

The Russians are coming... As the old saw has it, an ounce of prevention is worth a pound of cure. In the case of *Diuraphis noxia*, however, an investment of less than \$200 000 could help save Australia's wheat-growers as much as \$520 million a year.

Diuraphis noxia is the Russian wheat aphid, a 3- to 4-mm-long pest of barley, oats, wheat, and other grains that is native to western Central Asia. First noticed outside its home range in north-western Africa in 1938, it has since spread rapidly to South Africa and North America. It has taken little more than a decade to spread across the grain belt of the United States and Canada, and farmers there are already spending \$140 million a year to control it... while facing crop losses of up to 70%.

In what may well be the world's first application of pre-emptive pest control, scientists from CSIRO's Division of Entomology have bred *Aphelinus varipes*, a 1- to 2-mm-long parasitic wasp from the Soviet Union, in strict quarantine conditions and have released several batches to control the Russian wheat aphid should it arrive in Australia as a 'stowaway' aboard a passenger plane or in cargo. This is part of a multipronged approach to control, with scientists at CSIRO's Montpellier, France, research facility looking for aphid-resistant varieties of wheat and barley to cross-breed with high-yielding but non-resistant Australian strains.

The aphid is primarily parthenogenetic; that is, it can reproduce asexually, and a single individual could produce enough offspring to threaten one of Australia's most important export crops. Spring wheat harvests could be cut by as much as 50% in some cases, while winter harvests would suffer losses of up to 80%. Insecticides are the only means of controlling the aphid once it has become established: chemical costs of up to \$20 per hectare could not only

render marginal wheat-growing areas unprofitable, but also destroy Australian wheat's pesticide-free reputation.

A. varipes lays its eggs in wheat aphids; when they hatch, the larvae eat their unwilling hosts. Fortunately, the species also lays its eggs in a number of other species of accidentally introduced aphids. The net effect is to develop a 'reservoir' of wasps that can attack the Russian wheat aphid if and when it arrives in Australia... in short, an ounce of prevention.

Alive... but for how long? Only 15 of the 33 species of mammals once found in the Perth area have weathered the impact of European settlement: numbats, bettongs, quokkas, tammar wallabies, and many small mammals have disappeared. But a team of Division of Wildlife and Ecology scientists led by Dr Graham Arnold has 'rediscovered' one — the shy, forest-dwelling black-gloved wallaby, *Macropus irma* — only 10 km from Perth.

Numbers of the species, once found throughout the south-western corner of Western Australia, have declined by an estimated 90% throughout its range in the past 10 years. Although a number of factors are involved, predation by foxes seems to be important: according to Dr Arnold, the survival of the 20–30 wallabies found during the CSIRO survey of the 2600-ha Whiteman Park north of the capital is directly related to the park's small population of foxes.

The survey, conducted on behalf of the Western Australian Department of Conservation and Land Management, also identified 44 species of small vertebrates in Whiteman Park, including the increasingly rare nectar-feeding honey possum, *Tarsipes spenserae*. In addition, more than 60 species of land birds, including the brown falcon, the painted button quail, and the yellow-throated miner, were identified in the park.

