



11 August 2014

Committee Secretary  
Senate Standing Committees on Environment & Communication  
PO Box 6100  
Parliament House  
Canberra ACT 2600

#### SUBMISSION TO SENATE BIOSECURITY COMMITTEE

ON: *The adequacy of arrangements to prevent the entry and establishment of invasive species likely to harm Australia's natural environment*

#### SUBJECT

Management of the noxious fish species, common carp (*Cyprinus carpio*).

#### QUALIFICATIONS

I am a fisheries scientist and freshwater ecologist with 37 years' experience. I led NSW Fisheries' research from 1987–1999 as Principal Research Scientist. I was also Leader of the Fish Ecology Program for the CRC for Freshwater Ecology for two terms and have since worked as a consultant, and hold the position of Adjunct Associate Professor at UNSW. In these roles I have had extensive experience in the environmental issues associated with alien pest species, including publication in 2013 of a chapter in the book: *Ecology of Australian Freshwater Fishes* (Attachment 1) and other publications (Attachment 2).

#### BACKGROUND

Common carp have existed in Australia for about 150 years, having been introduced in NSW in the mid-1800s. They now exist in all jurisdictions apart from the NT and their spread is continuing. In rivers of the Murray-Darling Basin, carp constitute 60%–90% of total fish biomass. In one MDB river site a scientific survey indicated there was an average of one carp for every square metre of water surface.

Carp cause serious damage to the structure and quality of waterways through their feeding behaviour, disturbing sediments, destroying aquatic plants destabilising stream banks and liberating nutrients that favour algal growth. These effects have had profound impacts on aquatic environments across southern and eastern Australia, impacting on aquatic biodiversity (Attachment 3), and have led to major expenditure by the affected States and the Commonwealth. There are continuing research programs, particularly through CSIRO and the CRC for Vertebrate Pest Control, aimed at developing various biological pest-control options.

## ISSUES WITH MANAGEMENT ARRANGEMENTS

Carp exist in all main rivers of the MDB, in one or two Tasmanian lakes and SA rivers and in a significant number of eastern coastal-drainage rivers such as the Brisbane, Richmond, Clarence, Bellingen, Hunter, Hawkesbury, Georges, Shoalhaven and Lakes Entrance tributaries. They have been predicted to be ultimately capable of invading all Australian rivers.

Environmental problems caused by carp led to their declaration as a noxious species in all States and the ACT. In Queensland, Tasmania, SA and Victoria, their possession is illegal, with significant penalties applied.

But a major management problem remains in NSW, where inadequate attention has been paid to effective regulatory control measures. While the species was relatively recently declared noxious, control measures are limited to educational programs and even these are not strongly resourced, so that their penetration and effectiveness has been very limited. Possession, sale and distribution of carp is permitted. Lax management in NSW has significantly hampered neighbouring jurisdictions' administration of the carp issue. The main reason for NSW's weak response to the issue appears to be effective lobbying by an industry group based around hobbyist fanciers of the highly coloured, domesticated strain of carp known as koi. Representations to the Minister by a group of Mid-North Coast Councils have not produced improvements (Attachment 4).

Koi carp is a selected strain from the parent population of common carp. Colouration is maintained by intense progeny selection, with poorly coloured offspring being disposed of by breeders. When koi carp escape to the wild, as they often have done, they are highly invasive and populations of common carp emerge. Most are dull-coloured and visually similar to other carp strains. The environmental impacts of koi and other carp strains are the same.

Extensive genetic research, including at least two PhD studies, have confirmed that a large proportion of invading carp populations are entirely or largely based on koi parentage. Representatives include those in east-coast rivers, Tasmania, the ACT and other parts of the MDB. From the available evidence, and from personal experience, it is clear that escape from koi-breeding establishments has been the source of these populations. In the past, koi hobbyists have bred fish in outdoor ponds including farm dams in drainage gullies, backyard pools and other non-secure places. These are vulnerable to overflows during rainfall events, leading to escape of fish and invasion of receiving waterbodies, usually with severe environmental effects. In NSW, koi have been (and may still be) promoted and handed out freely to visitors at events such as boating shows.

The results of lax management of the koi industry in NSW are that large numbers of the State's coastal-drainage rivers, together with their highly vulnerable wetlands, are threatened by incursions of carp. Further, regulatory efforts in neighbouring States are made less effective by the ease of cross-border access to koi carp. While NSW authorities have made some efforts towards public education about the threats, this on its own is an inadequate and ineffective response. Much stronger, more-direct methods of control are essential to stop the spread of carp to new waterbodies. Previous efforts to protect NSW coastal rivers have so far been unsuccessful (Attachment 3)

## SUGGESTED MANAGEMENT SOLUTION

A compromise form of regulation is possible between the total ban on possession exercised in most states and the ineffective approach so far taken by NSW. Senior representatives of the koi industry have come to accept the science driving concern about their industry's past role in the spread of carp, and have promoted attempts to educate their members. Regrettably, there are many more less-committed hobbyists who are not being influenced, and who remain a major risk factor.

While an industry-wide ban on koi possession may remain politically unpalatable to the NSW Government, there are many examples of effective management of potentially hazardous activities that take the form of licensing schemes. Driving a car, owning a firearm, using dangerous chemicals, moving animals and plants across borders – all of these are effectively controlled through licensing and permit systems, with users paying the costs of management and enforcement.

While fisheries and most environmental matters within state boundaries remain the responsibility of the relevant state, the environmental damage caused by carp involves direct threats to listed threatened species under the Commonwealth's EPBC Act. Particular fish species in NSW coastal rivers that are threatened in this way include Australian grayling (*Prototroctes maraena*), Clarence River cod (*Maccullochella ikei*) and Macquarie perch (*Macquaria australasica*), plus a greater number of threatened species in the MDB.

## SUBMISSION

I submit that arrangements to prevent the entry and establishment of common carp that are likely to harm Australia's natural environment are clearly inadequate in NSW. I further submit the Senate Committee should use all available capacity through the EPBC Act, and any other appropriate avenues, to bring Commonwealth influence to bear on the Government of NSW in order to undertake effective management to eliminate the threat of establishment of new carp populations.