

When bats and planes meet..

Minimising the risk of bat strike to the Australian Aviation Industry

Jen Parsons¹, Simon Robson¹, David Blair¹, Jon Luly¹, Andrew Franzmann² and Louise Shilton³

¹James Cook University, ²Townsville Airport Pty. Ltd., ³CSIRO, Sustainable Ecosystems.



Overview

- Wildlife Strike
- The growing impact of bats
- Bats are not hairy birds
- How to manage the risk
- Possible solutions
- Where to from here..
- Outcomes for industry

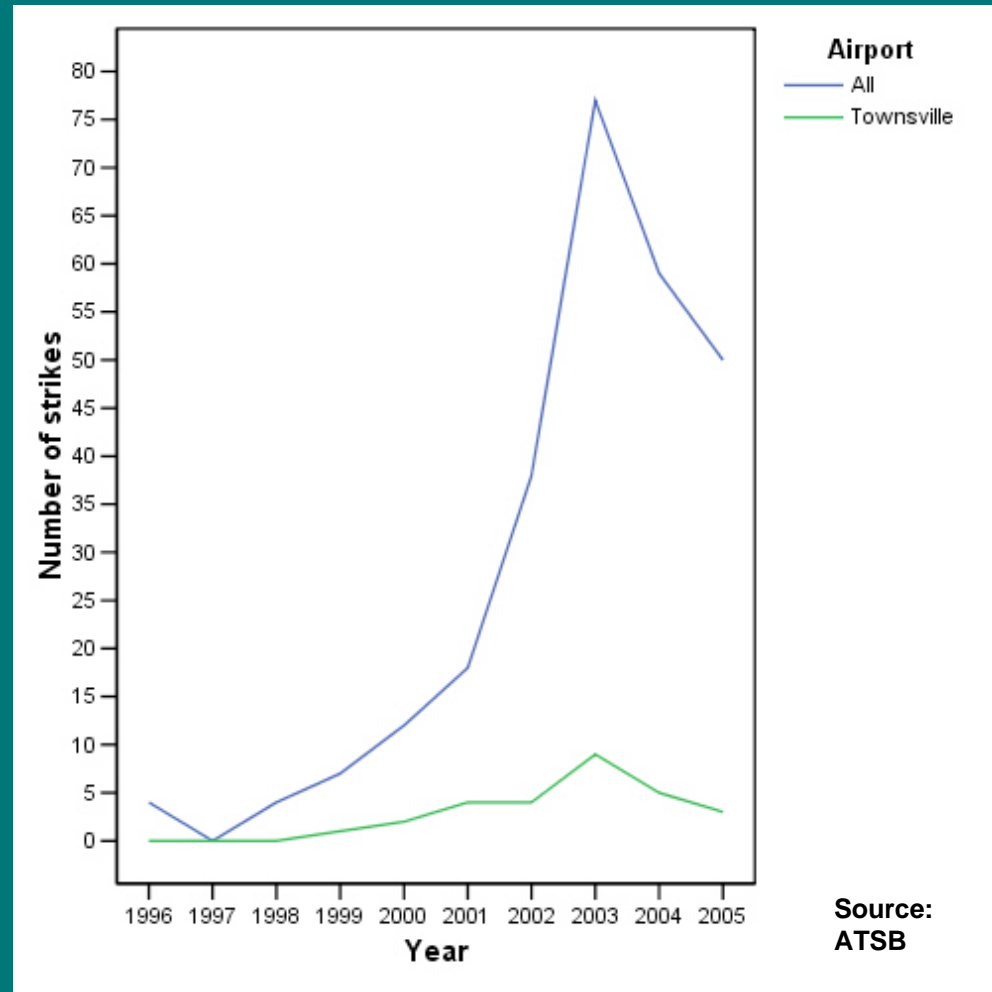
Wildlife Strike

- Significant on a global scale
 - direct & indirect costs in the US in 2005 estimated at > \$500 million
- Requires global, national and local response
 - intensive studies into global migratory patterns in birds
 - intensive studies into national and local 'behaviour' of problematic species
- Strikes no longer = 'acts of god'
 - the airline industry must act to reduce risk of known threats

Bats are now a significant risk

(or why TAPL contacted us!)

