



FACT SHEET

BIOCONTROL OF COMMON GRAPEVINE INSECT PESTS: EUROPEAN EARWIG

By Dr Mary Retallack, Retallack Viticulture Pty Ltd



FINDING THE BALANCE... NATURALLY!

Healthy and diverse populations of predatory arthropods (insects and spiders) and parasitoids (wasps and flies) can help prevent grapevine pests from reaching economically damaging thresholds.

Growers can support healthy predator populations by providing a habitat that provides food, shelter and alternative prey/hosts and minimise the use of pesticides that are toxic to natural enemies.

Biocontrol options for common Australian grapevine pests are explored in this series of fact sheets. For a broader discussion about functional biodiversity please see the [EcoVineyards best practice management guide on functional biodiversity in Australian vineyards](#) and to read the other fact sheets in this series please visit the EcoVineyards [knowledge hub](#).

FAMILY FORFICULIDAE

Forficula auricularia, European earwig

DESCRIPTION: The European earwig is an important omnivorous predator of LBAM, mites, and other insect pests (Frank et al., 2007). However, isolated damage may occur to newly emerging leaves and shoots just after budburst (Magarey et al., 1994), although this does not necessarily cause economic damage.

Earwigs are usually considered to cause problems in grapevines only when large numbers are present. It takes more than one season for European earwig populations to build up. Slow-growing vines may sustain more feeding damage than vigorous vines. However, subsequent vegetation growth is normally sufficient to maintain vine health.

In most cases, the risk of minor damage early in the season is likely to be offset by the biological control benefits earwigs provide in vineyards. They are present throughout the year, predominantly from October to December, and this coincides with the period of grapevine flowering and bunch set. They provide valuable pest control in the period leading up to vintage when chemical control options are limited (Retallack, 2019). If numbers are very high at vintage, they may pose a problem if they are fermented with the fruit, resulting in rotten animal/insect taint.

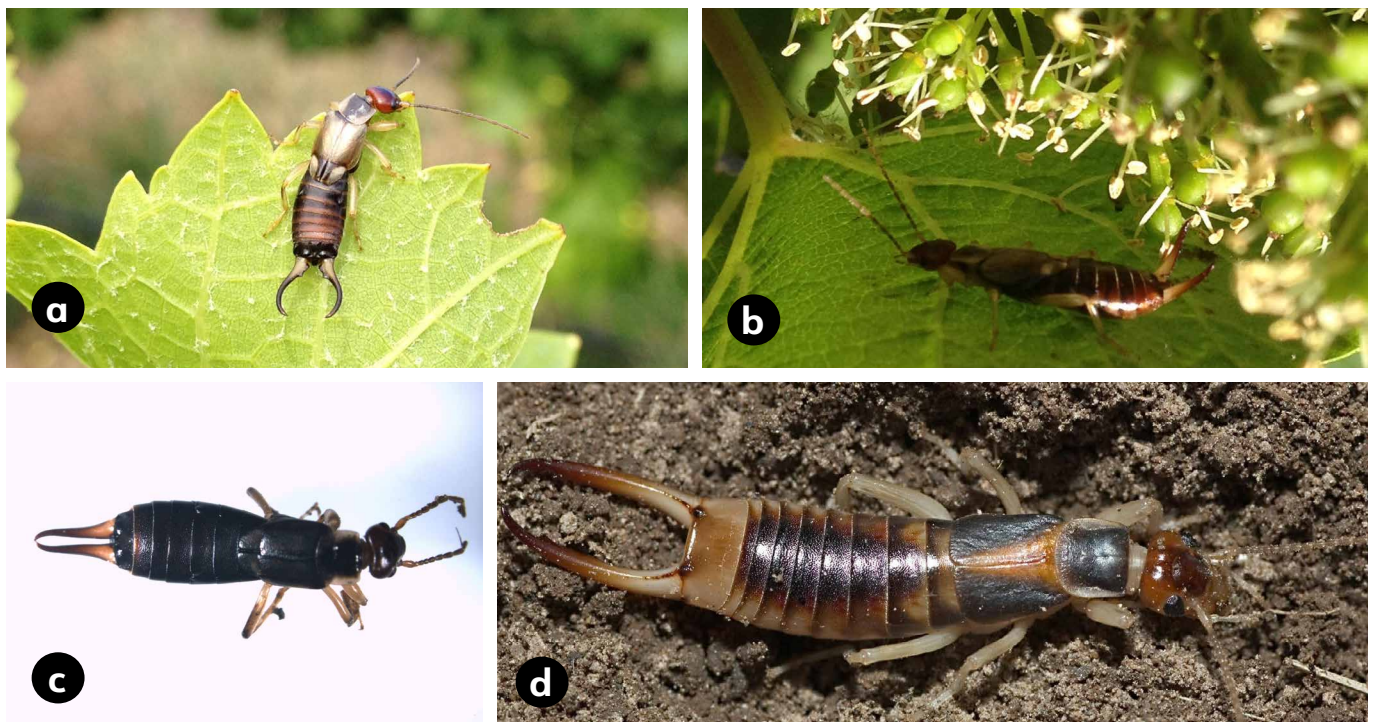


Figure 1. (a) *Forficula Auricularia*, male European earwig, (b) European earwig during flowering, (c) female European earwig [Photos: Mary Retallack], and (d) *Ligidura truncata*, native, common brown earwig [Photo: Michael Nash].

