

## IMPORTANCE

Small vertebrates do a great deal of damage in olive groves. Their predations are probably our industry's most serious production problem. In some regions their damage may be a bit less important than that caused by fungal disease but it is more likely that this is because fungal disease is particularly severe for these growers than that these creatures cause less damage! The severity of attack depends on a number of local factors and so can be very variable from grove to grove. The variability implies that there *are* reasonably effective things that you can do about the problem.

**Damage assessment:** The mere presence of small vertebrates in your grove does not necessarily mean that they are damaging your trees or fruit. Some of them are merely residents or visitors doing no harm at all. We can become overly concerned. On the other hand, damage can easily be missed because it is difficult to detect. One can see a fruit that has been pecked, or one that has fallen to the ground partly eaten or as a bare pit, but where a fruit has been removed altogether for consumption elsewhere, there is little visual evidence of your loss - just a bare stalk.

**Not alone:** It may not comfort you to learn that ours is not the only crop that suffers the predations of birds and small mammals; the cereal crops can be very seriously affected too. Of the fruitcrops, the small-fruited ones are particularly susceptible – cherries and grapes and especially the berryfruit (blueberries, raspberries and strawberries). The larger-fruited species (apples and kiwifruit) are not usually as seriously affected although there have been horror stories of marauding sparrows descending upon a kiwifruit orchards a few weeks before bloom and removing every flower bud.

**Isolation and scale:** Damage tends to be worst around the margins of a crop so problems are felt most in small plantings – all margin and no middle. Conversely, damage can be almost insignificant in very large plantings. For similar reasons isolated plantings suffer much more than grouped ones. There is some protection to be had by grouping together.

**Worsening:** Populations of many pest species are rising with changes in land use (less pastoral agriculture, more horticulture, more urban sprawl etc). Also, with the widespread adoption of 'greener' industrial, agricultural and horticultural practices that result in fewer accidental poisonings. Lastly, the appearance of a diversity of new crop species (such as olives) provides good new food sources during what were previously lean periods of the year, thus helping ever-larger pest populations through to the start of the next season.

**Survival:** Unlike people, animals usually do not cause damage out of sheer mischievousness. Most damage is caused as they eat to survive. When, for them feeding, or not feeding, is a matter of life and death, they are very persistent indeed. Much of your success in deterring them will depend on the availability of other food sources. A better understanding of their biology and feeding behaviour will help you to identify the best ways to reduce damage.

**Learning:** Animals take some time to learn to eat a new food. However, once learned, they will pass on this new feeding information to their offspring. For this reason, pest problems usually worsen for a new crop, as pest populations gradually adopt new

feeding behaviours and pass this on to their offspring. Also, as this learned behaviour is transferred to other groupings of the same species by migration. In similar fashion, learned behaviour will sometimes jump between species so that a species that previously did not touch your crop can suddenly become a persistent pest (e.g. kiwifruit flowers). A particularly hard season will speed the learning process as, at these times, the pressure to try new foods becomes extreme. Starving rats eat PVC.

**Birds:** This chapter is mostly about birds. Because they fly, they alone can reach the fruit and are the ones primarily responsible for the *ongoing* damage suffered in mature groves. Their direct impact is felt in reduced oil yield (fruit eaten/dropped) and also in reduced oil quality (fruit damaged and contaminated by their faeces). Secondary yield and quality loss occurs in bird-pecked fruit though the introduction of fungal rots and through oxidation of the surrounding flesh. Yet another route to loss is through reduced oil yield/quality following a premature harvest made in an attempt to avoid more extreme crop loss when damage pressure is very intense.

As we have already mentioned, many birds are mere residents or visitors in your grove and cause no significant damage at all. Indeed, some may be quite beneficial. Those that eat only insects fall into this category (e.g. fantails).

**Small mammals:** This chapter also deals with small mammals. Because many of these are nocturnal and they tend not to make much noise, we are less aware of their presence and activity. Where they do cause damage it is usually of a different sort. Because they can't fly their damage is usually caused closer to the ground and to a different part of the tree, mainly to the bark and to young, tender shoots. This is usually more of a problem early on in the life of the tree during establishment when the canopy is more completely within their reach and when the bark of the main stem is still tender. The special problem here is that onset of their attack can be very sudden (a cold snap) and its consequences very serious indeed. Overnight, you can be set back several years by the loss *whole trees* following ring-barking or severe shoot loss. It has been said that rabbits will "*walk over carrots to get at young olive trees*"...Birds, in comparison, merely reduce yield by eating some of the fruit. Again, although many small mammals may live in or visit your grove not all of them are pests.

**The culprits:** It would appear that it is primarily the introduced species that are the pests for olives. This is fortunate as the native (bird) species are mostly either partially or fully protected by law so controlling them is more problematical. All of the small mammals are introduced and all are unprotected.

**Information sources:** We are unaware of any NZ research that has identified which vertebrate species are the main pests for olives. Nor of research that has measured their relative importance in terms of the nature or amounts of damage they do. Instead, in writing this chapter, we have had to make a number of professional *guesses* based upon such anecdotal information as we have for olives. Not surprisingly, some of this is contradictory and some is probably wrong. Mostly, we have drawn upon better quality information that we have to hand on the habits and feeding behaviours of the commoner species in relation to the more-established NZ crops both here and overseas.

**Help:** To help us develop a more solid foundation for this chapter it would be useful if you would obtain a wildlife field guide and a pair of binoculars to help you identify the species in your groves and, particularly, to record their feeding behaviours. The field guide we recommend is *The hand guide to the birds of New Zealand* – Hugh A. Robertson & Barrie D. Heather (Penguin Books NZ Ltd; about \$30.00). You will not need particularly expensive binoculars. About \$150 buys a pair of 8x20s, or \$200 a pair of 8x40s of reputable manufacture. A higher magnification than '8' requires a particularly steady hand or a tripod and is not worth it. A larger aperture ('40' rather than

'20') is worth it as the image will be brighter and you will often be watching in low light conditions at the beginning and end of the day when feeding is likely most intense. It is best to choose a good brand as some of the cheaper ones are 'toys'. Also, shop around for price.