THREE NEW SPECIES OF *NIPPOCRYPTUS* UCHIDA FROM INDIA (HYMENOPTERA ICHNEUMONIDAE)

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INTRODUCTION

The genus Nippocryptus Uchida belongs to the tribe Ischnini of the family Ichneumonidae. It contains medium sized species measuring 7 to 13 mm in length. This genus is known from Palaearctic and Oriental Regions. Townes (1970 : 190) referred to this genus 3 species Ichneumon vittatorius Jurine from Palaearctic Region and Mesostenus misippus Cameron and Aglaocryptus striatifrons Cameron from Oriental Region. On examination of the type of A striatifrons Cameron, it was discovered that this species belongs to genus Ischnus Gravenhorst, rather than to Nippocryptus Uchida.

Three new species are described here from India along with a detailed description of *Mesostenus misippus* Cameron. One female specimen of *Nippocryptus suzukii* (Matsumura) (=*vittatorius* Jurine) from Japan was available for study, which is included here in the key and the text for comparison with the Oriental species.

SYSTEMATIC ACCOUNT

Genus Nippocryptus Uchida

1936. Nippocryptus Uchida, Insecta Matsumurana, 11 : 3. Type : Hemiteles suzukii Matsumura (=vittatorius Jurine). Original designation.

Body of moderate proportions to rather stout. Clypeus small, about 2.2x as wide as long, moderately convex with its apical 0.35 flattened or slightly concave, its apex with a median tooth, lobe, or obtuse angulation. Malarspace 0.5 to 1.1x as long as basal width of mandible; mandible with equal teeth or lower tooth slightly shorter. Mesoscutum polished or weakly mat, its punctures closely placed. Notaulus moderately strong, ending behind the center of mesoscutum. Propodeal spiracle subcircular to 2.0x as long as wide, apical carina (Fig. 1 c) with sublateral crest-like apophyses. Base of hind coxa with a short, shallow, oblique groove below its attachment. Wing venation in figure 1, a, b, the ramulus sometimes vestigial or absent. First tergite moderately stout, at base with lateral flange like teeth, its spiracles near apical 0.42; median dorsal carinae distinct in female, indistinct in male, ending between base

and middle of postpetiole, dorso-lateral carinae moderately strong to obolescent, ventrolateral carinae distinct. Second tergite mat with small punctures, hairs short and rather dense. Ovipositor sheath 0.8 to 1.5x as long as hind tibia, ovipositor weakly compressed, its tip elongate-sagittate with a distinct nodus.

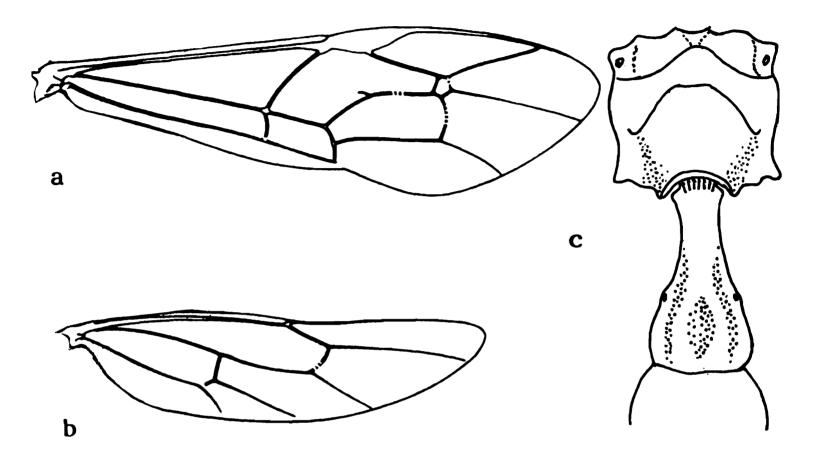


Fig. 1. Nippocryptus Uchida a, b, fore and hind wings showing venation; c, dorsal view of propodeum and first tergite.

Length Female 7.2-12.8 mm. Fore wing 6-9.5 mm. Ovipositor sheath 2.5-3.75 mm.

Type species Hemiteles suzukii Matsumura.

