

CORNELL COOPERATIVE EXTENSION

Cherry Fruit Fly and Black Cherry Fruit Fly

Rhagoletis cingulata (Loew)

Rhagoletis fausta (Osten Sacken)

Two native tephritid flies feed on cultivated cherries in the eastern United States and eastern Canada, the cherry fruit fly, *R. cingulata*, and the black cherry fruit fly, *R. fausta*. The range of the cherry fruit fly (CFF) includes most of eastern North America. The black cherry fruit fly (BCFF) has a more northern distribution than the CFF and exists in eastern as well as western North America.

The CFF is usually a more abundant and more severe pest than the BCFF. The principal wild host of the CFF is the black cherry, *Prunus serotina*. The BCFF infests almost exclusively the smaller-fruited, native "bird cherry" or "fire cherry," *P. pennsylvanica*. However,

sweet as well as sour cherries are readily attacked by both species. Conversely, the native choke cherry (*P. virginiana*), plums, and other stone fruits are reportedly not suitable hosts for either fly species.

Both cherry fruit flies have a similar seasonal biology: only one generation a year throughout their geographic ranges. Except for the adults, the eggs, larvae, and puparia of the two species look alike.

The Adults

The adults of the CFF are somewhat smaller than the common house fly. The head and legs are yellowish-brown. The male has three white crossbands on the abdomen (fig. 1); the female has four crossbands. The wings are clear with dark bands and a characteristic dark spot at the tip (fig. 2). The adult BCFF is slightly larger than the CFF, and its abdomen is entirely black (fig. 3); the bands on the wings are darker and wider than those of the CFF, with a characteristic "doughnut-hole" marking near the posterior (back) edge of the wing (fig. 4).

Emergence begins in late May or early June when early sour cherry varieties begin to turn red or when 950 degree-days above 4.4 C (40 F) have accumulated after March 1. As a rule of thumb, the BCFF emerges at McIntosh apple petal fall and the CFF emerges seven days later. Flies continue to emerge for about one month, into early July. Peak emergence occurs in mid- (BCFF) to late (CFF) June.

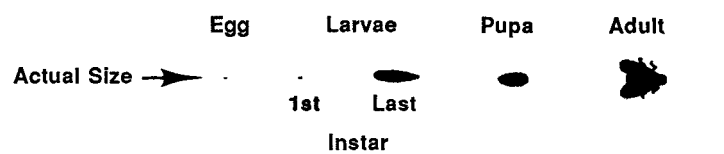
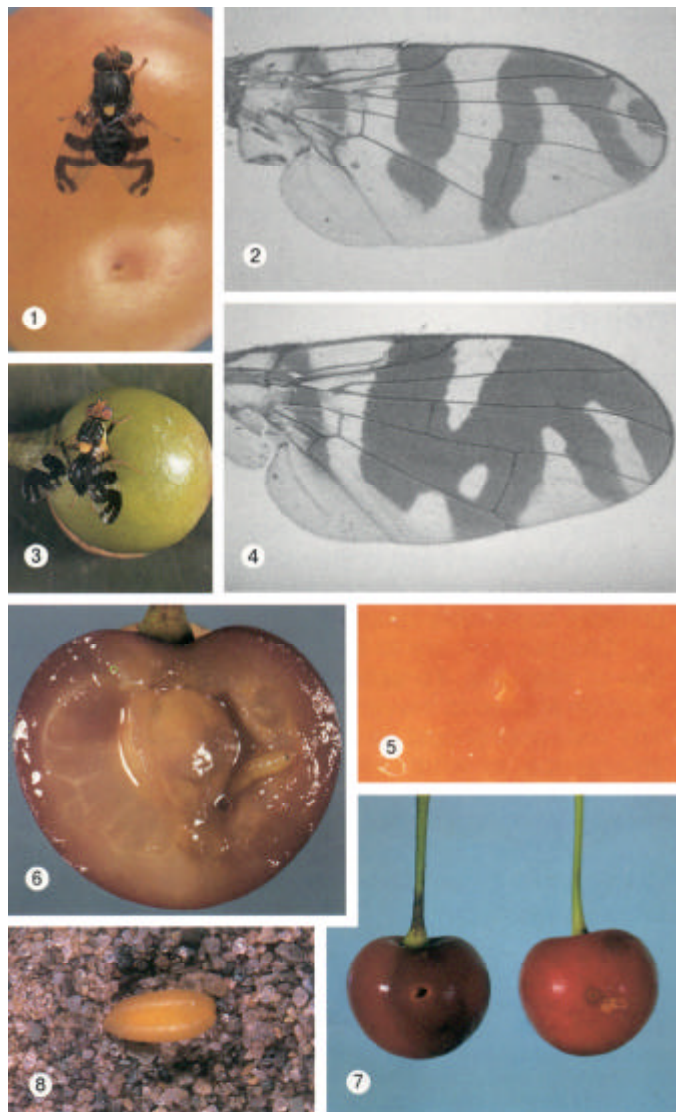
Freshly emerged flies move actively about the foliage and feed on honeydew produced by aphids or other insects. After about one week, flies are sexually mature. Mating takes place on the fruit and egg-laying begins.

