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TINGITOIDEA OF THE VICINITY OF WASHINGTON, D. C.  
(HETEROPTERA.)

BY W. L. McATEE.

INTRODUCTION.

The Tingitoidea are insects characterized by reticulate sculpturing, and often also by cellulate membranous expansions of the integument, characters which justify the application of the name lace-bugs to them. Most of the common species of our area live on the under side of leaves, where they lay their dark, peg-like eggs, and where the spiny nymphs later complete their development. The feeding operations of the lace-bugs produce small pale spots on the upper surface of the leaves, which vary in number with the abundance of the insects; in cases of very heavy infestation the leaves are so damaged that they turn brown and curl up. Numerous kinds of lace-bugs are common, at least locally, and several of the species are restricted to but one or a very few kinds of food plants.

Collecting lace-bugs requires a combination of botanical and entomological acumen, and the process of looking for the food plant, and for specimens showing the work of these bugs is full of interest. Why certain kinds of plants, so few in proportion to our whole flora, have been settled on as hosts by the lace-bugs is a problem that would seem to defy solution.

In addition to the common species of lace-bugs attached to certain food plants there are in the family Tingitidae a considerable number of species that are rarely collected, the habits of which are unknown. The chance of encountering some of these forms and of adding to the stock of information about them should ever be borne in mind by the collector.

It has not been deemed necessary to include keys in the present paper, since keys to both genera and species may be found in the reports upon the Tingitoidea of Ohio and of New Jersey, and systematic treatment of individual genera in other articles cited in the bibliography. A comparative statement of the number of species of lace-bugs reported in the formal lists for Ohio, for New Jersey, and in the present list is given in the subjoined table. No doubt a number of species have been added to the Ohio list since 1916. A few species additional to those here listed should be collected in the vicinity of the District of Columbia. Among described species the following

may be suggested as likely to occur: *Acalypta thomsonii*, *Melanorhopala clavata*, *Corythaica bellula*, *Corythucha celtidis*, *Corythucha bellula* and *Teleonemia nigrina*, but in a family so recently studied intensively, the discovery of entirely unknown species is not at all improbable.

*Species of Tingitoidea in Recent Lists.*

	Ohio 1916	New Jersey 1922	District of Columbia 1923
Piesmidæ			
Piesma	1	1	1
Tingitidæ			
Acalypta	—	1	1
Drakella	1	—	—
Hesperotingis	—	1	1
Melanorhopala	1	1	1
Tingis	—	—	1
Physatocheila	1	2	3
Atheas	—	—	1
Leptoypha	—	1	2
Gelchossa	—	1	3
Gargaphia	2	2	3
Corythucha	11	11	13
Stephanitis	1	2	1
Leptobyrsa	—	—	1
	18	23	32

Those interested in the fauna of Plummer's Island, Md., can learn from the records cited or from the symbol P. I. at the end of specific accounts what species have been collected on the island. Forms collected in the immediate valley of the Potomac between Great Falls and Little Falls carry the symbol V. P. I. Thirteen species are in the former group, and 12 in the latter. Excluding synonyms 11 species of lace-bugs have been described wholly or in part from specimens collected in our region.

The preparation of the following list has been facilitated more by the work of Dr. Carl J. Drake than by any other factor. Dr. Drake not only has had a major part in working up the classification of our lace-bugs, but he has identified or verified the identification of a great proportion of the specimens upon which this list is based. He has also read the manuscript and made useful suggestions. The writer is indebted furthermore to Messrs. Nathan Banks and H. G. Barber for reading copies of the list and for supplying records of Tingitoidea collected by them in this locality.

*Annotated List of Species.*

Family **Piesmidæ.**

Genus **Piesma** LePeletier and Serville.

*P. cinerea* Say.—Abundant, and of general occurrence; the preferred food plant is lamb's-quarters (*Chenopodium album*); adults have been taken in winter, among old leaves, on the foliage of scrub pine (*Pinus virginiana*), and under bark of birch and cherry; season for non-hibernating individuals May 20 to September 6. V. P. I.

Family **Tingitidæ.**

Genus **Acalypta** Westwood.

*A. lillianis* Bueno.—Beltsville, Md., May 21, 1922, J. R. Malloch; Maryland near Plummer's Id., May 9, 1913, taken by sweeping in a meadow, McAtee; Washington, D. C., May 20, 1904, O. Heidemann. McAtee also took a specimen of *Acalypta* at Beltsville, hibernating in Sphagnum; this was in the possession of Mr. Heidemann at the time of his death, and its present location is unknown. Possibly it was *A. thomsonii*, known from similar situations not far south of here.

