

BIOSECURITY FAILURES IN AUSTRALIA: 12 CASE STUDIES

5. ASIAN BLACK-SPINED TOADS

A case study of efforts to prevent a potential new toad invader

Species: Asian black-spined toad (*Duttaphrynus melanostictus*)

Origin: Asia (from north Pakistan through Nepal, Bangladesh, India, Sri Lanka, southern China, Myanmar, Lao People's Democratic Republic, Vietnam, Thailand and Cambodia to Malaysia, Singapore, and Indonesia).⁸⁵ The toad has recently spread to southern Indonesia, East Timor and Papua New Guinea.⁸⁶

Australian occurrence: Has been detected at least 3 times in the wild in Australia.⁸⁷ The most recent incursion, in 2014, was in suburban Melbourne, where so far just one toad has been located. Only warm summer weather will confirm whether the toad is established at this location or not. The details of the surveillance effort have not been

revealed so we are uncertain whether all surrounding areas have been fully surveyed.

Potential environmental impacts: The Asian black-spined toad 'may cause serious ecological problems, comparable to the impact of the cane toad' due to competition with native species, its potential to spread exotic parasites and pathogens and its toxicity.⁸⁸ Like cane toads, the black-spined toads secrete poison from glands in their backs to ward off predators. The toxins contain several bioactive compounds with lethal, hypotensive, hypertensive, neurotoxic, cardiotoxic, haemolytic and sleep inducing factors that could severely affect the snakes, goannas and quolls likely to prey on the toad.⁸⁹ The toad is a prolific breeder with the females typically producing 40,000 eggs at a time.

Potential economic impacts: It is difficult to estimate potential costs. They may include reduced tourism, blocking of drains, health impacts on children and the spread of human diseases. Costs for control include efforts to slow the toad's incursion or maintain areas free from the toad. The economic impacts of cane toads have not been quantified.⁹⁰

Pathways: Usually found in international vessels, shipping containers, machinery and personal effects such as bags, shoes, boxes and cartons.⁹¹

Summary of biosecurity issues: This toad is widely accepted by governments as a high-risk target for interception and presumably a high priority for eradication if there is an incursion. The recent rate of interceptions (about 10 a year) and 3 detected incursions since 2000 suggest a high likelihood of establishment. It is unclear what plans have been developed to respond to incursions and whether they will be sufficient to prevent permanent establishment.

Particular biosecurity issues

Planning and surveillance: This toad is regarded by DAFF as one of its 10 'most unwanted' species and 'potentially more damaging than the cane toad'.⁹² A 2008 risk assessment (by the Western Australian



Photo: Vic DEPI.

⁸⁵ Cshures (2010)

⁸⁶ Csurhes (2010)

⁸⁷ Henderson and Bomford (2011)

⁸⁸ Department of Environment and Primary Industries (2014), also Cshures (2010)

⁸⁹ Department of Environment and Primary Industries (2014)

⁹⁰ Taylor and Edwards (2005)

⁹¹ Cshures (2010)

⁹² Department of Agriculture, Fisheries and Forestry (nd)

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government) found it had a 'serious' risk of establishment and a 2010 assessment by the Invasive Animals CRC found it had an 'extreme' establishment risk rank. There is no publicly available pathway risk analysis or contingency plan.⁹³ We believe it should be a high priority to develop a contingency plan that includes a surveillance strategy.

Pre-border and at-border biosecurity: This toad is frequently intercepted as a stowaway: 75 times from 2003-2010 (involving at least 79 animals) and 25 times from 2009-2012.⁹⁴ It has arrived with 'stone, straw, personal effects, baggage, containers by air and ship' from Brunei, China, India, Indonesia, Malaysia, Thailand, United States.⁹⁵ Since 1999, has been detected 3 times in the wild in Australia: 2 times in Victoria, 1 time in Western Australia.⁹⁶ The toad is abundant in Bali and Papua New Guinea, and also found in East Timor.⁹⁷ Massam et al. (2010) note there has been some pre-border focus on black-spined toads in some countries, with a report of AQIS import clearance officers visiting the Freeport Mine in West Papua in 2006.⁹⁸ They also note that a toad barrier was installed around the unloading dock at Cairns Port to prevent the escape of these and other introduced amphibians.

Emergency response: We assume that, unlike many other invasive species, governments would be willing to commit to eradicate black-spined toads even if there were risks of failure because of strong public interest due to the notoriety and the negative impacts of the cane toad on biodiversity. The 2014 incursion response by the Victorian Department of Primary Industries focused on searching the immediate area near the incursion including a local creek. We believe that a nearby industrial area that may have been the source of the toad was not searched. The National Environmental Biosecurity Response Agreement was not activated since only one toad was located and the Victorian government determined that additional resources were not needed.

Issues for inquiry

Prevention

- This species is regarded by DAFF as one of its 10 most unwanted and therefore is presumably subject to optimal biosecurity preparation and response. What has this involved?
- What steps has Australia taken to prevent new incursions – pre-border, at-border and post-border?

Surveillance

- What surveillance is being conducted that would detect new incursions?

Contingency planning

- How well prepared is Australia to respond quickly and effectively to incursions of this toad?

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⁹³ Page et al. (2008), Massam et al. (2010).

⁹⁴ Henderson and Bomford (2011), Minister for Agriculture, Fisheries and Forestry (2013)

⁹⁵ Henderson and Bomford (2011).

⁹⁶ Henderson and Bomford (2011), REF for recent incursion?

⁹⁷ Cshures (2010)

⁹⁸ Massam et al. (2010) citing AQIS (2006)

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