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**THE NORTH AMERICAN GENERA OF CALYPTRATE
MUSCIDÆ.** Paper IV.*

SARCOPHAGIDÆ and MUSCIDÆ *s. str.*

BY C. H. TYLER TOWNSEND.

This paper furnishes a synopsis of the North American genera of Sarcophagidæ, including, as heretofore in this series of papers, the West Indian fauna. Following this is a synopsis of the North American genera of Muscidæ *s. str.* In the preceding paper of this series, 43 Dexiid genera are tabulated; and in the present paper there are 8 Sarcophagid, and 17 Muscid (*s. str.*) genera included in the tables. Three genera, which are preceded in the tables by a circle, have not yet been found in North America. Following the tables will be found notes on certain genera which claim attention.

One more paper, which will attempt a synopsis of the Anthomyiid genera, will conclude this series of papers on the North American Calyptrate Muscidæ.

**Synopsis of the North American genera of
SARCOPHAGIDÆ.**

1. Tibiæ beset on the outside with a comb-like row of strong, regularly arranged bristles.....**Theria** R. D.
Tibiæ at most with weak bristly hairs, or with scattered stronger bristles not regularly arranged in a row.....2.
2. Hind and middle tibiæ and femora thickly beset with bristly hairs in the ♂, the hind tibiæ somewhat arcuated.....**Phrissopoda** Mcq.
Tibiæ and femora not beset with such hairs in either sex.....3.
3. Apical cell open.....4.
Apical cell closed in the margin; front of ♂ wide; arista long plumose.
Sarcophilodes B. B.
4. Front in both sexes very broad, and of nearly the same breadth; arista usually short plumose.....**Sarcophila** Rdi.
Front of ♂ always much narrower than that of ♀; arista usually long plumose.....5.
5. Sides of face with a distinct row of small bristles on lower portion near eye margin; facial ridges with not more than two or three short bristles above vibrissæ; gray colored species..... 6.
Sides of face bare below; facial ridges bristly nearly half way up; species with metallic green or blue reflections.....7.

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6. Veins of wings all more or less curved or sinuate; apical cross-vein very deeply bowed in near base, fourth vein bent at an acute angle, hind cross-vein more or less curved.....**Sarcophaga** Mg. *s. str.*
 Veins of wings much straighter in general; apical cross-vein with a very short angular bend inward at extreme base, then straight to margin; fourth vein bent at nearly a right angle, hind cross-vein straight.
Sarcophagula v. d. W.
7. Apical cell ending a good distance before the wing apex; apical cross-vein at base strongly bowed in, then bowed outward; thorax distinctly longer than wide.....**Cynomyia** R. D.
 Apical cell ending but little before wing apex; apical cross-vein at base scarcely bowed in, then almost straight; thorax hardly longer than wide.....**Onesia** R. D.

REFERENCES TO DESCRIPTIONS OF GENERA.

- Theria* Rob. Desv. Myod. 337 (1830); Sch., Dipt. Austr. i, 566.
Phrissopoda Macq., Hist. Nat. ii, 222 (1835); Dipt. Ex. ii, 3, 96.
Sarcophilodes Br. & Bgst. Musc. Schiz. i, 96, [164.] (1889).
Sarcophila Rond., Dipt. Ital. Pr. i, 86 (1856); Sch., Dipt. Austr. i, 566.
Sarcophaga Meigen, Syst. Besch. v, 14 (1826); Sch., Dipt. Austr. i, 568, *s. str.*
Sarcophagula v. d. Wulp, Tijdschr. voor Entom. xxx, 174 (1887).
Cynomyia Rob. Desv. Myod. 363 (1830); Sch., Dipt. Austr. i, 574.
Onesia Rob. Desv. Myod. 365 (1830); Sch., Dipt. Austr. i, 575.

NOTES AND SYNONYMY.

