



Ripples

Newsletter of the **AUSTRALIAN PLATYPUS CONSERVANCY**

GOING WITH THE FLOW

Have platypus populations been adversely affected by the post-storm flows that have broken the banks of so many rivers and creeks in eastern Australia this summer?

Although our knowledge of how platypus populations cope with flooding is far from complete, available information suggests that the answer probably depends on both the timing and severity of local flood events.

For example, it's possible that platypus might actually tend to benefit in the case of minor to moderate flooding, if silt that has accumulated in the course of a drought is dispersed to reveal a more diverse channel substrate, or additional woody debris in the form of logs and large branches is washed into the channel.

On the other hand, as the strength and duration of a flood increases, it's progressively more likely to erode banks severely and deposit the resulting sediment into pools, sometimes resulting in massive degradation of platypus habitat.

The likelihood that platypus are killed by drowning or aspiration pneumonia or that they experience prolonged food stress after bottom-dwelling invertebrate populations are washed away is also expected to increase with the magnitude of a flood event.

With respect to timing, young platypus may be subject to widespread mortality if flooding occurs when juveniles are still confined to nesting burrows or have only recently started to hone their swimming skills. Along the Shoalhaven River in New South Wales, juveniles failed to be detected in surveys carried out in March 1992 after floods occurred in late December and early January, despite the fact that many adult females had been lactating earlier in December.

Similarly, after more than 120 millimetres of rain was recorded around Melbourne in less than 24 hours in early February 2005, the frequency of juveniles captured along streams in the Yarra River and Dandenong Creek catchments declined to less than 10% of the frequency of juveniles recorded in the four previous summers.

One common stumbling block when seeking to investigate the effects of post-storm flows on platypus is that substantial flooding tends to occur at fairly unpredictable intervals in most parts of Australia.

This means that it's generally quite rare for any data to have been recently collected against which a population's post-flood status can be assessed.

One such opportunity has arisen this summer along the Queanbeyan River near Canberra, where a *Platypus Count* program – conducted by dedicated community volunteers working in partnership with the Conservancy and ACT Waterwatch - has been monitoring platypus and water-rat populations since May 2009 (see page 2 and *Ripples* no. 43).

Heavy rains in December 2010 prompted a one-in-30-year flood event at Queanbeyan township, where a bemused person observed a platypus paddling around the local golf course near the tee at the sixteenth hole.

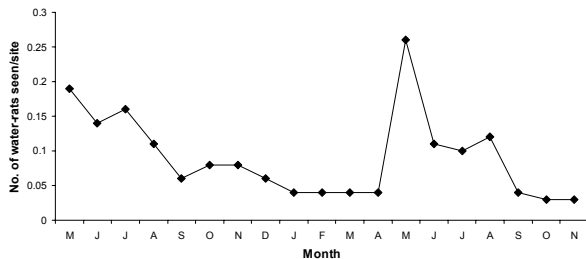
Floods are not something to rejoice about, not least when they cause damage and threaten human lives in an urban setting.

However, the recent events at Queanbeyan will hopefully be associated with at least one positive outcome, in the form of new information about the response of a platypus population to flooding.

WANDERING WATER-RATS

Along with a thriving platypus population, the Queanbeyan River supports large numbers of native water-rats (or rakali) – Australia's ecological equivalent to the otter. This has created a wonderful opportunity for *Platypus Count* volunteers to monitor water-rat activity at the same sites where platypus activity is regularly being tracked.

The graph below shows how the average frequency of water-rat sightings along the Queanbeyan River at Queanbeyan township has varied on a monthly basis from May 2009 through November 2010.



Water-rats were most often spotted in May, when the average sighting frequency across both years was 0.22 (equivalent to one animal being seen in roughly five visits to observation sites along the river). In both 2009 and 2010, the number of water-rats seen in May actually exceeded the number of platypus seen (the only month when this was true).

By comparison, only about half as many rakali sightings were recorded from June through August, when one animal was seen in 8 to 9 site-visits on average. At other times of year, the frequency of water-rat sightings dropped even further, with one water-rat observed on average in 20 site-visits.

How can this pattern of seasonal variation best be explained?

Although a great deal remains to be learned about water-rat ecology, studies carried out in Victoria and New South Wales have indicated that these animals mainly breed in spring and summer, though juveniles are sometimes born in other seasons. In favourable years, it's believed that two or three litters are likely to be produced in fairly close succession, with three or four siblings typically found in a given litter.

