AAWHG
AUSTRALIAN AVIATION
WILDLIFE HAZARD GROUP

WILDLIFE HAZARD MANAGEMENT

REPORTING AND RECORDING WILDLIFE DATA

Australian Aviation Wildlife Hazard Group

WHO WE ARE

Formed in 2003 and recognised as Australia's national bird strike committee in 2010

Executive Committee:

Executive Members:

Webinar Summary

1. AIRLINE - REPORTING AND RECORDING

- Simon Locke (Manager Boeing Programs | Fleet Engineer Management)
  Qantas Airways

2. AIRPORT - REPORTING AND RECORDING

- Anthony Conte (Head of Airfield Operations and Compliance)
  Sydney Airport

3. SCIENCE - DNA COLLECTING AND ANALYSIS

- Matthew Lott (AMRI-USYD Postdoctoral Fellow | Australian Centre for Wildlife Genomics)
  Australian Museum

4. ANALYSIS - NATIONAL AND INTERNATIONAL DATABASES

- Thomas Lenné (Senior Transport Safety Investigator)
  Australian Transport Safety Bureau

AIRLINE - REPORTING AND RECORDING

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Definitions

WILDLIFE STRIKE

SPLAT (see previous slide)

NEAR MISS

Ooooh that was close, nice manoeuvre.

WILDLIFE INTERACTIONS & OBSERVATIONS

Look at those ducks over there. Remember them for tomorrow's flight.

ISSUE

I hit the duck. That was big!

RISK

If I hit the duck **then**….

MITIGATION

Pilot: If I talk to the tower they might clear the ducks before we land.

Tower: If I tell the pilot about the emus they can make an informed decision and reduce their risk.

Better also send the safety officer out to clear them off the runway.

Reporting wildlife events

WHY MUST WE?

Strikes and near misses are required to be reported per regulations.

WHY SHOULD WE?

Strikes and near miss reports are crucial for identifying immediate issues and risks at a particular aerodrome.

Wildlife interactions and observations (by airlines) are **NOT** required to be reported **but should be strongly encouraged.**

These can be beneficial in identifying emerging risks and patterns to prevent future strikes and near misses.

What should we report and why?

AS MUCH AS WE CAN !

The more data we can provide on a wildlife interaction report the better **our** risk management can be.

START WITH THE BASICS

Where and when?

- Location, runway, altitude, phase of flight, time, weather conditions,

What?

- Species (if you can), size, colour, quantity, direction

WHY?

Different species behave differently and need to be managed separately.

What does the data tell us today?

NOT AS MUCH AS IT COULD

The largest category of species in the ATSB wildlife strike database is still ‘UNKNOWN’. Also, the current dataset is focussed on what has happened.

The more we can improve the data, the better we all can be at identifying emerging patterns and risks, and mitigating them.

WHAT WE DO KNOW?

Where aerodromes have access to specific data on wildlife species and interactions with aircraft, they are able to customise their wildlife hazard management plans to their environment.

Risk management that takes into account seasonal variations, local conditions and species behaviour gives the best possible outcome for aerodromes and operators.

Risk Assessment and Mitigation

DATA ON SPECIES

Greater knowledge on the species involved in, and the circumstances surrounding aircraft interactions, allows for an increased effectiveness in risk management.

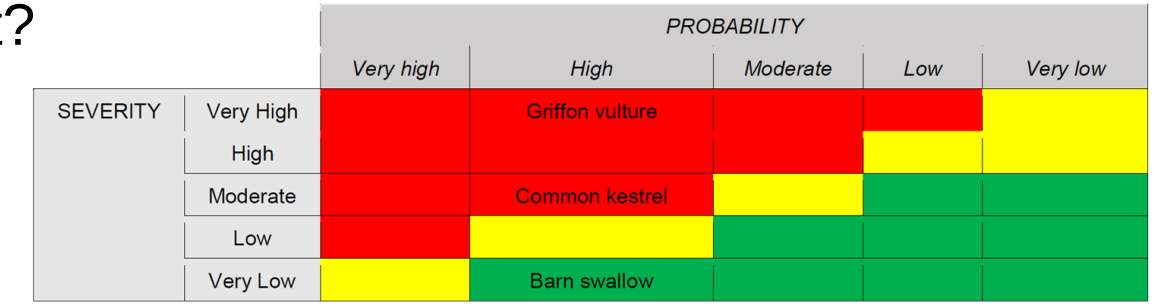
SPECIFIC RISK MANAGEMENT STRATEGIES

What are the riskiest species at each airport?

Where is the strike most likely to occur?

What is the safety risk?

What are the mitigation measures?



Safety risk= (severity of damage caused) x (probability of strike)

- Advise crew at dispatch
- Carry more fuel
- Consider using another runway if possible
- Hold until wildlife dispersed

What can airlines do?

PEOPLE

Work with our flight and ground crew to inform them on the value of why we need the details.

Ensure our maintenance teams know what to do to effectively gather the required data post wildlife strike.

PROCESS

Improve on our methods of data collection and collation.

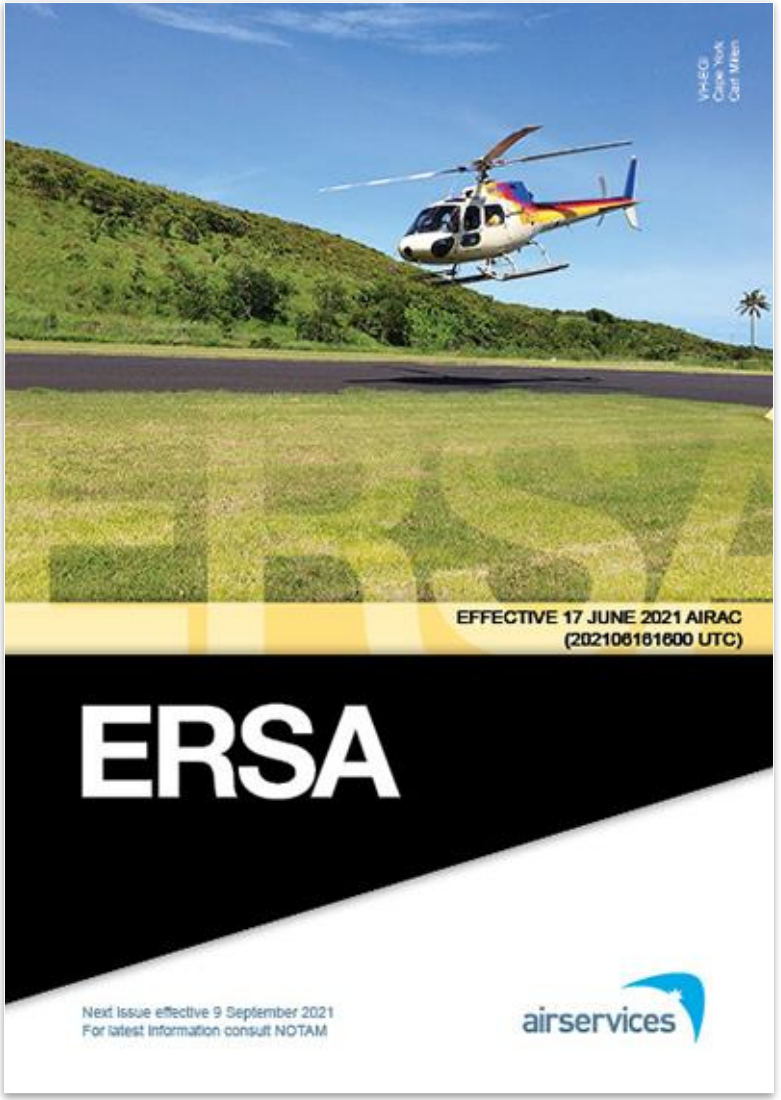
Share our data and learnings with both the relevant aerodrome and wider industry.

Continue to review the data and always seek to reduce our shared risk in the interest of safety.

Using external information sources

AERONAUTICAL INFORMATION PUBLICATION (AIP)

- in Australian known as ERSA
  (En-route Supplement Australia)



Using external information sources

NOTAMS

Providing more specific information in NOTAM, either as a stand-alone product or in conjunction with supplemental information will be beneficial.

For example:

“Increased flying fox (bats) hazard exists. Observed overflying RWY 15/33 and approaches up to 400 ft AGL from time approx 0800 to 0900”

This provides precise information for the pilots rather than a general statement.

Improving industry information

PRESENT ERSA INFORMATION ON BIRDS

ADDITIONAL INFORMATION

1. Possibility of WS/TURB on short final for all RWYs.
2. Bird hazard exists.
3. The FLW Rifle Ranges are in the Darwin CTR, ACT for all ranges is indicated by R flags.
   a. BRG 050 1.0NM FM ARP.
   b. BRG 140 6.0NM FM ARP.
4. CAUTION: Model ACFT OPR at East Point (ETP) SFC to 400FT AGL 270/2.9NM FM ARP.
5. Pilots of ACFT entering or exiting DN CTR to the SE are to be aware of the close proximity of YMKT AD to the CTR boundary, and make the appropriate broadcasts on CTAF 127.1.

CHARTS RELATED TO THE AERODROME

1. WAC 3109.
2. Aerodrome Obstruction Chart Type A (RWY 11/29 only): 11th Edition (FEB 2009).
3. MIL Aerodrome Obstruction Chart Type A: NOV 2005.
4. Also refer to AIP Departure & Approach Procedures.

Improving industry information

ERSA

Providing more specific information in AIP will improve wildlife risk mitigation

A wildlife hazard exists year-round at this AD.

a. Bird activity is significantly increased after rainfall events.

b. Whistling Kite, Magpie Lark and Nankeen Kestrel present all year round.

c. Black Kites occur year-round and occur in very high numbers during insect swarms, NOTAM will be issued in these events.

d. Australian Pratincole present in greater numbers OCT to APR but may occur seasonally year-round.

For current information refer to NOTAM and ISA Bird Watch Report.

YBMA - 227 FEB 202027 FEB 2020

How do airlines improve?

COMMUNICATION

Sharing information with airports and industry.

Participation in our local aerodrome wildlife hazard management process.

Local aerodrome species and seasonal risk profiles shared with network planners and flight crew.

EDUCATION

Pilot and ground crew training in identification methods.

How do airlines improve?

REPORTING TOOLS AND RESOURCES

Reporting database sharing / comparing.

Forensic tools (DNA).

Industry forums.

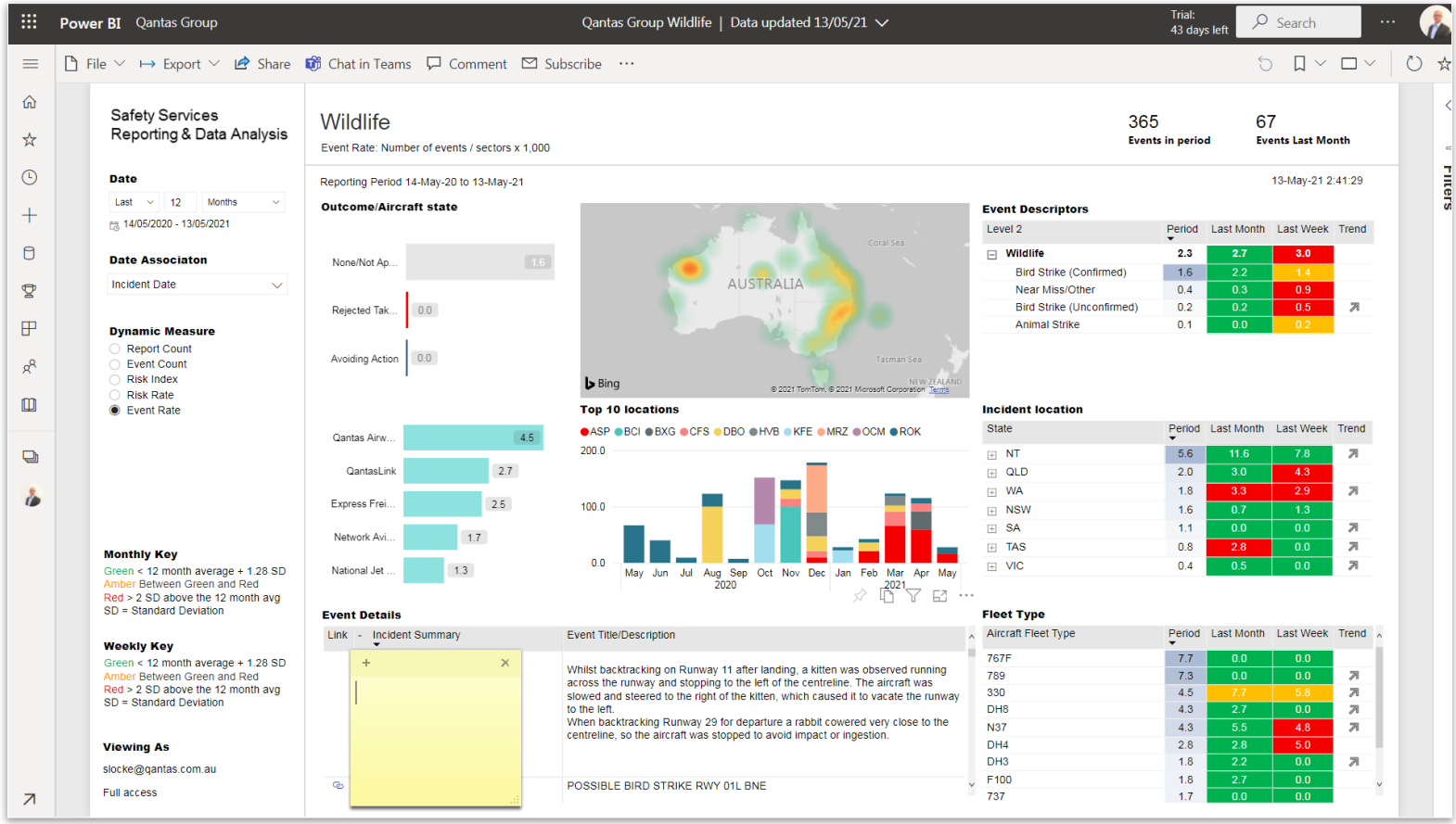
Closing the loop

IMPROVING OUR DATA

- Standardise and define
- Making reporting easier

USING AND SHARING OUR KNOWLEDGE

- Analysing our data
- Sharing our data



AIRPORT - REPORTING AND RECORDING

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Reporting

- Mandatory reporting of all wildlife strikes to the Australian Transport Safety Bureau (ATSB)
- 72 hrs to report strikes
- Wildlife strikes are emailed automatically to the ATSB and ornithologist
- Monthly wildlife strikes are reported to Safety Steering Committee
- Report runway serviceability to Air Traffic Control
- Temporary Hazard NOTAM raised
- Additional Hazards included in AIP

Recording

- Recording of wildlife strikes, bird counts and dispersal are entered into Safeguards
- Wildlife strikes are recorded when confirmed or suspected.
- Wildlife counts and dispersals are entered via a tablet in the field by Wildlife Officers
- Standard Operating Procedure details recording requirements.

