

Key to TINGIDAE of Florida

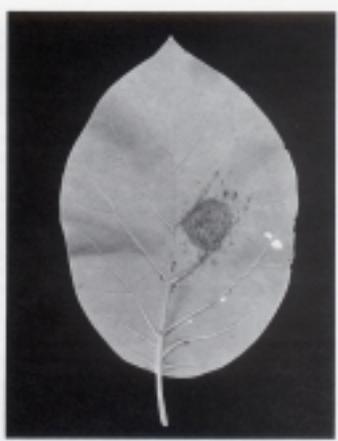
Lace Bugs

Tingidae is a rather large family in the order Heteroptera containing approximately 250 genera and 2000 species worldwide. All are phytophagous (feeding on plants) and are host specific. In fact, despite the detailed key provided here, one of the most important pieces of information necessary for tingid identification is the name of the host plant. Thirty-nine species have been reported in Florida; however, only seven of those are commonly encountered. The most common species that occur in Florida include the azalea lace bug (*Stephanitis pyrioides*), the hawthorn lace bug (*Corythucha cydoniae*), the lantana lace bug (*Teleonemia scrupulosa*) and the sycamore lace bug (*Corythucha ciliata*). Other important species include the avocado lace bug (*Pseudacysta perseae*), the fringetree lace bug (*Leptoypha mutica*), and the oak lace bug (*Corythucha floridana*).

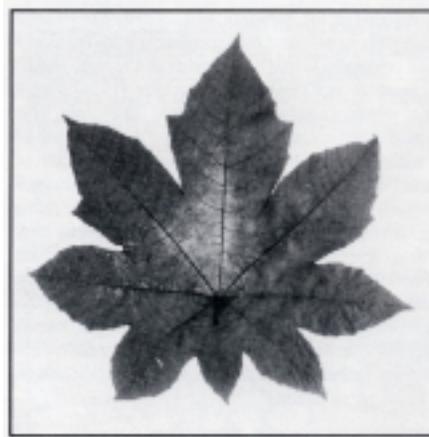
Physical identification of tingids is done primarily through examination of the head, pronotum and hemelytra. Adult lace bugs get their name from the lace-like appearance of their dorsum. This is created by a reticulate network of ridges on the pronotum and hemelytra that divides the area into a series of cells of variable size and shape. Many tingids also bear a strongly developed bucculae. These are ventral flanges on either side of the head that border the rostrum. Other common characteristics of tingids include two-segmented tarsi and the absence of ocelli. Their antennae are four-segmented, with segments I and II short and thick and segment III usually much longer and more slender.

Lace bugs adults and nymphs feed by sucking plant sap from the undersides of leaves, causing the upper surface to become whitened. Lace bug damage resembles that of leafhoppers, but the Tingidae produce varnish-like spots on the undersides of the leaves. Symptoms can also resemble damage caused by mites; however, mite damage is often characterized by chlorotic specks that are much finer than the typical signs of lace bug feeding. Lace bug damage can be positively identified by the presence of brown or black patches of excrement on the undersides of leaves.

Since tingids are considered pests of many economically important plants, control methods are often necessary. Recent biocontrol methods include the use of egg parasites, lacewing larvae, assassin bugs, spiders and predaceous mites. Alternately, lace bugs themselves have been used as a biocontrol. An example is the lantana lace bug (*Teleonemia scrupulosa*) which has been used in an effort to control lantana in areas where it is considered invasive.



Lace bug colony (*Pseudacysta perseae*) on underside of avocado leaf.



Injury caused by *Corythucha gossypii* on castor bean



Signs of lace bug infestation (*Corythucha cydoniae*). Left two leaves show whitening of upper surface of leaf. Right two leaves show excrement on underside of leaf.

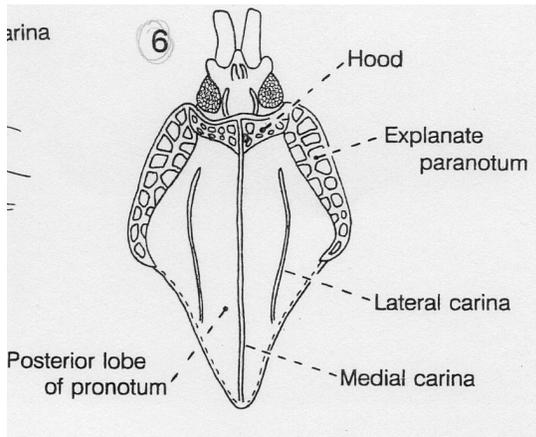
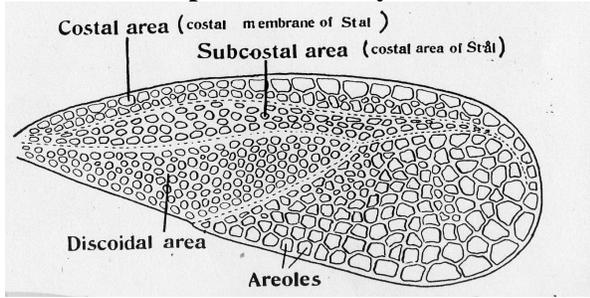
Checklist of Tingids in Florida

