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### On a new subgenus *Orientoheriades* and two new species of genus *Heriades* SPINOLA from India (Insecta, Hymenoptera, Apoidea, Megachilidae)

With 2 Plates

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**Abstract.** The species of genus *Heriades* SPINOLA, were grouped under subgenera *Neotrypetes* ROBERTSON, *Physostetha* MICHENER, *Michenerella* KROMBEIN and *Heriades* s. str. A new subgenus *Orientoheriades* has been proposed (type-species: *Heriades* [*Orientoheriades*] *orientalis* sp. n.), and a key to the subgenera of genus *Heriades* has been presented. The description of subgenus is followed by the type description and *H. (O.) erecta* sp. n.

MICHENER (1938) grouped the species of genus *Heriades* SPINOLA under 3 subgenera: *Neotrypetes* ROBERTSON (type-species: *Megachile variolosa* CRESSON), *Physostetha* MICHENER (type-species: *Heriades carinatum* CRESSON) and *Heriades* s. str. (type-species: *Apis truncorum* LINN.). KROMBEIN (1950) added one more subgenus *Michenerella* (type-species: *Heriades paganensis* YASUMATSU), while describing Micronesian Hymenoptera.

#### Key to the subgenera of genus *Heriades*

1. Axillae rounded posteriorly.	2
— Axillae produced to points posteriorly.	4
2. Carinae of mandible of female separated except apically; first sternite of male large and broadly expanded.	3
Carinae of mandibles of female united at basal part of mandibles; male: first sternite short, truncate apically; fifth sternite with small, apical, median emargination and sixth with two short, subapical rows of stout spines.	<b>Physostetha</b> MICHENER
3. Clypeal margin of female not thickened but with dents or tubercles; male: first sternite large and produced to a rounded or pointed apex; fifth sternite produced to a broad, apical emargination and sixth with some soft, subapical hairs.	

#### **Neotrypetes** ROBERTSON

Clypeal margin of female thickened but not dentate or tubercled; male: first sternite broadly expanded apically, concealing second sternite almost totally; fifth sternite with a narrow median emargination at apical margin; sixth sternite with apical margin broadly rounded and with a median emargination, hairs along the apical margin long, and with an oval or rounded area basad of emargination with very stout curved setae.

#### **Michenerella** KROMBEIN

4. Carinae of mandibles of female separated except apically; male: first sternite short, truncate apically; fifth sternite with a moderate sized apical emargination and sixth with some soft subapical hairs.

#### **Heriades** (s. str.)

Carinae of mandibles of female united at basal region and runs parallelly upto subdente margin; male first sternite broadly produced apico-laterally; fifth sternite apically, with a slender projection, formed due to the invagination of basal margin,

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produced apically beyond the median emargination of apical margin; sixth sternite with basal margin deeply incurved and with thick spicules on apico-lateral projections.

**Orientoheriades subgen. n.**

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Type species *Heriades (Orientoheriades) orientalis* sp. n.

This subgenus can be distinctly separated from the allied subgenera by having the following combination of characters:

Axillae produced to points.

**Female** Mandibular surfacial carinae united at basal region and apically runs parallelly upto sub-apical outer impressed line, near the dentate margin, inner angle of mandible obtuse and incurved; clypeus at extreme apical margin distinctly dentate or tubercled; axillar projection, posteriorly straight or slightly shifted towards scutellum, from its main line of axis.

**Male** First sternite apico-laterally broadly expanded; fifth sternite apically with a narrow median emargination and basal margin medially also deeply invaginated, and produced beyond the apical margin as narrow apico-median projection, marginal hairs are absent at median emargination; sixth sternite with thick stuffed spicules on its apico-lateral projections, apical margin with fine bristles arranged in a row on either sides of mid line; basal margin deeply incurved medially.