Recording

- Wildlife counts are performed morning and afternoon airside and once per week landside area (e.g. ponded areas).
- DNA samples are processed if the species cannot be confirmed.
- Record bird activity during routine patrols every 60 minutes.
- Investigate damaging and multiple strikes

SCIENCE - DNA COLLECTING AND ANALYSIS

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The cost of wildlife strikes

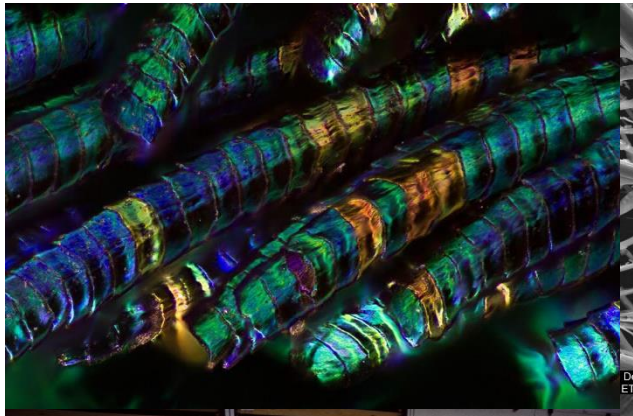
- Collisions between wildlife and aircraft are a major threat to the global aviation industry.
- Conservative estimates suggest an annual loss of us$1.2 billion due to a combination of direct damage, precautionary delays, and cancellations.
- At least 500 lives and over 600 aircraft have been lost worldwide since 1912.
- The International Civil Aviation Organisation (ICAO) recommends that all aerodromes implement wildlife management programs to reduce the risk of wildlife airstrike events.

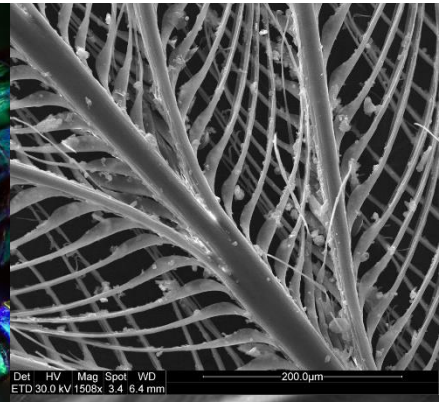
The importance of species identification

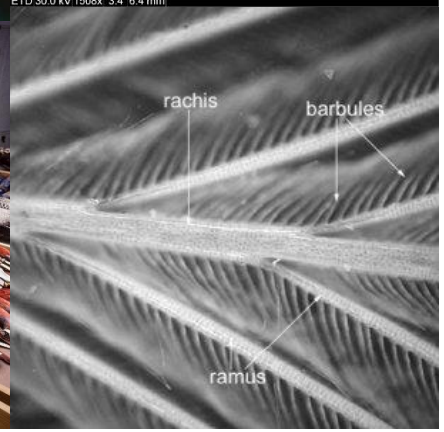
- Establishing which species are responsible for damaging aircraft is a crucial first step in wildlife airstrike prevention.
- This information can provide valuable insights into the size, behaviour and ecology of potentially problematic wildlife.
- Species identification has been used to design avoidance programs, guide habitat management, and to assist in the creation of aircraft components (e.g. windscreens and engines) that are more resilient to wildlife strikes.
- Wildlife airstrike statistics are currently strongly biased towards the detection of larger and more easily recognisable species.

A brief history of forensic ornithology

- The examination of feathers remains an important identification technique for bird strike events.
- Many microscopic characteristics of feathers, such as the barbs, barbules, nodes and pigmentation patterns, are highly unique to different groups of birds.
- The microscopic structure of bird feathers is believed to have been first described by Asa Crawford Chandler in 1916.
- Ornithologist Roxie Collie Laybourne is credited with pioneering the study of forensic ornithology.

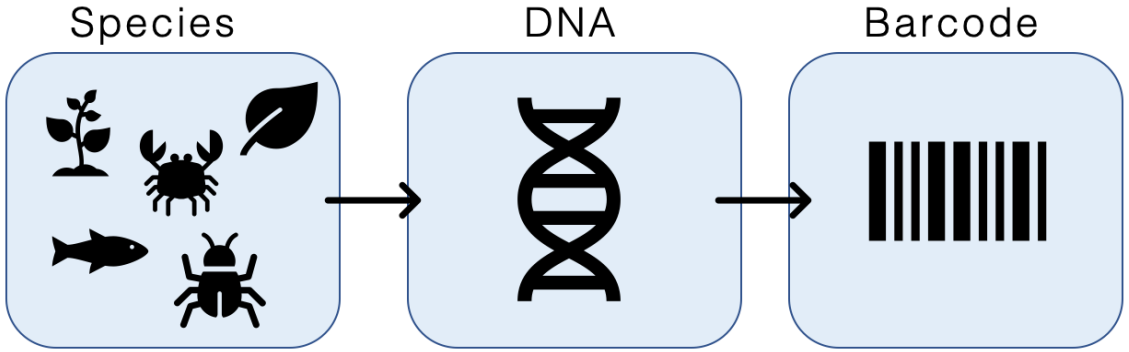


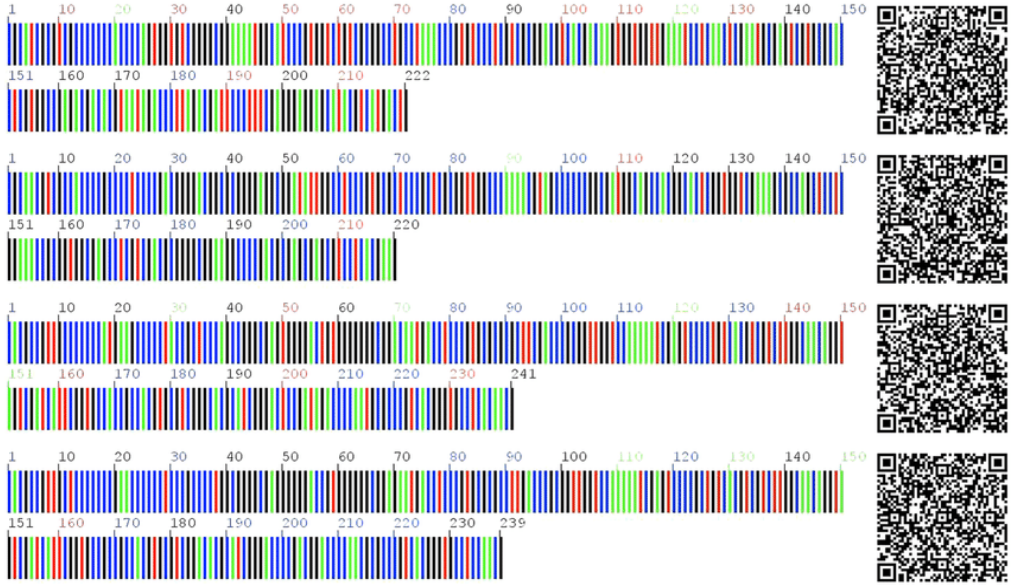




A brief history of forensic ornithology

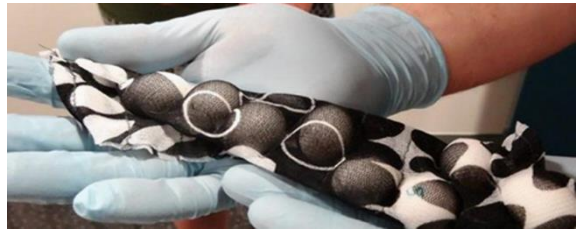
- A quarter of all reported wildlife airstrikes cannot be identified by the examination of physical remains.
- In such cases, biochemical or DNA-based species identifications can be far more accurate.
- A number of techniques have been developed for extracting structural proteins (e.g. Keratin) from bird feathers and analysing them by electrophoresis.
- In 2003, a technique known as DNA barcoding was proposed as a standardised method for species identification.

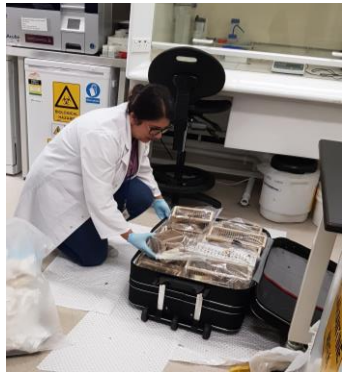




The role of museum collections

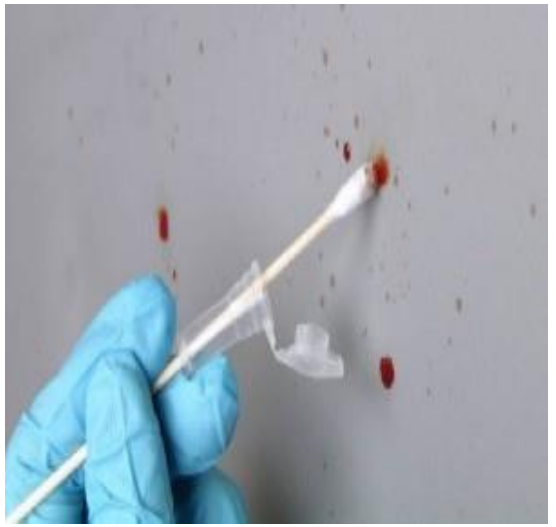
The Australian Centre for Wildlife Genomics, Australian Museum Research Institute





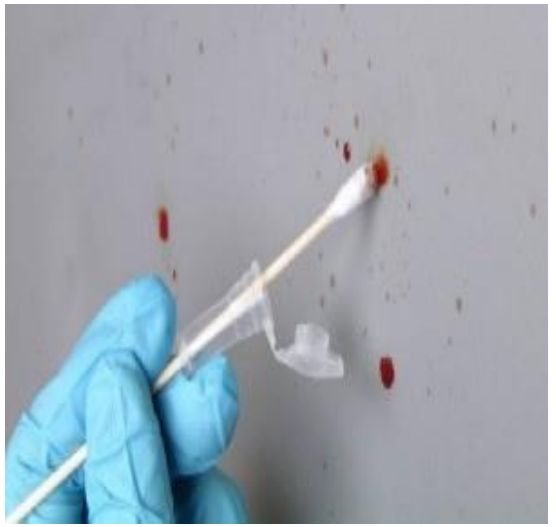
Sample collection

- Sample collection kits are supplied to aerodrome operators free of charge.
- Fresh blood or flesh samples are best for DNA analysis but dried blood or feathers/hair can also give good results.
- The ideal sample would contain blood or tissue on a swabstick plus several plucked feathers or hairs (if available).

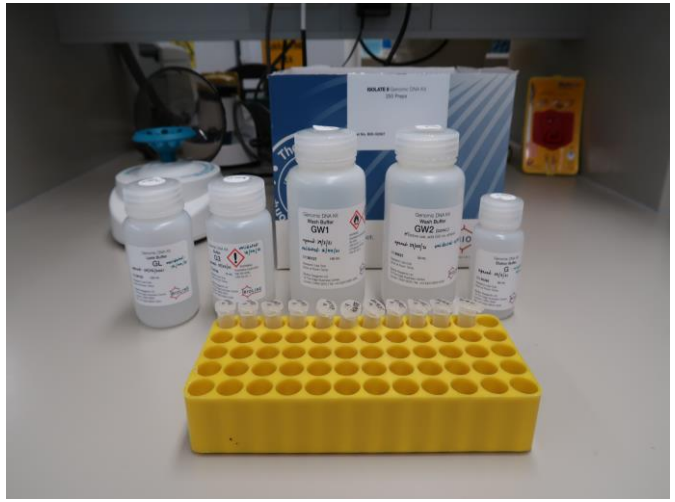


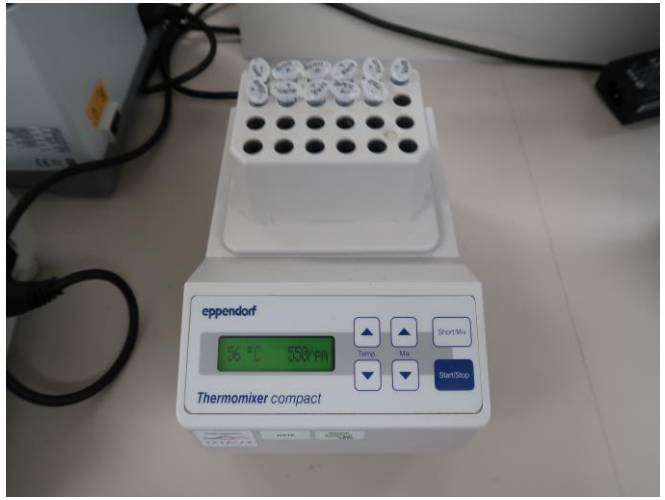
Sample collection

- Samples should be placed in a small sealed plastic bag. This bag should be enclosed in a second plastic bag (i.e. double-bagged) together with a completed Australian Museum DNA identification request form.
- To ensure the best possible results, samples should be shipped immediately or frozen/refrigerated until transport.



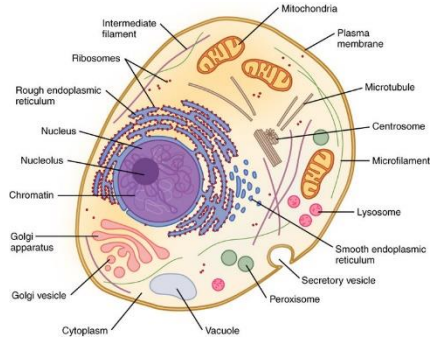
Sample processing & DNA extraction

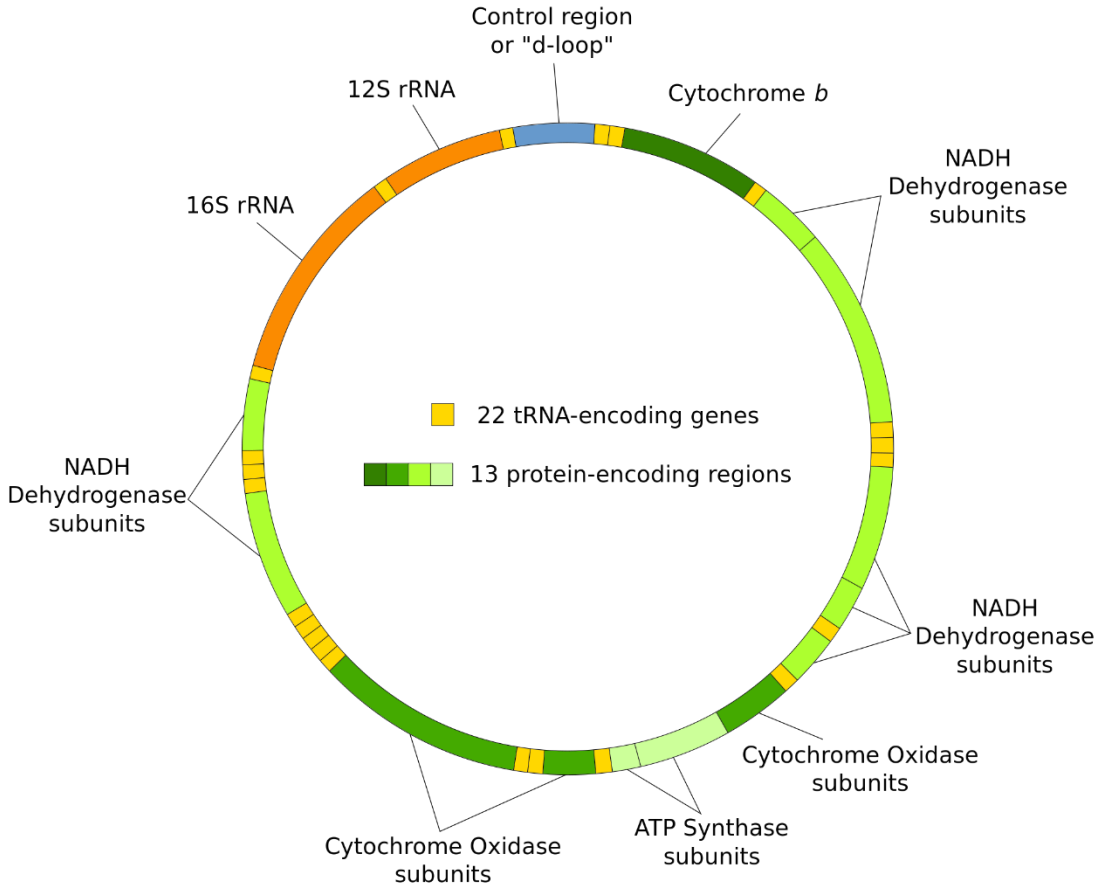




Targeting informative gene regions

MITOCHONDRIAL DNA (mtDNA) ANALYSIS





Why use mtDNA?

