Whole-Drawer Digitisation at the Australian National Insect Collection (ANIC).

Nicole Fisher

September 2013
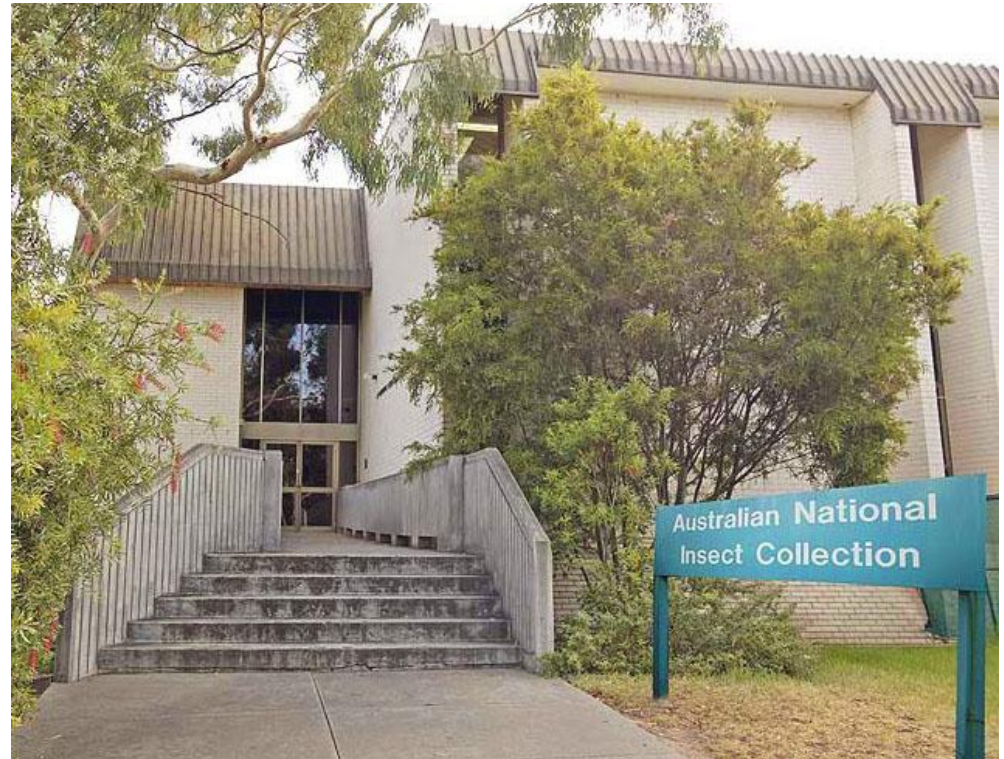
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Section 1:
Introduction

Whole-Drawer Digitisation at the Australian National Insect Collection (ANIC). |Nicole Fisher

Australian National Insect Collection (ANIC)

- ANIC is the world's largest collection of Australian insects

  and related groups

  (mites, spiders, earthworms,

  nematodes & centipedes).

- 12 million insect specimens!

  .... and grow at a rate of

  100,000 per year

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Australian National Insect Collection (ANIC)

2,000 cabinets
(10 drawers per cabinets)
= 20,000 drawers

(To date – about 2,000 drawers are imaged using our satscan = 10% of ANIC)

Australia's biodiversity

- Australia is home to around 8% of the world's plant and animal species

- Every day we are making new and exciting discoveries about Australia's biodiversity.

- Yet only about 25 % of Australia's species have been formally described.

