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NOTES ON CLUSIODIDAE (DIPTERA).

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SINCE the appearance of my revision of this family in the Proceedings of the Entomological Society of Washington, in 1918, I have collected many more specimens and have elucidated some points that necessitate the publication of additional notes on two genera.

The generic characters used in the family are rather trivial in some cases and a strict application of these throughout the group would result in the erection of several more genera, a course which seems to me inadvisable in a group as homogeneous as this. I present a key to the species of the genus *Clusiodes* known to me to occur in the eastern United States and indicate characters for the subdivision of the genus into three subgenera.

The type specimens of the species taken by Mr. C. W. Johnson are in the collection of the Boston Society of Natural History.

Key to Subgenera and Species of Clusiodes.

1. Postvertical bristles present.....2.
- Postvertical bristles absent.....(Subgenus *Columbiella*) 15.
2. Thorax with three long strong pairs of dorso-central bristles, the anterior pair in front of suture..... (Subgenus *Clusiodes* Coq.) 3.
- Thorax with two strong pairs of dorso-centrals and usually one or two pairs of weak setulae behind suture..... (Subgenus *Clusiaria*) 4.
3. Anterior margin of mesonotum black between the humeri; each orbit with three bristles, the upper one weak; fore metatarsus black; palpi black apically..... *albimana* Meigen.
- Anterior margin of mesonotum between humeri yellow; each orbit with two bristles, the upper one absent; fore metatarsus black, white at tip; palpi black..... *americana*, sp. n.
4. Males.....5.
- Females.....10.
5. Two very long strong vibrissae on each side of mouth; face and cheeks almost entirely black; each orbit with two bristles..... *duplicata*, sp. n.
- Only one strong vibrissa on each side of mouth; each orbit with three bristles, the upper one weak.....6.
6. Face deep black except below antennae, cheeks blackened anteriorly; upper orbital bristle very weak and yellow; dorsum of thorax rufous..... *melanostoma* Loew.
- Face not deep black; upper orbital of moderate strength, black.....7.

7. Apical three or four segments of fore tarsi black; infuscation of wings confined to apical half or less of wing. *pictipes* Zetterstedt. Fore tarsi entirely yellow. 8.
8. Thorax shining rufous, with slight gray pruinescence, lateral margins white, the dorsum with two submedian black vittae. *ruficollis* Meigen. Thoracic dorsum black, with dense gray pruinescence, not vittate. 9.
9. Infuscation of wing extending from apex of first vein to apex of wing *geomyzina* Fallen. Infuscation of wing confined to apical half or less . . . *apicalis* Zetterstedt.
10. Dorsum of thorax shining rufous, without gray pruinescence. 11. Dorsum of thorax black, with dense gray pruinescence. 14.
11. Each orbit with two bristles, the upper one absent; dorsum of thorax not vittate, the sides narrowly white. *duplicata*, sp. n. Each orbit with three bristles, the upper one weak. 12.
12. Fore tarsi black. *pictipes* Zetterstedt. Fore tarsi yellow. 13.
13. Thoracic dorsum not vittate. *melanostoma* Loew. Thoracic dorsum with two black vittae posteriorly. . . . *ruficollis* Meigen.
14. Infuscation of wing extending from apex of first vein to apex of wing. *geomyzina* Fallen. Infuscation of wing confined to apical half or less. . . *apicalis* Zetterstedt.
15. Thorax with two pairs of strong postsutural dorso-centrals, no presutural dorso-central present; upper orbital bristle present, of moderate length; palpi of female yellow; infuscation of wing extending from apex of first vein to apex of wing; fore tarsi fuscous. *orbitalis*, sp. n. Thorax with three pairs of strong dorso-centrals, the anterior pair in front of suture; upper orbital bristle absent; infuscation of wing in the form of two large clouds, one over the cross-veins and the other on apical half; basal segment of fore tarsi in female deep black; in male the basal or basal and second segments infuscated, remainder white. 16.
16. Palpi yellow; third segment almost entirely yellow. 17. Palpi and third antennal segment largely or entirely black. 18.
17. Thoracic dorsum black; basal segment of fore tarsi black, second segment faintly browned at base in male; fore femur yellow; hypopygial claspers long, drawn out into a long narrow strap-like tip. *apiculata*, sp. n. Thoracic dorsum yellowish brown, with two or four darker vittae, the lateral margins white; male with basal and second segments of fore tarsi fuscous; fore femur with a dark-brown mark at apex on anterior side; hypopygial claspers short, rounded apically. . . . *johnsoni*, sp. n.
18. A large mark on anterior side of fore femur near apex; the fore tibia, and basal two segments of fore tarsus black. *nigripalpis*, sp. n. ♂. Fore tibia fuscous, basal segment of fore tarsus black. *nigripalpis*, sp. n. ♀?

***Clusiodes americana*, sp. n.**

Male and female. — Very similar to *albimana*, differing as stated in the key, and in having the first posterior cell on wing more narrowed apically, as well as in being slightly smaller.