<i>Acanthocheila</i>	<i>exquisita</i>	Uhler	1889
<i>Atheas</i>	<i>austroriparius</i>	Weidman	1909
A.	<i>exiguus</i>	Heidemann	1909
A.	<i>mimeticus</i>	Heidemann	1909
<i>Corythaica</i>	<i>bellula</i>	Torre-Bueno	1917
C.	<i>carinata</i>	Uhler	1894
<i>Corythucha</i>	<i>aesculi</i>	Osborn & Drake	1916
C.	<i>baccharidis</i>	Drake	1922
C.	<i>ciliata</i>	Say	1832
C.	<i>cydoniae</i>	Fitch	1861
C.	<i>floridana</i>	Heidemann	1909
C.	<i>gossypii</i>	Fabricius	1794
C.	<i>mollicula</i>	Osborn & Drake	1916
C.	<i>morrilli</i>	Osborn & Drake	1917
C.	<i>mormorata</i>	Uhler	1878
<i>Dichocysta</i>	<i>pictipes</i>	Champion	1898
<i>Gargaphai</i>	<i>bimaculata</i>	Parshley	1920
G.	<i>sororia</i>	Hussey	1957
G.	<i>tiliae</i>	Walsh	1864
<i>Hesperotingis</i>	<i>antennata</i>	Parshley	1917
H.	<i>duryi</i>	Osborn & Drake	1916
H.	<i>floridiana</i>	Drake	1928
H.	<i>mississippiensis</i>	Drake	1928
<i>Leptodictya</i>	<i>plana</i>	Heidemann	1913
L.	<i>simulans</i>	Heidemann	1913
L.	<i>tabida</i>	Herrich-Schaeffer	1839
<i>Leptopharsa</i>	<i>machulana</i>	Drake & Hamleton	1946
<i>Leptoypha</i>	<i>elliptica</i>	McAtee	1917
L.	<i>ilicis</i>	Drake	1919
L.	<i>mcateei</i>	Drake	1921
L.	<i>morrisoni</i>	Drake	1922
L.	<i>mutica</i>	Say	1832
<i>Melanorhopala</i>	<i>clavata</i>	Stal	1873
<i>Pseudacysta</i>	<i>perseae</i>	Heidemann	1908
<i>Stephanitis</i>	<i>blatchleyi</i>	Drake	1925
S.	<i>pyrioides</i>	Scott	1874
<i>Teleonemia</i>	<i>belfragii</i>	Stal	1873
T.	<i>sacchari</i>	Fabricius	1794
T.	<i>scrupulosa</i>	Stal	1873

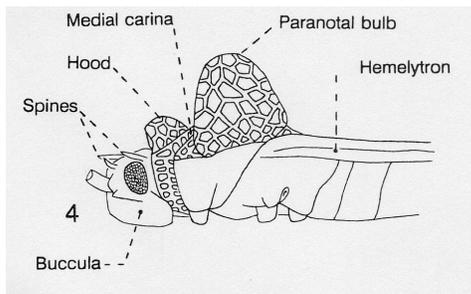
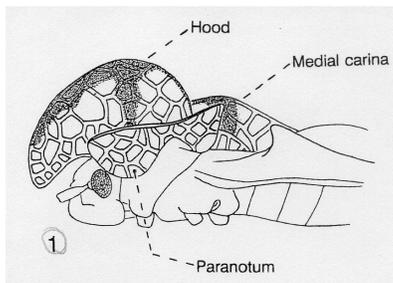
Key to Genera of Tingidae in Florida

