

## Another Pitcher-Plant Insect (Diptera, Sciarinae).

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(Plate 1.).

The captures of *Sarracenia*, especially those of the larger southern species, offer many surprises: as we pass from one tall "pitcher" to another, lifting their lids and peering down the narrowing tubes, we find recent captures,—moths, beetles, flies, wasps, grasshoppers, representatives of most of the principal orders of insects,—attempting to scale the vertical walls which have already proved fatal to the earlier victims whose remains fill the lower tubes; we recognize the usual guest insects, *Exyra*, *Sarcophaga*, *Isodontia*, or the indications of their presence; and if the season and locality be favorable, we may soon find a "pitcher" whose tube, some inches below the top, is closed by a mass of whitish froth-like filaments

suggestive of a mold or fungus, but which closer examination shows to be the product of certain slender yellowish white or yellow larvae which are feeding upon the captured insects, the froth-like mass being spun by those about to pupate, usually on the upper surface of the accumulated insect remains. Attention to this insect was first called (in 1909) by Dr. John M. Macfarlane, who has so ably monographed the *Sarraceniaceae*; at that time, in the *Sarracenia*-house of the Botanical Laboratory of the University of Pennsylvania, the presence of these insects occasioned some alarm for the safety of the plants, until their feeding habits were determined; subsequent observations in the field have resulted in the discovery of this insect in the pitchers of *S. sledgei* in southern Mississippi, in *sledgei* and *drummondii* in southern Alabama, in *S. rubra* and *S. flava* in North Carolina, and in *S. minor* and *S. flava* in South Carolina. Thus widely distributed, and associated with every species of *Sarracenia* whose structure is favorable to its presence, this insect is probably, like the associated Sarcophagid flies (Aldrich, *Sarcophaga* and *Allies* in North America, Thomas Say Foundation, 1916, pages 88, 89), exclusively a pitcher-plant insect; Dr. Johannsen has kindly determined that it belongs to an undescribed species, in Petthey's key (*Annals Ent. Soc. Am.*, XI, 319) going with *Neosciara coprophila* and *N. caldaria*, from which it is readily separable by the ♂ hypopygium, which in the new species resembles that of *jucunda* (Johannsen's figure 123), though lacking the transverse row of setae, and in wing venation having the petiole of the cubitus longer and R' shorter than in *jucunda*; its description follows:

***Neosciara macfarlanei* nov. sp.**

*Egg*.—Pear-shaped, .38 mm. long, .21 mm. greatest width; translucent, polished, pale yellow; deposited on inner leaf wall above the insect remains.

*Larva*.—Of the usual *Sciara* form, with brownish-black chitinized head; in color varying individually from yellowish white to rather bright yellow; the dark contents of the digestive tract, in which insect fragments are recognizable, showing through the translucent integument; segments 6, 7, 8, and 9 of almost uniform diameter, from these tapering somewhat anteriorly and posteriorly; eight pairs of spiracles marked by minute pol-

ished black rounded protuberances; length before pupation 10 mm.; usually from three to a dozen or more larvae occupy an infested pitcher.

*Pupa*.—Suspended among or imbedded in froth-like white filaments; often several pupae in close proximity in a common froth-mass which is denser about each pupa, thus approximating a frail cocoon-like structure, from which the pupa pushes its way before emergence of the fly; pupa yellowish white, soon darkening, especially the eyes, with the pigmentation of the imago; base of antennae prominently arched over the eyes, but not in contact medially; abdominal spiracles marked by minute concolorous pointed projections; length about 4 mm.

*Imago*, ♂ and ♀.—Length 3 to (♀) 3.8 mm., dry; live females often slightly exceed 4.5 mm.; fuscous black to black; head and thorax denser in color than the abdomen, somewhat polished, finely punctate, hairs black. Eyes black, finely pubescent, their finger-shaped frontal projections failing of contact by less than width between antennae; lateral ocelli remote from eye-margins, inclined on a rather prominent ocellar protuberance. Palpi and antennae smoky; intermediate joints of the flagellum twice as long as wide, last flagellar joint elongated; antennae of ♀ about one-sixth shorter than those of the ♂.

Halteres slender, finely pubescent, smoky, the stems pale; coxae and femora brownish-yellow, with dark hairs; tibiae darker, more smoky, and tarsi almost black; trochanters dark beneath; length of hind tibia to tarsus, as 100 to 85.

