

DOVE
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Information

Shore flies

Because shore flies are often confused with darkwinged fungus gnats, control efforts are often wasted (darkwinged fungus gnats may be harmful to plants but are relatively easy to control; shore flies are harmless but are very difficult to control with insecticides). Sometimes shore flies become so abundant in glasshouses that the sheer numbers of flies becomes a deterrent to customers browsing or even employees working.

Adult: Shore flies in the genus *Scatella* are small (2 millimeters), black flies with reddish eyes and gray wings with clear spots. Shore flies resemble eye gnats in general shape. Shore flies are sometimes confused with darkwinged fungus gnats which are about the same size and color. (Darkwinged fungus gnats are shaped more like miniature mosquitoes and have relatively long legs and antennae.)

Egg: Shore fly eggs are about 0.42 long and 0.2 millimeter wide. They are fairly rounded at both ends although there are small lobes on one end. The surface of the egg is covered with minute, faint polygons. The eggs remain white throughout the development of the embryo.

Larva: The tiny first stage maggots have two spiracles only at the rear. The next two larval stages have two spiracles on the rear and a spiracle on either side near the head. The mature maggot is about 2.6 millimeters long and 0.9 millimeter wide and 0.5 millimeter high. The hind spiracles are black and are located at the end of small but conspicuous tubes. The anterior spiracles each resemble the fingers of a slightly inflated rubber glove but these spiracles are microscopic and inconspicuous.

Pupa: The pupa of *Scatella* shore flies are brown to dark brown, curved, and tapered on both ends. The puparia are about 2.6 millimeters long and 0.9 millimeter wide. At the hind end, the spiracles resemble stiff antennae. On the front, the anterior spiracles stick out sideways like microscopic horns. The puparia are curved toward the top side of the developing fly.

Feeding: Adult and immature shore flies feed on microscopic algae, dinoflagellates, bacteria, cyanobacteria, and other unicellular forms. Neither adult nor immature shore flies feed upon ornamental plants. The damage caused by shore flies consists primarily in the excrement ("fly specks") left on the foliage of bedding plants and ornamentals.

Life Cycle: *Scatella* shore flies are commonly found in glasshouses where they breed in algae growing on the growing media, pots, benches and floors. The eggs hatch in 2 to 3 days. Females scatter eggs right on the surface of the potting mix. The eggs hatch in 2 to 3 days. The larvae are found within the crust of algae and very top layer of potting mix. The maggots feed on bacteria and yeasts as well as diatoms and flagellates growing on the surface of the potting mix.

The larvae mature in 3 to 6 days and pupate inside the skin of the last larval stage (this kind of pupa is called a puparium). The last larval skin affords the relatively tender and completely helpless pupa protection from environmental hazards (including insecticides). Some of the puparia are found on top of the potting mix or are very close to the surface. A new generation of adult flies emerges 4 to 5 days later. The adults crawl about on the surface of the potting mix, on the plants or they fly about the pots and plants. The flies move and fly

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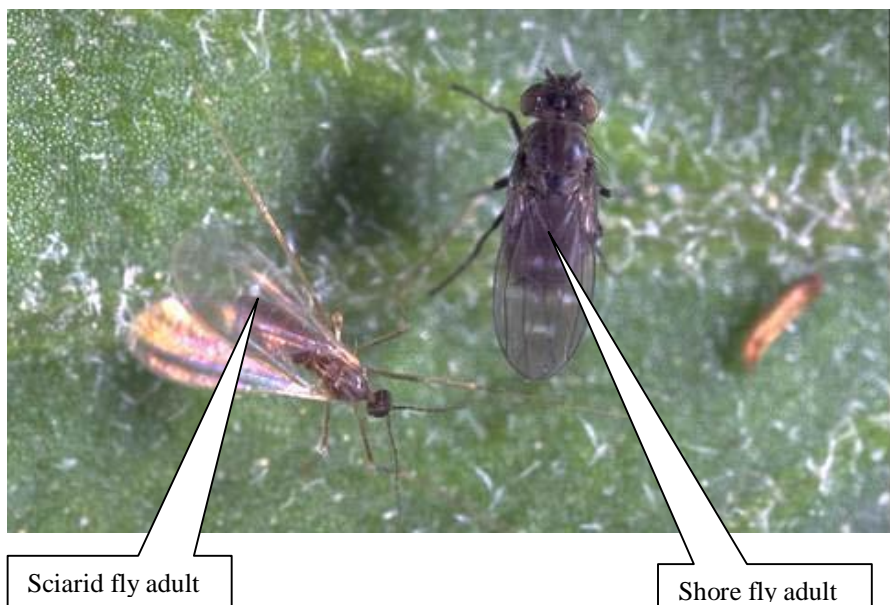
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rapidly but generally stay close to their breeding sites. The adults feed primarily on diatoms and flagellates on the surface of the potting mix or mats.

Cultural Controls: Cultural methods of shore fly management include avoiding excessive use of water during irrigation, using the minimal optimum levels of fertilizers for adequate plant growth (and lower levels of excess fertilizers that encourage algal blooms), and a drier glasshouse environment. Algae on mats, benches, the walls or other structural members, and the soil beneath benches should be eliminated by using an approved algaecide. Because shore fly maggots can also develop on rotting vegetable matter, general glasshouse sanitation should also help suppress shore fly numbers.

Biological controls: The nematode *Steinernema feltiae* is a commonly occurring species that is capable of parasitising sciarid flies, but other insects can also be affected. The *Steinernema feltiae* are small, unsegmented worms. There are four larval stages, the first one of which develops inside the egg. Second stage larvae emerge from the egg. Nematodes in the third larvae stage, the infectious stage, enter their host through one of its body openings or through the skin. The intestines of the nematode release bacteria into the host which spread and multiply very quickly. The fly larvae is killed within 48 hours due to blood poisoning. The *Steinernema feltiae* cannot withstand drought. The soil to which they are applied must be kept as moist as possible. They keep for only a short time and should be applied using watering equipment. High humidity and a temperature of 15°C are necessary for effective control using nematodes.

Atheta coriaria is a small rove beetle 3 mm long with a black glossy body and short front wings, that feed on soil dwelling organisms including shore fly and sciarid fly larvae dwelling in the soil. Both larvae and adults eat their prey.



Sciarid fly larva



Shore fly larva

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