

THREATS

The Fox in Tasmania

A threat to stock and wildlife alike



Parks and Wildlife Service Tasmania

DEPARTMENT of PRIMARY INDUSTRIES,
WATER and ENVIRONMENT

The European red fox (*Vulpes vulpes*) has a distribution across the continents of Europe, Asia and North America. In the southern hemisphere, the species occurs only in Australia, where it was introduced by English settlers in Victoria in the 1850s for hunting.

The fox was reported in NSW by 1893, in South Australia by 1901, in Queensland by 1907 and in Western Australia by 1912. Within 30 years of its release in southern Victoria, it was given the status of "agricultural pest" and has since inflicted enormous impacts on the native wildlife of Australia, being implicated in the extinction of many native animals.

Indeed, Australia's appalling record of mammal extinctions in the last 200 years - the worst in the world - is in no small part due to the fox.

Following sightings, shootings of foxes and confirmed footprints in Tasmania during 2001, it became clear that the fox had been illegally brought into the State. It is imperative that foxes be eradicated from Tasmania if the State is to retain its unique advantage as a refuge for many species of wildlife which have been lost on mainland Australia, if wildlife tourism is to develop and if the Tasmanian agricultural industry is to not suffer heavy economic impacts.

The History of the Fox in Tasmania

Early information

Unlike the rest of Australia, foxes never established here in Tasmania so we still have many of our unique marsupials. There has been a scattered history of foxes in Tasmania. In 1864 one was imported specifically for a fox hunt and was killed at Oatlands. Two foxes were imported into Hobart in 1890 -

fortunately both were destroyed. In 1972 a young female was trapped near Launceston. The source of this animal is unknown, although there are some indications it may have been a "pet".

In recent decades there have been many reports of fox sightings in Tasmania. Some have been credible, but many can be attributed to feral cats, dogs, hares or even large brushtail possums.

The Burnie Fox

In 1998 a fox escaped from a container ship in Burnie.

Rangers and experienced fox hunters used fox whistles, spotlighting and traps in an attempt to capture this fox. No trace of it has since been found except for footprints on a nearby beach, proving how elusive the species can be.



The Longford foxes

Two foxes were shot in the Longford/Symmons Plains area in 2001. The first was shot in the Woodstock area by local hunters but only the skin was ever handed in. Then in September 2001 another fox was shot in the Symmons Plains area. During this period reports of sightings and possible signs of foxes such as dead chickens were also reported. Other 'hotspots' of evidence became apparent.

Both foxes were males and DNA analysis showed they were closely related. The carcass enabled further research. This was a male about 14 months old which had been feeding in Tasmania on local native species (including a mouse only found in Tasmania). Chillingly, the threat of foxes in Tasmania was suddenly very real.

The Threat to Tasmania's Wildlife

The fox is recognised nationally as the single most devastating introduced pest and threat to Australia's native land animals. It has been listed as a National Threat on the *Commonwealth Endangered Species Protection Act 1992*.

24 hour FOX HOTLINE – 1300 FOX OUT or 1300 369 688

Australia's wildlife has not evolved in the presence of foxes, and therefore lacks adequate adaptations to cope with the predatory prowess of the fox. In Victoria, for example, the fox has established itself in all terrestrial environments from inner urban areas to alpine heaths, rainforests to coastal heaths and mallee. It is known to have caused the extinction of six mammals and is currently causing the near extinction of many others.

Tasmania, in stark contrast to all other States and Territories has lost only one species of mammal since white settlement - the Thylacine (Tasmanian Tiger). Tasmania is the final refuge for a long, sad list of species that have recently succumbed on the mainland, such as the eastern quoll, bettong and pademelon. Other species, such as the barred bandicoot, occur in high numbers in Tasmania, but are on the verge of extinction on the mainland largely due to the fox.

This island State is recognised as a national and international fauna haven, largely due to the lack of dingoes and foxes. However, should the fox become established here 78 native vertebrate species would be at risk. Of these, 34 species have locally restricted ranges, 16 are suspected to be already declining in distribution and 12 species are threatened according to Commonwealth or State threatened species legislation. Invertebrate species are also at risk.

The Tasmanian pademelon and Tasmanian bettong, both of which thrive in Tasmania, are now extinct on the mainland because of the fox. The mainland eastern barred bandicoot continues to be unable to survive because of the fox. The young of unique species such as the Tasmanian devil, spotted tail quoll that are left unattended in dens are highly vulnerable to fox predation. Moreover, many of these and other species would also suffer intense competition from foxes.

More widespread species like ducks, shorebirds, ground nesting birds, blue tongue lizards, mountain dragons, skinks and frogs are all highly at risk. Even animals such as the little penguin and platypus are at risk.

