

PROGRESS REPORT

Quolls in the Townsville area: a summary of current knowledge



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Quolls in the Townsville area: a summary of current knowledge

Executive Summary

- 41 quoll records in the Townsville/Bowen area were collated from a variety of sources.
- 2 of these records are of spotted-tailed quolls, and are old (>50 years) records.
- The remainder are of northern quoll sightings. These sightings have contracted towards the coast over past decades.
- All known northern quoll populations in the area are found on or about the Mt Elliot/Saddle Mtn massif, Cape Cleveland and Cape Upstart.
- Field survey conducted during this project located northern quolls on the foot slopes of the Mt Elliott massif at Toonpan.
- A number of recommendations aimed at identifying and managing northern quoll populations in the Townsville area are made including:
 - **Recommendation 1.** Undertake field and community survey aiming to map the extent and numbers of the known populations (Mt Elliot, Cape Cleveland, Cape Upstart).
 - **Recommendation 2.** Undertake quoll-friendly cat and fox control across all tenures overlaying and adjacent to the Mt Elliot massif, Cape Cleveland and Cape Upstart.
 - **Recommendation 3.** Undertake minimal wild dog control in the above areas (see Recommendation 2). Wild dogs possibly suppress numbers of cats and foxes, which are likely to be major predators and competitors with northern quolls.
 - **Recommendation 4.** Support research to investigate the impacts of carnivore baiting programs on northern quolls.
 - **Recommendation 5.** Undertake field and community survey aiming to establish the presence/absence of northern quolls on Magnetic Island, Cape Pallarenda, Mt Stuart, Hervey's Range and intervening hill and coastal areas.
 - **Recommendation 6.** Undertake field and community survey aiming to establish the presence/absence of the spotted-tail quoll in the Paluma and Bluewater Ranges.

- **Recommendation 7.** Support efforts to introduce quoll-proof poultry yards into areas adjacent to Mt Elliot and Cape Cleveland.
- **Recommendation 8.** Develop quoll habitat management guidelines for landowners and land-managers within or adjacent to quoll habitat.
- **Recommendation 9.** Develop quoll habitat mapping as a council and regional planning tool.

Introduction

The northern quoll *Dasyurus hallucatus*, is the smallest quoll species. Most individuals weigh less than 500g and animals rarely reach 1000g. Quolls are carnivorous marsupials belonging to the family Dasyuridae, which also includes the tasmanian devil and a number of genera and species of marsupial “mice”. Three quoll species inhabit mainland Australia, the spotted-tailed quoll, *D. maculatus*, western quoll, *D. geoffroyi*, and the northern quoll. Two species, the northern and the spotted-tailed quoll, are known from the Townsville region.

A small isolated race of the spotted-tailed quoll *D. m. gracilis*, occurs in the Townsville area, and is classed as endangered by the Commonwealth Government (EPBC Act 1999). The northern quoll is also classed as endangered by the Commonwealth Government (EPBC Act 1999). Populations of both species are particularly susceptible to extinction through a combination of their life-history strategy, behaviour and diet (Burnett and Marsh 2004). Their life history strategy results in a rigid breeding system and production of relatively few young in each females short (1-3 years) life-time. Quolls are dietary opportunists which are often killed when they raid poultry yards, eat poisoned baits, attempt to consume cane toads, or scavenge on road kill. On top of this quolls have a tendency to return to a food source until it is depleted, or they are killed. Quolls are very mobile and males can roam several kilometres in a night. This high mobility means that a relatively high proportion of quolls otherwise secure within protected areas may wander into more threatening landscapes adjacent to protected areas.

Despite recent research aimed at delineating the distribution of the spotted-tailed and northern quolls in Queensland (Burnett 2001, Woinarski *et al.* 2008), the distribution of each species remains poorly known. Spotted-tailed quolls probably only occur on the very periphery of the study area, if they still exist there at all. Northern quolls are much more widespread within the study area.

Fine scale knowledge of the distribution of quoll species is essential if they and their habitats are to be conserved. WPSQ received funding from TNTC and BDTNRM to undertake preliminary data collection and promotion of quoll conservation amongst

the broader community. This report provides an up-to-date summary of the known distribution of quolls in north Queensland with particular reference to the Townsville area.

