

# Progress report from the 'bat strike' team

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*You're always welcome*

Presented by the lovely  
Dr Rebecca Johnson

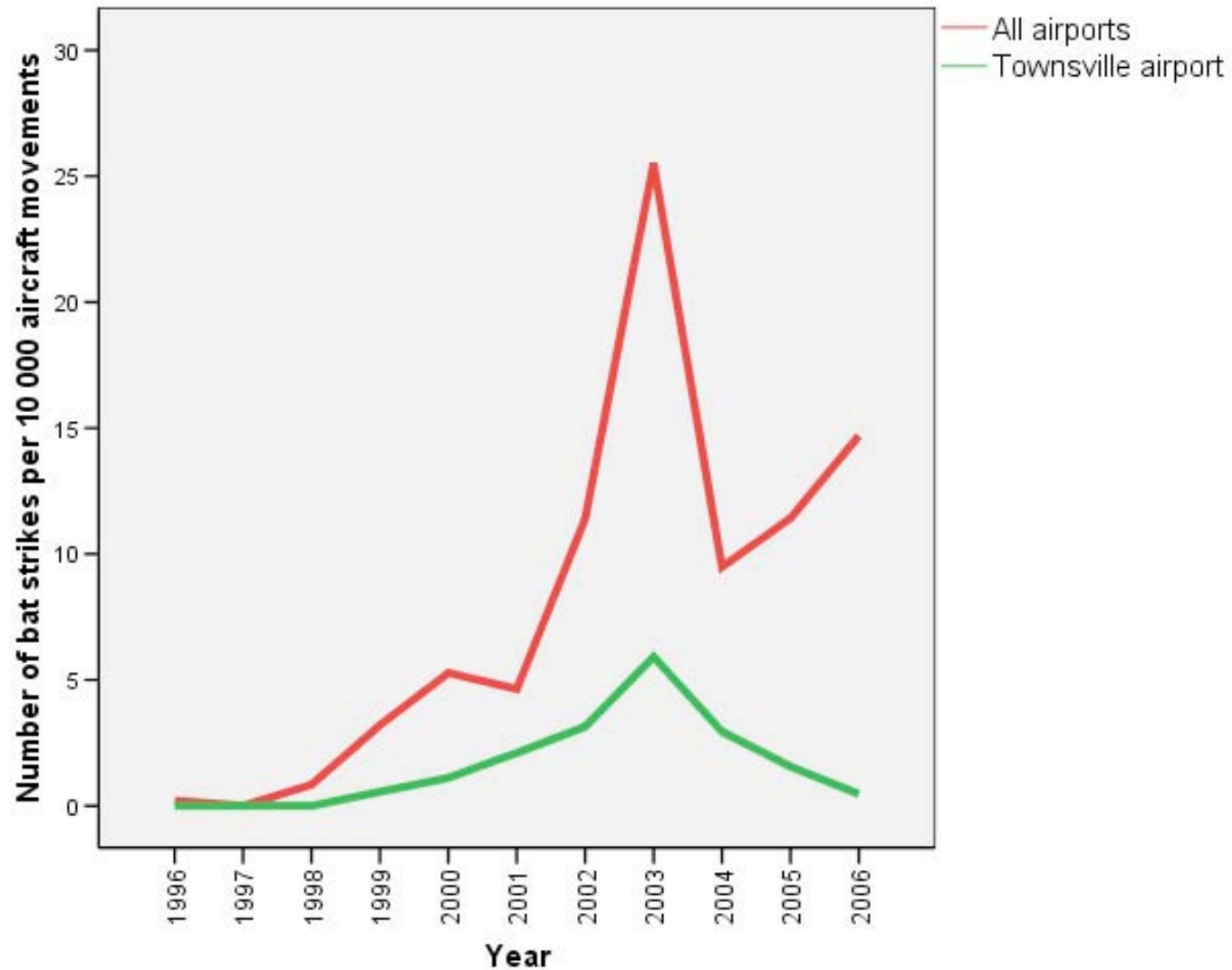


**Or, when bats and planes meet..**

# Background to the project



# 'Bat strikes' appear to be increasing



# Flying foxes are a high risk

- Large body size  
= increased risk
- Possibility of multiple strikes  
= increased risk
- 25% of detected bat strikes at  
Townsville Airport caused  
major damage

The impact:

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

700g *P. alecto* +250 knot aircraft =  
>5,000kg





# Data analysis - Progress report

- Records from ATSB and Airservices Australia analysed
- Not always reliable/accurate/enough information
- But still informative

