

Biodiversity, Biosecurity and Industry.

An example of them working together on Barrow Island

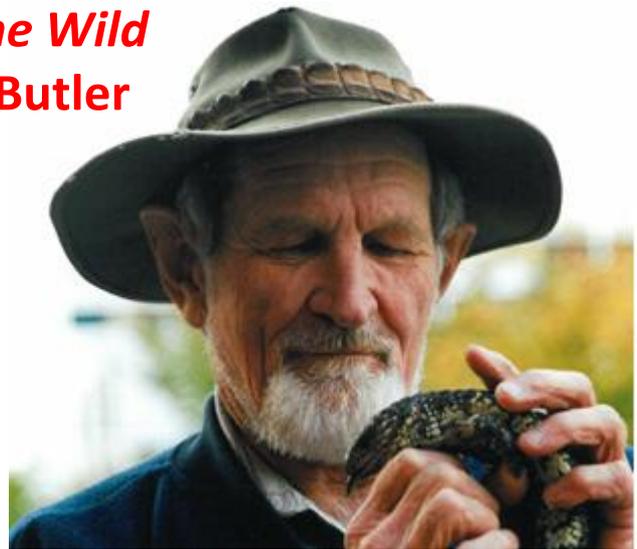
July 2010

Ken Walker – kwalker@museum.vic.gov.au



**Barrow Island, some 202 square kms,
is 90kms off the north Western Australian coastline
and is classified as a Class A Nature Reserve.**

**ABC TV Series: *In the Wild*
1976 – 1981 Harry Butler**

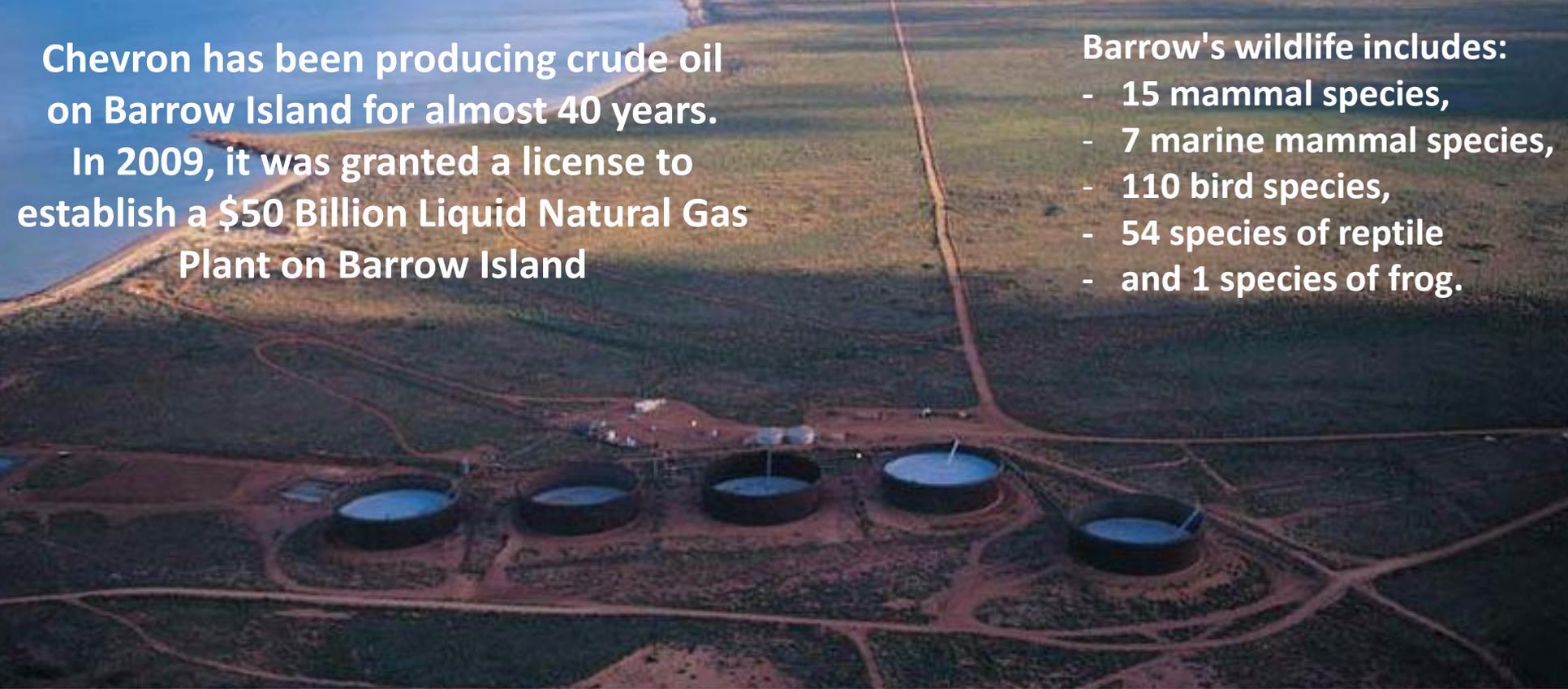


Chevron has been producing crude oil on Barrow Island for almost 40 years.

In 2009, it was granted a license to establish a \$50 Billion Liquid Natural Gas Plant on Barrow Island

Barrow's wildlife includes:

- 15 mammal species,
- 7 marine mammal species,
- 110 bird species,
- 54 species of reptile
- and 1 species of frog.



Quarantine Incursion Management is a significant condition on this mining license.

Chevron must demonstrate that
Non Indigenous Species (NIS) Incursions
are minimised, quickly recognised and
strategies are in place to deal with them.

Vertebrates



Invertebrates!

Quarantine Incursion Management

The best way to implement a

Quarantine Incursion Management Program

is to know what animals you have on the island.

We know the vertebrates but what about the
invertebrates?

So what happened?

Quarantine Incursion Management

Extensive invertebrate faunal surveys were conducted on Barrow Island between 2005 and 2007.

Queensland University of Technology

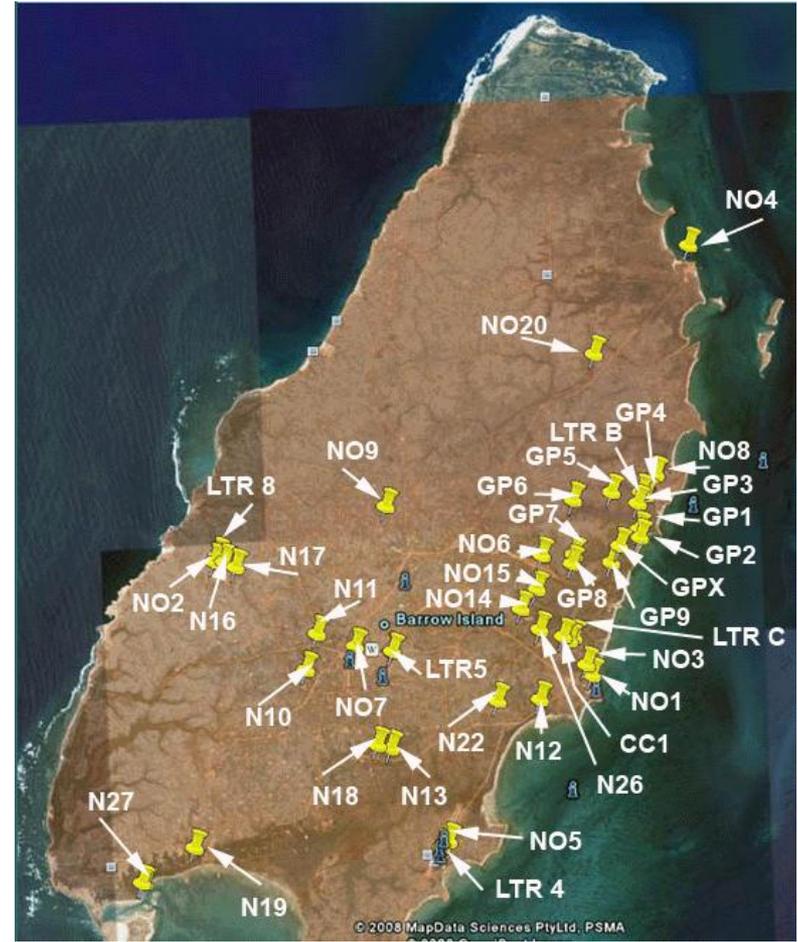
Maths Department developed a

trapping model for the Chevron

footprint on Barrow Island. It has

a theoretical capture success rate

of 95% or better.