Study Area and Methods

The study area is arbitrarily defined here as the area bounded by latitudes 19° 30' and 20° (i.e. between about Ingham and Bowen) and bounded to the west by the west by the Paluma Range and Bluewater Ranges, Hervey's Range and other ranges south to and including the Leichhardt Range.

I summarise the known past and present distribution of quolls in the Townsville district through plotting of sight records data collated by the author since 1986, the databases of the Queensland Museum and the Queensland EPA (Wildnet), from Woinarski *et al.* (2008) and from the results of field and community survey undertaken as part of this project.

Minimal community survey has been undertaken during the project to date but has included requests for information made through spoken and written media interviews, opportunistic conversations with during the project, and appeals for information during public presentations.

Field survey consisted of hair-tubing surveys at a site on the Mt Elliot massif, near Mt View Drive, Toonpan. Twenty hair-traps were set 20-m-apart in a line transect. Hair tubes were set on the 1st June and retrieved on the 6th June. Two hair-trap types were used (Fig. 1); hair funnels (Faunatech, Bairnsdale, Vic), and home made hair tunnels (after Murray 2005). Hair-traps were baited with chicken mince and left in the field for five nights. Hair samples collected from these were identified by Georgeanna Storey (Scats About, Majors Creek, NSW).



Fig. 1. The two hair-trap types employed in this survey. Murray hair-trap (left) and Faunatech hair funnel (right).

Results

We collated 41 sighting records for two species of quoll in the North Queensland area (Appendix A, Map 1).

Spotted-tailed quoll

The spotted-tailed quoll is known from two records in the 1940's, both in the Paluma Range. Both of these records (including one supported by a photograph) are of quolls which raided poultry yards and which were subsequently killed.

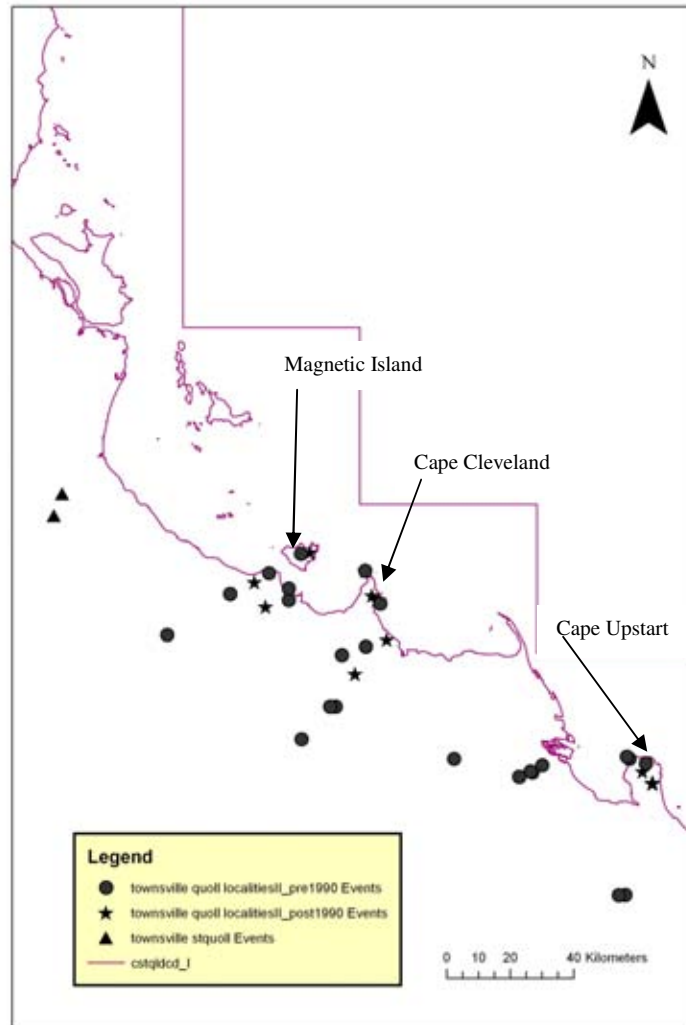
Northern quoll

The northern quoll is known by 39 records at a number of sites throughout the area. This number does not include multiple captures of northern quolls at single localities (e.g. the 19 quolls trapped by me at AIMS in 1999 are counted as a single record in the attached database).

