigaster stepicola* Boucek. *Acta. Fauna. Ent. Mus. Natl. Pragae* 11 : 12-14. M, F. Bohemia. (NM).

1971. *Acroclisis melanagromyzae* Mani. *J. Nat. Hist.* 5 : 591-593. Syn. Boucek *et al.*, 1979. *Oriental Ins.* 12 (4) : 458.

Diagnostic characters : Length : 1.5-2 mm. Body shiny black, slender; Legs black; antennae with all funicular segments transverse, F1 shorter than pedicel; gaster oval, shorter than mesosoma, petiole length nearly 3 x width, hind margin of T1 with middle portion truncate or virtually so.

Material examined : Nil.

Distribution : India : Kerala, Delhi, Bihar, Uttar Pradesh, Orissa.

Remarks : Reported from Dholi, Bihar. (Boucek, *et al.*, 1973).

23. *Trichomalopsis apanteloctena* (Crawford)

1911. *Trichomalopsis apanteloctenus* Crawford. *Proc. U.S. natn. Mus.* 39 : 618 M, F. Japan : Konosu. (USNM).

1919. *Eupteromalus parnae* Gahan. *Proc. U.S. Natn. Mus.* 56 : 522. F, India (Karvetnagar). Syn. Kamijo & Grissell, 1982 : *Kontyu, Tokyo* 50(1) : 77.

Diagnostic characters : Length 1.6-2.5 mm. Metallic bluish green, coxae concolorous with thorax, remainder of legs testaceous; Lower margin of clypeus rather deeply incised medially, striae on clypeus extending to lower margin of eyes and to malar sulcus; both mandibles with four teeth; occipital carina sharp, in posterior-dorsal view strongly curved medially. Antennae with combined length of pedicel plus flagellum length 0.8-0.93x head width in female and 0.95-1.05x in male. Gaster 1.7-2x as long as broad.

Material examined : 1F, Muzafupur dist., Muzafarpur, Bagavanpur, 2.xii.200.07 (Reg. No. A. 1239) 1 F, Vaishali dist., Bidarpur, 29.iii.2007, coll. P.M. Sureshan (Reg. No. 1230).

Distribution : India (Kerala, Tamil Nadu, Karnataka, Orissa, Bihar (present record)); Bangladesh, Korea, Malaysia, China, Japan, Taiwan, Philippines. Vietnam.

Remarks : Parasitic on *Cnaphalocrocis medinalis* (Lepidoptera : Pyralidae) and *Pelopidas mathias* (Lepidoptera : Hesperidae) Commonly occurring in paddy field and adjacent grassy vegetations.

24. ***Trichomalopsis nigra*** Sureshan & Narendran

2001. *Trichomalopsis nigra* Sureshan & Narendran. *Journal Bombay Nat. Hist. Soc.* 98(3) : 400. M, F. India (Kerala) (ZSIC).

Diagnostic characters : Length : 1.5-2 mm. Body blue black with slight metallic reflection, Legs testaceous except base of hind coxae blackish. Head and thorax black with little metallic reflection. Pronotal collar weakly but sharply margined except at sides; antennae with scape as long as eye, pedicel plus flagellum 0.84x head width; gaster with T1 reaching almost half length of it; temple narrow, length 0.4x eye length.

Material examined : 1 F, Gaya dist., Chakand, 100 km. South of Patna, 6.ii.2008, coll. P.M. Sureshan.

Distribution : India : Kerala, Orissa, Bihar (present record).

Remarks : Associated with paddy field and grasses.

25. ***Uniclypea kumarani*** Sureshan & Narendran
(Photo 6)

1994. *Uniclypea kumarani* Sureshan & Narendran. *Hexapoda* 6(2) : 62-63. F. India : Kerala. (ZSIC).

Diagnostic characters : Length 2.9 mm. Head and thorax black, gaster dark metallic blue, almost black towards tip; coxae concolorous with thorax, remainder of legs testaceous. Antennae testaceous with clava brown; POL 1.2x OOL; antennae with scape reaching the vertex, pedicel little longer than F1. Propodeum with median carina not reaching beyond costula, callus thickly pilose. Gaster longer than head plus thorax combined.

Material examined : 1 F, Bihar, Vaishali dist., Hajipur, 9.vii.2003, (Reg. No. A. 1320) coll. P.M. Sureshan.