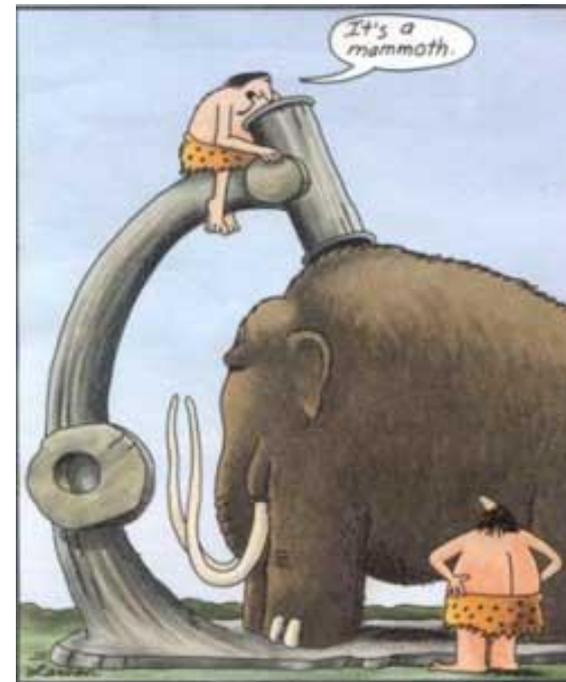
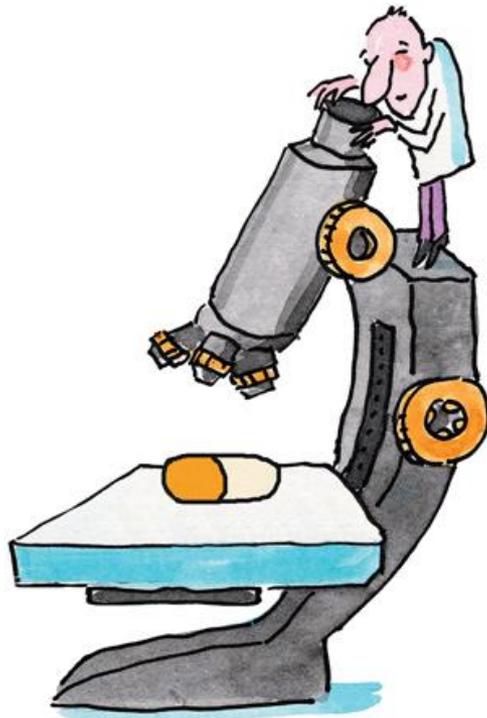
Quarantine Incursion Management

A wide range of collecting was done several times a year
And replicated between 2005 and 2007 -> 14,000 specimens.



Quarantine Incursion Management

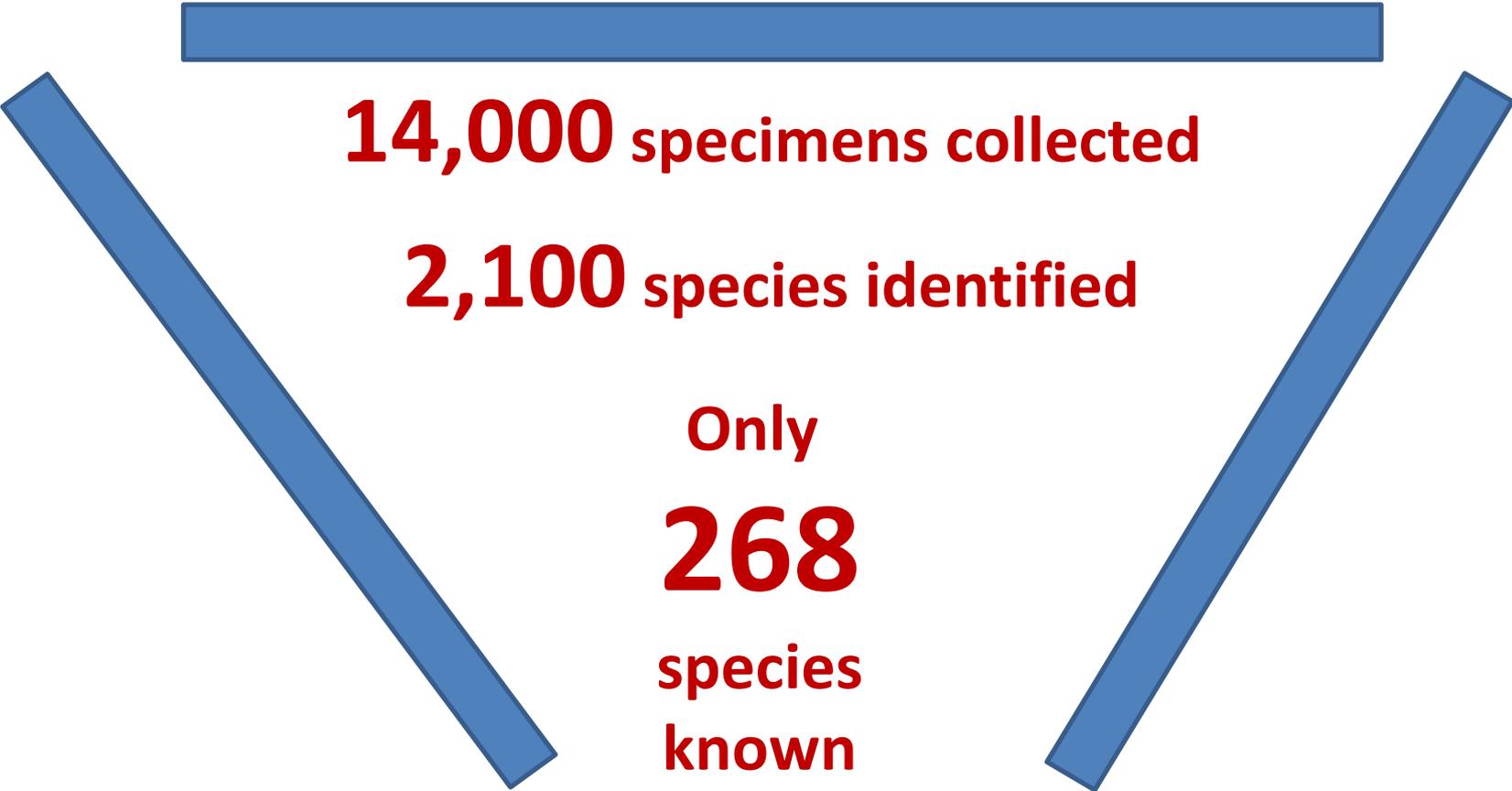
Australian and International taxonomists examined the 14,000 specimens and identified almost 2,100 species.



Early microscopes

Quarantine Incursion Management

The statistics are interesting:



14,000 specimens collected

2,100 species identified

Only
268
species
known

Quarantine Incursion Management

These specimens are now stored at
Curtin University and the WA Museum.



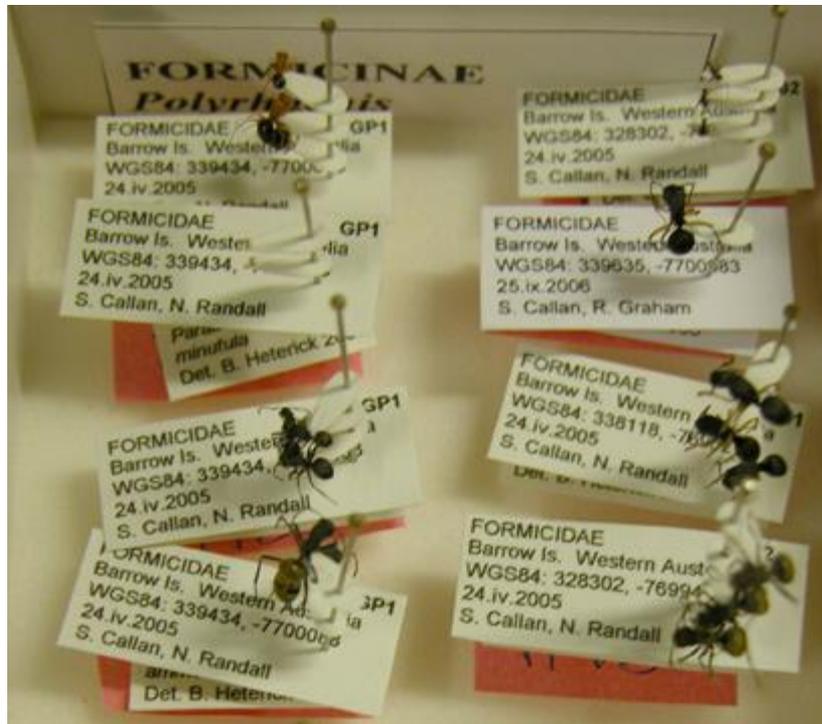
But how accessible
is this information
to assist with
Quarantine Management
on
Barrow Island?



And what about
its biodiversity value?

