

**REVIEW OF THE GENUS *HEMICHROA* STEPHENS  
(HYMENOPTERA: SYMPHYTA: TENTHREDINIDAE: NEMATINAE)  
FROM THE ORIENTAL REGION**

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**ABSTRACT**

*With the description and illustrations of three species, the genus Hemichroa Stephens is reviewed from the Oriental region. The species dealt herein include: two already recorded viz., Hemichroa major Rohwer and Hemichroa crocea (Geoffroy), and one, Hemichroa smithi sp. nov. A key to the Oriental species of this genus is also provided. Key characters for H. smithi include: post ocellar area wider than long as 2:1, antennal segments 4 and 5 equal, mebasitarsus equal to following three joints combined, and clypeus broadly roundly incised u to one third of its medial length.*

**KEYWORDS**

Hemichroa crocea, H. major, H. smithi, key, new species, Oriental region, review

**ABBREVIATIONS**

*1m-cu - First medio cubitus; 2m-cu - Second medio cubitus; AWMt - Apical width of metatibia; C - Costa; EL - Eye length; IATS - Inner apical tibial spur; IDMO - Interocular distance at level of median ocellus; LID - Lower interocular distance; M - Median; MB - Metabasitarsus; OATS - Outer apical tibial spur; OCL - Oculooccipital line; POL - Postocellar line; R - Radius; Rs-M - Radiomedius; UCL - Oculooccipital line; UOL - Oculoocellar line*

Six species of the genus *Hemichroa* Stephens are so far known from the world. All the species excepting two, viz., *Hemichroa major* Rohwer, which is an Oriental species and *Hemichroa crocea* (Geoffroy) also occurring in the region in question, belong to Holarctic Region. Larvae of almost all the species are external leaf feeders, and the known hosts are *Alnus*, *Betula*, *Carylus*, *Salix*, *Prunus*, *Crataegus* and *Amelanchier*. One new species from India is described here. Host plant is unknown, though it was collected from a *Prunus* farm. All three species are described and illustrated on a uniform pattern. A key to the known Oriental species of this genus is provided.

The type material will be housed at the Division of Entomology, Pusa National Collections, Indian Agricultural Research Institute, New Delhi, India.

**Genus *Hemichroa* Stephens**

*Hemichroa* Stephens, 1835: 55; Konow, 1905: 49; Ross, 1937: 78; Benson, 1958: 145; Smith, 1975: 297-298; Smith, 1979: 53; Abe & Smith, 1991: 37, 106.

Type species: *Tenthredo alni* Linnaeus (Designated by Westwood, 1840).

*Leptocerca* Hartig, 1837: 228; Abe & Smith, 1991: 44, 106 (= *Hemichroa* Stephens).

Type species: *Tenthredo alni* Linnaeus (Designated by Rohwer, 1911).

*Engages* Gistel, 1848: 9; Abe & Smith, 1991: 29, 106 (= *Hemichroa* Stephens).

*Leptocercus* Thomson, 1871: 76 (unjustified emendation of *Leptocerca* Hartig); Abe & Smith, 1991: 44, 106 (= *Hemichroa* Stephens).

*Hemichroa* subgenus *Varna* Ross, 1937: 79; Smith, 1979: 54.

*Varna*: Abe & Smith, 1991: 89, 106 (= *Hemichroa* Stephens).

Type species: *Nematus militaris* Cresson (Original designation).

**Distribution**

Holarctic and Oriental regions.

**Diagnosis**

Adult: Forewing with veins 1m-cu and 2m-cu received on M in cell 2RS, cell 2R1 with crossvein 2r indicated, anal cell with complete basal loop, constricted portion of anal cell much longer than basal loop, C not strongly dilated at apex so that at the point of origin of vein Rs+M from R, C scarcely wider than cell c at that point; antenna long, more than twice as long as width of head, segment two not longer than wide; malar space shorter than apical width of second antennal segment.

**Remarks**

Belonging to the tribe Hoplocampini, genus *Hemichroa* was erected by Stephens (1835), and its type species *Tenthredo alni* Linnaeus was designated by Westwood (1840). Only three species are on record from the Oriental Region. After a long gap this genus is being studied from the Oriental Region a new species is added.