### Aviation Bird & Animal Strike Notification

Submit by Post: Reply Paid 967, PO Box 967, Civic Square ACT 2608 (No postage stamp required) or Facsimile: (02) 6274 6434

This report is submitted by:  
 Airline  Pilot  ATC  Aerodrome  Engineer  Other

Aircraft operator name: \_\_\_\_\_  
 Contact name: \_\_\_\_\_  
 Contact telephone / mobile: \_\_\_\_\_  
 Contact email: \_\_\_\_\_

Aircraft make: \_\_\_\_\_ Aircraft model: \_\_\_\_\_  
 Engine make: \_\_\_\_\_ Engine model: \_\_\_\_\_  
 Aircraft registration: \_\_\_\_\_

Date of strike: \_\_\_\_\_ Time of strike: \_\_\_\_\_  
Day Month Year Hour:Minute:Second  Dawn  Day  Dusk  Night

Aerodrome name: \_\_\_\_\_  
 Departure aerodrome: \_\_\_\_\_ Arrival aerodrome: \_\_\_\_\_  
 Runway used: \_\_\_\_\_ Position on runway: \_\_\_\_\_

Flight details:  
 Pilot warned of birds/ animals:  Yes  No

Phase of flight:  
 Taxi  Take-off run  Climb  En-route  
 Descent  Approach  Landing roll  Parked

Effect on flight:  
 None  Aborted take-off  Precautionary landing  
 Engine shut down  Other  Specify \_\_\_\_\_

Weather details:  
 Sky conditions:  
 No cloud  Some cloud  Overcast  
 Precipitation:  
 None  Fog  Rain  Snow

Aircraft details:  
 Part(s) of aircraft hit by bird/animal:

	Struck	Damaged	Struck	Damaged
Rodome	<input type="checkbox"/>	<input type="checkbox"/>	Engine No. 1	<input type="checkbox"/>
Windshield	<input type="checkbox"/>	<input type="checkbox"/>	Engine No. 2	<input type="checkbox"/>
Noise (excluding above)	<input type="checkbox"/>	<input type="checkbox"/>	Engine No. 3	<input type="checkbox"/>
Propeller	<input type="checkbox"/>	<input type="checkbox"/>	Engine No. 4	<input type="checkbox"/>
Wing / Rotor	<input type="checkbox"/>	<input type="checkbox"/>	Fuselage	<input type="checkbox"/>
Landing Gear	<input type="checkbox"/>	<input type="checkbox"/>	Tail	<input type="checkbox"/>
Lights	<input type="checkbox"/>	<input type="checkbox"/>		
Other	<input type="checkbox"/>	<input type="checkbox"/>	Specify	_____

Bird or Animal details:  
 Bird or Animal species (e.g. Seagull, Kangaroo): \_\_\_\_\_

Number of Birds / Animals:  
 Seen  Struck   
 1    
 2-10    
 11-100    
 More than 100  Estimated number: \_\_\_\_\_

Size of Bird/s / Animal/s:  
 Small  Medium  Large

Bird activity:  
 Low  Normal  High

Environment details: e.g. land / animal control method used  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Remarks: describe aircraft damage, passenger injuries and other pertinent information  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Direct cost information:  
 Aircraft time out of service due to strike: \_\_\_\_\_ hrs  
 Estimated cost of repairs or replacement: AUD\$ \_\_\_\_\_

Indirect cost information:  
 Estimated other costs: AUD\$ \_\_\_\_\_ e.g. loss of revenue, fuel, hotels.