Quarantine Incursion Management

So, a few specimens of each species
and their full collection datasets were sent to the
Museum Victoria's



	A	B	C	D	E	F	G	H	I
1	SP. CODE	Aeni ceyl	Ambl s.ma	Anoc rect	Arno J 433	Camp capi	Camp cf. ex	Camp disc	Camp doni
2	GENUS:	Aenictus	Amblyopor	Anochetus	Arnoldius	Camponoti	Camponoti	Camponoti	Camponoti
3	SP./SUBSP./VAR.:		sp. male	rectangula	sp. JDM 4	capito	cf. evae (s)	discors	donnellani
4	SUBGENUS:								
5	008-Apr05	0	0	0	0	1	0	0	0
6	008-May05	0	0	0	0	0	0	1	0
7	017-Apr05	0	0	0	0	0	0	0	1
8	017-May05	0	0	0	0	0	0	0	0
9	022-Apr05	0	0	1	0	1	0	1	1
10	022-May05	0	0	0	0	1	0	0	0
11	045-Apr05	0	0	0	0	0	0	1	0
12	045-May05	0	0	0	0	1	0	0	0
13	105-Apr05	0	0	1	0	0	0	1	1
14	105-May05	0	0	0	0	0	0	1	1
15	ADM-May05	0	0	0	0	0	0	0	0
16	AIR-Apr05	0	0	0	0	0	0	0	0
17	AIR-May05	0	0	0	0	1	0	0	0
18	CC1-Mar05	0	0	1	0	1	0	0	0
19	CC1-Sep05	0	0	0	0	0	1	0	0
20	CC2-Mar05	0	0	0	0	1	0	0	0
21	CC2-Sep05	0	0	0	0	0	1	0	0
22	CON-May05	0	0	0	0	1	0	1	0
23	CTC-Apr05	0	0	0	0	0	0	1	1
24	CTC-May05	0	0	0	0	0	0	0	0
25	DMP-Apr05	0	0	0	0	0	0	0	0
26	DMP-May05	0	0	0	1	0	0	0	0
27	GP1-Mar05	0	0	0	0	0	0	1	0
28	GP1-Sep05	0	0	0	0	0	0	1	0
29	GP2-Mar05	0	0	1	0	0	0	0	1
30	GP2-Sep05	0	0	0	0	0	0	0	0
31	GP3-Mar05	0	0	0	0	0	0	1	0
32	GP3-Sep05	0	0	0	0	1	0	0	0

Quarantine Incursion Management

Biosecurity Diagnostic Image Capture Centre.

Our external collaborators

- Industry (Chevron)
- CRC National Plant Biosecurity

Our Motto: If it's not Digital, then it's Invisible!

Have provided:

- 3 Leica motorised microscopes
- 2 Leica digital cameras
- Image management software
- Montaging software
- 2 fulltime staff x 3 years

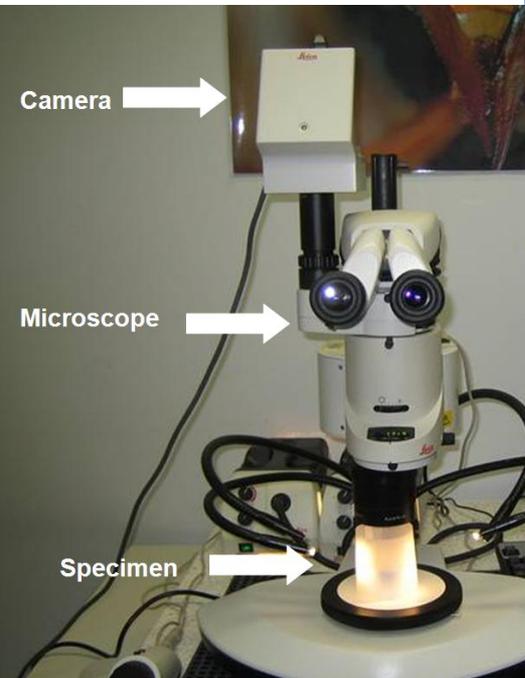
Museum Victoria has provided:

- Taxonomic expertise
- Access to collections
- World wide Museum Networks
- Built the website



Quarantine Incursion Management

Image Montaging



Quarantine Incursion Management

Image Montaging

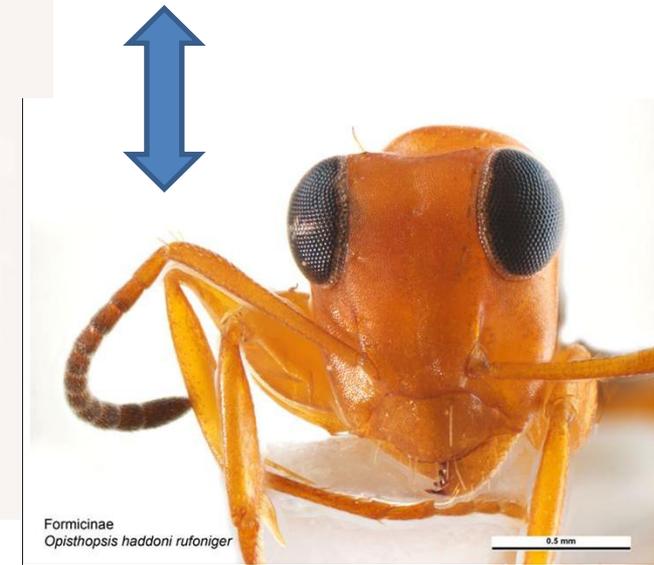
Single image

A Montaged Image from 40 single images



Quarantine Incursion Management

We have now over 10,000 BWI montaged images



Quarantine Incursion Management

We have now over 10,000 BWI montaged images



Lycidas sp. 6 Jumping Spider - Lycidas sp. 6



Minasteron minusculum Ground Spider - Minasteron minusculum



Miturgidae Genus 1 sp. 1 Long-legged Spiders - Miturgid Genus 1 sp. 1

Quarantine Incursion Management

We have now over 10,000 BWI invertebrate images

Springtail - *Pseudanurida* sp cf *billitonensis* ⓘ *Pseudanurida* sp cf *billitonensis*



Springtail - *Rastriopes* sp ⓘ *Rastriopes* sp

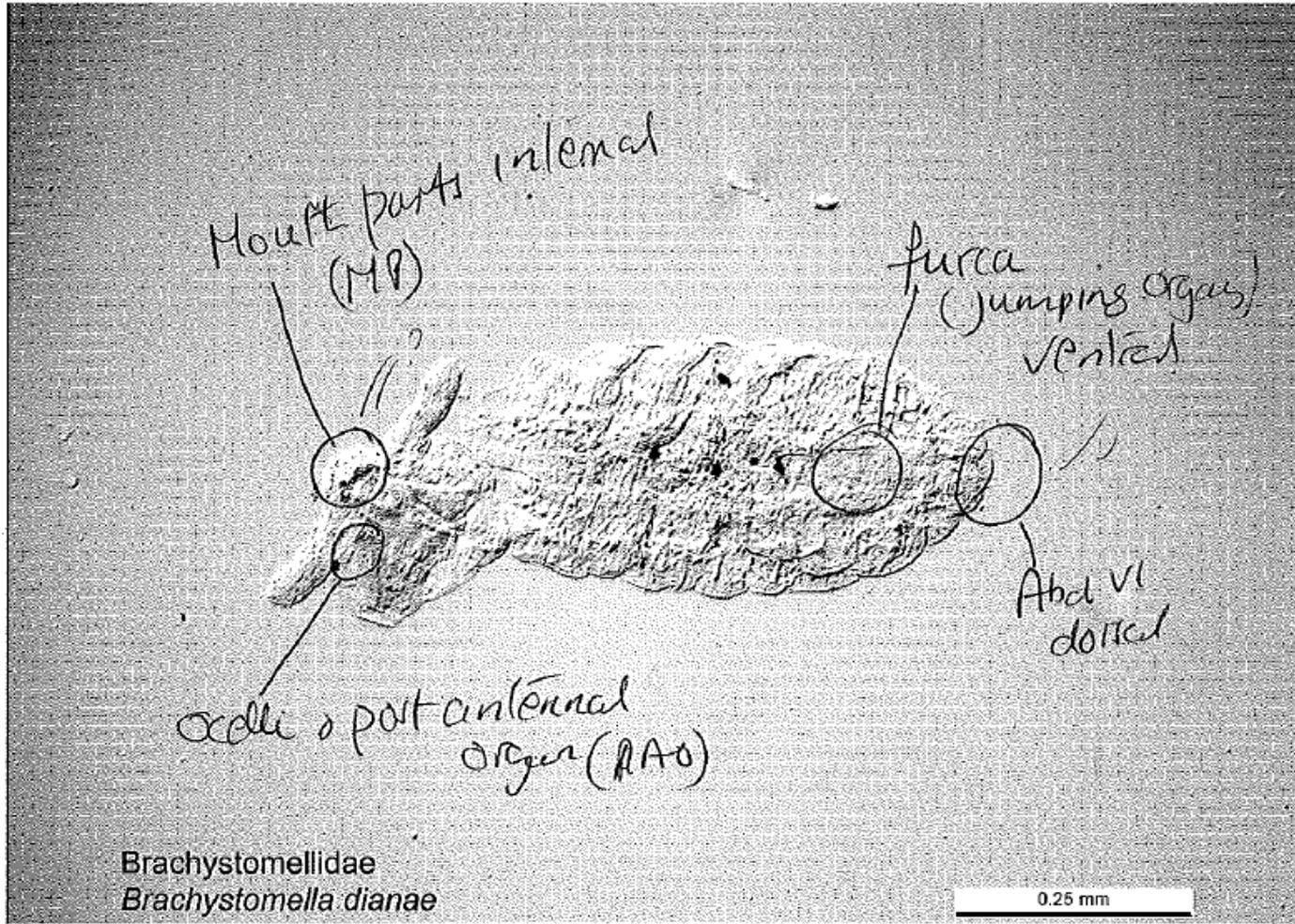


Springtail - *Seira* sp cf *queenslandica* ⓘ *Seira* sp cf *queenslandica*



Quarantine IncurSION Management

A Collembola world expert marked diagnostic characters



Quarantine Incursion Management



Quarantine Incursion Management

Each species has its own web page with a series of diagnostic images

[Print Friendly Fact Sheet](#)
[Email to a Friend](#)

