Introduced Animals Fact Sheet

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Introduction

The word "feral" is incorrectly used. In fact, "feral" simply means wild. It therefore accurately refers to native as well as non-native animals. However, it also has overtones of "savage" and "brutal". "Pest", "noxious" and "vermin" are similarly emotionally loaded words which have no place in a sound and scientific discussion of these issues.

"Invasive" is also frequently misused. It refers to a capacity, shared by all species, including species in their native habitats, to, in certain circumstances, take over niches from other species. The circumstances which can cause a species to become invasive may result from introducing it to a foreign environment, or they may equally result from simply changing an environment in ways which favour one species at the expense of other species. For example, as land is cleared (bulldozed) for housing all along the Eastern coast of Australia, native and non-native former inhabitants of bushland either die or move (invade) into surrounding habitat and cause overcrowding for the resources available.

The use of the word "invasive" to describe a species, as though invasiveness were an attribute of the animal or the plant, rather than a consequence of altering an environment, is therefore misleading and unscientific.

A variety of methods are used to kill these animals, including traps, poisons, gassing, shooting and intentional infection with disease. All these methods may inflict extreme suffering on the target animals (and sometimes also on non-target animals). Despite this, since most of these animals are prolific breeders, the above methods achieve at best a very temporary reduction in the population. Sudden large-scale reductions in the populations of these species sometimes even lead to a substantially increased population within a very short period (weeks or months), because the extra food available to the survivors enables more prolific breeding and survival of offspring.

The Agricultural Issue

In Australia, because of geographical, ecological and climatic factors, agriculture has been particularly destructive. Human competition with other animals using this fragile landscape has been extremely fierce. Rabbits in particular, along with native animals such as kangaroos, ducks and parrots, have been routinely subjected to killing on a massive scale.

Control Methods — Lethal

Poison baits

Poison baits are routinely used by governments and farmers to kill introduced wild animals. 1080 poison and Warfarin are the most commonly used poisons. Some Australian Governments are funding research into less painful toxins (see theInvasive Animals Cooperative Research Centre). Governments acknowledge that some toxins cause suffering but continue to recommend their use for economic and political reasons i.e. they are unwilling to deny 'farmers' these products.

1080 poison (sodium monofluoroacetate) is used in baits for most introduced wild animals.

- This poison causes a range of symptoms including: anxiety, salivation, nausea, vomiting, incontinence, twitching, auditory hallucinations, organ congestion, renal tube degeneration, respiratory problems, spinal pressure, citrate accumulation in the tissues, convulsions, coma, and eventually death. Animals poisoned with 1080 may take several hours or longer to die.

- Because of the presence of small quantities of the poison found in some Western Australian vegetation, some Western Australian native animals have a slightly higher tolerance for the poison than introduced and other native animals. However, 1080 will kill any animal if delivered in high enough doses.

- 1080 has been banned for use against mammals in the United States.
  Warfarin is routinely used to kill wild pigs and rodents. Warfarin may cause massive haemorrhage into body cavities or, if into the brain resulting in sudden death before or soon after the appearance of initial signs. Animals that receive smaller (but still lethal) doses may take around 10 to 14 days to die after the initial dose. These animals may show signs of depression/lethargy and anorexia followed by manifestations of haemorrhage including anaemia, laboured breathing, pale mucous membranes and weakness. Bleeding may be visible around the nose, mouth, eyes and anus and animals may pass bloody faeces and urine. In pigs, bleeding into weight-bearing joints is common. The resulting swollen, tender joints cause lameness, recumbency and reluctance to move, which prevents the animal from accessing its normal feeding grounds. The discomfort and pain from haemorrhages in internal organs, muscles and joints can typically last for several days before death.

Yellow phosphorus, a compound that burns the animals' gastrointestinal track, is also used on pigs.

Most Australian animal welfare and prevention of cruelty to animals legislation also allows the use of other poisons on private property, in accordance with local poisons law, where the animals are legally defined as "pests' or "vermin".

Fumigants
Fumigants are often used to kill animals which use dens, in particular rabbits and foxes. Burrow entrances are sealed and the fumigant pumped or diffused throughout the burrow. Native wildlife such as small mammals, goannas, and other reptiles which use burrows for shelter are also at risk from fumigation. **Chloropicrin**is an extremely painful fumigant used for rabbits. It is a strong sensory irritant which causes profuse watering of the eyes and nasal passage and intense irritation of the respiratory tract. Death is by respiratory failure. Other toxins frequently used are **carbon monoxide**, **carbon dioxide**, **cyanide** compounds and **phosphine**.

Carbon dioxide appears to be the only fumigant which, if used in the prescribed manner, does not cause extreme pain and distress to the target animal.

