



Terrestrial Biodiversity Information in Western Australia

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Scene Setting

Where

What

What do we know

Future

Parochially & Unashamedly…… Plants & Pilbara!

WA Biodiversity Information Landscape

WA is BIG

- Covers 22° Lat, 13° Long, 2.65M km² in area, 21,800 km of coastline
- Diversity of climatic regimes, landforms, geologies & regolith
- 26 Bioregions, 53 subregions
- South West Botanical Province is International biodiversity hotspot
- Pilbara is International subterranean fauna biodiversity hotspot
- 8 nationally recognised terrestrial biodiversity hotspots
- 3 natural World Heritage areas

Unique, rich and diverse biota & ecosystems

vascular plants ~12,500 60% endemic
cryptogams ~2,276 150,300 estimated
mammals ~145 35% endemic
reptile ~450 40% endemic
~550 birds
troglofauna 960+ 100% endemic
stygofauna 2,000+ 99% endemic
vegetation associations ~950

WA Biodiversity Information Landscape

Long history of collection

Plants:

3 taxa / 3 vouchers (September 1699)

13,708 taxa / 752,000 vouchers (FloraBase - June 2015)

1.05M vouchers (AVH - April 2016)

Animals:

422,000 vouchers (April 2016) (WA Museum

692,000 records in Fauna Returns database

1.65M records in Terrestrial Ecosystem's database

Exceptional People

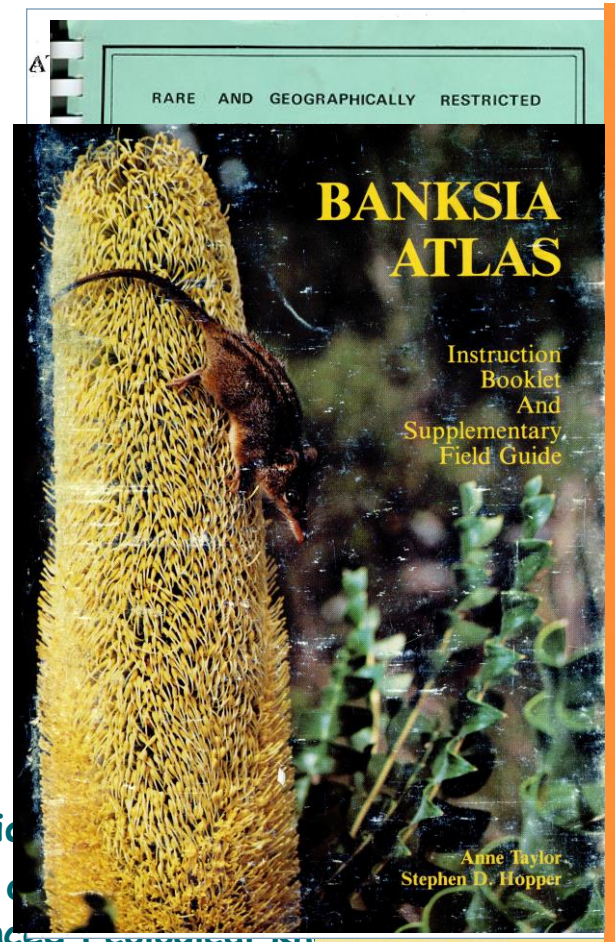
Excellent Facilities

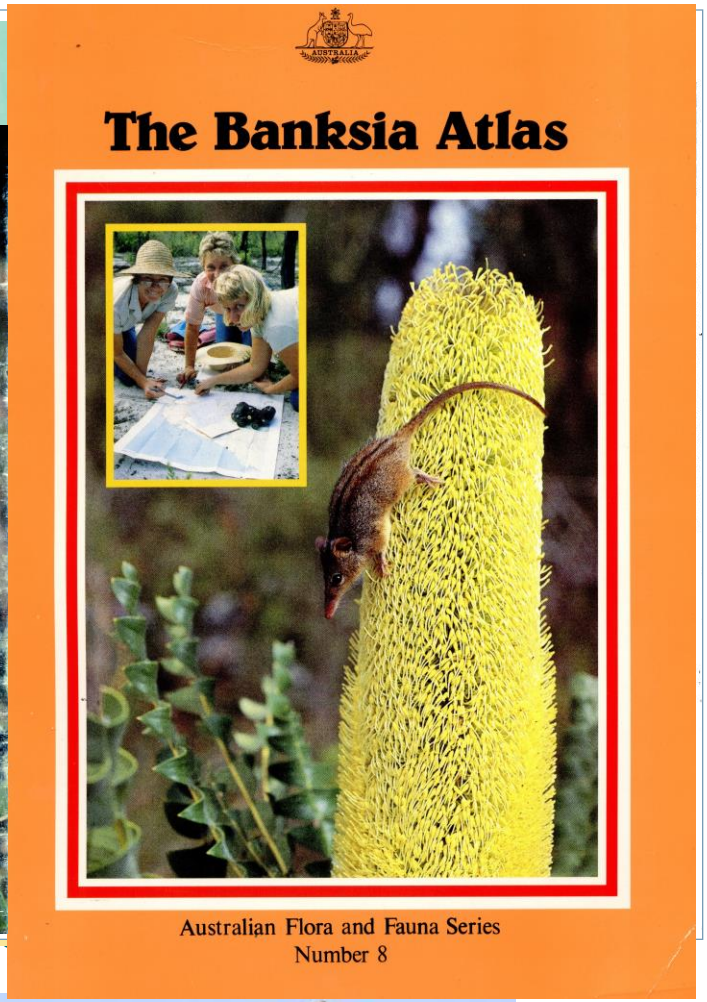
WA Biodiversity Information Landscape

Credible track record of Information Management

Specimen plotting
- Poorly collected flora
- *Acacia* phytogeography

Atlases
- Kangaroo Paw
- Orchid
- Banksia
- Rare eucalypts
- Birds





Great Tools

FloraBase – Australi

NatureMap – Atlas

Advanced Ecological

FloraBase the Western Australian Flora

NatureMap Mapping Western Australia's biodiversity

WA Biodiversity Information Landscape

BUT WAIT

SIZE OF THE ISSUE IS ENORMOUS

OWNERSHIP OF DATA IS A CHALLENGE

EXPECTATIONS ARE HIGH

Shared Environmental Assessment Knowledge (SEAK)

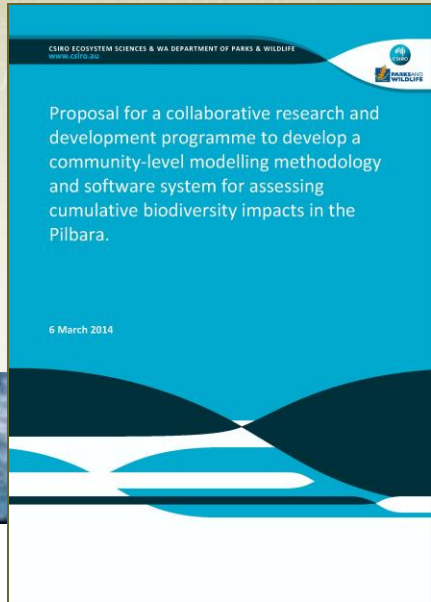
Lead – Environmental Protection Authority (2009-11)

State Environmental Data Library (SEDL)

Lead - Department of Mines & Petroleum (2014-16)