Length, 4 mm.

Type, male, and allotype, Beltsville, Maryland, May 21, 1922 (J. R. Malloch). Paratypes, females, Mt. Cadillac, Mt. Desert, Maine, July 25, 1919; Mt. Ascutney, Vermont, July 11, 1908 (C. W. Johnson); and Intervale, New Hampshire, August 23 (G. M. Allen).

CLUSIARIA, subgen. n.

Characters as stated in key.

Genotype, the following species.

Clusiodes (Clusiaria) duplicata, sp. n.

Similar to *melanostoma* (Loew) to which it will run in my revision of the family already referred to, differing as stated in the key in this paper. The male has the face and cheeks more extensively blackened than in *melanostoma*, the arista brown, third antennal segment slightly browned at insertion of arista, and the frontal bristles black instead of brown as in that species. The females may be distinguished by the orbital bristling, and the color of arista and third antennal segment as in males.

Length, 4 to 4.5 mm.

Type, male, allotype, and two male and two female paratypes, Glen Echo, Maryland, July 2, 23, and August 8, 1922 (J. R. Malloch). Taken on a rotten tree trunk overhanging a stream.

Paratypes in collection of Boston Society of Natural History.

COLUMBIELLA, subgen. n.

Characters as stated in key.

Genotype, the following species.

Clusiodes (Columbiella) apiculata, sp. n.

Male.— Very similar to *albimana* in color and habitus. Dorsum of thorax, upper half of pleura, and abdomen brownish black. Third antennal segment with a very small brownish mark at insertion of arista. Other characters as stated in key.

Length, 3 mm.

Type, Milford, New Hampshire, June 23, 1914. Paratype male, Manchester, Vermont, June 4, 1910 (C. W. Johnson).

Clusiodes (Columbiella) johnsoni, sp. n.

Male.— Very similar to the foregoing species; differs as stated in key. The cloud over discal cell is less distinct. The hypopygial claspers are very small, and like those of the preceding, furnished with short black hairs.

Length, 3 mm.

Type, Echo Lake, Mt. Desert, Maine, July 12, 1918. Paratype, Burlington, Vermont, June 23, 1906 (C. W. Johnson).

Clusiodes (Columbiella) nigripalpis, sp. n.

Male.— A larger and darker species than the last but the thoracic dorsum is similarly colored. Third antennal segment

black, yellow basally, head fuscous, whitish on orbits and margins of eyes below and behind. Fuscous markings of wings not so clearly limited as in *johnsoni*. Bases of hind tibiae brown. Hypopygial claspers as in *johnsoni*.

Length, 4 mm.

Type, Glen Echo, Maryland, August 22, 1922 (J. R. Malloch).

Four females before me differ from the above male as stated in the key and also in having the dorsum of thorax including the lateral margins black, third antennal segment less broadly blackened, face paler, and wings more conspicuously blackened; hind tibiae largely brown. It is possible that this is not *nigripalpis*, but there is sexual dimorphism in many species of the family so that it may be the female of this species or of *apiculata*.

Localities, Bar Harbor, Maine, June 17, 1922; Mt. Desert, Maine, June 10, 1921; Bashbish Falls, Massachusetts, June 27, 1912; Milford, New Hampshire, June 23 (C. W. Johnson).

***Clusiodes (Columbiella) orbitalis*, sp. n.**

Female. — Head yellow, frons darker, occiput blackish above, antennae and palpi yellow, arista brown. Thorax brownish yellow, anterior margin of disc, two submedian vittae, disc of scutellum, and a line along upper margin of pleura blackish, lateral margins of mesonotum whitish. Abdomen black. Legs yellow, apices of fore and hind tibiae and entire fore tarsi infuscated. Wings as stated in key.

The fore femora have the ventral setulae longer and the series is more extensive than in the female above described.

Length, 4 mm.

Type, Bar Harbor, Maine, June 13, 1921 (C. W. Johnson).

***Heteromeria convergens*, sp. n.**

Male and female. — Entirely yellow, the face whitish, and the apices of wings very slightly clouded. Bristles yellow.

Differs from *flaviseta* Johnson and its allies in having the frons very much narrowed above, the others having it either parallel-sided or but slightly narrowed. The male hypopygial claspers are slightly tapered apically and a little longer than wide.

Length, 3.5 to 4 mm.

Type, male, Urbana, Illinois, July 13, 1916 (J. R. Malloch). Allotype, Lafayette, Indiana, July 27 (J. M. Aldrich). Paratypes, one male, Chain Bridge, Virginia, August 20, 1922 (J. R. Malloch); one female, Atherton, Missouri, July 2, 1922 (C. F. Adams); and a large series in the collection of Illinois Natural History Survey, standing as *flaviseta*, which I used as the basis of my work already referred to but erroneously described the immature stages as those of *flaviseta*. Missouri specimen in collection of Boston Society of Natural History.



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