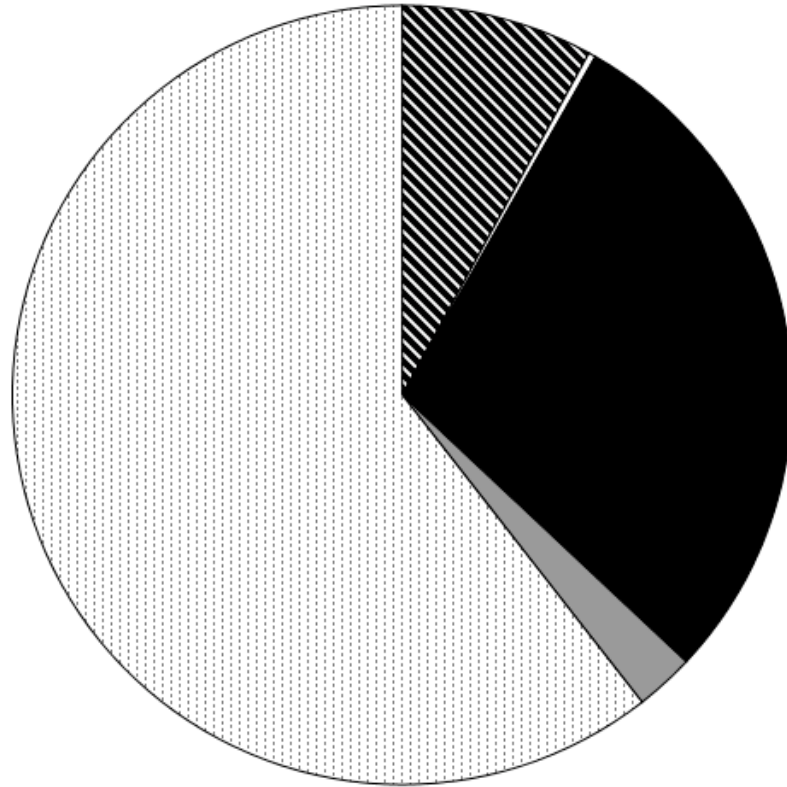
Special information on engine damage strikes:  
 Engine position number:  1  2  3  4  
 Reason for failure / shutdown:  
 Uncertain failure      
 Fire      
 Shutdown - vibration      
 Shutdown - temperature      
 Shutdown - fire warning      
 Shutdown - other      
 Shutdown - unknown

Estimated percentage of thrust loss\*  
\* these may be difficult to determine but even estimates are useful

Estimated number of birds ingested: \_\_\_\_\_

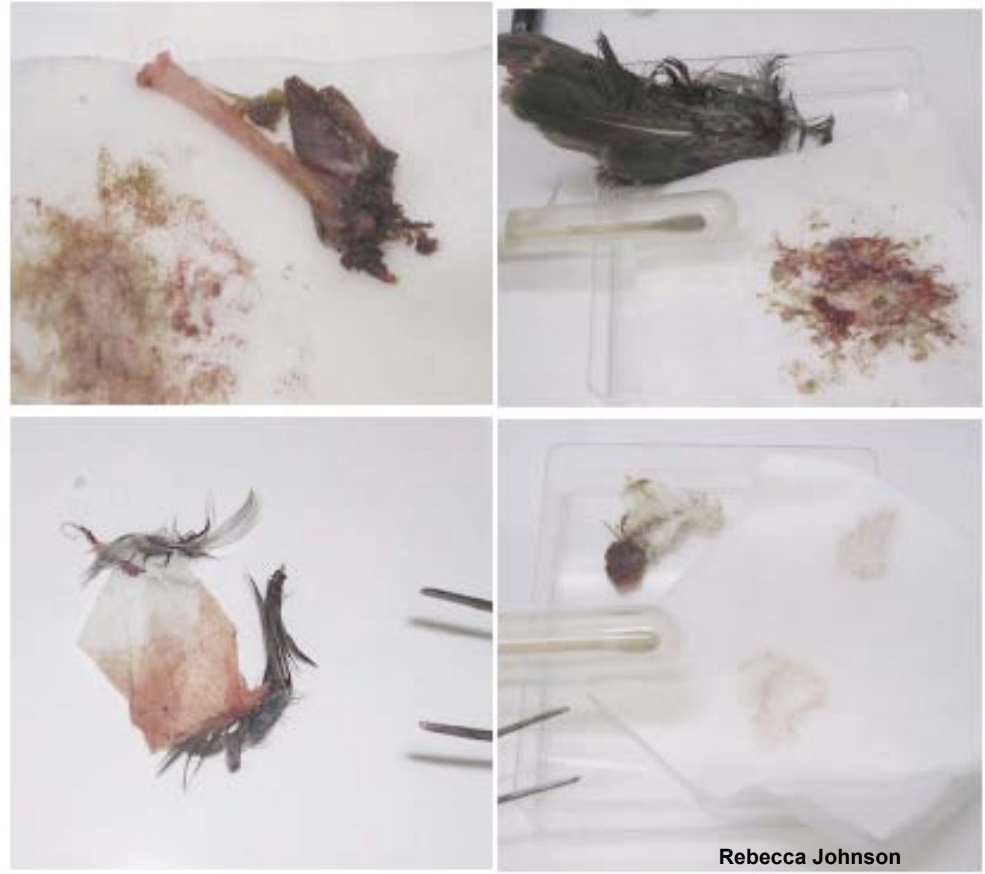
Reported by: \_\_\_\_\_ Position: \_\_\_\_\_  
 Company name: \_\_\_\_\_ Date: \_\_\_\_\_