Nippocryptus Uchida is close to *Caenocryptus* Thomson by the absence of lateral tooth at the base of First tergite; subapical 0.6 of mediella vein weakly arched; propodeal spiracle rounded or short illiptic. However, it is easly distinguished from *Caenocryptus* by having clypeus moderately convex (not subpyramidal) in profile; ovipositor tip elongate-sagittate and apical margin of clypeus with a median short tooth, lobe, or abtuse angulation.

Key to the species of Nippocryptus

- 1 Body almost entirely black (except second to fourth hind tarsal segments, whitish). Fore wing with a broad dark brown transverse band......1 vittatorious Jurine
- Body black and variously marked with yellow. Fore wing without a dark brown transverse band, except in *N. himalayensis*, sp. nov. with a light transverse band..2

- 4. Propodeal spiracle oval. Speculum on mesopleurum smooth and polished. Basal carina of propodeum strongly arched in the middle. Scutellum shiny, sparsely, minutely and weakly punctate. Antennal flagellum with a whitish band. Metascutellum and scutellum yellow. Metapleurum with an oval mark at the base above. Hind tarsus reddish...... 4. *rufofemoratus*, sp. nov.

1. Nippocryptus vittatorius Jurine

- 1807. Ichneumon vittatorius Jurine, Nouvelle methode de classer les hymenopteres et les dipteres, p. 107. F. Type : F, Europe (Geneva).
- 1912. Hemiteles suzukii Matsumura, Thousand insects of Japan, suppl., 4: 131. F. des., fig. Type: F, Japan : Kyoto (Sapporo).
- 1936. Nippocryptus suzukki Uchida, Insecta matsumurana, 11 : 3. M, F. des. of M, figs. Japan.

This is a distinct species having body almost black, except second to fourth hind tarsal segments whitish. Fore wing with a broad dark brown transverse band (Fig. 2, a).

Female : Face largely mat, with shallow setiferous punctures, median raised area weakly rugose. Clypeus subpolished, with coarse shallow punctures, towards the apex smooth.

Mandible shallowly punctate with striations in between the punctures. Malarspace granulose, 1.0x the basal width of mandible. Frons mat, dull, weakly rugoso-punctate. Vertex mat, with setiferous punctures. Temple with small, weak and closely placed punctures. Pronotum subpolished, in the middle striato-wrinkled, its collar and upper area with small, dense punctures, punctures forming fine rugosities, epomia long and strong. Mesoscutum mat, densely punctate. Scutellum mat and subpolished with moderate sized, not so close punctures, lateral carina extending at its basal 0.3. Metascutellum smooth and shiny. Mesopleurum moderately strongly rugoso-wrinkled, its central area infornt of speculum with coarse closely placed punctures, the punctures running into striations; speculum smooth and shiny except its posterior area punctate, subtegular ridge finely punctate. Mesosternum with small closely placed punctures, prepectal carina extending 0.8x the height of mesopleurum. Metapleurum finely wrinkled, along the pleural carina closely punctate. Propodeum as a whole finely rugoso-wrinkled, apical carina strong, arched, laterally forming crest-like apophyses. First tergite mat and dull, post-petiole laterally near the spiracles with small and dense punctures. Ramulus in the fore wing present. Nervulus slightly basad of basal vein, inclivous. Nervellus intercepted at its lower 0.25.

Black. 5th to 7th flagellar segments white above; temple with a narrow yellow line along the eye margin, hind tarsus with second to fourth segments whitish; fore wing clear hyaline with a broad dark brown band in the subapical region.

Male. Not available for study.

Length Female, 11.5 mm. Forewing 8 mm. Ovipositor sheath 3.75 mm.

Specimen examined : 1 Female, W. JAPAN : no other data, det. as Nippocryptus suzukii Matsumura by Uchida and Momoi (Gupta Colln.).

Distribution : Japan. In literature Europe.

2. Nippocryptus misippus (Cameron)

- 1904. Mesostenus misippus Cameron, Trans. Ent. Soc. London, 1904 : 114. F, des. Type : F, India : Khasi Hills, Meghalya (formerly Assam) (Oxford).
- 1907. Ischnus misippus : Townes, Townes & Gupta, Mem. Amer. Ent. Soc., 1 : 163.
- 1970. Nippocryptus misippus : Townes, Mem. Amer. Ent. Soc., 12 : 191.