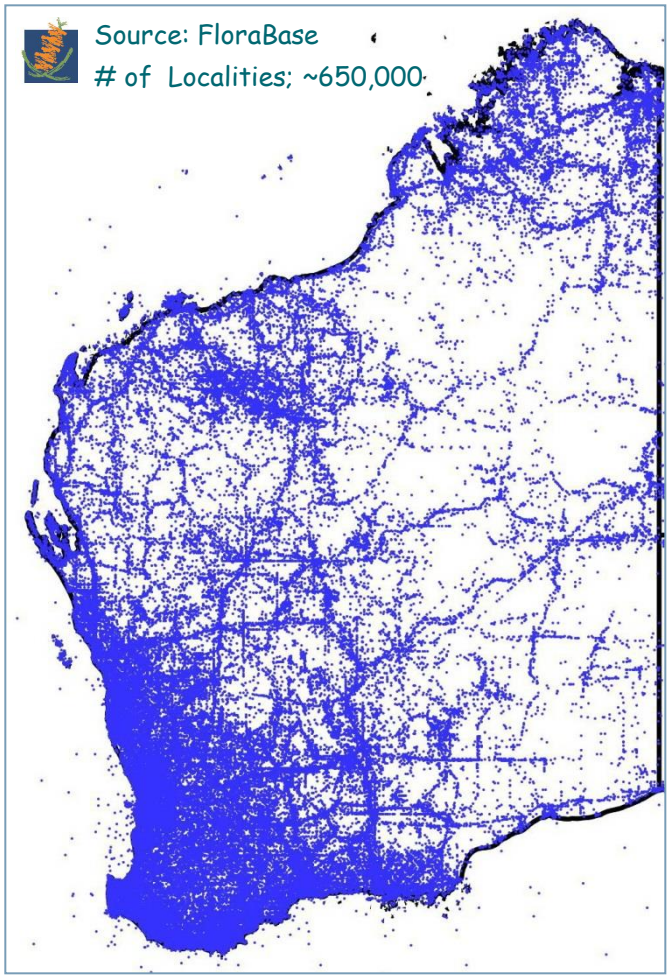
Community-level modelling & assessing cumulative biodiversity impacts

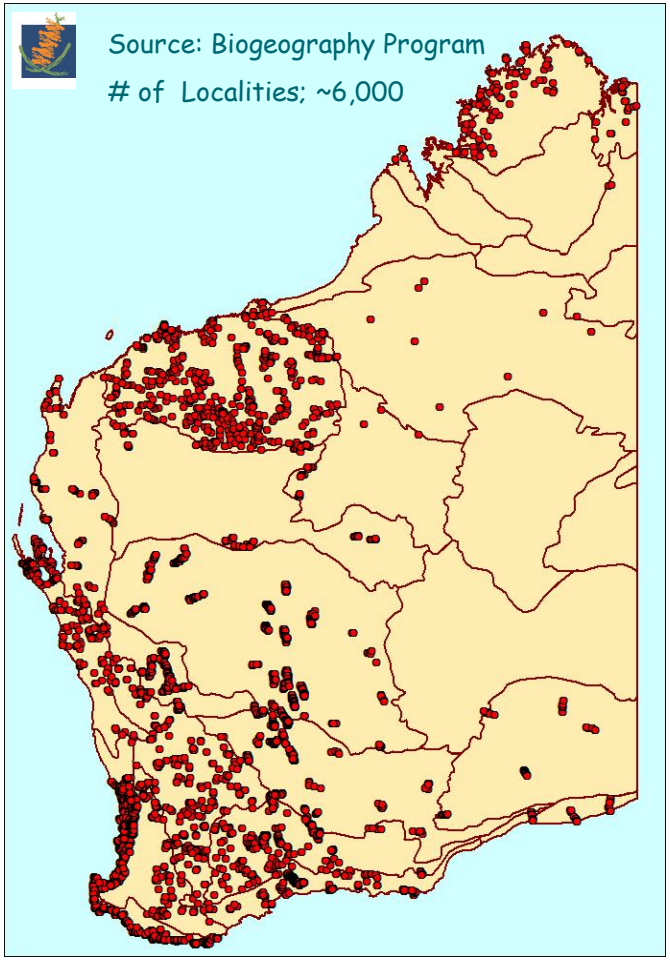
CSIRO, Parks & Wildlife, BHP Billiton, Rio Tinto, Fortescue Metal Group (2014)



