# Dangerous Dichotomies: native good, exotic bad


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ABSTRACT

Humans think in dichotomies, and one of the most potent of these in conservation is 'native' versus 'exotic', whereby native species are considered good and exotic species bad. This dichotomy is generally useful but leads to some confused thinking. Dingoes are often claimed to be native dogs when they should be considered exotic. Many native animals, including threatened species, are growing dependent upon exotic plants and animals, and this dependency calls into question the presumption that exotic means 'bad'. Conversely, many native species behave at times as pests. The native-good, exotic-bad dichotomy is under attack from many people who do not want to see exotic pests controlled. Biologists should be thinking more about these issues.



Key words: Invasion biology, Exotic, Introduced, Pest, Native, Dingo, *Canis lupus dingo,* Permaculture


## Introduction

Humans seem to be hard-wired to think in dichotomies: Yes and no, good and bad, right and wrong, up and down. In conservation thinking, one of the most potent dichotomies is 'native' versus 'exotic'. Australians, for the most part, are very fond of their native fauna and hostile towards feral animals. You can reverse someone's opinions about a colourful plant in a forest by telling them it is an introduced weed rather than a native wild flower.

The native-exotic dichotomy is very useful when concerns need to be raised about some new foreign organism. 'Exotic' becomes a code for 'unwanted, undesirable, harmful'. But like all dichotomies, this one has its limitations, resulting at times in distorted thinking. Examples of these are discussed below, followed by suggestions for their resolution. My concerns apply to these words as they are used in the popular media, for example in nature magazines and documentaries. Greater rigour usually prevails in the scientific literature.

The native-exotic dichotomy is coming under growing attack from some writers and community groups who want exotic species in the landscape, even when environmental harm is caused. Their influence is discussed.

## Discussion

The Dingo *Canis lupus dingo* is an example of an animal that inspires confused thinking. Dingoes meet the definition of an introduced species, being a breed of dog introduced into Australia by humans (Corbett 1995; Daniels and Corbett 2003). But Dingoes are often called 'native dogs', and within national parks they are treated differently from other introduced species by receiving legal protection. Many people argue that the Dingo, because it has resided in Australia for thousands of years, is now a native species.

This conclusion is problematical because it implies that all introduced species will become native when enough time elapses. 'Exotic' becomes a transitional category leading to 'native'. The rationale for controlling foxes and other pests is weakened by this logic, because all pests are destined to become part of our native fauna in future.

Corbett (1995-6), in arguing that Dingoes should be defined as native, even proposed a definition that does away with any requirement to wait:

"… feral cats and foxes have caused extinctions and modified environments, and will probably be in Australia forever; so, in that sense, they can also be considered Australian animals.

So what constitutes a native animal? It is simply one that lives in Australia and has ecological and/or cultural impact, regardless of taxa, birth site…etc. Accordingly, the Dingo most certainly is a native Australian."

This definition is unworkable because it destroys any meaning for the words 'native' and 'exotic' (Low 1999); they become the same thing.

Distorted thinking like this has emerged because Dingoes are now thoroughly integrated into Australian ecosystems, playing a valued ecological role by controlling numbers of macropods (Daniels and Corbett 2003), which can otherwise overgraze vegetation (Cheal 1986). In natural habitats the dingo is not usually 'unwanted, undesirable' and 'harmful'. But if the word 'exotic' lost its negative connotations it could be applied to the Dingo without causing distress.

Australia does have one category of introduced organism to which the negative connotations are seldom applied – the biological control agent. Most bio-control agents are viewed very favourably. The Cactoblastis Moth *Cactoblastis cactorum* that quelled invasions of Prickly Pear *Opuntia stricta* is certainly not considered 'unwanted, undesirable' and 'harmful', and the words 'exotic' and 'introduced' are rarely applied to bio-control agents. They provide a strong precedent for viewing introduced species favourably (except for those that misbehave, as the Cane Toad *Bufo marinus* did).


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That said, Dingoes do cause environmental harm in certain situations. The Queensland government recently spent $400 000 erecting a fence to protect the endangered Northern Hairy-nosed Wombat *Lasiorhinus krefftii* from Dingo attacks (Torr 2004).

This question of how to perceive exotic invaders is growing more important because examples keep emerging of introduced weeds providing vital foods or habitat for native fauna. I document many examples in the *The New Nature* (Low 2002). In particular, shrubby weeds such as Gorse *Ulex europaeus* and Lantana *Lantana camara* provide cover for animals, including threatened Eastern Barred Bandicoots *Perameles gunnii*; and exotic fruits and seeds feed animals such as the endangered Southern Cassowary *Casuarius casuarius* and Norfolk Island Green Parrot *Cyanoramphus cookii*.