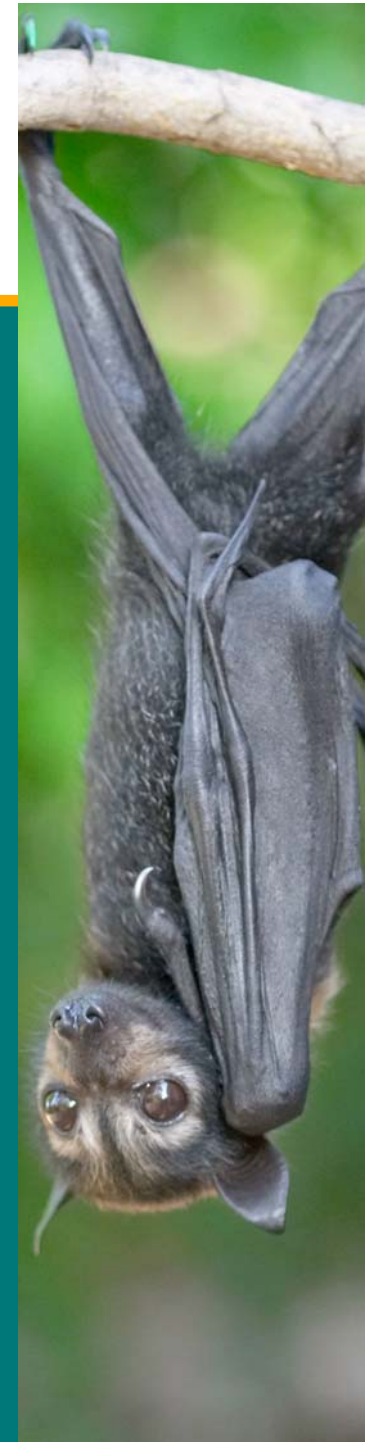
- An increase in bat strike in the past five years
- More bat strikes or more flights?
- Reduction in bird strikes?
- Or better recording protocol?



A CRITICAL POINT:

Bats are not hairy birds..

- They require different solutions
- 76 species of bats in Australia
- Bats are flying placental mammals
- Have VERY different ecologies to birds
- Even different bat species have different ecologies
- Can feed on: flowers, fruit, insects, frogs, small mammals, fish.
- Can live in groups or solitarily in: trees, caves, ceilings, hollows.
- Unlike birds, they are unlikely to be feeding and roosting at airports



Why are bats so dangerous?

- Can have large body weight (>1 kg)
- Many species 'flock' in large numbers
- Movement is unpredictable (?)
- The impact:

