



Ripples

Newsletter of the **AUSTRALIAN PLATYPUS CONSERVANCY**

SPURRING ON PLATYPUS RESEARCH

Techniques for estimating the age of mammals often rely on examining teeth to see how many adult-type teeth have erupted or to measure the amount of tooth wear. Unfortunately, this approach doesn't work in the case of the platypus: although nestling platypus are equipped with true teeth, these structures fall out around the time when young animals first enter the water and are then replaced by continually growing grinding pads at the back of the jaw.

Similarly, measurements of length or weight are of little use in assessing a platypus's age: juveniles have already grown to around 80-90% of their adult length by the time they first emerge from a nesting burrow, and adult body size varies substantially even within a given population.

As an alternative approach, research carried out by Dr Peter Temple-Smith in the 1970s described how the pointed spurs and associated physical features found on a male platypus's ankles not only help to deliver venom but can provide some information about its age. Although mature females lack spurs, he confirmed that juvenile females retain a small vestigial stub of the sheathing material which protects the spurs of juvenile males, making it possible to differentiate young females from older animals.

APC researchers recently joined forces with Dr Tom Grant to analyse spur-related data obtained in the course of platypus live-trapping programs respectively carried out in Victoria and New South Wales. In both cases, information had been collected at some study sites for more than a decade, making it possible to assess how the size and appearance of spurs and spur sheaths changed in individual animals over periods of up to 11 years.

These studies have shown that first-year juveniles can be reliably identified on the basis of spur-related characteristics up to the age of 12 months in the case of males but only 9 months in the case of females. Given that platypus eggs mainly hatch in late spring, this suggests that researchers who need to discriminate accurately between first-year females and older animals should ideally not schedule fieldwork from August through October at sites on the southeastern mainland.

In the case of males, spurs continue to grow after an animal's first birthday, reaching a mean (or average) maximum length of 19 mm at 19-24 months of age. Spur length shrinks thereafter, probably due to natural abrasion, but at a very slow rate: at ages of more than four years, mean male spur length was only 10% less than at the peak. This presumably reflects the fact that males mainly use their spurs when fighting with other adult males during the breeding season, thereby selecting for spurs which resist wear through a male's entire reproductive life span.

From a purely practical point of view, the slow rate of spur wear – coupled with the fact that the size of spurs varies considerably among males known to have been born in the same year – means that masculine age can't be inferred accurately only from spur length.

However, by measuring the width of a collar of skin found around the spur base, and expressing that value as a proportion of total spur length, it is possible to discriminate young second-year males (13-18 months old) from mature males with fairly high (95%) accuracy.

A paper presenting all of the new spur-related findings has recently been submitted for publication in the scientific journal *Australian Mammalogy*.

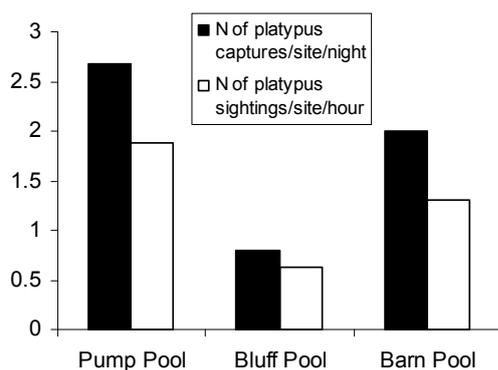
MATCHING UP MONITORING METHODS

The Australian Platypus Conservancy has worked hard over the past decade to develop visual monitoring techniques for platypus and Australian water-rats, in order to overcome the limitations associated with traditional live-trapping survey methods for these species.

The APC now administers two observation-based monitoring programs. *Platypus Count* provides an opportunity for individual volunteers to scan for platypus (and, where possible, water-rats) on a regular basis throughout the year. This work is now yielding valuable results along waterways in Victoria, the Australian Capital Territory and New South Wales.

Platypus Group Watch is an allied program which, as its name implies, relies on groups of volunteers who jointly monitor a chosen section of river or creek for platypus and water-rats on two or more occasions each year. *Group Watch* currently has nearly 70 groups participating across four states, including TAFE colleges, Landcare and Friends groups, Field Naturalists Clubs, a canoe club and a scout troop.

To establish the potential for platypus observational data to contribute to long-term population monitoring, it's clearly of interest to find out how findings from visual surveys compare with those obtained using netting techniques. To this end, the Conservancy has carried out platypus live-trapping surveys over the past three years along part of the Buchan River, and co-ordinated a series of *Group Watch* sessions in the same area. The graph below summarises how the number of adults and subadults captured at the three main sites where nets were set compares with the frequency of platypus sightings at the same places.



