

ECO-CULINARY ACTIVISM AND THE VIABILITY OF DEVELOPING CANE TOADS AS AN AUSTRALIAN FOOD RESOURCE

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Abstract

Following an introduction to the extent and spread of invasive cane toads in Australia, this article discusses the concept of eco-culinary activism and explores the potential for cane toad meat in local cuisine and as an export commodity. Recent publicity around the cane toad's nutritional and culinary properties indicates a considerable interest on the part of both the Australian media and Australian chefs in cane toads being introduced into Australian cuisine. Further consideration is given to the safety of eating cane toad meat, to the cane toad's export potential and the manner in which these might be explored.

Keywords

Cane toads, eco-culinary activism, media coverage of culinary issues

Introduction – Cane Toads in Australia

The cane toad (*Rhinella marina*, formerly known as *Bufo marinus*) is native to Central and South America and was introduced into Australia in 1935 in an initiative coordinated by the Bureau of Sugar Experiment Stations (BSES) (see Turvey, 2013 for a

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comprehensive discussion). The BSES was established by an act of Australian parliament in 1900 to ensure the secure management and expansion of sugarcane production. Sugarcane cultivation had been established as a commercial enterprise in Australia in the 1860s. Initial production was centred on rural areas in the vicinity of Brisbane and expanded north, up to Far North Queensland and south, into northern New South Wales, over the next three decades. As areas of cane cultivation spread, growers encountered pernicious pests in the form of the greyback cane beetle (*Dermolepida albohirtum*) and the French cane beetle (*Lepidiota frenchi*), which severely compromised crops. The BSES considered various options to combat the beetles including importing cane toads, which had been reported as having some success in combating a similarly pernicious beetle in Puerto Rico earlier in the century (Miller, 2012).¹ The BSES imported their first 100 cane toads from Hawai'i (where they had also been imported as a beetle control agent) in 1935 and used these to breed stock to release. The toad's introduction was controversial, with a number of commentators expressing concern that the cane toads would not be effective against the types of Australian beetle causing farmers problems, and that there was a danger of them multiplying and becoming a pest themselves (ibid). Similar opinions were expressed in the 1940s and 1950s, as the toad population spread and multiplied and this view became widely accepted from the 1960s as the extent of the cane toad population's expansion became apparent. From their original release sites in coastal Queensland, cane toads spread across the continent, arriving in the Northern Territory in 1984, and reaching the north eastern edges of Western Australia around 2010. Cane toads also spread south and met up with another population that had been introduced into Byron Bay as late as 1965 (Department of the Environment, Water, Heritage and Arts, 2010: online). The most commonly cited estimate for the number of cane toads currently in Australia is 200 million.²

While cane toads impact the environment and indigenous species in various ways, Shine's (2010) review of the research undertaken on their proliferation in Australia suggests that their most adverse impact results from their consumption by predators. The cane toad's natural defence mechanism is the cardio-active steroid bufadienolides, which it exudes from its parotoid glands located on the back just below the toad's head (Hayes et al., 2009). Ingestion of this toxin, either by contact

with external permeable skin membranes or through swallowing parts of the cane toad's body can severely incapacitate or kill predatory marsupials, reptiles or amphibians. While no human deaths from contact with cane toad venom have been recorded in Australia, this is likely to be the result of careful interactions with the amphibians rather than any human ability to tolerate substantial ingestion of the poison. Although the impact of cane toads is less apocalyptic than has sometimes been assumed,³ Shine has identified that the population of a number of indigenous Australian predators has declined due to cane toad expansion into their habitats and that further indirect impacts, through disruption of existing trophic webs, has yet to be ascertained (ibid). To date, no predator has managed to negotiate the amphibian's defence mechanisms in sufficient a manner to include it as a standard element of its diet.⁴ Similarly, no chemical or biological agents have been developed that can selectively target the cane toad and remove it from the environment without damaging other species. Some local endeavours involving humans identifying, removing and killing cane toads in particular locations have been mounted, but are of limited effectiveness. As the Australian Department of the Environment, Water, Heritage and the Arts has acknowledged, there "is unlikely to be a broadscale method available to control cane toads across Australia" (2010: online).

