KIMBERLEY MAMMALS: STATUS AND CONSERVATION

On 7 October 2015, **Andrew Burbidge**, a well-known conservation biologist, who first studied Kimberley mammals in 1971, shared some of his extensive knowledge with us. His summary of the evening's presentation follows.

Although our knowledge of what used to occur in the Kimberley is incomplete, 82 species of native mammals are known to have occurred there at the time of European settlement. These comprised one, possibly two, species of echidna, 31 species of marsupials, 28 of bats and 22 of native rodents. Eleven species of introduced mammals are feral in the Kimberley. Many species have much-reduced geographic ranges and some are threatened with extinction.

The Short-beaked Echidna remains widespread and occurs on eight Kimberley islands. It is still an open question as to whether the Western Long-beaked Echidna occurred in the Kimberley. Recently a specimen was located in a European museum, labelled Mt Anderson, 1901, and collected by John Tunney. There is a fossil record of the species in Australia. However, enquiries of traditional owners suggest that there is no oral tradition of it in the Kimberley and it's possible that the label was transferred by someone to this specimen from another animal. Mt Anderson seems an unlikely location for the species, as in New Guinea, where it still occurs but is critically endangered, it prefers much wetter habitats.

There are ten species of Dasyurids (carnivorous marsupials) in the Kimberley. Best known is the Northern Quoll, but there are also dunnarts, an antechinus, planigales and a phascogale. There are three species of bandicoots: the Northern Brown and Golden Bandicoots, and, along the Kimberley's southern edge, the Bilby. Three species of possum and the Sugar Glider comprise the next group. This group includes the Kimberley endemic (occurs nowhere else) Scaly-tailed Possum. Thirteen species of rat-kangaroos, wallabies and kangaroos are (or were) found in the Kimberley. The endemic Monjon, the smallest rock-wallaby, occurs in a small area of the high rainfall north-west. Another small rock-wallaby, the Nabarlek is also found there; the Kimberley shares this species with the Northern Territory.

The Golden Bandicoot (*Isoodon auratus*) once occurred over half of Australia, but is now restricted to a small part of the north Kimberley and six islands. Photo: Tricia Handasyde.

Three species of flying-foxes and 25 species of insectivorous bats have been recorded in the Kimberley. These include one endemic species, the Yellow-lipped Bat. Native rodents are represented there by 22 species, including the endemic Kimberley Rock-rat.

Four mammal species that occurred in the Kimberley are extinct and have been recorded only as subfossils (that is likely to have been alive at or shortly before European settlement). A further four species that have disappeared from the Kimberley still occur elsewhere in Australia. An enigmatic species is the Daada, known to older Aboriginal people but never recorded by scientists. It is (or was) another species of quoll, significantly larger than the Northern Quoll. It is most likely to be the Chuditch (or Western Quoll), which once occurred throughout the western deserts up to the southern edge of the Kimberley and occurs (possibly as a closely-related species) in New Guinea.

The conservation status of the Kimberley's mammals varies with location, with many more species from drier areas being extinct or having declined than in the higher rainfall north Kimberley. This pattern is consistent with the rest of Australia. It had been thought for some time that the North Kimberley was the only, or one of very few, areas in Australia with an intact mammal fauna. However, recent research suggests that the mammals in this area are also declining. Nabarlek have not been recorded on the mainland since 1974, phascogales have only two sight records in the past 20 years, and Black-footed Tree-rats have not been located in the Kimberley for more than 20 years.

The major threats to Kimberley mammals are feral cats, inappropriate fire regimes, cane toads and over-grazing and trampling by stock and feral herbivores. Major mammal declines have been documented in Kakadu National Park and other areas of the Northern Territory and a similar picture is emerging in the Kimberley. In particular, large, very hot, late-dry-season fires open up vast areas of country making it easier for cats to hunt and eliminate native mammals. They also convert the vegetation, eliminating perennial plants in favour of annuals, especially promoting annual grasses such as annual native sorghum, making fires even hotter.

Fortunately, there is an increasing level of biodiversity research in the Kimberley, although not nearly enough. The Department of Parks and Wildlife and the Australian Wildlife Conservancy (AWC) have been active, and, increasingly, Aboriginal Rangers working with the Kimberley Land Council (KLC) and supported by the federal government and WWF-Australia, are researching a range of threatened and other species.

Forty-two Kimberley islands, which are protected from most threats, are known to have populations of native mammals and others are likely to have mammals as well. Northern Quoll, threatened by poisoning from eating cane toads, occur on 15 islands; however, there is concern that toads may reach some of these during floods as has happened to some islands in the Gulf of Carpentaria. Other rare or threatened mammal species that occur on Kimberley islands include the Golden Bandicoot, Scaly-tailed Possum, Monjon, Nabarlek and Golden-backed Tree-rat.

The Golden-backed Tree-rat (*Mesembriomys macrurus*) has disappeared from the Northern Territory, the Pilbara and much of the Kimberley, remaining only in the near-coastal high rainfall north Kimberley and on nine islands.
Photo: Norm McKenzie.

Better fire management has been developing for some years, mainly via the KLC, AWC and Parks and Wildlife. Fires that are ignited, mainly from helicopters, in the late wet season and early dry season cover relatively small areas and help prevent the development of large, hot, late-dry-season fires. Research, especially by AWC, has shown that feral cats hunt more effectively in open areas, so patchy fires should reduce cat predation. Parks and Wildlife's Eradicat© feral cat bait has now been registered and current research in the Pilbara into its possible effects on Northern Quoll may lead to field trials in the Kimberley. Parks and Wildlife is also trialling cane toad sausages – it is hoped the sausages, which include minced cane toads and are laced with a nausea-inducing chemical, will deter carnivorous marsupials, including the Northern Quoll, from eating cane toads. Camera traps and faecal DNA analysis are revolutionising mammal survey and they are being used increasingly by Aboriginal Rangers and others.

The State government's Kimberley Science and Conservation Strategy has seen the Kimberley receive increased conservation funding. This, along with increased involvement by non-government organisations, including AWC, the KLC and Aboriginal Rangers, WWF-Australia and Bush Heritage Australia, is leading to better knowledge and better management outcomes. However, the Kimberley covers a vast area and the amount of biodiversity conservation funding it receives is low compared with most of Australia and much more needs to be done to conserve the Kimberley's rich natural heritage.