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Current rate of digitisation at the ANIC
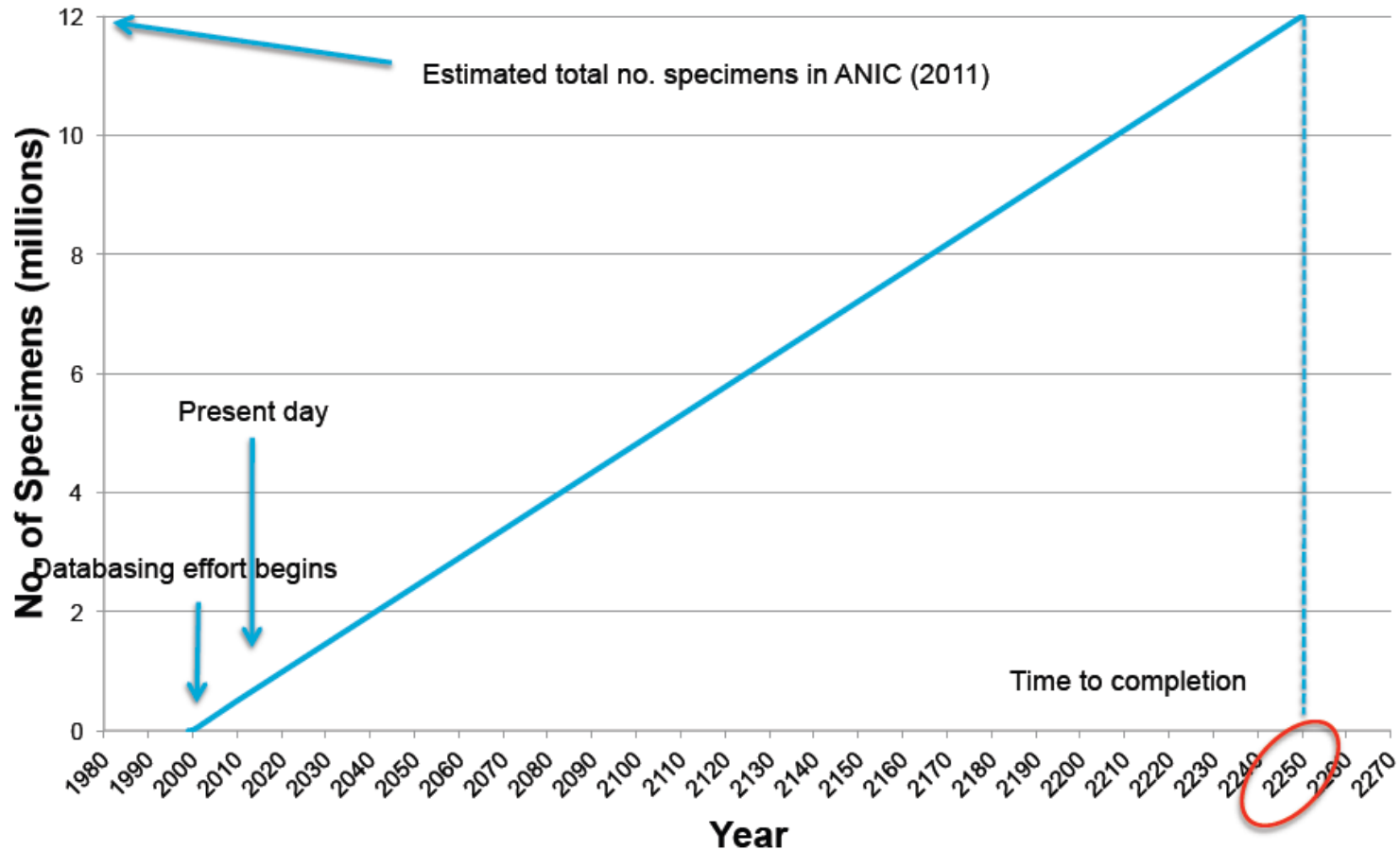
Why digitise a collection ?

Imaging of a collection enables an enhanced ability to -

- ▪ Promote & encourage remote curation of unsorted specimens;
- ▪ Deliver insect specimen metadata;
- ▪ Assist with image and loan requests;
- ▪ Provide a method for auditing the collection;
- ▪ Encourage public engagement with biological collections;
- ▪ Permit morphometric analysis of at least some specimens.