***Hemichroa smithi* sp. nov.**

(Figs. 1-5)

**Material examined**

Holotype: One female, 11.ix.1993, Darjeeling, West Bengal, 2300m, coll. V. Vasu.

Paratype: One female, 11.ix.1993, Darjeeling, West Bengal, 2300m, coll. V. Vasu.

Individual variation: Both specimens alike.

**Distribution**

India: Darjeeling, West Bengal.

**Etymology**

Species is named in honour of Dr. D.R. Smith, an eminent and famous symphylogist of the world.

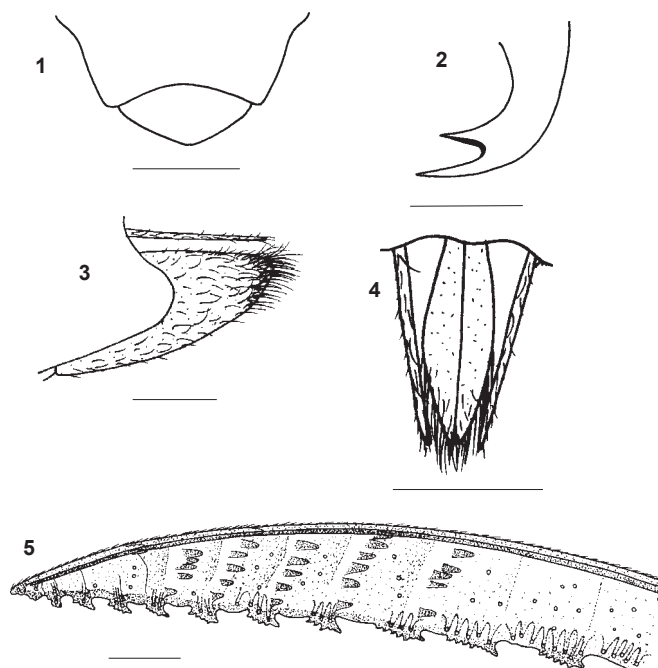
**Diagnostic features**

On the basis of some characters such as: tarsal claw shorter than apical one, insignificant frontal ridges, metabasitarsus equal to following joints combined and antennal segments three and four equal, *H. smithi* comes close to *H. crocea* (Geoffroy) but it stands far apart from the latter on the basis of some other significant characters which include: postocellar area wider than long as 2:1 (3:2 in the latter), head parallel behind eyes (widened in latter), wings uniformly infumated (apical halves infumated only in latter), antennal segments four and five equal (subequal as 8:7 in the latter), and legs entirely fuscous (with some broad aureate markings in the latter). Taking into consideration some other characters such as size of malar space, ratio of antennal segments three and four, level of frontal area, presence of furrows on head, *H. smithi* shows affinities to *H. major* Rohwer, from which it can be distinguished by the following characters: face above antenna aureate (black in the latter), clypeus roundly incised (triangularly incised in the latter), postocellar area wider than long as 2:1 (8:5 in the latter), wings infumated (brownish-yellow in the latter), venation piceous (yellowish-brown in latter), and subapical tooth of tarsal claw shorter than apical one (longer in the latter). Besides these characters, cerci reaching posterior end of ovipositor sheath in *H. smithi* but extends well beyond posterior end in *H. major* Rohwer and *H. crocea* (Geoffroy), is a significant character to separate this new species from the other two known species.

**Female**

**Colour:** Body aureate, black are: antenna, clypeus, metascutellum and ridges lateral to it, mesosternum, mesepimeron except anterodorsal half, metapleuron entirely, ovipositor sheath. Legs fuscous. Wings infumated, venation including costa, subcosta and stigma piceous.

