



Rec. zool. Surv. India : 110(Part-4) : 41-45, 2010

NEW DISTRIBUTIONAL RECORDS OF SOME SPECIES OF THE SUBGENUS *POLISTES (GYROSTOMA)* KIRBY (HYMENOPTERA : VESPIDAE) FROM VARIOUS STATES OF INDIA AND ADJACENT COUNTRIES

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INTRODUCTION

The genus *Polistes* Latrille is the most abundant, widely distributed and speciose social wasp. They are commonly known as paper wasps and usually make relatively small colonies and usually build their nests in human inhabited areas. They are generally non-aggressive compared to other social wasps but can be provoked into an aggressive morale for defending their nests. They are considered as beneficial insects since all the species are predatory and many consume large numbers of caterpillars of many insect pests.

There have been occasional attempts to subdivide the species of the genus. The only comprehensive attempt at a subgeneric classification of *Polistes* is that of Richards (1973). Prior to that, a few generic and subgeneric names had come into use, but only on regional and limited basis (Carpenter, 1996a). Richards (1973, 1978) subdivided *Polistes* into eleven subgenera. Recently, Carpenter (1996a) divided this genus into four subgenera. They are : *Polistes (Polistes)* Latrille primarily from Palearctic and African, barely penetrating into the Oriental Region, *P. (Gyrostoma)* Kirby from Oriental, Palearctic and Australian Regions and from oceanic Islands, *P. (Polistella)* Ashmead from Oriental, Palearctic and Australian Regions and from Wallacea and *P. (Aphanilopterus)* Meunier which is endemic to the New World. Two hundred and eleven described species and numerous subspecies are recorded under this genus from the world, of which 21 species belongs to the subgenus *Polistes (Gyrostoma)*. There are five species of *Polistes (Gyrostoma)* recorded from Indian subcontinent till date (Das & Gupta, 1983, 1989;

Carpenter, 1996b; Carpenter, 1996b Web page (updated, 2009)). In this paper, some new distributional records of the species *Polistes (Gyrostoma) tenebricosus* Lepeletier, *P. (G.) olivaceus* (De Geer) and *P. (G.) wattii* Cameron are provided.

The present study is based on a large number of collections present in the Hymenoptera Section, Zoological Survey of India, Kolkata. All the studied specimens were properly registered and kept in the Hymenoptera Section (NZSI).

Abbreviations used in the text: BMNH = Natural History Museum, London; NR = Naturhistoriska Riksmuseet, Stockholm; NZSI = Hymenoptera Section of Zoological Survey of India, Kolkata.

1. *Polistes (Gyrostoma) tenebricosus* Lepeletier (Plate I)

1836. *Polistes tenebricosus* Lepeletier, *Hist. Nat. Insect. Hym.*, 1 : 529. Type : Java (? Lost).
1852. *Polistes sulcatus* Smith, *Trans. Entomol. Soc. London*, 2 (2) : 38.
1854. *Polistes hoplites* de Saussure, *Et. Fam. Vesp.* 2, Errata : 255 (unjustified emendation).

Diagnosis : Colour : Head reddish except black mark on frons and vertex (black mark usually broader in males); antenna red with black marks on flagellar segments (black colour highly variable); thorax black mixed with red (highly variable); pronotum reddish except a black mark ventrally; mesoscutum predominantly black with sometimes a large red mark on each side of the posterior half; gaster red mixed with black (black colour highly variable); legs red mixed with black (black colour highly variable); wings

yellowish; thorax and legs generally more blackish in males.

Clypeus with close larger deep punctures; supraclypeal area, interantennal space, inner orbit below ocular sinus almost impunctate; frons, ocular sinus, vertex upto posterior ocellus with close punctures; vertex behind ocelli, temple, malar space with moderately close to sparse punctures; pronotal fovea present; pronotum, mesoscutum, scutellum, postscutellum, mesepisternum almost entirely densely rugoso-reticulate; mesepisternum with dorsal episternal groove but without distinct epicnemial carina; mesepimeron densely punctate; dorsal metapleuron with irregular striations, in between scattered larger punctures; ventral metapleuron strongly reticulate; propodeum with strong striations and a few larger punctures on sides and base; first gastral sternite with semicircular fine striations.