(see : Johnson,L . et al (2013) Morphometric measurements of dragonfly wings: the accuracy of pinned, scanned and detached measurement methods. ZooKeys 276: 77–84. doi: 10.3897/zookeys.276.4207)

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Collections digitised and on-line

- Can help when a collection is
  not accessible.

wrapping collection for major refurbishment

collections move around

Section 2:

Whole-drawer imaging in ANIC

The SatScan™ by SmartDrive Ltd

- a combination of hardware and software

- automatically captures a series of 200-400 "tile" images at precisely monitored positions

- tile images are then
  assembled together to
  form a high-resolution
  final image of a drawer

Where to begin ...

- How to go about scanning 20,000 drawers ?

- Recruit volunteers ?

We couldn't do it without ..

Our Volunteers...

Our Hero's!

Examples (insects)

Examples (non-insects)

High resolution images
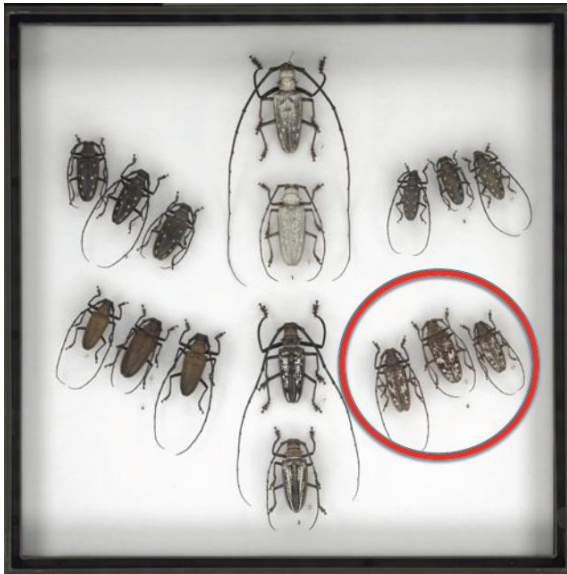
Leads to unexpected discoveries

... look what you can find ...

whoa! ......
would they be mites?
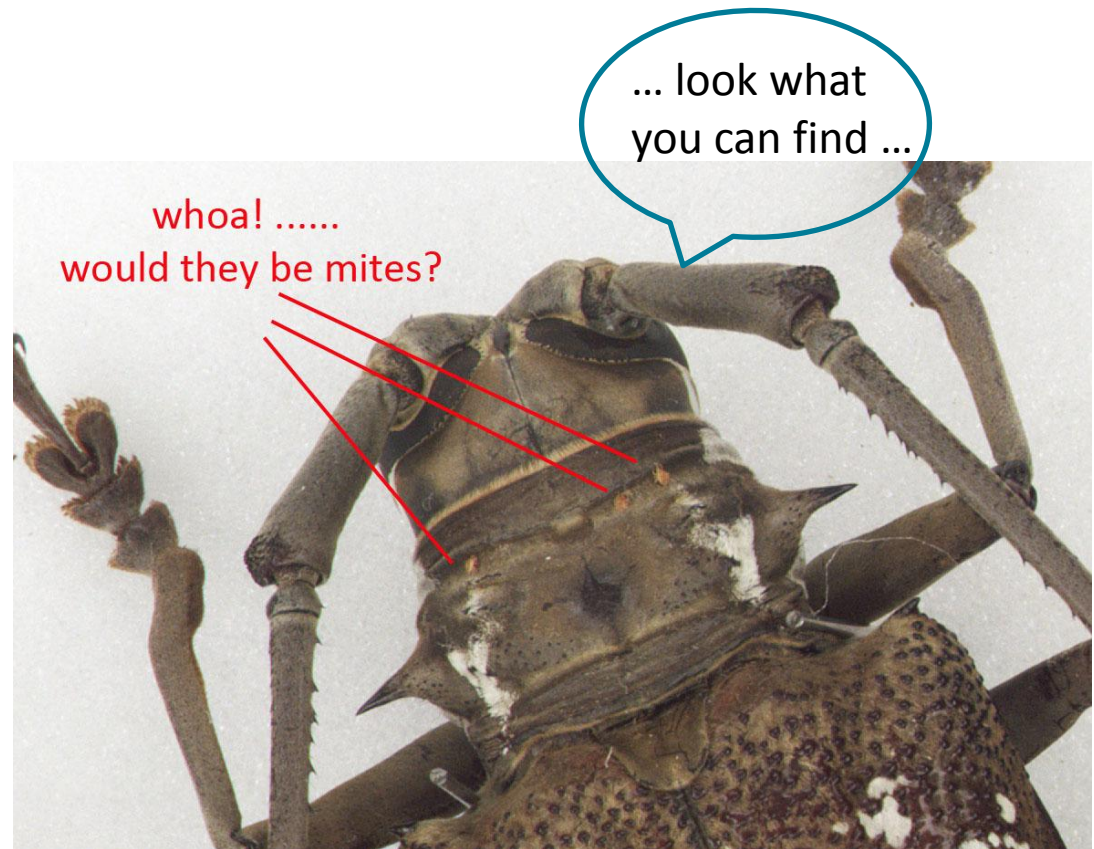
High resolution images

