

Platypus News & Views



Newsletter of the Australian Platypus Conservancy (Issue 82 – November 2020)

GOOD NEWS FOR COLIBAN PLATYPUS POPULATION

A platypus survey recently conducted by the Conservancy in partnership with Malmsbury Landcare Group succeeded in capturing 8 animals (6 males, 2 females) in a 3-kilometre segment of the Coliban River in and near Malmsbury township in central Victoria. The survey's main objective was to replicate APC surveys previously carried out in 2001 (near the start of the Millennium Drought, when 10 animals were recorded in the study area) and again in 2010 (shortly after the drought ended, when only two animals were recorded).

Given that only a fraction of the animals found in an area is expected to enter nets on any given night, the recent results are consistent with platypus abundance having now recovered to pre-drought levels.

This is not particularly surprising given that a female platypus matures at the age of two years and average fertility in reasonably productive habitats is 1.9 babies per litter. The low number of females encountered in the most recent survey probably reflects the fact that it was carried out in October, when many breeding females will be spending a lot of their time in a nesting burrow - either incubating eggs or caring for recently hatched young.

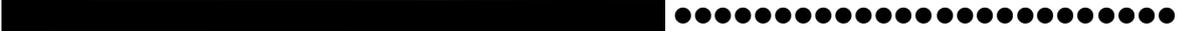


Other points of similarity between the 2001 and 2020 survey findings include the following:

- In both years, at least one platypus was captured at every site where nets were set.
- In both years, two males and two females were recorded at Malmsbury township.
- In both years, there was evidence that a healthy rakali population coexists with platypus in the study area.

Viewed at the catchment scale, the Malmsbury platypus sub-population is part of a much larger group of animals occupying around 50 kilometres of river channel between Malmsbury Reservoir and Lake Eppalock. Although not all of this area will necessarily be characterised by platypus densities that are as high as those at Malmsbury, recent eDNA evidence indicates that animals occur widely, with the pattern of recent platypus sightings also helping to confirm that this part of the Coliban system holds a regionally important platypus population that should be managed with care to ensure its long-term survival.

Considered at a more local scale, the substantial pools located in Malmsbury township are likely to support successful platypus reproduction in both wet and dry years, with two females captured there in both 2001 and 2020. The high quality of this habitat reflects not only the pools' size but also the provision of reliable outflows from Malmsbury Reservoir and many years of hard work by Malmsbury Landcare members to protect and improve adjoining riparian vegetation.



BENEFITS OF PLATYPUS FLUORESCENCE – SOME HYPOTHESES

As many of you will be aware, scientists recently reported that a platypus glows in lurid shades of turquoise blue, green and purple when illuminated by ultraviolet light – see <https://www.degruyter.com/view/journals/mamm/ahead-of-print/article-10.1515-mammalia-2020-0027/article-10.1515-mammalia-2020-0027.xml?language=en>.

This phenomenon, known as fluorescence, occurs because UV light is absorbed by platypus fur and skin and then re-emitted as longer-wavelength light visible to humans. While certainly very interesting, this isn't entirely unexpected given the enormous range of living organisms that are known to fluoresce, including plants, fungi, corals, jellyfish, insects, millipedes, scorpions, more than 180 kinds of marine and freshwater fish, frogs, marine turtles, birds (including puffins and parrots) and a wide variety of mammals (including bilbies and wombats).

But - apart from being a fun fact - could platypus fluorescence provide positive benefits for the species? We're aware of at least five possible mechanisms whereby this could be true, and thought you might like to hear what they are:

Help to protect platypus skin from being damaged by UV light. This would be analogous to the role played by melanin (which again mainly acts by absorbing UV) in reducing skin cancer risk. Though the platypus tends to be most active at night, animals can sometimes be seen feeding in the middle of a sunny day. This hypothesis is consistent with the fact that the bare skin of the platypus's front feet and bill both appear to fluoresce strongly.

Make it easier for platypus to detect each other at a distance. Though the platypus is not a gregarious species, several animals often share a given stretch of waterway. Being able to detect neighbours at a distance should make it easier to forage efficiently and optimise interactions, for example during the breeding season. Although the platypus normally closes its eyes when it's underwater, animals also spend a fair amount of time floating or swimming on the surface with their eyes open. To test this hypothesis, much more needs to be learned about the sensitivity of the platypus's eye to various wavelengths of light - and the relative amounts of UV and longer wavelength light present in platypus habitats, especially when illumination is low.

Provide information about attributes such as health or age. It's been known for more than a century that human teeth fluoresce in response to UV light, contributing to a bright appearance when people smile in natural light. It's also known that dental fluorescence peaks at about 26 years of age and gradually declines thereafter. It's therefore possible that variation in aspects of fluorescence such as brightness or colour could convey useful information about a platypus's age/reproductive status or condition/vigour to other individuals. Again, much more needs to be learned before this hypothesis can be properly evaluated.

Help to camouflage platypus from predators. Because UV is better than longer-wavelength light at penetrating water, fluorescence could in theory contribute to a platypus being less easily observed when it's submerged – at least by animals that can detect UV. In practice, this could apply to known platypus predators such as sea eagles and large Murray Cod – many birds and fish are capable of seeing UV light, though sensitivity varies in different species. Once again, more research is needed to evaluate this hypothesis.

