

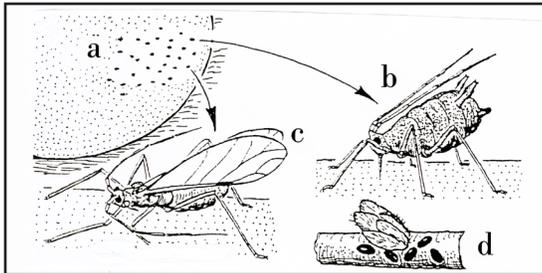
Urban Water-Quality Management

Insect Pests of Water Garden Plants

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Aphids (*Hemiptera: Aphididae*)

(numerous aquatic plants)

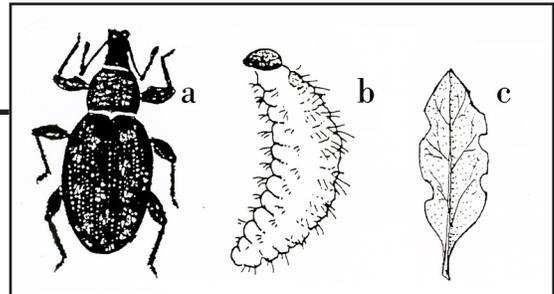
Aphids are often called plant lice. Several species are troublesome pests on above-water leaves (a), stems, and flower buds of aquatic plants. These sucking insects distort succulent new leaves, causing them to curl, wilt, or turn yellow. Adults are 1/8 inch long and can be winged (c) or wingless (b) with soft pear-shaped bodies with two distinctive cornicles or “tailpipes” protruding from the backs of their abdomens.

Aphids excrete honeydew, which attracts ants and promotes sooty mold that eventually blackens leaves. The dark green to brown waterlily aphids overwinter as black eggs (d) on nearby plum or cherry trees. Aphids are active in late spring and throughout the summer.

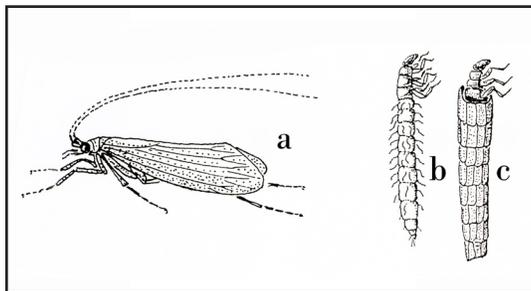
Black Vine Weevil (*Otiorhynchus sulcatus*)

(shoreline/marginal plants)

Black vine weevil adults (a) are 1/2 inch long and black with wing covers that appear pocked. They have short, broad snouts and elbowed antennae. Black vine weevils feed only at night, causing notched segments along leaf margins (c). They fake death when disturbed. White legless larvae (b) are 5/8 inch long with brown heads and C-shaped bodies. Larvae eat roots and girdle root crowns leading to wilting, yellowing, and death. The black vine weevil has one generation per year. Larvae overwinter in the soil. Adults emerge in May to feed during the summer.



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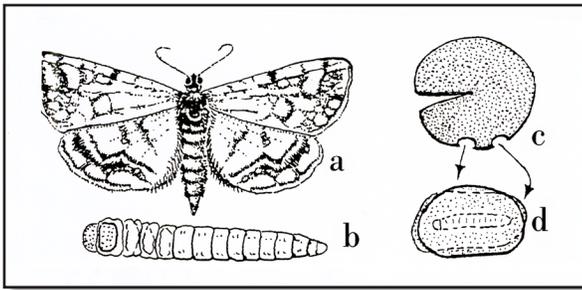
Caddisflies (Order Trichoptera)

(numerous aquatic plants)

Caddisfly adults (a) are 1/4 to 1/2 inch long and resemble small brown moths. They are active at night. Their antennae have many segments and are longer than their bodies. Their hairy wings are held roof-like over the bodies. Larvae (b), often called caddisworms, have a pair of hook-like appendages at the rear. The larvae characteristically wiggle up and down and back and forth in a movement called the “Caddisfly Dance.” Caddisfly

larvae feed on plant roots, stems, and flower buds and also on algae and other immature aquatic insects. Larvae form protective portable cases (c) out of leaves, grasses, small sticks, shell pieces, or sand. The eggs appear as long, jelly-like tubes that may be seen dangling underneath foliage on or near the water’s surface. Caddisfly larvae are an important source of food for fish.