**Structure:** Length 7.5mm. Antenna 2.3x head width, scape and pedicel each 0.75x its apical width, segment three, four and five equal; clypeus (Fig. 1) broadly roundly incised up to 1/3 of its medial length, labrum (Fig. 1) broader than long as 3:2 with roundly pointed anterior margin; malar space 1x diameter of median ocellus, postgenal carina absent, hind orbits ecarinate; supraclypeal area subtriangularly gently raised, supraantennal pit shallow with small median protuberance; frontal area almost at level of eyes, supraantennal tubercles moderate and confluent with low lying frontal ridges, median fovea in form of broad, shallow depression in its anterior half and posteriorly reaching median ocellus, posterior half of median fovea pentagonal in outline having shallow, uneven bottom; LID:IDMO:EL = 3.0:3.0:2.0, POL:OCL:UOL:UCL = 1.0:1.0:1.0:1.0; post-, inter- and circumocellar furrows sharp and distinct; lateral furrows deep, distinct, diverging posteriorly and ending well before hypothetical hind margin of head; postocellar area



**Figures 1-5. *Hemichroa smithi* sp. nov.**  
1 - Clypeus and labrum; 2 - Tarsal claw; 3 - Ovipositor sheath (lateral view); 4 - Ovipositor sheath (dorsal view); 5 - Lancet. Scale = 1.0mm

convex, wider than long as 2:1; head parallel behind eyes; mesoscutellum subconvex, appendage neither carinated nor grooved; tarsal claw (Fig. 2) with subapical tooth slightly shorter and weaker than apical one, basal lobe absent; metabasitarsus equal to following 3 joints combined, IATS:MB:OATS:AWMT = 1.5:2.0:1.0:1.0. Lancet (Fig. 5) with 12 serrulae. Cerci reaching posterior apex of ovipositor sheath (Fig. 3, lateral view; Fig. 4, dorsal view).

**Sculpture:** Head with few, fine, inconspicuous punctures, surface shining; mesonotum with dense, minute, shallow punctures on its anterior half only, rest of thorax impunctate, shining; abdomen impunctate, shining.

**Pubescence:** Body covered with golden pubescence.

**Male**

Yet to be discovered.

***Hemichroa crocea* (Geoffroy)**

(Figs. 6-12)

*Tenthredo crocea* Geoffroy, 1785: 364.

*Tenthredo rufa* Panzer, 1799: 2.

*Hemichroa stigma* Stephens, 1835: 55.

*Leptocerus nigriceps* Thomson, 1871: 78; Lindqvist, 1954: 156 (gynandromorphic type).

*Dineura (Leptocera) unicolor* Rudow, 1872: 218.

*Nematus ardens* Zaddach, 1882: 133.

*Dineura americana* Provancher, 1882: 292.

*Hemichroa pallida* Ashmead, 1890: 15.

*Hemichroa dyari* Rohwer, 1918: 171.

*Hemichroa orientalis* Rohwer, 1921: 108-109; Benson, 1963: 19.

*Hemichroa washingtonia* Rohwer & Middleton, 1931: 97.

*Hemichroa crocea*: Konow, 1905: 49; Ross, 1937: 79; Smith, 1975: 298-299; Smith, 1979: 53; Gangrou *et al.*, 1992: 122.

#### Material depository

**Holotype:** Female (*Hemichroa dyari* Rohwer), USNM, Washington; female (*Hemichroa orientalis* Rohwer), USNM, Washington; female (*Hemichroa washingtonia* Rohwer & Middleton), USNM, Washington.

**Paratype:** Five females, seven males, NR, Stockholm.

**Determined specimens:** One female, det. D.R. Smith, USNM, Washington, D.C.

#### Material examined

**Determined specimens:** One female (borrowed from USNM) appended with labels as: female, *Hemichroa crocea* (Four.), det. D. R. Smith, 94, A. W. Stelfox collection, 1966; L. 07. alder, Kelly's Glen, G. Du. AWS. 18.x.31, En. 24.5.32.

**Specimens:** Four females, 14.vi.1988, Solang Valley, Himachal Pradesh, India, 2600m, coll. M.S. Saini; one male, 29.v.1991, coll. V. Vasu.

**Individual variation:** A faint brownish spot between ocelli present. Smith (1975) observed black to infuscated areas on antennae, labrum and metanotum, and the presence of or absence of these darker areas is variable.