- High Copy Number (degraded/low DNA samples)
- Doesn't undergo recombination
- Maternally inherited

Human Forensics

- Control region (Hypervariable Region)
- Provides information intra-specific variation

Wildlife Forensics

- CO1, Cyt b and others
- Not as variable as control region
- Provides information on inter-specific variation
- Well characterised in a range of taxa

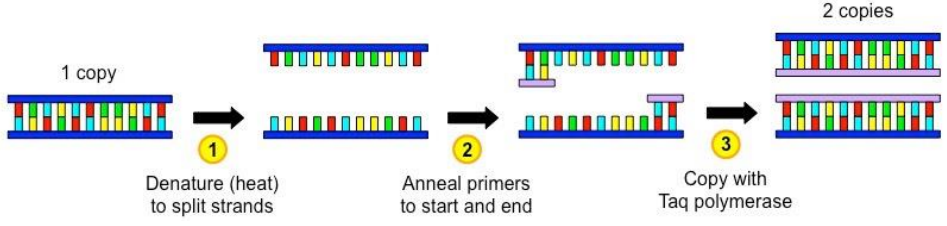
PCR & DNA sequencing

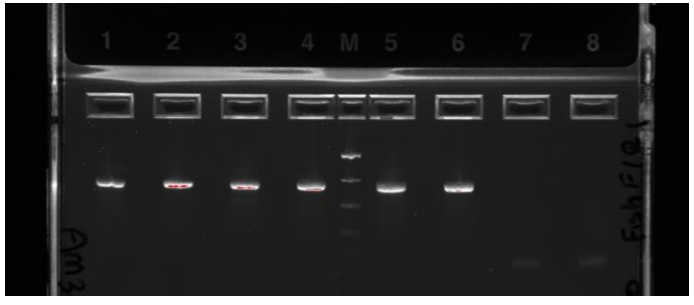
MITOCHONDRIAL DNA (mtDNA) ANALYSIS

Step 1: Sub-sample**,** Extract DNA and PCR target gene

- If completely unknown: universal primers
- If have some idea may use taxa/species specific primers

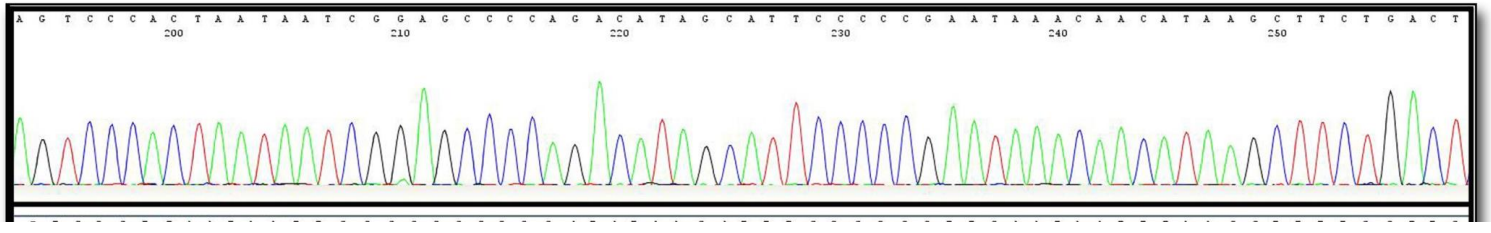
?





Step 2: Sequence target region of MtDNA

- Purify PCR product
- Sanger sequencing



Species ID

MITOCHONDRIAL DNA (mtDNA) ANALYSIS

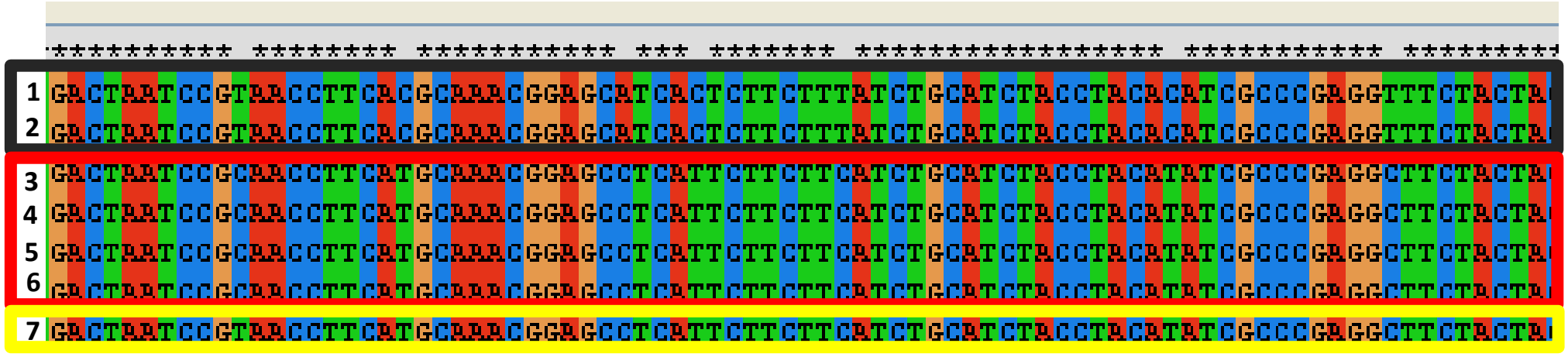
% Identify between unknown and reference sequence

1&2, 100% identity to each other - same species

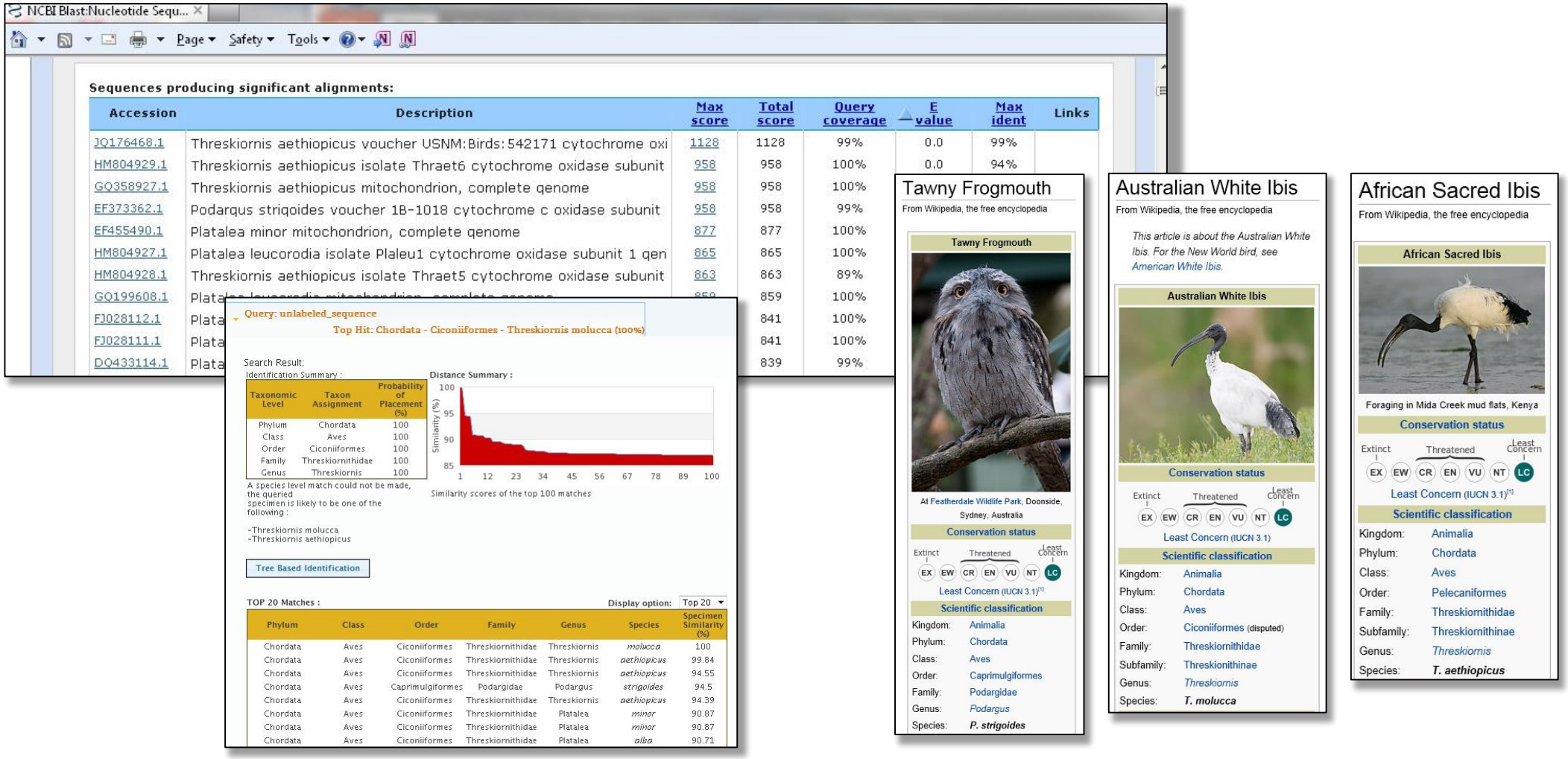
3-6, 100% identity to each other - same species

94% identity between groups - different species

7, 96% (1&2) and >99% (3-6)



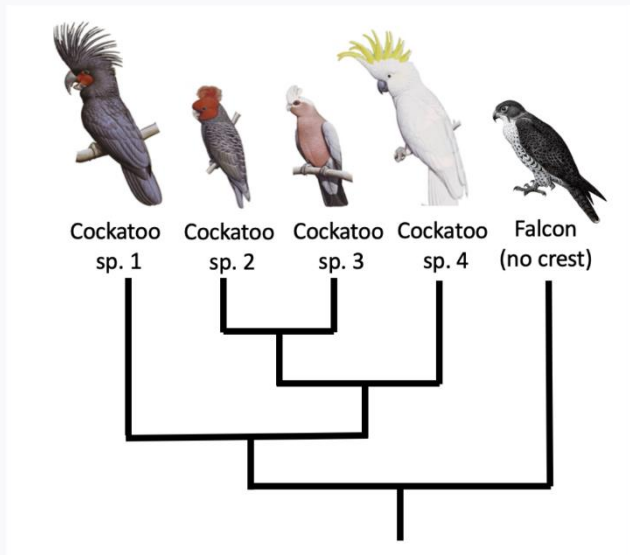
Species ID – Database searches



Species ID – constructing phylogenetic trees

MITOCHONDRIAL DNA (mtDNA) ANALYSIS

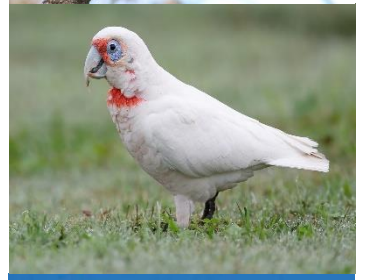
Phylogenetic Inference



High node support = species match support

Gene dependent

Sample dependent



Wildlife airstrike species ID reporting

Australian Centre for Wildlife Genomics
Australian Museum Research Institute, Australian Museum
1 William Street
Sydney, NSW 2010
E: Wildlife.Forensics@Australian.Museum

AUSTRALIAN MUSEUM

Australian Centre for Wildlife Genomics
Results Report

Dear XXXX,

One biological sample/s was received by the Australian Centre for Wildlife Genomics at the Australian Museum on the 16th of April 2013. Please find the result/s for the analyses carried out on this/these sample/s below. Following that you will find a brief summary of the work carried out and the methods used.

Please feel free to contact us if you wish to discuss these results further. We also encourage any feedback that may help us improve our services

Yours sincerely,
The Australian Centre for Wildlife Genomics.

If a court statement is required based on this report, please contact ACWG staff and one can be prepared upon request.

NATA

Accredited for compliance with (ISO/IEC 17025) interpreted for research using CITAC Guide CG2 "Quality Assurance for Research and Non Routine Analysis" (1998). Facility Number: 18884.

Case No:	**Date:**	**Service:** Choose an item.
Species:		
Client contact:		
Report prepared by: Choose an item.		**Report Checked by:** Choose an item.
Laboratory work conducted by: Choose an item.		

DESCRIPTION OF EXHIBIT AND ANALYSES REQUESTED: (DELETE SECTION IF NOT REQUIRED)

DNA EXTRACTION:

An A and B subsample were taken from the unknown sample/s provided and DNA was successfully extracted using our standard laboratory protocols.