1. Paranota present or absent with out spines on lateral margins2
 1'. Paranota present with spines on lateral margins10
- 2 (1'). Paranota folded inward over pronotum so that true lateral margins are innermost and in contact with pronotal carinae*Leptodictya* sp.
 2'. Paranota present or absent, when present folded inward against pronotum, not reaching carinae3
- 3 (2'). Channel for reception of labium interrupted at suture between the mesosternum and metasternum by a transverse plate*Gargaphia* sp.
 3'. Channel for reception of labium not interrupted by a transverse plate4
- 4 (3'). Paranota either lacking, costate or narrow and reflexed subentrally5
 4'. Paranota explanata or somewhat broadly reflexed but never reflexed inward and flattened on dorsal surface of pronotum.....8
- 5 (4). Lateral carinae of pronotum absent on anterior 2/3 or pronotal disc and sometimes on posterior process.....*Leptoypsa* sp.
 5'. 3 well-developed carinae present on pronotum6
- 6 (5'). Anterior margin of pronotum convex; pronotal carinae slightly closer to each other on posterior process11
 6'. Anterior margin of pronotum concave; pronotal carinae parallel to one another.....7
- 7 (6'). 3rd antennal segment sometimes very large but always broader distally than proximally; antennae as long as or nearly as long as body length.....*Melanorhopala* sp.
 7'. 3rd antennal segment very large, gradually increasing in width so that entire outer half is enlarged; antennae short and stout, much shorter than body length*Hesperotingis* sp.
- 8 (4'). Head without spines but sometimes with groves and ridges present.....*Atheas* sp.
 8'. Head with definite spines present9
- 9 (8'). Head mesally completely covered dorsally by membranous pronotal hood*Stephanitis* sp.
 9'. Hood small, not completely covering head; metathoracic gland opening present and distinct*Leptopharsa* sp.
- 10 (1'). Hood extending over head*Corythucha* sp.
 10'. Hood not extending over head*Acanthocheila* sp.
- 11 (6). Pronotum tricarinate.....12
 11'. Pronotum subpentagonal*Pseudacyta* sp
12. Head with 5 short spines.....*Teleonemia* sp.
 12'. Head with 5 long decumbent spines*Dichoysta* sp.