Ants - BI	Giant pennant ant - <i>Tetramorium sjostedti</i> <i>Tetramorium sjostedti</i> Forel (Hymenoptera: Formicidae: Myrmicinae)	Status Present on Barrow Island
------------------	--	--

Lateral image
Zoomify
VIEW LARGER IMAGE



Myrmicinae
Tetramorium sjostedti

Caption: Western Australia: Barrow Island
Source: Lucinda Gibson [Museum Victoria](#)

Citation: Gibson, L. (2010) Giant pennant ant - *Tetramorium sjostedti* (*Tetramorium sjostedti*) Pest and Diseases Image Library. Updated on 6/4/2010 8:44:09 AM. Available online: <http://www.padil.gov.au>

Created Date: 10/20/2008 2:43:49 PM

Last Updated: 6/4/2010 8:44:09 AM

Diagnostic Images



Dorsal view



Head front



Head side



Lateral view

[Distribution](#) | [Hosts](#) | [Linkouts](#) | [Diagnostic Images](#) | [Google Maps](#)

Quarantine Incursion Management

Each image can be enlarged

Species Diagnostic Images [Print Friendly Fact Sheet](#)
[Email to a Friend](#)

Ants - BI	Giant pennant ant - <i>Tetramorium sjostedti</i> <i>Tetramorium sjostedti</i> Forel (Hymenoptera: Formicidae: Myrmicinae)	Status Present on Barrow Island
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Caption: Western Australia: Barrow Island
Source: Lucinda Gibson [Museum Victoria](#)

[Distribution](#) | [Hosts](#) | [Linkouts](#) | [Diagnostic Images](#) | [Google Maps](#)

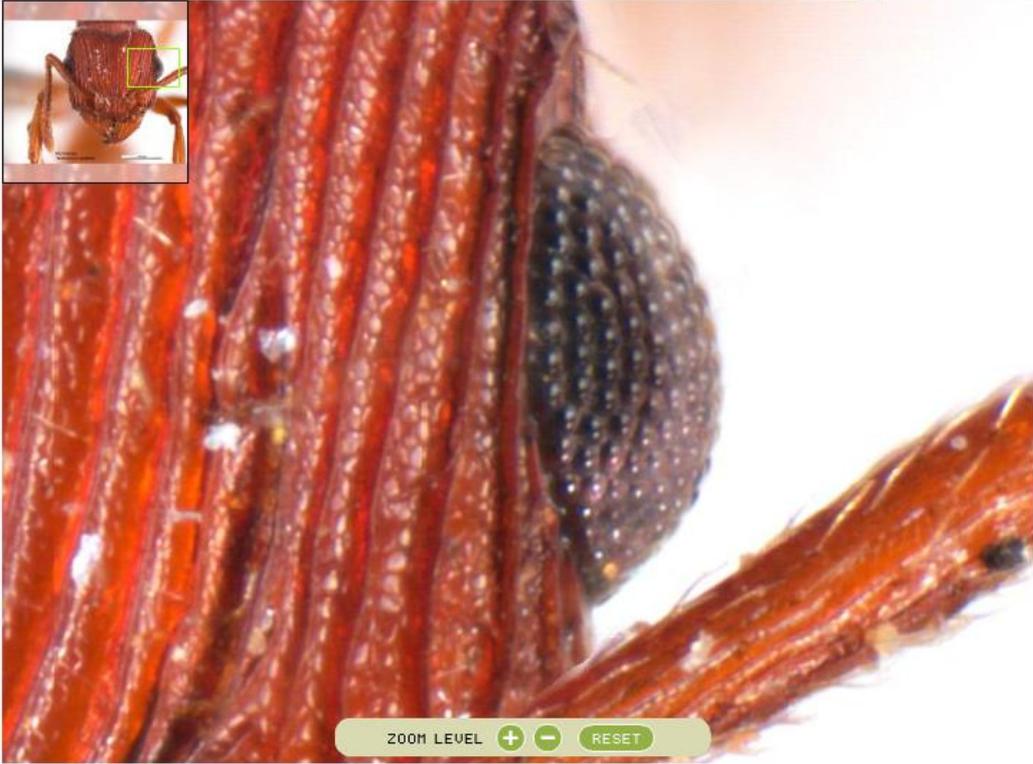
Quarantine Incursion Management

Each image can be zoomified!

Zoomify [Print Fact Sheet](#)
[Email to a Friend](#)

Ants - BI Giant pennant ant - *Tetramorium sjostedti*
Tetramorium sjostedti Forel (Hymenoptera: Formicidae: Myrmicinae) **Status**
Present on Barrow Island

[BACK TO IMAGES](#)



200% LEVEL + - RESET

[Distribution](#) | [Hosts](#) | [Linkouts](#) | [Diagnostic Images](#) | [Google Maps](#)

What data do we have and how can we use it?

Every species provides:

Scientific Name & Taxonomic Hierarchy

Order: Hymenoptera: Family: Formicidae: Subfamily Formicinae



Formicinae
Camponotus fideae

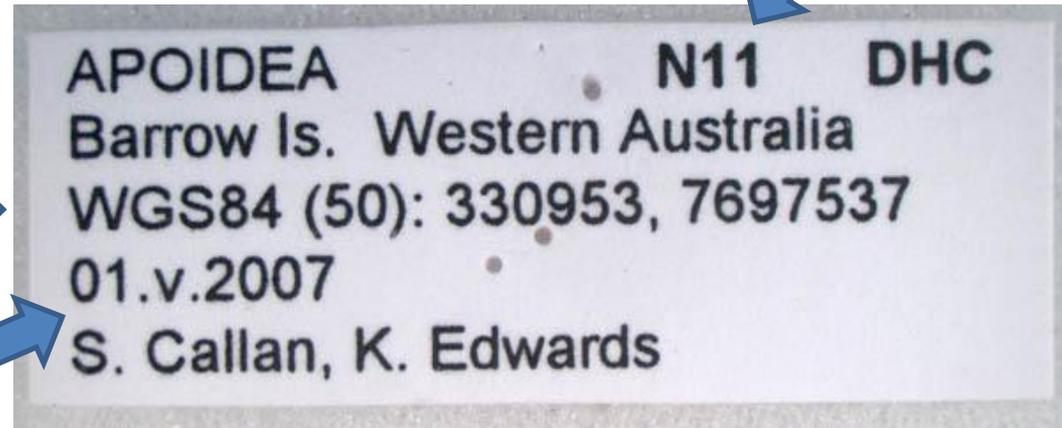


What data do we have and how can we use it?

Every data label provides:

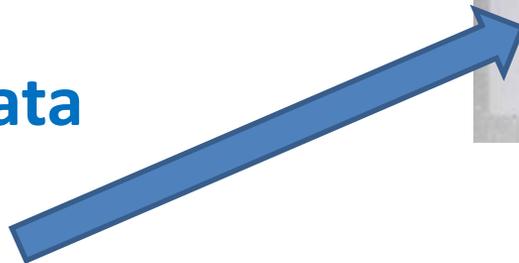
Collection location code

Spatial coordinates



Temporal data

- Month
- Year



What data do we have and how can we use it?