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China mark moth (*Nymphula* spp.)

(waterlilies)

The China mark moth is probably the most recognized aquatic plant insect pest. Adults (a) are 1 inch long and have irregular white patches on brownish-orange wings. The larvae (b) are 3/4 inch long and cream-colored with brown heads. The larvae hide in cocoon-like shelters (d) made of cut leaf pieces joined by silk, hence the nicknames “bagman caterpillars” and “sandwich men.” The larvae eat large holes along waterlily leaf margins (c), and sometimes bur-

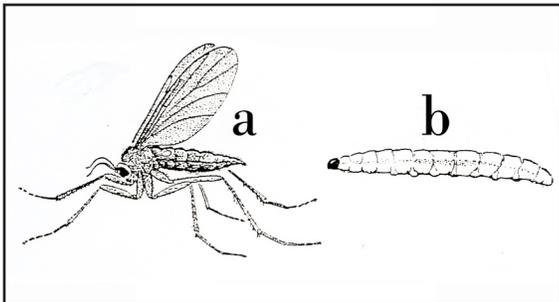
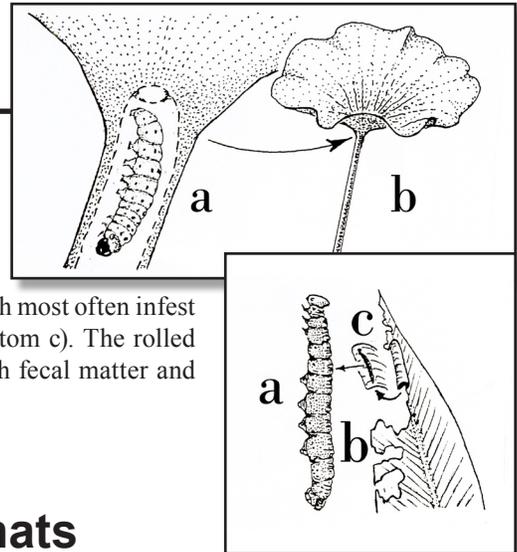
row into leaf stems. During late summer, egg clusters are found on the undersides of leaves near the edges, or sometimes in a circle around leaf holes made by beetles.

Borers, Leafminers, Leafrollers

(Lepidoptera: Noctuidae and Pyralidae)

(numerous aquatic plants)

Larvae of other moths can cause damage to aquatic plants. **Borers** (top a, b) tunnel into plant stems and leaf petioles. **Leafminers** tunnel between the leaf layers creating brown serpentine trails. Aquatic plants susceptible to borers and leafminers include lotuses, water lilies, water hyacinths, arrowheads, rushes, cattails, pickerel, and sedges. **Leafrollers** (bottom a), which most often infest water cannas and lotuses, cut leaf edges (bottom b) and roll up inside (bottom c). The rolled leaves rarely open and contain dark brown or black frass, a mixture of both fecal matter and chewed leaves.



