Platypus News & Views

Newsletter of the Australian Platypus Conservancy (Issue 58 – November 2014)

MATTERS OF LIFE AND DEATH

How are platypus populations affected by extreme weather in the form of droughts and floods?

To help address this question, the APC recently analysed platypus population data obtained in stream systems near Melbourne in the decade from July 1997 to June 2007. This period was mainly dry, with 2002/03 and 2006/07 respectively ranking as the driest and second driest years on record since 1855. However, the pattern of prevailing drought was punctuated by a few wetter periods, including one storm that produced the highest daily rainfall total ever measured for the Melbourne area.

A number of new findings emerged from the analysis:

Firstly, population trajectories differed considerably among streams. Platypus population size varied least along Olinda Creek, where 16 resident animals (six males, 10 females) disappeared through the decade and were progressively replaced by 17 new recruits (six males, 11 females). This stability presumably reflected the occurrence of a small but highly reliable volume of surface water (comprising about 2 megalitres/day) that was released into Olinda Creek as an environmental flow from Silvan Reservoir throughout the study. In contrast, the worst-performing population occupied Monbulk Creek, where impacts of drought and rapid catchment urbanisation apparently conspired to cause platypus numbers to drop from 27 to just 12 resident animals over the 10-year period.

Surprisingly, the percentage of adults that died or otherwise disappeared annually was approximately the same in Monbulk Creek (15.5%) and Olinda Creek (14.5%). Instead, the contrasting trajectories of these small and relatively isolated systems seemed to be mainly due to differences in reproductive rate: nearly four times more juveniles appeared annually along Olinda Creek than Monbulk Creek (where on average less than 0.1 juvenile was captured per breeding-age female). In other words, population size along Olinda Creek remained stable because females were able to raise enough juveniles to compensate for adult mortality. In the case of Monbulk Creek, the population shrank because too few juveniles were available to replace adults as animals got old and died.

Across all study sites, platypus reproductive success was positively related to the amount of rain that fell in the months before breeding. This presumably reflects the fact that reliably flowing streams are more likely to generate abundant food for platypus (in the form of aquatic insects and other invertebrates), which in turn will improve the physical condition of breeding-age animals. A positive relationship between body condition and fertility has previously been reported for a diverse range of wild mammals, including squirrels, arctic foxes, European badgers, deer and elk.

Conversely, platypus reproduction suffered when substantial storms occurred in summer, around the time that juveniles first emerge from nursery burrows and are learning to swim. Flooding can deplete populations of aquatic invertebrates so it becomes harder for juveniles to find food. Unusually strong and turbulent flows might also contribute directly to juvenile mortality when young animals drown or are washed long distances downstream.

WATER-RATS IN THE GIPPSLAND LAKES

As reported in the February 2014 edition of *PN&V*, the Conservancy recently investigated the distribution of the Australian water-rat (a.k.a. rakali) in the Gippsland Lakes, a Ramsar-listed network of coastal lagoons in eastern Victoria. This research was supported by the Gippsland Lakes Ministerial Advisory Committee.

Water-rats are notoriously hard to capture in standard traps or nets. Instead, collecting community-based sightings reports was identified as the most effective method for mapping the species' distribution. Following extensive media coverage and several public information sessions, 65 persons contributed details relating to several hundred different sightings.

This information served to establish that water-rats are widespread in the Gippsland Lakes. However, sightings were mainly concentrated in human-modified habitats around Paynesville, Eagle Point, Metung and Lakes Entrance, i.e. in Lake King and the eastern end of Lake Victoria. A number of reports noted that animals were seen sheltering in stormwater drains, boat exhaust pipes or rubber tyres mounted as boat fenders. The species was also often described as scavenging for fish guts or other food scraps kindly provided by humans.