#### Distribution

Europe, Asia minor, Siberia, Nippon, Myanmar, India: Solang Valley, Himachal Pradesh.

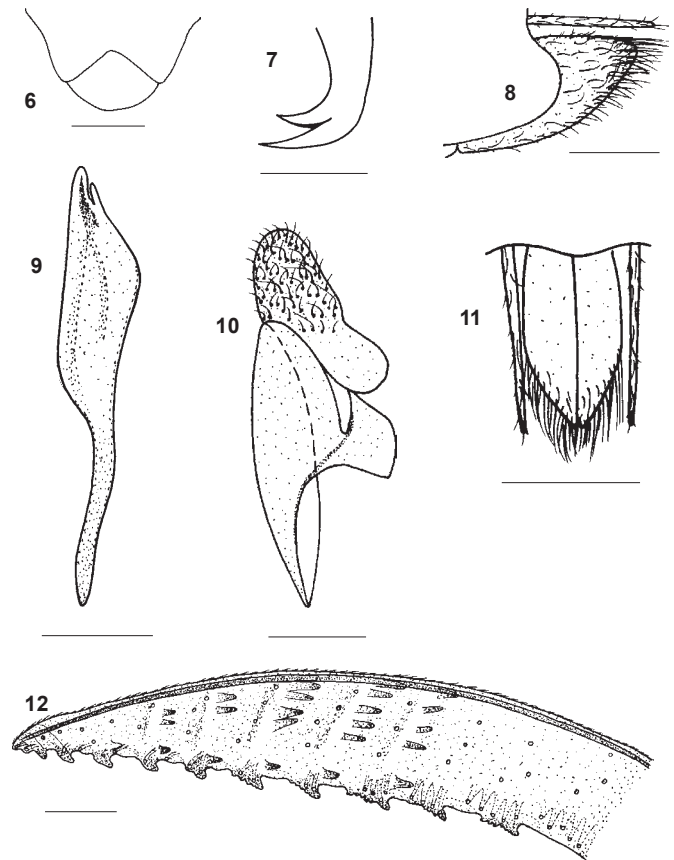
#### Diagnostic features

The characters distinguishing *H. crocea* (Geoffroy) from its closely related species *H. major* Rohwer are discussed under the latter. This species is found from Europe to Siberia, Japan and south to Himalayas. The most commonly recorded host is *Alnus*, but the larvae may feed on foliage of *Betula*, *Corylus* and *Salix*.

#### Female

**Colour:** Body aureate, black are: antenna, clypeus, metascutellum and ridges lateral to it, mesosternum, mesepimeron except anterodorsal 1/3, metapleuron entirely, ovipositor sheath. Legs fuscous; aureate are: sides of four front coxae, anterior aspect of apical 1/2 of protibia. Wings infumated except hyaline apical halves; venation including costa, subcosta and stigma piceous.

**Structure:** Length 7.0mm. Antenna 2.5x head width, scape 0.5x its apical width, pedicel 0.35x its apical width, segment three to five as 4.0:4.0:3.5; clypeus (Fig. 6) deeply subtriangularly incised up to 1/2 of its medial length, labrum (Fig. 6) broader than long as 3:2 with broad medial longitudinal depression and roundly pointed anterior margin; malar space 1x diameter of median



**Figures 6-12. *Hemichroa crocea* (Geoffroy)**  
6 - Clypeus and labrum; 7 - Tarsal claw; 8 - Ovipositor sheath (lateral view); 9 - Ovipositor sheath (dorsal view); 10 - Penis valve; 11 - Gonoforceps; 12 - Lancet.  
Scale = 1.0mm

