

BIOSECURITY FAILURES IN AUSTRALIA: 12 CASE STUDIES

11. JACK DEMPSEY CICHLIDS

A case study of an aggressive aquarium fish probably illegally released into the wild

Species: Jack Dempsey cichlids (*Cichlasoma octofasciatum*)

Origin: North and Central America

Australian occurrence: NSW – in a popular swimming pool (an isolated flooded quarry) on the far north coast near Yamba.²⁰⁴

Potential environmental impacts: The features that make cichlids popular pets are also those that contribute to their invasive potential: 'they are hardy, adaptable and breed prolifically'.²⁰⁵ In their native range Jack Dempsey cichlids inhabit swampy areas with warm, murky water. Of great concern is that they are highly aggressive fish (named after the heavyweight boxer Jack Dempsey) and are likely to dominate and compete with native fish populations. They eat almost anything smaller than themselves, including fish, invertebrates and frogs.²⁰⁶ As a relatively large carnivore they could directly impact on a wide range of native fish.²⁰⁷ Females lay about 500-800 eggs per clutch and both parents aggressively protect the eggs. The introduction of disease into wild fish populations is also of great concern.²⁰⁸ Many pathogens and parasites have been recorded in imported ornamental fish in quarantine and post-quarantine in Australia. Jack Dempsey cichlids can tolerate low oxygen levels, so can inhabit degraded waters.²⁰⁹



Photo: Gregory Heinrichs (creative commons licence)

Potential social and economic impacts: They include costs of control, impacts on recreationally valued fish and the potential spread of disease into economically or recreationally valued fish.

Likely pathways: Probably illegally released from an aquarium when the owner no longer wanted them.

Summary of biosecurity issues: In 2004/05 there was an attempt to eradicate a population of Jack Dempsey cichlids from a pool on the NSW north coast but it was unsuccessful (or the cichlids were re-introduced). They are one of about 30 aquarium fish species that have established in Australian waterways.²¹⁰ They highlight the importance of preventing new incursions because it is extremely difficult or impossible to eradicate feral fish populations.

Biosecurity issues

Risk assessment and contingency planning: There are >450 ornamental fish species permitted for import into Australia; in 2004-05, 15 million fish were imported.²¹¹ Corfield et al. (2008) note that risk assessments rely on overseas information and are likely to be of limited value in many cases in predicting the likelihood of environmental impacts in Australian waters. We do not know of any contingency planning for aquarium fish incursions. More than two-thirds of naturalised fish in Australia have come from the aquarium trade. As well as the risk of aquarium fish establishing in the wild, the risks of them introducing new fish pathogens and

²⁰⁴ Department of Primary Industries (nd)

²⁰⁵ Department of Primary Industries (nd)

²⁰⁶ Department of Primary Industries (2004)

²⁰⁷ Corfield et al. (2008)

²⁰⁸ Whittington and Chong (2007)

²⁰⁹ Corfield et al. (2008)

²¹⁰ Corfield et al. (2008)

²¹¹ Corfield et al. (2008)

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parasites has not been adequately addressed (see case study 14).²¹² Whittington and Chong (2007) advise that 'the number of species traded and the number of sources permitted need to be dramatically reduced to facilitate hazard identification, risk assessment and import quarantine controls.'

Response to incursion: The NSW government website explains the response to the detection of 'thousands' of Jack Dempsey cichlids in 2004:

When Jack Dempseys were first discovered in the Green Pool, Angourie they were considered an ideal target to attempt a pest fish eradication program, because the pool was relatively small, confined, and contained few native fish. However there were also some limits on what methods could be used because the pool is a popular local swimming location. After considering the options available it was decided to trial explosives – a novel technique that had been used with some success in Western Australia.

Three eradication attempts, using lines of detonation cord laid out across the pool's surface by a qualified explosives expert, were carried out between September 2004 and June 2005 (several successive attempts were necessary as eggs and larvae are not killed by the shock wave). After the use of explosives, 36 large Australian bass were released into the pool to help prey on any remaining larvae or juveniles.

Unfortunately, follow up monitoring by the department has found Jack Dempseys still remain in the pool. It is possible that the fish are very hardy and some survived the blasts, or alternatively they may have been deliberately re-introduced.

NSW DPI is not planning any further eradication work at this time.

Threat abatement: Non-native fish species are 'implicated in the decline of 42% of Australian native fish and several frog species'.²¹³ The Threatened Species Scientific Committee recently judged that 'The introduction in Australian inland waters of native or non-native fish that are outside their natural geographic distribution' met the criteria for a key threatening process on the basis but the environment minister rejected the advice of the committee to list it as a KTP.²¹⁴ The refusal to list (or even assess invasive species KTPs)²¹⁵ has become a pattern at the federal level, undermining the capacity to take a national approach to many very serious invasive species threats.

Issues for inquiry

Risk reduction

- What measures should biosecurity agencies be taking to reduce the risks of new species of aquarium fish establishing in Australian waterways?
- Should there be listing of key threatening processes on the basis of scientific advice rather than being a ministerial prerogative and the requirement for a threat abatement plan?
- What funding is available for the implementation of threat abatement plans?

References

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²¹² Whittington and Chong (2007)

²¹³ Moore et al. (2010)

²¹⁴ Threatened Species Scientific Committee (2011)

²¹⁵ The Invasive Species Council made two nominations that were refused for assessment on the basis that 'novel biota' were being assessed as a KTP. This effectively shuts down the capacity to use the national threat abatement process to assist with addressing invasive species problems not already listed.

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