DISTINCTIVE FEATURES: Approximately 12 to 15 mm in length. Earwigs have an elongated and flattened or cylindrical body. They can be winged or wingless. The abdomen is long and flexible. The two forcep-like cerci on the end of the abdomen are heavily sclerotised (hardened) and vary in shape and size between species.

They come in a range of colours, including reddish brown, dark brown, and black. Females can be readily distinguished from males as they are usually smaller, have simple forceps, and eight visible abdominal (hind-body) segments as opposed to males that have ten (Australian Museum, 2019).

Earwigs are mostly omnivorous and eat a wide variety of live and decaying plant and animal material. The forceps are used for defence, catching, and carrying prey. They have chewing mouthparts and are most active at night.

BREEDING CYCLE: There are two generations per year. One breeding cycle occurs in late winter/early spring and a second in summer.

WHEN TO MONITOR: From budburst onwards. Earwigs can be trapped with corrugated cardboard bands around the upper portion of grapevine trunks, or layers of hessian or newspaper placed at the base of vines. Earwigs will use these traps for shelter during the day.

SUGGESTED ACTION THRESHOLDS: None established. The potential value of the European earwig as a predator of vineyard pests should be considered before any decision is taken to control this species.

Biocontrol options

Poultry are major predators of earwigs as a source of protein and energy. In vineyards where birds, such as guinea fowl, chickens, bantams, or ducks, are encouraged, some reduction in earwig numbers can be expected.

PREDATORY ARTHROPODS: The common brown earwig, *Labidura truncata*, is known to eat the European earwig (Crawford, 2015), as well as spiders, assassin bugs, and centipedes.

FURTHER READING

For more information on natural enemies, please see [natural predators of vineyards insect pests booklet](#) and associated [articles](#) and [fact sheets](#) on the [EcoVineyards knowledge hub](#).

REFERENCES

- Australian Museum. (2019) Australian Museum website at <https://australianmuseum.net.au/>.
- Crawford, D.J. (2015) Garden pests, diseases and good bugs, Harper Collins Publishers, Sydney.
- Danthanarayana, W. (1980) Parasitism of the light brown apple moth, *Epiphyas postvittana* (Walker), by its larval ectoparasite, *Goniozus jacintae* Farrugia (Hymenoptera: Bethyilidae), in natural populations in Victoria. Australian Journal of Zoology 28:685-692. DOI: 10.1071/zo9800685.
- Frank, S.D., Wratten, S.D., Sandhu, H.S., Shrewsbury, P.M. (2007) Video analysis to determine how habitat strata affects predator diversity and predation of *Epiphyas postvittana* (Lepidoptera: Tortricidae) in a vineyard. Biological Control 41:230-236. DOI: 10.1016/j.biocontrol.2007.01.012.
- Magarey, P.A., Nicholas, P.R., Wachtel, M.F. (1994) Control of the diseases of grapes in Australia and New Zealand. Wine Industry Journal 9:197-225.
- Retallack, M.J. (2019) The potential functional diversity offered by native insectary plants to support populations of predatory arthropods in Australian vineyards, PhD Thesis, School of Agriculture, Food and Wine, University of Adelaide, Adelaide. pp. 193.
- Retallack, M.J., Keller, M.A. (2018) Which species of Tortricid leafroller do I have in my vineyard? The Australian and New Zealand Grapegrower and Winemaker 656:36-42.

Disclaimer

The information contained in this EcoVineyards fact sheet is provided for information purposes only. Wine Australia and Retallack Viticulture Pty Ltd give no representations or warranties in relation to the content of the fact sheet including without limitation that it is without error or is appropriate for any particular purpose. No person should act in reliance on the content of this fact sheet without first obtaining specific, independent professional advice having regard to their site(s). Wine Australia and Retallack Viticulture Pty Ltd accept no liability for any direct or indirect loss or damage of any nature suffered or incurred in reliance on the content of the fact sheet.

For more information about the National EcoVineyards Program please visit www.ecovineyards.com.au @EcoVineyards

© Retallack Viticulture Pty Ltd, 2024



PROGRAM PARTNERS



REGIONAL PARTNERS



MARGARET RIVER WINE



The National EcoVineyards Program is funded by Wine Australia with levies from Australia's grape growers and winemakers and matching funds from the Australian Government.

ACKNOWLEDGEMENT OF COUNTRY

EcoVineyards proudly acknowledge the Aboriginal and Torres Strait Islander Peoples, and their ongoing cultural and spiritual connection to this ancient land on which we work and live.

As the Traditional custodians we recognise their wealth of ecological knowledge and the importance of caring for Country.

We pay our respect to elders past and present and extend this respect to all Aboriginal and Torres Strait Islander Peoples.