Length : 17-19 mm.

Material examined : India : Arunachal Pradesh : Lower Debang Valley dist., Roing, 1 F, 17.ix.2000, coll. A.R. Lahiri & Party, Regd. No. 12289/H3; Mizoram: Serchhip dist., Chekawn, 1 M, 27.xi.1996, coll. S.C. Mitra & Party, Regd. No. 12293/H3; Nagaland: Naga Hills, 1 F, 15.vii.1917, coll. S.W. Kemp, Regd. No. 1119/H3 (NZSI).

Distribution : India : Arunachal Pradesh (new record), Assam, Jammu & Kashmir, Meghalaya, Mizoram (new record), Nagaland (new record), Sikkim, Tripura, Uttarakhand, West Bengal.

Elsewhere : China, Myanmar, Nepal, Taiwan, Vietnam.

Remarks : This species is widely distributed in the Himalayan ranges of India. This species is the new record from Arunachal Pradesh, Mizoram and Nagaland.

2. *Polistes (Gyrostoma) olivaceus* (De Geer)

(Plate II)

1773. *Vespa olivacea* De Geer, *Mem. Hist. Insect.*, **3** : 582.

Type : Sex not mentioned, America (NR).

1787. *Vespa hebraea* Fabricius, *Mant. Insect.*, **1** : 292.

1792. *Vespa undata* Olivier, *Encyc. Method.*, **6** : 684.

1793. *Vespa macaensis* Fabricius, *Entomol. Syst.*, **2** : 259.

Diagnosis : *Colour* : Body yellow with variable black markings and few reddish markings; some are dark form with extensive black markings while others are pale

forms with less extensive black markings. Black markings as follows: basal and apical margin of clypeus narrowly, mandibular teeth, a short line on raised part of interantennal space, a mark above each antennal socket, a band on vertex (sometimes narrow line), occiput, a line on antennal scape and flagellum above (often only antennal scape apically above), in front of pronotal carina, a mark on pronotum ventrally towards propleuron (often absent), mesoscutum (except a longer median and two shorter lateral yellow lines, sometimes an incomplete median line), almost all the thoracic sutures (sometimes faint), a line along the median groove of propodeum (sometimes two marks on sides), first gastral tergite narrowly at base (sometimes absent), second to fifth gastral tergites and sternites with bisinuate marks, a line below coxae (sometimes absent), another line on hind tibiae above (sometimes faint). The reddish markings as follows: pronotum partly dorsally, two curved lines on propodeum on sides, second gastral tergite at base and legs partly.

Female : Clypeus densely finely punctate, with a few larger scattered punctures interposed; supraclypeal area, interantennal space, inner orbit including ocular sinus almost smooth; frons, vertex and temple with fine scattered punctures; malar space with moderately larger and close punctures; occipital carina incomplete; pronotum sparsely finely punctate; mesoscutum almost impunctate; scutellum, postscutellum and metapleuron impunctate; mesopleuron behind epicnemial carina and above sternopleural suture with scattered fine punctures; propodeum with distinct striations without distinct lateral edge; gaster almost impunctate, covered with short velvety pubescence, first gastral sternite transversely striated.

Male : Similar to female except clypeus not touching eye; temple wider; proximal tooth of mandible short; apical gastral sternite with bluntly projecting tubercle on each side; apophyses long, narrow and flattened at apex like a spatula, shiny and devoid of pubescence.

Length : Female : 13-20 mm; Male : 16-19 mm.

Material examined : India : Andhra Pradesh : Nagarjunsagar Srisailam Tiger Reserve, Mahaboobnagar dist., Mannanur, 1 F, 11.iv.1985, coll. S. Chatterjee & Party, Regd. No. 12096/H3; Medak dist., Medak, 1 F, 11.xii.1993, coll. A.K. Poddar & Party, Regd.