Genus **Hesperotingis** Parshley.

*H. antennata* Parshley.—Washington, D. C., July 3, 1918, J. G. Sanders.

Genus **Melanorhopala** Stal.

*M. infuscata* Parshley.—Falls Church, Va., July 15, 27, 30, Aug. 2, on bark of tulip-tree, N. Banks; Great Falls, Va., August 21, 1917, H. G. Barber; Scott's Run, Va., July 4, 1918; Dead Run, Va., June 10, 1922, on flowers of *Ceanothus americanus*, McAtee; Glen Echo, Md., July 10, 12, 1921, J. R. Malloch; Maryland near Plummer's Id., at tulip-tree sap, July 25, August 5, 1914, R. C. Shannon; Washington, D. C., July 4, 1895.

Genus **Tingis** Fabricius.

*T. necopina* Drake.—Bladensburg, Md., July 27, 1890 (Coll. P. R. Uhler).

Genus **Physatocheila** Fieber.

*P. brevirostris* Osborn and Drake.—Plummers Id., Md., May 21, 1905, E. A. Schwarz; Falls Church, Va., May 3, N. Banks.

*P. major* Osborn and Drake.—Plummer's Id., Md., June 7, 1914, October 12, 1913, McAtee; Falls Church, Va., Washington, D. C., no dates, N. Banks.

*P. plexa* Say.—Stubblefield Falls, Va., on hickory, July 4, 1918, October 30, 1921, on laurel (*Kalmia latifolia*). The latter specimens are of a uniform reddish-brown color (clear pinkish

red when alive), but I am convinced their color is but a concomitant of senescence, and their choice of a plant upon which to sit, perchance to feed, one of necessity, the hickory leaves having been long dried up, but the evergreen laurel being still in good condition. Dead Run to Turkey Run, Va., April 30, 1922, also a pink specimen (no doubt overwintered); Glencarlyn to mouth Four-mile Run, Va., September 27, 1914, McAtee.

#### Genus *Atheas* Champion.

*A. insignis* Heidemann.—Locally common on *Stylosanthes biflora*. Glen Echo, Md., August 22, 1922, H. G. Barber, J. R. Malloch, McAtee; Bladensburg, Md., July 21, 1890, O. Heidemann; Cabin John Bridge, Md., July 29, 1914, H. S. Barber; Washington, D. C., July 7, 1909, August 8, 1910, Forest Glen, June 13, 1913, O. Heidemann; Vienna, Va.; Rock Creek, D. C., August 24, N. Banks; August 8, 1913, H. G. Barber.

#### Genus *Leptoypha* Stal.

*L. costata* Parshley.—Marshall Hall, Md., August 1, 1891, N. Banks, July 2, 3, 1897, September 3, 1891; Mt. Vernon, Va., April 19, 1904, R. P. Currie; Virginia opposite the District of Columbia, June 15, 1902; Rock Creek, D. C., June 20, 1890; Washington, D. C., June 20, July 8, 28. These are the older records and include the specimens from which the species was described. From one or the other of these collections the impression was obtained that the food plant of the species was witch-hazel. The writer has beaten witch-hazel thoroughly at every opportunity without finding this insect and he believes the report cited is in error. On May 19, 1918, he collected one specimen at Dyke, Va., upon *Fraxinus caroliniana* which, considering the habits of *L. mutica*, is a more likely suggestion as to the true food plant. Dr. Carl J. Drake informs me he has taken this species in great numbers on ash.

*L. mutica* Say.—Abundant on fringe tree (*Chionanthus virginiana*) and upon ash (*Fraxinus* spp.). It appears as early as April 11 and has been collected as late as October 12; comes to light. P. I.

#### Genus *Gelchossa* Kirkaldy.

*G. clitoriae* Heideman.—Fairly common on *Clitoria mariana*, and feeds also on other leguminous plants such as various species of *Meibomia* and *Lepedeza*. Dates of collection range from June 26 to October 14; *in copula* July 26; eggs July 19; comes to light. P. I.

*G. heidemanni* Osborn and Drake.—Exceedingly abundant on wild indigo (*Baptisia tinctoria*); season May 2 to October 10. V. P. I.

*G. oblonga* Say.—Apparently quite local, but common on its food plant, *Falcata comosa*, if the right place be found. Glen Echo, Md., July 10 to August 22, J. R. Malloch, H. G. Barber, McAtee; Oct. 12, 1901, no collector; Maryland near Plummer's Id., July 26, McAtee; Chain Bridge, Va., June 5, N. Banks.

