

## Risk period

Table 1. The risk and monitoring periods for European earwig activity.

Flowering			Fruit drop			Golf ball			Colour break		Maturation	
Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	

## Description

**Eggs** are oval, white to pale yellow, 1 mm long, and laid in clutches of 20–80.

**Immature** nymphs resemble adults but are smaller, paler, and have only wing buds and undeveloped forceps.

**Adults** are brown, 13–16 mm long, have short equal-sized legs, long thin antennae, chewing mouthparts, flight wings hidden on their back and flattened segmented abdomens with 2 forceps on the end (Figure 1). Males have inward curved forceps while females have straighter forceps. The forceps are used to catch and carry prey and for defence.

## Life cycle

Females lay eggs from May to October in one or two clutches in small dug-out nests in the soil. Eggs hatch and females care for their young until the second or third moult (skin shedding). Moulting occurs 5 times, with 5 nymphal stages developing from June to December (Figure 2). Adults survive for about 1 year, with one to two generations produced annually. They prefer the cooler months of the year and are not very active during summer. Adults produce an aggregation pheromone to attract other earwigs; hence they are usually found in congregations.

## Damage

European earwig occurrence varies between regions. Young trees are more susceptible to European earwigs than mature trees. Feeding damages buds, flowers, leaves, young shoots and rind of young fruit (Figure 3). Earwigs consume developing buds, preventing new foliage from growing. Bud damage can be confused with frost damage. Leaf edges become scalloped and fruit display scarring. Mature foliage is rarely chewed. Severe infestations prevent flowering and fruit development, promoting alternate bearing and out-of-season fruit.

**Risk period:** June to November (Table 1).



Figure 1. Adult European earwig.

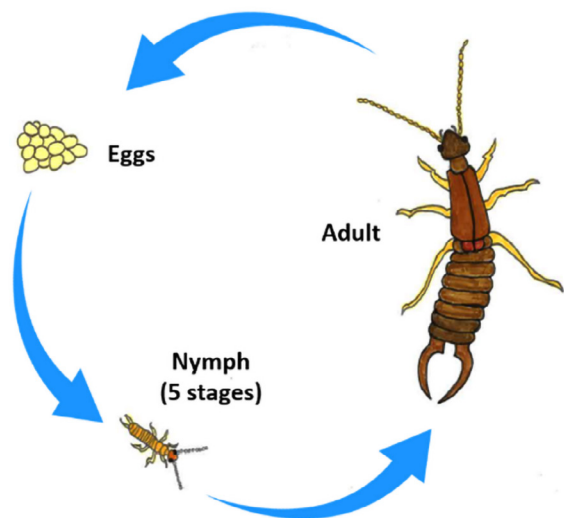


Figure 2. European earwig life cycle.

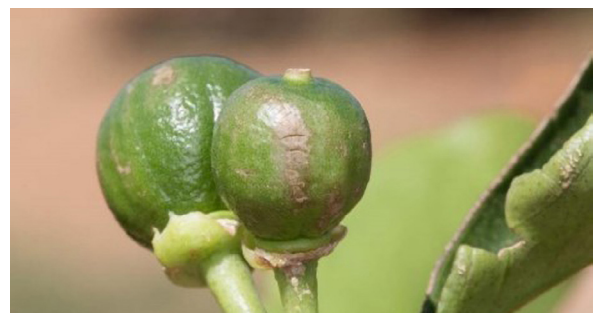


Figure 3. Earwig chewing damage on young fruit.

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## Monitoring

Earwigs are nocturnal, feeding at night and hiding during the day. High earwig populations occur in places with high vegetation, including older citrus orchards and vineyards. If earwigs caused damage in the previous season, monitoring should be conducted the following season.

**Traps:** pitfall traps can be used to detect earwig movement and abundance.

**Mats:** corrugated cardboard or carpet mats placed on the soil underneath trees encourage earwig congregation.

To determine earwig presence in the canopy, place beating sheets underneath trees and shake tree branches or place corrugated cardboard (rolled up) in tree crowns. Lift and shake tree guards in young trees.

Check traps, mats, guards, leaf litter under trees, and tree canopies weekly from June to November for earwigs.

## Management and control

There is currently no threshold for earwig control. Research is needed to understand why outbreaks occur in some orchards and not others. If the damage was significant during the previous season, management might be required the following season. Ensure the correct identification of earwig species before deciding on management options. The predatory native common brown earwig (*Labidura truncate*) is easily confused with the European earwig (Figure 4). Native earwigs are larger with an orange triangle on their back (Figure 5) and do not produce aggregation pheromones. They are beneficial in the orchard, preying on many insects, including caterpillars, pupae and eggs.

**Biological:** natural predators include birds, spiders, reptiles, frogs, centipedes, assassin bugs, entomopathogenic fungi and nematodes. These are unlikely to reduce populations to an acceptable level. The European earwig is also a predator and can be beneficial at low densities. In orchards where European earwigs are established as an economic pest, natural predators are unlikely to reduce populations to an acceptable level.

**Cultural:** soil tillage and vegetation reduction can help destroy and reduce nesting sites, particularly in early June. Prune the skirts of trees and remove tree guards to prevent and discourage earwig access and protection.

**Chemical:** there are currently\* no registered chemical options for controlling European earwigs in citrus. Consult your pest control specialist.



Figure 4. European earwigs, female (bottom) and male (top).



Figure 5. Native common brown earwig (*Labidura truncate*).

## More information

Capinera JL (2016) *Featured creatures: European earwig*. University of Florida, [https://entnemdept.ufl.edu/creatures/veg/european\\_earwig.htm](https://entnemdept.ufl.edu/creatures/veg/european_earwig.htm)

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Horne P and Altmann J (2023) *European earwig*. Citrus SA, <https://www.citrusa.com.au/grower-resources>

Maczey N (2015) *Forficula auricularia (European earwig)*. CABI Digital Library, <https://www.cabidigitallibrary.org/doi/10.1079/cabicompendium.24345>

Severi J (2019) *European earwig*. Cesar Australia, <https://cesaraustralia.com/pestnotes/earwigs/european-earwig/>

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