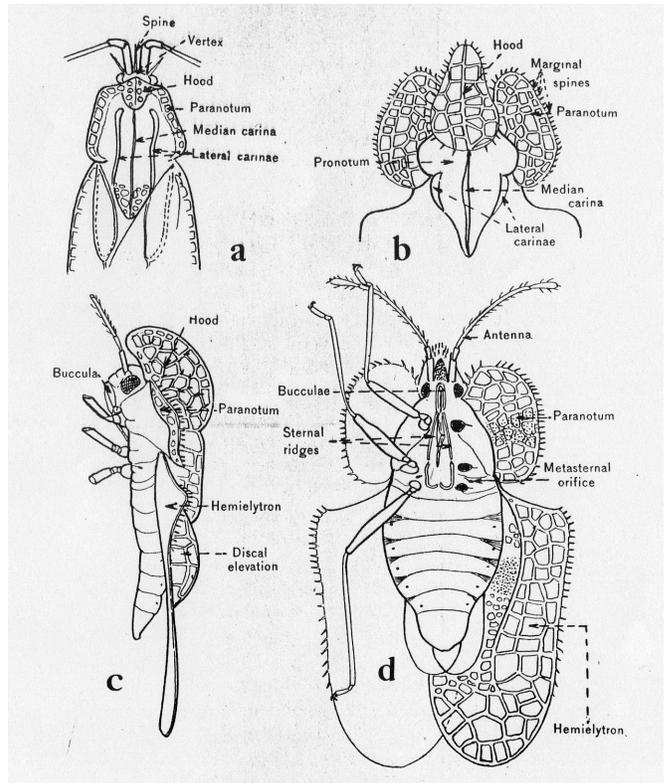
Representative Elytron



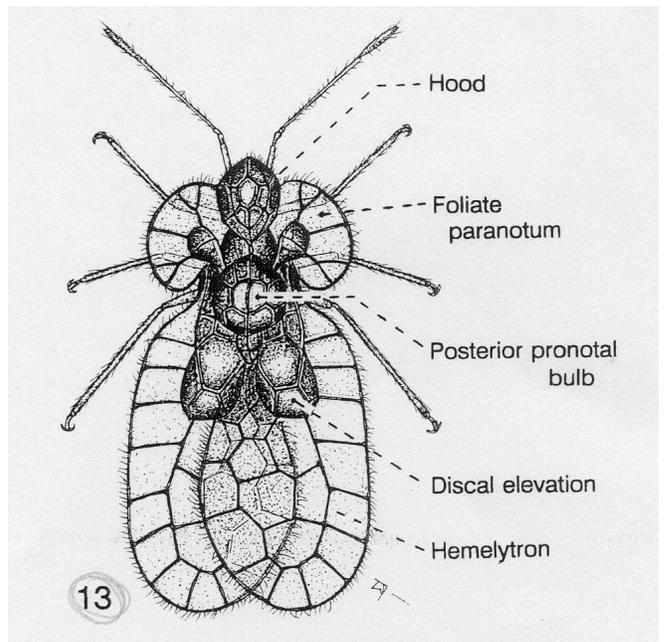
Dorsal View of Anterior Section



Lateral views of anterior section



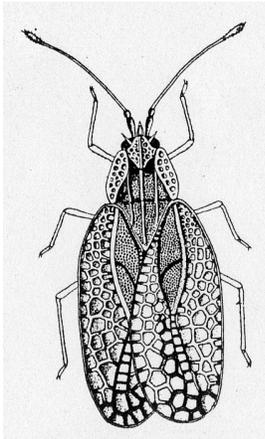
General Anatomy



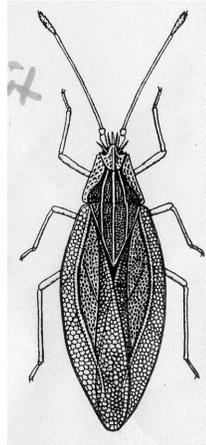
Ventral view

Key to species of Genus *Leptodictya*

- 1. Form elongate-oblong2
- 1'. Form elongate-oval. Also, side margins of paranota distinctly, though feebly, rounded; discoidal area reaching only to middle of elytra;*L. simulans* (Heidemann)
- 2 (1). Discoidal area of elytra with a narrow oblique blackish streak length 3.2 mm.*L. plana* (Heidemann)
- 2'. Elytra transparent, 3.8 mm.*L. tabida* (Herrich-Schaeffer)



Leptodictya simulans



Leptodictya plana



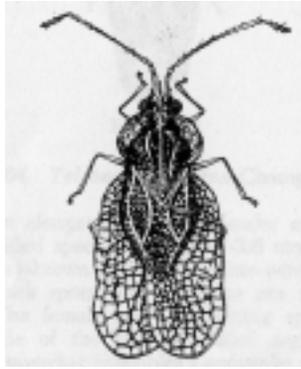
Leptodictya tabida

Key to species of Genus *Gargaphia*

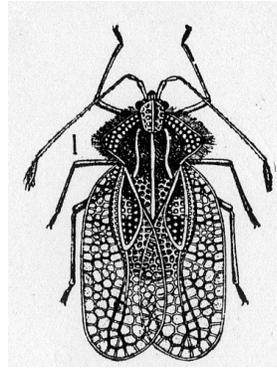
(see figures next page)

- 1. Head with basal spines long, distinctly visible in front of hood; outer margins of paranota more or less rounded, not angulate at middle; length, 4 or more mm*G. tilliae* (Walsh)
- 1'. Head without basal spines, or if present very short, not visible in front of hood; outer margins of paranota distinctly angulate; length, less than 3.5 mm*G. bimaculata* (Parshley)

A third species, *G. sororia*, is also reported in Florida; however, we were unable to find a description of this species. If your specimen does not key out to either of the two species above, it is possible that you have *G. sororia*.



Gargaphia tilliae

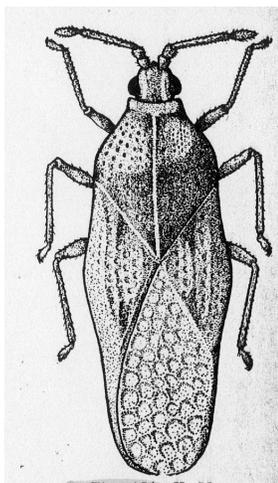


Gargaphia bimaculata

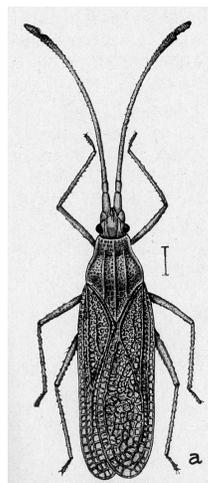
Key to species of Genus *Leptoypha*

- 1. Costal margin of elytra flattened and reflexed, distinct for its whole length; elytra widest across discoidal area, then narrowed toward apex2
- 1'. Costal margin not flattened by very narrow and deflexed, replaced by subcostal margin along basal third; elytra subparallel, but little widened across discoidal area3
- 2 (1). Costal margin with two rows of areolae throughout part of its length*L. elliptica* (McAtee)
- 2'. Costal margin with a single row of areolae throughout its length*L. mcateei* (Drake)
- 3 (1'). Larger, length more than 2.5 mm.; third joint of antennae nearly four times as long as basal joint (Fig. 1 below).....*L. mutica* (Say)
- 3'. Smaller, length not over 2.2 mm.; third joint of antennae less than three times as long as first*L. ilicis* (Drake)