No. 12097/H3; Prakasam dist., Dornal, 1 F, 22.ix.1998, coll. S.K. Mandal & Party, Regd. No. 12098/H3; Gujarat : Mehsana dist., Visnagar, 1 M, 2.i.1974, coll. B. Dutta & Party, Regd. No. 12118/H3; Jharkhand : Godda dist., Sunder Pahari, 1 F, 6.iii.1938, coll. H.S.R. & H.A. Hafiz, Regd. No. 12124/H3; Pakur dist., Palmando, 3 M, 15.xi.1938, coll. H.A. hafiz, Regd. Nos. 4246/H3, 4248/H3 & 4249/H3; Nagaland : Dimapur dist., Kukidolong, 1 F, 28.x.1998, coll. T.K. Pal & Party, Regd. No. 12140/H3; Orissa : Khordha dist., Bhubaneswar, State botanical garden, 1 F, 10.ix.1984, coll. S. Biswas & Party, Regd. No. 12141/H3; Bangladesh: Chittagong, Maiui Mukh, 3 F, 1922, coll. R.P. Mullins, Regd. Nos. 1125/H3, 1126/H3 & 1128/H3; Pakistan : Punjab, Sialkote, Gharial, Murree, Alt. 6000 ft, 3 F & 1M, 19.ix.1928, coll. H.S. Pruthi, Regd. Nos. 1168/H3, 1172/H3, 1174/H3 & 1175/H3 (NZSI).

Distribution : India : Andhra Pradesh (new record), Arunachal Pradesh, Assam, Gujarat (new record), Himachal Pradesh, Jammu & Kashmir, Jharkhand (new record), Karnataka, Madhya Pradesh, Manipur, Meghalaya, Nagaland (new record), Orissa (new record), Rajasthan, Sikkim, Tripura, Uttarakhand, Uttar Pradesh, West Bengal.

Elsewhere : Afghanistan, Amirantes, Australia, Bangladesh (new record), Cambodia, Chagos Archipelago, Chile (introduced), China, Egypt, Fiji, Indonesia, Iran, Japan (?), Laos, Madagascar, Malaysia, Marianas, Marquesas, Mauritius, Myanmar, Nepal, New Caledonia, New Zealand, Oman, Pakistan (new record), Philippines, Reunion, Samoa, Seychelles, Singapore, Society Is., Sri Lanka, Tanzania, Thailand, Tongas, Tuamotu Archipelago, U.S.A., Vietnam.

Remarks : It is one of the most common and abundant paper wasp species in India, occurring in all the ecosystems and in areas of low to very heavy rainfall from sea level to high elevations. It is the first record of this species from Bangladesh and Pakistan. It is also the new record from the Indian states Andhra Pradesh, Gujarat, Jharkhand, Nagaland and Orissa.

3. *Polistes (Gyrostoma) wattii* Cameron (Plate III)

1900. *Polistes wattii* Cameron, *Ann. Mag. Nat. Hist.*, **6** (7) : 416. Type : Female, West Bengal (BMNH).

Diagnosis : *Colour* : Almost uniform yellow colour of head and thorax, in some specimens brown mixed with yellow especially on gaster; in some specimens a black spot on scape at apex above, a black mark around each ocellus narrowly, interrupted or uninterrupted narrow black marks on vertex of some males; hind tibia above usually black; a narrow transverse reddish brown line on first gastral tergite after middle, second to fifth gastral tergite and sternite with bisinuate reddish brown line; in some specimens two brown curved lines on propodeum.

Female : Clypeus finely punctate and interposed with scattered larger deep punctures; supraclypeal area, interantennal space, inner orbit including ocular sinus, frons, vertex, temple, pronotum, mesoscutum, scutellum, postscutellum mat; malar space with scattered punctures; occipital carina complete; mesepisternum behind epicnemial carina mat with scattered fine punctures; dorsal and ventral metapleuron impunctate; striations on propodeum weak, not distinct near the lower margin of side; gaster smooth covered with short pubescence; first gastral sternite smooth.

Male : Similar to female except clypeus not touching the eye; proximal tooth shorter and broader than other teeth; temple wider; apophyses of subgenital plate long and narrow, not flattened at apex, densely pubescent.