Only about 5% of all sightings originated in Lake Wellington or the western end of Lake Victoria, including around the busy resort community at Loch Sport. While this may partly reflect the presence of fewer human observers, the popularity of boating, fishing and other recreational activities throughout the Lakes should have provided ample opportunities for animals to be spotted and reported if they were present. The substantial deficit of sightings from the western end of the system therefore suggests that genuinely fewer water-rats occur there. Similarly, only three water-rat sightings reports originated in the lower reaches of the three rivers joining Lake Wellington, whereas 12 reports were obtained for the lower reaches of the three rivers flowing into Lake King and eastern Lake Victoria. At the extreme eastern end of the system, only one water-rat sighting was reported for Lake Tyers, with no reports emanating from the popular holiday destination of Lake Tyers Beach.

Anecdotal evidence obtained during the study suggests that water-rat numbers may have declined regionally in the last five decades. Purported contributing factors include the impact of commercial eel-fishing, habitat loss when drainage channels were filled in around Lakes Entrance township, predation by domestic cats, and possible poisoning during rabbit baiting programs. However, there is no reason to believe that the Gippsland Lakes water-rat population as a whole is currently threatened or at risk.

More generally, the feedback received about water-rats was overwhelmingly positive. Typical comments include the following:

> *Locally, those of us who are fond of water-rats refer to them affectionately as Rattus wettus or Rattus paynesvillii.*
>
> *Good luck with your care and attention of this beautiful creature – they add colour and interest to the marine environment.*
>
> *They certainly do look like otters. Lovely to watch.*

This suggests that water-rats could be actively promoted as a very desirable inhabitant of the Gippsland Lakes ecosystem and even as an eco-tourism attraction. There is also considerable scope for harnessing community support for this species to help tackle issues such as litter and pollution.

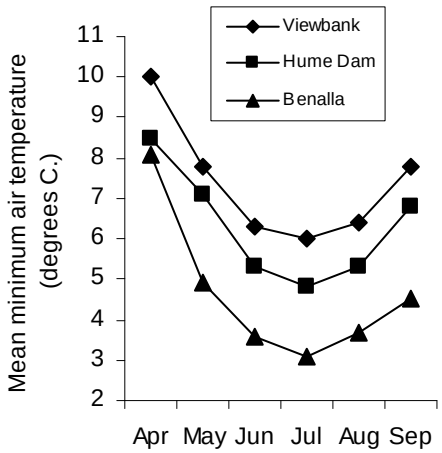
***PLATYPUS COUNT*: MURRAY AND BROKEN RIVERS**

In the May 2014 issue of *PN&V* we considered how the number of platypus sightings varies by month along the Yarra River from Viewbank to Wonga Park in Melbourne's eastern suburbs. The highest frequency of sightings occurred in August, followed by September. Given that platypus breed in spring, it makes sense that this peak is largely fuelled by increased diurnal activity of adult males as they search for mates.

The platypus's breeding season varies geographically, with Queensland animals known to breed earlier in the year than those found in New South Wales and Victoria, which in turn breed earlier on average than those in Tasmania. This pattern suggests that females don't start producing young until water temperatures are high enough to boost stream and river productivity and hence the platypus food supply. But what about platypus populations that are located closer to one another? For example, is there any evidence to suggest that the onset of breeding may vary among locations within a given state?

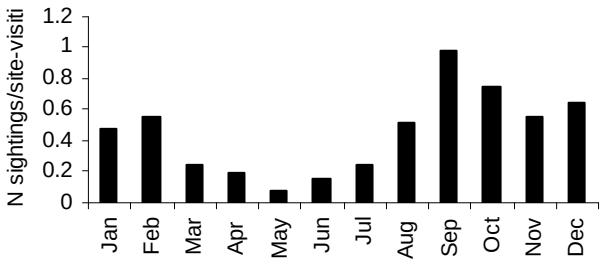
As a first step towards answering this question, we thought it might be useful to examine the monthly pattern of platypus sightings in two other Victorian water bodies where data have been collected for some time by *Platypus Count* participants, namely the Broken River at Benalla (monitored since January 2011) and the Murray River at Mungabareena Reserve near Albury-Wodonga (a few kilometres downstream of Hume Dam, monitored since August 2010). Benalla is located roughly 200 km north-east of Melbourne, and Albury-Wodonga straddles the Victoria-New South Wales border (roughly 300 km north-east of Melbourne).