This species is close to *N. himalayensis*, sp. nov. in having frons medially strongly rugose or wrinkled, clypeus yellow, abdominal tergites with narrow to broad apical bands. This species is recognized by having a median longitudinal carina on frons. Mesopleurum with an elongated mark, speculum, lateral lobes of mesoscutum with longish marks and its median lobe with an aval mark, yellow. First tergite black at base and hind tibia without a basal band.

Female : Face subpolished, with small, sparse punctures, punctures at sides weak. Clypeus subpolished, sparsely and shallowly punctate. Mandible weakly striato-punctate. Malarspace

granulose, 0.75x the basal width of mandible. Frons subpolished, moderately strongly transversely rugose in the middle, near the median ocellus rugoso-punctate, at sides mat and shallowly punctate, median longitudinal carina weakly present. Vertex mat with close setiferous punctures. Temple shiny, with small closely placed punctures. Pronotum subpolished, largely trans-wrinkled, its upper margin with moderate sized deep and close punctures, punctures running into striations. Pronotal collar minutely and sparsely punctate. Scutellum with small, close and shallow punctures, lateral carina exending at its basal 0.2. Metascutellum shiny with minute scattered punctures. Mesopleurum largely rugose, speculum smooth and shiny except posteriorly punctate, mesosternum with small dense punctures, prepectal carina extending almost up to the base of subtegular ridge, subtegular ridge minutely punctate. Metapleurum moderately strongly rugoso-wrinkled, juxtacoxal carina not defined. Propodeum between basal carina and apex moderately strongly wrinkled, basad of basal carina reticulopunctate, apical carina strongly arched, carina in the middle transverse, basal carina moderately arched (Fig. 2, e). First abdominal tergite mat, postpetiole laterally with small setiferous punctures. Ramulus absent, nervulus basad of basal vein, vertical. Nervellus intercepted at its lower 0.25. Ovipositor tip long (Fig. 2, f).

Black. Apex of 5th to 11th flagellar segments white above. The following are yellow Scape in front, face with a triangular mark above, clypeus, except at the apex, orbital mark all along the eye margin (Fig. 2, b), pronotal collar, upper margin of pronotum, an oval mark at the apex of middle lobe of mesoscutum, a small mark each on lateral lobes near to tegula, scutellum, metascutellum, subtegular ridge, speculum, an elongate transverse mark along the sternaulus, a narrow elongate mark on metapleurum above, apical carina of propodeum (Fig. 2, c), apices of all the abdominal tergites. Legs in general reddish-brown, except fore and middle coxae and trochanters yellow with black markings, their tarsi brown. Hind coxa (Fig. 2, d) black with an oval mark above and an oval mark apico-ventrally, yellow; first trochanteral segment black, tarsus white except its basal 0.4 of first segment and fifth segment wholly dark brown. Wings clear hyaline.

Male : Essentially similar to female in colour and body structure, except body slender and polished. Face densely and shallowly punctate. Frons finely rugoso-wrinkle with a few scattered punctures. Vertex mat and subpolished. Temple shiny, minutely and sparsely punctate. Pronotum striate in the middle, its upper and lower regions with moderate sized punctures. Mesopleurum rugoso-punctate in the middle, striato-punctate above. Mesosternum closely punctate, speculum smooth and shiny except for a few punctures above. Metapleurum weakly rugose. Propodeum between apical carina and apex largely rugoso-wrinkled, basad of basal carina mat with shallow close punctures, apical carina represented by knob-like apophyses. First tergite largely smooth. Ramulus present as a small stump; rest as in the female.