Eco-culinary Activism, Cane Toad Consumption and Media

Interest

Eco-culinary activism can be defined as the strategic targeting and promotion of particular species for either consumption or avoidance of consumption on ecological grounds. The most well-established facet of this practice concerns public information campaigns aiming to persuade consumers to avoid the purchase and consumption of endangered species (see, for example the Oneworld Oneocean 'Go Fish' campaign⁵). A more recent phenomenon has been the development of strategies that promote the inclusion of particularly harmful invasive species in cuisines as a method of limiting their expansion and, thereby, their impact in particular environments. One notable example of the latter has been the campaign to reduce numbers of two species of the Indo-Pacific Lionfish genus (*Pterois volitans* and *Pterois miles*) in the Gulf of Mexico and Caribbean through promoting their food value (see, for instance, Ferguson and

Adkins, 2010; Barbour et al., 2011). In the Australian context, the most notable advocacy of such a strategy was the theme adopted by Hobart's MONA (The Museum of Old and New Art) for their 2011–12 summer markets season. Under the slogan 'Eat the Problem', MONA curator Kirsha Kaechele organised summer market activities that focussed on "solving ecological problems by eating invasive species", a practice that she described as "a kind of culinary ecological engineering" (MONA Market Blog, 2012: online). Kaechele provided the following rationale for the Museum's initiative:

This year at MoMa⁶ we are solving problems by eating them. We have decided that, being human, and therefore the earth's biggest problem, we should make up for our evil existence by out-parasiting the parasites. We won't eat tapeworms, but we will feast on a plethora of ecological disasters, each a delicacy. (Kaechele, 2012: online)

The "ecological disasters" referred to in the Tasmanian context comprised invasive species such as rabbits, various snails, Northern Pacific seastars (*Asterias amurensis*), and long-spined sea urchins (*Centrostephanus rodgersii*). Commenting on patrons' responses to the summer market theme, Kaechele identified that there were "invasivore converts as a result of the market, and many of the stall-holders have continued to feature invasive species in their menus." She also contended that, "it's the new thing in foodie culture – invasive-chic." (personal communication with the author, April 2013). While there is no evidence that the dishes presented at the markets have made substantial inroads into Tasmanian cuisine, the inclusion of the sea urchin, in particular, maintained focus on an invasive that has been the subject of previous attention from eco-culinary activists in various contexts over a number of years. A study of this topic published by the author (Hayward, 2013) came to the attention of ABC radio journalist Rachael Brown in July 2014, who interviewed me for an item broadcast on Radio National's AM program in which I advocated consumption of the long-spined species on both eco-culinary and nutritional grounds.⁷ While 'colourful' in promoting consumption of an animal largely unfamiliar to Australian palates, the item was hardly controversial, but one aside I made during the interview had a significant impact. Asked as to what other invasive species might be exploited as foodstuffs in Australia, I identified cane toads as one

obvious item (based on my awareness of the initial explorations of this practice identified below). In the following week I fielded a substantial number of inquiries from journalists and members of the public, and expanded upon that initial aside in interviews on a range of ABC radio programs and in press interviews (see, for instance, Fathima, 2014: online; and Fordham, 2014). The cane toad angle proved attractive to various journalists whose coverage was often somewhat sceptical. But if this media attention in July was surprising, it was nothing compared to the coverage that occurred in November.

A veritable media blitz followed an item on eating cane toads published in the *Daily Telegraph* newspaper on November 10th, generating 5 TV and 17 radio interviews with the author, and a wide range of press and online articles drawing on material included in other media reports. The item resulted from Southern Cross University's attempts to get a story in the press to promote the 4th Regional Food Cultures and Networks (RFC&N) Conference at Byron Bay (November 16th–18th 2014)⁸ and from journalist Geoff Chambers' perception that the abstract of my paper on cane toad cuisine (which was prompted by the earlier media interest in the topic) was the most colourful angle to publicise the conference with. As the author of the paper concerned, I was incredulous at the media coverage for the largely introductory discussion of the topic that I was in the process of writing but the media coverage was invaluable in giving me insight into media and public engagement with issues concerning cane toads and environmental concerns in food production. The latter fed into the RFC&N conference paper concerned and this article.

