

REVEGETATION

SHELTERBELTS IN AGRICULTURAL LANDSCAPES SUPPRESS INVERTEBRATE PESTS

Land for Wildlife's introductory brochure contains a photograph of a fairy wren with a blowfly in its beak and the caption 'natural pest control'. We have always maintained that controlling pest invertebrates is an important role of the native fauna living in remnant vegetation, however this is a difficult thing to quantify (but see Anne Smart's superb example in WW 1/3, July 1997, 'Birds, trees and fly strike'). A recent article * at last provides good experimental evidence in support of our position.

Farming creates uniformity in the landscape, in which the invertebrates that rely on crops and pastures may build up in numbers as their source of food increases and their predators decrease. The predators often need perennial vegetation in order to survive; remnants, roadsides or planted linear strips such as shelterbelts or oil mallees, and are unable to reach prey populations in the middle of vast paddocks. Thus, costly chemical control of the pests is required.

In order to evaluate whether the shelterbelts harbour beneficial organisms, or the pests themselves, the authors, working in Victoria, sampled invertebrates along transects running from shelterbelts and into pastures, then conducted glasshouse trials on the impact of the predatory organisms found on known pasture pests. They worked with three widespread pests, redlegged earth mite *Halotydeus destructor*, blue oat mite *Penthaleus major* and lucerne flea *Sminthurus viridis*. They found that there were lower numbers of pests in pastures adjacent to shelterbelts, especially those with a well-developed

understorey. They state: "Our study shows not only that alternative vegetation (shelterbelts) contributes to an increase in potential predators (predatory mites and spiders) of the dominant economic pests in pasture, but also that the structure of the margin itself is important".

They also show that the shelterbelts do not harbour significant populations of the pest insects, perhaps because of effective control by predators. Thus landholders need not be concerned that infection will emerge from the bushland. (This was confirmed during the 'Woodland fauna' workshop at Coorow, where the pea aphid *Acyrtosiphon pisum* was in plague proportions in the paddocks, but only one specimen was found in the remnants, WW 8/3 July 2004.)

Of course there are many more questions to be answered, not least how far into the crop or pasture the predatory invertebrates can penetrate. But this work is rigorous and well replicated. The authors concluded; "We have shown here that habitat heterogeneity and its management can have a direct negative impact on pest invertebrates".

Landholders seeking organic certification, therefore managing pest insects by methods other than chemical insecticides, should find in this research encouragement for establishing more perennial strips throughout their properties.

* Ref: Tsitsilas A., Stuckey S., Hoffman A.A., Weeks A.R., & Thomson L.J. 2006. Shelterbelts in agricultural landscapes suppress invertebrate pests. *Australian Journal of Experimental Agriculture*, 46: 1379-1388.