Black. Antennal flagellum entirely black. The following are yellow : Scape in front, face, clypeus, malarspace, mandible, except the teeth, temple, frons and vertex along the eye margin, pronotum except the middle strip, middle lobe of mesoscutum with an oval mark,

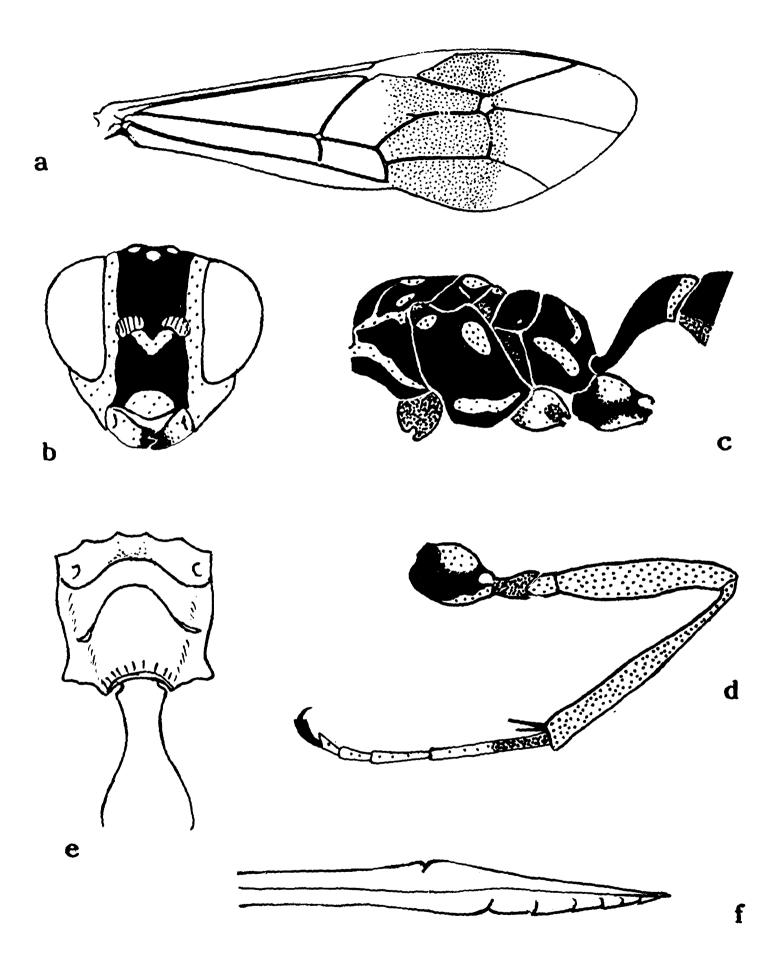


Fig. 2. Nippocryptus vittatorius Jurine : a, fore wing showing dark brown band. Nippocryptus misippus (Cameron) : colour pattern : b, front view of head; c, side view of thorax; d, hind leg; e, dorsal view of propodeum and first tergite; f, ovipositor tip.

lateral lobes with a small mark each, scutellum, metascutellum faintly, tegula, subtegular ridge, speculum, mesopleurum with a broad extensive irregular mark, metapleurum above, propodeal apophyses and median portion of apical carina, apices of all the tergites, fore and middle coxae and trochanters, yellow, their femora and tibiae yellowish-brown, tarsi dark brown. Hind coxa black with an oval mark above and below, yellow; trochanters black, femur and tibia brown, femur above and tibia at apex dark brown or blackish, tarsus white, except its first segment and claws blackish. Wings clear hyaline.

Length : Female, 10 mm. Fore wing 9 mm. Ovipositor sheath 3.5 mm. Male, 9.5 mm. Fore wing 7 mm.

Specimens examined : 5 Females, 13 Males. INDIA : MEGHALYA : (formerly Assam) : Cherrapunji, 1273 m, 1 F (homotype of *Mesostenus misippus* Cameron), 6.iv. 1966, D. T. Tikar, No. T 172; 4:F, same loc. as above, 3-7. iv. 1966, Colls. J. K. Jonathan & D. T. Tikar, Nos. J 121-125, T 127. WEST BENGAL : Darjeeling Dist. Rangiroon, 1790 m, 13 M, 25-27. v. 1966, Colls. J. K. Jonathan, M. K. Kamath, V K. Gupta, Tek Chand, Nos. J158, K118 & 196-188 (Z.S.I., Calcutta).

Distribution : India : Meghalaya (formerly part of Assam), West Bengal.

