



Resolving the Problem of Platypus Deaths in Enclosed Yabby Traps

Information Paper (August 2017)

Executive Summary

Enclosed yabby traps such as opera house traps often drown platypus, with several animals sometimes found dead in a single trap. The latest edition of *The Action Plan for Australian Mammals* has identified platypus bycatch mortality to be an important threat operating over a wide geographic area. Other aquatic wildlife (including rakali/Australian water-rats and freshwater turtles) also regularly die in enclosed traps.



The platypus is an iconic native species and the vast majority of Australians do not approve of them being killed in this manner. Failure to address this matter also has the potential to damage Australia's international reputation in relation to its commitment to wildlife conservation.

Recreational fishing regulations most typically seek to address the problem by prohibiting use of enclosed traps in waters where platypus are known to occur. However, a very high proportion of platypus deaths occur in yabby traps that have been deployed illegally. There is no reason to believe that increased community education and law enforcement will be sufficient to solve this issue. In addition, rakali and turtles remain at risk in many places where traps can be set legally.

Extensive research has now been carried out to investigate how modifying yabby traps can reduce the risk to air-breathing fauna. The results indicate that opera house traps can be modified to make it easier for non-target wildlife to escape. However, none of the designs tested to date can be deemed to be platypus-safe in all circumstances. More generally, the behaviour of animals confined in trial traps indicates that this objective is likely to be unachievable.

Similarly, the platypus's streamlined shape and ability to squeeze through small openings makes it difficult to design a trap that will reliably exclude this species while encouraging large yabbies to enter, particularly when red claw yabbies are being targeted.

Alternatively, a recent study has confirmed that some types of lift net actually outperform opera house traps in terms of the average number of yabbies captured when traps are left unattended in the water for 6 hours. In part, this reflects the fact that – contrary to what most people assume – yabbies can escape from a standard opera house trap fitted with a ring entrance if they wish.

Fisheries management agencies, recreational angling bodies and the Australian Fishing Trade Association widely agree with members of the broader Australian community that mortality of platypus and other air-breathing animals as bycatch in enclosed yabby traps is a problem that needs to be solved.

It is therefore recommended that possession and use of enclosed yabby traps should be banned in all private and public freshwater habitats in favour of gear that is effectively risk-free for air-breathing bycatch.

Why are platypus dying in yabby traps and what is the scale of the problem?

Several species of freshwater crayfish (yabbies) are commonly taken by recreational anglers for human consumption or to serve as angling bait for fin fish. The use of enclosed traps is the most common technique for catching yabbies.



Enclosed yabby traps are typically constructed from nylon mesh and metal framing. The openings in the walls through which yabbies enter the trap are relatively small (typically 7.5-10 cm in diameter), and are typically placed at the ends of internal funnels to further discourage yabbies from escaping. Opera house traps (as shown at left) currently dominate the yabby trap market and can often be purchased for as little as \$5 each. Huge numbers of this design are sold each year. However, other types of enclosed trap are also used for yabbing, including home-made versions and traps that are mainly designed to catch marine crabs or crayfish.

Enclosed yabby traps are typically left unattended in the water for extended periods. Platypus enter traps either by accident or because they are attracted to yabbies as a food source. They then generally have less than 2.5 minutes to locate an exit before drowning. In practice, research has shown that most (probably close to 100%) of the platypus that enter a standard opera house trap will run out of oxygen before they can escape (Serena *et al.* 2016).

For obvious reasons, most platypus deaths in yabby traps are never reported. Nonetheless, a study of platypus mortality factors in Victoria from the 1980s to 2009 found that 56% of deaths with an identifiable cause were due to animals drowning in illegal fishing nets or traps. About one-third of these cases involved use of opera house traps. Although use of these traps in Victorian public waters has been banned since mid-2001, platypus mortalities in opera house traps actually increased in 2000-2009 as compared to previous decades, presumably reflecting the vast increase in numbers of inexpensive opera house traps sold in this period (Serena and Williams 2010).



Dead platypus in opera house trap, Lagoon Creek 2013

The Action Plan for Australian Mammals 2012 lists “Mortality associated with fishing bycatch” as the second most important threat currently facing the platypus, with potentially severe population impacts occurring over a large area (Woinarski *et al.* 2014). In line with this conclusion, numerous platypus deaths in enclosed yabby traps have been documented at sites distributed across most of the platypus’s geographic range since 2010 (Appendix 1).