Database the Raw available data

Scientific Name
Taxonomic Hierarchy



Collection
location
code



```
Order: Hymenoptera          Family: Hym - Formicidae Formicinae
Genus: Camponotus          Subgenus:
Species: fieldae           Subspecies:
Author: Forel

Storage Medium: c          SRating: 3

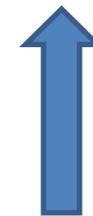
Locality & Collector:      Uniq Locality Identifier:
Western Australia: Barrow Island, N11, Former 'ODE' camp
1 May 2007, S. Callan, K. Edwards
Ranged Date items: Month (1-12): 5 Year: 2007 Ref Site 20 48, 115 22
Place N11
State No. Latitude: 20 Deg 48 Min S Longitude: 115 Deg 22 Min E
```

Temporal
data

- Month
- Year

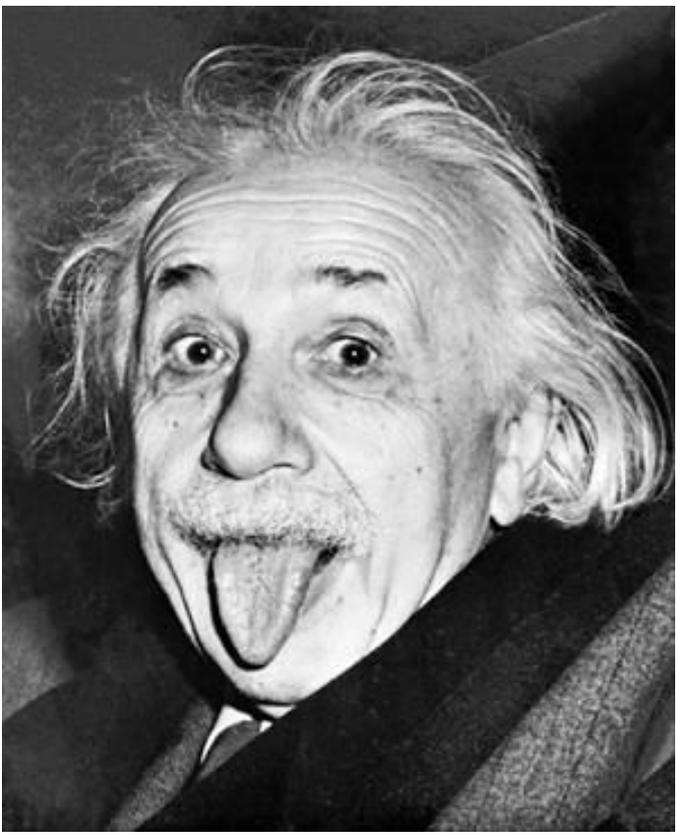


Spatial coordinates



**“Imagination is more important than knowledge”
Albert Einstein.**

**“Knowledge is power.”
Sir Francis Bacon**



Effective Web Searching?

The web world has offered two search paradigms:

- Navigational or Hierarchical search (taxonomy)

which enables users to browse the information by narrowing the scope of their query in a predetermined order.

Arthropod/nematode/pathogen information:

Scientific name:*

Aggregate summary by **taxon** details

Order	equals <input type="text"/>	<input type="text"/>
Family	equals <input type="text"/>	<input type="text"/>
Genus	equals <input type="text"/>	<input type="text"/>
Species	equals <input type="text"/>	<input type="text"/>
Infraspecific Taxa	equals <input type="text"/>	<input type="text"/>
Common Name*	equals <input type="text"/>	<input type="text"/>

- Direct search allows users to simply write their queries as a bag of words in a text box. This approach has been made popular by Web search engines.



[Advanced Search](#) [Language Tools](#)



“Knowledge is power.”

Uni-dimensional Searches

Select data sources

Click checkboxes to select data sources.

ANIC
 ASCU
 BSES
 FCNI
 ICDB
 NTEIC
 QDPIF
 TFIC
 TPPD
 UQIC
 VAIC
 WACALM
 WINC
 APDD
 WAC

[Select all sources](#)
[Deselect all sources](#)

Navigational Hierarchical

Arthropod/nematode/pathogen information:

Scientific name:*

Aggregate summary by **taxon** details

Order: equals

Family: equals

Genus: equals

Species: equals

Infraspecific Taxa: equals

Common Name*: equals

[Reset taxon details](#)



[Data source refresh status](#)

Host Information

Scientific name:*

Aggregate summary by **host** details

Family: equals

Genus: equals

Species: equals

Infraspecific Taxa: equals

Common Name*: equals

Substrate*: equals

[Reset host details](#)



Location

State: Town: equals

Collection date:

From: (yyyy) - To: (yyyy)

AUSTRALIAN PLANT PEST DATABASE

Search databases: ANIC 0, ASCU 0, BSES 0, FCNI 0,
Total records returned: 0.

Original query:

Pest genus: *Bactrocera*
Pest species: *papayae*
Host family: *Compositae*

Results ordered by: *Pest genus, pest species*

No.	Database	Count
Total count:		0



[Web](#) [Images](#) [Videos](#) [Maps](#) [News](#) [Books](#) [Mail](#) [more](#) ▼



"bactrocera papayae compositae"

Everything
More

⚠ No results found for "bactrocera papayae compositae".

Direct text

“Knowledge is power.”

Uni-dimensional Navigational Searches - Science websites

Department of **Entomology**  Smithsonian National Museum of Natural History

Search the Department of Entomology Collections

Detailed Search of the Department of Entomology Collections

Enter or select appropriate terms in the boxes below and click on the "Search" button. To return to the Basic Search screen search form.

Please be aware that searches on a single, broad term may produce very large result sets following long processing times. searches with additional terms is strongly advised. It is also possible to create searches that will produce no results, e.g. "C" "Odonata" and "Apidae". Partial words may be entered using an asterisk (*) wildcard, however such searches may be quite you choose to enter more than one term in a field, only records including both terms will be returned.

Currently results lists are sorted by taxonomic group and limited to 2000 records.

Enter search term(s)...

List only items with images

USNM Number [e.g. 70791]

Barcode [e.g. 00391587]

Collection [Use to select primary types]

Class [Select from list]

Order [Select from list]

Family [Up to 3 leading characters narrows lookup]

Scientific Name [e.g.: Ceratina amabilis OR Ceratina OR amabilis]

Country [Select from list; e.g. United States]

Province/State/Territory [e.g. Arizona]

District/County [e.g. Pima]

Collector(s) [e.g. Jordan, D.S.]

Collection Date [e.g. 13-Aug-1953 or Aug-1953 or 1953]

Records per page

List only items with images

NATURAL HISTORY MUSEUM  Research and curation | Business centre | About us | Search

NaturePlus  [Login](#) | [Register](#) | [Browse](#)

[Home](#) | [Visit us](#) | [Nature online](#) | [Kids only](#) | [Education](#) | [Take part](#) | [Buy online](#) | [Tring](#)

You are here: [Home](#) > [Research and curation](#) > [Collections](#) > [Departmental collections](#) > [Entomology collections](#) > [Search database](#)

Entomology collection database

Index Lot search | **Specimen search**

Enter your search criteria into the form below and select search.

Taxon:

Type status:

Specimen number:

Preservation:

Sex:

Stage:

Collection locality:

Records per page:

Toolbox Print version Email a friend

Lessons from e-commerce – Faceted Searching



Whenever the customer puts in a query term:

- Only show categories relevant to that query term
- Only display available stock for the query term

The screenshot shows the Amazon.com search results for the query 'car'. The search bar at the top contains 'car'. Below the search bar, there are navigation links for 'Shop All Departments', 'Search', and 'All Departments'. The main content area displays a list of products, including 'Little Tikes Cozy Coupe 30th Anniversary Car', 'Cars (Full Screen Edition)', and 'Hot Wheels 10 Car Pack'. The left sidebar shows department filters like 'Toys & Games', 'Music', and 'Books'. The bottom of the page features an advertisement for 'MUSEUM VICTORIA'.



Shopping Cart

Display product

The screenshot shows the eBay.com.au search results for the query 'car'. The search bar at the top contains 'car'. Below the search bar, there are navigation links for 'Categories', 'Motors', 'Real Estate', 'Pets', 'The Big Deal', and 'Store'. The main content area displays a list of products, including 'Audi Stainless Steel Car K 3D', '2008 Lamborghini Gallardo M' Bsp M', and 'Nissan GTR 35 Stainless Steel Ring 3D'. The left sidebar shows a 'Refine search' section with 'Categories' and 'Cars, Bikes, Boats'. The bottom of the page features an advertisement for 'Chevron'.

Query term



Lessons from e-commerce – Faceted Searching

Home ▸ Barrow Island ▸ Search

Search

Multi-dimensional search engine:

Save As Explore Item...

Search Text [Show](#)

Search Taxonomic Classification [Show](#)

Search Facets [Show](#)

Search Nested Library Facets [Show](#)

Search By Map [Show](#)

Text

Navigational Hierarchical Query

User defined facets

Spatial

Start Your Search

To perform a search:

- Enter some text to search for;
- Select a taxonomic classification;
- Select a facet option;
- Select an area on the map;
- or any combination of these options.

Other options:

- [Explore Barrow Island](#)

Shopping Cart

Selected Species

No Species Selected

Clear All

Click To Compare

“Imagination is more important than knowledge”^{PaDIL}



Albert Einstein.

**I'm at the Barrow Is airport
and it's 11pm.
I've just found an ant nest
at the base of tree and
the ants are tending aphids.
I can clearly see that the
ants have 1 petiole segment
on the abdomen.**

- (1. User defined Spatial area)**
- (2. Temporal data)**
- (3. Common /Classification)**
- (4. Nesting Strategy)**
- (5. Feeding strategy)**

- (6. Morphological character)**

**Is this a new incursion record for Barrow Island? Show me
Barrow Island ant species with images for these variables.**



“Imagination is more important than knowledge” PaDIL

Albert Einstein.