Distribution : India : Kerala, Maharashtra, Bihar (present record).

Remarks : The specimens from Bihar show some variations such as gaster more elongate, little longer than head plus thorax (1.3x), (probably due to slight

protrusion of the epipygium and basal termites) metallic blue tinge on thorax more pronounced than specimens collected elsewhere. Uncommon species.

Subfamily CEROCEPHALINAE

26. ***Theocolax elegans*** (Westwood, 1874)

1874. *Choetospila elegans* Westwood. *Theas. entomology. illust.* xxiv. 157. F. West. Indies. (Hope Dept. Uni. Museum, Oxford).

1979. *Choetospila elegans* Westwood : syn. By Boucek *et al. Oriental Ins.* 12(4) : 440.

1988. *Theocolax elegans* (Westwood) : Boucek. *Australasian Chal.* 339.

Diagnostic characters : Body brown with metallic sheen, legs brown with tarsi paler. Antennal flagellum slightly clavate, with funicle much longer than scape, funicular segments subglobose or subquadrate; winged or sometimes wingless, wings with distinct tuft of black setae on parastigma.

Material examined : 2F, 1M, Bihar, Patna dist., Fathipur, 13.vi.2009, (from stored rice) coll. P.M. Sureshan.

Distribution : India : Kerala, Maharashtra, Bihar (current study) Tamil Nadu, Karnataka, West Bengal, Delhi (Cosmopolitan).

Remarks : A cosmopolitan parasite of beetles in stored grain.

Subfamily SPALANGINAE

27. ***Spalangia nigroaenea*** Curtis

1839. *Spalangia nigroaenea* Curtis *Brit. Ent.* 16 : fol. 740. P (2). M. Britain. ANIC.

2008. *Spalangia nigroaenea* Curtis : Sureshan, *Fauna Lon. Crat. Sanct. Cons. Area. Series*, 37 : 171.

Diagnostic characters : Female : Length : 2.9-3.8 mm. Black, often with brassy lusture; Legs concolorous with thorax except tips of tarsi testaceous; head distinctly longer than broad (in male only as long as broad), umbilicately punctate with interspaces about as wide as punctures; pronotum with an isolated crenulate cross-line consisting of close punctures in front of hind margin, disc of collar more or less smooth, impunctate, collar bordered anteriorly by a narrow groove, setting off ridge like margin; gaster petiole expanded anteriorly.

Material examined : 1 M, Patna dist., Manpur, 9.vii.2009, coll. P.M. Sureshan (Reg. No. A. 1331).

Distribution : India : Delhi, Karnataka, Maharashtra; Orissa, Bihar, Kerala, Pondicherry .Cosmopolitan.

Remarks : Parasitoid of fly puparia, especially of the synanthropic species.

28. *Spalangia gemina* Boucek

1963. *Spalangia gemina* Boucek *Acta Ent. Mus. Nat. pragrae.* 35 : 484. M, F. Mauritius. (BMNH).

Diagnostic characters : Female : Length 2.3-2.6 mm. Body black without metallic tinge. Legs darker except basal four tarsal segments yellow. Head hardly longer than wide; pronotal collar not margined anteriorly, with very deep coarsely crenulate cross line off hind margin; antennae longer, second funicle segment sub quadrate, following ones transverse; gastral petiole about 1.4x as long as broad, bare with distinct carinae, gaster ovate, polished, T2 distinctly emarginate. Male : Length : 2.6 mm. Head in facial view slightly wider than long, genae dull, crowdedly punctate, antennal scape as long as four following segments comined, pedicel 1.5x as long as broad, F1 2x as long as broad and about 1.7x as long as pedicel, clava as long as two preceding segments combined

Material examined : 2 M, Bihar, Patna district, Fathua, Didarganj, 11. vi.2009; 2 M, Chapra district, Sonapur, 30.ix.2009, (Reg. No. A. 1333); 1 F, Patna dist., Digarganj, 20.vi.2009, (Reg. No. A. 1327); 1 F, Digarganj, 20.vi.2009 (Reg. No. 1332); 2 M, Chapra dist., Sonapur, 30.ix.2009 (Reg. No. A. 1336) coll. P.M. Sureshan.

Distribution : India : Karnataka, Tamil Nadu, West Bengal, Bihar (present record).

Remarks : Parasitoid of dipterous puparia.