The Threat to Tasmania's Agricultural Industry

The fox has an enormous impact on agriculture. Foxes kill at least 10% of lambs Australia-wide. In some areas of Victoria it is estimated that up to 30% of lambs are killed by foxes every year. The conservative estimate of income lost due to fox predation on lambs is 40 million dollars per year. Add to this the money private land managers and state

governments spend on direct fox control, and the overall conservative cost of foxes on the lamb industry alone on mainland Australia is many millions of dollars per year. Some agencies estimate this figure to be as high as 249 million dollars per year.

Other livestock on the menu of foxes includes chooks, ducks, geese, goats and fawns. In some rare cases, foxes have been known to eat the tongues out of calves while they are being born, resulting in the death of the calf because it cannot suckle milk.

Foxes can also carry diseases which impact upon both native wildlife and domestic stock. They are known carriers of distemper, parvovirus, canine hepatitis, heart worm, hydatids, (Tasmania at present is hydatid free) and sarcoptic mange.

In Europe, the fox is the main carrier of rabies. Should rabies ever be introduced into Australia, foxes would likely be the main agent of its spread.

The Threat to Tourism

Nature-based and ecotourism is burgeoning in Tasmania as tour operators and visitors to the State alike come to realise the unique natural advantage that Tasmania has to offer. Visitation statistics collated by Tourism Tasmania show that visiting natural places such as the States' National Parks and engaging in outdoor recreation is a major component of visitor's activities. Wildlife tourism, too, is growing strongly - largely on account of the intact, abundant and easily viewed native fauna within the State.

The fox poses a threat to this fauna, and therefore to the growing reputation of Tasmania as a wildlife haven, and the continued growth of the ecotourism industry.

About the fox

Breeding

Foxes are reproductively receptive once per year (seasonally mono-estrous) and are stimulated to breed by changing day-length and resource availability. Gestation is 51 to 53 days with most cubs being born between August and September. Mean litter size is 4 with up to 10 being possible in areas with abundant food. Cubs are weaned by about one month and are sexually mature by 10 months.

Home range and activity cycle

Foxes usually have well defined home ranges with spatially stable borders. Ranges vary in size depending on habitat and have been recorded at around 30 ha in urban areas and up to 1,600 ha in arctic environments. In general, foxes are active from

dusk to dawn and rarely travel more than 10 km per day within their home range. Dispersal is common in sub-adult males.

In Victoria, foxes generally pair up in early winter and mate in mid to late winter. They usually hide in shelters during the day and evening. Foxes around the Port of Melbourne (Victoria dock area) shelter in thick weeds such as blackberries and remain totally quiet until after midnight. Their activity increases gradually after midnight to reach a peak in activity from 1 am to 3 am. Data on these urban foxes suggest that first and second year animals do not generally disperse further than 1 to 2 km from their area of birth.

Population

The population estimate of the fox in Victoria is 1 to 2 million (widespread) and in NSW is 3 to 6 million (widespread), with a common density of 4 to 8 animals per square kilometre. There may be up to 30 million foxes within Australia.

Tasmania, with its abundant wildlife and vegetation cover, has the potential to harbour 300 000 - 400 000 foxes – several times the number of feral cats!

Prey, Predators and Competition

A single fox is estimated to eat about 400 gm of food each night (equivalent to one bandicoot). One million foxes potentially eat 400 tonnes of food per night or 146,000 tonnes of food per year. In some cases this has been estimated to consist of one third native species, one third domestic stock, and one third feral pests such as rabbits, mice and rats.

The fox on mainland Australia has few natural predators except for humans, dingos and eagles. Tasmania, however, has a range of native carnivores (e.g. Tasmanian devil) which could potentially predate fox cubs. Mortality is thought to be due to seasonal factors such as drought, mange and distemper.

Due to their wide diet, foxes compete with many animals, most obviously carnivores such as Tasmania devils, quolls, raptors, ravens and so on. Maintaining healthy populations of these animals can help defend against foxes.

Returning Tasmania to it's Fox Free Status

Following the many sightings and reports, the discovery of two fox carcasses, and the confirmed finding of footprints and a fox scat (dropping), the Tasmanian Government established a Fox-Free Task Force to eradicate the fox from the State before it became established. Complete eradication is the only alternative, for Tasmania can only be either fox-free

or fox full.

The task force's extensive spotlight surveys and searches for footprints, scats (droppings) and den sites confirms that there are few foxes in the State.

The fox has never before been successfully eradicated from a large area once it has become established. In the case of Tasmania, there is a unique opportunity to prevent the fox becoming established because its numbers are low. It is imperative that this opportunity be seized.

