THREATENED SPECIES INFORMATION

Endangered Long-nosed Bandicoot Population at North Head

Conservation status

The population of Long-nosed Bandicoots *Perameles nasuta* at North Head is listed as **endangered population** on Schedule 1, Part 2 of the NSW *Threatened Species Conservation Act* 1995.

Figure 1 Long-nosed Bandicoot.

Description

The Long-nosed Bandicoot (*Perameles nasuta*) (Figure 1) is a nocturnal marsupial of 850-1100g (Stoddart 1995), 310-425mm in head and body length, and with a tail length of 120-155mm. Males are larger than females. They are typically dark, greyish-brown above and creamy white below. The forefeet and upper surfaces of the hindfeet are also creamy white. Long-nosed Bandicoots are distinguished from other *Perameles* (Eastern and Western Barred Bandicoots) by the absence of distinct dark and light bars on the rump, except in some juveniles and adults. The muzzle is long and pointed and the ears are distinctly larger and more pointed than short-nosed bandicoots of the genus Isoodon (Stoddart 1995).

Distribution

The Long-nosed Bandicoot occurs throughout a range of habitats along the east coast of Australia from Cape York in northern Queensland to the Otway Ranges in western Victoria. The species is considered to be relatively common throughout this range (Ashby *et al.* 1990; Stoddart 1966). The species is represented by two subspecies, *Perameles nasuta pallescens* from Townsville to Ravenshoe and *P. nasuta nasuta* south of Townsville. However, evidence suggests that the present distribution represents only part of the historical distribution, indicating a contraction in the range of *P. nasuta* over time (Marlow 1958; Ashby *et al.* 1990; Opie *et al.* 1990).

The Long-nosed Bandicoot is widely distributed in coastal NSW from the Victorian to the Queensland borders. Marlow (1958) reports of a number of specimens collected west of the Great Dividing Range in the late nineteenth century and early twentieth century where it appears the species has now disappeared (NSW NPWS Wildlife Atlas 2000).

Until the early 1960s, the Long-nosed Bandicoot was abundant throughout the Sydney region (Marlow 1962), including most areas on the foreshore of Sydney Harbour. However, rapid urban development in Sydney over the past few decades has dramatically altered the natural environment for bandicoots (Benson and Howell 1990). Urbanisation has reduced the amount of available dense vegetation which is necessary for diurnal shelter and introduced new threats (cars, dogs and cats) to their survival. This has resulted in the widespread decline of *P. nasuta* throughout the Sydney region (Higgs and Campbell 1993). Populations at Dobroyd and Middle Heads, which were regularly recorded in the 1960s and 70s are now presumed extinct (Hume and Flannery pers. comm.). They were recently recorded at Manly Dam (anonymous). The only known populations now remaining in the Sydney area are in the Royal and Heathcote National Parks and the Holsworthy Military area in the south, Ku-ring-gai Chase and Garigal National Parks, Manly Dam and the Pittwater Local Government Area in the north, the Blue Mountains to the west and a small isolated population at North Head, Manly.

The NSW Scientific Committee (1997) defines the distribution of the North Head population of *P. nasuta* as occurring in the area of North Head south of Addison Road, Manly. Within this area, Long-nosed Bandicoots are widely distributed. There are regular reports of bandicoots visiting and residing in residential backyards, particularly along Bower and Fairy Bower Streets, Little Manly Point, with an occasional record from closer to the Manly CBD (Reizes pers. comm.).

Recorded occurrences in conservation reserves

This population occurs in Sydney Harbour National Park at North Head and in Manly

NSW NATIONAL PARKS AND WILDLIFE SERVICE

Council Reserves at Shelly Beach, Spring Cove and Little Manly Point.

Habitat

Across their range, Long-nosed Bandicoots have been recorded in rainforest, wet and dry forest, woodland, heathland and grassland. They are known for being extremely adaptable and tolerant of major habitat disturbance and modifications and are one of the few Australian marsupials to be consistently recorded in urban environments. In fact, in some areas they were once regarded as a pest due to the conical holes they make at night while foraging in suburban lawns.

At North Head, Long-nosed Bandicoots occupy, to varying degrees, all of the habitat types available including woodlands, scrub, heath and open areas.

Ecology

Moyle (1991), Claridge (1993) and Scott (1995) have studied aspects of the diet of the Long-nosed Bandicoot which is described as being generally opportunistic and omnivorous with an apparent preference for invertebrates. Scott (1995) found that the diet of *P. nasuta* at North Head consisted primarily of beetles, larvae, ants, monocot leaf and stem and fungi and that the composition did not change throughout the year. In southern NSW, Claridge (1993) found that in winter and early spring *P. nasuta* increased their consumption of plant material and beetle larvae and decreased their consumption of cockroaches, seeds and adult ants.

Mating takes place at night and may occur throughout the year in the Sydney Region, although there is a trough in breeding activity from late autumn (April) to mid-winter (June) (Stoddart 1995). At North Head, Scott (1995) recorded Long-nosed Bandicoots breeding from mid-winter (June) to autumn (March). Like other bandicoots, this species has a very high reproductive capacity. There are 8 teats in the pouch, litter sizes range from 1–5 but usually 2–3. Scott (1995) recorded an average litter size of 2.3 at North Head. Birth takes place during the daylight hours after a gestation of only 12.5 days (Stoddart 1995). The young are carried in the pouch for 50–54 days and then left in the nest. After about 60 days, the young begin to accompany their mother and learn to forage for themselves (Menkhorst and Seebeck 1995). When the young are about 50 days old the mother may mate again and produce another litter several days after the previous one has been weaned (Stoddart 1995). In good years, females may produce up to 4 litters. Female bandicoots may begin breeding at about four months of age and males at about five months (Menkhorst and Seebeck 1995).