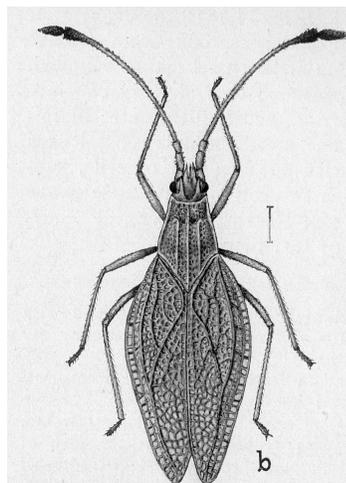
A fifth species, *L. morrisoni*, is also reported in Florida; however, we were unable to find a description of this species. If your specimen does not key out to any of the four species above, it is possible that you have *L. morrisoni*.



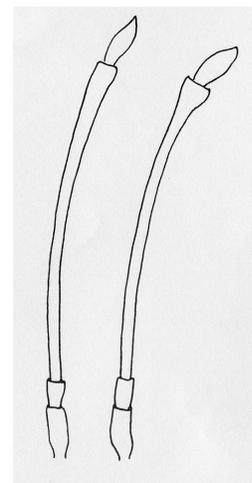
Leptoypha mutica
Fig. 1



Melanorhopala clavata
male
Fig. 2



Melanorhopala clavata
female
Fig. 3



Antennae of *Melanorhopala clavata*,
male (left), female (right)
Fig. 4

Key to species of Genus *Melanorhopala*

There is only one species, *M. clavata* (Stal), that occurs in Florida (see Figs 2 - 4 above).

Blatchley's 1926 description of this species reads

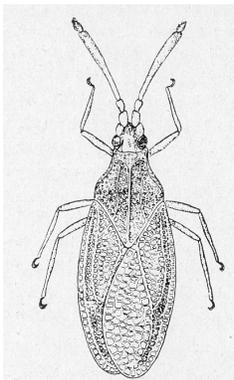
"Elongate-subparallel, macropterous form; elongate-oval, brachypterous one. Dull brownish-yellow or grayish-brown; tarsi, fourth antennal, swollen tip of third, and often some of the elytral veins blackish-fuscous or dark brown. Disk of pronotum of macropterous form with median third strongly convex, nearly twice the width of front margin, of brachypterous form flat throughout, its width across humeral angles but little greater than that of apex. Male with body narrower and third antennal but little enlarged at tip; female much broader with tip of antennae distinctly enlarged. Elytra in brachypterous form oval, their sides curved, the divaricate tips surpassing abdomen. Length, 5 - 6 mm." (pg 491)

Key to species of Genus *Hesperotingis*

- 1. Wings a little longer than abdomen2
- 1'. Wings greatly reduced3

- 2 (1). Antennae slightly shorter than head and pronotum combined; pronotum subcylindrical, narrowed in front*H. antennata* (Parshley)
- 2'. Antennae slightly longer and considerably more swollen distally; pronotum strongly swollen*H. floridiana* (Drake)

- 3 (1'). Reticulations regularly arranged*H. mississippiensis* (Drake)
- 3'. Reticulations not regularly arranged*H. duryi* (Osburn & Drake)



Hesperotingis antennata

Key to species of Genus *Atheas*

1. Third antennal segment with only the extreme base black2
 1'. Third antennal segment with basal third black; cross nervures of costal area blackish at inner ends; costal area wider than the subcostal one (Figs. 1, 2d, following page)
*A. mimeticus* (Heidemann)
- 2 (1). Form very narrow, sides subparallel; elytra feebly sinuate and constricted at apical third; subcostal area with two rows of minute cells (Fig. 2b).....*A. exiguus* (Heidemann)
 2'. Form wider, more oval; elytra widest at middle, then gradually narrowed to the rounded tips; subcostal area with three rows of small cells (Fig. 2c).....*A. austroriparius* (Heidemann)