- And more
   unexpected discoveries …

- Did anyone
   know
   about this ?

Challenges

- Development of workflow:
  - Drawer image is out-of-date immediately after capture.
  - Maintain list of drawers that have 'changed' due to sorting, curation, changes to agreed taxonomy etc.
- Metadata capture and handling:
  - Linking images with specimens: Morphbank, LSIDs?
  - Interacting with & annotating image metadata.
  - Integration with collection management system.
  - Image storage (25,000 drawers = 12TB).
- System limitations:
  - Scanning area ~ 500 x 600 mm.
  - Errors during batch stitching.
  - Focusing is time consuming and clumsy.

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Delivery of whole drawer images on-line

- To Morphbank (ALA node) …

  (but issues with this)

- So we do use flickr

(as a quick & easy way for external researches to look at drawers)

Keeping track of drawers and images
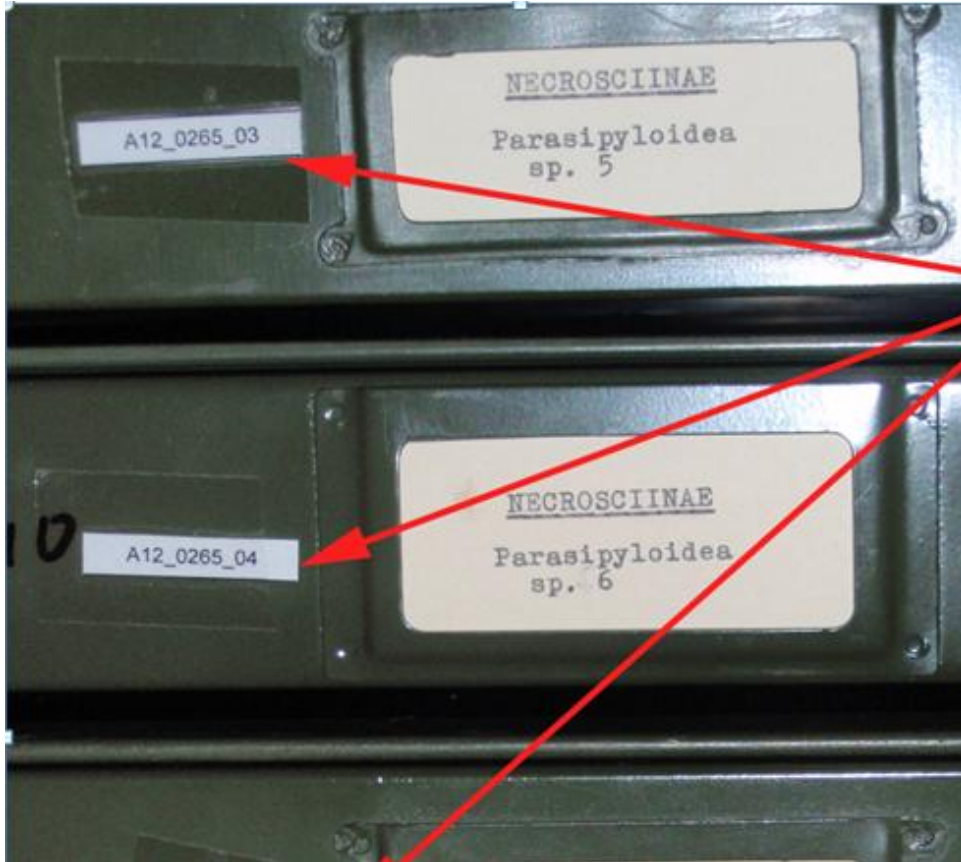
- Drawer name = location code for the drawer = filename of the image