Search Taxonomic Classification **Hide**

All (111 species)
Hymenoptera (111 species)

All (111 species)
Dryinidae (1 species)
Formicidae (110 species)

All (110 species)
Aenictinae (1 species)
Cerapachyinae (5 species)
Dolichoderinae (21 species)

Search Nested Library Facets **Hide**

Nested Library: Ant SubFamily Key (104 species)

Antennae: Basal attachments not obscured (42 species), Basal attachments obscured by lobes (28 species)

Gaster shape: Second segment not strongly arched (69 species), Second segment strongly arched (1 species)

Head shape: Long and parallel sided (1 species), Not long or parallel sided (69 species)

Petiole: A single, distinct segment (39 species), Attached with two segments (31 species)

Group

Ants (111 species)
Bees (12 species)
Beetles (199 species)
Booklice (18 species)
Bugs (118 species)

Search Text **Show**

Search Taxonomic Classification **Show**

Search Facets **Show**

Search Nested Library Facets **Show**

Search By Map **Show**

(3. Common name Classification)

(6. Morphological character)

(1. User defined Spatial area)

(5. Feeding strategy)
(2. Temporal data)
(4. Nesting Strategy)

Nested Library: Formicinae ant behaviours (35 species)

Feeding strategies: Herbivores (23 species), Omnivores (23 species), Parasitic (1 species), Predators (34 species), Scavengers (10 species)

Foraging times: Seen during the day (24 species), Seen during the night (19 species)

Nest locations: Arboreal (1 species), Below ground (34 species), Nest entrance exposed (32 species), Nest entrance sheltered

Map Satellite Hybrid

1 mi
2 km

POWERED BY Google Imagery ©2010 DigitalGlobe, Cnes/Spot Image, GeoEye, Map data ©2010 MapData Sciences Pty Ltd, PSMA - Terms of Use

“Imagination is more important than knowledge” PaDIL 

Multi-dimensional Query string

Albert Einstein.

3 results found for **Formicinae ant behaviours**, **Ants**, **Seen during the night**, **Scavengers**, **Below ground**, **Nest entrance sheltered**, **A single, distinct segment**, **Species Within -20.8471, 115.3952, -20.8724, 115.4232** (0.0658502 seconds)

Start New Search

RSS feed

Scientific Name Common Name Taxonomy Relevance Date Added 10 20 30 PDF CSV RSS

Select To Compare All

			Sugar ant - <i>Camponotus capito</i> <i>Camponotus capito</i> Mayr (Hymenoptera: Formicidae: Formicinae) Present on Barrow Island High	Added
			Sugar ant - <i>Camponotus discors</i> <i>Camponotus discors</i> Forel (Hymenoptera: Formicidae: Formicinae) Present on Barrow Island High	Added
			Sugar ant - <i>Camponotus simpsoni</i> <i>Camponotus simpsoni</i> McArthur (Hymenoptera: Formicidae: Formicinae) Present on Barrow Island High	Added

Selected Species

Camponotus capito

Remove

Camponotus discors

Remove

Camponotus simpsoni

Remove

Shopping Cart

Clear All

Click To Compare

“Imagination is more important than knowledge”^{PaDIL} 

Albert Einstein.

Subscribe to this feed using Always use Live Bookmarks to subscribe to feeds.

PaDIL species matching Formicinae ant behaviours, Ants, Seen during the night, Scavengers, Below ground, Nest entrance sheltered, Species Within -20.8344, 115.3832, -20.8826, 115.4347

PaDIL species search within Barrow Island

[Sugar ant - Camponotus discors](#)

Friday, 26 December 2008 10:41 PM

Species Details

Common Name: *Sugar ant - Camponotus discors*
Scientific Name: *Camponotus discors*
Author: Forel
Taxonomy: (Hymenoptera: Formicidae: Formicinae)

Images



[View Species in PaDIL](#)

[Sugar ant - Camponotus capito](#)

Thursday, 25 September 2008 1:38 PM

Species Details

Common Name: *Sugar ant - Camponotus capito*
Scientific Name: *Camponotus capito*
Author: Mayr
Taxonomy: (Hymenoptera: Formicidae: Formicinae)

Images



[View Species in PaDIL](#)

[Sugar ant - Camponotus simpsoni](#)

Thursday, 25 September 2008 1:12 PM



An RSS feed will alert you to any new additions that match your query string.

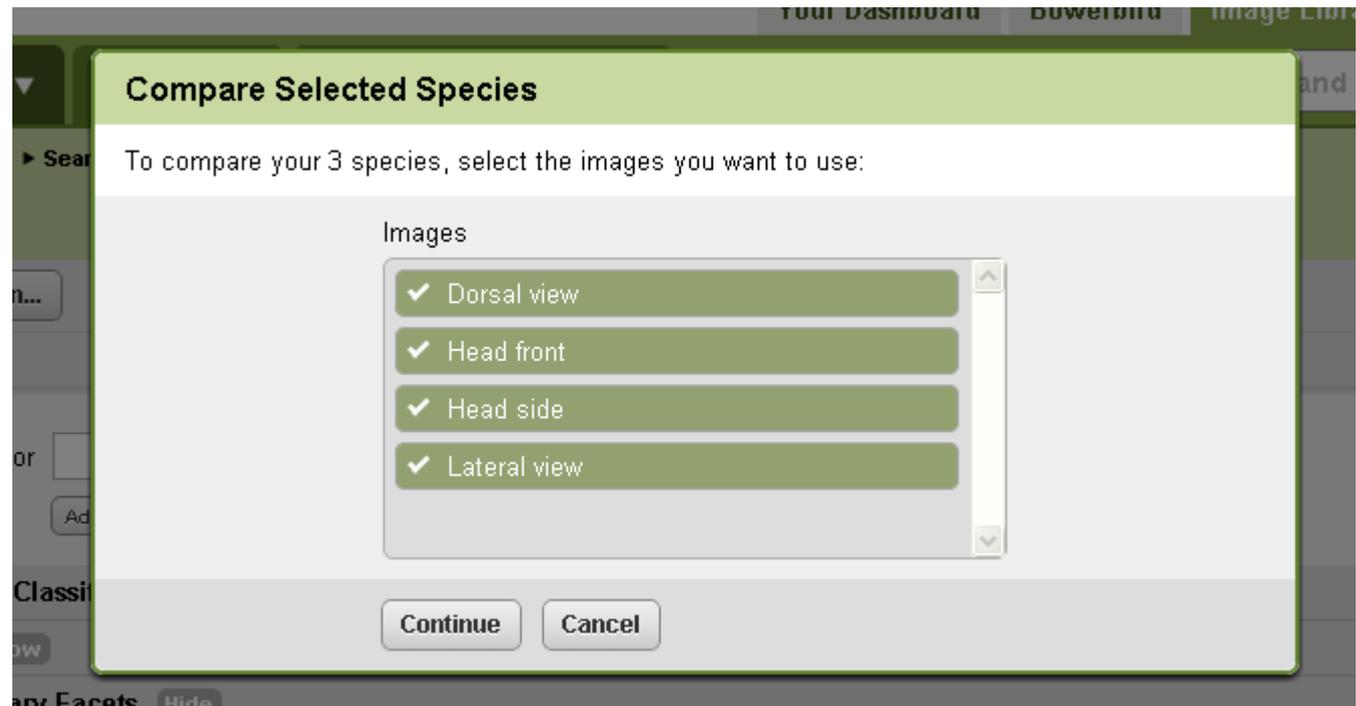


“Imagination is more important than knowledge”^{PaDIL} 

Albert Einstein.

“Shopping Cart”

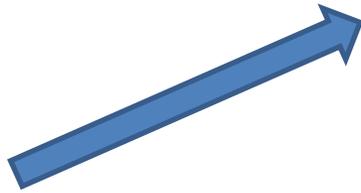
You select what images you want to compare



“Imagination is more important than knowledge” PaDIL 

Albert Einstein.

A Comparative Image table is built in real-time to your selections.



You can save these results to your *Personal Dashboard.*

Save As... Save As Explore Item... Change Selected Species Reset Character States Exit Full Screen

Dorsal view (All) Head front (All) Head side (All) Lateral view (All)

Sugar ant - *Camponotus capito* *Camponotus capito*

Sugar ant - *Camponotus discors* *Camponotus discors*

Sugar ant - *Camponotus simpsoni* *Camponotus simpsoni*

“Imagination is more important than knowledge”^{PaDIL} 

Albert Einstein.

Saved to your personal dashboard.