Genus *Gargaphia* Stal.

*G. angulata* Heidemann.—The food plant of this species is *Ceanothus americanus* upon which it is often found in abundance. Records: Great Falls, Va., May 19, May 23, July 25; Scott's Run, Va., July 4; Dunn-Loring, Va., August 30, McAtee; Glencarlyn, Va., July 1, 1906, D. H. Clemons; Vienna, Va., August 26, 1916, H. G. Barber.

*G. solani* Heidemann.—Occasionally found in numbers on its wild food plant *Solanum carolinense*. Records: Hyattsville, Md., Sept. 6; Hunting Creek, Va., Sept. 23; Glencarlyn to mouth of Four-mile Run, Va., Sept. 27, McAtee; Vienna, Va., August 30, 1916, H. G. Barber. The species is a pest to the cultivated egg plant and has been taken upon it near Washington by Dr. Carl J. Drake.

*G. tiliae* Walsh.—Common and widespread on the basswood (*Tilia americana*); hibernating adults have been taken under bark and among old leaves; on the subsidence of a flood, March 30, 1913, a number were taken from drift on Plummer's Id., Md., further evidence that the species winters in litter on the ground. Eggs May 18 and June 8, 17; records of adults on the food plant from April 3 to October 13; in copula April 25; comes to light.

Genus *Corythucha* Stal.

*C. arcuata* Say.—Abundant on oaks; has been collected on the food plants from May 2 to November 21; eggs from May 30 to July 27, but *in copula* as late as September 27. Variety *mali* Gibson lacks a dark band across posterior part of tegmina. P. I.

*C. associata* Osborn and Drake.—Arlington Farm, Va., on wild cherry (*Prunus serotina*), June 24, 1922, J. E. Walter; Chain Bridge, Va., September 4, October 2, 1921, J. R. Malloch; Great Falls, Va., on peach leaves, September 5, 1916; Scott's Run to Ball's Hill, Va., August 12, 1917; Four-mile Run, Va., May 31, 1914, Plummer's Id., Md., July 27, September 1, 1913; Eastern Branch, near Benning, D. C., September 7, 1913, McAtee; Forest Glen, Md., May 18, 1914, July 27, 1913, O. Heidemann; Washington, D. C., July 16, September 3, N. Banks.

*C. bulbosa* Osborn and Drake.—Abundant on its sole food plant, the bladdernut (*Staphylea trifolia*), on which it has been collected from April 22 to September 14; eggs May 9 to July 13. P. I.

*C. celtidis* Osborn and Drake.—Has been taken at Hagerstown, Md., July 10, 1915, H. L. Parker; probably occurs nearer Washington.

*C. ciliata* Say.—Very abundant on sycamore (*Platanus occidentalis*), on the leaves of which it feeds and under the bark of which it chiefly winters; it has been collected in winter also among old leaves and on the foliage of scrub pine. Collected on snow Rock Creek Park, D. C., Dec. 25, 1908, F. E. Matthes. P. I.

*C. coryli* Osborn and Drake.—Common locally on hazel-nut (*Corylus americanus*); near corner of Conduit and Potomac Roads, Md., May 18, June 8, 29, July 4, August 20; Scott's Run, Va., July 4, 1918, McAtee; Falls Church, Va., July 30, N. Banks.

*C. cydoniae* Fitch.—Has a greater variety of food plants than most of the species of the genus, occurring in numbers on at least 3 groups of plants, hawthorn (*Crataegus* spp.), June-berry (*Amelanchier* spp.), and buttonbush (*Cephalanthus occidentalis*); has been taken also on quince; local records date from May 10 to September 7. According to Dr. Drake this species shows considerable variation in height of the hood.

*C. juglandis* Fitch.—Abundant locally on black walnut (*Juglans nigra*); extreme dates of collection, April 26 and September 18. P. I.

*C. marmorata* Uhler.—Abundant on Compositae, including *Aster* spp., *Solidago* spp., and *Ambrosia trifida*; has been collected from June 15 to September 25. V. P. I.

*C. mollicula* Osborn and Drake.—Glen Echo, Md., July 23, August 22, 1922; Chain Bridge, Va., September 25, 1921, on willow; April 16, 1922, J. R. Malloch.

*C. pallida* Osborn and Drake.—Very abundant on its particular food plant, the red mulberry (*Morus rubra*); dates of collection range from April 16 to October 2. P. I.