The underlying motivation for the media coverage appears to have been surprise, scepticism and/or disgust about the prospect of eating a species that has been largely reviled in Australia. The roots of these responses are complex and predominantly reflect the Anglophone cultural heritage and biases that continue to dominate Australian media discourse. One manner in which these were immediately apparent to me was via the puzzled response of Vietnamese colleagues who come from a society where amphibian consumption is routine and unremarkable. Their sense of the utter non-newsworthiness of my proposal for cane toad consumption spoke volumes. One key factor in the coverage appears to have been generic – in the sense

that eating frogs and toads is foreign to Anglophone sensibilities. Indeed, one of the best-known ethnophaulisms (terms used to disparage other ethnic groups) applied to the French by the English, who have had a long and often acrimonious relationship with their cross-Channel neighbours, is ‘frogs’, commonly understood to derive from the French predilection for eating frogs’ legs.⁹ In one of the first surveys of ethnophaulisms, Palmore contended that there were five types, which reflected the degree of perceived racial closeness of the disparaged groups. His category 4 referred to the situation prevailing when “the out-group is of the same racial type” (ie French and English), a situation in which most ethnophaulisms “express stereotypes of highly visible cultural differences” (1962: 443) such as food, e.g. the English terms “kraut” for Germans (from sauerkraut, a fermented cabbage dish) or “frog” for French. Concluding his survey article, Palmore concluded that ethnophaulisms reflect and reinforce the ethnocentrism of dominant groups (1962: 445). Further research on this topic, and on the power of particular ethnophaulisms in particular, have been presented more recently by Rice et al. (2010), confirming the persistence of the practice and the value systems associated with it. While cultural stereotypes may carry far less ‘edge’ than ones premised on skin colour, they are nevertheless persistent and serve to distinguish one culture from another in a way that underlines (even, at best, in a quasi-affectionate manner) the differences between them.¹⁰ It is unsurprising in this regard that one common gambit used by interviewers was me to make statements to the effect that “I know the French eat frog’s legs but...”

If the fundamental ‘un-Australianness’ of eating amphibians (derived from the Anglophone heritage of the nation’s dominant ethnic group) can be identified as a background element to the Australian media response to my proposal for eco-culinary activist exploitation of cane toads; another – and arguably more substantial – aspect comes from Australian cultural perceptions of the creature itself. Reviled since the extent of its spread became apparent in the 1960s and 1970s, the animal has been subject to a set of social and cultural responses that have amplified a related set of cultural conventions concerning the toad and its appearance. As Robbins (1996) has identified, the toad was widely considered as loathsome and connected with death and pestilence in theological, literary, and artistic discourse in the Middle Ages

(at the same time as it, and frogs, were also elements of vernacular cuisine). Given this established set of associations (which do not seem to have been significantly ameliorated by the representation of the urbane, aristocratic toad in Kenneth Grahame's popular children's novel *The Wind in the Willows* [1908]), the presence of an invasive toad in Australia appears to have produced both loathing and, more latterly, a degree of ironic affection. Both aspects of national perception have been documented in Mark Lewis's films *Cane Toads: An Unnatural History* (1988) and *Cane Toads: The Conquest* (2010). The former is a humorously grotesque exposé of human interactions with cane toads (largely, in Queensland) and the latter is a more sanguine reflection on the amphibians' tenacity and resilience. But while the cane toad may have entered Australian culture in a number of ways (such as Morris Gleitzman's cane toad books¹¹ and Matthew Taylor's affectionate comic strip *Ogga The Can Toad* (1994-)¹², one of the most common forms of social, media and online discourse about cane toads concerns methods of killing them. Media coverage suggests that the most popular techniques comprise running them over with motor vehicles, killing them by spraying their backs with disinfectant liquids and—via the method often characterised as the most humane—placing them in bags in fridges and freezing them to death.¹³ Crushing their skulls with golf clubs or cricket bats is also a practice that has its advocates (and an associated set of jokes, humorous images and 'how to' videos¹⁴). Disposal of cane toad remains is rarely discussed.