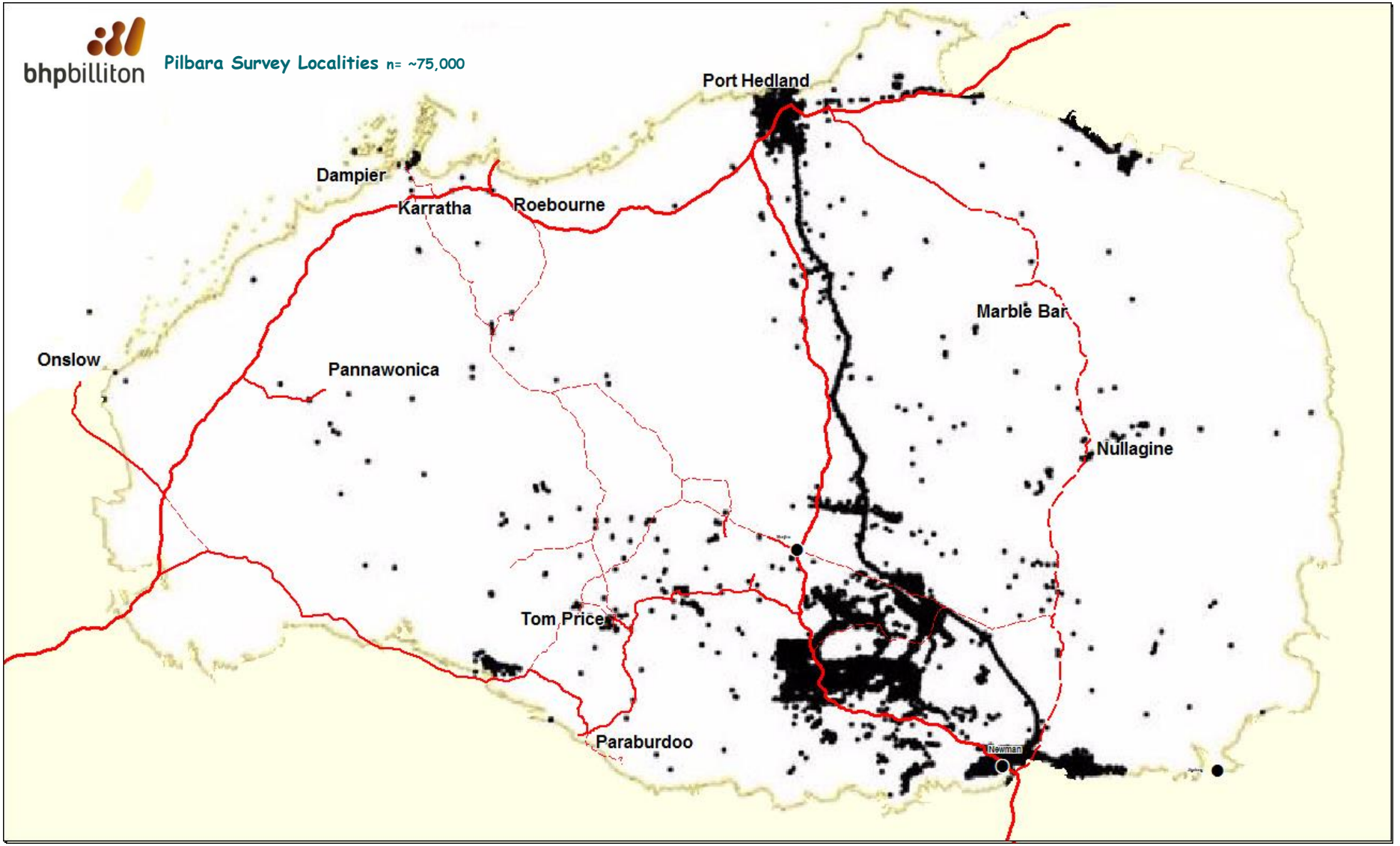
Where is it? - Sites & Species

Survey Site Network



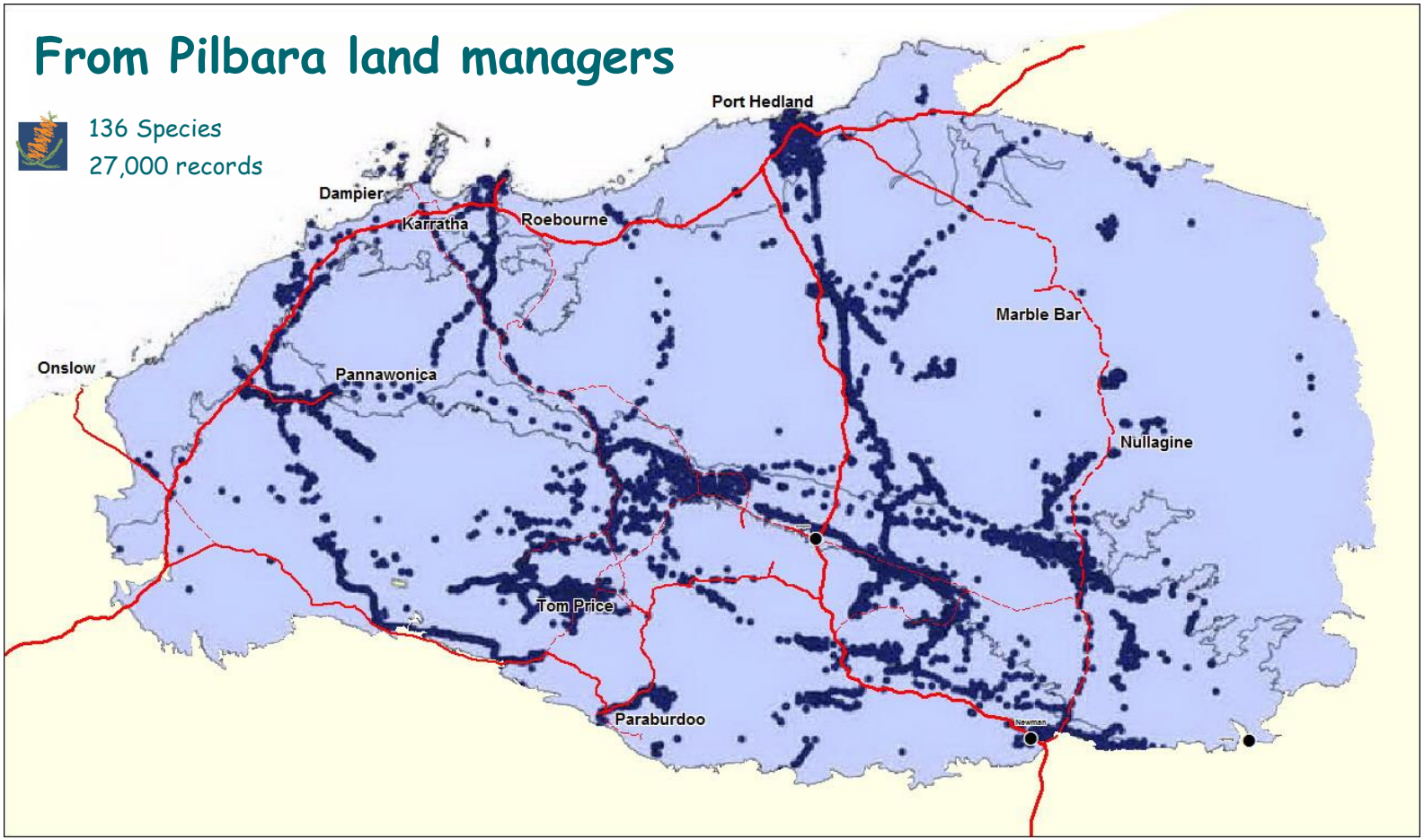


Where is it? - Sites & Species



Where is it? - Sites & Species

Outputs – Pilbara Weeds

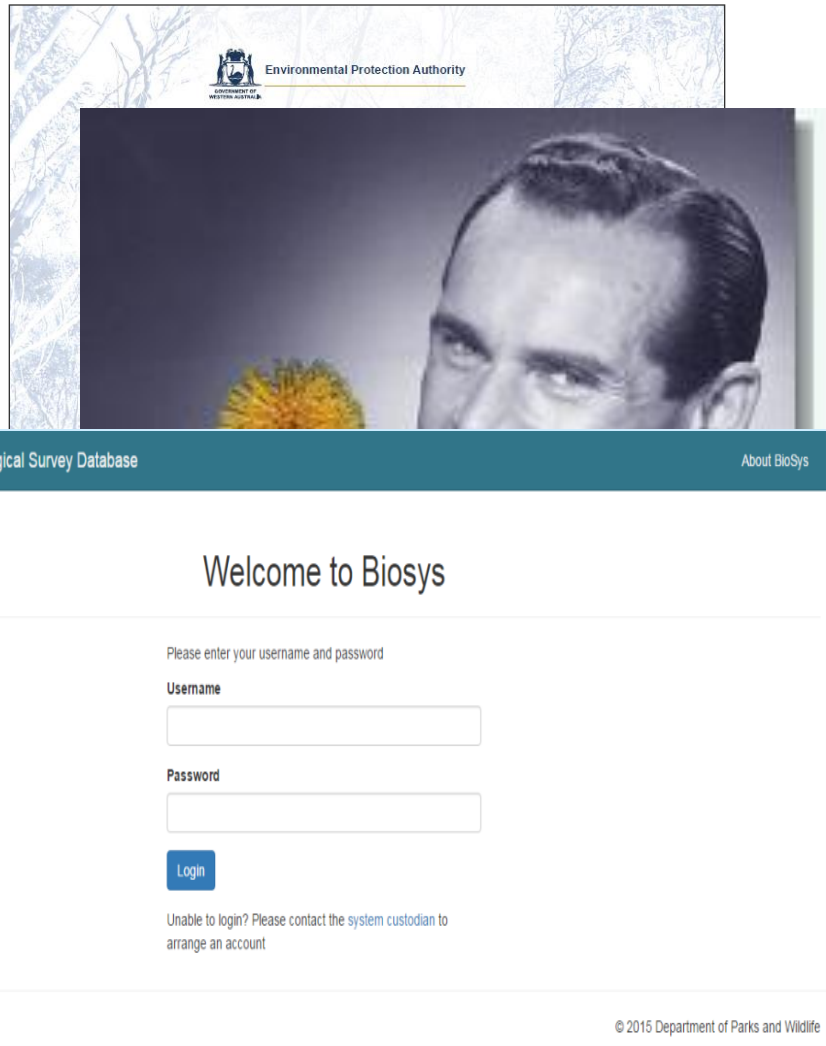


Where is it? - Sites & Species

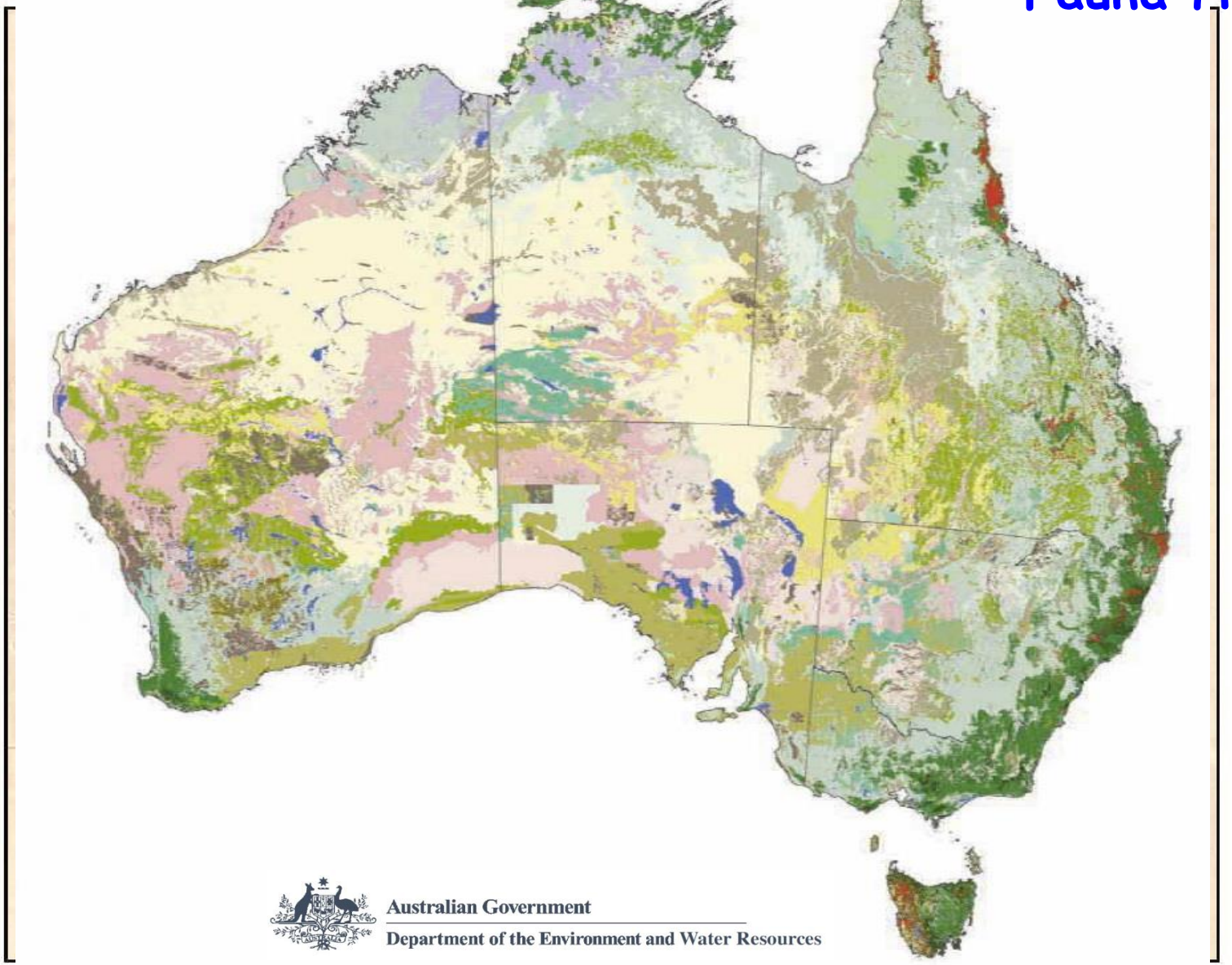
THE OPPORTUNITIES

- Scientific Sites Register
- Standards & Protocols for Plots/Sites/Releves
- Vouchering Protocols
- Site Data Capturing Tools
- Make data RAD compliant

= BioSys

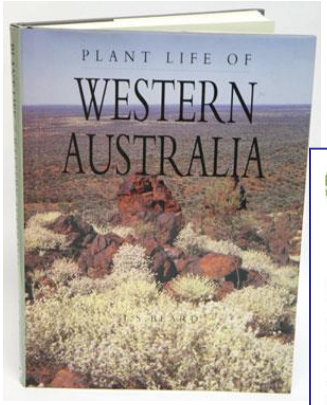