PCR AMPLIFICATION:

Based on the information you provided regarding suspected species, two mitochondrial (mtDNA) gene regions were sequenced and compared to published data to confirm species identification. The two sources of scientific literature used in this case were:

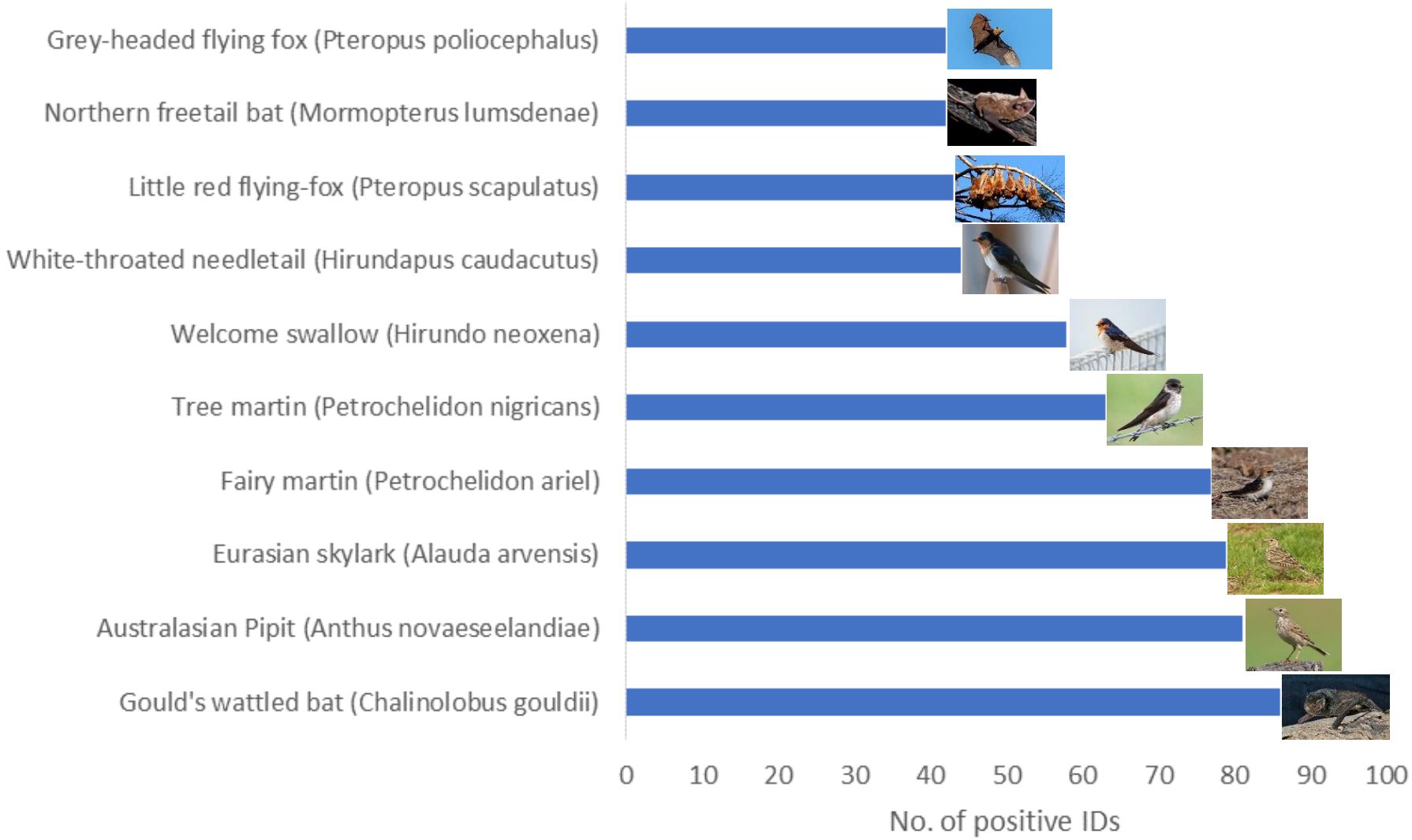
Cytochrome *c* oxidase I – Folmer et al. (1994). DNA primers for amplification of mitochondrial cytochrome c oxidase subunit I from diverse metazoan invertebrates. *Mol. Mar. Biol. Biotechnol*, Vol 3, pp. 294-299.

Cytochrome *b* - Kocher et al. (1989). Dynamics of mitochondrial DNA evolution in animals: Amplification and sequencing with conserved primers. *Proc. Nat. Acad. Sci. USA* Vol. 86, pp. 6196-6200

SEQUENCE ANALYSIS:

Mitochondrial DNA sequences that passed ACWG quality standards were recovered/amplified from XXX of the samples/exhibits presented for testing. In my opinion, the identity of the DNA sequences amplified from the submitted samples/exhibits can be determined to the species/genus level by comparing the unknown DNA sequences to known reference DNA sequences. These identifications were made based on the samples provided, the tests that were used and reference data available for comparison at the time of testing. The results are outlined in table 1 and figure 1 shows a photograph of each exhibit upon which DNA analysis was conducted.

A brief look at the ACWG wildlife airstrike database



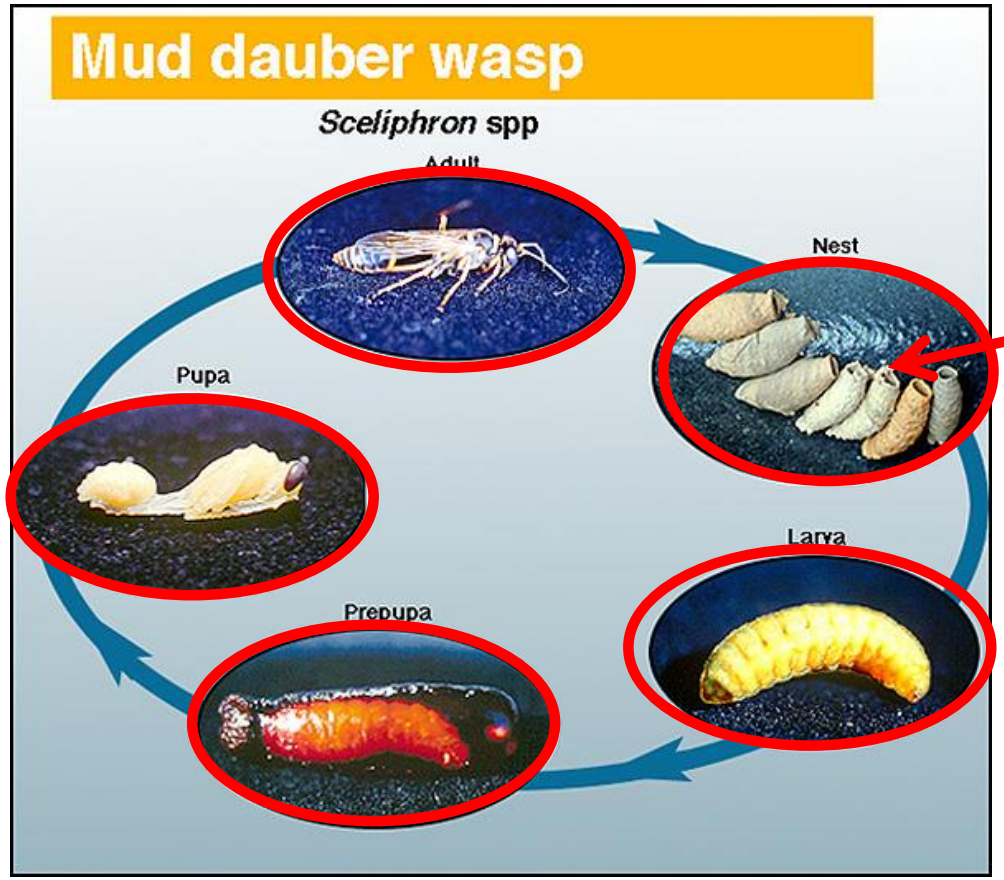
Entomology and wildlife hazard management

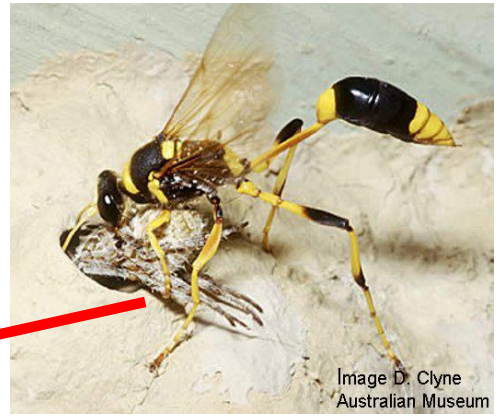
- Entomology – the study of insects and their relationship to humans, the environment, and other organisms.
- Mud wasps (order) Hymenoptera can represent a hazard to aircraft.
- ~12000 species of wasps in Australia (which can look very similar to the naked eye).
  - ~300 species of mud wasps – Eumeninae
  - ~130 species of potter wasps - genus *Paralastor*

known species

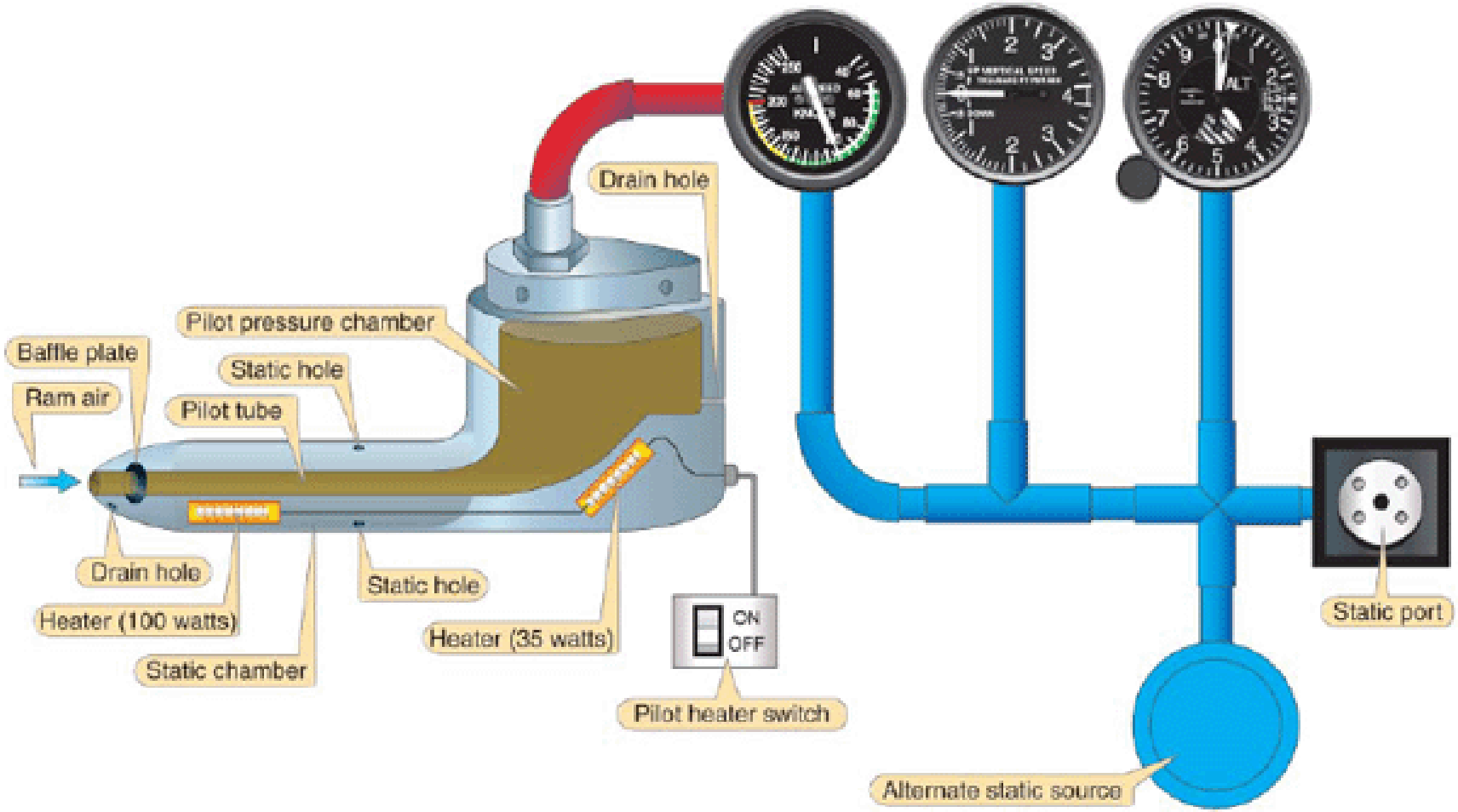
undetermined species

A brief primer on mud wasp biology





A ready made nest for a mud wasp

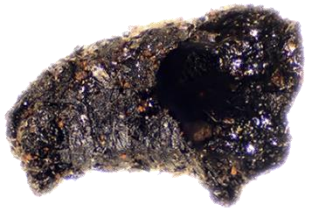


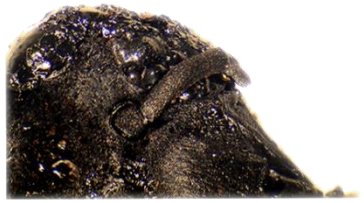
Pitot tube diagram

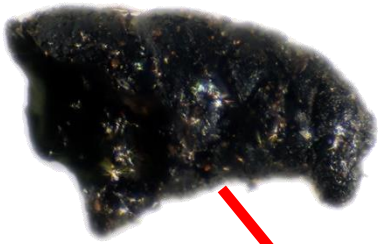
http://luckybogey.wordpress.com

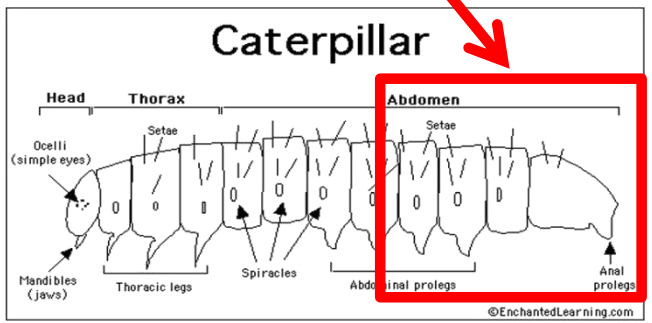
Species identification from charred remains

- Charred insect remains are often unsuitable for DNA analysis.
- However, morphological identification of mud wasps and their prey may be possible if informative characteristics are not completely destroyed.



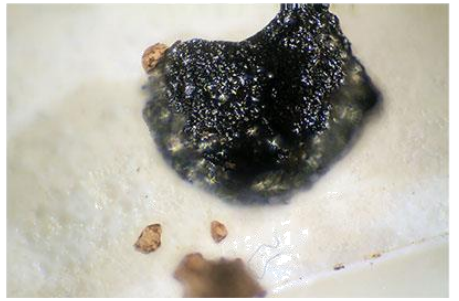






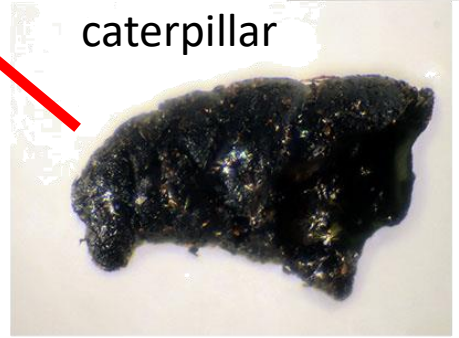
head

body plate



leg

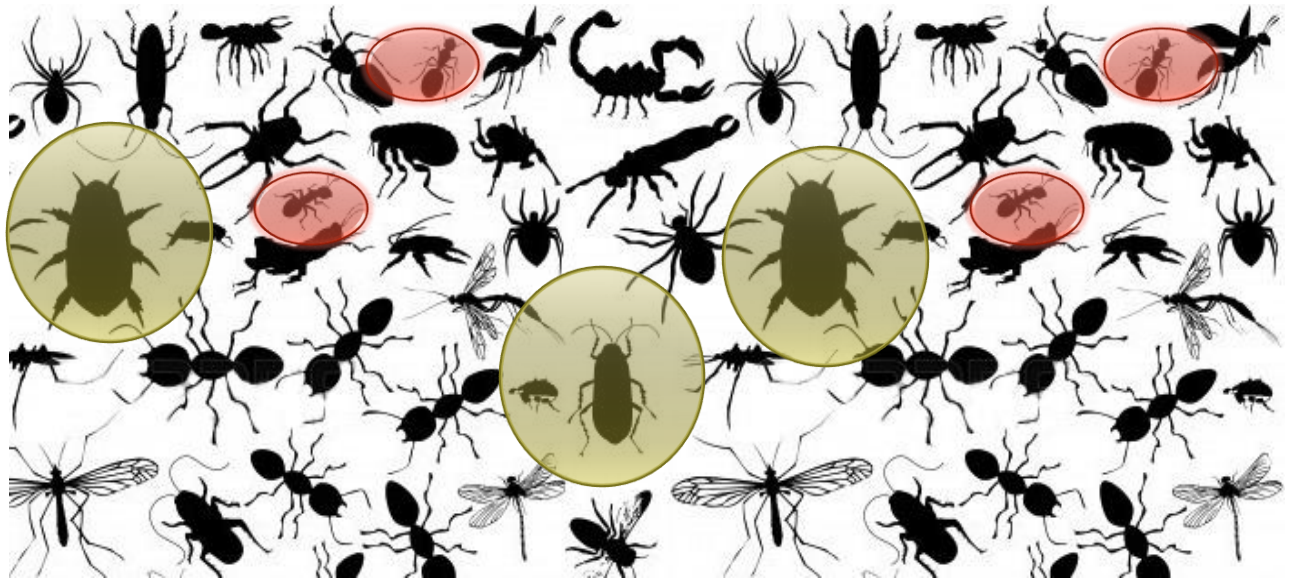
caterpillar



thorax

Research applications of DNA analysis

Food chain analysis - is it possible to determine what food items are attracting birds to airports using molecular methods?