# Strong evidence that bats do hit planes



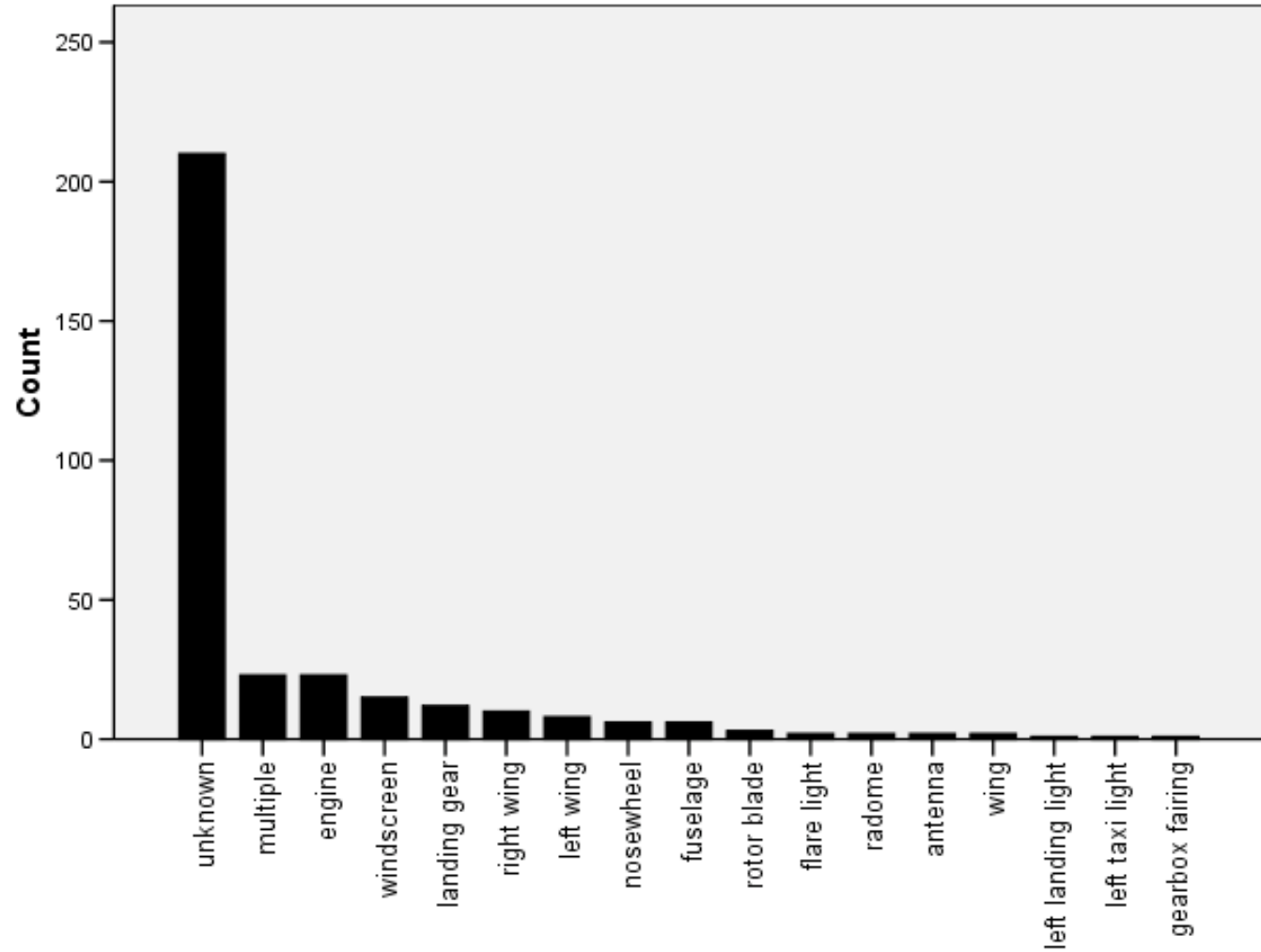
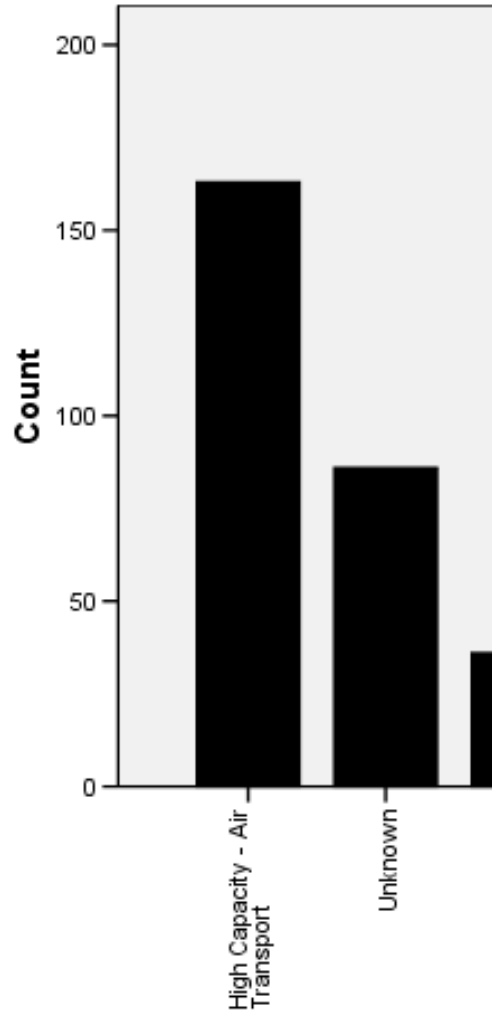
## Identification

