

Ripples is the quarterly newsletter of the Australian Platypus Conservancy. It provides updates on research in progress and other APC news. Members of *Friends of the Platypus* automatically receive each edition of *Ripples*.

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Newsletter of the AUSTRALIAN PLATYPUS CONSERVANCY

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WOODY DEBRIS IS IMPORTANT TO PLATYPUS

Woody debris (including branches, sticks and logs) typically accumulates along a waterway as trees growing on the banks either shed their limbs or fall over. In the past, a vast amount of woody debris was removed from Australian streams and rivers on the grounds that this material could contribute to erosion or flooding.

More recently, research has shown that the proportion of bank erosion actually due to snags is quite small. It has also been found that most pieces of woody debris have little or no effect on the extent of local flooding-particularly as compared to larger structures, such as bridge abutments. At the same time, woody debris appears to be an extremely valuable resource in terms of contributing to the health and diversity of streams and rivers.

Along many waterways-particularly those lined with fine silt or sand-woody debris comprises the most abundant type of stable substrate in the water, providing a place where small aquatic animals can cling, perch, lurk, spawn and shelter from strong currents. While some aquatic invertebrates directly feed on dead wood, many others are nourished by grazing on the film of bacteria, fungi and algae which thrives on drowned timber. As well, the turbulence created as water flows over large logs both oxygenates the water and helps to maintain scour pools which are an essential habitat feature in their own right.

The importance of dead wood to native fish has been highlighted by a recent study which found that 94% of young Murray cod were encountered at sites featuring woody debris. Similarly, several studies undertaken by the APC have shown that a positive relationship exists between the amount of woody debris present in the water and platypus activity or abundance.

For example, in western Victoria's Wimmera River catchment, three waterways supporting reasonably large populations of platypus had on average 11 to 19 partly submerged logs or large branches (20 cm or more in diameter) present in each 50-metre section of channel. By comparison, in a neighbouring part of the catchment supporting few or no platypus, an average of only four emergent logs or large branches were present in each 50-metre stretch of channel.

Along Running Creek and the Little Yarra River near Melbourne, radio-tracking studies undertaken as part of the Melbourne Water Urban Platypus Program have revealed that around twice as much woody debris is present at sites where platypus regularly forage as compared to unused sections of the streams.

The positive association between platypus and woody debris presumably reflects the fact that platypus are top predators-mainly feeding on aquatic invertebrates such as worms and insects.

Besides promoting the development of productive invertebrate communities, the presence of submerged wood may also improve platypus foraging efficiency by making it easier for these animals to find their prey underwater.

In short, to help conserve platypus (and a wide range of other freshwater species) it makes good sense to retain woody debris whenever possible as an important component of healthy aquatic habitats.

TAKING A DIVE

What is the best time of year to undertake visual surveys for platypus?

Research conducted at Toorourrong Reservoir (a relatively shallow impoundment, 1-2 metres deep, located north of Melbourne near the APC's research base in Kinglake National Park) suggests that the answer is at least partly related to the timing of the platypus breeding season.

Based on surveys undertaken in early morning, more than twice as many platypus were observed from June through September (when an average of 3.4 platypus were seen per survey session) as compared to October (when an average of only 1.6 animals were seen). Over the rest of the study, from November to January, an average of 2.8 platypus were spotted per survey session.

Platypus breed in the spring, with eggs typically recorded in October from Victoria. Given that about a month is believed to elapse between the time that platypus eggs are fertilised and the time they are laid in the nest, activity in this species appears to reach a peak in the period before and during the breeding season.

In the case of females, this is likely to reflect the fact that they are working hard to store fat which will be needed while raising young. In the case of males, breeding success presumably depends on moving around to monitor the reproductive status of prospective mates-while also doing their best to discourage other adult males from spending too much time in the vicinity.

By the same token, the relatively low number of platypus seen in October makes sense if a large proportion of females are involved at that time in incubating eggs and then caring for newly hatched juveniles in underground burrows.

Interestingly, platypus also spent more time on the water surface between consecutive feeding dives in the period from June through August (32% of activity time) than from September to January (25% of activity time). In terms of the animals' basic biology, this may again be related to the timing of breeding: increasing levels of male aggressiveness in late winter and early spring could well result in the population as a whole becoming more vigilant-devoting more time to watching other platypus and scanning their surroundings.

Along with the time of year, weather conditions have been found to affect the number of platypus observed at Toorourrong.

For example, the number of platypus recorded in a given survey session showed a significant positive correlation with the amount of cloud cover: the more overcast the sky, the more platypus were active during daylight hours.

As well, previous radio-tracking research has demonstrated that it is extremely difficult to see

platypus feeding on windy days when the water surface is ruffled or choppy. (In consequence, visual surveys undertaken at Toorourrong are only carried out on calm, wind-free occasions.)

Based on the results summarised above, it clearly is important to take both season and weather into consideration when designing or interpreting observational surveys for platypus-particularly if there is any intention of comparing the results across waterways or through time.

To help community groups deal more effectively with these issues when endeavouring to set up a visual monitoring program for platypus, an article summarising the full findings of the APC study is currently being prepared for publication.

Did You Know That....

It is believed that platypus eggs need to be incubated for a period of about 10 days before they hatch. A mother platypus keeps her clutch of one to three eggs warm by grasping them between her curled-up tail and lower belly as she lies in an underground nest.

USING PLATYPUS TO PLAN

Since beginning its fieldwork programs in 1994, the Australian Platypus Conservancy has published research results in a wide range of scientific journals*. The APC is also strongly committed to sharing new findings about the platypus with management authorities and members of environmental organisations along with businesses and the wider community. To this end, the Conservancy continues to generate management reports, popular articles and special publications about platypus conservation needs.

In this context, the Australian Platypus Conservancy has been very pleased to work with Rio Tinto and the *Project Platypus* Landcare initiative to produce a new publication, "Using Science to Plan". The booklet was launched in July by Senator Nick Minchin, Minister for Industry, Science and Resources, at Parliament House in Canberra.

"Using Science to Plan" is based on work undertaken by the APC in partnership with *Rio Tinto Project Platypus* and Earthwatch in the upper catchment of the Wimmera River since 1997. The booklet describes how platypus research has contributed to Landcare in this region-both by providing landowners with detailed information on platypus habitat requirements and by using the animals' status to help monitor the effectiveness of habitat improvement projects.

Along with demonstrating the value of wildlife research to practical Landcare work, the publication also highlights the role of the platypus as a charismatic flagship for stimulating community-based environmental action.

"Using Science to Plan" is being distributed to Landcare and other environmental groups throughout Australia, as well as management agencies, educational institutions, public libraries and interested individuals.

Copies of the booklet can be obtained by contacting Rio Tinto Australia, *Rio Tinto Project Platypus* in Stawell, or the Australian Platypus Conservancy.