ocellus, postgenal carina absent, hind orbits ecarinate; supraclypeal area gently subtriangularly raised, supraantennal pit shallow with small median protuberance; frontal area almost at level of eyes, supraantennal tubercles moderate and confluent with low lying frontal ridges, median fovea divided into raised anterior and low lying posterior parts, anterior half of median fovea with shallow but distinct median longitudinal seam continuing with that of characteristically carved posterior half of median fovea and reaching median ocellus; LID:IDMO:EL = 3.0:3.0:2.0, POL:OCL:UOL:UCL = 1.0:1.0:1.0:1.0; post-, inter- and circumocellar furrows sharp and distinct; lateral furrows deep, distinct, diverging posteriorly and ending well before hypothetical hind margin of head; postocellar area subconvex, wider than long as 3:2; head widened behind eyes; mesoscutellum subconvex, appendage neither carinated nor grooved; tarsal claw (Fig. 7) with subapical tooth slightly shorter and weaker than apical one, basal lobe absent; metabasitarsus equal to following three joints combined, IATS:MB:OATS:AWMT=1.5:2.0:1.0:1.0. Lancet (Fig. 12) with 11 serrulae. Cerci extending well beyond posterior apex of ovipositor sheath (Fig. 8, lateral view; Fig. 9, dorsal view).

**Sculpture:** Head with few, fine, inconspicuous punctures, surface

shining; mesonotum with dense, minute, shallow punctures on its anterior half only, rest of thorax impunctate, shining; abdomen impunctate, shining.

**Pubescence:** Body covered with golden pubescence.

#### Male

Length 7.0mm. Similar to female excepting body entirely black with yellowish red legs. Genitalia: penis valve (Fig. 10), gonoforceps (Fig. 11).

#### *Hemichroa major* Rohwer

(Figs. 13-19)

*Hemichroa major* Rohwer, 1915: 53; Benson, 1963: 19; Smith, 1975: 298, 299.

#### Material depository

**Holotype:** Female, IM (ZSI), Kolkata.

#### Materials examined

**Specimens:** Three females, two males, 21.vii.1992, Gobind Dham, Uttaranchal, India, 3100m, coll. V. Vasu; two females, 38 males, 22.vii.1992, coll. V. Vasu; 22 males, 23.vii.1992, coll. Amrik S. Chambal.

**Individual variation:** All specimens alike.

#### Distribution

China, Nepal, India: Gobind Dham, Uttaranchal.

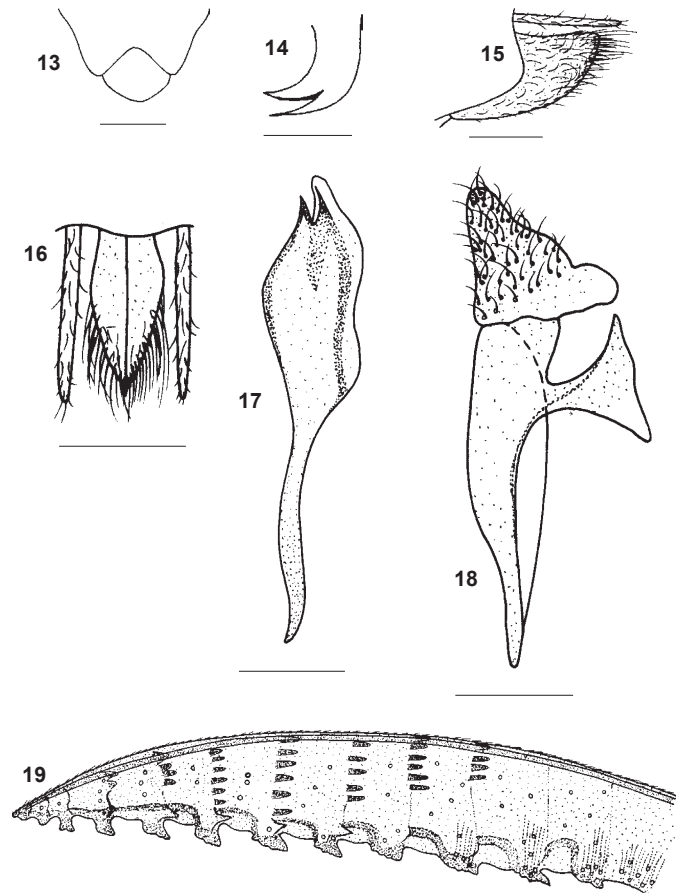
#### Diagnostic features

*H. major* Rohwer though closely related to *H. crocea* (Geoffroy) in having cerci extending well beyond hind apex of ovipositor sheath, can be set far apart on the basis of a combination of some significant characters which are: subapical tooth of tarsal claw longer and stronger than apical one (shorter and weaker in latter), median fovea traversed by horizontal ridge into two parts (not traversed in the latter), metabasitarsus shorter than following three joints combined (equal in the latter), body impunctate (finely punctate in the latter), and head entirely black (face above antennae aureate in the latter).