- Theria* R. D.—Brauer and v. Berg. say (Musc. Sch. ii, 63) that “*Eurychæta* v. d. Wulp, B. C.-A.” is a synonym of this genus.
- Sarcophila* Rdi.—This genus, though not at present identified from North America, will very probably be found here.
- Myophora* Rob. Desv. Myod. 337.—Syn. of *Sarcophaga* Mg.
- Onesia* Rob. Desv.—This genus, in all probability, will yet be found within our limits. It may seem difficult at times to distinguish it from *Lucilia* and other Muscid genera. The following characters will serve to identify it: Arista naked on apical half; bristles (macrochætæ) on the last two segments of the abdomen, while in the Muscidae *s. str.* the last segment at most has bristle-like hairs; no species have the gold-green colors of *Lucilia*, etc.
- Brauer and von Bergenstamm (Musc. Sch. ii, 62, [366]) mention the genus “*Trichoprosopus* v. d. Wulp, (? Mcq.)” as belonging with the Sarcophagidæ. This seems to have been a fly received by Br. and v. Bgst. from Mr. v. d. Wulp, apparently labeled

with the above name. However this may be, Macquart's genus (*Trichoprosopus* Mcq. Dipt. Ex. ii, 3, 70) is a Tachinid.

The following two genera are placed by Br. and v. Bgst. in the Sarcophagidæ, and accredited to North America: *Paramintho* "v. d. W." B. B. Musc. Sch. ii, 62, [366,] (1891). *Erythrandra* B. B. Musc. Sch. ii, 64, [368,] (1891). There is nothing in the descriptions to prove their position, and I very much doubt that they belong to this family.

The North American Genera of MUSCIDÆ *sensu stricto.*

1. Proboscis widely protruded, rigid, and adapted for piercing, labella nearly wanting (subfam. Stomoxynæ).....2.
- Proboscis but little exerted, fleshy, not adapted for piercing, with fleshy terminal lips or labella (Muscinæ).....3.
2. Palpi thread-like, thin, much shorter than the proboscis, not extending beyond oral margin.....**Stomoxys** Geof.
- Palpi longer, extending far beyond oral margin, only a little shorter than the proboscis.....**Hæmatobia** R. D.
3. Arista pectinate, thinly hairy on the upper side, but bare or only pubescent below.....**Idia** Meig.
- Arista plumose, hairy alike on both sides, or rarely very short pubescent, almost bare.....4.
4. Fourth vein arcuate at bend.....5.
- Fourth vein angular at bend, or if almost arcuate, then the apical cross-vein bowed in.....11.
5. Face straight, vertical, epistoma never prominent, arista very short pubescent; front border of wing somewhat dilated before apex, apical cross-vein strongly bowed out; yellowish or testaceous species **Ormia** R. D.
- Face not vertical, epistoma always more or less prominent; arista long plumose, front border of wing not dilated; not wholly yellowish, usually metallic green, blue or black species.....6.
6. Middle tibiæ on inside with one or more erect bristles, or clothed with shaggy hair.....7.
- Middle tibiæ without such bristles or hair.....9.
7. First longitudinal vein ending well beyond middle of wing, therefore the small cross-vein situated a good distance before its termination; eyes hairy.....**Mesembrina** Mg.
- First vein ending about middle of wing, the small cross-vein situated opposite, or but little before its termination.....8.
8. Metallic shining gold-green or blue species, without lighter pollen or other colored pubescence; eyes usually naked.....**Pyrellia** R. D.
- Other colored species, more or less light pollinose; eyes thickly hairy.
o **Dasyphora** R. D.
9. Eyes naked.....**Cyrtoneura** Mcq.
- Eyes hairy.....10.

