

BIOLOGICAL, ANATOMICAL, AND DISTRIBUTIONAL NOTES ON THE GENUS *CALLOPISTROMYIA* HENDEL (DIPTERA: OTITIDAE)

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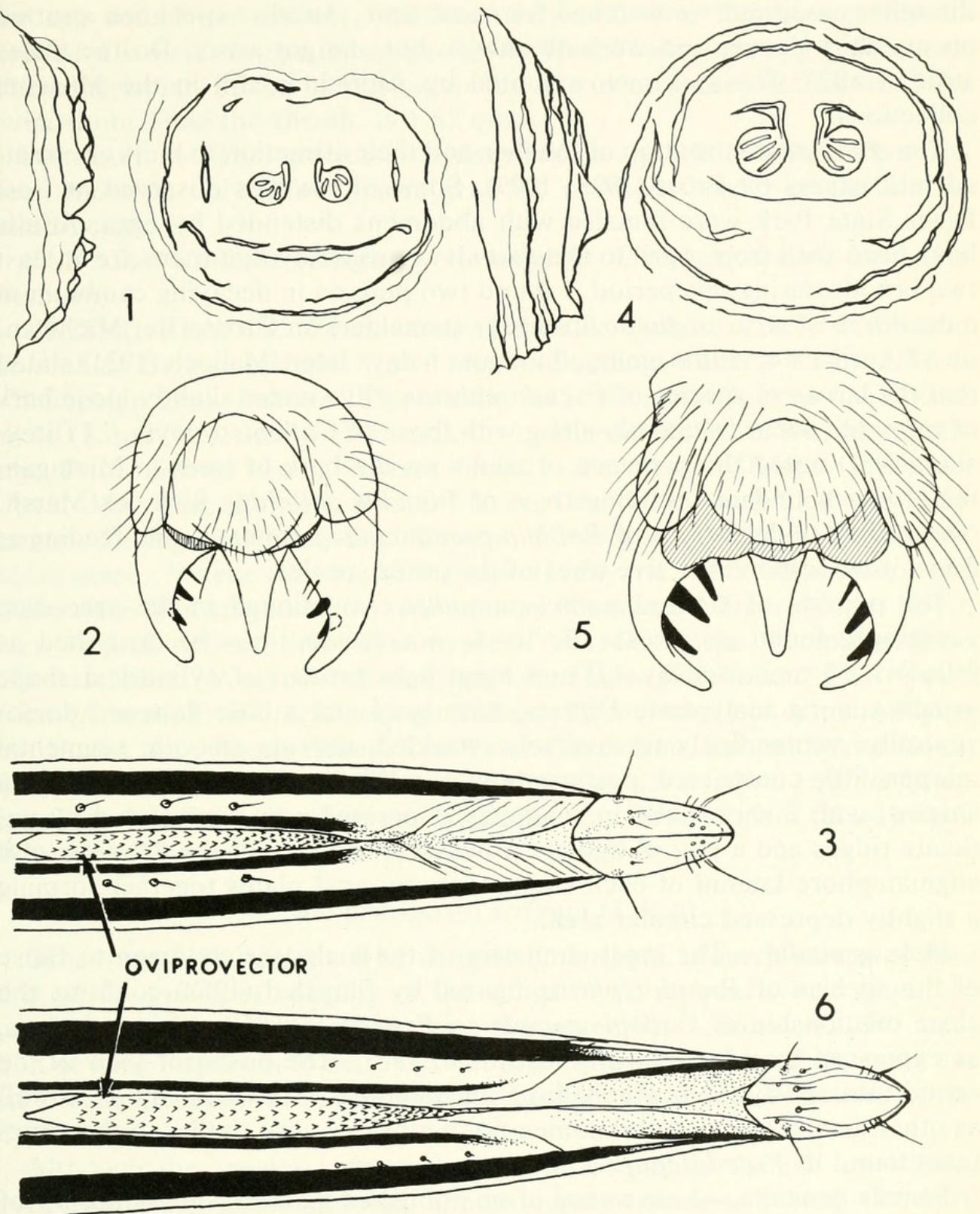
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Abstract.—A review of the biology, anatomy of the puparia and adult postabdomens, and distribution of the two known species of the genus, *Callopistromyia annulipes* (Macquart) and *C. strigula* (Loew), is presented. The immature stages are spent in the decaying cambium of recently dead wood of various trees. A new term, oviprovector, is introduced for a structure in the ovipositor.

Observation of *Callopistromyia annulipes* (Macquart) at Lost River State Park, Hardy County, West Virginia, on 3 September 1978 in such numbers that non-entomologists noticed them prompted the following review of what is known about the two species presently considered to belong to the genus. Until I (Steyskal, 1975) referred *Pterocalla strigula* Loew to *Callopistromyia*, the genus was considered to include only *C. annulipes* (Macquart).