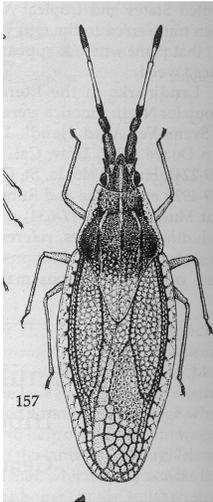


Fig 1. *Atheas mimeticus*

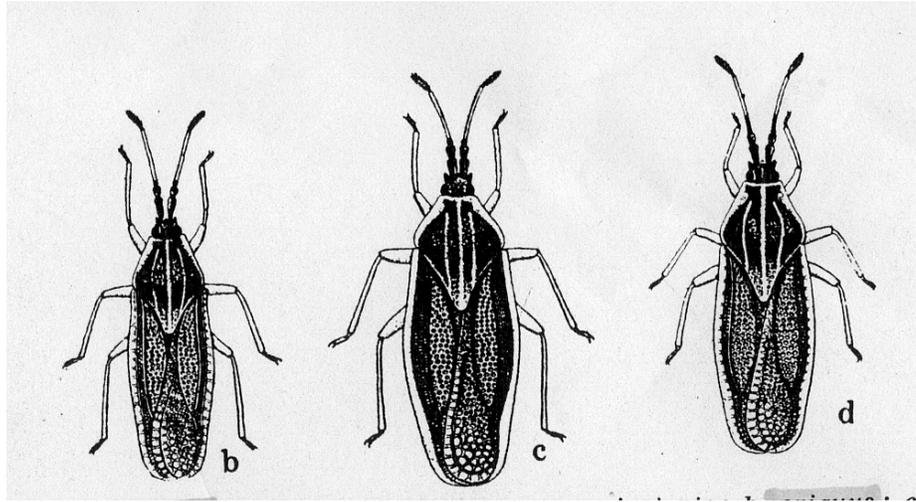
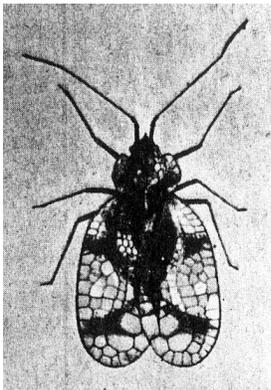


Fig 2. *A. exiguus*, *A. austroriparius*, *A. mimeticus*

Key to species of Genus *Stephanitis*

1. Hypocostal ridge biseriata; lateral carinae of pronotum entire*S. blatchleyi* (Drake)
 1'. Hypercostal ridge uniseriate; lateral carinae of pronotum abbreviated.....*S. pyrioides* (Scott)



Stephanitis pyrioides

Key to species of Genus *Leptopharsa*

The only species in this genus that is recorded in Florida is *Leptopharsa machulana* (Drake & Hamleton).

Key to species of Genus *Corythucha* (see figures on following pages)

- 1. Lateral margins almost devoid of spines (Fig. 10).....*C. mollicula* (Osborn & Drake)
- 1'. Lateral margins with spines.....2

- 2 (1'). Elytra with dark basal or apical crossbars3
- 2'. Elytra without dark basal or apical crossbars4

- 3 (2). 2.3 - 2.6 mm. long; hood, slightly but distinguishly higher than median carina;
brown basal markings on elytra (Fig. 2).....*C. floridana* (Heidemann)
- 3'. 3.2 - 3.7 mm. long; hood, same height as median carina; only brown marking at rear of
tumid elevation of each elytron (Figs. 4 & 9)..... *C. ciliata* (Say)

- 4 (2'). Crest of hood 1.5x or higher than median carina5
- 4'. Crest of hood less than 1.5x as high as median carina (Figs. 7 & 8).....*C. gossypii* (Fabricius)

- 5 (4). Costal margins of elytra nearly straight6
- 5'. Costal margins of elytra distinctly concave; hood at least 2x as high as median (Fig. 3)
.....*C. morrilli* (Osborn & Drake)

- 6 (5). Hood height 1.4 - 1.7x higher than median carina (Figs. 1 & 6)*C. marmorata* (Uhler)
- 6'. Hood height at least 2x higher than median carina (Fig. 5).....*C. cydoniae* (Fitch)

Two other species of *Corythucha*, *C. baccharidis* and *C. aesculi*, were uncovered by the authors in a literary search done after this key was designed. If your specimen does not key out to any of the species above, you may have one of the species described below by Blatchley in 1926.

Corythucha aesculi: Elongate, subquadrate. Body black; antennae, beak and legs dull yellow; nervures of hood and paranota fuscous-brown, the cells in part hyaline; paranota with a large median submarginal brown spot; pronotum dark brown, the tip paler; elytra with wide basal and apical bars and discoidal area dark brown, the apical bar enclosing three large hyaline cells. Hood abruptly compressed at middle, hind portion globose, wider than long, its areolae large, more than twice the size of those of paranota. Median pronotal carina arched in front and with a single large basal cell, behind which are two rows or smaller ones. Costal area of elytra broad, with three rows of large cells. Length, 4 - 4.2 mm. (pg 465- 466)

Corythucha baccharidis: Elongate, subquadrate. Body dark reddish-brown or black, the apical ventral segment paler; antennae and legs dull yellow; nervures of hood and elytral elevations fuscous-brown, those of paranota and elytra straw-yellow, cells hyaline; elytra with fuscous spots which usually are so merged as to form very indistinct basal and apical cross-bars. Antennae with numerous very long hairs. Margins of paranota furnished with a double row of spinules; those of costal and basal margins of elytra with a single row. Hood slightly broader than high, its areolae much larger than those of paranota. Tumor elevations of elytra very large, rounded. Length 4 - 4.2 mm. (pg 463).