10. Face carinate, therefore with two longitudinal furrows for the reception of the antennæ.....**Graphomyia** R. D.
Face not carinate, antennæ lying in a single wide excavation of the face.
Myospila Rdi.
11. Middle tibæ on inner side with one or more erect bristles.....12.
Middle tibæ without such bristles.....**Musca** L. *s. str.*
12. Shining metallic gold-green or blue species, without lighter colored pollen or pubescence on thorax.....13.
Other colored species, or if blue or green species then the thorax at least with lighter colored pollen or pubescence.....14.
13. Eyes contiguous in ♂; third antennal joint four or more times the length of second.....**Chrysomyia** R. D.
Eyes not (or but slightly) contiguous in ♂; third antennal joint three to four times the length of second.....**Lucilia** R. D.
14. Face projecting on lower portion, not straight; thorax with bristles (macrochætæ), but otherwise only thinly covered with short bristly hairs...15.
Face almost vertical, epistoma not prominent; thorax, in addition to the bristles, thickly clothed with fine hair, which is usually fleecy on the sides just before the wing bases.....16.
15. Metallic green or blue species, with light pollinose and black vittate thorax.
Compsomyia Rdi.
No characteristic vittæ on thorax.....**Calliphora** R. D.
16. Apical cell open.....**Pollenia** R. D.
Apical cell closed in margin.....**Nitellia** R. D.

REFERENCES TO GENERA.

- Stomoxys** Geoffroy, Hist. Ins. i (1764); Sch., Dipt. Austr. i, 577.
Hæmatobia Rob. Desv. Myod. 388 (1830); Sch., Dipt. Austr. i, 578.
Idia Meig., Syst. Besch. v, 102 (1826); Sch., Dipt. Austr. i, 579.
Ormia Rob. Desv. Myod. 428 (1830).
Mesembrina Meig., Syst. Besch. v, 103 (1826); Sch., Dipt. Austr. i, 582.
Pyrellia R. D. Myod. 462 (1830); Sch., Dipt. Austr. i, 591.
Dasyphora R. D. Myod. 409 (1830); Sch., Dipt. Austr. i, 588.
Cyrtoneura Meq., Hist. Nat. ii, 274 (1835); Sch., Dipt. Austr. i, 595.
Graphomyia Rob. Desv. Myod. 403 (1830); Sch., Dipt. Austr. i, 581.
Myospila Rdi., Dipt. Ital. Prod. i, 91 (1856); Sch., Dipt. Austr. i, 598.
Musca Linn., Faun. Suec. (1763); Sch., Dipt. Austr. i, 593, *s. str.*
Chrysomyia R. D. Myod. 444 (1830); Rdi., Dipt. Exot. (Archiv. Zool. iii, fasc. i), pp. 27-28.
Lucilia R. D. Myod. 452 (1830); Sch., Dipt. Austr. i, 589.
Compsomyia Rdi., Ann. Mus. Civ. Stor. Nat. Gen. vii, 11 (1875).
Calliphora R. D. Myod. 433 (1830); Sch., Dipt. Austr. i, 583.
Pollenia R. D. Myod. 412 (1830); Sch., Dipt. Austr. i, 585.
Nitellia R. D. Myod. 417 (1830); Sch., Dipt. Austr. i, 586.

Synonymy.

- Phormia* R. D. Myod. 465, = *Lucilia* R. D.
Melinda R. D. Myod. 439, = *Calliphora* R. D.

NOTES.

Hæmatobia R. D.—This genus was unknown in North America until the discovery of the introduction of the horn fly (*H. serrata*) from Europe, in 1887. A native *Hæmatobia* has since been found on the moose in northern Minnesota (*H. alcis* W. A. Snow, Can. Ent. 1891, p. 87).

Dasyphora R. D.—Not yet known in North America, but may be found to occur here.

Nitellia R. D.—Bigot refers one California sp. here (Bull. Soc. Ent. Fr. 1887, 174; Bull. S. Zool. Fr. 1887, 594).