The distribution of these records suggest that (i) northern quoll populations have contracted in the region over the past century and (ii) that extant populations are closely associated with the slopes and foot slopes of three geographic features in the area; (a) Mt Elliot and Saddle Mountain, (b) Cape Cleveland and (c) Cape Upstart.

There are no recent quoll records from any of the other historical quoll sites or elsewhere in north Queensland.

Seven quoll scats and two hair samples were recorded from the field survey site at Toonpan during the week 1 – 6th June 2008.



Map 1. All known records of Spotted-tailed and Northern quolls in the study area.

Note that Spotted-tailed quoll records are shown as triangles. All other symbols refer to northern quoll sightings.

Discussion

Overview

The northern quoll is the dominant quoll species in the Townsville area and unless otherwise stated the following discussion refers to this species.

Distribution and status

The status of spotted-tailed and northern quolls at the many historical sites from which no records have been obtained is uncertain. Many other potential sites from which quolls have never been reported may also house quoll populations. However, the lack of any records arising from the considerable fauna survey work done throughout the area since the 1970's (e.g. the unpublished EPA Dalrymple fauna survey, and several unpublished studies by the ACTFR, James Cook University, is indicative of small and localised or extinct quoll populations throughout much of the area.

Distribution in the Townsville region

Spotted-tailed quoll

Spotted-tailed quolls probably never occurred within the savannah landscapes of the Townsville region. It is no coincidence that the species is only known from the highland rainforests of the Paluma Range, from which it hasn't been seen for over 60 years. It is possible that the species continues to survive there and in the adjacent Bluewater Range, however the high human activity within these sites suggests that it is unlikely that the species survives here undetected. The nearest confirmed population of the species occurs in the Tully Falls area of Atherton Tablelands (Burnett 2001).

Northern quoll

Northern quolls probably once roamed the Townsville landscape. The species still exists here although the extent of their population has declined since at least the 1940's.

In the Townsville area, northern quoll populations are known to survive on Mt Elliot and Saddle Mtn, Cape Cleveland and Cape Upstart and northern quolls were recorded

on the **Mt Elliot** foot slopes, during this study. It is unknown how quoll populations are distributed over the massif area but it is probably noteworthy that 500 trap nights of mammal survey in the rainforests of the Mt Elliot summit, didn't find any quolls there (Williams *et al.* 1993).

Quolls appear to be abundant on **Cape Cleveland** and **Cape Upstart**. They are regularly recorded from fishing huts there, and are routinely encountered by security and other staff at the Australian Institute of Marine Science at Cape Ferguson (Cape Cleveland). An unpublished trapping study by me returned very high trap rates and high numbers of female quolls from the Cape Ferguson site.

Quolls were historically known from the rocky headlands and ranges within and bounding the Townsville city area (i.e. Kissing Point, Many Peaks Range, Mt Stuart). We can confidently state that quolls are extinct at **Kissing Point**. No natural habitat remains in the area.

Northern quolls are probably locally extinct on **Cape Pallarenda** from which they haven't been reported for approximately 60 years. This area experiences relatively high human activity and is adjacent to densely settled areas, so quolls would be expected to be encountered either within their habitat or adjacent areas occasionally if they occurred there. Although never recorded there, it is highly probable that northern quolls occurred on **Mt Stuart**. This is one of the most intensively surveyed sites in the Townsville area (e.g. James and Buosi 1997, Kutt 2000, ENSR 2008). A single recent record of a northern quoll at Mt Louisa is probably of an animal which had been accidentally transported in a vehicle. This animal was observed several times over a couple of days during the mid-1990's. It was denning in the air filter of a vehicle. The high human presence all around and on Mt Louisa suggest that it is highly unlikely than an otherwise undetected quoll population occurs there.

Areas of **Hervey's Range** are so extensive and remote that the lack of recent quoll sightings from there could be due to lack of observers. The area contains extensive rocky habitats, which are favoured by quolls plus permanent or nearly permanent water holes, especially in the head water areas to the south of the Hervey's Range Developmental Road.