Provide a benefit unrelated to fluorescence. Compounds contributing to fluorescence may be beneficial in ways that have nothing to do with their effect on light. For example, studies on swell sharks and chain catsharks – which are strikingly patterned with dark spots or criss-crossing lines over a lighter fluorescent background – have shown that the contrasting pattern becomes more noticeable as depth increases and light levels decline, suggesting that fluorescence contributes to the sharks' ability to see each other. At the same time, researchers have found that compounds responsible for shark fluorescence also have anti-microbial properties and so may help to keep their skin healthy.

PLATYPUS MONITORING HOT SPOTS

Despite challenges caused by coronavirus, hard-working members of the Australian Platypus Monitoring Network (APMN) have recorded the results of nearly 5300 standardised platypus monitoring scans in the last 12 months. A grand total of 2442 platypus sightings was reported, yielding an average frequency of 0.46 animals seen per scan across all sites.

Founders Lake at the Tasmanian Arboretum has again emerged as the leading hot spot for platypus sightings, with an average 3.4 animals seen per scan. Other highly reliable spotting locations have included the weir pool at Tidbinbilla Nature Reserve in the Australian Capital Territory (1.5 sightings/scan), the Snowy River at Dalgety in New South Wales (1.5), and Maleny in Queensland (1.2). A site on Seven Creeks near Strathbogie yielded the highest sightings frequency for Victoria (0.6). This population was feared to have declined severely during the Millennium Drought but now seems to be doing well, at least in its upper reaches.

If you're interested in contributing to platypus conservation by monitoring your local platypus population, full details about how to get started can be found on the APMN website at www.platypusnetwork.org.au.

VIEW FROM THE BRIDGE

People enjoying an exercise break during Melbourne's covid lockdown were treated to a remarkable sight as they crossed the pedestrian bridge over the Yarra River at Finn's Reserve on 20 September: a pair of platypus engaged in mating, unperturbed by excited onlookers (see photo at right courtesy of Jonathan Stone and also the video posted on 22 September on the APC Facebook page).



The Finn's Reserve footbridge is an established APMN monitoring site and standardised sightings data were previously collected there for many years through the APC's *Platypus Count* monitoring program (the precursor of APMN). Analysis of the combined dataset reveals that the average number of platypus sightings at this site more than doubled from 2008 (near the end of the Millennium Drought) to 2019. The ongoing occurrence of breeding activity within roughly 15 kilometres of the Melbourne CBD, along with recent reliable records of up to five platypus observed feeding near one another in the Yarra's middle reaches, provide welcome evidence that platypus continue to thrive in this system.

IN THE POO



Along with helping to track platypus population trends, APMN volunteers are also documenting some fascinating and previously unknown aspects of platypus behaviour. Pete Walsh, who monitors the Hobart Rivulet in Tasmania, recently captured some remarkable video footage of a platypus that appears to climb out of the water quite deliberately to defaecate at the top of an adjoining concrete bank - see <https://www.facebook.com/hobartrivuletplatypus/videos/819770458756290>

Up until now it's been believed that these animals almost invariably defaecate in the water. However, Pete has photographed many platypus scats in the vicinity, suggesting that it's regularly used as a platypus toilet, possibly to assist territorial marking.

NEW PLATYPUS SERVICES ALLIANCE LAUNCHED

Because the platypus is such an unusual animal, special expertise is needed to conduct platypus surveys, design effective monitoring programs or provide reliable advice about protecting populations. To help meet the growing need for these services in Victoria and elsewhere, the Australian Platypus Conservancy has recently entered into a strategic partnership with Ecology Australia – a highly respected ecological consultancy group (established in 1978) that employs both terrestrial and aquatic biologists and has a strong track record for bridging the gap between consultancy work and applied ecological research.



A pair of platypus survey (fyke) nets set in Livingstone Creek near Omeo, Victoria

The aim of the new Platypus Services Alliance is to provide a cost-effective 'one-stop shop' for anyone who requires information about platypus population status (based on netting, eDNA data and/or visual methods) or would like to receive the best possible technical advice about how to manage flows, improve habitat quality, minimise impacts of new infrastructure or other development, or otherwise take positive action to benefit this species.

For more information, please get in touch with Chris Bloink (Principal Aquatic Ecologist, Ecology Australia, cbloink@ecologyaustralia.com.au) or Melody Serena at the APC.

APC PLATYPUS AND RAKALI WEBINARS

We sincerely thank Mike Smith and his staff at Optus Business Centre Bendigo for installing a new mobile broadband service that has (at long last) solved the APC's NBN connection woes. We've since presented a successful platypus webinar on behalf of Yarra Ranges Council and feel well placed to provide other online events about platypus/rakali conservation or community-based platypus monitoring. Please contact Geoff Williams at the APC if your organisation would like to host such an event in the future.

A QUICK CORRECTION

In the article on 'Rakali Look-Alikes' in *PN&V* 81, we mentioned that the common ringtail possum *Pseudocheirus peregrinus* is found (among other places) in southwestern Western Australia. In fact, the southwestern corner of Australia is inhabited by a different (though closely related) species known as the western ringtail possum *P. occidentalis*. It does have a white-tipped tail and is similar in size to common ringtails, so could in theory be mistaken for a water-rat. However, it's much rarer than common ringtails, comprising just a handful of small coastal sub-populations that are collectively considered to be highly endangered. Many thanks to Dr Andrew Burbidge for bringing this error to our attention.

Australian Platypus Conservancy



PO Box 115, Campbells Creek VIC 3451
(03) 5416 1478 platypus.apc@westnet.com.au
www.platypus.asn.au

Facebook: Australian Platypus Conservancy (Official)