Your Dashboard | Manage Image Libraries ▾ | Manage Enquiries | Global Settings

Home ▶ Your Dashboard

Your Dashboard

Inbox

From	Subject	Sent
No Messages		

Task Shortcuts

- Start New Comparison
- Make New Identification Enquiry

Your latest comparisons

Name	Image Library	Details		
Airport Night Ants	Barrow Island	3 species, 4 characters	Edit Comparison	Edit Name
Cockroaches at Accommodation Centre	Barrow Island	20 species, 5 characters	Edit Comparison	Edit Name
NIS Barrow Checklist	Barrow Island	16 species, 15 characters	Edit Comparison	Edit Name

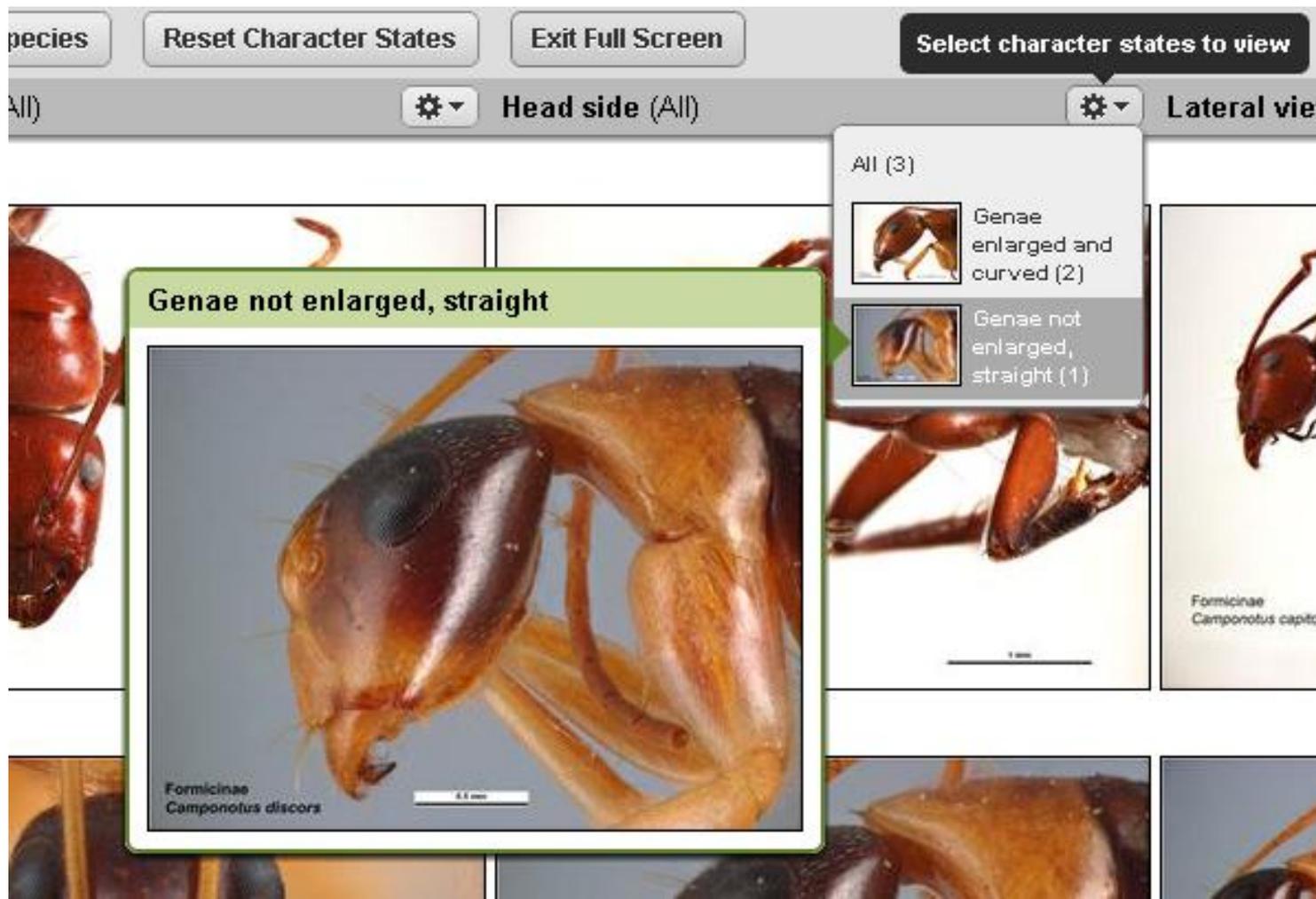
[View All Your Comparisons »](#)



“Imagination is more important than knowledge”^{PaDIL} 

Albert Einstein.

If you return with a specimen for examination under a microscope,
Character State analysis can be used to identify to species.



“Imagination is more important than knowledge” PaDIL



Albert Einstein.

Think of the possibilities to play with the data!



Exotic Status

- Non Indigenous Species to Barrow Island (12 species)
- Present on Barrow Island (213 species)

Group

- Ants (55 species)
- Beetles (15 species)
- Centipedes (3 species)
- Cockroaches (8 species)
- Flies (63 species)

Show me the fauna at the accommodation centre.

Feeding strategies

- Herbivores (12 species)
- Omnivores (12 species)
- Parasitic (1 species)
- Predators (17 species)
- Scavengers (5 species)

Foraging times

- Seen during the day (13 species)
- Seen during the night (9 species)

Nest locations

- Arboreal (1 species)
- Below ground (17 species)
- Nest entrance exposed (16 species)
- Nest entrance sheltered

Propodeum and Petiole

- With spines (5 species)
- Without spines (12 species)

Sting

- Absent (25 species)
- Present (23 species)



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Albert Einstein.

Think of the possibilities!

Show me the known native bee fauna on the Vic / SA border and their plant-host associations.



Search Taxonomic Classification Hide

All (58 species)

Hymenoptera (58 species)

Apidae (3 species)

Colletidae (18 species)

Halictidae (31 species)

Megachilidae (6 species)

Search Facets Hide

Bio-Region: Australasian - Oceanian (58 species)

Host Family: Aizoaceae (10 species), Amaranthaceae (6 species), Anacardiaceae (11 species), Asteraceae (4 species)

Host Type: Cleptoparasitic (1 species), Fresh Flowers (57 species)

Status: Native Australian Beneficial Species (58 species)

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Albert Einstein.

Think of the possibilities!

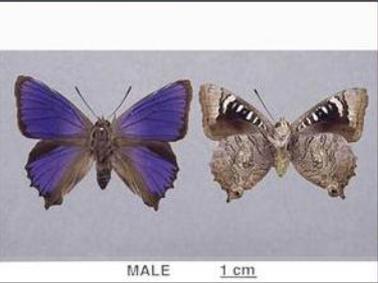
Show me Victorian butterflies with ant associations from some area.

Adult Male (All) Egg dorsal (All) Egg lateral (All) Larva (All) Pupa (All)

Imperial Hairstreak *Jalmenus evagoras*



Southern Purple Azure *Ogyris genoveva*



Bright Copper *Paralucia aurifer*



Think of the possibilities!

1	species	institutionC	collectionCo	catalogue	basisOfRe	longitude	latitude
2	Araneus rhombocephalus	WAM	ARACH	88936	specimen	115.449	-20.7975
3	Ardea sacra	WAM	AVIF	31944	specimen	115.4	-20.7666
4	Ardea sacra	WAM	AVIF	31945	specimen	115.4	-20.7666
5	Ardea sacra	WAM	AVIF	31946	specimen	115.4	-20.7666
6	Argiope protensa	WAM	ARACH	89179	specimen	115.386	-20.8163
7	Argiope protensa	WAM	ARACH	89161	specimen	115.462	-20.7791
8	Argiope protensa	WAM	ARACH	88863	specimen	115.452	-20.7958
9	Argiope protensa	WAM	ARACH	57666	specimen	115.377	-20.8458
10	Carlia triacantha	WAM	REPT	119564	specimen	115.367	-20.75
11	Carlia triacantha	WAM	REPT	45413	specimen	115.467	-20.7833
12	Carlia triacantha	WAM	REPT	45731	specimen	115.467	-20.7833
13	Chelonia mydas	WAM	REPT	133184	specimen	115.4	-20.8
14	Chelonia mydas	WAM	REPT	133186	specimen	115.4	-20.8
15	Chelonia mydas	WAM	REPT	133185	specimen	115.4	-20.8
16	Chelonia mydas	WAM	REPT	112132	specimen	115.4	-20.7666
17	Chelonia mydas	WAM	REPT	112131	specimen	115.4	-20.7666

Normal Satellite Save image Reset map

Occurrence information

Scientific name: *Monomorium disetigerum*
 Family: [Formicidae](#)
 Longitude: 115.472 , Latitude: -20.7247
 Occurrence date:
 Species Occurrence [View details](#)

species in active area: 451 (first 200 listed)

family	species	common name
Acanthuridae	<i>Naso mcdadei</i>	Squarenose Unicornfish
Accipitridae	<i>Circus assimilis</i>	Spotted Harrier
Accipitridae	<i>Haliaeetus leucogaster</i>	White-bellied Sea-eagle
Accipitridae	<i>Haliastur indus</i>	Brahminy Kite
Accipitridae	<i>Haliastur sphenurus</i>	
Acroporidae	<i>Acropora aspera</i>	
Acroporidae	<i>Acropora cerealis</i>	
Acroporidae	<i>Acropora digitifera</i>	
Acroporidae	<i>Acropora hyacinthus</i>	
Acroporidae	<i>Acropora latistella</i>	
Acroporidae	<i>Acropora nasuta</i>	



5 km 2 mi Lon: 115.55351 Lat: -20.73171

BowerBird



About

Identification Enquiries

Community Groups

Uploads

Secure

BowerBird answers the need in Biosecurity and Biodiversity for access to a shared, socially networked workspace.