Silver gull *(Croicocephalus novaehollandiae)*

Galah *(Eolophus roseicapilla)*

Research applications of DNA analysis

Data mining from airstrike records – can we identify population structure, movement patterns of wildlife etc. from airstrike data?

How to get in touch

- All enquiries regarding the ACWG's wildlife airstrike species ID service should be directed to airstrike@australian.museum
- Samples should be shipped to the address below, together with a completed identification request form:

AIRSTRIKE IDENTIFICATION

Australian Centre for Wildlife Genomics

AUSTRALIAN MUSEUM

1 WILLIAM ST

SYDNEY NSW 2010

ANALYSIS - NATIONAL AND INTERNATIONAL DATABASES

AAWHG
AUSTRALIAN AVIATION
WILDLIFE HAZARD GROUP

Reporting and Recording Wildlife Data

- Australian transport safety bureau (ATSB) overview
- Australian reporting requirements (*Transport Safety Investigation Act 2003*)
- Australian wildlife strike data – Australian context
- International reporting (ICAO / IBIS)
- ATSB website overview – where to report and how to access data

Reporting and Recording Wildlife Data

ATSB - OVERVIEW

Independent commonwealth government statutory agency

Governed by a commission separate from transport regulators, policy makers, and service providers

Established in 2003 by the TSI Act, and conducts investigations according to the Act's provisions

Reporting and Recording Wildlife Data

ATSB - OVERVIEW

Purpose:

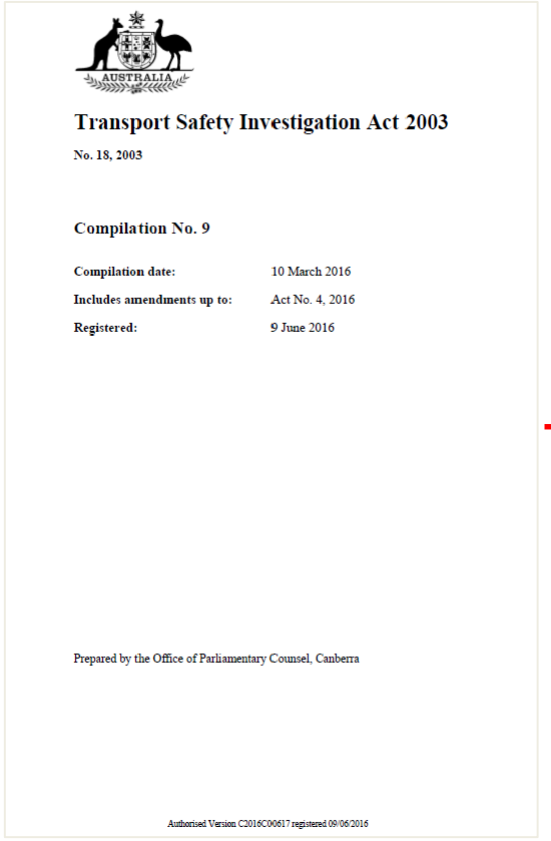
- To improve the safety of, and public confidence in, Australian transport (aviation, rail, marine) through:
  - The independent investigation of transport accidents and other safety occurrences
  - Safety data recording, analysis and research
  - Fostering safety awareness, knowledge and action.

Reporting and Recording Wildlife Data

AUSTRALIAN REPORTING REQUIREMENTS

Definitions in the TSI regulations:

- Immediately reportable matters
- Routinely reportable matters
- Wildlife strikes.
  - *'A collision with an animal, including a bird.'*



Transport Safety Investigation Act 2003

No. 18, 2003

Compilation No. 9

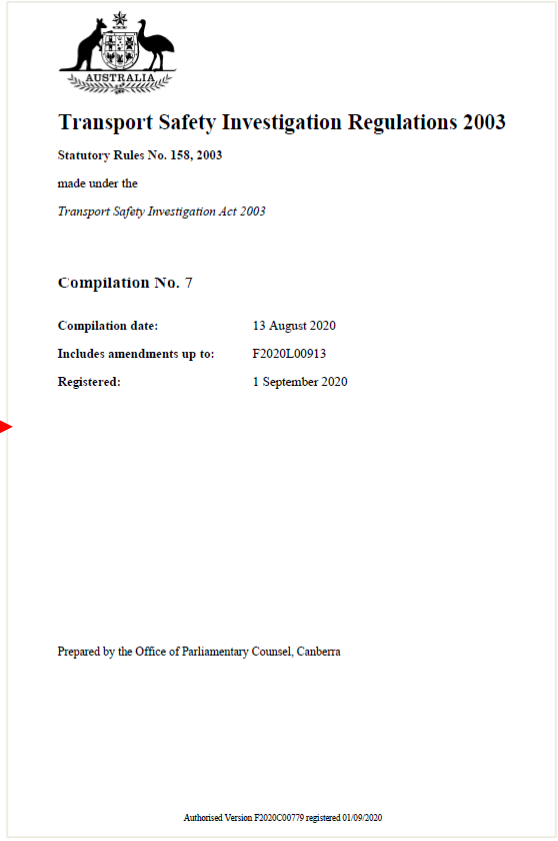
Compilation date: 10 March 2016

Includes amendments up to: Act No. 4, 2016

Registered: 9 June 2016

Prepared by the Office of Parliamentary Counsel, Canberra

Authorised Version C2016C00617 registered 09/06/2016



Transport Safety Investigation Regulations 2003

Statutory Rules No. 158, 2003

made under the

Transport Safety Investigation Act 2003

Compilation No. 7

Compilation date: 13 August 2020

Includes amendments up to: F2020L00913

Registered: 1 September 2020

Prepared by the Office of Parliamentary Counsel, Canberra

Authorised Version F2020C00779 registered 01/09/2020

Reporting and Recording Wildlife Data

AUSTRALIAN REPORTING REQUIREMENTS

Who is required to report:

- Any crew member of the aircraft involved in the occurrence
- The owner or operator of the aircraft
- Any person providing an Air Traffic Service
- Any person performing a dedicated aerodrome fire or rescue service
- Aircraft maintenance engineers or anyone doing work in relation to the aircraft
- Any person operating as a ground handler in relation to the aircraft
- A staff member of the Civil Aviation Safety Authority
- An aerodrome operator.

Reporting and Recording Wildlife Data

AUSTRALIAN REPORTING REQUIREMENTS

How to report to the ASTB:

- Mail
- Fax
- Phone (generally for IRMs)
- ATSB on-line report
- Email
- Application programming interface (API's)
  - (AsA, high capacity RPT, Defence)
  - Bird strikes xml schema

Notify the ATSB via secure online form
Click here

www.atsbasir.gov.au

1800 011 034

Reporting and Recording Wildlife Data

INTERNAL DATA USE

- Trend detection and analysis
- Research investigations (safety studies)
- Assist occurrence investigations

EXTERNAL DATA USE

Aviation occurrence data:

- ATSB national aviation occurrence database
- Monthly summaries sent to operators

Wildlife strike data:

- Monthly summaries sent to aerodromes
- Wildlife strike report
- Wildlife strike database

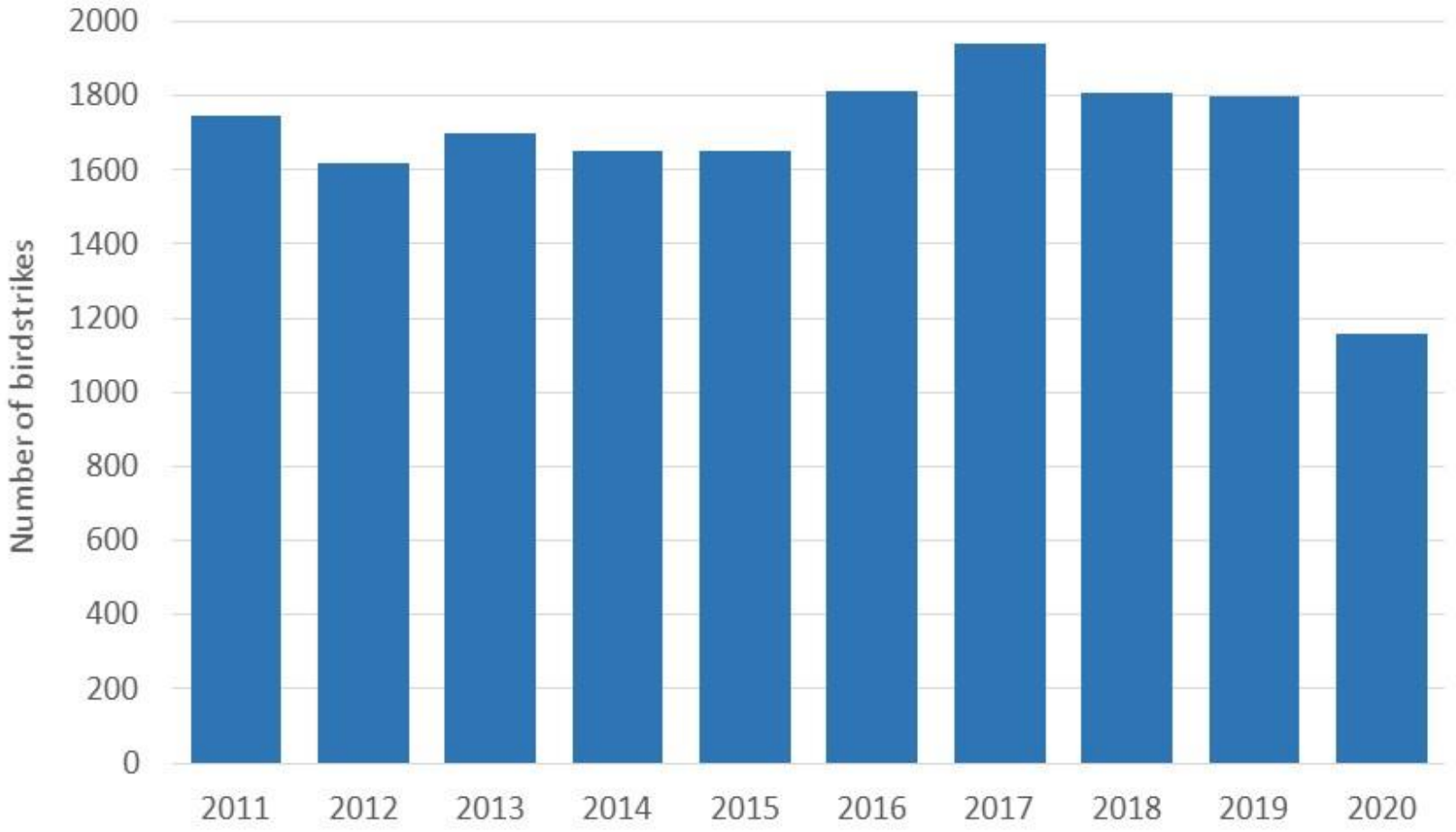
Australian Government
Australian Transport Safety Bureau

Date range: From 01/07/2020 to 14/09/2020
Location: All
Occurrence Type: Birdstrike, Wildlife - Other
Aircraft and Airspace: All
Highest Injury Level: All

Date	ATSB Reference Number	Category	ATSB Investigation	Location	State	Aircraft Manufacturer	Model	Operation Type	Operation Sub Type	Airspace Type	Airspace Class	Summary
1/07/2020	202003301	Incident		Dubbo Aerodrome	NSW	Piper Aircraft Corp	PA-31	Aerial Work	EMS	CTAF	G	During landing, the aircraft st
2/07/2020	202003326	Incident		Port Macquarie Aerodrome	NSW	Diamond Aircraft Industries	DA 40 NG	Flying Training	Training Dual	CTAF	G	During landing, the aircraft st
3/07/2020	202003334	Incident		Bathurst Island (YPR)	NT	Cessna Aircraft Company	208	Charter	Passenger	CTAF	G	During landing, the aircraft st
4/07/2020	202003354	Incident		Newman Aerodrome	WA	Fokker Aircraft B.V.	F28	Air Transport High Capacity	Passenger	CTAF	G	During landing, the aircraft st
7/07/2020	202003400	Incident		Mackay Aerodrome, 178Â° M 28Km	QLD	Bell Helicopter Co	412	Aerial Work	EMS	OCTA	G	During cruise, the helicopter s
7/07/2020	202003405	Incident		Dunbury Aerodrome	WA			Unknown	Unknown	CTAF	G	During a routine runway inspe
7/07/2020	202003407	Incident		King Island Aerodrome	TAS	Piper Aircraft Corp	PA-31	Charter	Passenger	CTAF	G	During landing, the aircraft st
7/07/2020	202003420	Incident		Browse Island (ALA), 271Â° T 44Km (Offshore Tig Maersk Deliverer)	WA	Sikorsky Aircraft	S-92	Charter	Passenger	OCTA	G	During take off, the aircraft st
7/07/2020	202003428	Incident		Edinburgh Aerodrome	SA	The Boeing Company	P-8A Poseidon	Military	Other	CTR	C	During landing, the aircraft st
8/07/2020	202003459	Incident		Charleville Aerodrome	QLD	S.O.A.B. Aircraft Co	340	Air Transport Low Capacity	Passenger	CTAF	G	During take-off, the aircraft st
9/07/2020	202003463	Incident		Richmond (NSW) Aerodrome	NSW	Unknown	Unknown	Military	Other	PRD	PRD	During the post-flight inspecti when the strike occurred.
9/07/2020	202003486	Incident		Cairns Aerodrome	QLD	The Boeing Company	737	Air Transport High Capacity	Passenger	CTR	C	During landing, the aircraft st
11/07/2020	202003478	Incident		Sydney Aerodrome	NSW	Bombardier Inc	DHC-8	Air Transport High Capacity	Passenger	CTR	C	During the pre-flight inspectio when the strike occurred.
11/07/2020	202003485	Incident		Sydney Aerodrome	NSW	The Boeing Company	787	Air Transport High Capacity	Passenger	CTR	C	During landing, the aircraft st
13/07/2020	202003497	Incident		Perth Aerodrome	WA	Fokker Aircraft B.V.	F28	Air Transport High Capacity	Passenger	CTR	C	During landing, the aircraft st
13/07/2020	202003509	Incident		Brisbane Aerodrome	QLD	The Boeing Company	787	Air Transport High Capacity	Passenger	CTR	C	During landing, the aircraft st

