
SHORE FLIES: NEMESIS OR NUISANCE?

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Shore flies have become common greenhouse pests requiring considerable attention by greenhouse managers. Shore flies are predominantly a nuisance pest, but they have been implicated in the transmission of fungal pathogens. Shore flies inhabit the same environmental conditions as fungus gnats and are often confused with them. The following descriptions will help to identify larvae and adult stages of shore flies.

- Larvae are opaque yellowish-brown with no head capsule and about 1/4 inch long when mature.
- Adults look like small house flies. They are 1/8 inch long, and are black in color. They possess dark wings with approximately 5 light-colored spots on each wing. Antennae are shorter than their head and the legs are small. Shore flies are stronger fliers than fungus gnats.

Damage

Shore flies are primarily a nuisance pest, as large numbers of flies can reduce crop marketability. Shore fly damage involves excrement (“fly specks”) left on the foliage of bedding plants

and other ornamentals. Shore flies also have the potential to transmit fungal pathogens such as pythium root rot and black root rot. They can only damage plants indirectly by injuring plant root hairs. In most cases, shore flies generally feed only on algae.

Biology

The shore fly species commonly encountered in greenhouses is *Scatella stagnalis*. Shore flies have a life cycle consisting of an egg stage, 3 larval stages, pupa stage, and an adult. A generation can be completed in 15 to 20 days. Females lay eggs in areas where algae accumulates such as media surfaces, benches, and greenhouse floors. A single female can lay between 300 to 500 eggs. Eggs hatch in 2 to 3 days, giving rise to maggot-like larvae. Larvae are found just under the top layer of media, where they feed on algae. Usually, the body is located in the media and the head in the algae. The larval stage lasts approximately 7 to 10 days, after which they pupate. Pupation occurs in the soil. Adults emerge in 4 to 5 days and live about 3 to 4 weeks. Adults move very rapidly on

media and leaf surfaces. The rate of development depends on temperature.

Management

1. Quarantine

Inspect all incoming plant material for the presence of adults and larvae. If possible, hold plants in an isolated area for approximately one week. Place several yellow sticky traps among the crop to detect the presence of adult shore flies. Apply insecticides to control any shore flies that are present.

2. Proper Sanitation

Shore flies breed in algae, so the elimination of algae in pots, propagation areas, on benches, under benches, and on greenhouse floors will greatly reduce shore fly populations. Areas under benches can be treated with copper sulfate, bromine, or quaternary ammonium salts.

3. Proper Fertilization

Use the minimal optimum levels of fertilizers for plant growth and avoid excess fertilizer levels to reduce algal blooms. Fertilizer that leaches through the pot if allowed to accumulate on floors can serve as a breeding site for algae and shore flies.

4. Eliminate Excess Moisture

Minimize all free-standing water on solid benches, on walks, and under benches by not overwatering plants. Also, be sure to repair all irrigation leaks.

5. Monitoring/Record-Keeping

Shore fly infestations can be monitored effectively by counting adults on yellow sticky traps. Place sticky traps near the media surface and/or about 1 inch above the crop canopy. Move sticky traps in relation to plant growth. Inspect sticky traps weekly using a 10X hand lens and record the number of adults per sticky trap. Keep records on areas in the greenhouse where shore flies occur. Be sure to note plant species infested and the type of media used.

6. Chemical Control

Insecticides that are labelled for shore flies are Azatin, Citation, Precision, and Adept. Adept (Diflubenzuron) is the newest material available. It is an insect growth regulator that inhibits the formation of chitin. It is applied as a soil drench. Adept has approximately 30 to 60 days of residual activity. The material should be applied before shore fly populations build-up. It has been shown to be highly effective against shore flies. Azatin (Azadirachtin), Citation (Cyromazine), and Precision (Fenoxycarb) are also insect growth regulators. Always check label for application rates and crops that these materials can be used on.

7. Biological Control

Biological control of shore flies involves the use of the soil-predatory mite, *Hypoaspis miles*. *Hypoaspis* attacks shore fly larvae and is able to control shore flies if there is no standing water. Shore fly larvae can survive standing water whereas *Hypoaspis* cannot. Make releases soon after shore flies are detected.

If you want to attempt biological control, use the following guidelines:

- Start on a small scale. Don't convert the entire operation to biological control until the system has been tested and proven effective.
- Consult supplier catalogs and university personnel for information on the use and release rates of available biological controls.
- Find a reliable source and order at least 2 weeks before application.
- Release biological control agents upon delivery. Delaying release reduces effectiveness.
- Monitor and record the number of pests (shore flies) present before and after release in the greenhouse.

* The author wishes to acknowledge the comments of Dr. Clifford S. Sadof.