As more bushcare groups become active, community concerns are growing about native animals suddenly losing their food or shelter as weeds are removed. This problem can usually be avoided by removing weeds and providing native replacements in stages, to ensure that some food and cover remain available throughout the regeneration process. But native alternatives do not always provide the same ecological value. The prickly protection afforded against Red Foxes *Vulpes vulpes* by Blackberries *Rubus fruticosus*, Lantana and Gorse is matched by few native plants. To hide from a foreign predator, a foreign weed may sometimes be best.

Today it is difficult to find a parrot species that does not use exotic foods, and in Western Australia bio-control programs against two weeds - Doublegee *Emex australis* and Guildford Grass *Romulea rosea* - have been slowed by concerns about their value as foods for rare parrots (Low 2002). In the case of Doublegee, bio-control only proceeded after a study concluded that rare Red-tailed Black Cockatoos *Calyptorhynchus banksii* would not suffer significantly (Scott *et al.* 2000). Bio-control programs often stall when proposed bio-control agents are found to attack non-target plants or insects, and in future, programs may also stall if endangered animals are found to be using the weed as food or shelter.

As another kind of example, exotic mammals, especially House Mice *Mus musculus*, Black Rats *Rattus rattus* and Rabbits *Oryctolagus cuniculus* are nowadays important food for birds of prey. House Mice make up as much as 97 per cent of the diet of some Barn Owl *Tyto alba* populations (Morton and Martin 1979). A study around Mildura found that young Rabbits were the staple food (60-92 per cent by weight) of eight raptor species, including Wedge-tailed Eagles *Aquila audax*, goshawks, harriers, kites and falcons (Baker-Gabb 1984). When Rabbit Haemorrhagic Disease (Calicivirus) escaped into the environment, concerns were expressed for native raptors (Edwards *et al.* 2002).

The trend towards native animals becoming reliant upon introduced plants and animals can only continue in the future. We will see more and more examples of threatened species becoming dependent upon introduced species, leading to more difficult decisions to be made about control. A thousand years from now, such situations may be the norm rather than the exception.

But just as exotic species can do 'good' by assisting native wildlife, so too can native species behave 'badly' by threatening native species (Low 2002). In the *Action Plan for Australian Birds* Garnett & Crowley (2000) document 19 native birds that pose, or are thought to pose, a threat to declining native bird species. The birds under a cloud include Pied Butcherbirds *Cracticus nigrogularis*, which attack endangered Golden-shouldered Parrots *Psephotus chrysopterygius*, Pied Currawongs *Strepera graculina* and Australian Ravens *Corvus coronoides*, which prey on Gould's Petrels *Pterodroma leucoptera*, and Bell Miners *Manorina melanophrys* which displace endangered Helmeted Honeyeaters *Lichenostomus melanops cassidix*. Australian animals that are culled in the name of conservation include the Eastern Grey Kangaroo *Macropus giganteus*, Masked Owl *Tyto novaehollandiae*, Silver Gull *Larus novaehollandiae*, and Crimson Rosella *Platycercus elegans*.

Native plants can also cause problems by invading diverse habitats and forming mono-cultures, and they too are sometimes controlled, usually by manipulating fire regimes or by poisoning trees. Sweet Pittosporum *Pittosporum undulatum* around Sydney and Burgan *Kunzea ericoides* near Canberra are examples of woody plants that form undesirable mono-cultures under changing land management. These and other examples are documented in Low (2002).

In many conservation situations it is thus unhelpful to equate native with good and exotic with bad. In management situations a case by case approach is required, with management decisions made on a site by site basis. Most of the time, native species should be encouraged and exotic species controlled, but in special situations the reverse may apply. As humans continue to modify the landscape and species respond in different ways, the number of special situations will keep rising. The public will need to understand why, under some circumstances, weeds are retained and native animals culled in the name of conservation.

The message should not be too simplistic. Howell (2003) documented a situation where a landholder, having been told that Sweet Pittosporum is an environmental weed, destroyed the understorey of an Endangered Ecological Community, Sydney Turpentine Ironbark Forest.