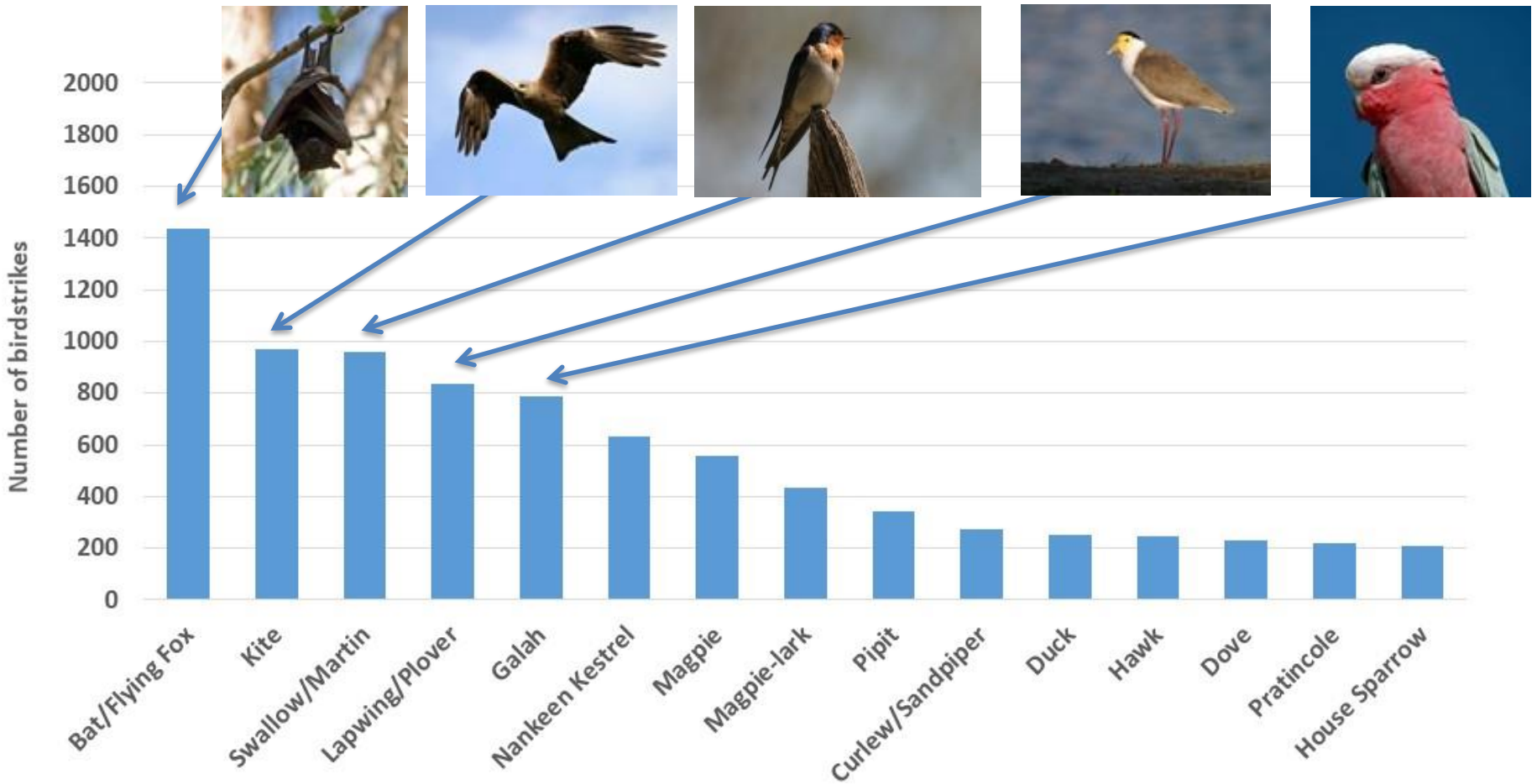
Bird strike data – Australian context

Number of bird strikes per year, 2011 - 2020



Bird strike data – Australian context

Top 15 by number of airborne wildlife struck, 2011 - 2020



Bird strike data – the Australian Context

- ~ 16,500 notifications received per year
  - (~3k for bird strikes)
- 16,875 bird strikes 2011 - 2020 (1,159 in 2020)
- 99.85% incidents
  - 2 serious incidents (0.01%), 23 accidents (0.14%)
- No civilian fatalities (all years)
  - 8 injuries (2011 – 2020) ~ 0.05%
- 93% nil/unknown damage, 8 aircraft destroyed (7 RPAS)
- 247 fatal accidents (2011 - 2020)

International reporting

ICAO ANNEX 13 – AIRCRAFT ACCIDENT AND INCIDENT INVESTIGATION

- State of registry
- State of operator
- State of design
- State of manufacturer
- ICAO

ICAO ANNEX 14 – AERODROMES

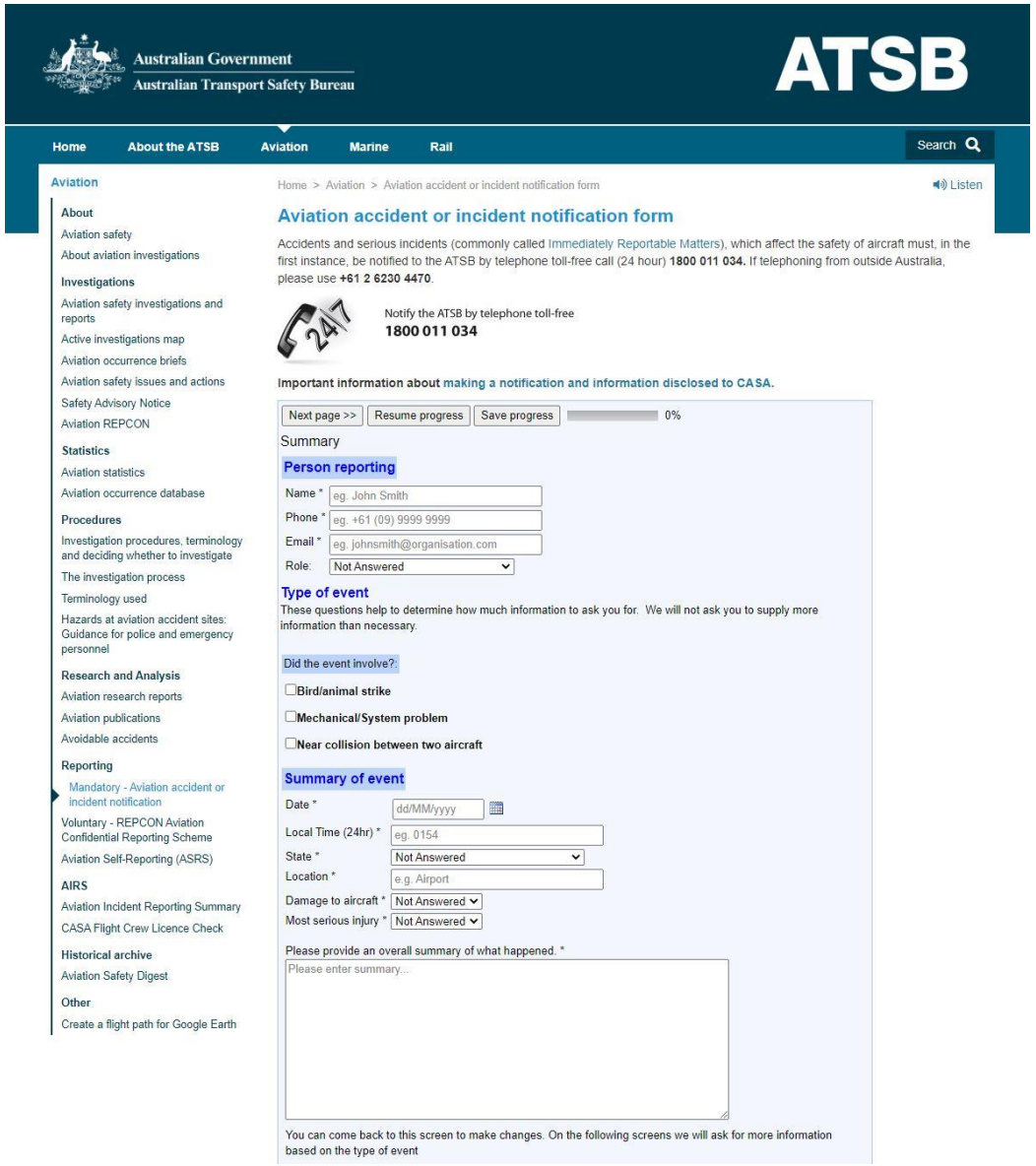
- ICAO / IBIS
  - Bulk data (excel)
  - Aligned with publication of wildlife report / data set

ATSB Website

National reporting (www.atsb.gov.au)