Fungus gnats

(Diptera: Sciaridae)

(shoreline/marginal aquatic plants)

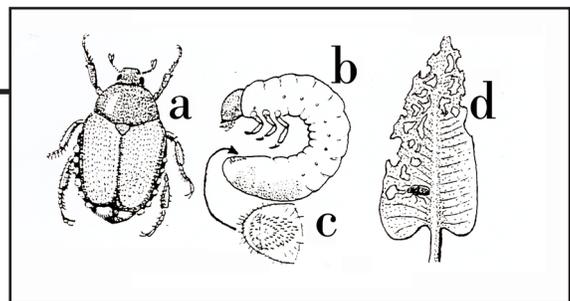
Adult darkwing fungus gnats (a) are small, 1/8 to 1/4 inch, and grayish black with long legs and antennae. They are weak fliers and generally not noticeable until plants are moved or disturbed. The larvae (b) are slender, 1/8 inch long maggots with white bodies and shiny black heads. Larvae feed directly on roots and bore into stems of plants at the soil line. Plants look wilted, off-color, and generally unhealthy.

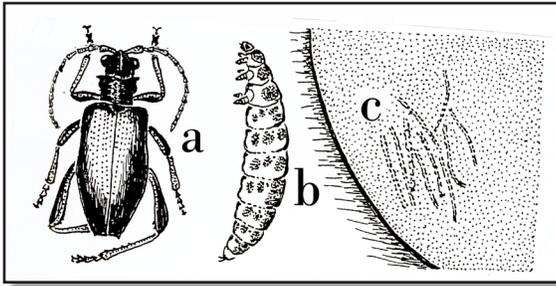
Fungus gnats can transmit plant diseases like *Pythium*, *Fusarium*, and *Verticillium*. They are seen in the winter and spring in moist, shady areas, especially on plants in greenhouses or on plants brought inside for overwintering. There are many generations within a growing season.

Japanese beetle (*Popillia japonica*)

(water cannas, pickerel, rushes, arrowheads, and lotuses)

Japanese beetle adults (a) are 1/2 inch long, oval, and metallic green. They voraciously chew between leaf veins leaving a lacy, open-weave pattern of damage (d). Larvae (b) are 1/4 to 1/2 inch long white grubs with brown heads, a distinctive C-shape, and raster pattern (c). They overwinter in soil and feed on turf roots in lawns. A single generation of adults emerges in the summer.





Leaf beetle (*Donacia* spp.)

(waterlilies, pickerel, arrowheads, and water cannas)

Leaf beetle adults (a) are 1/4 to 1/2 inch long and metallic green, blue, copper, or black with long antennae. They chew holes in the leaves of floating plants. In late spring and early summer, they lay eggs around the underside edges of the holes. Larvae (b) have 8 to 9 abdominal segments and also feed on leaves (c). Newly hatched larvae pierce leaves and stems to acquire air, leaving behind small brown spots referred to as stippling. There is one generation per year. Leaf beetles overwinter in plant debris.

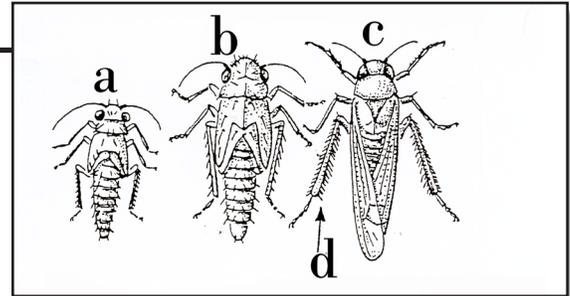
There is one generation per year. Leaf beetles overwinter in plant debris.

Leafhoppers (Hemiptera: Cicadellidae)

(numerous aquatic plants)

Leafhopper adults (c), which are jumping and sucking insects, are 1/8 to 1/4 inch long, brightly colored, and have spines on their hind legs (d). They hold their wings roof-like over their bodies. Nymphs (a, b) look similar to the adults. Leafhoppers attack leaves above the water, sucking out sap, stippling the leaves, and weakening the plants.

Leafhoppers also transmit plant diseases. The eggs overwinter in plant debris.



