

MOUNT EMERALD WIND FARM – NORTHERN QUOLL MONITORING PROGRAM



SUMMARY OF RESULTS: JULY 2017

Monitoring Grid (refer to Fig. 1)	No. survey points	Survey Occasion	No. individual quolls detected	Quoll population estimate (se) ¹	Quoll occupancy (se) ²	Quoll detection probability (se) ³
Mt Emerald Site 1	35	July 2017	9	32.6 (17.9)	0.7319 (0.2628)	0.0523 (0.0215)
Mt Emerald Site 2	36	July 2017	8	Insufficient spatial recapture data	0.4841 (0.1591)	0.0739 (0.0269)
Davies Ck Site, Davies Ck NP	36	July 2017	22	Insufficient spatial recapture data	0.8164 (0.2212)	0.0619 (0.0199)
Tinaroo Ck Site, Dinden NP	36	July 2017	26	62 (18.06)	0.6295 (0.0992)	0.1418 (0.0235)
Upper Walsh River Site	36	July 2017	1	Insufficient spatial recapture data	Naïve occupancy 0.02* Insufficient detections for modelling	Insufficient detections for modelling
Brooklyn Sanctuary ⁴	36	July 2017	17	60.5 (25.02)	0.4625 (0.1304)	0.0903 (0.0278)

Table 1. Three metrics of quoll abundance and detection probability values for six quoll monitoring sites monitored during July 2017.

NOTES

¹population estimated using spatially explicit capture-recapture modelling (Efford 2016);

² Occupancy is the proportion of sites (in this case the 36 trail camera monitoring points within each monitoring grid), at which quolls are estimated to occur, given the modelled uncertainty in detecting quolls when they occur at a point. Modelled using Presence software (Hines 2006);

³ Detection probability is the modelled probability of detecting a quoll on each detection opportunity when it is present at a site. Modelled using Presence software (Hines 2006);

⁴ The Brooklyn site replaced the Biboorah site from July 2017 onwards;

* Naïve occupancy used in this case as insufficient detections were made.

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Trail cameras were used to collect capture-recapture and site occupancy data on six populations of northern quoll *Dasyurus hallucatus* (Map 1) during July 2017. Eighty-three individual quolls were detected (Table 1) during approximately 3000 camera trap days. Population estimates were able to be generated at half of the sites due to low numbers of spatial recaptures from the other half of sites. Occupancy estimates were able to be generated at all but one site.



Figure 1 - Indicative locations of the six monitoring grids (red diamonds) used to monitor Northern Quoll populations in the northern Atherton Tablelands from July 2017 onwards. Monitoring site names in white text. Local place names in black text. Basemap: GoogleEarth Pro 9 December 2017.

The number of quoll individuals detected on each of our 3km² sites ranged from 1 to 26. The numbers from the Mt Emerald sites are at the lower end of this range (Table 1). Of the three sites for which population sized could be estimated, the Mt Emerald 1 site had the lowest population size. The occupancy of the Mt Emerald sites is within the range of values at the three control sites for which occupancy could be modelled (Table 1).

References

Efford, M. G. (2016) secr: Spatially explicit capture-recapture models. R package version 2.10.4. <http://CRAN.R-project.org/package=secr>.

Hines, J. E. (2006). PRESENCE- Software to estimate patch occupancy and related parameters. USGS-PWRC. <<http://www.mbr-pwrc.usgs.gov/software/presence.html>>.