- <u>Human readable – some benefits :</u> Easier for our volunteers & staff to help with digitisation activities

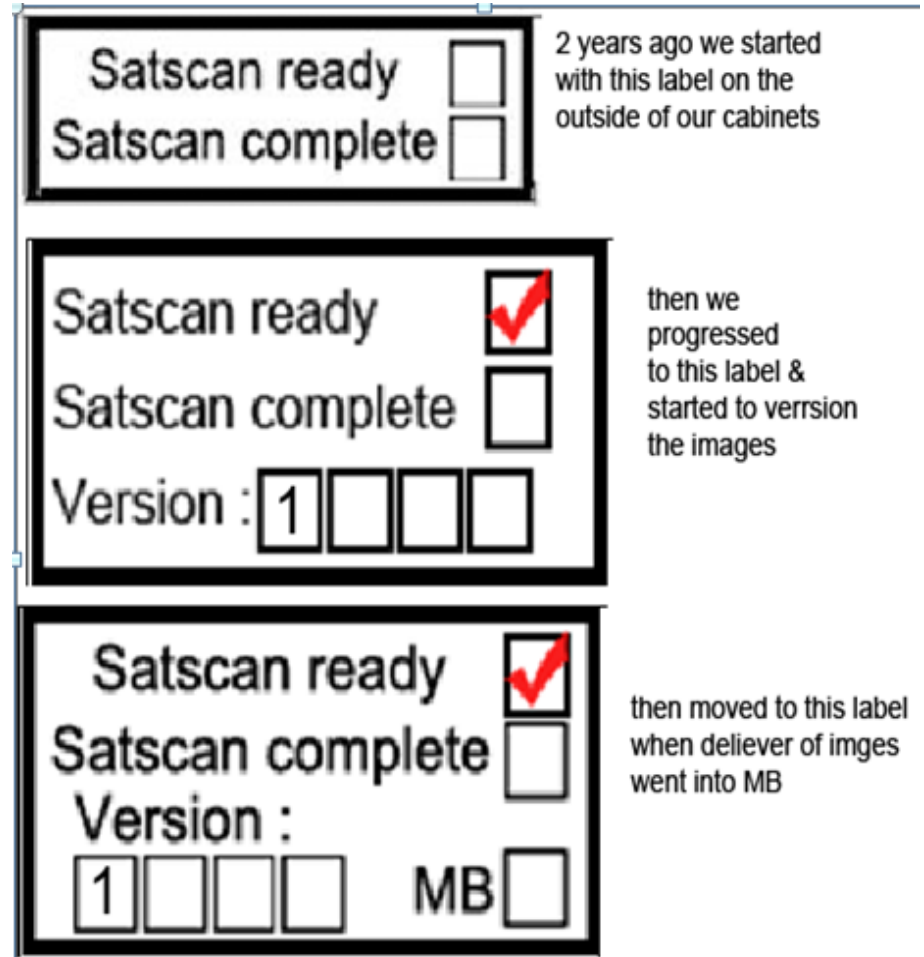- We haven't yet moved to machine readable

Colour control sample

ANIC drawer with a modified photographic colour control sample

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Labelling of cabinets

• Different labels we have used over the years to identify which cabinets have been scanned and imaged

• Labels are situated on the outside of cabinets

Section 3:

Next step –
value adding to our research

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The **Euryglossa bee project**