Another vivid expression of pre-constituted tropes about cane toads and perceptions of their fundamental incompatibility with Australian consumer inclination and cuisine was provided by columnist Mandy Nolan in an article published to coincide with the RFC&N conference in Byron Bay. Some selected fillets provide a taste of her discourse:

...emotionally I find this idea pretty repulsive. Look, if the world is taken over by flesh-eating zombies and we are forced to live in an apocalyptic future, I'll consider it ... Toads are grotesque. They're truly vile little fuckers, I know it sounds wrong but toads are too ugly to eat. (2014: 28)

A similar sense of the grotesque informed photographer Marc Stapelberg's elaborate photo-shoot for a representation of the author in the process of forking an array of cane toads on a dinner plate for an article published on my research in the *Northern Star* newspaper (Broome, 2014: online). The lighting and overall composition (featuring a blood-red tablecloth, black background and gleaming steel fork) was more Gothic-Horror in feel than regular visual reportage in the paper in question.¹⁵ This image proved inspirational for painter Louise Klein, who adapted it into a composition (entitled 'Road Kill') which was submitted to and accepted into the 2nd annual 'Bald Archy Prize' touring exhibition, described on its website as a forum for "artists of all styles and standards with a genuine opportunity, ranging from the hilarious to the bizarrely vulgar, to create portrait paintings of humour, dark satire, light comedy or caricature" (2015: online). The painting retains the essential pose of the original, further distends the face, switches the red tablecloth in the photograph to a crimson backdrop and adds drool dribbling from my mouth on to a large single toad.



Figure 1 – 'Road Kill' (portrait of Philip Hayward) by Louise Klein, 2015

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Despite Nolan's seemingly heartfelt revulsion and the grotesque nature of the Northern Star's photograph and Louise Klein's related portrait, one thing I was particularly surprised by in media coverage of my advocacy of cane toad consumption in November 2014 is that while headlines and/or hosts' introductions to interviews with me were often colourful and/or satirical (reflecting the particular associative predilections described above); the actual content of questions addressed to me and/or interpretations offered by the journalists concerned were often more measured than I anticipated. As might be expected there was a degree of predictability to the coverage, which principally concerned:

- a) Statements to the effect that eating amphibian meat was alien to Anglophone societies;
- b) Questions as to the safety of eating cane toad meat;
- c) Questions regarding how I imagined that aspects a) and b) could be overcome in researching and developing the promotion of cane toad consumption to Australian consumers.

One significant strand of a number of press items was the attempt to offset my proposal for cane toads to be investigated as an element of Australian cuisine with the views of Australian chefs. In many of these, the chefs' responses appeared to surprise the journalists and interviewers concerned. One notable example of this occurred in the item on my research included in Channel Ten's nightly current affairs panel program *The Project* on November 10th 2014.¹⁶ The show, which frequently lampoons aspects of the stories and/or individuals it covers, included an item entitled 'Toad on the Table' that incorporated sequences of an interview with me, voice-over commentary and visual material and a brief interview snippet with GULP ('Growing and Understanding Local Produce') chef Emma Lupin.¹⁷ Host Carrie Bickmore's 'flick' to celebrity chef Matt Preston (of Channel 10's high-rating *MasterChef* show¹⁸) immediately after the item was particularly illuminating. Commenting that "Matt Preston appreciates fine dining so there's got to be no way he supports this idea, right Matt?" she elicited the following reply: "Cane toads on every menu? What a brilliant idea ... We're all about sustainability these days, we're all about eating things that grow here in great profusion." Responding to panel

member Steve Price's interjection (which referred to me as a "nutty professor" for suggesting cane toad consumption), Preston also commented, "Why not eat a big, fat, rich chunk of Aussie cane toad drummet? Delicious." A similar response occurred in an item in *WA Today*, when journalist Steve Holland interviewed leading Perth chef Clyde Bevan (of Friends restaurant) about my promotion of cane toad consumption. The question also received a positive response:

