



Frog Breeding Success



The development of the Roseate Frog: eggs, tadpoles, metamorph and adult.

Perth Zoo's frog breeding research program recently celebrated its first successful captive breeding of the Roseate Frog (*Geocrinia rosea*). The Roseate Frog is being used as an analogue species for the threatened Orange-bellied Frog (*Geocrinia vitellina*) and White-bellied Frog (*Geocrinia alba*) species found in south-west Western Australia.

A number of WA's 78 native frog species are threatened with extinction as a result of the impact of humans, Chytrid fungus and the potential invasion of the Cane Toad in the Kimberley.

The four-year Frog Breeding Research Program has been established at Perth Zoo through a grant from the Office of Science, Technology and Innovation to develop successful captive breeding and management techniques for frogs. By developing this expertise we hope to be able to provide a safety net for threatened frog species if their populations collapse in the wild as a result of disease or Cane Toads.

It is hoped that common species such as the Motorbike Frog (*Litoria moorei*) and the Roseate Frog can provide valuable information about husbandry, reproductive biology, growth, development and captive management for threatened species.

However, when it comes to husbandry and breeding of even WA's most common frog species, there is very little

information to start with. Getting the common species to breed can be just as challenging as breeding a rare species.

The Roseate Frog is a direct developer, which means there is no free-swimming tadpole stage in water during its development. It lays its eggs in a jelly egg mass in a soil depression under leaf litter. The tadpole emerges as a metamorph (or small frog) from the jelly. Only 15% of frog species develop this way. Its threatened relatives, the Orange-bellied Frog and White-bellied Frog, are also direct developers which means that any data collected can be applied to aid their conservation.

The program is also looking at different ways to house the frogs to provide optimum conditions for breeding and development. A simple setup of containers with chemical-free sphagnum or sponge was found to be the most suitable.

The dedicated research team has made some very important discoveries. It turns out that the Roseate Frog can breed within the first year of life whereas previously it was thought to breed in its second or third year. It was also discovered that females can double clutch (produce more than one egg mass per breeding season).

It was found that newly laid egg masses could be transferred to artificial nests, such as a specially modified ice-cube tray, where they continued to develop

and metamorphose into frogs. The metamorphs were then kept individually in containers to develop on their own.

Close monitoring of the second generation of Zoo-born Roseate Frogs is important because these frogs have been solely raised at the Zoo, rather than the previous generation which were the product of wild parents. This gives the researchers the opportunity to compare the development of the two generations.

Perth Zoo Native Species Breeding Program supervisor Glen Gaikhorst said: "We were able to refine the husbandry of the species, breed them in captivity and raise metamorph frogs to adults. This is something that hasn't been done anywhere before, not just in WA".

"From here we can adapt our methods for the more threatened species in the south-west of Western Australia in the hope that we can make a significant difference to their conservation."

Research is also being conducted into frog species that are found in isolated populations in the Kimberley, including Weigel's Toad (*Notaden weigeli*) and the Cave-dwelling Frog (*Litoria cavernicola*). Little is known about the wild and reproductive behaviours of either of these frogs which means that extensive study is needed to assist in the conservation of these native species.

The Zoo has also now successfully bred the Cave-dwelling Frog for the first time.