Apart from the platypus, enclosed yabby traps are known to pose a threat to Australian water-rats (or rakali) across this species’ range in Australia (Appendix 2). For example, a recent study in Western Australia found that 43% of reported rakali deaths ($n = 30$) occurred when animals drowned in opera house traps set by recreational anglers to capture marron (Trocini *et al.* 2015). Remarkably, this occurred despite the fact that opera house traps have never been formally approved for use in any waters in Western Australia.



Dead rakali in opera house trap, Crookwell River 2011

Freshwater turtles typically take up to several hours to drown when forced to remain in submerged yabby traps. Nonetheless, substantial mortality can occur when traps are left unattended for long periods. For example, Limpus *et al.* (2006) concluded that several hundred turtles die each year in opera house traps that have been lost or abandoned by recreational anglers seeking to catch red claw yabbies in Queensland's Fairbairn Dam.

Why doesn't current legislation work?

All state or territory jurisdictions where platypus populations are known to occur (including Tasmania, Victoria, the ACT, New South Wales and Queensland) have regulations to reduce the likelihood that these animals die in opera house traps (Appendix 3). These regulations generally aim to prohibit use of enclosed yabby traps in waters where platypus are likely to be found.

In brief, enclosed yabby traps are currently banned throughout Tasmania, and in *public waters* in Victoria, the ACT and the eastern parts of New South Wales and Queensland (apart from 44 reservoirs in eastern Queensland that are popular destinations for recreational anglers). However, enclosed traps can be legally deployed in *private waters* (such as farm dams) throughout Victoria, the ACT, New South Wales and Queensland, and also in public waters located west of designated lines in New South Wales and Queensland.

In practice, illegal usage is responsible for most recorded platypus mortalities in enclosed yabby traps. Two demographic groups appear particularly likely to contribute to this issue: persons living near waterways in urban fringe areas, and urban or suburban families who camp or otherwise spend time near platypus waters while on holiday.



A seizure of illegally-set opera house traps in the Wimmera River by Fisheries Victoria officers

Use of enclosed traps at even a few scattered sites may adversely affect platypus populations over a very large area, due to the fact that platypus home ranges are overlapping and can encompass up to 15 kilometres of channel (Serena and Williams 2012). The most popular period for family camping in late December and January coincides with the late lactational period when juvenile platypus are still highly reliant on their mother for food (Grant *et al.* 2004). If a female platypus is killed at this time of year, her offspring are therefore also highly likely to die.

Illegal use of opera house traps is promoted by a number of factors, including:

- Many opera house trap users are not licensed recreational anglers and are unaware that regulations restricting the use of yabby traps even exist.
- The low cost and ubiquity of opera house traps offered for sale in fishing and camping stores promote their purchase as spur of the moment items and contribute to the perception that they must be harmless.
- Point-of-sale information regarding restrictions on opera house trap use is often woefully inadequate – retailers are not obliged to inform customers about restrictions on usage or provide informative labelling on traps.
- Effective law enforcement is virtually impossible – opera house traps are relatively small and inconspicuous and often deployed in the evening or overnight. Setting and hauling traps takes very little time and is more or less impossible to detect from a distance.
- The current disparity in regulations across state and territory jurisdictions creates confusion, especially in border areas and for persons travelling interstate.

Can traps be modified to exclude platypus reliably from traps?

A platypus's streamlined shape means that it is very good at getting through small openings. Research by Grant *et al.* (2004) has shown that adult females weighing up to about 1 kilogram can move through a rigid 55-mm square grid (equating to a 7-cm ring in terms of its perimeter). Much smaller grids or rings are needed to reliably exclude juvenile platypus (which can weigh as little as 300-400 grams) and immature rakali and turtles. Small rakali and turtles have reportedly been found drowned in bait traps with an entrance diameter of just 50 mm (APC unpub. data).

Based on the above, it appears unlikely that a trap can be designed that will reliably exclude platypus and other air-breathing animals from traps while encouraging large yabbies to enter. This will be particularly difficult to achieve in Queensland, where red claw yabbies often grow to 300 grams and can weigh up to 600 grams.

Can traps be modified to facilitate the escape of platypus?

Extensive research by Australian Platypus Conservancy staff in Victoria and Dr Tom Grant in New South Wales has shown that adding an escape hatch to the roof of an opera house trap results in a significantly safer trap for platypus (Serena *et al.* 2016, Serena and Williams 2017). However, none of the designs tested to date appear likely to be risk-free in all circumstances, given the length of time required by some animals to escape.