It depends on the quality of the meat with regard to flavour, length of flavour and texture ... You could mix it up with other meat and put it in a terrine. You could do all sorts of things ... We may end up doing toads. I think there are a lot of great restaurants in Perth that would have a go. You would be silly not to try it ... We're all looking for new challenges and we're all looking for a new edge.
(Holland, 2014: online)

These responses indicate that Australian chefs may well be ahead of popular cultural pundits in their willingness to consider expanding and diversifying Australian cuisine and in their ability to discard pejorative cultural stereotypes.

Although much of the media coverage and public response to cane toad cuisine discussed above approached it as a hypothetical activity, it has—as I mentioned in many interviews—been established as a low-level and low-profile culinary practice for some time.

Cane Toad Cuisine in the Early 21st Century

While the focus of this paper is on the consumption of the recently introduced cane toad, it should be noted that there is evidence that indigenous Australians have consumed *native* amphibians as an element of their diet at various times (see, for instance, Bourne, 1953 and Attenbrow, 2011). There were also attempts to farm exotic frog species for domestic production in the twentieth century. Australia's first commercial frog farming operation was established in the mid-late 1930s in Euroa, in central Victoria, using the American Bullfrog (*Rana catesbeiana*) (Hince, 2012). The venture folded after a few years of operation due to the inability of the farmers

concerned to produce sufficient stock for local markets. Since this period almost all frogs' legs consumed in specialist restaurants (primarily French ones) have been imported.

According to Lever (2001: 32) parts of the cane toad have traditionally been eaten in Peru (within their original area of habitation) and my research has revealed that numerous individuals have consumed cooked parts of cane toads, most usually their legs, in northern Australia at various times over the last decade (at least¹⁹). As a result of the media coverage referred to above I received correspondence and, in one instance, a video detailing methods of cane toad capture, butchery and preparation featuring Bush adventurer Noah Nielsen.²⁰ Much of the activity I was informed about was exploratory, being undertaken by adventurous individuals as part of outdoor activities, or else derived from ecological activists' attempts to explore what use could be made of cane toads as a resource. One notable example of these tendencies occurred as an item in Season 4 Program 3 of the US TV series *Bizarre Foods*, shot in northern Australia and broadcast in April 2009. Following a sequence showing the host, Andrew Zimmern, collecting cane toads with FrogWatch activist Emma Britton, the show's chef prepared a dish of garlic marinated and deep fried cane toad legs for Zimmern and Britton to consume on-camera (to illustrate the toad's potential as a food source).²¹ Aside from experimental cooking and consumption of cane toads, more co-ordinated culinary engagements have originated in the Northern Territory in the last two years. Perhaps the highest profile culinary activity in this regard has been undertaken by chefs associated with the GULP project in Northern Territory. GULP was established in 2013 (arising from a previous initiative entitled 'Foodcare') in response to the lack of locally produced fresh or dry produce around Darwin. GULP was established,

To work collaboratively with the diverse residents of the greater Darwin area to research and develop recipes which will be put together into a resource which can be shared. The resource will be specific to the food that we can grow locally here in the Top End. (GULP promotional flyer, undated)



Figure 2 – Cane toad legs marinated in soy, garlic, ginger and chilli (in preparation for being sautéed in sesame oil) (GULP website, 2014)

GULP's website has a section showing how to prepare cane toad legs for cooking and features recipes, mostly derived from Asian cuisines. Cane toad dishes were prepared by GULP chefs and were publically presented at Darwin's Tropical Garden Spectacular event in May 2014, attracting considerable attention from patrons and the media. But despite the group's advocacy, the types of dishes discussed above do not appear to have spread beyond circles of local food enthusiasts in the Northern Territory and have not appeared on the menus of Darwin eateries to date.

