5 Introducing the strategic approach

A whole system approach to land management

Pest management is much more complicated than simply reducing pest numbers. It is just one element of a complex, ecological, economic and social system that farmers and land managers operate within. Thus, pest management is best approached as part of the whole system of land management.

Pest animal management cannot be fully effective without considering other factors that influence sustainable use of the land. For a farmer these might include choosing the right type and variety of crop, level of fertiliser and marketing strategy, or the need for a better water distribution system. A high lamb marking percentage, an aim of a profitable fat lamb enterprise, might depend on ram fertility, climatic conditions, food quality, disease status of the ewes and cover for newborn lambs, as well as the level of predation by foxes. For a nature reserve manager, factors that affect the conservation of native wildlife in the reserve include the size and effectiveness of the buffer zone between the reserve and undesirable outside influences such as pests and stock, disturbance by visitors.
the fire management regime, weeds, the effectiveness of wildlife dispersal corridors, the size of the breeding populations of the animals to be conserved, as well as the effectiveness of pest control programs.

Too often, costly but inappropriate control strategies are adopted in managing both for production and conservation. 5

For effective, sustainable land management three major elements should be considered which greatly influence the approach to and effectiveness of pest animal management:

- Ecological—pest management that takes into account the relationship between organisms and their environment, specifically, the interrelationship between communities of animals and plants, soil and water resources, and other factors;
- Economic—relating to the costs and benefits of various pest management strategies;
- Social—covering a multitude of factors, from the attitude of neighbours to cooperative pest control and the attitude of individuals to pest animals (for example, 'I just want to get rid of them') to the impact of community groups through restrictions on techniques and practices due to concerns about animal welfare, as well as any political considerations.

Many individuals and groups have an interest in pest animal management. They include farmers, nature reserve managers, government agencies, banks, animal welfare and nature conservation groups. Failure to adequately consult and take into account the views of all major players when determining the best approach to pest animal management may hinder effective management of pest damage. For example, if a neighbour has little interest or is opposed to some forms of pest animal control, they are unlikely to cooperate.

An integrated planning system such as a Nature Reserve Management Plan or a Property Management Plan is a good way to analyse the interrelationship between the factors that determine the profitability of an enterprise. The Property Management Planning program is a joint initiative between the Commonwealth and State and Territory governments. It aims to assist farmers and their advisors to improve their business and natural resource management skills, including short- and long-term planning, risk assessment, and drought and pest management. Increasingly, individual farm management plans are being linked through Total Catchment Management Plans or Regional Management Plans. Advice on farm and regional management planning can be obtained from local Landcare or Total Catchment Management coordinators.
Key principles of pest management

Several key principles underpin sustainable pest animal management. Since the main aim of most pest control is to reduce pest animal damage and promote sustainable production or the conservation of biodiversity (the preservation of the natural variety of flora, fauna and habitats), it is not surprising that many of the principles are the same as those for Ecologically Sustainable Development (ESD, see below).

The main aim of ESD is to provide future generations with an environment that is at least as healthy, diverse and productive as that experienced by the present generation.

Ecologically Sustainable Development

The idea of sustainable development was crystallised in the 1987 report of the World Commission on Environment and Development, the Brundtland Report. This report defined sustainable development as that which "meets the needs of the present without compromising the ability of future generations to meet their own needs". In 1988-91 the Commonwealth, in cooperation with the States and Territories, business, farmers and the community developed an Ecologically Sustainable Development (ESD) strategy for Australia.

There are a number of principles that guide ESD. Those that are of major concern to sustainable land management and pest animal control in particular are:

- ensuring that the next generation is left with an environment that is as least as healthy and productive as that experienced by the present generation;
- protecting the diversity of our native plants and animals and maintaining the ecological process and life-support systems. An example is ensuring that our waterways are not degraded;
- taking into account the real value of environmental and natural resources. As far as possible, the price placed on natural resources should reflect the full social and environmental costs of their use. However, there is no simple formula for valuing natural resources that are not normally bought and sold. Economists have developed techniques such as Hedonic Pricing and Contingent Valuation in an attempt to value these natural assets. They are based mainly on estimates of how much people would be willing to pay to protect or improve the environment. The fear is that our natural assets will be lost or irreversibly damaged before they can be accurately valued;
- applying the precautionary principle to land management practices. This requires that risk and uncertainty are dealt with cautiously and care is taken with actions that have irreversible consequences. An example would be to err on the side of caution when considering whether to allow the import into Australia of a new animal that could become a pest.
INTRODUCING THE STRATEGIC APPROACH

Other key principles that underpin the new approach to managing pest animals include taking account of animal welfare concerns (see ‘Attitudes to animal welfare’, pages 22–24), adopting a whole system approach to management (see pages 74–75) and involving all major interest groups in dealing with the pest management issue (see Chapter 5). Three additional principles are important: beneficiary pays, the role of legislation, and the management of total grazing pressure.

Beneficiary pays

The Commonwealth, States and Territories have endorsed the principle of beneficiary pays. For land management, the trend is to ensure that the full costs of pest animal control are identified and, where appropriate, assigned to the individual or group of individuals that benefit from the pest control. Benefits are not only financial gains, but can also be non-market benefits, such as improved protection for a threatened native plant or animal.