A range of methods to eradicate the fox are underway and others are being trialled:

Shooting

Shooting foxes is target specific and can result in a carcass which is proof of success; therefore, shooting is an option for high activity, or fox hotspot areas within Tasmania. However shooting in areas where there are low numbers of foxes is labour intensive, and often unfruitful. It is important to remember that if you spotlight a fox, do not fire unless you are sure that your shot will succeed – foxes are famous for becoming gun-shy.

Shooting can be by spotlight at night, taking advantage of the foxes' extremely bright, golden eyeshine, or during the day by stalking and calling using fox whistles or using dogs.

Hunting with dogs, or dogging as it is commonly known, is a good method to use when the location of a fox can be pinpointed to one area, for example a crop paddock or a patch of blackberries. Dogs are used to flush the fox so that shooters can get a clear shot. Using dogs in some areas can scatter foxes, so it is important that dogging is employed with caution.

Shooting is usually the most successful in areas where foxes occur in high numbers such as on the mainland. If we are lucky enough to shoot any foxes in Tasmania this is a great bonus as they are in such low numbers here that we have a good chance of disrupting their breeding success, even if only a few foxes are killed.

Luring

Accurately locating foxes when they are at low densities is hard. Using a lure fox involves desexing and inducing oestrus (bringing 'into heat') a female fox. Female foxes that are in heat are attracted to, and act as a magnet for, male foxes. The lure fox would either be radio-collared, allowing her to be traced as she searched for males, or she would be placed in a cage with one-way doors leading to her. The lure method has not been used for foxes before, so its ability to succeed is unknown. The practice is currently being trialled in Victoria.

Den fumigation

Den fumigation involves locating dens occupied by foxes and then gassing the den with carbon monoxide. It is particularly useful in early spring when vixens and young fox cubs are restricted to their den. It poses some risk to non-target species as other species use similar places. Also, fox dens can be difficult to locate, even in areas on the mainland where there are high fox densities.

Use of M44 poison ejectors

M44 ejectors require the animal to place its nose inside a tube and pull at a bait which initiates a spring to inject a poison capsule into the mouth. The trigger mechanisms have been designed to be too strong for most quolls to release. To stop devils from getting the bait, the vessel is being designed to exclude the thicker shape of a devil's snout whilst still allowing access to the fine-nosed fox. This method is still under development in Victoria.

Fertility Control

Much research is being carried out to develop an Australia-wide method of fertility control of foxes. This method, however, will not be available for many years.

Poison baiting

Poison baiting involves placing meat baits poisoned with 1080 in certain areas. Of all of the eradication options, it is the least labour intensive, allowing large areas to be covered at a time. Poison baiting involves foxes finding baits, not people trying to find foxes. If done properly, 1080 fox baiting can reduce fox populations by 50-90%.

1080 - Targeting the right animals

It's vital that 1080 fox baiting methods are designed to target foxes rather than other native animals. These methods aim to be dangerous for foxes but safe for wildlife and people.

How fox baiting differs from 1080 baits currently used in Tasmania

Currently 1080 is sometimes used by land managers to control herbivores such as rabbits, wallabies and possums. Carrots poisoned with 1080 are used as baits. A dried meat bait containing 1080 is used to poison foxes. It is unattractive to herbivores. However

meat eaters such as marsupial carnivores (quolls and devils) and dogs may be attracted to fox baits too. So it is vital that we use and place baits in such a way as to exclude non-target species wherever possible. Dog owners must also be given plenty of warning prior to baiting operations so that their pets can be properly controlled.

Baits must be available for foxes

At present, foxes are in low densities compared to devils, quolls and dogs. If these non target animals can access the bait then the bait will be unavailable for foxes making the whole baiting process pointless.

Baiting trials using non-lethal baits have revealed a number of means of limiting the impact on non-target species. Baits are buried at 15cm. Foxes habitually cache food and will dig for the baits, while devils and quolls are unlikely to dig to this depth.

Potency of fox baits

Fox baits are being developed for Tasmania's unique conditions. Baits are being designed which will be toxic to foxes but less toxic for native marsupial carnivores. One bait will kill a fox but devils would need to take many baits before they would be poisoned.

Muzzling dogs

Mainland dog owners use muzzles on their dogs in fox baited areas, and this practice is being recommended in fox baiting areas in Tasmania. Muzzles are readily available and are comfortable for dogs to wear. The Fox-Free Taskforce has muzzles available for loan to landowners in baited areas.

Report All Fox Sightings

All fox sightings or any should be reported immediately to the Fox hotline

Further information

Up to date information on the fox in Tasmania and the eradication effort is available at www.parks.tas.gov.au

See also our notesheet on Working Together for a Fox Free Tasmania

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FOR FURTHER INFORMATION CONTACT:

Head Office: 134 Macquarie Street Hobart TAS 7000
Phone: (03) 1300 368 550
Internet: www.parks.tas.gov.au
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