The principal issue confronting anyone cooking cane toad meat (let alone preparing it raw, as a form of sashimi—a practice that I have found no evidence of to date) concerns how contamination from the parotoid glands can be avoided. In all cane toad preparation practices that I have found, the back area is avoided altogether and the legs are always separated from the main carcass and skinned prior to cooking. There is also a fairly widespread recognition of the need to have clean hands, utensils and surfaces during preparation processes. While there does not appear to be a common awareness of it, research indicates traces of the toxin remain on the surface and/or in areas of tissue of the cane toad even after skinning and washing (Price-Rees et al. 2011) and further research needs to be undertaken to ascertain to

what extent this residue is affected by cooking and/or whether consumption of cooked cane toad legs on a single or repeated basis might lead to a harmful accumulation of toxins in human consumers.

Conclusion: Overview of the potential to exploit cane toads as a food resource

There are a number of factors that are relevant in considering cane toads as an element of local cuisines and as a potential mass-market product:

- *Nutrition* – Cane toads have significant amounts of Omega 3 fatty acids and vitamins.²²
- *Environment* – There are considerable benefits to reducing cane toad populations by harvesting as they can poison native predators that try to eat them. Any reduction in cane toad numbers can assist the conservation of native species in these areas.
- *Commerce* – The supply of cane toads is plentiful. Cane toads are a naturally sustained, regenerative and harvestable resource that is not restricted by specific protection laws and/or by cultural reticence about culling and reducing the population. They are therefore relatively cheap to gather. Globally, there has been a marked reduction in frog and toad numbers over the last few decades as a result of pollution, reduction in natural habitat and over-exploitation of remaining populations (in locations such as Indonesia), meaning that Australian toad populations are bucking a global trend. In this regard, there are potential export markets in Europe and East Asia.²³ Harvesting of cane toads for various other commercially exploitable elements is also tenable. Cane toad skins were exported to China in the 1970s by entrepreneur James Tepstra, and cane toad venom has also been identified as a source of medicinal treatments that could combat particular types of cancer (see Jing, 2013).

There are, of course, a number of impediments to realising the successful exploitation of cane toad stocks and their incorporation into cuisine:

- *Brand Image* – Due to the cultural associations discussed in Section I (above), the name and image of cane toads does not currently signify a desirable tastiness for Australian consumers. This is likely to be a significant problem. Indeed, given the highly conservative nature of the Anglo-Australian palate it might well be an insurmountable one, at least in terms of domestic mass markets. A re-branding that does not use the cane toad name (and/or its whole body image) is one possible remedy for this aspect and this topic was a feature of several media discussions during the course of media coverage of the topic in November 2014 referred to above.²⁴
- *Safety* – Given the toxins present in cane toads it is unlikely that consumers would feel safe purchasing and consuming cane toad products unless further research into aspects of their toxicity were pursued and unless there were codes of practice and certification concerning the safe preparation of the product.²⁵ Specific training and certification of specialist chefs acts as one guarantor of food safety. There is also another aspect that also merits attention. Cane toads, like many other species, have their own distinctive parasites but as yet there is no direct evidence that humans consuming cane toad legs are in danger of becoming infected with these parasites. (Also, to put things into perspective, the types of frogs commonly used in French and Louisiana Cajun cuisine also have parasites but there is no evidence of transmission of these in these locations – ditto Asian culinary uses of amphibians).

With regard to the above factors it might well be that (subsequent to further testing of its toxin content), the production and packing of prepared cane toad legs (on-the-bone and/or as meat segments) geared at the Asian or European export markets is the most direct way to affect large-scale use of cane toad resources for food production. For this purpose it would also be profitable for the industry to create a

product name, imagery and branding that appealed to international consumers. Eco-culinary activists could usefully collaborate with various industry bodies to research and develop such strategies.

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Endnotes

¹ As Miller also detailed (*ibid*), BSES scientist Arthur Bell became familiar with the deployment of cane toads while attending a sugar conference in Puerto Rico in 1932, and subsequently was a leading proponent of their trial introduction into Queensland.