It is unclear whether quolls representing resident populations have been reported from **Magnetic Island**. The two records of quolls from there consist of a general reference to them there by Johnson and Lavery (ref?) and a photo verified sighting from beneath a house in Horseshoe Bay. After discussion with one of the authors, it is possible that Johnson and Lavery's (ref?) inclusion of northern quoll on the list of fauna from the Island is based on their premise of suitable habitat and known quoll populations on the nearby mainland (P. Johnson pers. comm.). The second record from Horseshoe Bay in August 2005 is confirmed, but is most likely a deliberate or accidental human assisted translocation. The long-term and numerous human populations around the northern, eastern and southern sides of the island and the relatively extensive road network linking them should lead to at least some quoll reports if they were present there. Targeted quoll surveys have recently been undertaken on Magnetic Island (Woinarski *et al.* 2008) without locating any quolls or signs of quolls.

Despite the body of circumstantial evidence suggesting that quolls have become locally extinct at several sites in the Townsville area, it is impossible to confirm this until comprehensive surveys are conducted in those areas.

Significance of Townsville's quoll population

As far as is known, northern quolls exist as five isolated populations within Queensland (Woinarski *et al.* 2008). These populations are centred on the following five broad areas; (i) Rockhampton, (ii) Mackay (iii) Townsville/Bowen, (iv) Wet Tropics, and (v) Porcupine Gorge. It is unknown whether other populations persist at any other historical sites (e.g. Carnarvon population) or at sites of potential habitat that have never been surveyed (e.g. most of north Queensland).

Recent survey work (Woinarski *et al.* 2008) suggests that the Townsville/Bowen quoll population is one of the three most important of these populations. Our current study further suggests that the Mt Elliott, Cape Cleveland and Cape Upstart populations are the most important in the Townsville/Bowen area.

The recent and impending extinction of northern quoll populations in the Northern Territory and Western Australia make this Townsville quoll population all the more

important for conservation of the species. This population is also significant in the sense that it has survived cane toads.

Clearly, lack of basic information on the extent of known populations, and the lack of presence/absence information from the remainder of the study area is a core hindrance to the conservation of quolls in the region. A range of recommendations are made below which will assist quoll conservation in the Townsville/Bowen area.

Recommendations

Recommendation 1. Undertake field and community survey aiming to map the extent and numbers of the known populations (Mt Elliot, Cape Cleveland, Cape Upstart).

Recommendation 2. Undertake quoll-friendly cat and fox control across all tenures overlaying and adjacent to the Mt Elliot massif, Cape Cleveland and Cape Upstart.

Recommendation 3. Undertake minimal wild dog control in the above areas (see Recommendation 2). Wild dogs possibly suppress numbers of cats and foxes, which are likely to be major predators and competitors with northern quolls.

Recommendation 4. Support research to investigate the impacts of carnivore baiting programs on northern quolls.

Recommendation 5. Undertake field and community survey aiming to establish the presence/absence of northern quolls on Magnetic Island, Cape Pallarenda, Mt Stuart, Hervey's Range and intervening hill and coastal areas.

Recommendation 6. Undertake field and community survey aiming to establish the presence/absence of the spotted-tail quoll in the Paluma and Bluewater Ranges.

Recommendation 7. Support efforts to introduce quoll-proof poultry yards into areas adjacent to Mt Elliot and Cape Cleveland.

Recommendation 8. Develop quoll habitat management guidelines for landowners and land-managers within or adjacent to quoll habitat.

Recommendation 9. Develop quoll habitat mapping as a council and regional planning tool.

Acknowledgements

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Appendices

Appendix A. Quoll sighting records from the Townsville/Bowen study area.

ID	Woinarski 08_ID	Dec_Lat	Dec_Long	YEAR	LOCALITY	OBSERVER	SOURCE
1	169	-20.09840	147.75110	1907	Mt Abbot, S of Home Hill	Not Available	Wildnet database
2	173	-20.10000	147.73333	1907	Mount Abbott, Inkerman	NHMUK	M Oakwood
3	175	-19.78390	147.82750	1995	2km ESE Station Hill, Cape Upstart	Pollock (Unpubl. data)	Wildnet database
4	176	-19.70830	147.75500	1984	Cape Upstart Flagstaff Bay.	G.B. Sherman	Nquoll Records 081106
5	177	-19.78310	147.82940	2002	Cape Upstart	John Augusteyn	Wildnet database
6	178	-19.78230	147.82860	1995	2km ESE Station Hill, Cape Upstart	Not Available	Wildnet database
7	179	-19.76510	147.45110	0	Inkerman	Not Available	Wildnet database
8	180	-19.75260	147.48860	1907	Inkerman Stn area, S of Home Hill	Not Available	Wildnet database
9	181	-19.72760	147.80940	1975	Cape Cattle Stn, Cape Upstart	Not Available	Wildnet database
10	182	-19.71510	147.76360	1967	Not Available	Not Available	Wildnet database
11	183	-19.71510	147.26780	1972	Lower Burdekin River district	Not Available	Wildnet database
12	184	-19.71510	147.76360	1967	NW corner, Cape Upstart	Not Available	Wildnet database
13	185	-19.65937	146.83575	0	WOODSTOCK ROAD, DOUBLE CREEK	Not Available	Nquoll Records 081106

