LIMITING THE EMERGENCE OF "NEW" INVASIVE ANIMALS: POLICY AND BIOSECURITY LOOPHOLES THAT NEED ATTENTION

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INTRODUCTION

New incursions of vertebrate pests into Australia are considered rare events. Most people consider that the biosecurity door has been closed and the only pathway for incursion is an inadvertent breakdown in the quarantine barrier. However, legal pathways do exist for incursion of new pests into Australia as well as for further spread of existing or potential pests within the country. These pathways warrant closer examination and, possibly, changes in laws or regulations to limit the risk of new invasive animal populations becoming established.

ACCIDENTAL OR INCIDENTAL SOURCES OF NEW PESTS

New pest populations can arise from changes in the nature of existing pests, changes in the environment or other mechanisms that allow for a "sleeping" pest population to begin to flourish. The concept of "sleeping" pest species is more commonly discussed in terms of pest plants. However, animal species may sometimes be present for many years before something changes that might cause them to become a pest. For example, common carp (*Cyprinus carpio*) were present in Australia for over a century before numbers took off to such an extent that they became a major pest species. In this case, it appeared to be the introduction of a new genetic strain of the fish in the 1960s (the "Boolara" strain) and the extensive flooding of the Murray-Darling Basin in 1974/75 that prompted the species to explode in numbers.

Some species continue to spread to new ranges from their original points of introduction. The cane toad (*Bufo marinus*) continues to spread west and south from its introduction points in the sugar cane fields of northern Queensland some three quarters of a century ago. Numerous pest bird species are also spreading, with extensive efforts by the Western Australian Government appearing to be successful in eradicating incursions of the common starling (*Sturnus vulgaris*) into that State.

Other sources of new populations are less well understood. An extensive fox eradication program has been underway in Tasmania for a decade, following evidence of fox (*Vulpes vulpes*) incursion in that State. Numbers of foxes in the State have remained so low during that time that public concern has been expressed about the value of an eradication program for a species that is so difficult to detect. It is not yet evident that the species has become firmly established in Tasmania.

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Inadvertent or accidental introduction of species does occur from time-to-time in Australia, but by and large our quarantine barrier works. In mid 2010 stevedores in Cairns alerted Australian Quarantine and Inspection Service personnel to the presence of two black spined toads (*Duttaphrynus melanostictus)* from a ship that had traveled from West Papua.

While continued vigilance and education is needed and action warranted in some cases, these accidental or inadvertent sources of new pests will not be further discussed in this paper. The remainder of the paper will concentrate on currently legal or potentially legal means of new populations of pests becoming established.

LEGAL OR POTENTIALLY LEGAL SOURCES OF NEW PESTS

Noxious Fish

Since World War II, the vast majority of new incursions of exotic fish in Australia have come from the ornamental fish trade. But the ornamental fish industry in Australia is a significant one, estimated to be worth $350 million a year. It is also a diverse industry and most regulations governing it are State and Territory responsibilities, with no real consistency in the past. So any changes to the industry require considerable consultation. In 2006, the Natural Resource Management Ministerial Council endorsed *A Strategic Approach to the Management of Ornamental Fish in Australia*.

The Ornamental Fish Management Implementation Group (OFMIG) was created to progress the implementation of this strategy. This group has members from all state and territory jurisdictions as well as industry, hobby and Australian Government representatives. The primary task of OFMIG to date has been the ongoing development of a nationally recognised noxious species list. They have also instigated a public awareness campaign on the dangers of releasing fish where they can get into waterways, and what to do with them if they are no longer wanted. Veterinarians can play an important role in educating pet owners about how to treat unwanted fish.

A challenge for the future will be the monitoring and enforcement of the Strategy. There is market demand for unusual or dangerous fish, for example giant snakeheads (*Channa micropeltes),* that are pests in other parts of the world. This fish grows to over a metre in length and appears to be traded illegally over the internet in Australia.