ATSB Website

National reporting

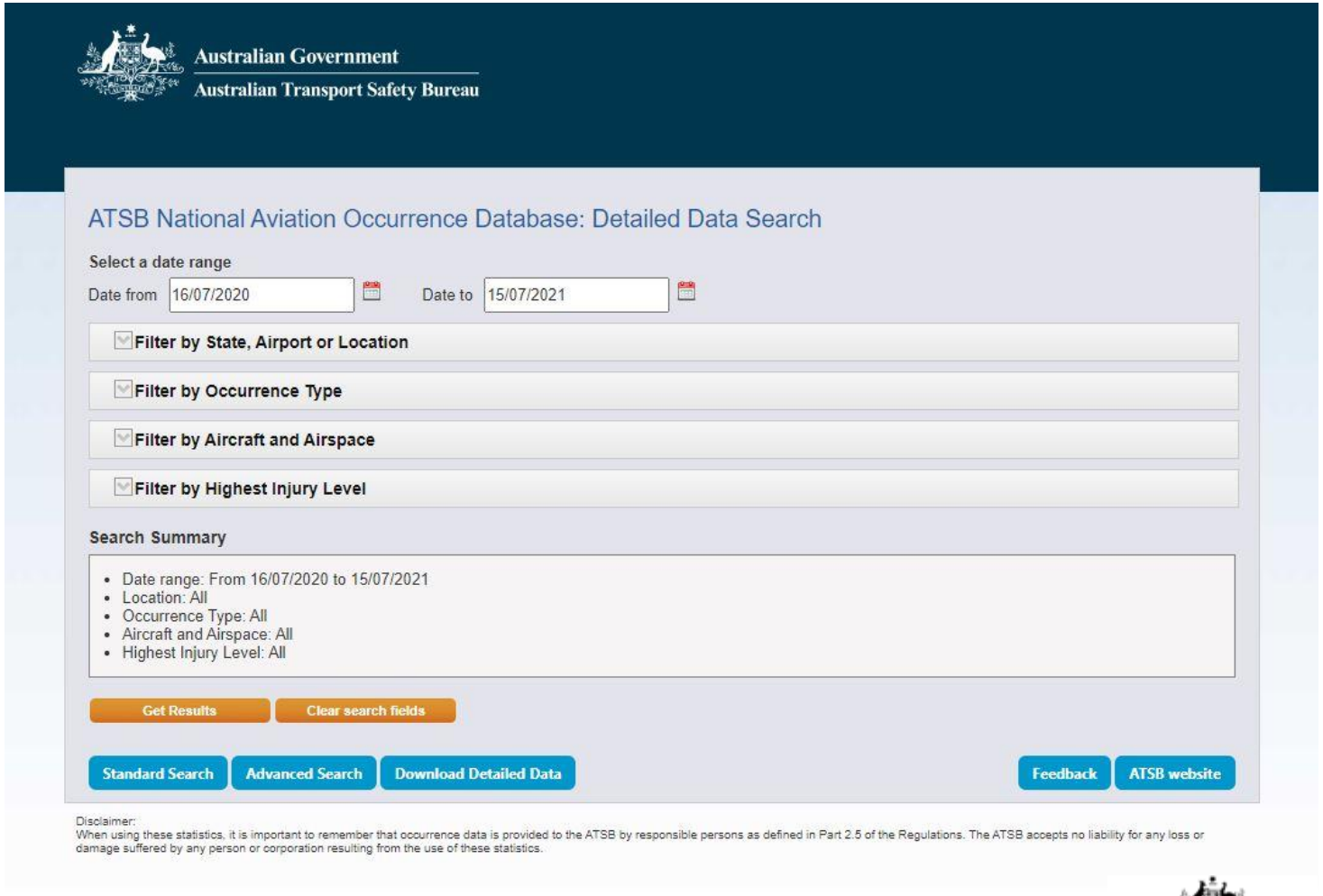


ATSB Website

Aviation occurrence database

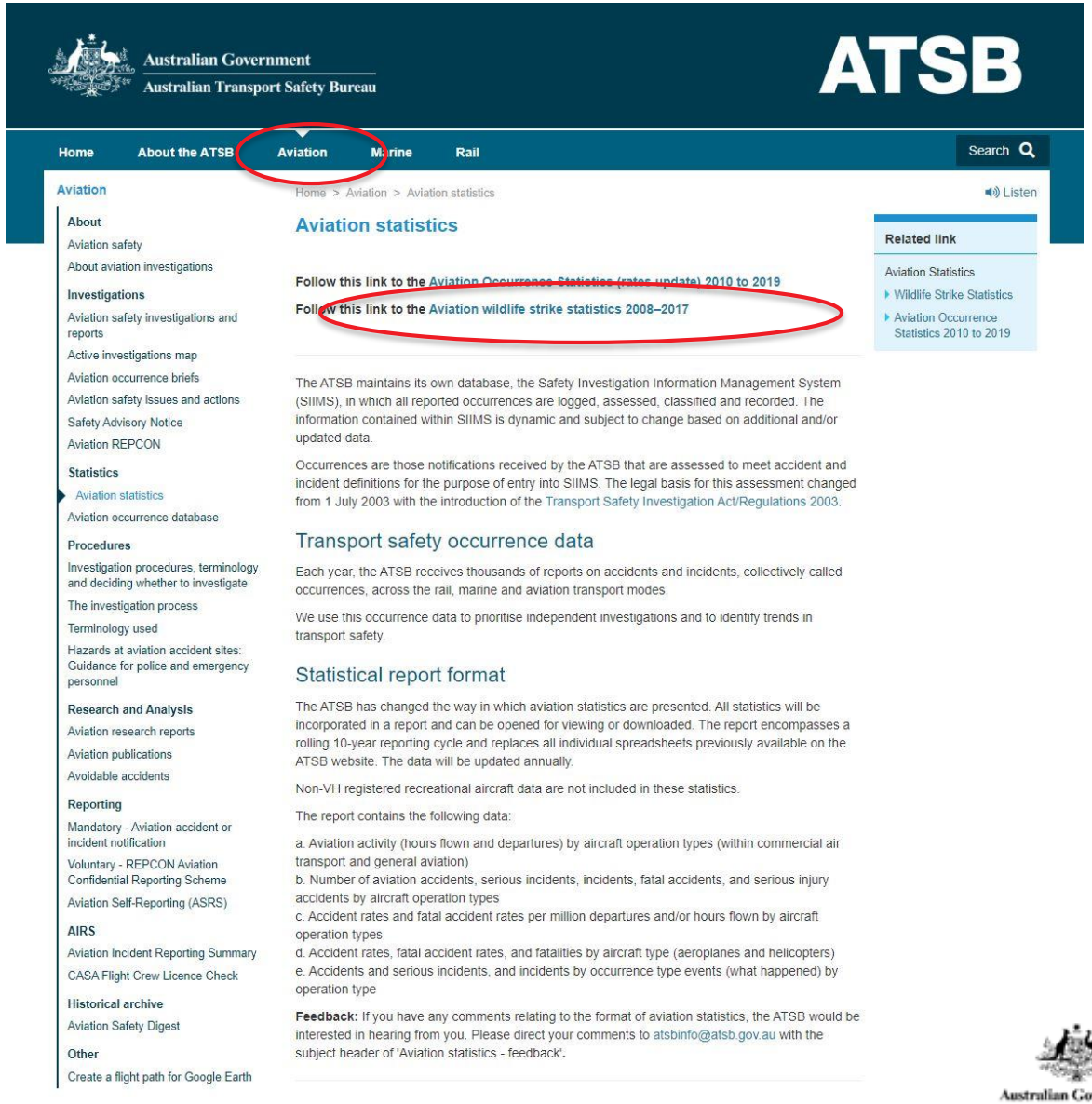
ATSB Website

Aviation occurrence database



ATSB Website

Wildlife strike report and database



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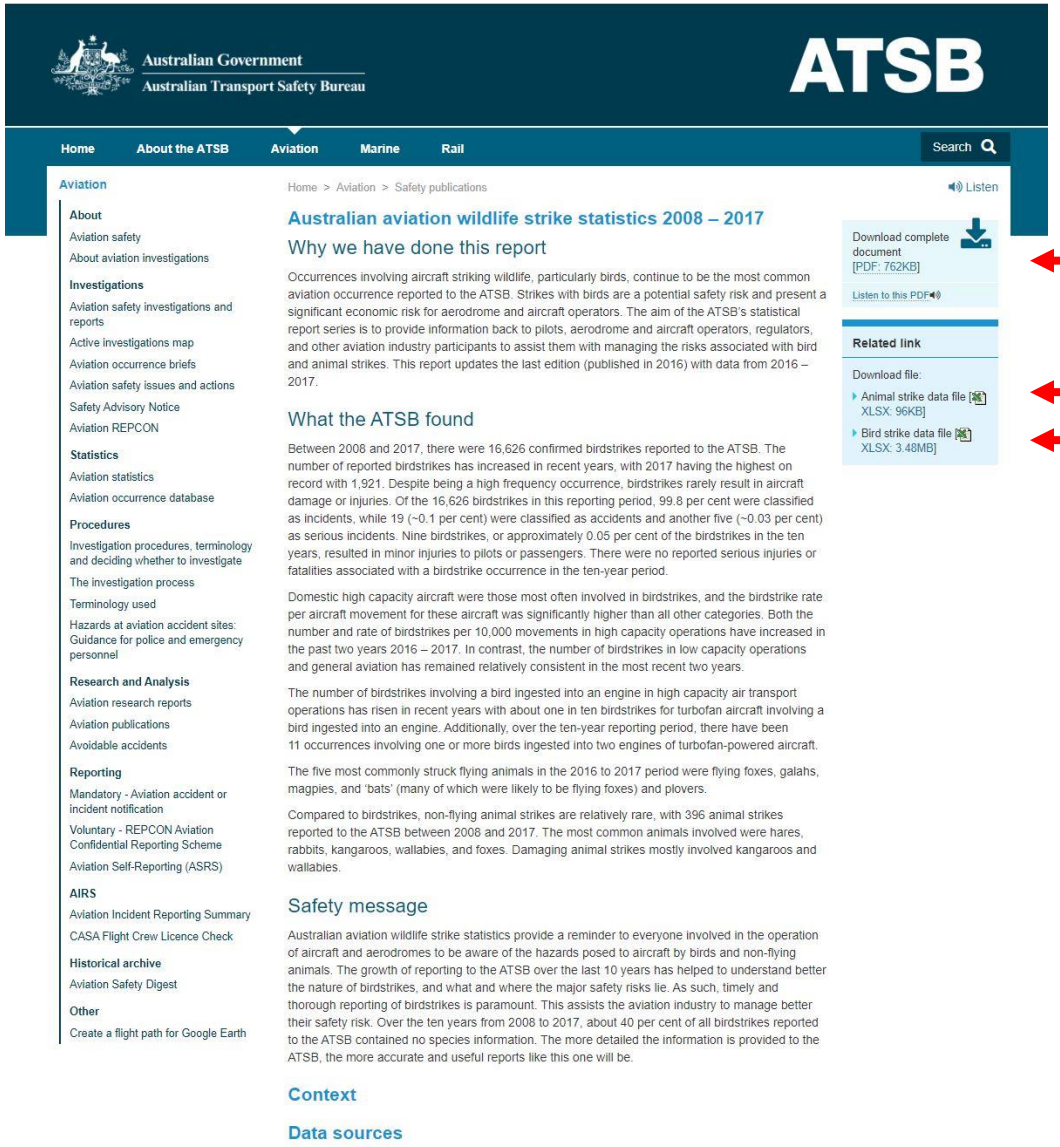
Wildlife strike report and database



Australian Government
Australian Transport Safety Bureau

ATSB

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Aviation

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Procedures
Investigation procedures, terminology and deciding whether to investigate
The investigation process
Terminology used
Hazards at aviation accident sites: Guidance for police and emergency personnel

Research and Analysis
Aviation research reports
Aviation publications
Avoidable accidents

Reporting
Mandatory - Aviation accident or incident notification
Voluntary - REPCON Aviation Confidential Reporting Scheme
Aviation Self-Reporting (ASRS)

AIRS
Aviation Incident Reporting Summary
CASA Flight Crew Licence Check

Historical archive
Aviation Safety Digest

Other
Create a flight path for Google Earth

Home > Aviation > Safety publications

Listen

Australian aviation wildlife strike statistics 2008 – 2017

Why we have done this report

Occurrences involving aircraft striking wildlife, particularly birds, continue to be the most common aviation occurrence reported to the ATSB. Strikes with birds are a potential safety risk and present a significant economic risk for aerodrome and aircraft operators. The aim of the ATSB's statistical report series is to provide information back to pilots, aerodrome and aircraft operators, regulators, and other aviation industry participants to assist them with managing the risks associated with bird and animal strikes. This report updates the last edition (published in 2016) with data from 2016 – 2017.

What the ATSB found

Between 2008 and 2017, there were 16,626 confirmed birdstrikes reported to the ATSB. The number of reported birdstrikes has increased in recent years, with 2017 having the highest on record with 1,921. Despite being a high frequency occurrence, birdstrikes rarely result in aircraft damage or injuries. Of the 16,626 birdstrikes in this reporting period, 99.8 per cent were classified as incidents, while 19 (~0.1 per cent) were classified as accidents and another five (~0.03 per cent) as serious incidents. Nine birdstrikes, or approximately 0.05 per cent of the birdstrikes in the ten years, resulted in minor injuries to pilots or passengers. There were no reported serious injuries or fatalities associated with a birdstrike occurrence in the ten-year period.

Domestic high capacity aircraft were those most often involved in birdstrikes, and the birdstrike rate per aircraft movement for these aircraft was significantly higher than all other categories. Both the number and rate of birdstrikes per 10,000 movements in high capacity operations have increased in the past two years 2016 – 2017. In contrast, the number of birdstrikes in low capacity operations and general aviation has remained relatively consistent in the most recent two years.

The number of birdstrikes involving a bird ingested into an engine in high capacity air transport operations has risen in recent years with about one in ten birdstrikes for turbofan aircraft involving a bird ingested into an engine. Additionally, over the ten-year reporting period, there have been 11 occurrences involving one or more birds ingested into two engines of turbofan-powered aircraft.

The five most commonly struck flying animals in the 2016 to 2017 period were flying foxes, galahs, magpies, and 'bats' (many of which were likely to be flying foxes) and plovers.

Compared to birdstrikes, non-flying animal strikes are relatively rare, with 396 animal strikes reported to the ATSB between 2008 and 2017. The most common animals involved were hares, rabbits, kangaroos, wallabies, and foxes. Damaging animal strikes mostly involved kangaroos and wallabies.

Safety message

Australian aviation wildlife strike statistics provide a reminder to everyone involved in the operation of aircraft and aerodromes to be aware of the hazards posed to aircraft by birds and non-flying animals. The growth of reporting to the ATSB over the last 10 years has helped to understand better the nature of birdstrikes, and what and where the major safety risks lie. As such, timely and thorough reporting of birdstrikes is paramount. This assists the aviation industry to manage better their safety risk. Over the ten years from 2008 to 2017, about 40 per cent of all birdstrikes reported to the ATSB contained no species information. The more detailed the information is provided to the ATSB, the more accurate and useful reports like this one will be.

Context

Data sources

Download complete document [PDF: 762KB]

Listen to this PDF

Related link

Download file:

Animal strike data file [XLSX: 96KB]

Bird strike data file [XLSX: 3.48MB]

← Report (.pdf)

← Animal strike database

← Bird strike database

ATSB Website

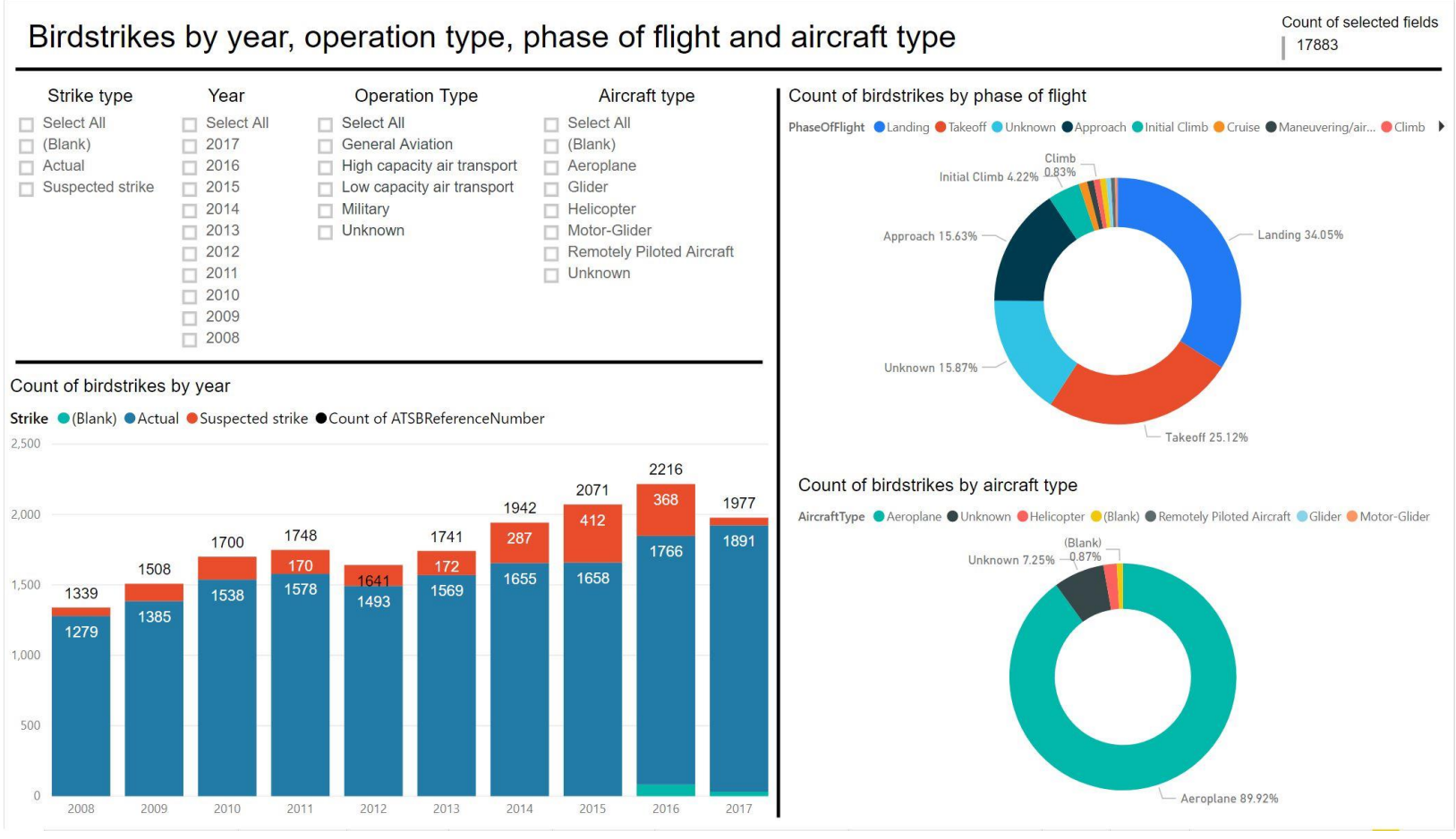
Wildlife strike report and database

- Ten years, 2008-2017
- 16,626 rows
- 37 columns

ATSB Reference Number	Database Location	Maximum Weight Category	Species
Occurrence Date	Latitude	Engine Type	Species Family
year	Longitude	Operation Type	Other species
Month	state	Altitude	Strike type
Occurrence Time	Injury Level	Phase Of Flight	Strike location
UTC Offset	Aircraft Damage Level	Engine Ingestion	Bird Size
ATSB Summary	Aircraft Type	No of birds seen	Bird mass (kg)
Location Common Name	Manufacturer	No of birds struck	
ICAO Code	Model Common Name	Part damaged	
Location Type	Maximum Take Off Weight	Runway no	