Subfamily ORMOCERINAE

29. *Systasis dalbergiae* Mani

1942. *Systasis dalbergiae* Mani. *Indian J. Ent.* 4 : 157-158. M, F. India (Dehradun). (IARI).

2009. *Systasis dalbergiae* Mani. Sureshan. *Rec. zool. Surv. India.* 109(4) : 97.

Diagnostic characters : Length 1.5-1.8 mm. Body bright metallic green, antennae dark brown, coxae, fore and hind femora concolorous with thorax, remainder of legs yellow ; OOL 1.25x ocellar diameter, face rugously punctate between scape and inner orbital border, just below antennae transversely reticulate; both mandibles

tridentate; antennae with pedicel much longer than F1, all funicular segments sub equal.

Material examined : 1F, Saran dist., Rampur, Emi, 11.vii.2009, coll. P.M. Sureshan.

Distribution : India (Karnataka, Orissa, Bihar. (Present record)).

Remarks : Parasite of cecidomyid flies making galls on *Dalbergia*.

30. *Systasis dasyneurae* Ahmad & Mani

1939. *Systasis dasyneurae* Mani. in Ahmad & Mani, : 535-537 M, F. India (Haryana). IARI.

2009. *Systasis dasyneurae* Ahmad & Mani. Sureshan. *Rec. zool. Surv. India.* 109(4) : 98.

Diagnostic characters : Length 1.75-2.0 mm. Bright metallic green, all coxae and hind femora concolorous with thorax, fore and mid femora coppery brown, remainder of legs testaceous. Antennae with pedicel slightly longer than first funicular segment, funicular segments sub equal; left mandible tridentate, right with an additional tooth between second and third; propodeum very short, almost hidden by scutellum medially; forewing hyaline, about twice as long as broad, MV nearly twice STV, PMV nearly one and one fourth to twice STV.

Material examined : 1 F, Bihar, Patna dist., Didarganj, 11.vi.2009, (Reg. No. 1328); 1 F, Nalanda dist., Parwalpur, 7.vii.2009, (Reg. No. A. 1329); 1F, Chapra dist., Chapra, 11.vii.2009, (Reg. No. 1326), coll. P.M. Sureshan.

Distribution : India : Uttar Pradesh, Madhya Pradesh, Orissa, Bihar.

Remarks : Reported from Bihar as parasite of the Cecidomyiid *Dasyneura lini* Barnes (Boucek *et al.*, 1979).

31. *Ecrizotomorpha tashkiri* Mani, 1939

1939. *Ecrizotomorpha tashkiri* Mani, in Ahmad & Mani, *Indian j. Agric. Sci.* 9 : 538. M, F. India : Haryana. IARI.

1979. *Ecrizotomorpha tashkiri* Mani : Boucek *et al. Oriental Ins.* 12(4) : 442.

Diagnostic characters : Female : Length 0.9-1.5 mm. Body black, non metallic, coxae and femora concolorous with thorax, remainder of legs light brown. Ocelli arranged in a line; scutellum without frenum; forewing

with MV about two third the SMV; PMV somewhat shorter than STV.

Material examined : Nil.

Distribution : India : Bihar.

Remarks : The species was reported from Pusa, Bihar, probably hyperparasitic on *Dasyneura lini* Barnes (Cecidomyiidae) (Boucek *et al.*, 1979).

Subfamily EUNOTINAE

32. *Cephaleta brunniventris* Motschulsky

1859. *Cephaleta brunniventris* Motschulsky, *Etudes Entomol. Helsingfors*. 8 : 173. F. Sri Lanka.

1979. *Cephaleta brunniventris* Motschulsky. Boucek *et al.*, *Oriental Ins.* 12(4) : 439.

Diagnostic characters : Length : 1.6 mm. Head and thorax shiny black, gaster purple violet with basal part brownish; coxae concolorous with thorax, remainder yellowish brown. Antennae stout, distinctly clavate, pedicel longer than F1, F1 and F2 quadrate or subquadrate. Forewing sub hyaline with little brown infumation basally; MV little longer than 0.5x SMV; gaster almost as long as thorax with a small tuft of white setae at base on either side of petiole; T1 more than 4x or dorsal length of gaster.

Material examined : 1 F, Chapra dist., Sonapur, 11.vii.2009, coll. P.M.Sureshan (Reg. No. A. 1317).

