floodplainfacts

Dusky plains rat (*Rattus colletti*)

FS12030

Kingdom:	Animalia (Animals)
Subkingdom:	-
Super-Division:	-
Phylum/Division:	Chordata
Class:	Mammalia (Mammals)
Sub-class:	Eutheria (Placental mammals)
Order:	Rodentia (Rodents)
Family:	Muridae (rats and mice)
Genus & species:	*Rattus colletti*
Common name:	Dusky plains rat

The dusky plains rat (*Rattus colletti)* is only known to occur in monsoonal floodplains of the Top End. Studies undertaken at Fogg Dam and elsewhere in the NT during the 1970's revealed a life history for the Dusky Plains rat that adapts it perfectly to the boom-bust cycles that occur on the floodplain habitat.

Dusky plains rats are one of the Australia's most fecund rat species. Females reach sexual maturity at between 1 and 2 months of age, are capable of reproducing throughout the year, in litters of nine or more young.

So what population size, densities and distributions result from the combination of floodplain habitat features with the fecundity of the Dusky Plains Rat?

Rat population size is at its lowest (and individuals are most stressed) at the end of the annual dry season. At this time high temperatures, and possibly the risk of predation, keep the rats underground, where they forage and shelter in cracks in the floodplain soil.

With early rains the soil cracks close, and rats move up to the floodplain surface and take advantage of the flush of new growth.

Charles Darwin
UNIVERSITY
Innovation in Education

As the floodplains become inundated, and water levels rise during the wet season, the rats are forced to move onto the shallower waters and vegetation at the margins of the floodplain or on levee banks near the river channel. In fact, they can be seen clinging to trees along the river channel if you happen to be out in a boat or airboat at that time of year.

At the peak of inundation, the floodplain rat population becomes crowded into these areas of higher ground or shallower water. As this crowding increases on these limited areas, density-dependent mortality and fecundity become significant for population size. In addition, individuals may also drown in floodwaters during rapid increases in water level.

As the floodwaters recede in the early dry season, the rats move back out onto the floodplains. Breeding re-commences at this time, as resources (food and space) are abundant. At this time the annual crop of wild rice seeds is an important food resource. Population size continues to build towards the commencement of the dry season.

As the dry season progresses rat numbers again decline, as resources again begin to diminish and life again becomes hard for the dusky plains rat.

So you can see that, because of the fecundity of females, the rat population has the capacity to respond quickly to both the "good" and "bad" conditions on the floodplain. In a given year, the probability of an individual rat surviving to the next might be quite low. However, because of the high fecundity of females, the probability of the rat population surviving persisting on the floodplains overall is very high.

References

Madsen T. & Shine R. (1996). Seasonal migration of predators and prey - a study of pythons and rats in tropical Australia. *Ecology* 77: 149-156.

Madsen T. & Shine R. (1999). Rainfall and rats: Climatically driven dynamics of a tropical rodent population. *Australian Journal of Ecology* 24: 80-89.

Redhead T.D. (1979). On the demography of *Rattus sordidus colletti* in monsoonal Australia. *Australian Journal of Ecology* 4: 115-136.

Shine R. & Madsen T. (1997). Prey abundance and predator reproduction: rats and pythons on a tropical Australian floodplain. *Ecology* 78: 1078-1086.

Williams C.K. (1991). Dusky Rat: *Rattus colletti*. In: *The Complete Book of Australian Mammals* (ed. R.Strahan) pp 441-442. Collins Angus and Robertson Publishers, Australia.