

Long-nosed Potoroo

Potorous tridactylus
Family Potoroidae

Other names:

Long-nosed rat-kangaroo

Conservation Status:

The long-nosed potoroo is listed as Vulnerable in the NSW *Threatened Species Conservation Act 1995 (TSC Act)* and the subspecies *P. t. tridactylus* is listed as Vulnerable at the national level (*Environmental Protection and Biodiversity Act 1999 (EPBC Act)*, Maxwell et al. 1996).

* One north coast NSW long-nosed potoroo population (at Cobaki) is listed as an Endangered Population in the NSW *Threatened Species Conservation Act*. This population falls within the Tweed Shire but highlights the species' precarious conservation status, a condition that is particularly apparent for coastal populations.



Long-nosed Potoroo *Potorous tridactylus*

photo: David Milledge

Distribution, Abundance & Population Trends

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National and State

The Long-nosed Potoroo is patchily distributed through coastal south-east Australia from south-east Queensland through eastern NSW to south-west Victoria, far south-east South Australia and some of the Bass Strait islands (DEC 2005). It is considered rare north of Sydney.

The long-nosed potoroo occurs at scattered locations along the NSW coast and eastern fall of the Great Dividing Range from the Queensland Border to the Victorian Border.

The NSW Scientific Committee's reasons for listing this species were as follows:

- It's population and distribution are reduced to a critical level
- It faces severe threatening processes
- It depends upon specific habitats (ecological specialist)

In north-east NSW the Long-Nosed Potoroo is known from the Tweed, Brunswick, Richmond, Clarence, Bellinger, Nambucca, Macleay, Hastings, Manning and Hunter valleys; known coastal locations include Cobaki Lakes, Cudgen, Brunswick Heads, Tyagarah, Lennox Head, Wardell, Wooli and Old Bar areas.

Schlager (1981) describes two broad but distinct habitat associations for the Long-Nosed Potoroo in north-east NSW, one associated with the eastern slopes and tablelands, and another associated with the coastal sands. The relevance of this distinction remains to be

clarified but it highlights the disjunct character of this species' current NSW distribution. Long-nosed Potoroo populations on the NSW north coast are fragmented and reduced to geographically isolated heathlands, shrublands and woodlands, often referred to as Wallum communities (Griffith et al. 2003), of the sand plains and floodplains (Mason 1997, Milledge 1991). Mason (1997) studied a population near Byron Bay, but on the whole the ecological requirements of coastal NSW populations remain poorly known.

Local

Long-nosed Potoroo populations on the far north coast of NSW have been particularly impacted by habitat loss associated with coastal developments. Local populations within Byron Shire occupy disjunct habitat remnants within highly fragmented landscapes. Their geographic isolation leaves them exposed to the influences and impacts of threats accompanying further habitat disturbance.

The species is known from patchy locations between Brunswick Heads and Wardell. A regionally significant population is protected within Tyagarah Nature Reserve and the species has also been recorded from other formal reserves of the Shire (e.g. Brunswick Heads Nature Reserve, Goonengerry National Park). Important known and potential habitats also occur on freehold lands (e.g. coastal remnants, Big Scrub remnants).

Ecology

Habitat

The Long-nosed Potoroo occurs from sea level up to 1,500 metres and is known to inhabit a broad range of vegetation types including subtropical, warm temperate and cool temperate rainforests, wet, dry and swamp sclerophyll forests and wet heathlands (DEC 2005).

It is typically patchy in its occurrence, a characteristic presumably relating to the dynamics of its habitat and the varying impacts of natural and human-induced phenomena such as fire, grazing, predation and general habitat disturbance. Occupied habitats are characterised by a dense ground layer, affording some protection from predators, and friable¹ soils, meeting the species' fossorial² foraging requirements.

The dense ground layer is variously composed of grasses, ferns, sedges, or shrubs, or various combinations thereof. In rainforests, this requirement is often met in areas regenerating after events that have disturbed the tree canopy and lead to the regeneration of a dense ground layer (e.g. storms, natural tree fall, road construction and logging).

In north-east NSW, rainforests and tall moist or wet sclerophyll forests at high elevations are favoured, whilst moist shrublands with a moderately dense heathy understorey or sedge-dominated ground cover are

preferred at lower elevations. Paperbark swamp forests also constitute potential habitat where they support a dense rainforest understorey.

Within Byron Shire the Long-Nosed Potoroo is known to occur within coastal heaths (Tyagarah Nature Reserve), tall open forests (e.g. Goonengerry National Park) and remnant lowland rainforest.

Home Range, Shelter and Movements

Individuals occupy overlapping home ranges varying from approximately 2-5 hectares in size (DEC 2005). Densities can be quite high under favourable circumstances.

This species rarely ventures far from cover and its occurrence is characterised by the presence of a dense ground layer, typically provided by structurally complex ground vegetation (e.g. grasses, ferns, sedges, vines or shrubs). It nests and shelters by day in simple nests constructed of grass and other vegetation placed in scrapes within such dense areas. Wet heaths, swamp forests, riparian vegetation and rainforests provide this species' shelter requirements within the Byron Shire.

