A New Species of *Putoniella* (Diptera: Cecidomyiidae) Damaging Leaves of *Prunus* spp: (Rosaceae) in Southeastern United States[1]

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ABSTRACT A new species of gall midge, *Putoniella gracilis* (Diptera: Cecidomyiidae), is described. It infests leaves of plum and peach (*Prunus* spp.) in southeastern United States. The genus *Putoniella* is redescribed, and the new species is distinguished from its only congener, the European *Putoniella pruni* (Kaltenbach), also a pest of *Prunus*.

KEY WORDS *Putoniella gracilis,* Cecidomyiidae.

A new species, *Putoniella gracilis,* is described. It is a pest of Chickasaw plum, *Prunus angustifolia* Marsh., and peach, *Prunus persica* (L.) Batsch, in Georgia and Mississippi. In Georgia, larvae attack young leaves in early April, causing them to roll and harden into rose or reddish green leaf capsules or podlike galls (Fig. 1). The same gall may contain several larvae (Fig. 2) and also other cecidomyiid larvae, including *Clinodiplosis* sp. Galls are most noticeable in May and June after they have reached lengths of 9-16 mm. Full grown larvae (third instars) are orange and leave the galls in late May to early June to diapause in the soil. Galled leaves may drop then or remain attached to the stems until late July or early August.

Although we have specimens taken from peach, one of us (JEP) has collected it only from native Chickasaw plum in central Georgia (Bibb, Crawford, Houston, Monroe, and Peach counties), despite extensive observations made from 1970 to 1991 of sprayed and unsprayed nectarine (*Prunus persica* var. *nucipersica* (Suckow) C. Schneider), peach, and plum (*Prunus persica* var. *nucipersica* (Suckow) C. Schneider), peach, and plum (*Prunus* hybrids) orchards and native stands of hog plum, *Prunus umbellata* Ell., and black cherry, *Prunus serotina* Ehrh. Additionally, the Japanese plum, *Prunus salicina* Lindl., has been used in plum breeding programs in southeastern United States in crosses with the Chichasaw plum (Thompson 1981), but examinations of progeny from these crosses have not revealed *Putoniella* galls.

The genus *Putoniella* is known from one other species, the European *Putoniella pruni*(Kaltenbach), which also feeds on *Prunus* spp., viz. *Prunus domestica* L. and *Prunus spinosa* L. (Skuhravá 1986). The two species are similar, so the occasion is taken here to redescribe the genus. It belongs to the supertribe Cecidomyiidi and

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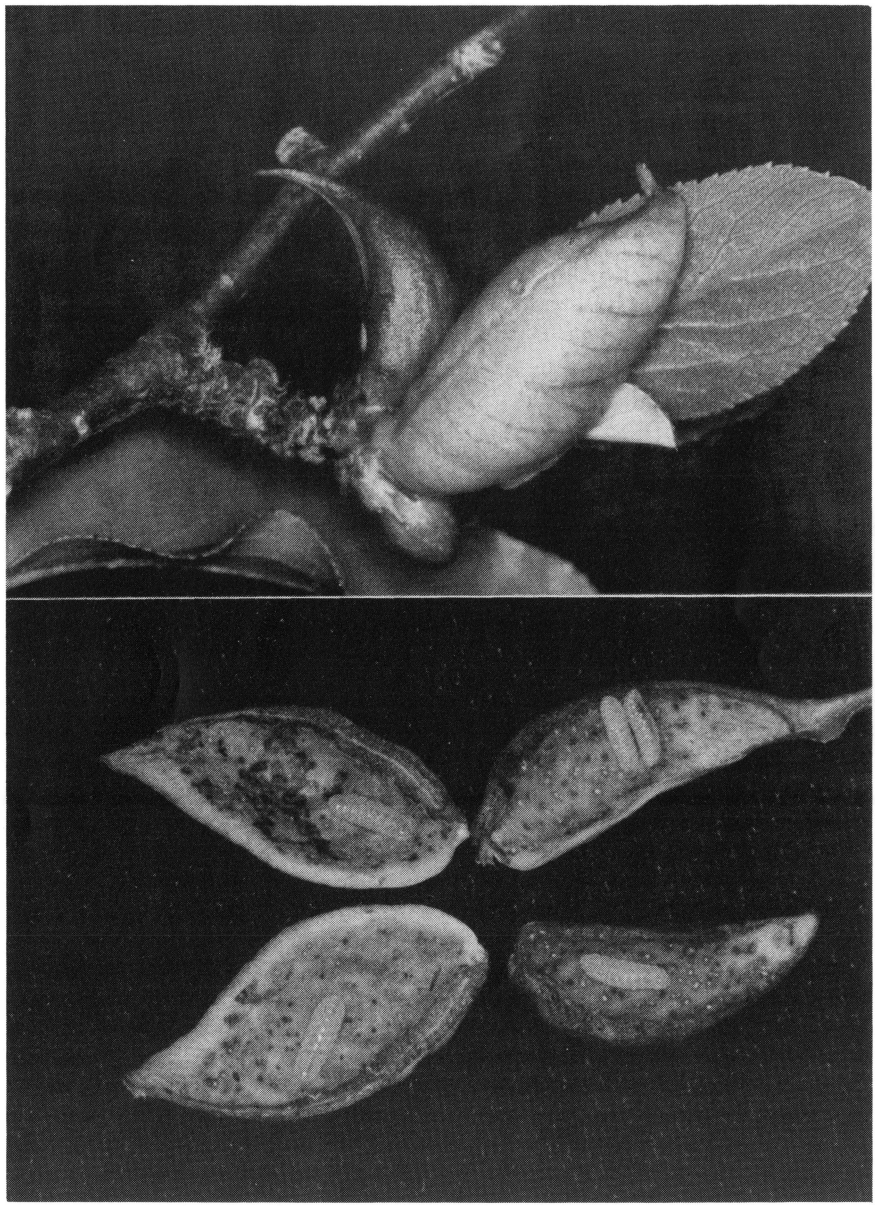