(figures on next page)

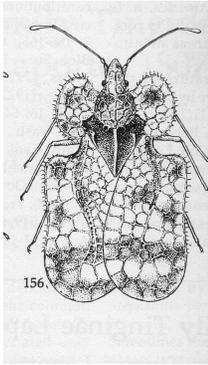


Fig. 1 *Corythucha marmorata*

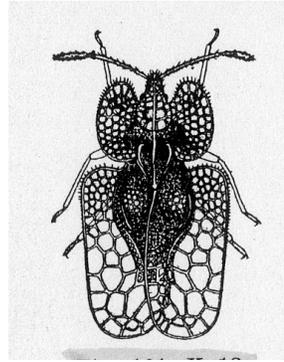


Fig 2 *Corythucha floridana*

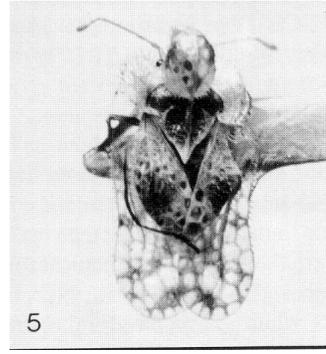


Fig 3 *Corythucha morrilli*

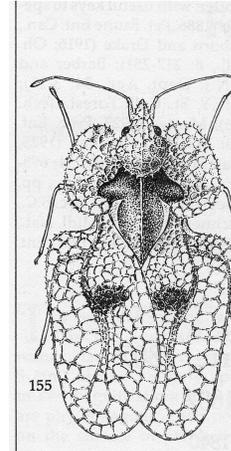


Fig 4 *Corythucha ciliata*



Fig 5 *Corythucha cydoniae*

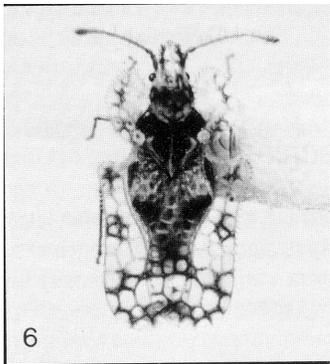


Fig 6 *Corythucha marmorata*

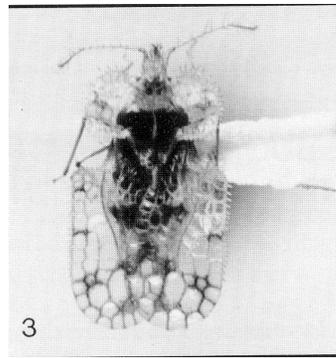


Fig 7 *Corythucha gossypii*, dorsal view

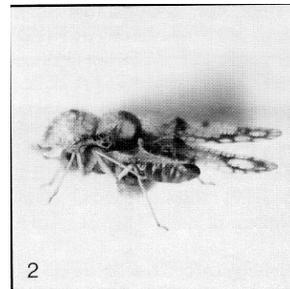


Fig 8 *Corythucha gossypii*, lateral view

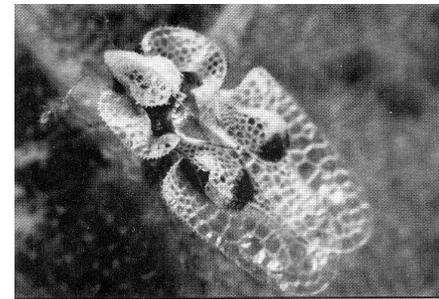


Fig 9 *Corythucha ciliata*

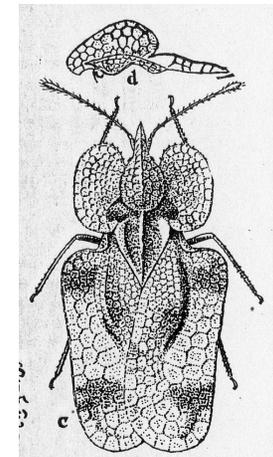


Fig 10 *Corythucha mollicula*

Key to species of Genus *Acanthocheila*

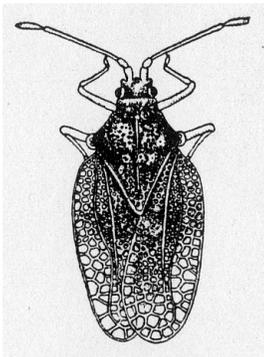
There is only one species, *A. exquisite* (Uhler) that occurs in Florida. Blatchley's 1926 description of this species reads