Stoddart (1966) describes the behaviour patterns of the Long-nosed Bandicoot, including feeding, nest-building, grooming, reproduction and care of young. As with other bandicoots, the species is generally solitary, with contact between males and females restricted to breeding events.

Bandicoots spend the day in a nest, usually a shallow hole or depression on the surface of the ground that is lined with grass and leaves which it scrapes together (Stoddart 1995). These nests can be extremely difficult to locate and the entrance is closed when occupied. At North Head, bandicoots have been observed nesting in a variety of habitat types including areas of dense shrubs, long grass, exotic vegetation (pampas grass) and in residential backyards (Scott 1995; Puddephatt and Miller 1996; Ecotone Ecological Consultants 1998; NSW NPWS 1998a).

Individual animals may use a number of different nests over several nights. Scott (1995) found that 62% of bandicoots radio-tracked at North Head had more than one nest and the average number of nests per bandicoot was $2.1^{\pm}0.3$ for males and $2.3^{\pm}0.4$ for females.

When foraging, Long-nosed Bandicoots produce a loud squeak which is believed to be an alarm call.

There are insufficient data concerning longevity, although individuals have been recorded living up to three years in captivity (Lyne 1982) and it is expected that they may live up to two to two and a half years in the wild.

Threats

Predation by cats and, to a lesser extent by dogs and foxes, and road mortality, potentially present the most significant threats to the persistence of the population.

Recently, several bandicoots were killed by a fox at North Head. Subsequent baiting was successful in removing this fox. This incident highlights the impact one fox can have on the population. Monitoring of the establishment of foxes on North Head needs to be vigilant as they are difficult to control given limitations on predator control techniques.

Major threats to the North Head population include the loss, modification, degradation and/or fragmentation of suitable habitat and direct impacts to individuals.

Although there has been a major loss of habitat over the past 200 years as a result of urbanisation in Manly, the amount of habitat lost in the last 20 years at North Head has been minimal and the majority of habitat currently available to bandicoots is either in National

Park, or will be added to National Park, or is about to be subject to management plans that protect and enhance habitat values. However, there are a number of current development proposals that may result in further loss of small areas of habitat.

Small populations such as the North Head population are likely to suffer from inbreeding depression. There have been no studies of the genetic variability and health of the population.

The population could potentially be affected by toxoplasmosis. The protozoan parasite *Toxoplasma gondii* is a well recognised cause of disease and mortality in Australian marsupials. In Australia, *Toxoplasma* is a parasite of the introduced cat. There is a substantial population of domestic cats adjacent to North Head and feral cats are occasionally trapped by NPWS staff. No studies of the incidence of toxoplasmosis at North Head have been completed.

Management

The NPWS convenes the North Head Liaison Committee (NHLC) which oversees the day-to-day management issues of North Head including utilities and access. Manly Council, the Department of Defence, Sydney Water, St Patrick's College, Manly Hospital and the Australian Institute of Police Management are represented on this committee.

The NPWS has developed a Plan of Management for Sydney Harbour National Park (NSW NPWS 1998b). This plan makes a number of commitments to managing and protecting the habitat of Long-nosed Bandicoots, including appropriate fire management and bushland rehabilitation. It also includes measures to reduce known threats, including the ongoing implementation of feral animal control programs and the night time restriction of vehicular access to North Head scenic lookout to reduce the incidence of road mortality.

Night time vehicle access along Scenic Drive has been restricted between 10pm and 7am to reduce road kills of bandicoots and vandalism in Sydney Harbour National Park.

The NPWS established a recovery team for the North Head Long-nosed Bandicoot population in 1998 to provide advice in the preparation of a recovery plan and to oversee the implementation of the plan once it is approved. The membership of the team currently includes representatives from the NPWS, Manly Council, Department of Defence, Sydney Water, Catholic Church and the Manly Environment Centre. The representation on the recovery team has a degree of overlap with the NHLC and North Head Planning Advisory Committee and covers the same area, allowing close liaison with these groups.

Manly Council has prepared and exhibited a draft conservation strategy (Manly Council 1997) that makes a number of recommendations, including responsible domestic animal ownership, for the protection of bandicoots. Manly Council has also prepared management and bush regeneration/rehabilitation plans for Spring Cove and Shelly Beach, which include measures for the management of bandicoot habitat.

The Catholic Church has prepared an Environmental and Heritage Conservation Plan for St Patrick's Estate which includes the protection and management of remnant bushland, the establishment of vegetated links to facilitate access and movement to nesting and foraging areas in the estate and the prohibition of cats and dogs by future occupants. As a condition of consent for developments on the estate, the Catholic Church will also be preparing a monitoring program to oversee the effectiveness of these management strategies.

Sydney Water Corporation has undertaken revegetation and rehabilitation activities within the North Head Sewage Treatment Plant and has prepared Environmental Management Plans as part of the operational phase of the Northside Tunnel project. These plans include measures for the protection and management of bandicoot habitat and the identification of measures to reduce threats to bandicoots, including fencing out habitat areas and education programs to reduce road mortality.

Recovery Plan

A Recovery Plan is being prepared for this endangered population of Long-nosed Bandicoots at North Head. This plan will be exhibited and finalised in 2001.

For further information contact

Long-nosed Bandicoot Recovery Team Co-ordinator, Threatened Species Unit, Central Directorate, NSW NPWS, PO Box 1967, Hurstville NSW 2220. Phone (02) 9585 6619 or visit our website at www.npws.nsw.gov.au

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