3. Nippocryptus himalayensis, sp. nov.

This species is close to *N. misippus* (Cameron), but can be distinguished by having first tergite broadly, yellow. Hind tibia with a basal yellow band. Frons without a median longitudinal carina and basal carina of propodeum acutely bent in the middle.

Female : Face subpolished, minutely punctate. Clypeus subpolished its basal half with small, sparse punctures. Mandible with minute sparse punctures. Malarspace granulose, 0.75x the basal width of mandible. Frons shallow, moderately strongly wrinkled in the middle at sides closely puncto-rugose; ocellar triangle with small sized punctures. Vertex mat with fine setiferous punctures. Temple subpolished, with small closely placed punctures. Pronotum largely finely wrinkled, wrinkles in the scrobe coarse, extreme upper margin rugulose, epomia moderately long and strong. Scutellum mat and subpolished, with small closely placed punctures, its lateral carina confined to its base. Metascutellum smooth and shiny. Mesopleurum subpolished, moderately strongly rugose, area below subtegular ridge, area above sternaulus in front and mesosternum with small sized moderately deep and closely placed punctures, speculum posteriorly with deep punctures, anteriorly smooth and shiny, prepectal carina extending 0.8 the height of mesopleurum. Metapleurum moderately strongly rugose, juxtacoxal carina present. Propodeum (Fig. 3, d) between basal carina and apex rugoso-wrinkled, basad of basal carina rugoso-punctate, basal carina in the middle acutely bent, apical carina evenly arched, laterally forming moderately strong apophyses. First abdominal tergite strongly mat, at base, smooth, postpetiole in the middle with sparse setiferous punctures, at sides small sized dense punctures. Ramulus in the fore wing present.

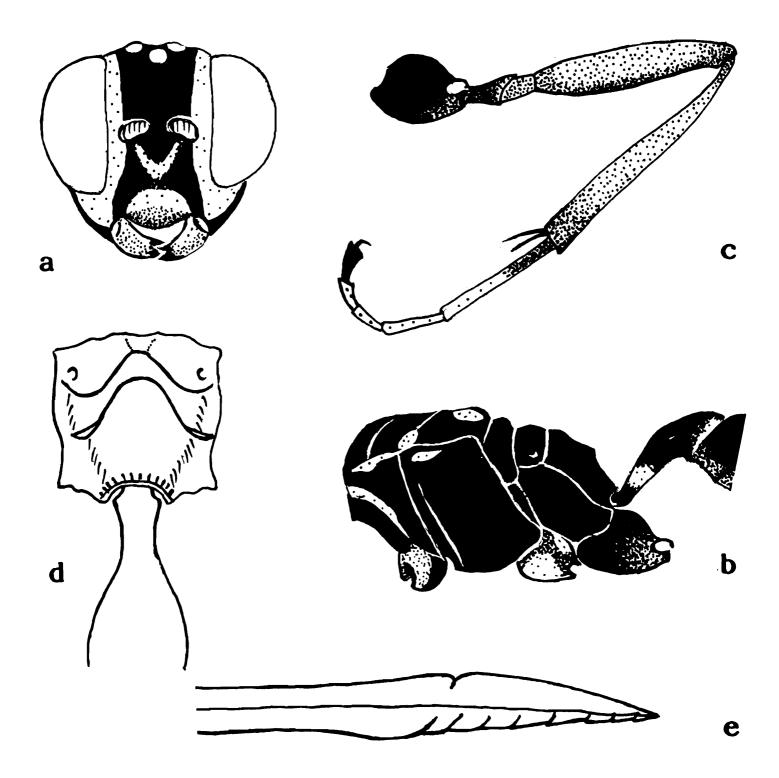


Fig. 3. Nippocryptus himalayensis : colour pattern : a, front view of head; b, side view of thorax; c, hind leg; d, dorsal view of propodeum and first tergite; e, ovipositor tip.

Nervulus basad of basal vein, slightly inclivous. Nervellus intercepted at its lower 0.2. Ovipositor tip as in figure 3, e.