Callopistromyia annulipes (Macquart)

Behavior of the adults.—At Lost River State Park the adults were seen everywhere on exposed surfaces, mostly in the sunlight. They were frequently seen on parked automobiles. No effort to mate was observed, but the peculiar display of the wings noted long ago by Banks (1904) was very evident and performed by both sexes. Banks also mentioned a statement by Harris (1862, p. 620) which apparently refers to this fly. Two cards in the files of the U.S. National Museum, written by J. M. Aldrich, are interesting: "Sept. 1, 1922. I noticed several specimens strutting with wings up-raised like a peacock's tail, on a bridge on Rock Creek Park. One that I captured in the act was a female, the first instance of such display in a female that I know of. I succeeded in mounting the specimen to show the posture pretty well, but the wings are not touching as they should be. The 2 black costal spots blend when the wings are displayed, and are almost central in the circle." "June 22, 1931. Melander and I watched a female strutting on a log above Great Falls. He finally captured her. She did as I have indicated in



Figs. 1-3. *Callopistromyia annulipes*. 1, Posterior end of puparium, lateral and posterior views. 2, Male postabdomen, posterior view. 3, Apical part of ovipositor, ventral view. Figs. 4-6. *Callopistromyia strigula*. 4, Posterior end of puparium, lateral and posterior views. 5, Male postabdomen. 6, Apical part of ovipositor, ventral view.

the other case, and we watched for some time. Another specimen strutted on my shirt-sleeve, and we both saw it, but she got away. Do the males strut at all?" The specimen mounted by Aldrich is still in the Museum collections.

The seasonal distribution of the flies and their attraction to baits are treated in 2 papers by Frost (1928, 1929). Some of the flies observed at Lost River State Park were females with abdomens distended by eggs. Adults have been seen from April to October. It seems likely that there are at least two broods during this period. I found two puparia in decaying cambium of a dead tree of *Acer negundo* Linnaeus (boxelder) on Grosse Ile, Michigan, on 12 April 1954; adults emerged indoors 6 days later. Malloch (1931) stated that the larvae of species of *Pseudotephritis* "live under slightly loose bark of trees and occur frequently along with those of *Callopistromyia*." I (Stey-skal, 1951) noted the presence of adults on the bark of trees in Michigan; they were abundant on dying trees of *Populus deltoides* Barr. ex Marsh, ovipositing on dead trees of *Robinia pseudacacia* Linnaeus, and feeding at frass of wood borers in live trees of the latter species.

The puparia of *Callopistromyia annulipes* mentioned in the preceding paragraph, found on Grosse Ile in *Acer negundo*, may be described as follows: 1.5 mm wide by 4.0 mm long; light brown; of cylindrical shape usually among acalyprate Diptera, with head end a little flattened dorso-ventrally; venter finely transversely wrinkled; dorsum smooth; segmental margins little constricted; posterior end as in Fig. 1; stigmatophores comma shaped, with 3 short slits, in shallowly depressed area surrounded by undulate ridges and a pair of ligulate processes, each about the diameter of a stigmatophore laterad of each stigmatophore; anal plates together forming a slightly depressed circular area.

Male genitalia.—The great similarity of the male postabdomen to those of the species of *Pseudotephritis* figured by Steyskal (1962) confirms the close relationship of *Callopistromyia* to *Pseudotephritis* and its relatives, as expressed by me previously (Steyskal, 1975). The posterior view of the epandrium, surstyli, and epiphallus ("median peg") shown in Fig. 2, as well as other details of the postabdomen not figured, is very similar to the structures found in *Pseudotephritis corticalis* (Loew).

Female genitalia.—I am aware of no published figure of the ovipositor of any otid of the genera most closely related to *Callopistromyia*, viz., *Pseudotephritis* Johnson and *Pseudotephritina* Malloch. The apical part of the ovipositor of *Callopistromyia annulipes* is shown in ventral view in Fig. 3. A structure which has otherwise been noted only in species of *Pareuxesta* Coquillett (Otitidae Ulidiinae, Galapagos Archipelago; unpublished data) is evident in *C. annulipes*. It is a ridge or process on the ventral surface of the dorsal male of the egg passage and is furnished with many apically directed spicules. It may be presumed that the structure assists in directing

the egg out of the oviduct, and inasmuch as a term for the structure is needed it is here designated *oviprovector* (from Latin *ovum* + *provector*). The total length of the ovipositor in the narrower sense, exclusive of the ovipositibus and the sheath, is 1.65 mm.

Distribution.—The species is widespread in the United States but has been found in only a few places near the southern border of Canada, as listed below.

CANADA: *Ontario* (Niagara, Normandale, Ottawa), *British Columbia* (Robson).