The primary aim is to connect users with experts and act as an identification screening aid.





Ability for Biosecurity or Biodiversity or Citizen Science To request identification assistance.

- About
- Identification Enquiries
- Community Groups
- Uploads
- Secure

BowerBird Your Identification Enquiries ▾

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Make Identification Enquiry

◀ Identification Enquiries

Use the form below to send an identification enquiry.

Identification Enquiry Details

From **Ken Walker**

Specimen Details

Specimen Type

- Egg
- Larvae
- Pupa
- Adult

(Required). More than one option is allowed. Hold down the Ctrl key in Windows or Command key on Mac and click on the items to select.

Storage Method
(Required)

Location
(Required)

Latitude

Longitude
Enter latitude and longitude in decimal degrees or degrees, minutes and seconds.

Commodity
(Required)

Priority
(Required)

Images

Please upload any images which may be of assistance in identification.

Image Upload head front.jpg
The image file must be in JPG or PNG format.

Requested Service

Service Type Identification Screening Aid
If you have a preferred expert, please include their name and details, as well as any other information in the message box below.

Remote Microscope Diagnostic Session
If you have a preferred date and time for the requested remote microscope diagnostic session, please specify your preference as well as any other information in the message box below.

Message

Please identify this ant as a matter of urgency as I believe it to be an new NIS incursion.

Bambi.

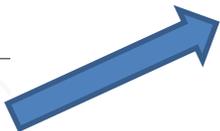
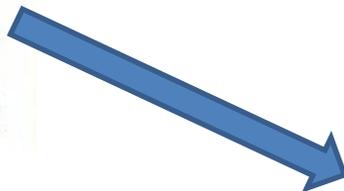
(Required). Please describe in detail why you need assistance and details about the problem.



BowerBird



ATLAS OF **LIVING**
AUSTRALIA
sharing biodiversity knowledge



About

Identification Enquiries

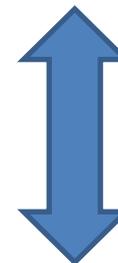
Community Groups

Uploads

Secure



CRC **PLANT** biosecurity



MUSEUM VICTORIA



Australian
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Remote Microscope Diagnostics

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Remote Microscope Diagnostics

About

Make an Identification Enquiry

Upload Images

RMD Facilitated Training

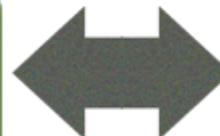
Contact



SPECIMEN



INTERNET



EXPERT

Remote Microscope Diagnostics or RMD facilitates pest identification by connecting microscopes with computers over the internet - users share live images with experts in real time around the world.

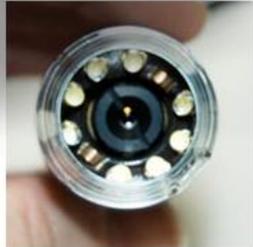


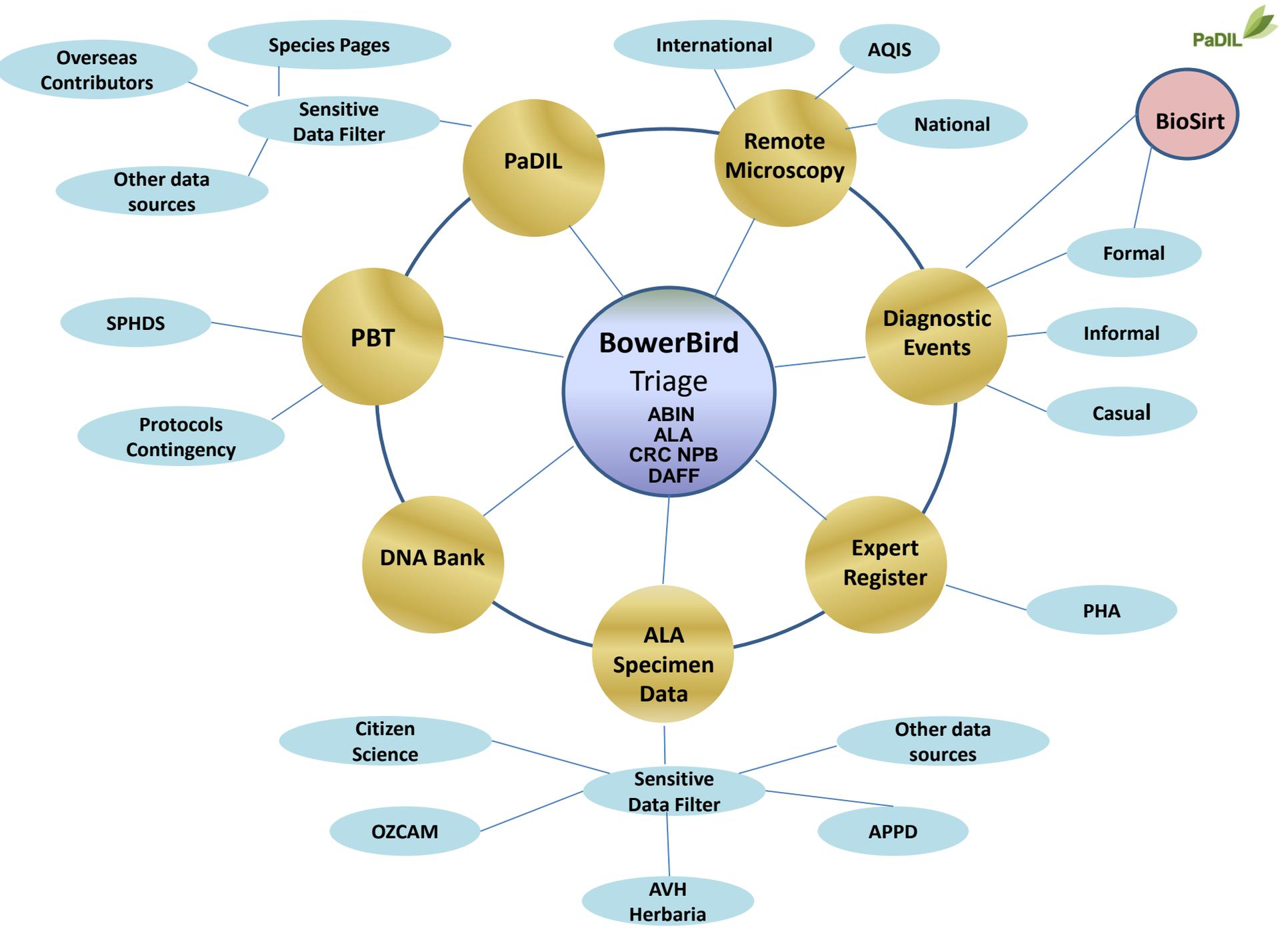


REMOTE MICROSCOPE DIAGNOSTICS



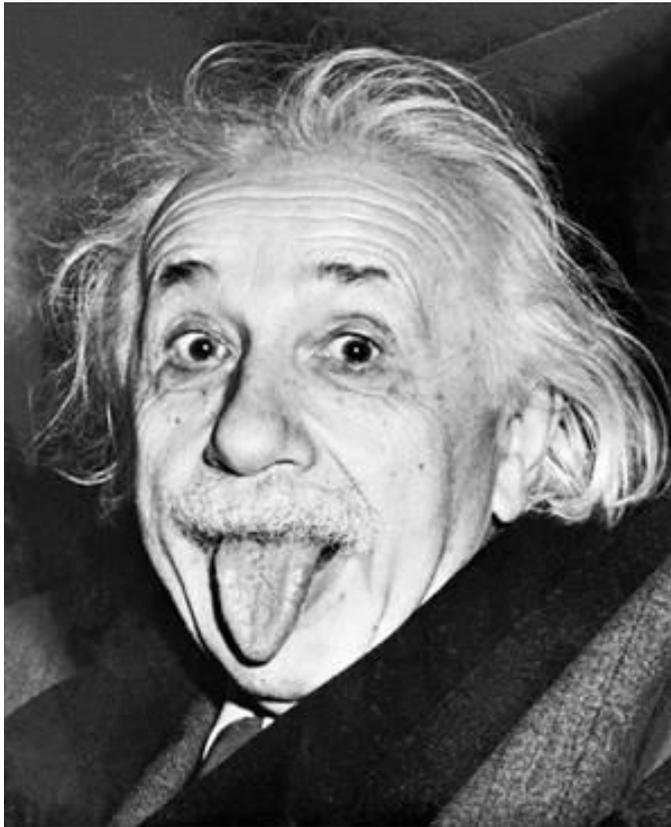
HI-SPEED
CERTIFIED **USB**





Biosecurity ↔ Industry ↔ Biodiversity

“Imagination is more important than knowledge”
Albert Einstein.



“Knowledge is power.”
Sir Francis Bacon