• Not much of ANIC specimen label data is capture in a digital format contained in our database

• So how to go about getting this information

• We use our whole-drawer technology and crowd sourcing techniques

The Euryglossa bee project

http://collections.ala.org.au/public/showDataResource/dr897

- On the ALA website we can access the data from each project

> Euryglossinae Bee Expedition 1
>
> Type of resource: records License: other License version: View records
>
> Euryglossinae Bee Expedition 2
>
> Type of resource: records License: other License version: View records
>
> Plume moths - ANIC
>
> Type of resource: records License: other License version: View records

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The Euryglossa bee project

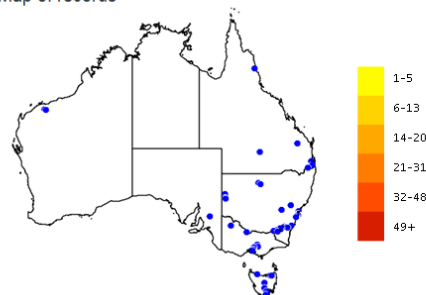• Graphical data is available for our use
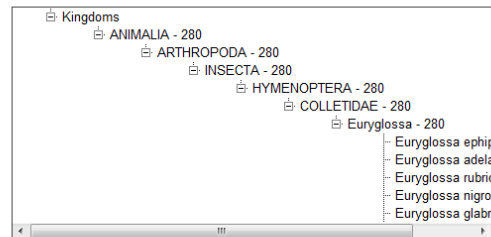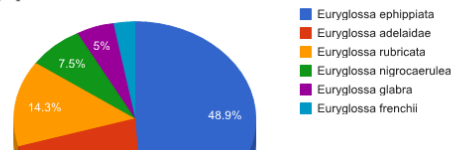
The **Euryglossa bee project**

• Now that the information from the specimen label has been turned into a digital format, we can derive more information then even before

By biogeographic region

Sydney Basin
Riverina
South Eastern Highlands
Pilbara
Darling Riverine Plains
Broken Hill Complex
South Eastern Queensla...
South East Coastal Plain
Australian Alps
Tasmanian Southern Ra...
Wet Tropics
Ben Lomond

1/2
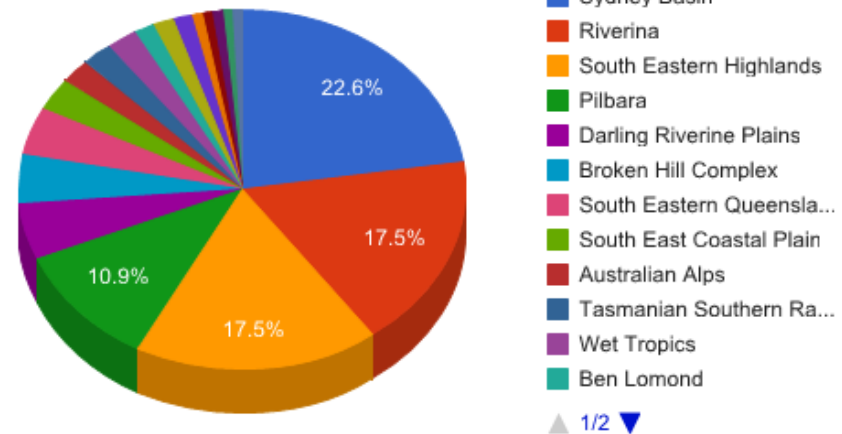
Section 4:

Where to next ….. ?

ANIC's future plans

- Image repository.

- Integration with a collection management system.

- Barcodes on unit trays & drawers to link images with metadata.

Examples of virtual collections

- NSW State Library :

  http://www.sl.nsw.gov.au/events/exhibitions/2012/lewin/collectionviewer/index.html

- Google Art Project :

  http://www.googleartproject.com/collection/art-gallery-of-new-south-wales/museumview/

- WebGL Bookcase

  http://workshop.chromeexperiments.com/bookcase/

Browsing for books on WebGL Bookcase

Thank you

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