UNITED STATES: *Connecticut* (Fairfield, Tolland Cos.), *District of Columbia*, *Georgia* (Harris Co.), *Idaho* (Gooding, Payette Cos.), *Illinois* (Champaign Co.), *Indiana* (Tippecanoe Co.), *Kansas* (Douglas Co.), *Kentucky* (Knox Co.), *Maine* (Hancock Co.), *Maryland* (Baltimore, Montgomery, Prince George Cos.), *Massachusetts* (Barnstable, Essex, Plymouth Cos.), *Michigan* (Berrien, Branch, Cass, Grand Traverse, Ingham, Kalamazoo, Livingston, Manistee, Monroe, Muskegon, Oakland, St. Joseph, Shiawassee, Wayne Cos.), *Mississippi* (Lafayette Co.), *Montana*, *New Hampshire* (Rockingham Co.), *New Jersey* (Camden, Mercer, Morris Cos.), *New York* (Dutchess, Erie, Nassau, New York, Onondaga, Tompkins, West Chester Cos.), *North Carolina* (Grayson, Haywood, Polk, Swain Cos.), *Ohio* (Athens, Franklin, Muskingum Cos.), *Pennsylvania* (Adams, Allegheny, York Cos.), *Rhode Island*, *Tennessee* (Anderson, Roane, Sevier Cos.), *Utah* (Box Elder, Cache, Salt Lake, Weber Cos.), *Vermont*, *Virginia* (Fairfax, Tazewell Cos.), *Washington* (Yakima Co.), *West Virginia* (Hardy Co.), *Wisconsin* (Dane Co.).

Callopistromyia strigula (Loew)

Behavior of the adults.—The wing of *C. strigula* is much narrower than that of *C. annulipes*; display of the wings of *C. strigula* would therefore produce a much different effect from that given by *C. annulipes*. No mention of wing display is to be found in the literature, and I have no notes nor can I remember any such behavior in connection with my collections of the fly.

Although the species is taken much less frequently than *C. annulipes*, collection dates extend through approximately the same period—21 April to 26 September. I reared adults from puparia found under the bark of a dead *Acer negundo*. The adults emerged indoors on Grosse Ile, Michigan on 21 and 22 April, and adults were seen outdoors a few days later. I am indebted to J. F. McAlpine for the record of a specimen in the Canadian National Collection reared from the same species of tree at Indian Head, Saskatchewan on 15 July. Others in the Canadian collection were taken as adults at “bleeding elm” and “wound on *Acer negundo*.” These are the only biological notes on this species of which I am aware.

The puparia from which I reared the adults on Grosse Ile are very similar in general appearance to those of *C. annulipes*. They are 1.5 mm wide by 4.2 mm long. The most evident differences are in the posterior end (Fig. 4), with larger stigmatophores and longer slits. The configuration of ridges also differs, especially a right-angled ridge extending dorsad from the stigmatophores.

Male genitalia.—Very similar to those of *C. annulipes* (see Fig. 4), but a little larger, with more strongly curved surstyli and larger prensisetae, 3 pairs of which are stout.

Female genitalia.—Also very similar to those of *C. annulipes*. The ovipositor (Fig. 6) is somewhat longer (1.70 to 1.80 mm in total length), with ventral setulae in the region lateral to the oviprovector much smaller and closer together in series.

Distribution.—The area occupied by *C. strigula* may be coincident with that of *Acer negundo*. The following collection records are available.

CANADA: *Manitoba* (Aweme, Beulah, Winnipeg), *Ontario* (Ottawa, Richmond, Ruthven), *Saskatchewan* (Delisle, Estevan, Indian Head, Regina).

UNITED STATES: *Colorado*, *District of Columbia*, *Georgia* ("Georgia," type), *Illinois* (Champaign Co.), *Kansas* (Douglas Co.), *Maine* (Penobscot Co.), *Maryland* (Montgomery Co.), *Michigan* (Lapeer, Wayne Cos.), *Minnesota* (Chisago Co.), *Nebraska* (Lancaster Co.), *New Mexico* ("Mogollon"), *North Carolina* (Swain Co.), *North Dakota* (Golden Valley Co.), *South Dakota* (Brookings Co.), *Tennessee* (Shelby Co.), *Utah* (Davis Co.).

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LITERATURE CITED

- Banks, N. 1904. Curious habit of two ortalid flies. *Entomol. News* 15:171-172.
Frost, S. W. 1928. Notes on ortalidae (Dipt.). *Entomol. News* 39:169-171.
_____. 1929. Notes on Pennsylvania ortalidae (Dipt.). *Entomol. News* 40:84-87.
Harris, T. W. 1862 (1863). A treatise on some of the insects injurious to vegetation. Crosby and Nichols, Boston. Frontispiece, xi, 640 pp. Reference on p. 620.
Malloch, J. R. 1931. Flies of the genus *Pseudotephritis* Johnson (Diptera: ortalidae). *Proc. U.S. Natl. Mus.* 79 (art. 3):1-6.

- Steyskal, G. C. 1951. The dipterous fauna of tree trunks. Pap. Mich. Acad. Sci. Arts and Letters 35:121-24.
- . 1962. The North American species of the genera *Melieria* and *Pseudotephritis* (Diptera, Otitidae). Pap. Mich. Acad. Sci. Arts and Letters 47:247-262.
- . 1975. The genus *Callopistromyia* Hendel (Diptera, Otitidae). Entomol. News 85:147-148.



Steyskal, George C. 1979. "Biological, anatomical, and distributional notes on the genus *Callopistromyia* Hendel (Diptera: Otitidae)." *Proceedings of the Entomological Society of Washington* 81, 450–455.

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