$$F = \frac{2\pi r^2 p V^2}{3}$$

- 700g *P. poliocephalus*
- +250 knot aircraft =
- >5,00kg

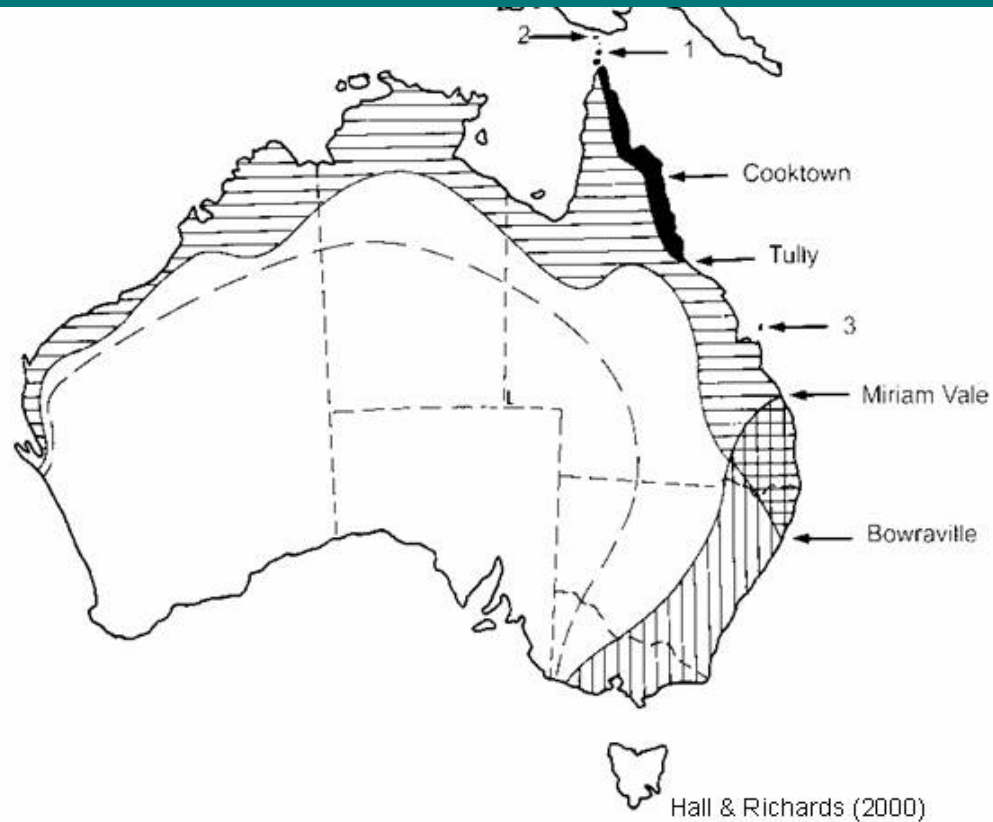


Who are the culprits?

- Five mainland species of flying fox
- Possibly smaller blossom, tube-nosed and micro-bats.
- Identifying the high risk species is crucial