Figs. 1-2. *Putoniella gracilis* galls on Chickasaw plum, *Prunus angustifolia,* those in Fig. 2 sectioned to show third instars.

resembles *Harmandia* and *Macrodiplosis* in several ways (Möhn 1955, Gagné 1989). *Putoniella* will not run cleanly through the key to genera of Cecidomyiidae in Gagné (1981). At couplet 133 the female would be sent to couplet 148, but the male would not fit either choice. Its aedeagus is somewhat longer than the hypoproct and its gonostylus is completely setulose. Allowing for these characters and proceeding to couplet 148, the genus will eventually lead to couplet 170 separating *Macrodipolosis and Obolodiplosis. Putoniella* can be separated from these genera by its completely setulose gonostylus and the presence of crowded, short, ventral setae on the female cercus.

Methods

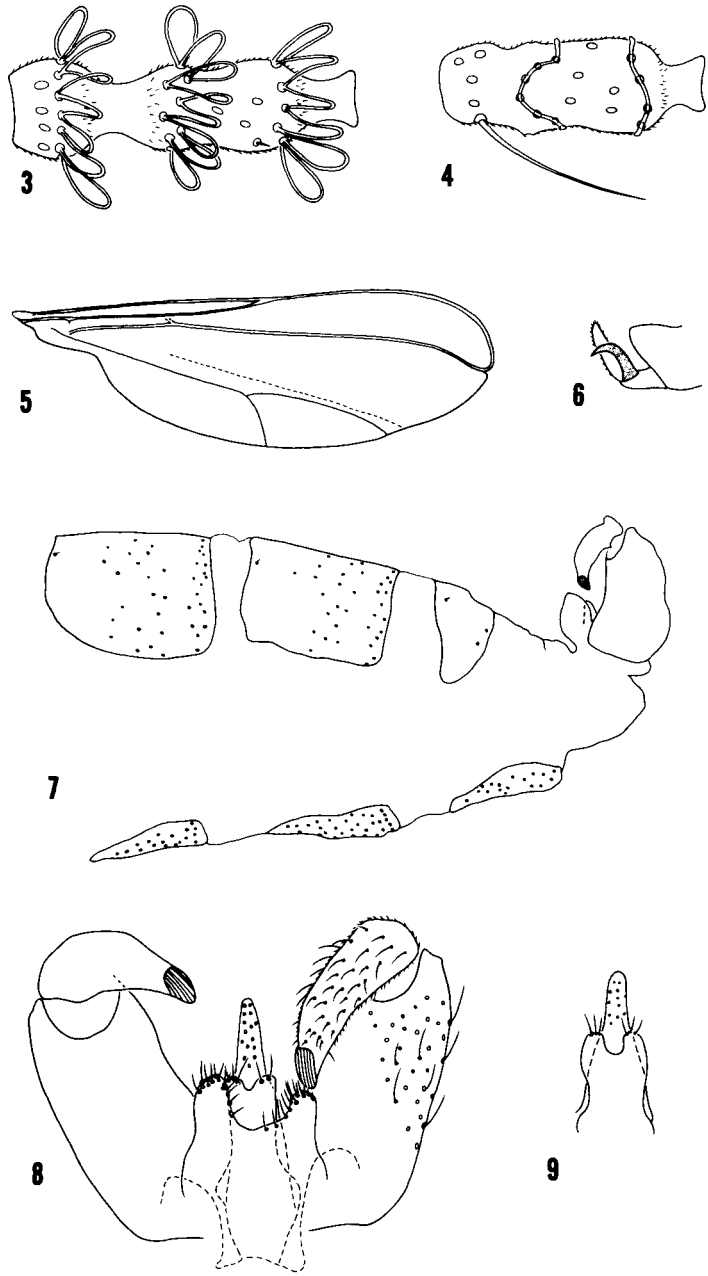
Galls with mature larvae were collected in April, 1988, and placed in a pot filled with damp peat moss. After the larvae left the galls and entered the peat, the pot was placed in a covered cardboard shoebox in the end of which was inserted a 5-dram lipped glass vial to attract emerging adults to the light. None emerged during the remainder of 1988, so the pot was placed in an outdoor coldframe for the winter and replaced in the covered shoebox the following spring. Emerging adults were stored in 70% ethanol. Immature and adult specimens were mounted on microscope slides using the method outlined in Gagné (1989). Terminology for adult morphology follows usage in McAlpine et al. (1981) and for larval morphology that in Gagné (1989).

Redescription of *Putoniella*