More generally, given what has been learned about platypus behaviour inside traps, modifying trap design is unlikely to be a viable strategy to eliminate bycatch mortalities in enclosed traps.

Should enclosed traps be banned in inland waters across Australia?

A total ban on possession and use of opera house traps and other enclosed yabby trap designs undoubtedly would be the best way to minimise the risk that platypus, rakali and turtles are harmed as a by-product of recreational yabbing. Interestingly, both VRFish (the peak representative body for recreational anglers in Victoria) and the Recreational Fishing New South Wales Advisory Council (RFNSW) have now called for a ban.

Such a ban will require existing fishing regulations to be amended in all states and territories apart from Western Australia and Tasmania. Although some use of enclosed traps (including homemade versions) is expected to continue to occur after a ban is enacted, this should decline over time to minimal levels – as has been the case with gill nets and drum nets which were banned by most jurisdictions some decades ago because of their lethal impact on air-breathing bycatch.

We acknowledge that there are many responsible users of enclosed traps, particularly landowners who have been yabbing for generations in farm dams without causing any harm to non-target species. However, it should also be recognised that there are other productive methods for recreational yabbing that could easily be adopted.

Apart from the traditional technique of capturing yabbies by dangling a chunk of meat (tied to a length of string) in the water, various types of lift nets are available. These basically consist of an open-topped receptacle in which bait is placed. Some lift nets consist of a collapsible bucket made of nylon mesh with a minimal metal frame – the net sits flat on the bottom while yabbies are attracted to bait placed at the net's centre, then the walls extend when the net is raised to the surface (as shown at right). Other models consist of relatively shallow, open-topped mesh boxes in which the walls are more or less permanently fixed in place. To the best of our knowledge, no bycatch issues have ever been reported for either style of lift net, indicating that their use entails effectively no risk to non-target wildlife.



Lift net

Importantly, two recent studies that compared the yabbing efficiency of different trap designs found that – contrary to what most people believe – yabbies *can* get out of opera house traps fitted with a standard ring entrance (for example, if a yabby has had enough to eat or feels threatened by other yabbies).

Both opera house traps and lift traps therefore generally perform best when left in the water for around 3-6 hours and not any longer (Brown *et al.* 2015; Serena *et al.* 2016). Furthermore, there is no indication that opera house traps consistently outperform lift nets within this time frame. For example, Brown *et al.* (2015) found that traps deployed for 6 hours held on average 5.7 yabbies (in opera house traps fitted with a 7.5-cm ring entrance), 5.9 yabbies (fixed-wall lift nets with relatively high side walls) and 6.2 yabbies (fixed-wall lift nets with relatively low side walls).

We conclude that perfectly acceptable, wildlife-safe options already exist for passive recreational yabbing. Fisheries management agencies, recreational angling bodies, the Australian Fishing Trade Association and members of the Australian community widely agree that mortality of platypus and other air-breathing animals as bycatch in enclosed yabby traps is a problem that needs to be solved.

It is therefore recommended that possession and use of enclosed yabby traps should be banned in all private and public freshwater habitats in favour of gear that is effectively risk-free for air-breathing bycatch.

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Appendix 1. Locations where platypus are reported to have drowned in enclosed yabby traps from 2010-2017 (June). Details as recorded in the APC's platypus mortality database. Sex (when reported) = M (male), F (female).

<i>Location</i>	<i>N of platypus (sex)</i>	<i>Trap type</i>
VICTORIA		
Upper Tarago River, Tarago	2	opera house trap
Mitchell River, Angusvale	2	homemade mesh trap
Tarra River, Port Albert	1	opera house trap
Goulburn River, Molesworth	1	opera house trap
Bunyip River, Labertouche North	1 (F)	opera house trap
Traralgon Creek, Traralgon	1	opera house trap
Agnes River, Toora	1	opera house trap
Yarra River, Don Valley	1	homemade mesh trap
LaTrobe River, Noojee	1	opera house trap
Cockatoo Creek, Cockatoo	1	opera house trap
Tyers River, Moondarra State Park	1 (F)	opera house trap
Tarra River, Port Albert	1	opera house trap
Ovens River, Eurobin	4	homemade mesh trap
Plenty River, Rosanna	1	opera house trap
Campbells Creek, Castlemaine	1	opera house trap
Buchan River, Buchan	1	opera house trap
Bunyip River, Cora Lynn	1	opera house trap
Murrindindi River, Yea	1	opera house trap
Labertouche Creek	5	opera house trap
Mount Emu Creek, Panmure	2	opera house trap
Lake Guy, Mount Bogong	3	frame traps
NSW		
Murrumbidgee River, Gundagai	2	homemade mesh trap
Georges River, Kentlyn	1	opera house trap
Queanbeyan River, Queanbeyan	2	opera house trap
Cobark River, Barrington Tops	2	opera house trap
Fish River, location unspecified	1	opera house trap
ACT		
Murrumbidgee River, Kambah	1	folding frame trap
Molonglo River, Coppins Creek	2	opera house trap
Murrumbidgee River, Point Hut	2	opera house trap
QUEENSLAND		
Brisbane River, Ipswich	1	opera house trap
Lagoon Creek, Caboolture	12 ^A	opera house traps
Nerang River, Springbrook National Park	2 (1M, 1F)	opera house trap
Private dam, Lockyer Valley	1	opera house trap
Brisbane River – Wivenhoe	1	opera house trap
TASMANIA		
Emu Creek, Burnie	3	opera house trap