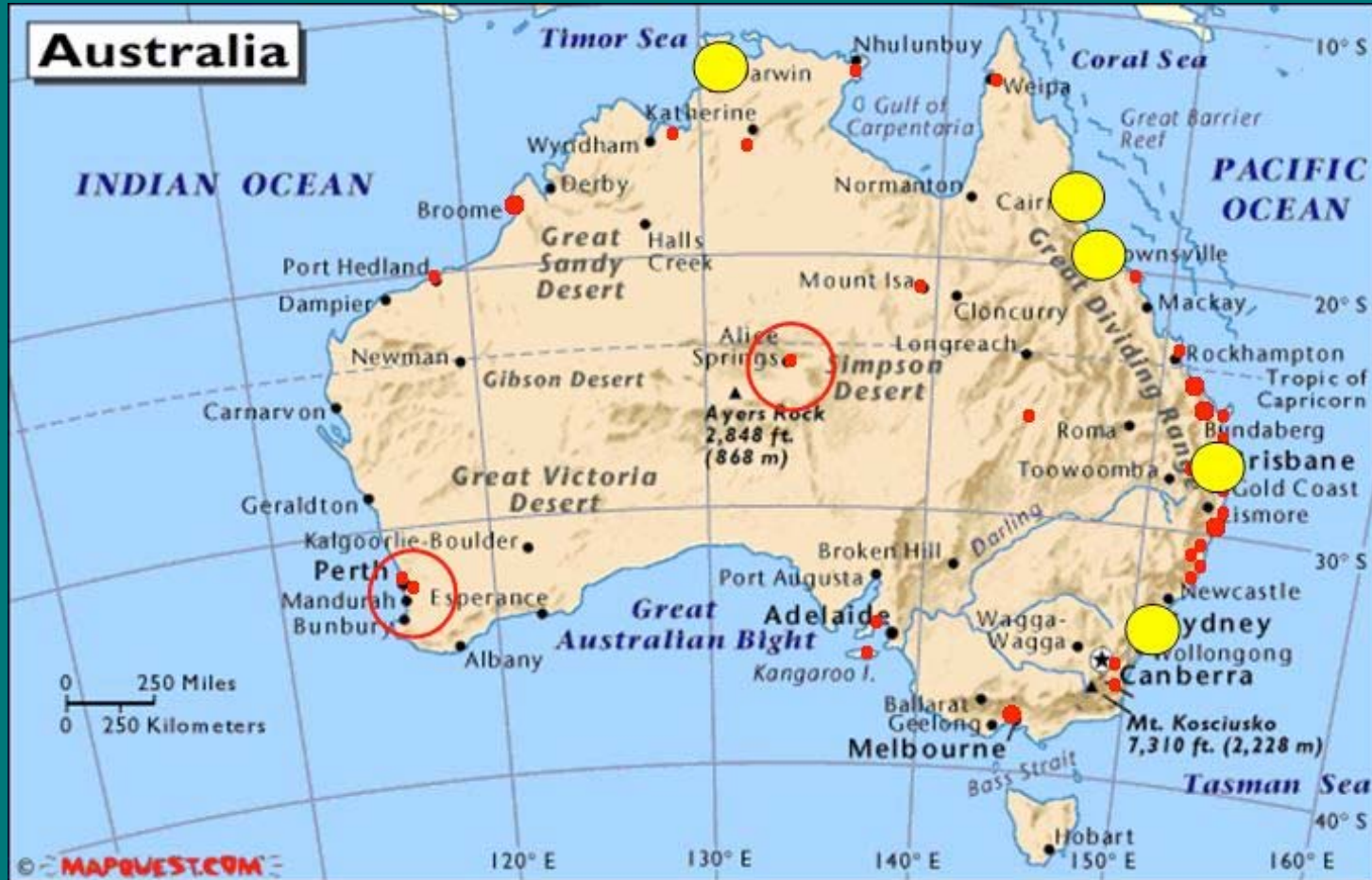


The potential danger is widespread



Distribution of four species of Australian flying fox

The realised danger is widespread



Airports reporting bat strike 1996 – 2005

● <5 strikes, ● 5 – 10 strikes, ● 10 – 20 strikes, ● 20+ strikes.

How to manage the risk?

- The bird approach is invalid
- Can't manipulate habitat
- Can't take them all out
- What affects movement?
 - Food?
 - Environmental conditions?
 - Lunar cycle?
 - Other resources (water, roosts etc)?



In a perfect world..

- GPS, satellite & radio telemetry to track movement
- National genetic study
- Local dietary and foraging ecology study



Food?

- One of the most limiting factors to any animal
- Has been proposed as an explanation of roost occupation
- Availability is likely to affect small and large scale movement
- If we can predict diet and FE we may be able to predict movement..



How to apply this info..



- Seasonal information on diet, local fruiting & flowering can be used to predict high risk times of bat movement
- This information can be provided for use by airports/airlines/defense in flight scheduling

Where to from here?

- Propose a national and local approach to the problem, emphasising appropriate interactions with industry partners
- Emphasise the need for ‘bat specific’ approaches
- A variety of methods are suitable, with choice dependent on funding levels
 - » satellite tags & radio tags,
 - » genetic analysis
 - » exploring alternative techniques
 - » dietary and foraging study
 - » field observations

Outcomes for industry

- Detailed knowledge of the movement patterns of flying foxes in Townsville and how this relates to resource use
- Analysis and interpretation of bat strike data
- Development of effective risk minimisation strategies
- Identification of high risk bat species
- Overall assessment of the large scale movement of flying foxes in Australia
- Investigate alternative technologies for risk minimisation

Acknowledgements

- QANTAS
- Virgin Blue
- CASA
- ATSB
- Dr Rebecca Johnson
– Australian Museum
- Billabong Sanctuary
- Australasian Bat Society



Questions?



© Helen Gormley