- Unknown
- Guess
- Visual
- Hair/blood
- Carcass



Rebecca Johnson

# Bat strikes are non-random

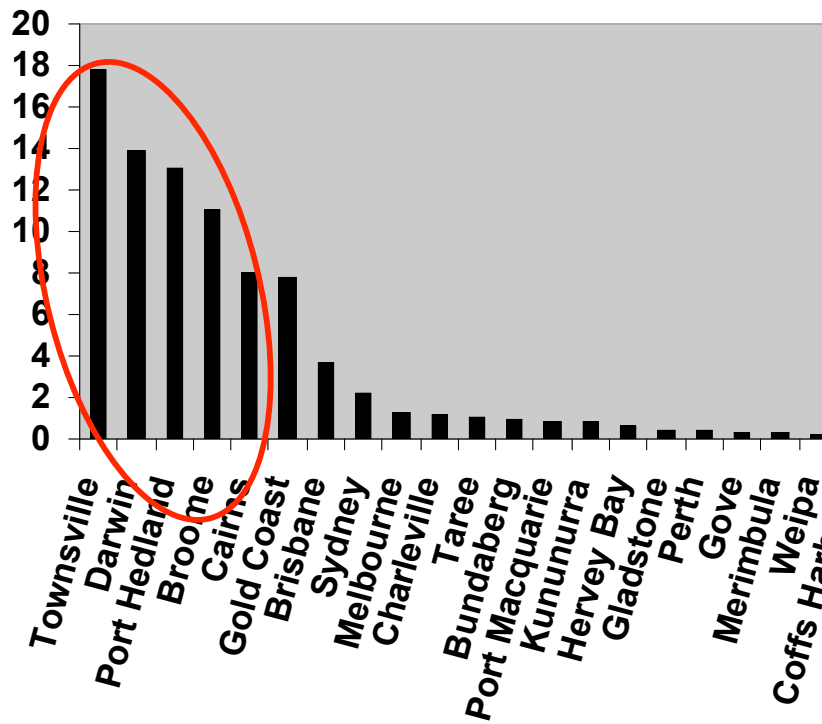


Most bat strikes happen during takeoff  
and landing

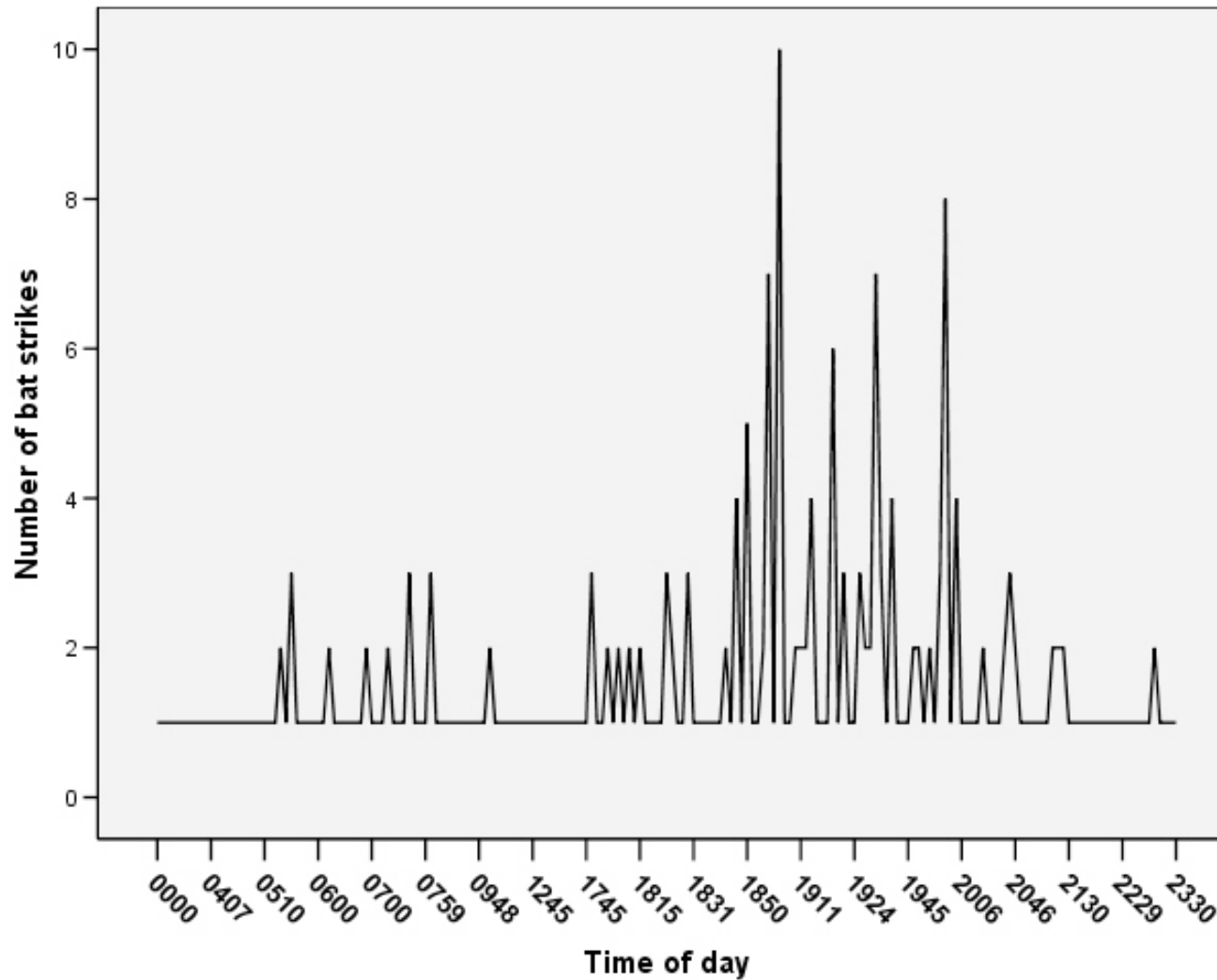


# Most bat strikes occur in the northern tropics

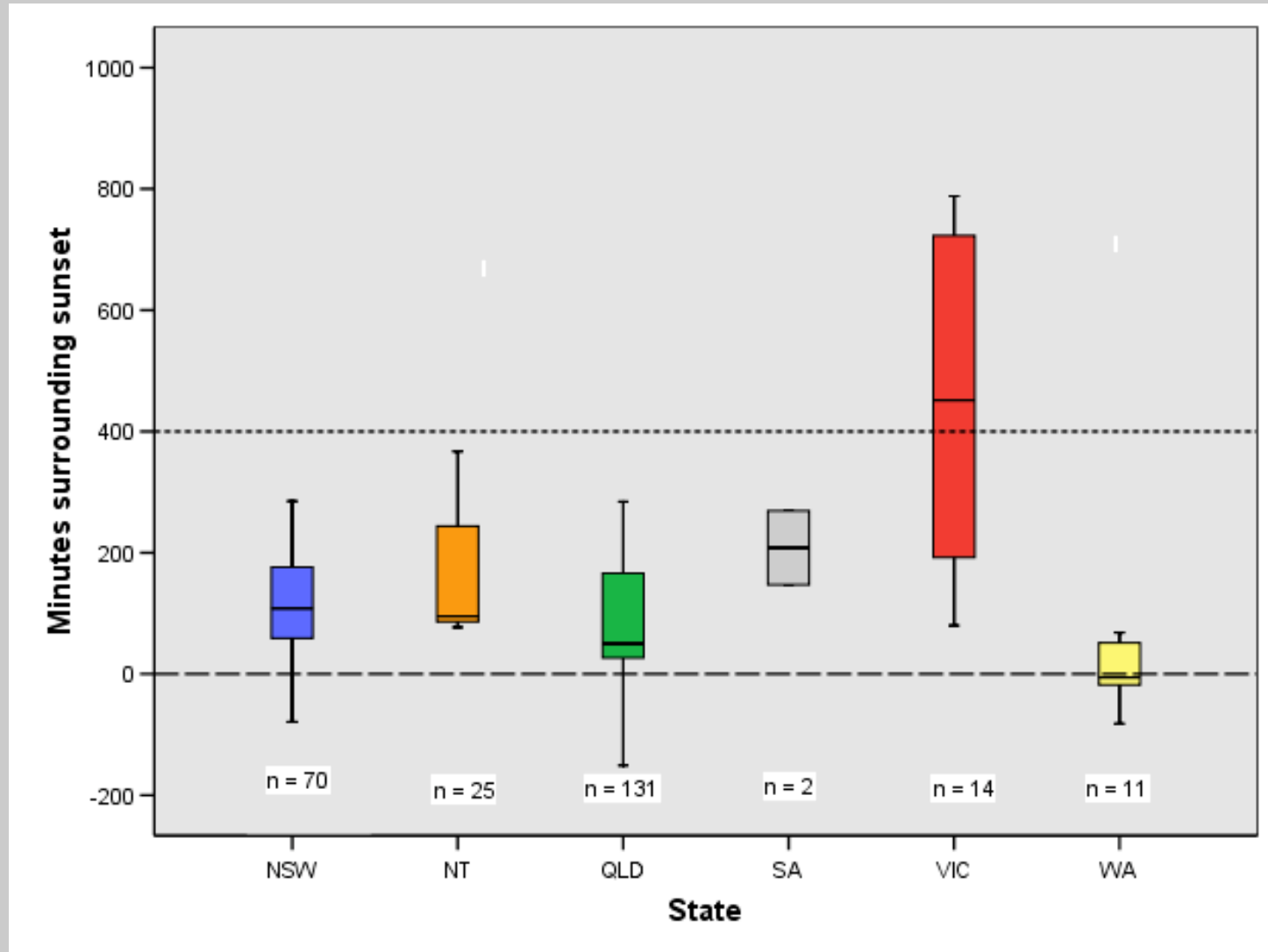
Number of bat strikes per 100 movements



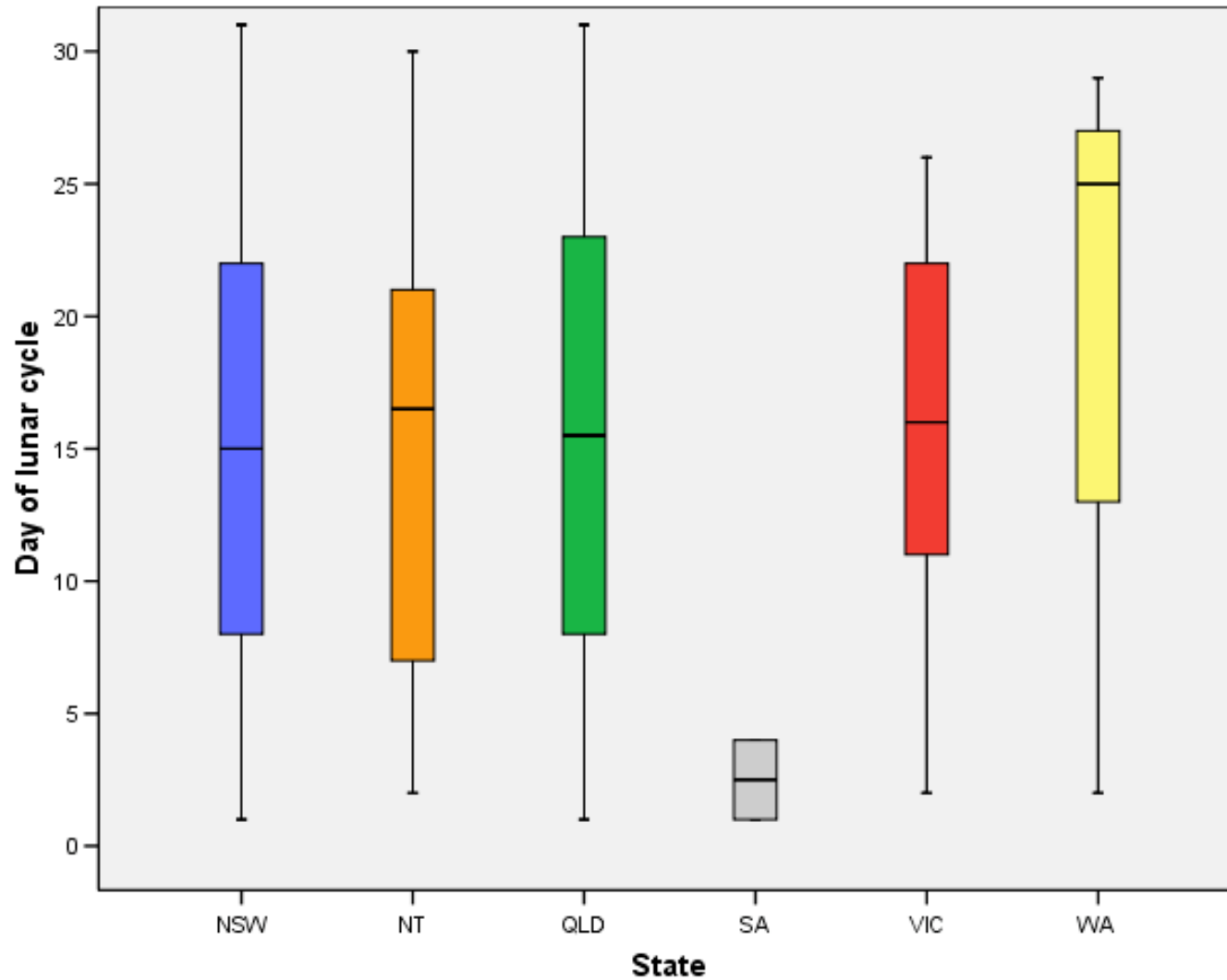
# Most strikes occur in the evening



# Between sunset and midnight.



# Bat strikes are independent of moon phase



# Summary of data analysis

- Most bat strikes in Australia occur in the Northern Tropics