Black. Apex of 4th to 9th flagellar segment white above. The following are yellow : Face in the middle, clypeus, orbital mark all along the eye margin (fig. 3, a), pronotal collar, upper margin of pronotum, tegula, scutellum, subtegular ridge (fig. 3, b), first tergite broadly at base and apices of first to seventh tergites narrowly (except sometimes bands on 4th-7th tergites not defined). Fore and middle coxae and trochanters yellow, with blackish markings. Hind coxa entirely black, its trochanter largely blackish-brown. All the femora reddish, tibiae reddish-brown, clouded with brown, hind tibia with a basal yellow band. Fore and middle tarsi brown to dark brown. Hind tarsus whitish, except basal 0.5 of its first segment and fifth segment wholly blackish-brown (fig. 3, c). Wings clear hyaline, except for a light brown transerve band in the middle.

Male : Body polished and slender. Face minutely and densely punctate. Clypeus with small and weak punctures, at apex smooth and shiny. Frons with moderate sized and closely placed puncturs, punctures running into oblique striations, near antennal scrobes smooth and shiny; near eye margin mat, with a few weak punctures. Pronotum largely rugoso-wrinkled, punctate above, collar with sparse punctures. Scutellum and metascutellum shallowly punctate. Mesopleurum and mesosternum with moderate sized, deep and closely placed punctures, area below subtegular ridge rugoso-punctate, speculum in the middle smooth and polished. Metapleurum finely rugoso-punctate. Propodeum rugoso-wrinkled, basad of basal carina weakly punctate. First abdominal tergite smooth, postpetiole mat and shallowly punctate; rest as in female.

Black. The following are yellow : Scape, face clypeus, mandible, except the teeth, frons, vertex and temple along the eye margin, pronotal collar, upper margin of pronotum, tegula, scutellum, subtegular ridge, a mark near the base of hind wing, two lateral marks on propodeum, marks united in front by a narrow line, basal half of first tergite, apices of first to seventh tergites narrowly. Fore leg yellow except for a narrow line above on femur and tibia, and tarsus almost wholly, brown. Middle leg with coxa, trochanter and inner side of femur yellow; femur on the outer side yellowish-brown, tibia brownish-yellow with a basal yellow band. Hind leg with coxa and trochanter black, except coxa narrowly at apex and its second trochanteral segment largely yellow, femur chocolate-brown, its apical 0.4 blackish, tibia dark brown with a basal yellow band; tarsus white, except basal 0.25 of its first segment and claws blackish. Wings clear hyaline.

Length Female, 10-12.8 mm. Fore wing 8-9.5 mm. Ovipositor sheath 3.25-3.75 mm. Male, 10 mm. Fores wing 6 mm.

Holotype Female, INDIA : HIMACHAL PRADESH : Manali, 1828 m, 18. v. 1970, D. Ram, No. K214. Allotype Male, same data as holotype, 19. v. 1970, M. K. Kamath, No.

K216. Paratype 1 Female, same data as holotype, 29.v.1970, M. K. Kamath, No. K251 (Z. S. I., Calcutta).

Distribution : India : Himachal Pradesh.

4. Nippocryptus rufofemoratus, sp. nov.

This species is close to *N. granulosus*, sp. nov. by having body strongly mat (granulated) and abdomen largely reddish. This species can be recognised by having propodeal spiracle oval, speculum smooth, antennal flagellum with a white band, matascutellum yellow, metapleurum with an oval mark and hind tarsus and abdomen reddish.

Female : Face subpolished, strongly granulated, with fine shallow dense punctures. Clypeus shiny with moderate sized, deep and sparse punctures. Malarspace granulose, 1.0x as long as basal with of mandible. Mandible shiny, striato-punctate. Frons strongly mat and rugulose, with fine shallow punctures at sides, antennal scrobes shiny with a few transstriations, median longitudinal groove wide and shallow without carina. Vertex mat with minute, dense, shallow punctures. Temple shiny, minutely and sparsely punctate. Scutellum shiny with minute moderately spaced punctures, lateral carina confined to its base. Metascutellum shiny, minutely punctate. Mesopleurum subpolished, with small dense coelescent punctures, appear to be rugoso-punctate, speculum smooth and polished, subtegular ridge minutely and sparsely punctate, prepectal carina extending about 0.8x the height of mesopleurum. Metapleurum strongly rugoso-wrinkled, with coarse deep punctures above, juxtacoxal carina absent. Propodeum between basal carina and apex subpolished, mat and finely wrinkled, area between the transverse carinae at sides with coarse moderately deep punctures, basad of basal carina coarsely punctate, apical carina broadly obsolete in the middle, laterally forming strong apophyses, basal carina strongly arched in the middle propodeal spiracle oval; first to third tergites granulose with fine dense setiferous punctures. Ovipositor sheath long about 1.6x as long as hind tibia.