Adult. Head: Eyes 3-4 facets long at vertex, separated by 1 to 2 facet diameters; facets circular, equally spaced except farther apart near vertex of each eye. Vertex of occiput rounded, without dorsal protuberance. Frons with 4-6 setae. Labella short, bilaterally flattened, pointed apically, each with 4-6 lateral setae. Palpus 4-segmented. Male antennal flagellomeres (Fig. 3) binodal, the distal node narrowed at midlength; tricircumfilar, the loops of similar length, not longer than node width, their bases in an irregular horizontal row. Female flagellomeres (Fig. 4) with appressed circumfila.

Thorax: Scutum with 2 lateral and 2 dorsocentral rows of setae. Scutellum with a group of setae on each side. Mesanepisternum with 0 to few scales. Mesepimeron with 10-20 setae. Wing (Fig. 5) with R_5 curved apically to join C posterior to wing apex, C broken at juncture with R_5, Sc not evident, Rs weak, situated approximately midway between arculus and apex of R_1, M_{3+4} evident. Claws untoothed, shorter than empodia (Fig. 6).

Male abdomen (Figs. 7 - 8): Tergites 1 to 7 entire, rectangular, with a single, uninterrupted, posterior row of setae, ca. 10 lateral setae near midlength, and pair of trichoid sensilla on anterior margin; tergite 8 not setose or sclerotized on posterior half, with several lateral setae and pair of trichoid sensilla; pleura without scales; sternites 2-8 rectangular, with single posterior row of setae on sternites 2-6, double row on sternites 7-8, and scattered setae covering most of remainder of sclerites. Cerci broadly rounded, setose along posterior margin; hypoproct divided, lobes rounded, setose at apex; aedeagus elongate with several



Figs. 3-8. *Putoniella gracilis.* 3, Male third flagellomere. 4, Female third flagellomere. 5, Wing. 6, Tarsal claw and empodium. 7, Male sixth to last abdominal segments (lateral view). 8, Male genitalia (ventral view). Fig. 9. *Putoniella pruni,* hypoproct and aedeagus (ventral view); specimen from Bologna, Italy (in The Natural History Museum, London).

sensilla; gonocoxite stout, unlobed; gonostylus robust, narrowing slightly from base to apex, setose and setulose throughout.