#### Female

**Colour:** Body aureate, black are: head including antenna, ventral 1/3 of pronotum, meso- and metasterna, meso- and metapleura except dorsal margins, ovipositor sheath more or less, all legs entirely. Wings brownish yellow, venation including costa, subcosta and stigma yellowish brown.

**Structure:** Length 11.0mm. Antenna 2.6x head width, scape 0.5x its apical width, pedicel 0.3x its apical width, segment three to five as 4.0:4.0:3.5; clypeus (Fig. 13) deeply triangularly incised up to 1/2 of its medial length, labrum (Fig. 13) broader than long as 4:3 with median shallow depression and rounded anterior margin; malar space 1x diameter of median ocellus, postgenal carina absent, hind orbits ecarinate; supraclypeal area triangularly tectiformly elevated, supraantennal pits well marked; frontal area almost at level of eyes, supraantennal tubercles moderate and confluent with roundly raised frontal ridges,



**Figures 13-19. *Hemichroa major* Rohwer**  
 13 - Clypeus and labrum; 14 - Tarsal claw; 15 - Ovipositor sheath (lateral view); 16 - Ovipositor sheath (dorsal view); 17 - Penis valve; 18 - Gonoforceps; 19 - Lancet.  
 Scale = 1.0mm

median fovea traversed by a horizontal ridge of magnitude of frontal ridges into two parts, anterior 1/3 of median fovea with deep, subtriangular pit, posterior 2/3 broad and horse-shoe shaped, having uneven bottom and characteristically carved with distinct grooves running almost parallel to frontal ridges; LID:IDMO:EL=4.0:4.0:3.0, POL:OCL:UOL:UCL=1.0:1.25:1.0:1.25; post, inter- and circumocellar furrows sharp and distinct; lateral furrows deep, distinct, diverging posteriorly and ending well before hypothetical hind margin of head; postocellar area subconvex, wider than long as 8:5; head widened behind eyes; mesoscutellum convex, appendage neither carinated nor grooved; tarsal claw (Fig. 14) with subapical tooth slightly longer and stronger than apical one, basal lobe absent; metabasitarsus shorter than following three joints combined as 3:4, IATS:MB:OATS:AWMT = 1.5:2.5:1.0:1.0. Lancet (Fig. 19) with 12 serrulae. Cerci extending well beyond posterior apex of ovipositor sheath (Fig. 15, lateral view; Fig. 16, dorsal view).

**Sculpture:** Body impunctate, shining with general oily lustre.

**Pubescence:** Body covered with golden pubescence.

**Male**

Average length 9.0mm. Similar to female. Genitalia: penis valve (Fig. 17), gonoforceps (Fig. 18).

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**Key to the Oriental species of the genus *Hemichroa* Stephens**

1. Tarsal claw with a subapical tooth shorter than apical one; metabasitarsus equal to following three joints combined; cerci in female reaching almost hind apex of ovipositor sheath ..... 2
- 1A. Tarsal claw with subapical tooth longer than apical one; metabasitarsus shorter than following 3 joints combined as 3:4; cerci in female extending well beyond apex of ovipositor sheath ..... *major* Rohwer
2. Head widened behind eyes; postocellar area wider than long as 3:2; only apical 1/2 of wings infumated; legs fuscous with prominent aureate spots; antennal segments three and five as 8:7, pedicel 0.35x its apical width; clypeus subtriangularly incised ..... *crocea* (Geoffroy)
- 2A. Head parallel behind eyes; postocellar area wider than long as 2:1; wings uniformly infumated; legs entirely fuscous; antennal segments three and five equal, pedicel 0.75x its apical width; clypeus roundly incised ..... ***smithi* sp. nov.**

