

MAMMAL DIVERSITY IN THE TOP END

This presentation introduces the mammals of the “Top End” of the Northern Territory, briefly places the mammal fauna in a regional context and uses individual species to showcase the diversity and ecology of this unique community. Description of some of the characteristics of individual species also sheds light on some of the reasons why many are particularly sensitive to adverse changes in their environments. Conservation of species is a major focus throughout.

Seventy-one species of small mammals are presently recognised in the Top End. Sixty species have wider distributions throughout the north of the continent. The remaining eleven are endemic, many to the sandstone regions of western Arnhem Land, a biodiversity “hot spot” in the north.

The vertebrate fauna of the Top End has strong similarities to that of the Kimberley region of northern Western Australia and to a lesser degree with that of Cape York in north Queensland. Seven species are shared exclusively between the Top End and the Kimberley and the presence of other closely related species between regions suggests common recent ancestries.

Eighteen of Australia's twenty-six mammal families are represented in the tropical north. Two groups, the microbats (comprising 5 families) and rodents, numerically dominate the Top End mammal fauna making up more than half of the total number of species. Other families, such as macropods also show a surprising diversity, often within relatively small areas.

Just as northern biologists are starting to understand the ecological requirements of many species, environments have begun to change rapidly and some species, including almost half of the “endemics” are under threat. This presentation highlights some of the challenges.

Background

The opening of the 2006 National Wildlife Rehabilitation Conference in Darwin on the 28th August coincides with the beginning of a period for public comment on proposed revisions of the Territory Parks and Wildlife Conservation Act. Among the proposed changes are variations to the conservation classifications of three species of Top End mammals, the northern quoll, golden-backed tree-rat and Carpentarian rock-rat. It is proposed to re-list each of these species as “Critically Endangered”. They are now just one short step away from regional extinction, and, in the case of the Carpentarian rock rat, extinction of the last wild population. How can things have gone so wrong in such a short space of time? The decline of these species is one sad part of a much wider story.

In the late 1970's and early 1980's ecological studies of mammals in the Top End were in their infancy but there was a growing awareness that small mammal populations were one of the most vulnerable links in natural ecosystems. An obvious example was central Australia where almost one third of the small to medium-sized mammals were lost from some areas. This represented the highest rate of mammal species extinctions in modern times. But, in addition to inappropriate fire regimes, these losses were also attributed to specific regional threats such as rabbits and foxes that were not present in the north. At that time, despite emerging concerns about fire management, it was assumed that mammal populations in the north were

secure and that many species were simply uncommon or rare in the wild and had always been so. There simply wasn't enough information to prove otherwise. During these times, discussions on northern ecosystems were often prefaced with the view that northern ecosystems remained relatively intact since human populations were low and mainly concentrated in regional centres. There was also a low overall rate of land-clearing, pastoralism and mining operations were not highly "developed" and there was almost no industrial activity.

This view was shared in other parts of the wet-dry tropics, notably western Cape York and the eastern and central Kimberley, areas also viewed as last frontiers and wilderness areas in the deep north. Then came the realisation that over the last twenty years, bandicoots, quolls, possums and tree rats had begun to disappear in both regions as well as small macropods from western Cape York.

In the Top End, evidence based on historical records of early collectors such as Dahl, Tunney and Collett from the beginning of the last century and from some older Aboriginal informants also suggested that all was not well. However, important baseline information on fauna populations was not collected until a number of landmark fauna surveys were conducted in the late 70's. Fauna surveys were associated with the declaration of Kakadu National Park, others were based at CSIRO's Kapalga Research Station or focussed on uranium mining ventures at Jabiru, Jabiluka and Koongarra, all within the park boundaries.

Recent resampling of the original fauna surveys sites throughout Kakadu and repetition of mammal studies at Kapalga and "Little Nourlangie Rock" using the same methods yielded startling results. The steady decline of small mammals noted during the original Kapalga study between 1976 and 1983 (but attributed to a number of below-average wet seasons) had intensified and six species had all but disappeared from the area by 1999. Similar trends for other mammal species were noted across the park. The Arnhem rock-rat seemed to have disappeared from Little Nourlangie Rock and had also declined over survey sites in the south of the park. Top End conservationists were alarmed. If this was happening in one of Australia's premier National Parks what was happening in areas that were being less sensitively managed? The news grew worse. Cane toads were coming. Shortly after, toads swept through Kakadu. Populations of the northern quoll, already in decline in some areas, disappeared entirely from long-term study sites in the park along with a range of other vertebrate predators of the toad. This pattern has continued as the toad spreads westward across the Top End.

The story so far has not been a happy one and certainly not confined to mammals. Similar trends are also evident for some species of seed-eating birds across northern Australia, some reptiles and many plant species. Unfortunately, we have been slow to learn from trends in other regions and slow to act on obvious new threats such as those posed by cane toads, invasive African grasses in woodlands and forests and the rapid spread of "ponded pasture" grasses across the northern floodplains. These newer threats loom large against a broader backdrop of intensifying pastoral and mining activity in the north.

This situation has led to many positive initiatives from government, concerned individuals and organisations and hopefully a more enlightened approach to managing natural habitats, wild populations and potential threats will continue to emerge.

Martin Armstrong has worked in the Top End and adjacent regions for the last 30 years. His career has alternated between environmental research and management. Initially based at Jabiru, he was involved in vertebrate research around the Ranger Uranium mine, he then worked for 11 years as a park ranger mainly in Kakadu and Litchfield National Parks. For the past 10 years he has been employed as a Scientific Officer with the Biodiversity Conservation Division of the NT Department of Natural Resources, Environment and the Arts. Today much of his work involves the review of development proposals and environmental impact assessments but periodically escapes for fauna survey work across the Top End.