Female abdomen (Figs. 10 - 11): Tergites 1 to 7 and sternites 2 - 7 generally as in male, but setae more numerous. Tergite 8 with 2 rows of posterior setae and scattered setae anteriorly. Ovipositor barely protrusible but attenuate; cerci elongate-ovoid, completely setulose and covered with setae, these short and numerous ventrally; hypoproct short, undivided.

Third instar. Integument rugose to spiculose. Spatula (Fig. 12) clove shaped. Basic complement of papillae for supertribe present (Gagné 1989); 3 pairs of terminal papillae with subequal corniform setae, 1 pair with short, thin setae.

Putoniella gracilis Gagné, new species

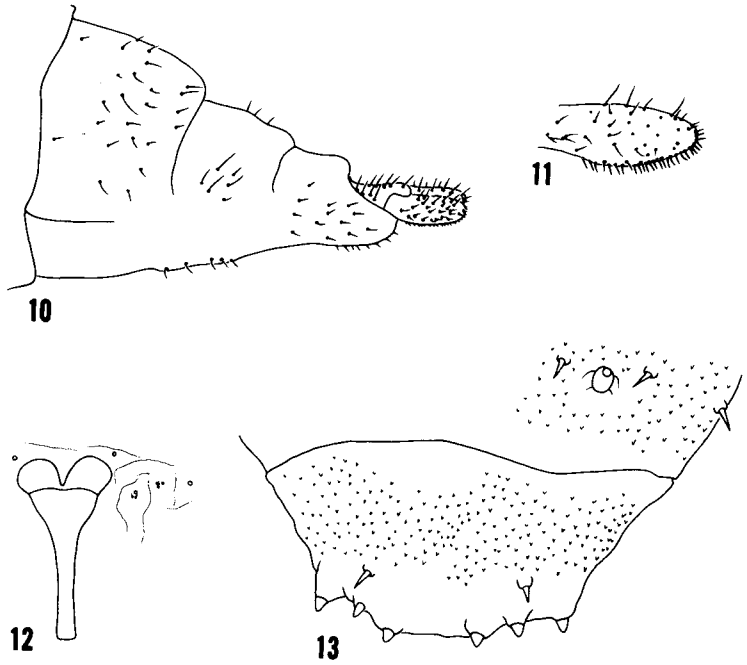
Adult. Wing length about 4 mm (Fig. 5). Male third flagellomere as in Fig. 3; female third flagellomere as in Fig. 4. Tarsal claw and empodium as in Fig. 6. Male postabdomen as in Fig. 7, genitalia as in Fig. 8; note especially the shallowly lobed hypoproct. Female postabdomen as in Fig. 10, cercus as in Fig. 11.

Third instar. Spatula with rounded anterior lobes and associated papillae as in Fig. 12. Eighth and terminal segments as in Fig. 13.

Holotype. Male, collected as larva from *Prunus angustata* leaf galls, 22-24-IV-1988, Byron, GA, J. A. Payne; emerged 27-31-III-1989; deposited in National Museum of Natural History (USNM), Washington, DC. Paratypes, same essential data and deposition as holotype, 6 males, 4 females, 10 larvae; 6 larvae, wild plum leaf galls, 22-VII-1970, Byron, Georgia, J. A. Payne. Other material (all in USNM): 5 larvae, ex leaf pod galls, *Prunus persica*, 26-IV-1990, Rankin Co., MS, B. Layton; 3 larvae, on peach trees, 20-V-1976, Tippah Co., MS, R. E. Anderson.

Etymology. The specific name *gracilis* is a Latin adjective meaning slender. It refers to the relatively slender male hypoproct.

Remarks. *Putoniella gracilis* is very similar to *P. pruni.* They differ in two ways. One is the narrower and not so deeply divided male hypoproct of *P. gracilis:* compare Fig. 8 with that of *P. pruni* in Fig. 9. The other difference is that the lobes of the larval spatula are convex in *P. gracilis* but pointed in *P. pruni.* The spatula of *P. pruni* with pointed lobes was illustrated in Mamaev and Krivosheina (1965) and Möhn (1955), and one of us (RJG) has seen similar spatulas on specimens collected in Bulgaria (deposited in The Natural History Museum, London).



Figs. 10-13. *Putoniella gracilis.* 10, Female eighth to last abdominal segments (lateral view). 11, Female cercus of same, detail. 12, Third instar spatula and associated papillae. 13, Third instar posterior segments (dorsal).

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