Trapping
The **steel jaw trap**, which snaps on a target animal and crushes and holds a limb, is still lawful in Western Australia, Queensland, the Northern Territory and some parts of Victoria and South Australia. In other jurisdictions, a range of other traps which seize and hold the animal's leg, some designed to tighten like a noose as the animal struggles, are permitted. Increasingly the steel jawed traps in use are 'modified' to provide a 'padded' surface to reduce the tissue damage to the animal. Regardless, any trap is inhumane, causing the animal terror while it is trapped and, if the trap is not regularly checked, death from starvation, dehydration or attack by predators.

Shooting
Head shooting of animals, causing instant death, is generally agreed to be the least inhumane method of killing a wild animal. Shooting is the method currently favoured by governments and farmers for larger animals such as goats, horses and other "livestock" animals.

Very few people engaged to shoot introduced wild animals are sufficiently expert marksmen to be able to kill every animal they target without either fatally or non-fatally wounding some of their victims. The routine mass shootings of native competitor animals (eg ducks and kangaroos), which have received considerable exposure over recent years, demonstrate the scale of suffering that can occur through panic and high wounding rates when animals are subjected to mass shooting.

Shooting from trucks and helicopters is particularly likely to result in high wounding rates, because it involves shooting a moving target from a moving platform.
Instant death of all animals shot may be accomplished in the case of animals such as horses and goats, if the animals are mustered prior to shooting. However, there are other animal welfare concerns arising from the panic and stress caused by the mustering process, transportation, yarding etc.

Introduced disease
Myxomatosis was deliberately released into the Australian rabbit population in 1950. Originally transmitted by fleas, Australian myxomatosis is also spread by mosquitoes. The flu-like symptoms may cause blindness, painful lesions and a lingering death which can take up to three weeks.

Now endemic and attenuated in the Australian rabbit population, severe outbreaks of the disease still occur spontaneously from time to time, but a general level of immunity has developed in the population, partly as a result of natural selection for naturally immune rabbits and partly as a result of exposure to mild, attenuated strains.

Australian rabbit populations, like those of other fast-breeding animals, quickly recover from decimation by disease and other methods of mass slaughter, rapidly breeding back to levels which are consistent with the availability of feed and habitat.

Rabbit Haemorrhagic Virus Disease (renamed in Australia Rabbit Calicivirus Disease or RCD) first appeared in China in the mid 1980s, as a virulent new killer of rabbits. It was believed to have recently jumped from some other species to the rabbit (as do other Caliciviruses). Since then there have been outbreaks of the disease in Europe and America where quarantine restrictions are in place to prevent its spread.

The disease kills more quickly than myxomatosis – infection leads to acute clinical disease in 1-3 days and rabbits die 6-12 hours after the onset of the disease.

Vets who have treated the disease in domestic rabbits believe it to be painful, and report rabbits screaming in their last minutes of life. Symptoms include convulsions and loss of muscle coordination as well as an increased body temperature and respiratory rate.

Imported into Australia for the purposes of laboratory testing on a "safe" off-shore island as a new method of controlling rabbits here, the disease escaped into the mainland wild rabbit population in 1995. Although many international Calicivirus experts were convinced the disease was not species specific and, despite evidence that it caused an immune reaction in a number of non-target species, the Australian Government officially released the disease in 1996 in order to maximise the impact of the accidental release on the Australian rabbit population. One laboratory study has now confirmed that the disease is not species specific, showing that pigs are susceptible to the disease.

While it is believed to have killed millions of rabbits, RCD has been no more successful in permanently reducing the rabbit population than myxomatosis. Dead rabbits leave empty rabbit niches. New rabbits fill those niches and remain there until the next attempt to wipe them out. They are then, once again, replaced by new rabbits.

Control Methods — Non Lethal

Harbour destruction

Ripping out empty warrens and burrows of rabbits can be humane only if conducted while there are no rabbits or other animals present. It can delay re-establishment of a population after a natural decline or a slaughter. However, if feed, water and suitable habitat remain available, a new generation of rabbits will eventually dig new burrows and warrens. This is a temporary measure at best.

Natural and unnatural barriers

Australia was once protected from the new species of animals that were evolving elsewhere on the planet because it was an island. Similarly, on a smaller scale, artificial barriers such as fencing can provide protection for vulnerable native species from the impacts of introduced predators and competitors.

Providing such areas has proven a successful technique for assisting vulnerable species to build up their numbers. However, there is a risk that areas protected by such fencing could become merely zoos. They may protect the vulnerable population from introduced predators and competitors, but they will also protect them from native predators and competitors, and other natural processes.

The most effective way of protecting farm animals and companion animals from the impacts of naturalised species is to provide them with effective housing and/or fencing. Most introduced predators hunt at night so keeping prey animals effectively housed at night would prevent most losses.

