3.4 Monitoring of key vertebrate species

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PURPOSE, INTENT, SCOPE OF RESEARCH

Refine and implement cassowary monitoring

i) Refine and implement cassowary monitoring at a variety of scales in the Wet Tropics

- Conduct cassowary monitoring at the scale of the Wet Tropics Region:
  - Provide data on cassowary abundance and distribution
  - Assess performance of method and opportunities for improvement
  - Identify environmental influences on abundance and distribution
  - Provide data on the structure and phylogeography of cassowary populations across the region.
  - Provide detailed monitoring data for key areas
Cassowary Surveys

- C. 500km of transects walked
- Low detection rates
- High variability - twice each year over 3 years

Oct-Nov 2013 survey results
- 101 fresh dungs
- 15 feathers
- 810 old dungs
- 82 tracks
- 11 sightings
Distribution of cassowary encounter through the Wet Tropics

1988 Score
0
0 - 1
1 - 2
2 - 3
3 - 4

2012
1) Walk tracks

2) Collect dung

3) Extract DNA

4) DNA Fingerprinting

5) Identify & sex individuals
Population Estimation at Kuranda

- Maximum Likelihood Estimation

- Estimated population size
  - 8 individuals (95%CI 6-16)
  - c. 6km$^2$
PURPOSE, INTENT, SCOPE OF RESEARCH

Maintain flying-fox monitoring
i) continue to provide up to date data for flying-fox management,
ii) contribute to the development of an effective national approach to monitoring of flying-foxes, and

iii) Determinants of spatial dynamics and risk

• Conduct monthly surveys of the spectacled flying-fox population in the Wet Tropics Region:
  • Determine the size and spatial distribution of the population
  • Determine trends in abundance with an estimate of confidence
  • Analyses of this long-term data to examine determinants of spatial dynamics
Spectacled Flying-fox Monitoring

SFF camps – Jan 2011 – Apr 201

\[ y = 1.1021E6 - 23.1615 \times x, \]

\[ p = 0.0841; r^2 = 0.3271 \]
An inconvenient truth - the population is urbanising

\[ r_p = 0.64, \ p < 0.01, \ n = 15 \]

\[ r_p = 0.69, \ p < 0.005, \ n = 15 \]
Why?

• Is it just chance?
  – Camps are closer to urban areas than expected by chance ($Z = 33.26, p < 0.0001$)
  – Camps are in locations which are more fragmented than expected (MPA, ED, PD, $p < 0.05$)

• Have urban areas encroached on camps?
  – No change in extent of urban cover near camps (Mann-Whitney U test, $Z = 0.31, p = 0.76$)

• Have individual camps shifted closer to urban areas?
  – No change in camp locations
  – No change in the sub-set of camps occupied

• Have landscape modifications forced a shift?
  – No change in the structure of the landscape around camps (MPA, PD, ED, $p > 0.05$)
Other hypotheses for urbanisation

- Other hypotheses include
  - Predation
  - Preferred environments
  - Resource availability
  - Habitat structure
  - Navigation
  - Refuge
This isn’t a new problem

*Reported organised shoots*

- Charters Towers 1916, 1927, 1935
- Tolga Scrub 1932 (‘mutilating’ the scrub)
- Midgenoo and Mareeba 1937
- Cooktown 1939, 1940 (back in 1946)
- Mirriwinni refused a permit 1941
- Pt Douglas refused ammunition in 1953

Clear that shooting to move camps was not uncommon and probably mostly unreported
Flying-foxes in Cairns

- 1915 Cairns experiences a “...severe visitation”
- 1920 Camp at the mouth of the Barron is a problem
- 1935 thousands in the city
- 1944 a camp at Pease and Anderson St
- 1948 Cairns Post’s Nature Notes reports that “In bygone years some large camps of flying foxes existed in the vicinity of Cairns - several such camps were located in the mangroves of the Cairns Inlet, Barron River and other places...”
- 1952 camps at Charles St and Alligator Ck
  - Mangrove reclamation program approved in 1954

Apparently flying-foxes are still an issue in the CBD
What have we achieved?