"Broadly oval. Head with a white carina adjoining eyes each side of vertex; tylus, buccalae and beak dull yellow; pronotum either ochreous or blackish with ochreous veins, median carina whitish; elytra dull grayish-yellow; under surface black; legs testaceous. Antennae testaceous; joint 1 thicker, shorter than head; 2 almost as thick, bristly, subconical; 3 much longer than the others united, slender, set with erect slender hairs; 4 fusiform, longer than 1 and 2 united, bristly with apical half blackish. Paranota with a single row of five quadrangular cells, other margin armed with six or seven long acute black-tipped spines. Hind lobe of pronotum trapezoidal, its tip whitish, subacute. Clavus and base of corium coriaceous, remainder of elytra subhyaline, cells of corium increasing in size toward apex, the greatest width with six rows. Costal margin armed with about 17 spines, these diminishing in length from base to beyond middle. Veins of upper surface set with minute bristles. Length, 3 - 3.5 mm." (pg 479)

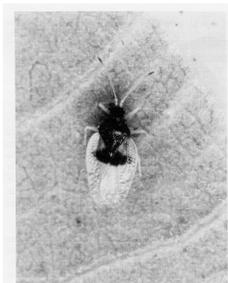
Key to species of Genus *Pseudactya*

There is only one species, *P. persea* (Heidemann) that occurs in Florida. Blatchley's 1926 description of this species reads

"Oblong-oval. Body beneath, head, pronotum, except front edge and tip of posterior third, and a bar crossing basal third of elytra but reaching only slightly outside the discoidal area, piceous-brown or blackish; remainder of upper surface yellowish-white; legs and antennae pale yellow, the claws and apical half of fourth antennal blackish. Pronotum subpentagonal, with front side margins obtuse and converging strongly toward apex; posterior portion flat, triangular, acutely pointed; disk finely and densely punctate and with a single entire low median carina. Elytra much surpassing abdomen, their tips broadly rounded; discoidal area long, narrow, not closed behind. Genital segment of male oblong with a small fovea each side. Length, 2mm." (pg 497)



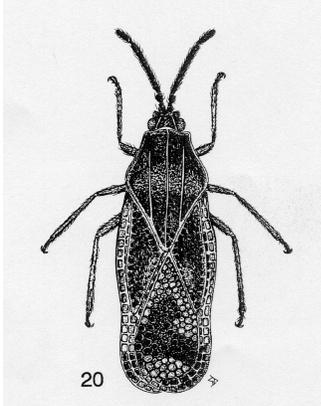
Pseudactya persea



Pseudactya persea

Key to species of Genus *Teleonemia*

1. Discoidal area finely pubescent; costal area with wider, predominantly squarish cells; in Florida, primarily in the peninsula on *Lantana**T. scrupulosa* (Stal)
- 1'. Discoidal area glabrous; costal area with narrower, rectangulate cells2
- 2 (1'). General color dark brown, the elytra with fuscous markings; front margin of pronotum subtruncate, its middle only slightly prolonged forward; coastal areas from Palm Beach country southward; Florida hosts unknown, but records elsewhere include *Lantana* spp., *Verbesina* sp., and *Saccharum officinarum* (L.)*T. sacchari* (Fabricius)
- 2'. General color pale brownish yellow, with darker brown markings; front margin of pronotum bisinuate, its middle forming an anteriorly produced triangle; ranges over most of Florida on Beauty Berry/French Mulberry (*Callicarpa Americana* L.)*T. belfragii* (Stal)



Teleonemia scrupulosa

Key to species of Genus *Dichoysta*

There is only one species, *D. pictipes* (Champion) that occurs in Florida. Blatchley's 1926 description of this species reads

"Elongate, subparallel. Dull brownish-yellow; fourth antennal, bulbs of paranota and cross veins of costal area, in great part of wholly fuscous; elytra with a few small scattered fuscous dots; joints 1 - 3 of antennae and legs brownish-yellow; femora and tibiae with one or two vague fuscous rings. Pronotum with front margin slightly prolonged at middle, sides parallel; median carina almost concealed between the bulbs, lateral ones visible only behind them. Elytra with cells of costal area variable in size, their centers hyaline; subcostal area with two irregular rows of cells; discoidal area with numerous confused rather coarse cells. Length, 3.2 - 3.8 mm. (pg 485 - 486)

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