**Etymology** The new subgenus is named after the Oriental region.

**Heriades (Orientoheriades) orientalis sp. n.**

**Female** Body pubescence plumose white; scopa pale yellow head wider than length; clypeal apical margin with 8 tubercles; maximum width of parocular area equal to the clypeal basal width, sloping towards antennal sockets; ocellar area bare, punctures nearby midocellus arranged in circumference; median groove on face obscure; genal margin incarinate, narrowed above and much wider than eye in lateral view; labral surface with a prominent longitudinal ridge; mandible tridentate and surface finely punctured along the carinae.

Scutum swollen anteriorly, lateral margins upcurved; notauli absent; scutellar crest obscurely triangular; mesepisternites broadly sulcate; length of propodeal triangle much exceed the length of median groove below fore wing clear hyaline with brownish-black veins, second recurrent vein little far from apex, but first at the base of the second cubital cell.

Trochanter and femor almost impunctate; tibiae with a short dorso-apical spine, arolium distinct; basal tergal concavity margin strongly carinate; all tergal apical marginal fasceae confined to lateral sides; tergum 6 surface downcurved with dense-short pale hairs, apex narrowed down; complete metasoma with a strong horizontal convexity beginning from 3rd to 6th tergite; basal sternum broadly expanded lateralo-apically, without any apical fringe.

**Measurements (in mm)** Total length 7.0; eyes: length 1.5, lateral width 0.65; clypeus: median length 0.55, basal and apical width 0.42, & 1.12; antennae: length of scape 0.5, pedicel 0.2, flagellar segments 1st 0.1, 2nd 0.1, Xth 0.3; labrum: median length 0.75, basal width & apical width 0.7 & 0.25; mandible: length of lower margin & of dentate margin 1.15 & 0.5; scutum: median length 1.42, maximum width 1.6; fore wing: total length 3.8 and relative widths of terga I to VI 1.55, 1.85, 1.86, 1.6, 1.2, 0.9.

**Male**

Clypeus with dense long plumose hairs, so as supraclypeus and parocular areas; parocular area almost flat; vertex margin slightly incurved; flat; genae tapering below and hypostome