Benalla and Albury-Wodonga are situated much farther from the coast than Melbourne, typically resulting in lower ambient temperatures in winter and early spring despite the fact that they are located farther north (see graph of air temperatures at right). In addition, cold-water pollution from Lake Hume (caused by chilly water being released from the bottom of the reservoir) is likely to further depress water temperatures in spring at Mungabareena Reserve. We therefore predict that platypus populations at both Albury-Wodonga and Benalla might potentially start breeding a bit later in the year than those found near Melbourne.

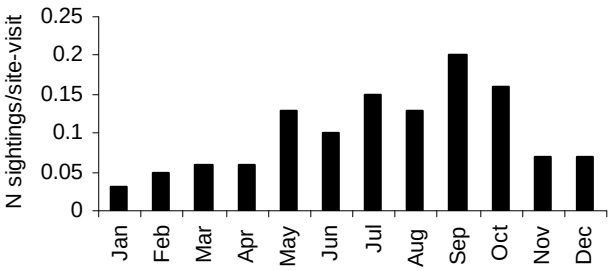


The graphs below summarise the mean (or average) monthly frequency of platypus sightings in the Murray and Broken River study areas. Interestingly, sightings in both places peaked in September, followed by October (or in other words, one month later than along the Yarra). We tentatively conclude that platypus may breed somewhat later at Albury-Wodonga and Benalla than they do near Melbourne. However, to provide really rigorous support for this conclusion (and for a possible relationship between water temperature and platypus breeding seasonality), further fieldwork is needed both to determine when juveniles actually appear in summer and to describe river temperature profiles in winter and spring.

Murray River near Albury-Wodonga



Broken River at Benalla



VISIT OUR FACEBOOK PAGE FOR MORE PLATYPUS NEWS

The **Australian Platypus Conservancy (Official)** Facebook page provides more news and articles about platypus and Australian water-rats. The page features a 'Sighting of the Week' chosen from the many community records of platypus and water-rat sent to the APC. These serve to highlight important conservation and research issues and other points of interest relating to these two species. Facebook articles in the last quarter have dealt with questions such as whether there are recognised sub-species of platypus and whether remote cameras can be used to monitor platypus and water-rats successfully.

TALK ON PLATYPUS IN CANBERRA

The Australian Platypus Conservancy will present a briefing on the status, distribution and conservation needs of the platypus and water-rats in the Canberra region as part of a 'Forum on the State of Native Animals in the ACT' to be held at ANU on Wednesday 11 February 2015. The event is organised by the ACT Division of the Environment Institute of Australia and New Zealand. For more information on how to register for this event contact Richard Sharp at richard.s@nghenvironmental.com.au.

HELPING US TO HELP PLATYPUS

Many of the Conservancy's projects are funded by grants from management agencies, philanthropic trusts or corporate sponsors. Increasingly, however, the APC is undertaking applied research for which funding is not readily available. For example, APC biologists are currently testing a prototype escape ring that hopefully can be used to reduce by-catch of platypus and water-rats in fyke nets set for fish surveys. Obtaining support from conventional funding sources for this project will not be possible in the required timeframe. Donations received from individuals and environmental groups are needed to enable this valuable research to be carried out as a matter of urgency. If you would like to help, remember that donations to the APC are tax-deductible.

SPECIAL THANKS TO OUR SUPPORTERS!

The Australian Platypus Conservancy is a non-profit research and conservation organisation. The success of the APC's programs relies on the support of businesses, management agencies and individuals sharing our interest in one of the world's most fascinating animals. We gratefully acknowledge recent help by the following supporters:

East Gippsland Shire ■ Friends of the Earth Melbourne ■ Gippsland Lakes Environment Fund ■ Goulburn Broken Catchment Management Authority ■ Betty Lynch OAM ■ Norske Skog ■ North Central Catchment Management Authority ■ Parks Victoria ■ Platypus Outdoors ■ Taronga Conservation Society ■

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Platypus News & Views (formerly *Ripples*) is published by the Australian Platypus Conservancy.
ABN 64 255 612 676 Print Post Publication Number 335708/0022