*C. pergandei* Heidemann.—Omnipresent almost upon the alder (*Alnus rugosa*); has been taken in early spring on plum (*Prunus americana*) and in fall (including nymphs) on hackberry (*Celtis crassifolia*); season April 20 to October 11. Has been taken also on willow, hazel, elm and crabapple; comes to light. The record of February 18, 1884 (including nymphs) cited in original description, seems to be erroneous; the date is too early for development of foliage by the food-plants. P. I.

*C. pruni* Osborn and Drake.—Abundant on wild black cherry (*Prunus serotina*) season May 9 to September 27; eggs May 9 and 18. V. P. I.

*C. ulmi* Osborn and Drake.—Maryland near Plummer's Id., on elm (*Ulmus americana*), May 18, September 13; Plummer's Id., April 20, August 15, 27, October 5, November 30; Virginia near Plummer's Id., April 17, May 12; Turkey Run, Va., on *Ulmus fulva*, October 9, McAtee; Plummer's Id., Md., April 20,

1912, E. A. Schwarz and H. S. Barber; Cabin John Bridge, Md., July 29, 1914, H. S. Barber.

Genus **Stephanitis** Stal.

*S. pyrioides* Scott.—Washington, D. C., August 9, 1910, on *Azalea*, F. H. Chittenden; July 19, 1915, L. E. Latham.

Genus **Leptobyrsa** Stal.

*L. rhododendri* Horvath.—Common on laurel (*Kalmia latifolia*); season April 20 to October 30. P. I.

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Keys to the genera and species and list of 23 species taken in the state.

DRAKE, CARL J.

—A new Tingid from Tennessee.

Ohio Journ. Sci. 16, No. 7, May, 1916, pp. 326-328, fig. 1.

Records *Leptostyla oblonga* from Washington, D. C.

—Notes on North American Tingidae (Hem.-Het.).

Bul. Brooklyn Ent. Soc. 13, No. 4, Oct., 1918, pp. 86-88.

Records *Leptopypha costata* from our region.

—On some North American Tingidae (Hemip.).

Ohio Journ. Sci. 19, No. 7, 1919, pp. 417-421.

Original description of *Monanthia (?) necopina* from Bladensburg, Md.

—Notes on North American Tingidae, with descriptions of new species.

Florida Ent., March, 1921, pp. 49-54.

Records *Corythucha associata* from Washington, D. C.

GIBSON, EDMUND H.

—The genus *Corythucha* Stal (Tingidae: Heteroptera).

Trans. Am. Ent. Soc. 44, pp. 69-104, April 4, 1918.

Key to species; records 5 from our area.

—The genus *Gargaphia* Stal. (Tingidae: Heteroptera).

Trans. Am. Ent. Soc. 45, pp. 187-201, July 23, 1919.

Key to the species, but no D. C. records.

HEIDEMANN, OTTO.

—A new species of Tingitidae.

Can. Ent., 31, 1899, pp. 301-302.

*Gargaphia angulata* n. sp. described in part from specimens of local origin.

—[Exhibition of specimens.]

Proc. Ent. Soc. Wash. 4, No. 4, Jan., 1899-Dec., 1900 (July 16, 1901), p. 493.

*Gargaphia undulata* from D. C.; perhaps a mere error, but in any case a ms. synonym of *G. angulata*.

—Account of a new Tingitid.

Proc. Ent. Soc. Wash., 8, Nos. 1-2, pp. 10-13, 2 figs., July 17, 1906.

Original description of *Corythucha pergandei* chiefly from local material; also notes on life history of the species.