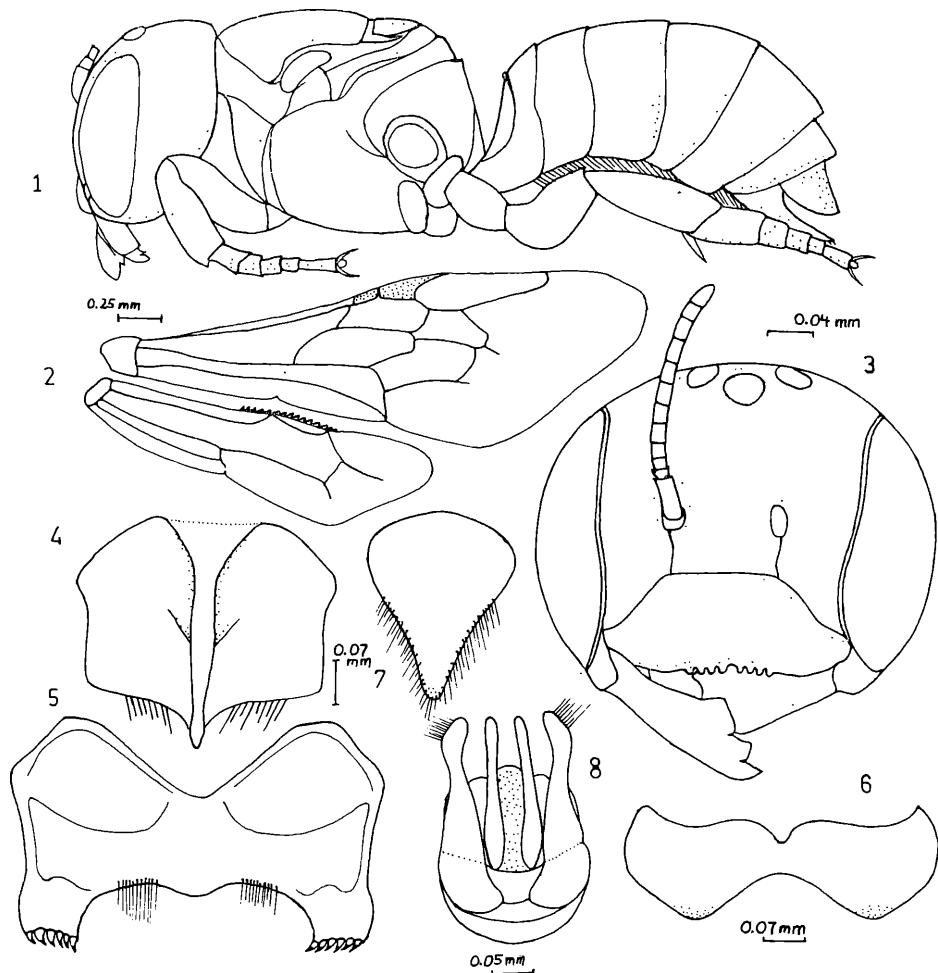


Plate 1. *Heriades (Orientoheriades) orientalis* sp. n., female (1–3) and male (4–8). 1 adult, lateral view (mid-leg removed) – 2: wings – 3: head, front view – 4: 5th sternite – 5: 6th sternite – 6: 7th sternite – 7: 8th sternite – 8: genitalia. (Dots on figs. 1–3 indicate pubescence)

with copiously long pubescence; mandible bidentate; scutum not swollen anteriorly, dorsal pubescence black; coxal spines lacking; in fore pair of legs, ventral surface of basitarsi concave, densely covered with pale pubescence; tarsi 2–4 apically excavated anteriorly and with bunches of bristles.

Basal tergum distinctly fasciate; transverse carina of sixth tergite angulate from rest of preceding area, lower margin of carina shallowly concave on either sides of median (feebly) carinate emargination; only 4 sternites exposed; apical fasceae of I<sup>st</sup> & II<sup>nd</sup> prominent but 4<sup>th</sup> sternite bare; apical margin of fifth finely fringed and with a median emargination, basal margin deeply invaginated and produced apically with median emargination of apical margin; sternite 6<sup>th</sup> basal margin deeply invaginated and apico-lateral lobes with thick spicules, either sides of midline with fine bristles; sternite 8<sup>th</sup> with a distinct marginal fringe at apical lobe.

Apical lobe of genitalia not protuberent at base, stipites gradually narrowed towards apex, apex slightly directed towards aedeagus and outer margin of this deviated apex bears fine bristles, penis valve and volselle are outcurved.

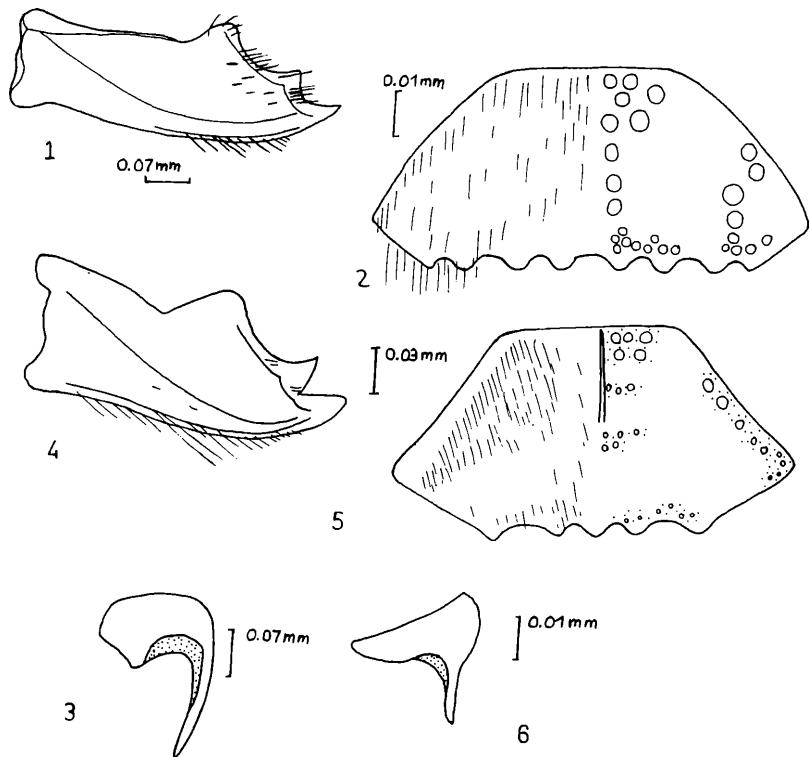


Plate 2. *Heriades (Orientoheriades) orientalis* sp. n., female (1-3) and *H. (O.) erecta* sp. n. female (4-6). 1, 4: mandible — 2, 5: clypeus — 3, 6: axilla.