ID	Woinarski 08_ID	Dec_Lat	Dec_Long	YEAR	LOCALITY	OBSERVER	SOURCE
14	186	-19.56670	146.93330	1973	Majors Creek, Woodstock Queensland Museum,	Watt (1993)	Wildnet database
15	187	-19.47500	146.98750	2007	Alligator Falls, Mount Elliot Sciton of Bowling Green Bay National Park	Luke Jackson	JWWdatabase
16	188	-19.75000	147.48333	1907	Beach, Mount Inkerman, N Qld	NHMUK	M Oakwood
17	189	-19.73333	147.51667	1907	Mount Alma, Inkerman, N. Qld (200 feet)	NHMUK	M Oakwood
18	190	-19.75000	147.80000	1992	Cape Upstart (sth of Home Hill)	P Johnson	M Oakwood
19	191	-19.39850	147.01780	0	Bowling Green Bay National Park	Not Available	Wildnet database
20	192	-19.56667	146.91667	1973	Major Ck: Woodstock	QLMU	M Oakwood
21	193	-19.25290	147.03530	1990	Mt Cleveland summit (site C4), E of Townsville	Not Available	Wildnet database
22	194	-19.24850	146.63440	1966	Townsville district, north Queensland	Not Available	Wildnet database

ID	Woinarski 08_ID	Dec_Lat	Dec_Long	YEAR	LOCALITY	OBSERVER	SOURCE
23	195	-19.21510	146.70330	1991	VCL west of Townsville Town Common, western side of Bohle River	Not Available	Wildnet database
24	196	-19.18310	147.01640	1975	Not Available	Not Available	Wildnet database
25	197	-19.26667	146.80000	1940	Townsville	QLMU	M Oakwood
26	198	-19.26789	147.05564	1995	Townsville, nr Instit of Marine Science	M. Trannery	M Oakwood
27	199	-19.23333	146.80000	1940	Kissing Point:Townsville,	<1940 QLMU	M Oakwood
28	200	-19.13600	146.83440	0	Magnetic Island (general)	Not Available	Wildnet database
29	201	-19.13150	146.86020	2005	Not Available	Not Available	Wildnet database
30	202	-19.18330	147.01500	1992	Cape Cleveland, nr Townsville	P. Johnson	M Oakwood
32		-19.26789	147.05564	2000's	AIMS	Ballment	S. Burnett
33		-19.26762	147.04856	1986	AIMS	Burnett	S. Burnett
34		-19.27653	147.05847	1999	AIMS	Burnett and Heinsohn	S. Burnett
35		-19.19032	146.74464	Pre 1950's	Townsville Town Common	Not recorded	S. Burnett
36		-19.42146	146.95013	1988	Alligator Creek	Brian Christensen	S. Burnett
37		-19.36408	146.45634	Unknown	Tabletop	Peter Fryer	S. Burnett
38		-19.28475	146.73425	Mid-1990's	Mt Louisa	S. Burnett video footage	S. Burnett
39		-19.39704	147.01818	1989	Saddle Mtn	S. Burnett	S. Burnett

ID	Woinarski 08_ID	Dec_Lat	Dec_Long	YEAR	LOCALITY	OBSERVER	SOURCE
40		-19.37791	147.07698		Clevedon	S. Burnett remote camera	S. Burnett
41		-18.96801	146.16	1950	Paluma township	Tom Connor	S. Burnett
42		-19.02992	146.13666	1939	Puzzle Creek, Taravale Rd	Tom Connor	S. Burnett