ATSB Website

Wildlife strike report and database



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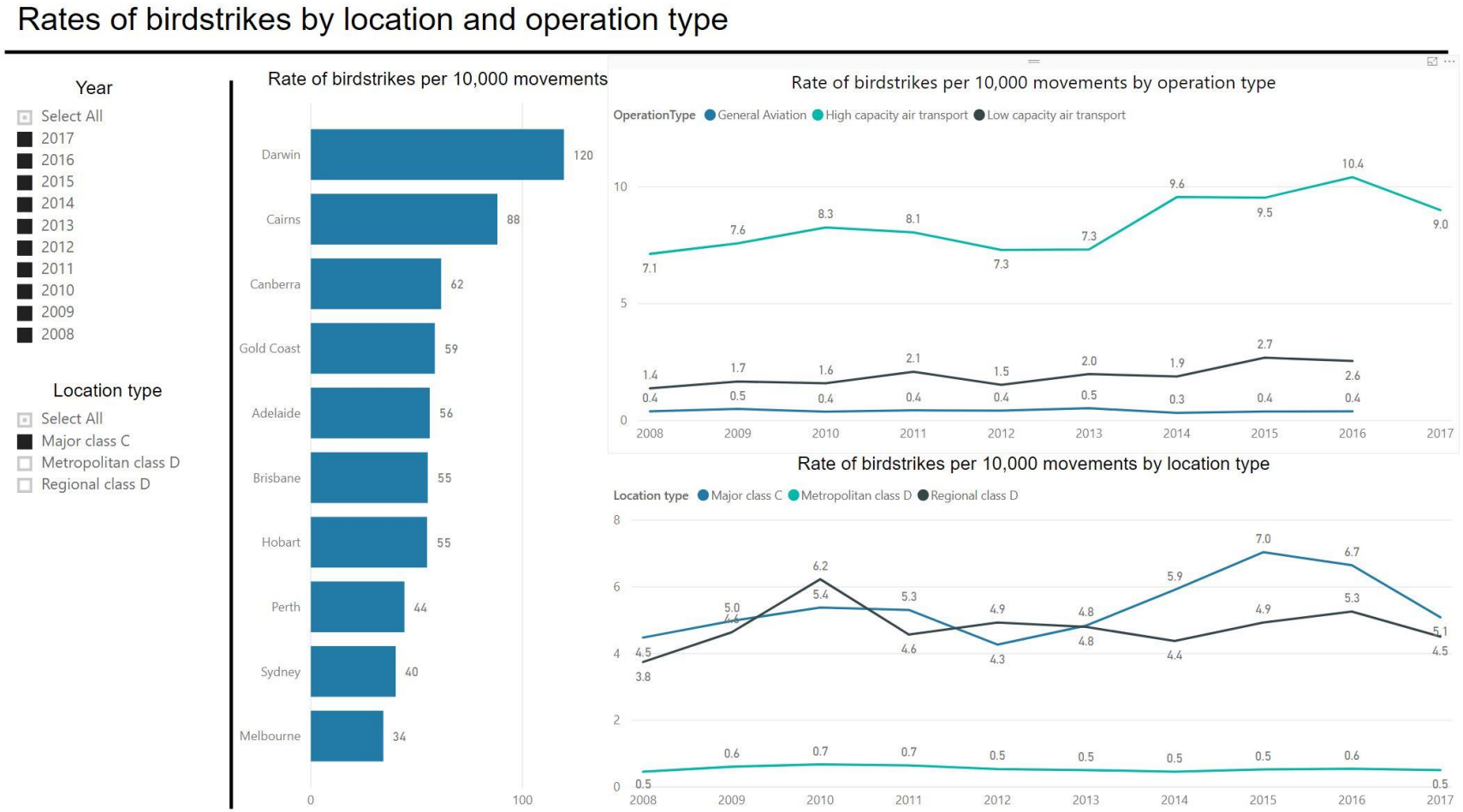

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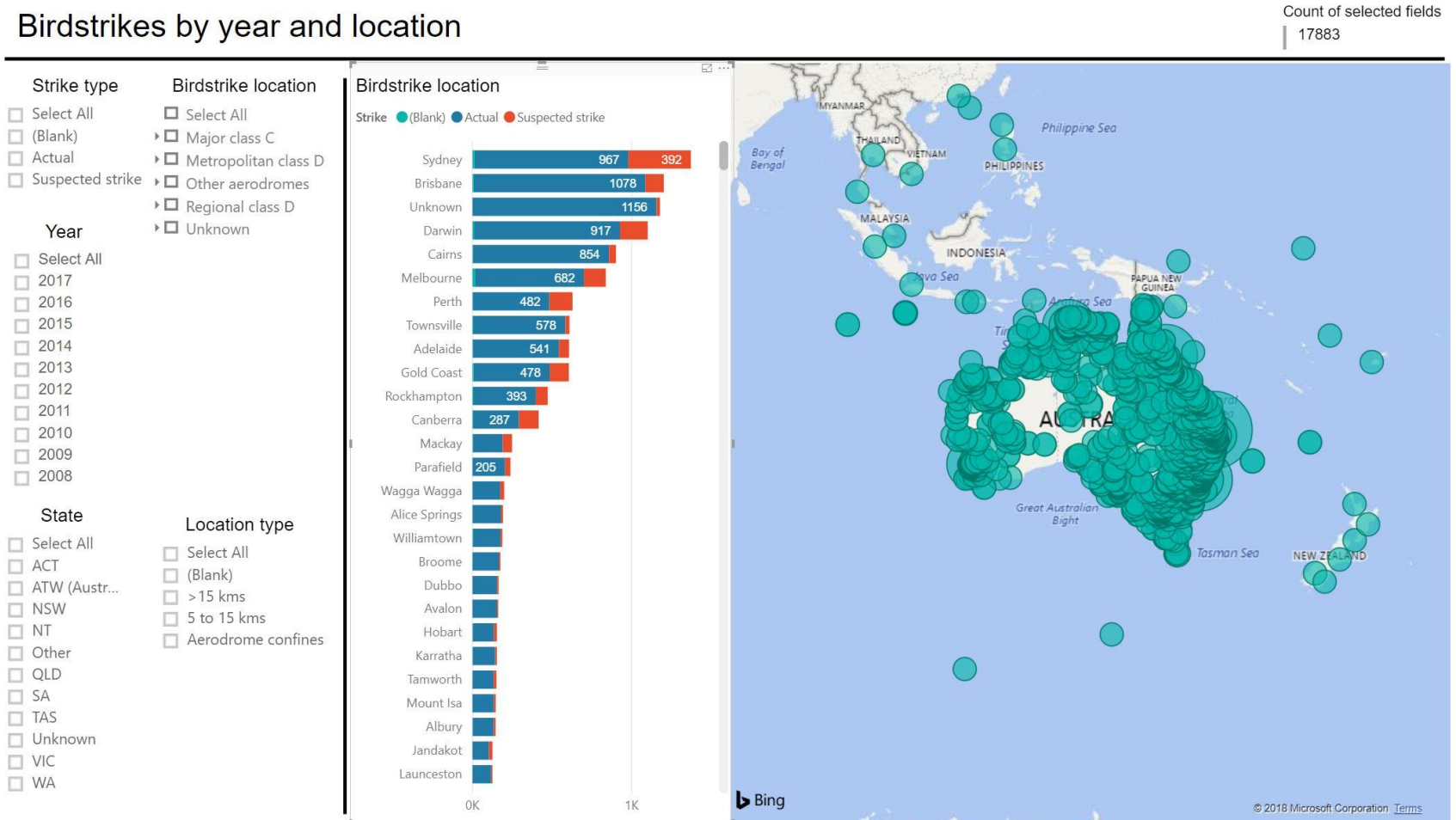

Australian Government
Australian Transport Safety Bureau

ATSB Website

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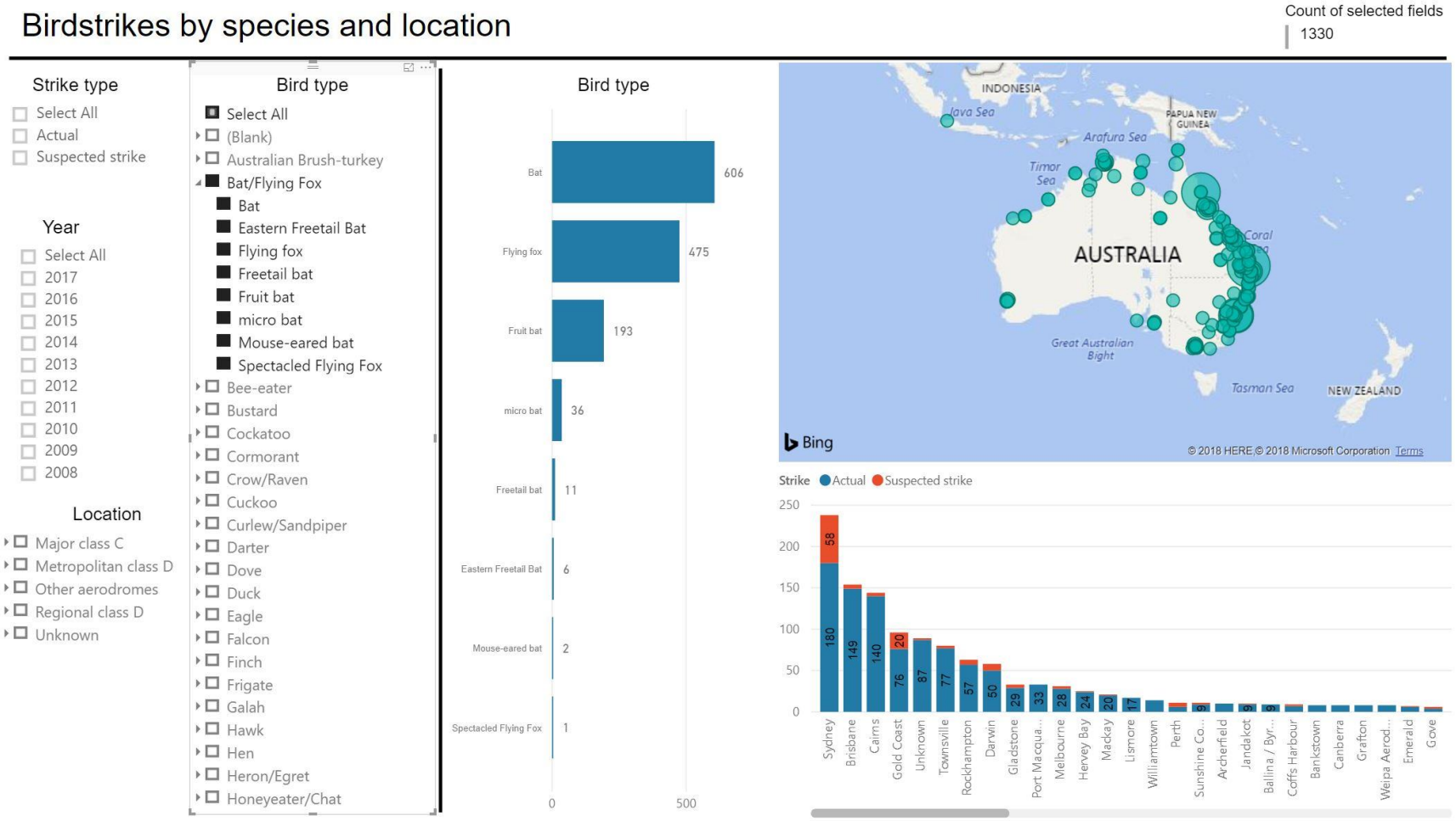

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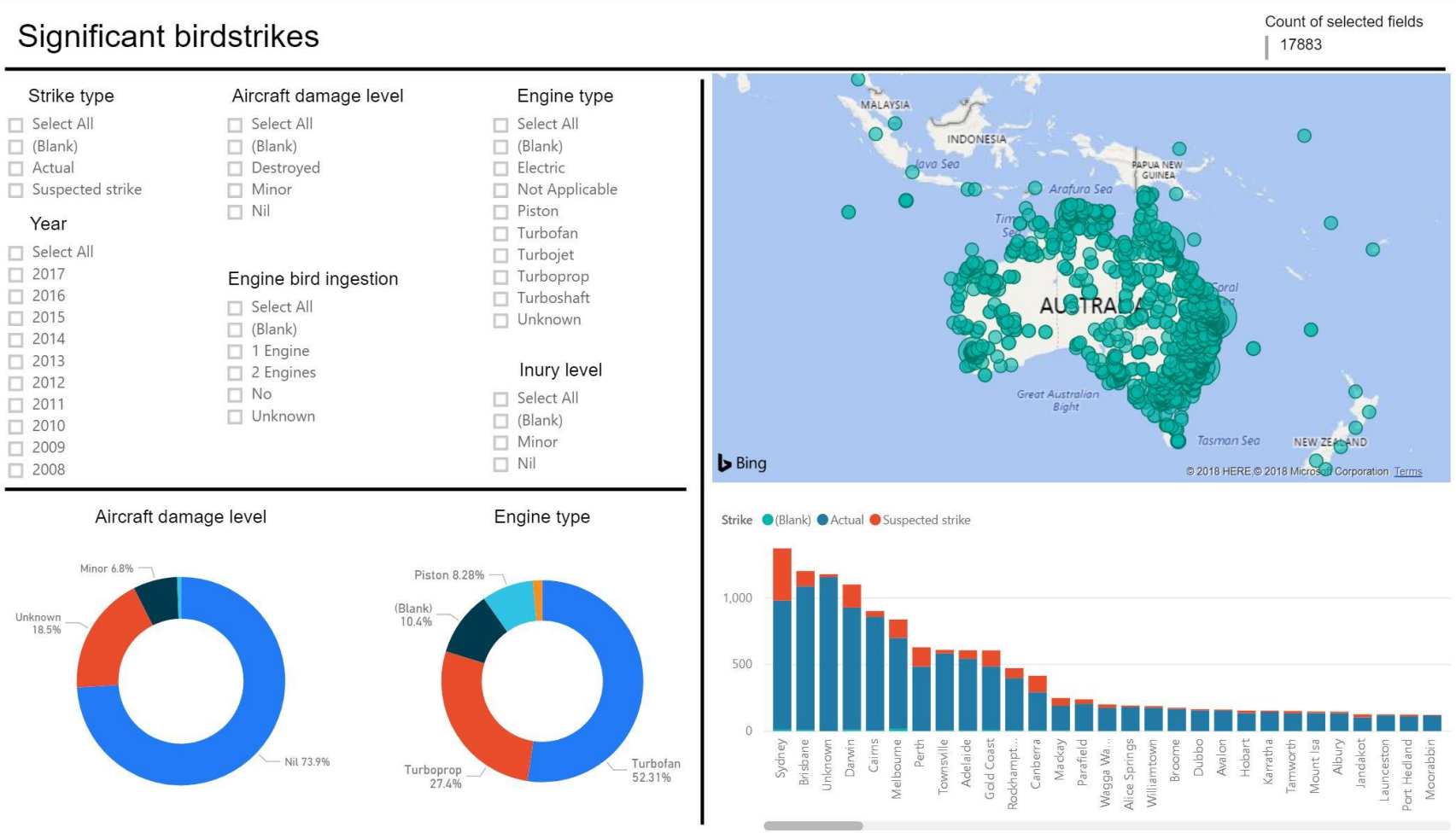

Reporting and Recording Wildlife Data

ATSB Website:
www.atsb.gov.au

ATSB Data Requests:
atsbinfo@atsb.gov.au

Notifications:
atsbasir@atsb.gov.au

Feedback / questions:
thomas.lenne@atsb.gov.au

Research publications:
www.atsb.gov.au/publications

Wildlife strike publications – search for: AR-2018-035

SUMMARY AND QUESTIONS

QR Code for information on the 4th Webinar and AAWHG Forum

AAWHG
AUSTRALIAN AVIATION
WILDLIFE HAZARD GROUP