Measurements (in mm): Total length 5.8; eyes length 1.15, lateral width 0.6; clypeus: median length 0.45, basal & apical widths 0.3 & 0.82; antennae: length of scape 0.35, pedicel 0.05, flagellar segments I<sup>st</sup> 0.1, II<sup>nd</sup> 0.1 & XI<sup>th</sup> 0.1; labrum: median length 0.5, basal and apical widths 0.32 & 0.2; scutum: median length 1.0, maximum width 1.4; total length of fore wing 3.6; relative widths of terga I to VI — 1.5, 1.6, 1.6, 1.5, 1.0, 0.52.

Material examined Holotype ♀, Kullu (H. P.), 3600' m. s. l., 19. V. 1982, Coll. Rajiv K. Gupta; Paratypes: 2 females & 2 males, same data as for holotype (National Pusa Collection, Division of Entomology, I. A. R. I., New Delhi).

Flower record *Helianthus* sp.

#### ***Heriades (Orientoheriades) erecta* sp. n.**

Female:

Integument black with large and deep punctures, tergal apical margin with redness; body pubescence white, partly plumose; scopa light pale; head wider than length; clypeal surface with a fine longitudinal groove running from basal margin upto the median area of disc, apical margin with 5 tubercles; punctures below the midocellus arranged in Y-shape, joining the median groove below; occipital margin at vertex straight and incarinate, punctures at the surface arranged in circles; labrum without any longitudinal ridge; scutum swollen posteriorly, surface bare at median area; fore wing with first recurrent vein near to the base but second finishes much before the apex, of second cuboital cell.

Femora of fore pair are slightly bifurcated apico-ventrally; claws brown; femora and tibiae of hind pair with longitudinal, smooth concavities on dorso-posterior surface; apical fasceae on tergum 3 absent, on the rest of tergites with prominent white hairs; tergite 6 straight in profile; basal sternite in profile resembles canopy near base; graduli on the sternites are evident as coarse punctures arranged in linear row, apical marginal fasceae absent.

**Measurements** (in mm): Total length: 5.7 clypeus: median length 0.5, basal & apical widths 0.3 & 1.0; mandible: length of lower margin & dentate margin 0.75 & 0.4; scutum: median length 1.12, maximum width 1.5; total length of fore wing 3.65 and relative widths of terite I to VI – 1.17, 1.7, 1.7, 1.5, 1.05 & 0.5.

**Male** Not known.

**Material examined** Holotype: ♀, Mandi (H. P.), 4000' m. s. l., 17 V 1982, Coll. Rajiv K. Gupta. Paratypes: 17 ♀ [5 ♀, Dharamsala (H. P.), 5000' m. s. l., 15. V 1982; 9 ♀, Kullu (H. P.), 3600' m. s. l., 19. V 1982; 3 ♀, Simla (H. P.), 6500' m. s. l.]; all Coll. Rajiv K. Gupta (N. P. C., Division of Entomology, I. A. R. I., New Delhi).

**Flower record** *Tegetes erecta*.

**Etymology** The new species is named after *Tegetes erecta*, the composit, from which the species was collected.

**Remarks** *H. (O.) erecta* and *H. (O.) orientalis* are related to each other in subgeneric characters, however, *orientalis* differ from *erecta* in: lacking longitudinal groove on clypeal surface, apical margin with 8 tubercles; facial median groove almost obscure; labrum with a longitudinal ridge; tergal fascae limited upto IIInd tergite and some of the exposed sternites (in female II to VI) with distinct apical fringe.

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