

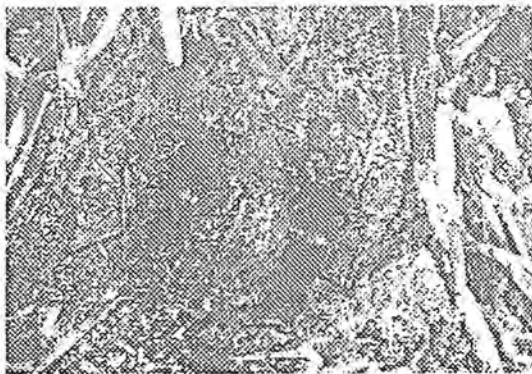


Geocrinia Biology

The White-bellied frog (*Geocrinia alba*) and the Orange-bellied frog (*Geocrinia vitellina*), like all frogs, go through a number of stages in their life cycle. i.e.: egg - tadpole - small frog - adult frog. However, in most other respects that's where the similarity ends. Geocrinias are very unusual frogs.

Burrow Breeding

Male Geocrinias create shallow depressions (burrows) approx. 10-30 mm deep by wriggling backwards into the wet soils of their swamp habitat. With construction completed, the male calls from within the burrow to attract a mate. An individual frog calls until a female arrives, they mate and 10 to 15 eggs are deposited. The male fertilizes them and both adults leave to find new mates and repeat the cycle elsewhere. Calling continues through July to December although this varies with locality.



Geocrinias wriggle backwards into the moist soil to create a burrow.

The burrows are sited near but not in the flood prone areas of "tea-tree" swamps. This ensures the eggs are protected from drying out but are unlikely to be washed away in a winter flood.

Inside the moist burrow the eggs sit in the shallow confines, hidden from predation by a covering of leaf litter. After hatching the tadpoles, unlike those of other species, never enter the water preferring to stay inside the burrow living in the jelly which surrounded the eggs.

During this time they do not feed but rely on food reserves in the egg yolk to sustain them. After 1-2 months the tadpoles metamorphose into small frogs and leave the burrow.

Though unusual, this type of life-history (called "direct development") is known to occur in 3 other species of WA frogs.

Behavioural Mysteries

Little is known about the behaviour of Geocrinias in the non-breeding season. Some individuals have been observed moving out of the swamps in Autumn and venturing into upland sites away from the creeklines, returning again in August or September to breed. The reason for and extent of this movement is still to be discovered.

Home Sweet Home

Geocrinias appear to be very particular about the type of habitat they need to breed in.

To date *Geocrinia alba* and *G. vitellina* have only been found breeding in the peaty, sandy soils of "tea-tree swamps" that grow along the broad shallow valleys of creeklines in the Margaret River area. Sites within these valleys where ground water seeps to the surface are especially important locations for breeding, presumably because they remain moist all year round.

Unfortunately these types of swamps are found only sporadically through the landscape, though numerous swamps may occur along a single creekline. *Geocrinias* living in one swamp are effectively isolated from *Geocrinias* in other swamps.

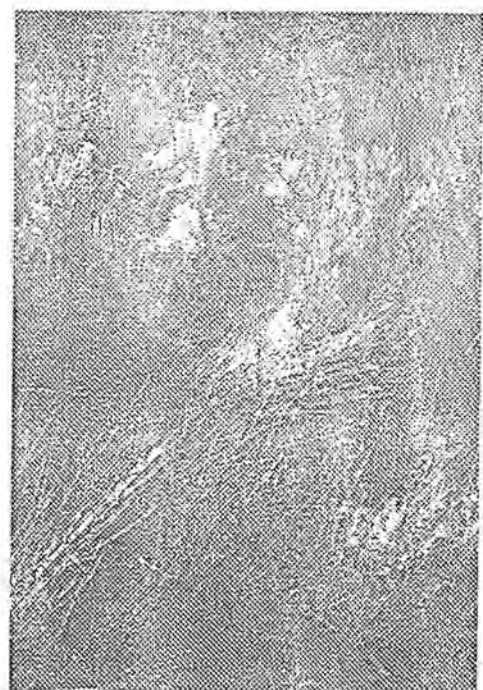
Frogs aint Frogs!

Because of this separation between swamps, a population of frogs living in one swamp is genetically very different from *Geocrinia* populations in other swamps. The extent of this genetic variation between populations is unusually high compared to other animals.

This has important implications the long term strategies required to conserve the species. For instance if a population in one swamp is in danger of becoming extinct, then individuals from the same site should be used to increase the population rather than frogs from other sites.

The reason: though frogs from other sites may add a number of new genes to the endangered population and thus increase its short term overall genetic diversity, there is a risk that the genes of these new frogs will eventually replace some of the specific genes developed by the endangered population in response to the micro-environment of the site. These lost genes may have been just the characteristics this population and the species may have needed to survive in the long term.

Therefore to conserve both species of *Geocrinia*, populations containing all the genetic variations within their known distribution must be protected.



typical Geocrinia habitat