Distribution : India : Assam, Andhra Pradesh, Bihar, Andaman, Goa, Kerala, Pondicherry, Uttar Pradesh, Karnataka; Sri Lanka; Pakistan.

Remarks : Parasitoids of various coccids. Reported earlier from Sabour, Bihar (Boucek *et al.*, 1979).

Subfamily DIPARINAE

33. *Dipara miniae* Narendran & Sureshan

2005. *Dipara miniae* Narendran & Sureshan. *Zoos'print journal*. 16(4) : 453. F. India : Kerala (ZSIC).

Diagnostic characters : Length 1.9 mm. Head and thorax honey brown, antennae brown except scape pale yellow, remainder yellowish brown, Fore coxae yellowish white, femora yellowish brown, mid legs yellowish brown, hind legs pale whitish yellow, gaster honey brown with base and sub apical part paler. Forewing hyaline with three brown infuscations, setae on head and thorax black. Head broader than thorax; POL 2x OOL. Vertex with three pairs of setae. Antennal formula 11173. Scutellum with frenum smooth. Propodeum

without median carina. Gaster with T1 largest, as long as combined length of T4 to tip of epipygium.

Material examined : 1 F, Chapra dist., Sonapur, 20.xi.2009. coll. P.M. Sureshan. Reg. No. A. 1341.

Distribution : India : Kerala, Bihar (present record).

Remarks : Rare species first time collected from Bihar subsequent to original description from Kerala.

Subfamily HERBERTINAE

34. *Herbertia indica* Burks

1959. *Herbertia indica* Burks. *Proc. Ent. Soc. Wash.* 61(6) : 252. M.F, India : Gwalior.USNM.

2007. *Herbertia indica* Burks : Sureshan, *Rec. zool. Surv. India. Occ. Paper* 268 : 11.

Diagnostic characters : Female : Length 1.4 mm. Black, metallic violaceous reflection on face and gaster dorsally; legs whitish except coxae, trochanter and femora bluish black; head and thorax granulate reticulate; antennae inserted on lower face, scape not reaching middle of face, extending 0.75x eye height, F1 shorter than pedicel, club as long as three preceding segments combined; forewing with MV slightly greater than 2x as long as PMV; gaster broad and short; T1 covering most of the gaster.

Material examined : 1 F, Chapra district, Sonapur, 20.xi.2009, coll. P.M. Sureshan, Reg. No. A. 1342.

Distribution : India : Madhya Pradesh, Karnataka, Maharashtra, Bihar (present record); Sri Lanka, Malaysia.

Remarks : Parasitoid of leaf mining dipterous larvae, uncommon species reported for the first time from Bihar.

DISCUSSION

The present paper deals with the record of 34 species of Pteromalidae belonging to 25 genera under 7 subfamilies from Patna and near by districts of South Bihar. Two species viz. *Ischyroptyx biharensis* sp.nov and *Merismomorpha intermedia* sp.nov. are described new to science. Some of the remaining species are reported for the first time from the state of Bihar. The genus *Ischyroptyx* Delucchi is a monotypic genus known for the speices *I. ligusticus* Masi, 1956 described from Italy. Boucek *et al.* (1979) reported *Ischyroptyx* from the Indian subcontinent mentioning the occurrence of an undescribed speices from Delhi and Bihar. The

Photos : 1-2. *Ischyroptyx biharensis* sp. nov. Female ; ;



1. Body in profile



2. Part of the body with forewing (in profile)



3. *Merismomorpha intermedia* sp. nov. 3. Body in profile.



4. *Oniticellobia longigastrea* Sureshan & Narendran, female, body in dorsal view.



5. *Uniclypea kumarani* Sureshan & Narendran, female; body in dorsal view.

description of a new species of *Ischyroptyx* viz. *I. biharensis* sp.nov. from Bihar is interesting since it represents the second described species and the extension of the distribution of the genus in the Oriental region. The genus *Merismomorpha* Girault is distributed in the Australian region and India and four species are known from India. A new species of *Merismomorpha* viz. *M.intermedia* sp.nov, is described here from Bihar.