There is another important reason why biologists should consider these issues carefully. Around the world, criticisms are growing of biologists and conservationists who promote the native-good, exotic-bad dichotomy. A proclaimed conservationist, Theodoropoulos (2003), has written a whole book attacking the notion that native and exotic equate with good and harmful respectively (reviewed critically by Daehler 2004). He compares the dislike of exotic species with racism, xenophobia and fascism, and claims that "to love only what we call 'native' is to be incomplete". American biologists James Brown and Dov Sax have recently cautioned colleagues against imposing value judgements when invasions by exotic

species are considered (Brown and Sax 2004, 2005). "The position that exotic species are inherently 'bad' and should be eradicated is an ethical judgment, usually based on the naturalist fallacy or xenophobic prejudice; it is not a scientific judgment", they claim (Brown and Sax 2005), in a rebuke to Cassey *et al.* (2005), who criticised their original paper. Many Californians hold strong emotional attachments to weedy eucalypts *Eucalyptus* species, and oppose attempts to remove them, despite the fire risk they often pose (Theodoropoulos 2003). In Florida, community groups also oppose the removal of exotic Coast Sheoaks *Casuarina equisetifolia*, although they are major weeds (Low 1999). In Italy, an attempt to eradicate a small colony of American Grey Squirrels *Sciurus caroliniensis* was blocked by an animal rights group that took legal action (Bertolinoa and Genovesi 2003). Grey Squirrels have displaced the indigenous Red Squirrel *Sciurus vulgaris* in Britain, and displacement is now underway on the European continent.

In Australia, permaculture founder David Holmgren has stridently attacked what he calls the 'nativist ideology' (www.holmgren.com.au). In New South Wales, culls of feral Horses *Equus caballus* from national parks have been fiercely opposed. The *Australian* magazine ran a cover story with the subtitle 'Is the brumby a pest or a poetic symbol of our national character' (Carruthers 2000). From time to time there are also calls to conserve feral Goats *Capra hircus*, deer, Swamp Buffalo *Bubalis bubalis*, and feral Banteng *Bos javanicus*, in situations where they are causing environmental harm. Animal welfare groups oppose the demonisation of feral animals, and they have called for the word 'mislocated' to be used in place of 'feral' because it lacks a negative connotation (Oogjes 1999).

The work of David Holmgren in particular should concern conservation biologists, because the permaculture movement he helped found has proved very influential. Many permaculturists accept the Gaia hypothesis and believe that the spread of exotic plants is part of Nature's plan. According to Holmgren (in Low 1999): "We need to have good reasons, be serious about working the land in a sustainable as well as a productive way before we have the moral right to get rid of the weeds." This is a position far removed from one of arguing that weeds under some circumstances can benefit wildlife. Holmgren supports Theodoropoulos (2003), and is writing a major book that will highlight the value of natualising plants.

The Gaia principle (Lovelock 1979), it should be noted, is incompatible with the exotic-is-bad value. If all living things on earth are part of one giant organism, then exotic plants and animals are a legitimate part of that organism, and the need to control them is called into question.

Conservation biologists should oppose this kind of thinking, but they cannot win the debate by arguing the native-good exotic-bad dichotomy. Holmgren and other permaculturists are well aware that some native animals benefit from weeds. As one letter to a gardening magazine noted, "If only native plants attract native birds, then why the hell do we need to net our exotic fruit trees?" (Anonymous 2004). Arguments need to be framed clearly in terms of harm to biodiversity and human interests.

## Conclusions

Challenges to the native-good exotic-bad dichotomy will continue to arise. With the collapse of scores of deer farming enterprises across eastern Australia (Moriarty 2004), deer look set to become Australia's next major pest. Because deer are charismatic there will be immense opposition to plans to eradicate them from national parks. It will not be enough to say that 'Exotic equals bad'. Community support will only be forthcoming if evidence is provided to show that deer cause real environmental, and preferably economic, harm. Such evidence is certainly available for some deer species but for most it is only available anecdotally (Moriarty 2004). Nonetheless, the reality that damage is occurring can hardly be doubted.

The biological community should give more thought to the native-exotic dichotomy. It ought to be discussed and analysed and not taken for granted. As a value system it is likely to weaken through time, as more and more feral species become established and accepted by the community as attractive wildlife. In future, the need will become greater than ever to conduct research to show the specific harm done by charismatic invasive species such as deer, One-humped Camels *Camelus dromedarius* and Banteng. As it stands, there is too little known about exotic introductions even to establish that Cane Toads harm native frogs. Conservation biologists will only win the debates if they have solid data to draw upon and a sound understanding of the values in contention.

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