Hybrid Species

During 2008 a public debate on importation of “Savannah” cats into Australia took place. Savannah cats are a breed derived from matings of a serval (*Leptailurus serval*) with a domestic cat. It was proposed that animals that were five generations away from the serval be acceptable for import into Australia, and considerable action had been taken to do so. According to websites of the breeders involved, all the expected offspring for 2009 of the 14 cats due for import had been pre-sold. Ultimately, the Federal Minister for the Environment exercised his powers under the *Environmental and Biodiversity Conservation Act (1999)* to ban their import.

But importation of other hybrid pet breeds remains legal. The market value of Savannah cats has encouraged cat breeders to develop other wildcat x domestic crosses including:

- Bengal : domestic Cat x Asian Leopard Cat (*Prionailurus bengalensis bengalensis*). This breed entered Australia in 1996.

- Bristol (cat) : domestic Cat / Margay (*Leopardus wiedii*)
- Chausie : domestic Cat / Jungle Cat aka Swamp Cat (*Felis chaus*)
- Machbagral and/or Viverral : domestic Cat / Fishing Cat (*Prionailurus viverrinus*)
- Safari (cat) : domestic Cat / Geoffroy's Cat (*Leopardus geoffroyii*)

Conservationists argue that allowing import of wildcat genes for private ownership in Australia will ultimately result in those genes supplementing the feral cat gene pool in Australia. These genes may be favoured in the population and confer fitness benefits on feral cat populations, leading to prey on a wider range of native species or improved hunting success. These concerns were vigorously denied by the Savannah cat importers, who claimed the high value of the cats, containment provisions imposed by them on new owners and the low level of wild cat genes would ensure safety of Australian wildlife.

Under legislation of the Australian Customs and Border Protection Service, dogs of five fighting-dog breeds are prohibited from entry into Australia. But Australian Quarantine and Inspection Service importation rules (from eligible countries) state that "any other domestic/non-domestic animal hybrids (e.g. Bengal cats or wolf crosses) are not eligible for import unless they are five (5) generations or more removed from their pure-bred non-domestic ancestors" (AQIS 2011).

It is this provision that allows import of hybrid breeds into Australia. Besides the wildcat x domestic hybrids mentioned above, it allows for the possibility of wilddog x dog hybrids becoming established in Australia. We know that the average size of wild dogs in Australia's has grown by up to 25% in the past 30 years (Spencer *et al*, 2008) due to the introduction of new genes into the population. Although all dogs are ultimately derived from wolves, the process of domestication was complex and occurred many, many generations ago.

The author argues that the AQIS "five generation rule" is inappropriate and appears to have been simply picked from the CITES (the Convention on International Trade in Endangered Species of Wild Fauna and Flora) as a convenient definition of when an animal ceases to be considered "wild". It does not follow that an animal that is not considered wild should be considered a suitable domestic pet. The potential pest status of animals imported for domestic purposes should be considered prior to approval to enter Australia, given our unique wildlife.

Game Species

Australian Governments adopted the "Australian Pest Animal Strategy" (APAS) in 2007. One objective of APAS is "to ensure nationally consistent pest management approaches are in place at all scales of management". But there is a stark difference in the management intention for species classified as "game" in some jurisdictions and "pests" in others.

In New South Wales, Victoria and Tasmania, deer are managed as game species whereas in Queensland, South Australia and Western Australia, they are regarded as pest species. Live Game Reserves are permitted in some Australian jurisdictions and not in others. One of the highest risk factors for establishment of a new pest population is the number of releases made (Bomford, 2008). If Live Game Reserves are allowed to make repeated releases of potential pests, it becomes an inevitability that those pests will become established unless the game reserve is securely fenced.

Hunters can provide a useful source of labour and expertise for feral animal management. Unfortunately, this role can be alternatively dismissed or exaggerated due to the emotive nature of

discussion involving shooting of animals. It is important that the positive roles hunters can play be recognized, but also that it not be overstated.

DISCUSSION

Australia faces the risk of establishment of more pest animal populations that may come through legal pathways. Ornamental fish have regularly become established in the wild, but we now have a national policy that is likely to stem this flow. Hybrid cats and dogs still pose a risk and could potentially come in "under the radar" with little or no public knowledge of their existence until established in this country.

Game management policy in Australia is inconsistent and warrants examination to find a sensible balance between allowing hunters to make a positive contribution to the environment while avoiding establishment of new pest populations.

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