- Most bat strikes occur between sunset and midnight
- Bat strikes hit aircraft non-randomly
- Bat strikes are independent of moon phase



# Field study - Progress report



- Ongoing study on the movement and foraging ecology of flying foxes
- Use of digital imaging to monitor camps
- Intensive dietary study on Townsville's flying foxes



# Field study - Progress report

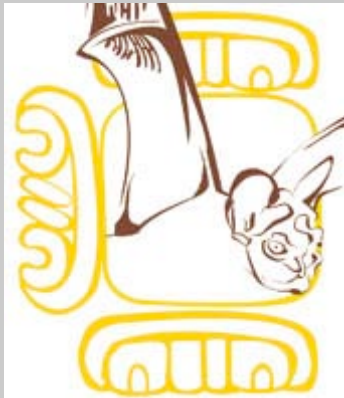


- Motion activated infra-red camera installed at Townsville Airport
- Recording commences at dusk
- Monitoring occurs every day for a week on a monthly basis

# Continuing industry links



BIRD STRIKE COMMITTEE CANADA  
COMITÉ CANADIEN SUR LE PÉRIL AVIAIRE



XIV INTERNATIONAL BAT  
RESEARCH CONFERENCE  
37<sup>th</sup> NASBR



- International Conference and Symposium on Australasian Bats (thanks to Qantas and Virgin!)
- BAAHWG meeting
- Potential for collaborative partnerships with QPWS and Australian biosecurity CRC
- Mexico/Canada conferences

# Progress report - summary

- Analysed past bat strike data ✓
- Established best methods for identifying flying fox strikes ✓
- Identified the location of local flying fox camps ✓
- Established methods for monitoring camps with digital imaging ✓
- Identified best method for on-airport monitoring and erected an infra-red camera ✓
- Commenced field studies at camps and on airport ✓

# Acknowledgements

- Dr Rebecca Johnson – Australian Museum..  
Thankyou!
- TAPL – Townsville Airport Pty. Ltd.
- QANTAS, Virgin Blue.
- CASA – Civil Aviation Safety Authority
- ATSB – Australian Transport Safety Bureau
- Department of Transport and Regional Services
- AABAHWG – Australian Aviation Bird and Animal Hazard Working Group  
(or whatever the new name is!)
- Australasian Bat Society