Shore Fly Biology and Control

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SHORE FLIES:

Identification: Shore flies (*Scatella stagnalis*) and fungus gnats are often considered together as greenhouse pests, but they belong to two distinct groups of insects. Shore flies feed on algae and are found in areas where algae are growing.

Adult shore flies are small, dark-grey flies (approx. 1/8 inch long), which slightly resemble a *Drosophila* fruit fly, with a robust body and short legs and antennae. [Fig 1.]
They have five distinctive whitish spots on their grey wings. Their single pair of wings lacks the characteristic Y-shaped vein at the tip seen in fungus gnats, and the shore fly adult has short antennae.

Larvae of the shore fly are small translucent-white maggots without a distinct head capsule. Larvae and adults are found in close association with algae.

Pupae are dark brown, spindle-shaped, with a distinctive forked structure at one end of the puparium. [Fig 2.] They attach themselves, often in groups, to the sides of objects or pots just above the water level.

Damage: Greenhouse workers and consumers consider adult shore flies a nuisance pest. In heavy infestations they also deposit characteristic black "fly specks" on foliage that are unsightly. Larvae are considered algae feeders, and do not feed on crop plant tissue. Adult shore flies are capable of transmitting *Pythium* and other root disease organisms, but whether such transmission commonly occurs in commercial greenhouses has not been evaluated. However, because algal growth and shore flies are common in misted propagation areas, and diseases are particularly severe to young plants during propagation, some growers aggressively manage shore flies in their propagation facilities.

Biology: Shore flies are adapted to living in a semi-aquatic environment. Female shore flies lay on average about 300 tiny white eggs singly on moist soil. They develop from egg to adult in 9-11 days. Eggs hatch in about a day and larvae feed for 4 to 6 days on algae, after which they pupate. Adult flies emerge from the pupae in 3 to 5 days and generally live 2 to 3 weeks.

Monitoring: Yellow sticky traps are useful in monitoring adults. They should be used positioned either horizontally at the soil surface for the greatest trap catch, or vertically just above the plant canopy for general monitoring. Larvae can sometimes be seen by examining algae-covered areas with a handlens. Potato disks do not work for monitoring shore fly larvae.

Management: Shore fly infestations can be reduced by managing algae growth. This includes minimizing fertilizer and irrigation runoff and fixing leaky hoses and irrigation systems. Avoid over-watering, over-fertilizing, and eliminate areas of standing water. In addition, greenhouse walls, benches, gutters, and floors should be cleaned of algal growth as often as possible. A steam cleaner may be effective. There are some chemical products that may aid in algae management. Use according to label directions. One study has noted that Zero-Tol applications reduced algae and shore flies, but also reduced plant growth. Use carefully.

Insecticides: Many insecticides are insect growth regulators and only affect larval stages, not adults. Growers may need both an adulticide and a larvicide for well-established populations. Nematodes and predaceous mites used for fungus gnat control do not appear to work as well against shore flies because of the semi-aquatic environment in which they live.

In unsprayed greenhouses, a tiny parasitoid of shore flies, *Hexacola neoscatella*e, is common. A comparison of a shore fly and the parasitoid on a yellow sticky card is shown in Fig 3.
The impact of these parasitoids on shore flies in commercial greenhouses is unknown.