Relatively little is known of the Long-Nosed Potoroo's movement and dispersal capabilities but available evidence, and the species' known reluctance to move

¹ Easily crumbled, broken into smaller fragments.

² Burrowing, digging.

Figure 2: Typical foraging habitat for the Long-nosed Potoroo *Potorous tridactylus*

photo: David Milledge



far from dense cover, indicates that habitat corridors are important in maintaining functional linkage between habitat patches (Bennett 1987). Provided adequate dense cover is provided, such corridors can take the form of roadside vegetation or broad landscape linkages. Habitat corridors have been mapped as part of the Byron Biodiversity Conservation Strategy (2004) and these are highly likely to constitute important links for this species, where vegetated.

Further systematic monitoring is required to ascertain the extent to which tunnels and culverts under roads such as the Pacific Highway will provide sustainable and functional linkages between otherwise fragmented Long-nosed Potoroo populations.

Diet

Potoroos excavate conical diggings in the soil as they forage nocturnally for underground fungi, roots, tubers, worms and insects (Johnston 2008). Friable soils (either

sandy or loamy) or a dense leaf litter are required for this activity. Potoroos also forage opportunistically and will consume some mushrooms, fruit and seeds (Seebeck et al. 1989).

Breeding

Long-nosed Potoroos are solitary except when mating, or when females have young at foot. They may breed at any time of the year but late winter - early spring and in early summer (Seebeck 1995) are favoured periods of breeding activity. A single young is carried in the pouch for up to 130 days but remains 'at foot' until weaned at about 170 days. Pouch young are susceptible to being evicted and abandoned when the mother is placed under undue stress. This appears to serve as a mechanism to enhance the survival prospects of the mother should she be confronted by a predator. This characteristic should be considered when potoroos are targeted for trapping as part of field surveys.

Threats

As a species, the Long-nosed Potoroo appears pre-disposed to an insecure conservation status. Three of the five potoroid species formerly occurring in NSW are now extinct (Schedule 1, TSC Act). It is also part of a group of small to medium-sized ground mammals referred to as the Critical Weight Range (CWR) species (Burbidge and McKenzie 1989). As a group, CWR species are considered highly susceptible to the impacts of feral predators including dogs, foxes and cats. These species have all experienced dramatic declines in status since European settlement in Australia and are now amongst those most in need of targeted conservation measures.

Loss and fragmentation of habitat

Land clearing has been and remains a significant threat to this species throughout its range. As elsewhere along the east coast, vegetation clearing within Byron Shire was originally associated with agricultural activities but is exacerbated by the spread of urbanisation and associated developments (Johnston 2008, Mason 1997). Direct habitat loss and the fragmentation of remnant habitats reduce the viability of populations. Edge effects associated with human development are likely to reduce available habitat through increased disturbance, road kills and predation by dogs, cats and foxes.

Stock grazing

Grazing by stock has been implicated as an activity that degrades habitat for this species by opening up the understorey, directly threatening potoroos by trampling

and removing protective habitat cover and improving access for predators (Seebeck 1995, Maxwell et al. 1996, NSW NPWS 2002). Indirect impacts of stock grazing include the replacement of native ground covers with pasture grasses and the long term simplification of ground layer habitats.

Feral predators

Foxes and cats are advantaged by activities such as habitat loss, fragmentation and degradation and are implicated in this species' decline along the east coast of Australia's mainland (Johnston 2008, Maxwell et al. 1996). The red fox, feral cat and dog are all potential potoroo predators.

Indiscriminate burning

Fire is an important element in the natural dynamics of potoroo habitats but too frequent burning, leading to the loss of dense ground layers and the simplification of habitats is detrimental to this species. It appears that long unburnt heaths are a vital component of this species' habitat at Tyagarah Nature Reserve (Mason 1997).

Road & Utility easements

The construction of roads and powerlines into coastal and forest habitats results in the loss and fragmentation of habitats for this species as well as providing access for feral predators.