• We’ve been getting rid of flying-foxes for a long time,
  • Charters Towers 97 years, Tolga 81 years, Cairns 60 years

• No evidence any method is particularly effective or cheap
  • 1890 – dispersals ineffective and too expensive (NSW Dept Ag)
  • 1920s – abolition of Flying-fox Destruction Boards (Qld & NSW)
  • 1920s – Commonwealth funded research program (Ratcliffe)

• This is the same experience that has been had up and down the east coast since the 1800s (Roberts et al. 2011)
This all adds up to...

- Manage the animals – harder, unpredictable
- Manage the trees – easiest, but outcomes can be undesirable
- Manage the people – easier...if you can manage the public debate
To move or not to move?

• What are the circumstances where moving a camp is appropriate?
  • What sort of camp should be moved?
  • What sort of impact should warrant moving a camp?

• What are the alternatives?
  • Home modifications, zoning, covered areas, purchase of properties, planning of tree plantings

• Who will bear the cost?
  • Council, affected parties

• Who is responsible for consequences?
  • Council, affected parties
### Cairns Regional Council Assessment Matrix

<table>
<thead>
<tr>
<th>Score</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>Total Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>No: of Bats</td>
<td></td>
<td>&lt;100</td>
<td>100-300</td>
<td>300-500</td>
<td>500-1000</td>
<td>&gt;1000</td>
</tr>
<tr>
<td>Dist from houses</td>
<td>&gt;100m</td>
<td>80-100m</td>
<td>50-80m</td>
<td>20-50m</td>
<td>&lt;20m</td>
<td></td>
</tr>
<tr>
<td>No: of houses impacted</td>
<td>1-3</td>
<td>3-5</td>
<td>5-10</td>
<td>10-15</td>
<td>&gt;15</td>
<td></td>
</tr>
<tr>
<td>No Residents impacted</td>
<td>1-5</td>
<td>5-10</td>
<td>10-15</td>
<td>15-20</td>
<td>&gt;20</td>
<td></td>
</tr>
<tr>
<td>Setting</td>
<td>Natural area</td>
<td>Low Density Residential/industrial</td>
<td>Medium Density Residential/industrial</td>
<td>Medium-High Density Residential/industrial</td>
<td>High Density Residential/industrial</td>
<td></td>
</tr>
<tr>
<td>Noise</td>
<td>Very little noise, occasional</td>
<td>Some noise, intermittent</td>
<td>noticeable, intermittent</td>
<td>Loud, for long periods</td>
<td>Very loud, continuous</td>
<td></td>
</tr>
<tr>
<td>Smell</td>
<td>Weak, occasional</td>
<td>Weak/medium</td>
<td>Medium</td>
<td>Medium/Strong</td>
<td>Very strong continuous</td>
<td></td>
</tr>
<tr>
<td>Mess</td>
<td>0-10% coverage</td>
<td>10-20%</td>
<td>20-30%</td>
<td>30-50%</td>
<td>&gt;50% coverage</td>
<td></td>
</tr>
<tr>
<td>Health</td>
<td>Low risk</td>
<td>Low/Med</td>
<td>Medium</td>
<td>Med/High</td>
<td>Very high risk</td>
<td></td>
</tr>
<tr>
<td>Impact on Assets</td>
<td>Low</td>
<td>Low/Med</td>
<td>Medium</td>
<td>Med/High</td>
<td>Very High</td>
<td></td>
</tr>
<tr>
<td>Achievability</td>
<td>Low</td>
<td>Low/Med</td>
<td>Medium</td>
<td>Med/High</td>
<td>High</td>
<td></td>
</tr>
<tr>
<td>Cost of Action</td>
<td>High</td>
<td>Low/Med</td>
<td>Medium</td>
<td>Med/High</td>
<td>Low</td>
<td></td>
</tr>
</tbody>
</table>

Score >35 Intervention warranted
Summary

• Spectacled flying-fox population appears to be stable, at best, possibly declining
• Spectacled flying-foxes are urbanising even further
  – We still don’t know what it is about us that they like

• Flying-foxes (SFFs) have been living with us for a long time
  – Government & Councils need to think carefully about when and which camps should be moved.
  – Understanding the drivers underpinning this may provide solutions
The National Flying-Fox Monitoring Program

http://www.environment.gov.au/node/16393
THANK YOU

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