A strong positive correlation is evident between the mean (or average) number of platypus captured at a given site and the mean number of platypus sightings recorded there. This presumably reflects the fact that both measurements are governed by the same underlying parameter, namely the number of platypus active in the vicinity.

In terms of their relative usefulness as monitoring techniques, visual surveys are more limited than live-trapping surveys in that they do not yield data relating to population age structure or sex ratio.

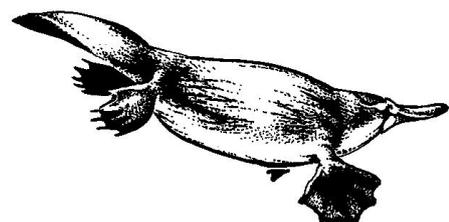
On the other hand, visual monitoring programs are much more cost-effective than live-trapping studies, do not entail any risk or disturbance to study animals, are less constrained by unpredictable or bad weather, and enable local communities to take responsibility for monitoring the status of their platypus populations.

Based on the results of the Buchan study and other research, the two techniques should properly be viewed as being complementary, with their respective use depending on factors such as waterway size and visibility, volunteer interest and availability, and the timeframe over which monitoring will occur.

Development of the *Platypus Group Watch* program and platypus live-trapping activities at Buchan have been made possible through the generous support of the Sara Halvedene Foundation.

Did You Know That...

A wide variety of indigenous species have been recorded to prey upon the platypus, including spotted-tail quoll, Tasmanian devil, white-bellied sea eagle and wedge-tailed eagle, grey goshawk, carpet python and Murray cod.



A DYNAMITE HOME

A juvenile platypus found trudging across land at the mouth of the Snowy River in early February was recently returned to the wild by biologists from the Conservancy and the Victorian Department of Sustainability and Environment.

The little male weighed just 390 grams when picked up by the principal of the Marlo primary school while taking her regular morning walk along a local beach.

His presence in this highly unusual habitat suggests that he was probably an orphan, forced to abandon his natal burrow when his mother died. After heading downstream in the direction of the current, he would eventually have washed up at the end of the river.

Although still bright and active, the animal was very thin and too young to be expected to cope on his own in the wild.

He was therefore taken immediately to Healesville Sanctuary's Animal Hospital, where Dr Rupert Baker and his staff (plus platypus keeper Jessica Thomas) cared for the youngster until he was old enough to be returned to the wild in March. The youngster steadily put on weight, eventually tipping the scales at 628 grams when he was released.

Meanwhile, APC staff inspected sites across the Snowy River catchment to find a suitable reintroduction site. Dynamite Creek was eventually chosen, in part because its high quality habitat offers a good range of pools and undercut banks supporting edible macro-invertebrates, along with abundant protective cover in the form of overhanging shrubs and ferns.

The release took place two hours before sunset: not long before a young platypus would normally come out to feed, while also giving him a chance to assess his new surroundings before darkness fell and other platypus became active.

"Little Dynamite's" behaviour immediately following his release can be seen on the APC (Official) Facebook page or on YouTube at: <http://www.youtube.com/watch?v=ypYrzvyWhWA&feature=youtu.be>

MURRAY PLATYPUS IN FOCUS

The future of the Murray-Darling Basin is the subject of one of Australia's most important environmental debates. Although studies investigating many aspects of the Murray-Darling system's biological health have been commissioned in recent years, no attempt has yet been made to assess how well platypus populations are faring throughout the system or monitor their longer-term progress.

To help address this shortfall, the APC has established a number of projects, including monitoring the platypus population found in the Murray River at Albury-Wodonga. As reported in *Ripples* no. 42, this work is sponsored by Norske Skog (a major producer of recycled paper in Australia) and also forms an integral part of monitoring a new treated wastewater management regime by the company.

The Albury platypus study incorporates the *Platypus Count* model of regular visual monitoring by volunteers. In addition, seasonal surveys are carried out by APC biologists at a series of 22 sites distributed along five kilometres of the Murray River, stretching from the upstream end of Wodonga Creek to West Albury.

The second year of the planned 5-year study has recently been completed. Platypus have been confirmed to be active throughout the study area and the overall sightings frequency in the last year (expressed as the mean number of platypus sightings recorded per site-visit) was 0.16, slightly higher than the figure of 0.14 recorded in the previous 12 months.

The results to date also indicate that there is no substantial or meaningful difference in platypus activity in the survey areas located upstream and downstream of the treated wastewater outfall at South Albury.

APC ON FACEBOOK

The APC (Official) Facebook page provides updates on the Conservancy's work and other platypus news, including details of forthcoming public talks and a "sighting of the week" selected from the platypus and water-rat reports submitted to the APC database.