Size : Female : 10-20 mm; Male : 15-20 mm.

Material examined : India : Bihar : Samastipur dist., Pusa, 1 F, 26-30.viii.1925, coll. H.S. Pruthi, Regd. No. 1127/H3; Patna dist., Rajendra Nagar, 3 F, 6.viii.2009, coll. P.M. Sureshan, Regd. Nos. 12207/H3 to 12209/H3; Haryana : Gurgaon dist., Gurgaon, 1 F, 25.iv.1964, coll. S.K. Mitra, Regd. No. 12256/H3; Jammu & Kashmir : Jammu dist., Talab tiloo, 1 F, 1.x.1977, coll. R.C. Basu & Party, Regd. No. 12244/H3; Jharkhand : Ranchi dist., Nawadi, 1 F, 9.vi.1994, coll. A.K. Sanyal & Party, Regd. No. 12245/H3; Bokaro dist., Bandhudih, 1 F, 5.viii.2009, coll. Arun Kumar Roy Mahato, Regd. No. 12246/H3; Madhya Pradesh : Jabalpur, Pachpedi, 2 F & 1 M, 27.viii.1963, coll. H. Khajuria, Regd. Nos. 3613/H3, 4077/H3 & 12247/H3; Rajasthan : Nagaur dist., Sambhar Lakeside, 1 M, 10.xi.1956, coll. Unknown, Regd. No. 2217/H3; Bhilwara dist., Gudha, 4 F, 2-5.iii.1958, coll.

T.G. Vazirani, Regd. Nos. 2827/H3, 2830/H3, 2831/H3 & 2833/H3; Jaipur dist., Korsina, 2 F, 18.iv.1958, coll. T.G. Vazirani, Regd. Nos. 2835/H3 & 2841/H3; Nagaur dist., Sambhar Lakeside, 1 F, 11.xi.1958, coll. A.K. Mukherjee, Regd. No. 2834/H3; Jodhpur dist., Mandor garden, 1 F, 7.ix.1963, coll. Unknown, Regd. No. 3603/H3 (NZSI).

Distribution : India : Bihar (new record), Delhi, Gujarat, Haryana (new record), Himachal Pradesh, Jammu & Kashmir (new record), Jharkhand (new record), Madhya Pradesh (new record), Meghalaya, Orissa, Punjab, Rajasthan (new record), Uttarakhand, Uttar Pradesh, West Bengal.

Elsewhere : Afghanistan, China, Iran, Iraq, Mauritius, Oman, Pakistan, Saudi Arabia, U.A.E.

Remarks : This species is one of the widely distributed species of India. This is the new record of this species from Bihar, Haryana, Jammu & Kashmir, Jharkhand, Madhya Pradesh and Rajasthan.

SUMMARY

Three species of the subgenus *Polistes* (*Gyrostoma*) Kirby namely *P. (G.) tenebricosus* Lepeletier, *P. (G.) olivaceus* (De Geer) and *P. (G.) wattii* Cameron are studied in this paper. During the present study there are several new distributional records are found out. *P. (G.) olivaceus* (De Geer) is the new record from Bangladesh and Pakistan. *P. (G.) tenebricosus* Lepeletier is the new record from Arunachal Pradesh, Mizoram and Nagaland. *P. (G.) olivaceus* (De Geer) is the new record from Andhra Pradesh, Gujarat, Jharkhand, Nagaland and Orissa. *P. (G.) wattii* Cameron is the new record from Bihar, Haryana, Jammu & Kashmir, Jharkhand, Madhya Pradesh and Rajasthan.

ACKNOWLEDGEMENTS

The author is grateful to the Director, Zoological Survey of India, Kolkata for providing research facilities and encouragements. The author sincerely thank Mr. Mridul Purakayastha, IT Assistant (Data Entry), ENVIS Centre, ZSI, Kolkata for editing photos.

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PLATE I



Polistes (Gyrostoma) tenebricosus Lepeletier. Female.

PLATE II



Polistes (Gyrostoma) olivaceus (De Geer). Female.

PLATE III



Polistes (Gyrostoma) wattii Cameron. Female.