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Research objectives

in vertebrate pest control



One of the most important functions of the Agriculture Protection Board is to prevent the introduction or spread of economically harmful animals and plants into Western Australia. The starling and skeleton weed, both major pests in the eastern States, are good examples of introduced economic pests.

Pest control or restrictive action, however, can arouse controversy. There is also community pressure for the introduction of animals and plants which could form the basis of new production enterprises or even become a fascinating hobby. Assessing the potential danger of introducing these species is an important area of the Agriculture Protection Board's investigations.

These investigations involve making inferences about pest potential based on the performance of animals introduced to new environments. The animals are then grouped in order of severity of risk according to studies of pest situations world-wide.

In considering research objectives, the Agriculture Protection Board is highly aware of diverse public attitudes and needs.

Concern about the environment and conservation, as well as the profitability of many areas of agricultural production, has influenced the scope and direction of research.

The Agriculture Protection Board's task is to develop and apply vertebrate pest control methods which are environmentally discrete, economically acceptable and which work efficiently under a specific set of local conditions.

This requires an understanding of the biology of the animals with which we are dealing, being alert to the potential side effects of control efforts, and an appreciation of the economic consequences of carrying out control or not doing so.

A detailed understanding of the animal has many advantages, such as the capacity to predict when damage is likely to be unusually severe. This allows preventative action to be taken, which is much cheaper and more effective than dealing with an established problem.

By A. J. Oliver, Research Officer-in-Charge

The European rabbit, introduced into Australia in 1856 by an early settler for hunting, caused massive losses to agricultural production in Western Australia in the 1940s and 1950s.

In those years most of the country's resources and efforts allocated to vertebrate pest problems were aimed at controlling this animal.

Research and control measures by Commonwealth and State agencies, including the introduction of myxomatosis, were largely responsible for reducing the rabbit problem to the comparatively minor one it is now.

Today, the Agriculture Protection Board is involved in the control of a much wider range of mammals and birds which cause losses to primary production throughout Western Australia.

■ Photographs (from left): skeleton weed; dingo; Hereford cattle in the South-West; Western grey kangaroo; boodie on Dorre Is. (Last two photographs by A. G. Wells.)

Knowing enough about the animal's interaction with its environment also tells us the best time for taking regular control action, and its frequency for optimum benefit in relation to cost.

Research carried out on similar problems elsewhere in Australia often has limited relevance here.

There are several articles in this Journal which illustrate the advantages of research into an animal's lifestyle. The benefits can be summarised simply as better and safer control for less money spent.

A major area of potential conflict is the problem of protecting agricultural production without harming non-target native animals.

If a native animal is causing damage, the Agriculture Protection Board co-operates with wildlife conservation authorities in devising a management programme. These programmes aim to minimise agricultural damage without threatening the survival of wildlife species.

The controlled harvesting of kangaroos and the control of parrots in orchards are both subject to programmes which recognise the needs of both production and conservation.

Another side of this problem is ensuring that only the animals causing the damage are affected by control methods. Studies on the susceptibility of native animals to the poisons used for control, and acceptability of bait materials to non-target animals, is an important aspect of this research. An example of this type of work is discussed in the Journal.

Feral animals

Feral animals are controlled in an attempt to reduce the overall grazing pressure on natural pastures upon which both livestock and native herbivores depend. Reducing donkey and goat numbers in the pastoral areas alleviates pressure on the rangelands. Assessment of the effectiveness of such campaigns is an important part of research, as illustrated by the work on donkey and dingo control.

Determining cost effectiveness in vertebrate pest control is difficult, but we attempt to provide at least a credible estimate of the order of costs incurred without control, compared with the known costs of control.

Most programmes have this economic element built into them, and are referred to in the articles on the effect of dingoes on sheep raising, rabbits in pastoral areas and damage by parrots in orchards.

The problems posed by economic and environmental concern in established agricultural areas can be confidently incorporated into research planning because they are likely to have continuing relevance.

However, there are areas where new forms of agriculture are being developed which can create new pest problems and pose special difficulties. Irrigated agriculture on the Ord River area and the new wine industry of the South-West are examples of these difficulties.

Whenever new crops are grown in areas where previously they have not been grown, it is likely that native animals will feed on the crops when their natural food supply fails. Birds, because of their mobility, are particularly capable of exploiting new sources of food.

Bird pest problems are generally sporadic, causing great difficulties in research aimed at solutions.

For example, a noticeable failure of the natural food supply of waterfowl or cockatoos in northern Australia, and small parrots or silvereyes in south-western Australia, is irregular, so that years of severe crop losses caused by these birds are sporadic.

Control methods

If pest problems do not occur regularly, the development and testing of control methods on a planned basis may be impeded. As a result, the period of funding allocated to research on a particular new problem could include several opportunities for finding solutions, or it may include none at all.

This difficulty is another important reason for understanding the biology of the pest animal.

Weather patterns ultimately determine the availability of natural foods, which in turn influence or determine the likelihood of pest damage to crops or livestock. This is generally true for vertebrate pest problems in this State. In the pastoral areas where livestock and kangaroos feed on the same pastures, competition for food is negligible when pasture is abundant after good seasons. Under good conditions, damage to livestock by dingoes also diminishes when there is more natural prey.

The Agriculture Protection Board aims to:

- Gather and assess information upon which to base decisions regarding the introduction of exotic animals.
- Develop methods and techniques of vertebrate pest control which are economically and ecologically attractive.
- Gain sufficient understanding of the ecology of pest situations to make the management of pest problems easier.

These aims recognise the potential conflict among various interests within the community. They challenge researchers to reach solutions which substantially satisfy the requirements of all groups while maintaining a productive agricultural industry in the State.