Somomyia Rdi., Atti del Accad. Sci. Bolog. (1861); Dipt. Ital. Prod. iv, 9.—This genus was erected by Rondani to contain *Lucilia*, *Calliphora*, and one or two allied genera (besides a number of synonyms), on the ground that none of these was sufficiently separated from the others. If we recognize the above two genera, as now seems advisable, then *Somomyia* must be dropped.

Ochromyia Mcq., Hist. Nat. ii, 250; Dipt. Ex. ii, 3, 132.—In the same manner Macquart has proposed this genus to contain Robinean-Desvoidy's genera *Ormia*, *Phumosia*, *Palpostoma* and *Bengalia* (only the first one is North American). As some of these forms have the apical cell closed and petiolate while others have it open, and exhibit other striking differences as well, it becomes evident that this genus cannot be maintained. N. B.—The genus *Ormia* may possibly be found to be misplaced in this family.

The genera *Calliphora*, *Lucilia*, *Chrysoomyia*, *Compsomyia* and *Pollenia* may be found difficult to distinguish, and perhaps it will be deemed necessary at some future time to drop one or two of these names. *Chrysoomyia*, as defined by Rondani, differs appreciably from *Lucilia* only by the eyes of the ♂ being always contiguous. Some species of *Lucilia*, in the ordinary acceptance of the genus, have the eyes in the ♂ contiguous for a short distance. It may be found possible to include in *Chrysoomyia* those forms with contiguous eyes in the ♂, and place the others in *Lucilia* s. str. These two genera then should be distinguished from *Calliphora*, *Compsomyia* and *Pollenia*, by their general gold-green or blue metallic colors, without lighter coloration on the thorax. When the latter group share this coloring, they

may be distinguished by a lighter yellowish pollen or pubescence on the thorax. *Pollenia* may be differentiated from the two other genera by its straight, almost vertical face, and the epistoma or oral margin being scarcely prominent. As to *Compsomyia*, it may be injudicious to attempt to maintain it separately from *Calliphora*, but it can always be told by the yellowish vittæ of the thorax, though the general coloring varies from gold-green through green to steel-blue, and even purplish.

NOTES ON NORTH AMERICAN TACHINIDÆ, WITH DESCRIPTIONS OF NEW SPECIES.—Paper VII.*

BY C. H. TYLER TOWNSEND.

The present paper gives descriptions of ten new species of Tachinidæ, which are interesting from the fact that they are all bred species. Seven of these were bred from various Lepidoptera, either from the larva or the cocoon; and three were bred from saw-fly (Tenthredinid) larvæ.

A DECADE OF PARASITIC TACHINIDÆ.

Tachina orgyiæ n. sp. ♀.—Eyes light brown, bare; front one-third width of head, frontal vitta blackish, hardly one-fourth width of front, two orbital bristles directed forward (not counting two bristles behind them directed backward); frontal bristles descending half way down sides of face; sides of front golden, face and cheeks silvery white; facial ridges bristly less than half way up, vibrissæ inserted above oral margin; antennæ and arista blackish, second antennal joint slightly rufous at end, third joint hardly twice as long as second; proboscis brownish, palpi elongate, rufous, thickened throughout; occiput silvery or cinereous, thickly gray hairy. Thorax silvery, with four well-defined black vittæ, the outer ones a little the heavier, and a narrow median one which is obsolete anteriorly; humeri and pleuræ silvery white; scutellum rufous or testaceous, black at base. Abdomen shining black, silvery white pollinose, except scutum of first and hind margins of other segments, second segment slightly reddish on sides; first and second segments with a lateral macrochèta or two, and a median marginal pair; third with a marginal row, and anal covered, except at base, with weaker macrochètæ. Legs black, femora silvery white, especially front pair, middle and hind tibie with spiny bristles, claws and pulvilli only a little elongate, pulvilli tawny fuscous. Wings grayish hyaline, veins brown; tegulæ white; halteres fuscous, rufous at base. Length of body 8.5 mm.; of wing 7 mm.

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