- Two new species of North American Tingitidae.  
Proc. Ent. Soc. Wash. 10, Nos. 1-2, pp. 103-108, Pl. 4; Sept. 11, 1908.  
Original description of *Leptobyrsa explanata*, in part from local specimens; this name a synonym of *Stephanitis rhododendri* Horvath; full notes on life history.
  - New species of Tingitidae and description of a new *Leptoglossus* (Hemiptera-Heteroptera).  
Bul. Buffalo Soc. Nat. Sci. 9, No. 2, 1909, pp. 231-238, 6 figs.  
Key to the species of *Atheas*; describes *A. insignis* n. sp. from local material.
  - A new species of North American Tingitidae.  
Proc. Ent. Soc. Wash. 13, 1911, pp. 180-181, fig. 4.  
Original description of *Leptostyla clitoriae*, chiefly from local material.
  - Two new species of Lace-bugs (Heteroptera; Tingidae).  
Proc. Ent. Soc. Wash. 18, 1916, pp. 217-219, Pl. 17 (June 11, 1917).  
Describes as new *Leptoxypha distinguenda* a synonym of *L. costata* Parshley; and *Acalypta grisea* a synonym of *A. lillianis* Bueno.
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Science, N. S. 41, p. 940, June 25, 1915.  
*Piesma cinerea* incidentally mentioned.
  - Key to the nearctic species of *Leptoxypha* and *Leptostyla* (Heteroptera; Tingidae).  
Bul. Brooklyn Ent. Soc. 12, No. 3, July, 1917, pp. 55-64.  
Records 2 species of the former and 3 of the latter genus from our region.
  - A few notes chiefly on the names of Nearctic Tingidae.  
Bul. Brooklyn Ent. Soc. 12, No. 4, Oct., 1917, pp. 78-79.  
Four species of *Corythucha* and one of *Gargaphia* noted for the D. C. region.
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- The Tingitoidea of Ohio, Ohio State Univ. Bul., 20, No. 35, June, 1916, pp. 217-247, Pls. 9-10, 9 figs.  
Keys to the genera and species and list of 18 species taken in the state.  
Records 1 *Leptostyla (heidemanni)*, 1 *Gargaphia*, and 2 *Corythucha (bulbosa, pruni)* species from the D. C. region, those of which the specific names are given being described as new.
  - Notes on American Tingidae with descriptions of new species.  
Ohio Journ. Sci. 17, No. 8, June, 1917, pp. 295-307, figs. 1-2.  
Records one species of *Atheas* and 4 of *Corythucha* from our region of which *C. coryli* is described as new.
- PARSHLEY, H. M.
- Notes on North American Tingidae (Hemiptera).  
Psyche, 24, No. 1, pp. 13-25, 2 figs.  
Describes *Leptoxypha costata* and *Melanorhopala infuscata* from local material; gives key to species of latter genus.
  - Hemipterological Notices 1 (Tingidae).  
Ent. News, 31, 1920, pp. 271-274.  
Adds a record of *Melanorhopala infuscata*.



VAN DUZEE, E. P.

—Catalogue of the Hemiptera of America north of Mexico.

Univ. Calif. Publ. Ent. Tech. Bul. Vol. 2, Nov. 30, 1917, pp. 209-223, and 813-819.

Records 13 species of various genera from D. C.; several of the Md. and Va. records are of local application also but the abbreviations obscure the fact. The record for *Corythucha decens* Stal is an error; being based on specimens of *C. marmorata* Uhler; for explanation of ms. name *Gargaphia undulata* see under Heidemann.

### NINE NEW SPECIES OF CICADELLIDAE (HOMOPTERA) FROM THE UNITED STATES AND CANADA.

BY J. G. SANDERS AND D. M. DELONG.

***Dorycephalus knulli*, n. sp.**

Plate 11, Figs. 8, 8a.

In size and general appearance resembling *D. vanduzeei* but with head and pygofers proportionately longer, wing venation different, one instead of three carinae on vertex and face less tumid. Length ♀ 16 mm., ♂ 15 mm. Width (greatest across eyes) 1.5 mm.

Vertex very long and flat, four times length of pronotum with a conspicuous median carina from which the vertex gradually slopes to margin. Pronotum strongly and broadly notched posteriorly. Elytra in females very short, twice as long as pronotum, reaching only to middle of third abdominal segment. In male more than four times as long as pronotum.

Color: Dull grass green to greenish brown, with irregular mottling and small dots, fuscous.

Genitalia: Female last ventral segment almost twice as long as wide, posterior margin slightly sinuately produced. Pygofers three and one-half times as long as segment, tapering to slender foliaceous tips. Male valve very small, transverse, broadly and bluntly angled. Plates a little longer than last ventral segment, broad at base strongly concavely narrowed at half their length and produced into very narrow tips. Pygofers ten times as long as plates, longer than combined segments of abdomen.

Described from three female, three male and two nymphal specimens all taken at Cleveland, Florida, April 25, 26, 27, 1921, by Mr. Josef N. Knull and the junior author. The first specimen was collected by Mr. Knull, who has secured many other interesting records and to whom we dedicate this species.

***Euscelis divaricatus*, n. sp.**

Plate 11, Fig. 7.

In size and coloration resembling *parallelus*, but with distinct genitalia. Length, 5.5 mm.

Vertex almost parallel margined, broad, scarcely produced, almost three times as broad as long. Pronotum twice as long as vertex and twice as wide as long. Elytra long and narrow, greatly exceeding abdomen in male.

Color: Very similar to *parallelus*, greenish yellow. Vertex with broad black band between eyes just back of margin. Elytra brownish yellow, tips smoky,