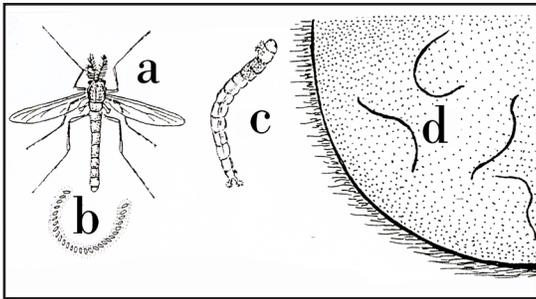
Leaf-mining midges (*Chironomus* spp.) False leaf-mining midges

(*Cricotopus* spp.)

(waterlilies)

Midge adults (a) are 1/16 inch long, resemble mosquitoes, and are active around water at dusk. They do not bite. Adults lay eggs (b) on leaf surfaces. Larvae (c) are very small, thin, and nearly transparent. Larvae

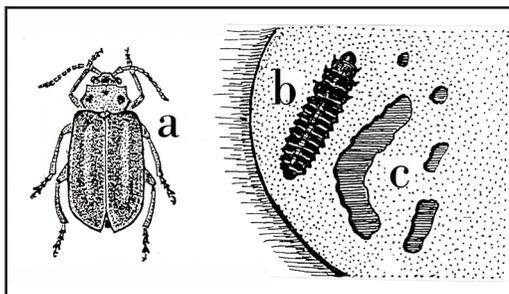
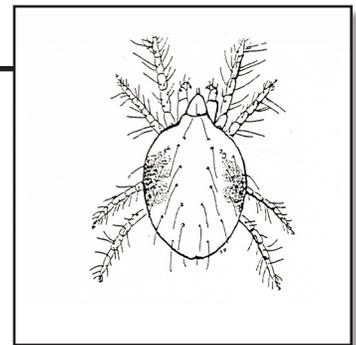
of leaf-mining midges tunnel between leaf layers whereas larvae of false leaf-mining midges chew trails along the surface of the leaf. Both cause serpentine (d) patterns that rot through the leaf.



Spider mites (*Oligonychus* spp. and *Tetranychus* spp.)

(numerous aquatic plants)

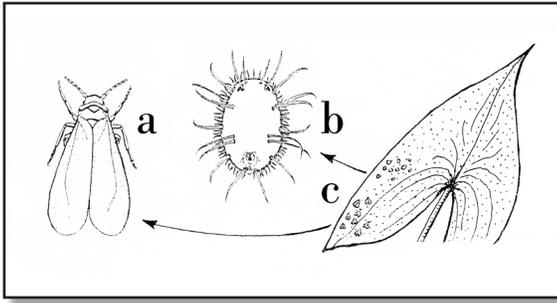
Spider mites are not insects, but relatives of spiders. Adults are 1/50 inch long (not much larger than a period on this page), with flat oval bodies and eight legs. Spider mites have mouthparts that rupture leaf cells to suck out sap. They are found on the undersides of leaves above the water and on flower buds. All species prefer dry conditions, but some species prefer hot temperatures and others cool temperatures. Spider mites are hard to see, but fine silk webbing and stippled, yellowing leaves are good indicators. The tiny eggs overwinter on host plant twigs and buds and hatch in the spring. Numerous generations occur during the growing season.



Waterlily beetle (*Galerucella nymphaeae*)

(waterlilies)

Waterlily beetle adults (a) are 1/4 inch long dark brown beetles. They lay eggs on leaf surfaces in June. Larvae (b) are shiny black with yellow bellies. They feed on the leaf surface (c). The beetles overwinter in plant debris.



Whiteflies (Hemiptera: Aleyrodidae)

(shoreline/marginal aquatic plants)

Whitefly adults (a) are 1/8 inch long, and resemble tiny white moths. Pupae (b) are oval, flat, and clear with a fringe. Adults and pupae feed on the undersides of leaves (c), causing stippling and yellowing. Whiteflies can transmit plant viruses. Adults fly around when plants are moved or disturbed. Reproduction is slow, resulting in only two to three generations in a season.

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