The Eggs

The female fly pierces the fruit with her sharp ovipositor and inserts a single egg just below the skin, leaving a small scar on the surface (fig. 5). The egg is creamy white, about 0.6 mm (.02 in.) long, and slightly curved. Hatch occurs after five or more days, depending on the temperature.

The Larvae

The larvae (maggots) of both cherry fruit fly species look very similar. Mature larvae are 5 to 6 mm (about .2 in.)



GUIDE TO STAGES

Stage	Timing	Where to look
Adults	Late May through mid-July; BCFF emerges one week ahead of CFF	On unsprayed or abandoned cherry trees; flies can be monitored with yellow adhesive coated traps; emergence can be monitored with cages placed over ground seeded with infested fruit.
Eggs (stings)	About one week after first emergence of adults, through late June	Under a small, inconspicuous puncture just below the skin of the fruit; small dimple may surround egg puncture.
Larvae (maggots)	About two weeks after first emergence of adults through early July	In the fruit; most larval feeding occurs next to pit; pulp discolors. Mature larvae leave fruit through large exit holes. Skin of infested cherries can shrivel above the injured area.
Puparia (pupae)	Early July until emergence the following year	Below tree canopy in top 5 cm (2 in.) of soil.

long, cream-colored, and have no legs or visible head (fig. 6). The posterior end is blunt; the anterior or "front" end tapers to a point with two dark mouth hooks. The young larva feeds next to the pit and matures in two to three weeks. When the fruit is ripe or overripe, the full-grown larva bores through the skin (fig. 7) and drops to the ground to pupate.

The Pupae

After the larva drops to the ground, it bores into the soil, where it forms a puparium. Although most larvae pupate in the top 5 cm (2 in.) of soil, some puparia can be found up to 12 cm (4.8 in.) deep. The straw-colored puparium is 4 mm (.16 in.) long, and resembles a grain of wheat (fig. 8). Both species overwinter in this stage and spend about ten months in the soil. Some individuals may stay in the ground for two or more years before they emerge.

Damage

Little damage results from the egg puncture itself, and the egg-laying scar can be inconspicuous (fig. 5). If the fruit is stung while still green—such as with late varieties—and before it has fully sized, a small dimple will form around the egg puncture (fig. 1).

Infested fruit may initially appear sound and will not drop prematurely. Larval feeding in the fruit will separate the pit from the pulp and cause the pulp to turn brown (fig. 6). Sometimes the skin shrivels over the injured area. Brown rot (*Monilinia* sp.) can start in wormy fruit (fig. 7) and spread to other cherries. Late cherry varieties are usually more heavily infested than early varieties.

Monitoring

The date of first emergence in an area can be determined by collecting infested cherries, caging them

on the ground under several trees (preferably in the south quadrant), and observing fly emergence in the cages the following spring.

A more convenient method for monitoring cherry fruit fly activity is the use of baited fluorescent-yellow sticky boards. These traps attract the CFF, the BCFF, the apple maggot, and many other flies. The CFF and the BCFF can then be identified by their characteristic wing patterns (figs. 2 and 4). Consult local recommendations for the use of these traps.

Control

Both species of cherry fruit flies build up in unsprayed, abandoned cherry trees or in wild hosts, and migrate from there to commercial orchards. The removal of such sources of infestation will reduce considerably the cherry fruit fly threat in an area.

The CFF is attacked by several natural predators, of which a braconid wasp is the most important. The BCFF is parasitized by an ichneumonid wasp. Neither wasp provides acceptable control in commercial orchards.

Cherries that are to be used commercially must be free of maggots. To achieve such quality, insecticides must be applied to prevent female flies from laying eggs. The first spray should go on seven days after first fruit fly emergence, or when early varieties are beginning to show a tinge of color. The second is applied ten days later, or when the Montmorency variety begins to color. Late varieties may require a third spray. Consult local Cooperative Extension agents for advice on the most effective insecticides for CFF and BCFF control.

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