Management Recommendations for Byron Shire

- Identify and prioritise key Long-nosed Potoroo habitats within Byron Shire to provide a focus for site specific management actions.
- Protect known Long-nosed Potoroo habitat and all native vegetation comprising potential habitat on coastal sand dunes and flood plains from clearing or development.
- Encourage owners of lands supporting known and potential Long-nosed Potoroo habitat to maximise the protection and enhancement of those habitats.
 - I. Highlight the impacts of habitat loss and fragmentation, stock grazing and frequent fires.
 - II. Ensure that affected land owners are aware of funding sources and mechanisms available to support habitat protection and enhancement.
 - III. Exclude stock from remnant native vegetation on sand dunes, sand plains and flood plains and from rainforests throughout the shire.
- Ensure that Byron Shire Council adopts best practice procedures for Council activities such as infrastructure development, weed control, control burning and bush regeneration within and adjoining habitat.
- Ensure appropriate hazard management burning practices are undertaken in areas of known Long-nosed Potoroo habitat.
- Target the control of foxes, cats and cane toads to known key sites for threatened terrestrial fauna.
- Manage weed infestations within known and potential Long-nosed Potoroo habitats.
- Encourage and support Landcare and Dunecare groups, bush regeneration teams and agency coastal habitat restoration programs, particularly within coastal woodland, heath, sedgeland and swamp forest habitats. Restoration programs within areas of known and potential Long-nosed Potoroo habitat should be undertaken in light of this species' requirement for dense ground cover.
- Wherever possible avoid the construction of new public utilities (roads, powerlines) within known or potential Long-nosed Potoroo habitat. Public roads that are no longer required should be revegetated, either naturally or by replanting.
- Long term conservation of the Long-nosed Potoroo within Byron Shire will be enhanced through the consideration and protection of known and predicted potoroo habitat within the framework of the Byron Biodiversity Conservation Strategy (2004). Encourage local research institutions or government to monitor Long-nosed Potoroo populations at key sites and promote surveys within potential habitats
- Ensure that adequate surveying is undertaken for this species wherever development is proposed within or adjacent to known or potential Long-nosed Potoroo habitat.
- Encourage state agencies (eg Roads and Traffic Authority, DECC) to boost the monitoring of potoroo populations impacted by upgrades of the Pacific Highway (e.g. Brunswick Heads) and other roads. Further encourage state agencies to augment mitigation measures designed to ameliorate impacts of road upgrades on this species.
- Encourage research into the ecology of the Long-nosed Potoroo. Key areas of research include: population dynamics, home range and movements, population viability.
- Report all confirmed Long-nosed Potoroo sightings to the Ecologist at Byron Shire Council. Records should include date and location (grid reference).

Locations of Threatened Fauna within Byron Shire *Potorous tridactylus*



Figure 3: Distribution of Long-nosed Potoroo *Potorous tridactylus* in Byron Shire

References

Bennett, A. F. 1987. Conservation of mammals within a fragmented forest environment: the contributions of insular biogeography and autecology. Pp. 41-52 in *Nature Conservation; The Role of Remnants of Native Vegetation*, edited by D. A. Saunders, G. W. Arnold, A. A. Burbidge and A. J. M. Hopkins. Surrey Beatty & Sons Pty Ltd Chipping Norton, NSW.

Burbidge A. A. and McKenzie, N. L. 1989. Patterns in the modern decline of Western Australia's vertebrate fauna: causes and conservation implications. *Biological Conservation* 50: 143-198.
Byron Biodiversity Conservation Strategy, 2004. Byron Shire Council, Mullumbimby

DEC November 2004. *Threatened Species Survey and Assessment: Guidelines for Development and Activities (Working Draft)*. Department of Environment and Conservation (NSW), Hurstville, NSW.

Department of Environment and Climate Change. 2005. Long-nosed Potoroo - profile. Retrieved 24th November 2009, from <http://www.threatenedspecies.environment.nsw.gov.au/tsprofile/profile.aspx?id=10662>

Johnston, P. G. 2008. Long-nosed Potoroo *Potorous tridactylus* (Kerr 1792). Pp. 301-302 in *The Mammals of Australia*, edited by R. Strahan. *The National Photographic Index of Australian Wildlife*. Australian Museum / Reed Books, Sydney, NSW.

Mason, R. J. 1997. Habitat use and population size of the Long-nosed Potoroo *Potorous tridactylus* (Marsupialia: Potoroidae) in a coastal reserve, north eastern New South Wales. *Australian Mammalogy* 20: 35-42.

Maxwell, S., Burbidge, A and Morris, K. 1996. *The 1996 Action Plan for Australian Marsupials and Monotremes*. Wildlife Australia, Canberra, ACT.

Milledge, D, R. 1991. A survey of the terrestrial vertebrates of coastal Byron Shire. *Australian Zoologist* 27: 66-90.

NSW NPWS. 2002. *Threatened Species of the Upper North Coast of New South Wales; Fauna*. NSW National Parks and Wildlife Service, Coffs Harbour, NSW.

Schlager, F.E., 1981, *The Distribution and Status of the Rufous Rat-Kangaroo, Aepyprymnus rufescens, and the Long-nosed Potoroo, Potorous tridactylus, in northern New South Wales*, Report to the NSW National Parks and Wildlife Foundation, Department of Ecosystem Management Report No. 18, University of New England, Armidale, NSW.

Seebeck, J. H. 1995. Long-nosed Potoroo *Potorous tridactylus* (Kerr 1792). Pp. 131-133 in *Mammals of Victoria; Distribution, ecology and conservation*, edited by P. W. Menkhorst. Oxford University Press, Melbourne.

Seebeck, J. H., Bennett, A. F. and Scotts, D. J. 1989. Ecology of the Potoroidae- A review. Pp. 67-88 in *Kangaroos, Wallabies and Rat Kangaroos*, edited by G. Grigg, P. Jarman and I. Hume. Surrey Beatty and Sons, Sydney.