The identification of beneficiaries and true costs of management have implications for all areas of land management, not least for conserving Australia’s natural heritage. Formal nature reserves and national parks alone will never be adequate to conserve biological diversity because many species are not represented on reserves. Several reserve systems are fragmented by other land management practices such as urban development and farming. This is especially true of the southwestern slopes of eastern Australia and the wheat belts of South and Western Australia. Protection of natural biodiversity should be an objective for non-protected areas such as agricultural and forestry land that contains important natural habitat.

Many landholders are willing to pay for some of the additional management costs involved in controlling predators such as the fox to a greater extent than is necessary to protect agricultural production. However, where the cost is likely to be significant and the landholder is not the main beneficiary (it may be the community in general), mechanisms should be developed to identify the major beneficiaries and ensure that they contribute to the management costs. For example, a grazer might control rabbits to protect the land resource base and to limit damage to production. However, to ensure successful regeneration of native vegetation, rabbits may need to be kept at much lower densities. Protection of native plants has a community benefit, and in principle, the community should contribute to the additional control costs. Ideally managers need to know how much damage a pest is causing, and the cost of controlling the damage, so that the community contribution can be determined. However, this information is rarely available (also see ‘Pest damage’, pages 52–53).

The role of legislation

Legislation and its enforcement are important components of pest animal management, especially where they apply to responsibilities such as the control of access to and appropriate use of poisons. However, legislation that directs land managers to carry out certain actions, such as rabbit control, is being replaced with legislation that assists rather than requires appropriate management action. The older form of legislation, often called the command-and-control legislation, is applied increasingly by governments only as a last resort. For example, it has been used to encourage farmers who for one reason or another refuse to undertake
pest control and cooperate with their neighbours, to meet agreed community objectives for managing pest animal damage.

The major role of legislation should be to encourage appropriate management. It should state the overall management philosophy and the resource values to be protected. The *South Australian Pastoral and Land Management Act 1989* is an example of the new approach to legislation. The Act and associated policy documents establish objectives for managing leasehold and pastoral land, and provide for negotiated property plans that aim for sustainable land management. This includes control of excessive grazing by both domestic and wild animals. As a backup, penalties can be used against those who fail to abide by property agreements to protect the land.

### Managing total grazing pressure

One of the most important elements in any grazing system is the stocking rate. Excessive grazing pressure can cause severe land degradation through loss of vegetation and subsequent soil erosion. Degradation occurs in the improved pasture lands, which are located mainly in higher rainfall areas, and the unimproved or native pastures of the rangeland, located mainly in semi-arid and arid areas. Damage due to excessive grazing can be treated more readily in improved pastures than in the rangeland, consequently, further discussion is concentrated on the rangeland.

Almost 75 per cent of Australia is rangeland, most of which is in the arid interior. The majority is controlled by pastoralists or is Aboriginal land. It has a rich assemblage of native flora and fauna including what is believed to be the world's most diverse reptile fauna. Across the rangeland, especially where it has been used for pastoralism, many native species, particularly native mammals, have become extinct or been reduced to small isolated populations. While some States and Territories have reserved significant sections of rangeland, survival of native plants and animals also depends on appropriate management of native plants and animals on privately managed rangeland.

Much of Australia's rangeland is degraded, due mainly to grazing pressure from domestic animals. Much of this damage was unintentional. Past management practices, adopted from those used for more stable systems in Europe, are now known to be unsuitable for fragile, infertile rangeland that is also subject to extended droughts and intermittent periods of high rainfall.

Continued overstocking of rangelands leads to destabilisation of natural pastures, mainly grasses in the north, and shrubs in the winter rainfall areas. Natural pastures help to stabilise the grazing system and are essential habitat for much of the rangeland's native ground animals. Grazing pastures more heavily than they can sustain, especially during drought, can cause them to be replaced with less stable annual plants, most of which are weeds.

To maintain native pastures, total grazing pressure, including that of stock, feral animals and native grazers, must be limited. Indeed, such control is essential if the three recommended primary management goals for the rangeland are to be achieved:

- protection of the vegetation base and soil resource;
- maintenance of natural biodiversity; and
- sustainable pastoral production.
The strategic approach to pest management

The strategic approach is a process of planning, action and evaluation, developed to help land managers address pest management problems. It was developed by the Bureau of Resource Sciences in cooperation with States, Territories, CSIRO and national farmer and nature conservation groups. The basic steps in the approach are:

- define the problem in terms of alleviating the damage caused by the pest (see Chapter 6, pages 81–93);
- determine the objectives of the pest management plan (Chapter 7, pages 94–95);
- identity and evaluate the management options and develop the management plan (see Chapter 7, pages 95–107);
- implement the management plan (see Chapter 8, pages 106–117), and
- monitor progress and evaluate the results against the stated objectives (see Chapter 8, pages 117–118). If necessary, return to the first step and redefine the problem.

For most management situations, best practice management will develop as the knowledge gained by experience is incorporated into the management strategy. Using the management system in this way, to refine pest management strategies is called adaptive management or ‘learning by doing’. Land managers learn from their past successes and mistakes, and those of others in similar situations, and combine them with research findings and technical information to continually improve management and care for their land in a more sustainable and cost-effective way.
The five-step strategic approach to pest management (adapted from Buyskes).