Fertility control

Immunocontraception:Substantial research has been conducted to develop immunocontraceptive vaccines for several introduced wild animal species, particularly foxes, rabbits and mice. Immunocontraception works on the principle of attaching an encoded

antigen from a sperm, egg or reproductive tract to a non-lethal virus and challenging the female with the modified virus. This tricks the female animal's immune system into reacting as if the male's sperm were the invading virus, and destroying it.

Aside from the animal welfare concerns of developing immunocontraception using animals in a laboratory, the principal concern with this method of control is that it involves releasing modified live pathogens into the environment. Many virologists believe that, even with pathogens which research has, to date, shown to be totally species specific, viruses are too volatile to trust. Although research into immunocontraception for rabbits has been under way for many years, it appears unlikely to be available for use on wild rabbits or other animals for some years to come.

Chemical fertility control, using food baits containing fertility suppressants rather than lethal toxins, has received relatively little attention to date. No suitable chemical fertility suppressant which can be delivered orally is currently available. Chemicals which render animals permanently sterile tend to do other painful and sometimes lethal damage. Cytotoxins are considered to have potential if they can be successfully targeted to specific cells yet safe for other body tissues. Fertility suppressant drugs such as steroid hormones, progestins and androgens are being studied as a method of temporary oral fertility suppression. However, delivery of appropriate, on-going and species-specific doses to wild animal populations would present a serious logistical challenge.

Surgical fertility control (ie capturing and sterilising free-living animals, then returning them to their environment) has been used very successfully in Australia and elsewhere for free-living cats and also for kangaroos. Because it involves the deliberate selection of individuals for sterilisation and can be accompanied by other veterinary procedures such as vaccination, treatment for illness and parasite control, it can be used not only to completely eliminate a population over time, if that is the objective, but, alternatively, to maintain a population at a desired level. It is an ideal form of control for relatively small and isolated populations, particularly of larger animals.

Despite its humaneness and potential effectiveness, surgical fertility control is not used at all in Australia for naturalised animals (except for free-living urban cats which cannot be regarded as wild) because of the expense involved.

Restoring and preserving native habitat

Given that where the natural Australian environment remains intact, introduced animals are either unable to naturalise or, where they do so, appear to have minimal invasive impact on the resident ecosystem, the obvious way to be rid of naturalised animal populations and of their impacts, such as they are, is to gradually restore as much as possible of the landscape to native habitat.

Other management practices

A range of other management practices can be used to protect farm and companion animals from the impacts naturalised animals. Rubbish attracts animals like rats, mice and pigeons

providing food, nesting sites and nesting materials. These animals can be easily discouraged by simply keeping a place clear of rubbish.

Decoy crops and netting can be used to protect crops. Sonic and smell deterrents can be used to discourage some animals from approaching a property, while alpacas and dogs may be engaged to protect sheep and other herd animals from predators.

Reduction of access to water points can also help reduce the populations of animals such as camels, goats, horses, etc.

Where nesting sites for birds are known, egg removal could be the simplest and most effective method of controlling population. This approach has had unprecedented success in controlling pigeon populations. It is even more effective if birds are encouraged to nest in sites that are readily accessible.

Effectiveness of control measures

Despite the armoury of lethal control techniques used against naturalised animals, there is very little monitoring of the effectiveness of lethal control, either in reducing populations, or in terms of the stated objectives of protecting the environment.
This is not surprising, given that lethal control is inherently unlikely to achieve either of these objectives.

Why is lethal control inneffective?

Established animal species maintain stable populations, based on available niches, subject to fluctuations in food supply and other extreme events. The majority of wild born young animals of all species die without reaching maturity, usually taken by predators, or starved out by competition with more successful members of the population.

Most naturalised animals are rapid and prolific breeders, so that the recovery of their populations following control action is likely to be particularly rapid. For example, six months after a mass slaughter of pigeons, pigeon numbers are likely to be 15% higher than they were prior to the slaughter because pigeons can breed up to six times more young when food is plentiful than when it is scarce.

What this means for animal control programs is that killing animals as a way of controlling them is essentially futile. Unless it is possible to reach every individual—and in mainland Australia and Tasmania, most governments have resigned themselves to the conclusion that this will never happen—a fast breeding species will quickly breed up to refill all the niches that lethal control has emptied.

Additionally, killing animals actively strengthens the population over time. It selects for individuals who are clever or fast or strong enough to thwart efforts to kill them. These individuals pass those faster, smarter, stronger genes (as well as their experiential knowledge) on to their offspring.

Further Reading

- The Great Feral Cat Con Job: The Ungentle Art of Scapegoating and Scaremongering *by Frankie Seymore*
- Cats - An Annotated Bibliography *by Frankie Seymore*