² See, for instance, University of Western Australia 'Cane Toads - background sheet', online at: <http://spice.duit.uwa.edu.au/samples/ast0896/Cane%20toads.pdf> - accessed November 2014.

³ See, for instance, Mills (2004).

⁴ Although some native animals such as the keelback snake (*Tropidonophis mairii*), for example, can tolerate eating them. (Thanks to Crystal Kelehear for this clarification, personal communication, November 22nd 2014).

⁵ See the organisation's website: <http://www.oneworldocean.com/initiatives/gofish> - accessed November 18th 2014.

⁶ The abbreviation MoMa here refers to the MONA Market.

⁷ Archived online at: <http://www.abc.net.au/am/content/2014/s4045147.htm> - accessed November 10th 2014.

⁸ See <http://scu.edu.au/regionalfoodconference/> - accessed November 14th 2014.

⁹ It should be noted that there are complexities to the etymology, in that the French/frog association may have predated its association with eating frogs' legs (see, for instance,

<http://www.oxforddictionaries.com/definition/english/frog> - accessed November 20th 2014).

¹⁰ One interesting engagement with the latter, in the Australian context, is the self-deprecating strategy pursued by the French wine maker Jean-Claude Mas. Responding to US boycotts of French wine following France's reluctance to join the US coalition in invading Iraq in 2003, he sought to emulate the success of the low-priced Australian Yellowtail label in the international market through a witty branding campaign featuring the "Arrogant Frog Label". Reporting the brand's success at securing a niche in the Australian market, Australian Business Review journalist Blair Speedy reported on the label's humorous marketing approach under a headline that characterised the label's strategy as invasive ('Frog hops into our global niche') (2011: online).

¹¹ As series that commenced with *Toad Rage* (1999) and included *Toad Heaven* (2003), *Toad Away* (2004) and *Toad Surprise* (2008) – all published by Penguin.

¹² See <http://matthewjamestaylor.com/comics/ogga-old> - accessed November 22nd 2014)

¹³ See Sharp, Lothian, Munn and Saunders (2011)

¹⁴ See, for instance: <https://www.youtube.com/watch?v=Zgl053z3xJg> - accessed November 18th 2014

¹⁵ The photographic image was not available for reproduction in this article (Broome, 2014) but was archived on-line at time of writing (March 6th 2015).

¹⁶ Archived online at: <http://tenplay.com.au/channel-ten/the-project/2014/11/10> - accessed November 12th 2014 (item begins at 36 minutes in to show).

¹⁷ See discussion of Lupin and GULP in Section II.

¹⁸ An Australian show derived from its British namesake.

¹⁹ While I have not found evidence of earlier consumption there is no reason to assume that this did not take place in regions of cane toad infestation.

²⁰ Archived online at: <https://www.youtube.com/watch?v=sswG4EeDK24> - accessed November 5th 2014.

²¹ As a parody, adventurer and TV natural historian David Ireland (presenter/star of the *Wildlife Man* TV series) produced an item on him preparing, cooking and eating whole cane toads baked in damper in May 2013. Archived online at: <https://www.youtube.com/watch?v=xSBjfSK58vc> - accessed November 20th 2014.

²² While detailed breakdowns of cane toads' nutritional value have not yet been published, information on other amphibians' nutritional elements has been published. See, for instance, the Self Nutrition website's analysis of (raw) frogs' legs (sampled species unknown) at: <http://nutritiondata.self.com/facts/finfish-and-shellfish-products/7739/2> - accessed November 21st 2014.

²³ Indeed Queensland meat processor John Burey conducted initial market research in China in 2010.

²⁴ Amongst names offered by professionals and the public in November 2014 were 'Cato' (taking the first two letters of Cane and Toad) and the punning 'Toadfu'. Chef Matt Preston also suggested 'sugar cane drummette' to describe the cooked legs (on *The Project* November 17th).

²⁵ But this is not necessarily an inflexible impediment. In Japan the puffer fish is prized as a sashimi dish – known as *Fugu* – despite parts of the fish being massively more toxic than any part of a cane toad.

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