^A Several traps containing carcasses were found from 2010-2013, including one trap that reportedly held five dead platypus

Appendix 2. Locations where rakali are reported to have drowned in enclosed yabby traps from 2010-2017 (June). Details as recorded in the APC's rakali mortality database, unless indicated otherwise.

<i>Location</i>	<i>N of water-rats</i>	<i>Trap type</i>
VICTORIA		
Tea Garden Creek, Myrtleford	1	homemade mesh trap
House Creek, Wodonga	2	opera house trap
Wimmera River, Longeranong weir	1	opera house trap
Avoca River (trib.) – near Kerang	1	opera house trap
Donnelly's Weir, Healesville	2	opera house trap
Lake Daylesford, Daylesford	1	opera house trap
Drainage channel, Leitchville	1	opera house trap
Broken Creek, Nathalia	1	opera house trap
Barmah NP	1	opera house trap
Cherry Lake, Altona	1	opera house trap
Private dam, Woodend	1	opera house trap
Silver Creek, Beechwood	2	opera house trap
Diamond Creek, Eltham	1	opera house trap
NSW		
Crookwell River, Crookwell	1	opera house trap
Private dam, Gulgong	1	opera house trap
Brown's Lagoon, Albury	1	opera house trap
Billabong Creek, Jerilderie	1	opera house trap
Lake Eucumbene	1	opera house trap
Nattai River, Mittagong	1	opera house trap
Lewis Ponds Creek, near Orange	3	opera house trap
ACT		
Lake Tuggeranong	1	opera house trap
Lake Burley Griffin	2	frame trap
QUEENSLAND		
Thomson River, 30 km south of Jundah	1	opera house trap
Barcoo River, Tambo	1	opera house trap
Darling River, Menindee	2	opera house trap
Private dam, Ballogie	1	opera house trap
SOUTH AUSTRALIA		
Light River, Hamley Bridge	1	opera house trap
Gilbert River, Stockport	2	opera house trap
Murray River, near Paringa	1	opera house trap
WESTERN AUSTRALIA		
Canning River, Roleystone ^A	2	opera house trap
Various ^B	13	opera house trap

^A Reported in *Bushland News* 83 (spring 2012, WA Dept of Environment and Conservation)

^B Reported in Trocini *et al.* (2015) (see Literature Cited)

Appendix 3. Summary of state or territory regulations regarding use of opera house traps, including the extent of locations where traps can be set, the maximum number of traps that can simultaneously be deployed by an person, and maximum entrance dimensions (if specified). GDR = Great Dividing Range.

<i>State/territory</i>	<i>Inland waters where traps are banned</i>	<i>No. of traps per person</i>	<i>Max. entrance size</i>
Victoria	Banned in all public waters	3	Unspecified
NSW	Public waters east of Newell Highway Murray R downstream to Echuca Edward R downstream to Stevens Weir Murrumbidgee R downstream to Darlington Point Declared trout and other closed waters	5	9 cm
ACT	Banned in all public waters	Unspecified	Unspecified
Queensland	Public waters east of GDR/Gore Highway ^A	4	10 cm ^C
SA	Can be deployed in all waters	3	7.5 cm ^D
NT	Can be deployed in all waters	5 ^B	9 cm ^D
WA	Banned in all waters	N/A	N/A
Tasmania	Banned in all waters	N/A	N/A

^A Apart from 44 specified impoundments

^B 3 traps allowed per person in Daly River FMZ

^C No more than 4 entrances permitted per trap

^D No more than 2 entrances permitted per trap