Water-rats are known to be fairly short-lived animals which are unlikely to survive in the wild beyond the age of three to four years.

Nonetheless, in the case of a relatively high density population like that found along the Queanbeyan River, it's likely that far more young water-rats will be born each year than can be accommodated comfortably through natural attrition of adults.

At some point, many young animals will therefore be forced – either in response to aggressive interactions or simply because food resources are starting to be stretched thin – to leave their natal area in order to look for a suitable place to settle elsewhere.

It follows that one reasonable explanation for the occurrence of a late-autumn spike in water-rat sightings is that it's related to juvenile dispersal, with large numbers of young water-rats predicted to start moving along the length of the river as water temperatures begin to drop and animals born in spring and early summer start to mature.

In fact, it wouldn't be at all surprising if dispersing juveniles are much more likely to be seen during daylight hours than resident water-rats, given that it's in the dispersers' best interests to be out and about when their highly territorial elders are most likely to be asleep in burrows.

To find out if this explanation is true, data describing the age structure and abundance of the Queanbeyan River's rakali population would ideally be collected throughout the year using live-trapping methods. However, this is likely to be quite difficult to achieve in practice, given how hard it can be (at least in our experience) to capture these very smart and elusive creatures.

Meanwhile, to assist the development of a reliable visual monitoring method for water-rats, it will also be of great interest to confirm whether the seasonal trends in sightings described near Queanbeyan occur elsewhere in the species' range.

Anyone living outside the Canberra area who sees water-rats regularly is therefore encouraged to contact the APC to discuss the possibility of recording observations.

PLATYPUS UNDER THE PUMP

As readers may recall, a surprisingly high proportion of reported platypus mortalities involves animals that die after entering water pumps, irrigation water wheels or water-powered turbines (see *Ripples* no. 41).

In addition, it is known that other aquatic species, especially freshwater turtles, often come to grief in this same manner.

However, the true conservation impact of this management problem remains unknown, given that anecdotal evidence suggests that the number of platypus and other animals dying annually in pumps is consistently under-reported.

To learn more about this issue, the Conservancy is commencing a study in partnership with Goulburn-Murray Water (G-MW). It is hoped that better understanding of the circumstances associated with animals entering pumps or other machinery will suggest solutions that both reduce impacts on native wildlife and also improve the efficiency of irrigation operations.

As a first step, G-MW staff and customers in the Torrumbarry Irrigation Area who discover a platypus lodged in equipment are being asked to report the incident, including a description of the size and sex of the platypus and details of the type of infrastructure involved.

This will allow the scope of the problem to be assessed and contributing factors to be identified - for example, are deaths significantly associated with certain designs or sizes of pumps, particular off-take locations, or specific hours of operation? This, in turn, should contribute to developing practical guidelines to address the issue.

Reports of platypus mortalities in pumps and other irrigation equipment in the Torrumbarry Irrigation Area should be made to G-MW's Environmental Officer on 03 5833 5672.

The APC would also be pleased to receive reports of any similar incidents from other irrigation districts, in hopes of shedding further light on how best to proceed. All reports will be treated in confidence.

Did You Know That...

Platypus field studies carried out by Dr Tom Grant along a river in New South Wales over 27 breeding seasons found that from 18% to 80% of females produced offspring in any given year.



COUNTRY PLATYPUS VICTIMS OF LITTER

Litter is often seen as a problem mainly confined to major urban areas. Two recent incidents in Victoria have highlighted the fact that discarded items are also hazardous for wildlife living near country towns.

In the first case, an adult platypus was found on the banks of the Ovens River at Bright with an elastic hair band cutting into his neck and shoulder. In the second, a subadult platypus was picked up beside the creek running through Traralgon with a hospital identification wrist-band looped around his neck and a rubber band around his body. Both animals were reluctant to move when approached, presumably because it hurt so much to do so.

Fortunately, local veterinarians (Dr Rebekah Day of Alpine Animal Doctors and Dr John Butler of Animal Clinic Morwell, respectively) were able to remove the offending items and treat the wounds caused by the litter (see below). Both patients - who started moving freely as soon as the litter was removed - were then cleared for a return to the wild.



To safeguard platypus, it is essential to avoid dropping litter near creeks and rivers. It's also a good idea to cut through all plastic, rubber or metal loops at home before recycling them, rendering these items harmless to wildlife if they do accidentally enter a waterway.