Black. 5th to 9th flagellar segments white above. The following are yellow : Face with a mark above, orbits (fig. 4, a) all along the eye margin, pronotal collar, upper margin of pronotum, a mark at the apex of middle lobe of mesoscutum, a large oval mark on scutellum, metascutellum, subtegular ridge, a small oval mark at the basal upper corner of metrapleurum. Basal 0.66 of first tergite (fig. 4, b) black, its apical 0.33 and following all the tergites deep red. Legs (fig. 4, c) in general reddish, except all the coxae and trochanters black, and coxae broadly marked with yellow. Wings clear hyaline with yellowish hue.

Male : Unknown.

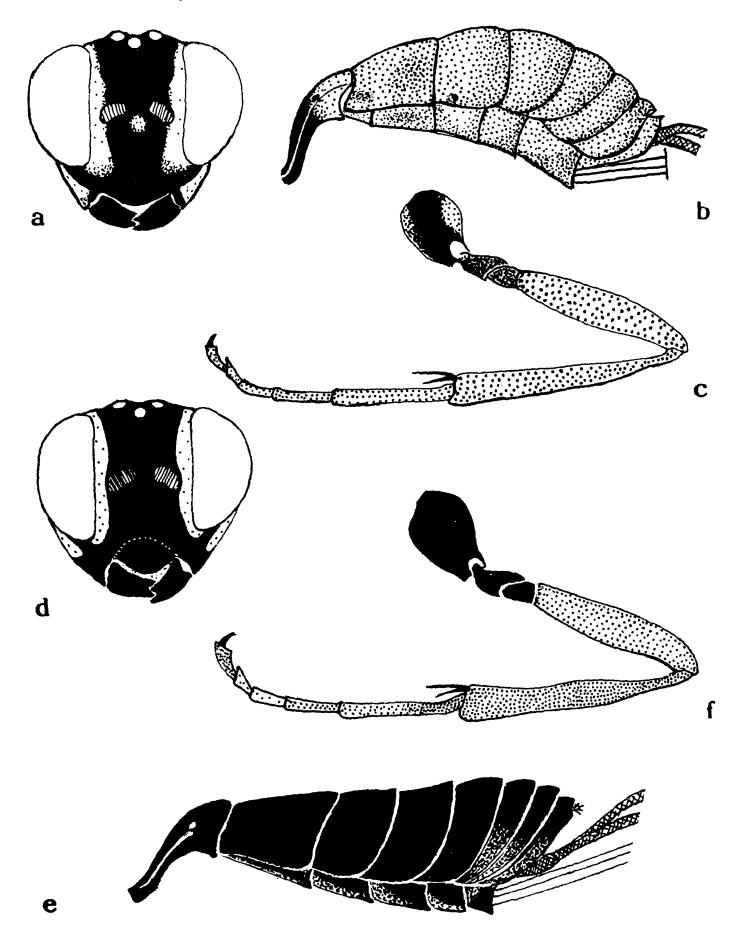


Fig. 4. Nippocryptus rufofemoratus : colour pattern : a, front view of head; b, side view of abdomen; c, hind leg. Nippocryptus granulous : colour pattern : d, front view of head; e, side view of abdomen; f, hind leg.

Length Female 9.75 mm. Fore wing 7.2. Ovipositor sheath 3.75 mm.

Holotype Female, INDIA HIMACHAL PRADESH, Kulu, 22.ii.1967, CIBC (Z.S.I., Calcutta).

Distribution : India : Himachal Pradesh.

5. Nippocryptus granulosus, sp. nov.

This species is allied to *N. rufofemoratus*, sp. nov., but can be recognised by having propodeal spiracle circular, antennal flagellum without a band, hind tarsus whitish and metascutellum and metapleurum entirely, black.

