

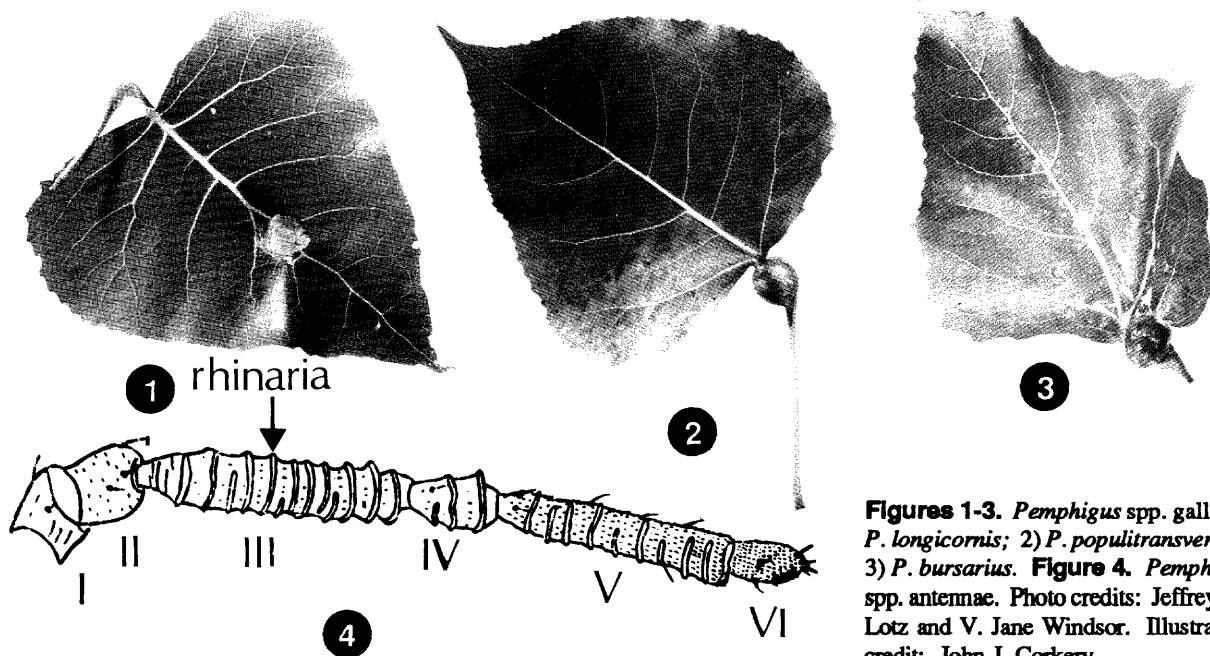
Five Gall Aphids, *Pemphigus* spp., on Poplar (*Populus* spp.) in Florida (Homoptera: Aphididae)¹

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INTRODUCTION: All *Pemphigus* spp. form galls on *Populus* spp. The galls are unsightly, but do little damage to the tree. Several *Populus* spp. have been introduced into Florida. In the 1960's, the forest industry in Florida was interested in developing cottonwoods for pulpwood production and manufacturing of crates. The Division of Forestry, Florida Department of Agriculture and Consumer Services grew and distributed *P. deltoides* (eastern cottonwood) as shade trees for a short time in the 1960's. Some trees are found today in the Florida Panhandle on flood plains. It is not uncommon to find galls on these and other cottonwoods in Florida.

TAXONOMY AND HOST PLANTS: Hartig 1839 erected the genus *Pemphigus*, but the type, *Aphis bursaria* L. was not designated until 1860 by Passerini. Smith (1981) published a key to the North American *Pemphigus*. *Populus* spp. are primary host plants. Some species of *Pemphigus* migrate to the roots of herbaceous plants which are alternate hosts.

Five species of *Pemphigus* have been recorded from Florida on their primary host, cottonwoods (*Populus* spp.). These are: *Pemphigus longicornis* Maxson with *Populus deltoides* Bartram ex Marsh as primary host (Fig. 1); *P. populitransversus* Riley with *Populus deltoides* ssp. *deltoides* and *P. deltoides* ssp. *monilifera* (Ait.) Eckenw. (= *P. sargenti* Dode) (Fig. 2) as primary hosts and crucifers (Cruciferae) as alternate hosts; *P. bursarius* L. with *P. nigra* L. (Fig. 3) as the primary host and lettuce (*Lactuca* spp.) as the alternate host; *P. nortonii* Maxson with galls similar to *P. bursarius* with *P. deltoides* ssp. *deltoides* and ssp. *monilifera* as primary hosts; *Pemphigus populicaulis* Fitch with galls similar to *P. bursarius* with primary hosts *P. deltoides* ssp. *monilifera* and *P. X acuminata* Rydh.



Figures 1-3. *Pemphigus* spp. galls, 1) *P. longicornis*; 2) *P. populitransversus*; 3) *P. bursarius*. **Figure 4.** *Pemphigus* spp. antennae. Photo credits: Jeffrey W. Lotz and V. Jane Windsor. Illustration credit: John J. Corkery.

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DISTRIBUTION: One or more species of *Pemphigus* are usually found wherever the primary hosts, *Populus* spp., are grown.

DESCRIPTION OF GENUS: Antenna 4-segmented in fundatrix, 6-segmented in alate; secondary rhinaria transverse (Fig. 4). Wax gland plates developed on aptera; thoracic glands normally not evident in alate. Cornicles, a mere ring, developed in alate at least. Cauda semilunar, bearing 2-4 setae. Setae inconspicuous. Rostral IV and V obtuse; V vestigial and indistinct. Forewing with media simple; hind wing with both media and cubitus. Sexuales apterous, minute, and without rostrum; ovipara laying single egg. Living in true galls on *Populus* as winter host; many species go to roots or stems of herbs as summer hosts. Fundatrix (apterous viviparous females) live in same gall as progeny.

Key to alates in galls

1. Galls on leaf-blade only (Fig. 1); primary on rhinaria antennal segment III, 19-27; antennal segment VI, 5-10; length antennal segment III, 0.30-0.37 (Fig. 4) *P. longicornis* Maxson
- 1'. Galls on petiole, base of leaf, stem, or stem and petiole 2
2. Galls on petiole, stem, or stem and petiole 3
- 2'. Galls involving petiole and base of leaf 4
3. Antennal segment III with more than 10 secondary rhinaria; antennal segment IV, V, and VI with secondary rhinaria; galls on petiole, elongate oval; on varieties of European black poplars, *Populus nigra* (Fig. 3) *P. bursarius* (L.)
- 3'. Antennal segment III with less than 10 secondary rhinaria; antennal segment IV, V, and VI often without secondary rhinaria; gall on petiole, stem, or petiole and stem; primary rhinaria on antennal segment V and VI large, with an irregular shape and bearing chitinous islands; not on *Populus nigra* (Fig. 2) *P. populitransversus* Riley
4. Antennal segment VI with 3-6 secondary rhinaria; on *Populus deltoides* (galls as in Fig. 3) *P. populicaulis* Fitch
- 4'. Antennal segment VI with 6-11 secondary rhinaria; on *Populus nigra* (galls as in Fig. 3) *P. nortonii* Maxson

SURVEY AND DETECTION: Look for galls on leaves, petioles, and stems of *Populus* spp.

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