According to Mani, 1974 the fauna of the Gangetic plains (which includes the present study area) is largely a spill over that of the Peninsula. The eastern parts of the plains are largely dominated by the derivatives from the South Chinese, Indo-Chinese and Malayan region and in the West Mediterranean and Ethiopian elements are dominated. Autochthonous or endemic elements are very poorly represented in the region. The genera *Unicylpea* Boucek and *Oniticellobia* Boucek are Ethiopian elements. Two species of *Unicylpea* and one species of *Oniticellobia* are known from the Indian subcontinent. The occurrence of these genera and their species in the Gangetic plains is interesting. *Ischyroptyz* Delucchi is a Mediterranean element and is reported here from the Gangetic plains by a new species. During the present study it has also been observed that the

diversity of Parasitic Hymenoptera is comparatively less in the agro ecosystems of Patna and near by districts which is revealed by the limited number of specimens in the collection. Excessive use of chemical pesticides and intense agricultural practices are very common in the area and the same may be the reason of the occurrence of less populations of parasitic hymenoptera in the agroecosystems. Though the present paper deals with a collection of Pteromalidae from a small part of Bihar, it throws some light on the distributional patterns of fauna in the Gangetic plains. Further serious attempts of field exploration and collection of Pteromalidae and other Parasitic hymenoptera from the Gangetic plains will provide more information on their distribution, endemism, intra-specific variations, biocontrol potential etc.

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REFERENCES

- Boucek, Z. 1988. Australasian Chalcidoidea (Hymenoptera). C.A.B. International Wallingford, U.K. pp. 832.
- Boucek, Z. & Rasplus J.Y. 1991. Illustrated key to West-Palaearctic genera of Pteromalidae (Hymenoptera : Chalcidoidea) *Inst. Natnl. De la Recher. Agro. Paris*. 140 pp.
- Boucek, Z. Subba Rao, B.R. & Farooqi, S.I. 1979. A Preliminary review of Pteromalidae (Hymenoptera) of India and adjacent countries. *Oriental Insects*, **12**(4) : 433-467.
- Farooqi, S.I. & Subba Rao, B.R. 1985. Family : Pteromalidae. pp. 254-263. In Subba Rao & Hayat. (Edt.) The Chalcidoidea (Insecta : Hymenoptera) of India and the adjacent countries, Part-I. Review of families and keys to families and genera. *Oriental Insects*, **19** : 161-310 & 15 pp.
- Farooqi, S.I. & Subba Rao, B.R. 1986. Family : Pteromalidae. pp. 279-306. In Subba Rao and Hayat. (Edt.). The Chalcidoidea (Insecta : Hymenoptera) of India and the adjacent countries Part-II. A catalogue. *Oriental Insects*, **20** : 1-430.
- Gibson, G.A.P., Huber, J.T. & Woolley, J.B. (Eds.). 1993. Annotated keys to the genera of Nearctic Chalcidoidea (Hymenoptera). xi + 794 pp. National Research Council of Canada, Ottawa, Canada.
- Graham, M.W.R. de. V. 1969. The Pteromalidae of North-Western Europe (Hymenoptera : Chalcidoidea). *Bull. Brit. Mus. Nat. Hist. (Ent.) Suppl.*, **16** : 1-908.
- Mani, M.S. 1974. Ecology and biogeography in India. *Dr. W. Junk, B.V. Publishers. The Hague*. PP. 775.

- Noyes, J.S. (2003). Universal Chalcidoidea database. <http://www.nhm.ac.uk/jdsml/research-curation/projects/chalcidoids>. Last updated October 2010.
- Sureshan, P.M. 2003. Pteromalinae (Pteromalidae : Chalcidoidea : Hymenoptera) of Indian subcontinent. *Rec. zool. Surv. India. Occ. Paper No. 205* : 1-170.
- Sureshan, P.M. 2007. Taxonomic studies on Pteromalidae (Hymenoptera : Chalcidoidea) of Southeast Asia based on collections of Bohart Museum of entomology, University of California, Davis, USA. *Rec. zool. Surv. India. Occ. Paper No. 268* : 1-42.
- Sureshan, P.M. & Narendran, T.C. 2003. A checklist of Pteromalidae (Hymenoptera : Chalcidoidea) from the Indian subcontinent. *Zoos'print Journal*, **18**(5) : 1099-1110.
- Sureshan, P.M. & Narendran, T.C. 2004. Key to the genera of Pteromalidae of India and the adjacent countries (Hymenoptera : Chalcidoidea) *Rec. zool. Surv. India. Occ. Paper No. 229* : 1-56.