Female : Body largely dull and strongly granulated. Face minutely and densely punctate, at sides granulate. Clypeus subpolished, with small sized close punctures, apical 0.2 smooth and shiny. Frons in antennal scorbes coarsely trans-striate, above strongly granulated with fine, dense, setiferous punctures, and also with fine median longitudinal carina. Vertex largely granulated, behind with dense, shallow, small punctures. Temple subpolished, with minute sparse, indistinct punctures. Mandibles rough with coarse punctures. Malarspace granulose, 0.8x the basal width of mandible. Pronotum largely rugoso-wrinkled, in the middle tending to be trans-wrinkled, above finely closely trans-rugose with weak scattered punctures in between the regulae, epomia moderately strong and long, collar finely rugose. Mesoscutum mat and subpolished, with minute close punctures. Scutellum mat with minute, close punctures, its lateral carina extending to its basal 0.33. Metascutellum with minute, weak and sparse punctures. Mesopleurum largely moderately strongly rugose, at some places finely striato-rugose, sternaulus with short ridges, below sternaulus minutely and sparsely punctate with fine transverse regulae, speculum densely punctate, prepectal carina extending almost up to the base of subtegular ridge, subtegular ride carinated, subpolished sparsely and minutely punctate. Metapleurum moderately strongly rugose, in large specimens transversely rugose, juxtacoxal carina not well defined. Propopodeum between basal carina and apex wrinkled, basad of basal carina very finely wrinkled with shallow punctures, spiracle circular, both the transverse carina strong, bent upward and straight in the middle. First to third tergites mat with fine and dense punctures, following tergites mat. Fore wing with areolet pentagonal, about 1.0x as high as the portion of second recurrent vein above bulla. Nervellus intercepted at its 0.26, ramulus in fore wing absent. Ovipositor sheath about 1.0x as long as hind tibia.

Black. Apical antennal segments with reddish-brown hue. The following are yellow or dirty yellow : Face, frons and vertex behind narrowly, temple below along the eye margin (Fig. 4, d), upper margin of pronotum narrowly, upper corner of pronotal collar (sometimes collar wholly,) a small oval mark on scutellum (sometimes mark absent), subtegular ridge. Apex of abdomen (ventrally) reddish-brown (Fig. 4, e). Legs in general reddish-brown, except all the coxae and trochanters, fore femur broadly on outer side, tibia with line a above

black; all the tibiae and fore and middle tarsi brown, hind tarsus whitish, except its first segment largely and fifth segment apically reddish-brown (Fig. 4, f). Wings clear hyaline (colour variable).

Male Unknown.

Length Female, 7.2-9.5 mm. Fore wing 6-8 mm. Ovipositor sheath 2.25-3 mm.

Holotype Female, INDIA : HIMACHAL PRADESH Manali, 1828 m, 27. v. 1970, coll. D. Ram, No. K246. *Paratypes* 9 Females. Same locality and data as holotype, 7 F, 14-28. v. 1970, Colls. M. K. Kamath, D. Ram, A. K. Gulati, Nos. K197, K216, K217, K225, K239, K245, & K249. UTTAR PRADESH Nainital, 2 F, 10-12. x 1978, V K. Gupta, No. A27 & A30 (all in Z. S. I., Calcutta & 1 F, No. 217 in AEI, Florida).

Distribution : India : Himachal Pradesh and Uttar Pradesh.

SUMMARY

This paper deals with three new species of *Nippocryptus* Uchida, viz., *N. himalayensis*, *N. rufofemoratus*, and *N. granulosus* from India. A redescription of *N. misippus* (Cameron) has been given. *N. vittatorius* (Jurine) = [*N. suzukii* (Matsumura)] from Japan is also included in the text for comparison with the Indian species.

A key to all the species has been provided.

ACKNOWLEDGEMENT

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REFERENCES

Townes, H. 1970. Genera of Ichneumonidae, Part 3. Mem. Amer. Ent. Inst., 13: 1-307.

Gupta, V K. 1987. Catalogue of Indo-Australian Ichneumonidae, Part 2. Mem. Amer. Ent. Inst., 41 (2) 598-1210.