Wings brownish-hyaline; costa, radius, and R-M cv. setose; cubitus and media not setose, except that basal section of media of ♂ usually bears one or two setae; costa produced fully two-thirds of way from Rs to M<sub>1</sub>; Rs and M<sub>2</sub> end about equidistant from the base of the wing; the base of Rs is slightly distad of the mid-point between the humeral cross-vein and the tip of R<sub>1</sub>; subcosta very faint, ends free, proximad of the origin of Rs; R<sub>1</sub> ends slightly proximad base of fork of M (in measured wings, from one-twenty-sixth to one-tenth of the wing-length proximad); petiole of cubitus about same length as basal section of media.

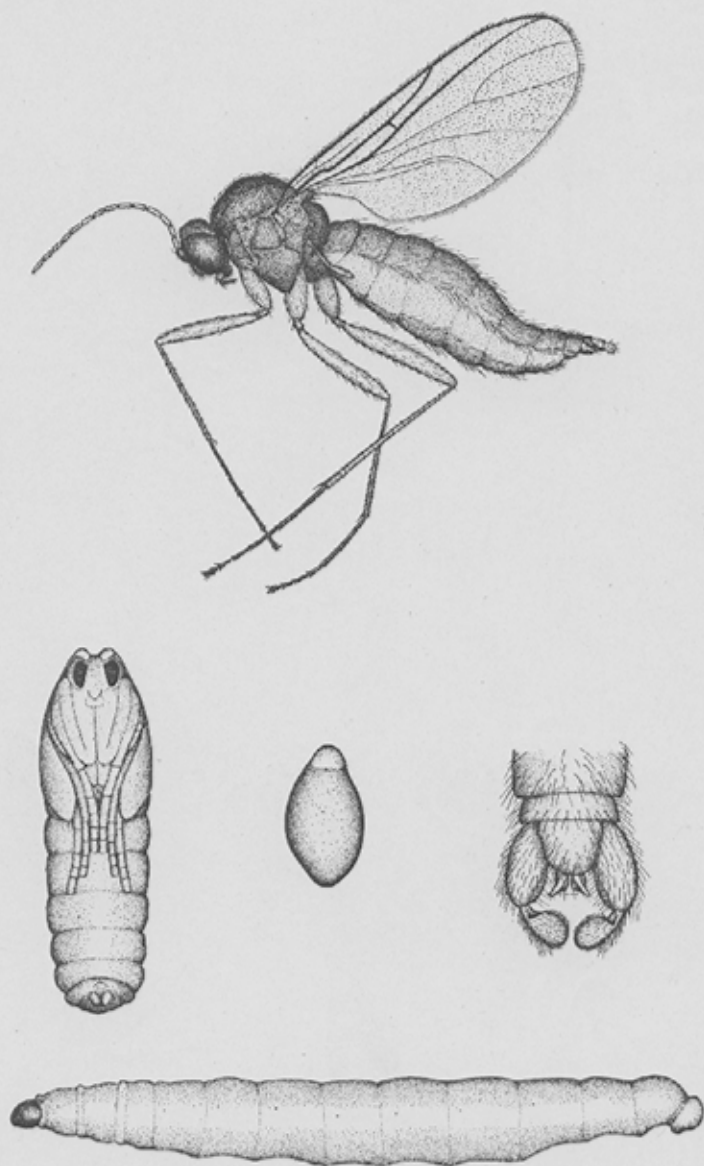
Abdomen black-haired; lateral band (in fresh examples) yellowish brown; the distended body of the ♀ dries to an almost uniform smoky brown, paler than that of the ♂; hypopygium dark, claspers subglobose, shortly stemmed to and more than half as long as the preceding joint, and with no mesal processes or differentiated apical spines: lamellae of ♀ ovipositor about one and one-third times as long as broad.

*Localities*: Summerville, South Carolina; Southern Pines, North Carolina; Theodore, Mobile County, Alabama; Biloxi and Wiggins, Mississippi; Philadelphia Pennsylvania (introduced).

Described and illustrated from numerous examples from all of the stated localities; a male and female, mounted in

balsam, from Theodore, Mobile County, Alabama, are designated as the types, and with other type material are deposited in the Cornell University collection.

In 1910 at Biloxi, Mississippi, as early as March 10th, the larvae of this insect were abundant, the pupae occasional, in those pitchers of *Sarracenia sledgei* which had remained green throughout the winter; the earliest observed emergence of the fly occurred March 27th; the eggs are deposited in the new pitchers of the season, soon after these have commenced to capture insect prey, and the insect in its various stages occurs in the pitchers through the summer months, no regular succession of broods being observed, though very irregular in its comparative abundance from year to year, and in its recorded localities.



NEOSCIARA MACFARLANEI.—JONES.  
ADULT FEMALE, PUPA, EGG, MALE HYPOPYGIUM, LARVA.