What is it? - ~~Vegetation~~ Fauna Habitat



Source: Ludwig Diels 1906 – Die Pflanzenwelt von West-Australien (The Plant World of Western Australia)

What is it? - Vegetation



ACT NOW FOR THE FUTURE

Department of Environment and Conservation
Our environment, our future

WA vegetation mapping BlueSheet

(Last updated September 2008)

sustainable consulting

A Where are we now?

Around us
- Increasing development pressures leading to declining biodiversity
- Increasing climate change focus & impacts
- Competing / siloed initiatives & short-term thinking
- Mining boom leading to growing environmental impacts, staff shortages, rising costs & unprecedented wealth
- Increasing Indigenous involvement in planning matters
- Strong State Government focus on infrastructure

WA vegetation mapping
- WA a large & diverse state
- Current maps largely derived from Beard work undertaken in the 1970s
- DEC/DAF as joint custodians of current maps

Strengths & opportunities
- Beard work well understood & widely accepted
- Logical hierarchy in place
- Moderate detail for most of state
- Rapid technology advances

Issues
- Scattered & inconsistent data sets
- Lack of legislative triggers
- Scarce funding (due to focus, scale & duration of work)
- Current maps used beyond original intent
- Gaps in data mean "don't know what don't know"
- Increasingly diverse user needs
- Inconsistent definitions & assumptions
- Growing divide between current maps & actual vegetation distribution & condition
- Shifting taxonomy
- Localised decision-making
- Aging experts not being replaced
- Limited floristic information in current maps
- Limited training
- Not regularly updated or updatable
- Inadequate statewide resolution

Focusing question
How can best capitalise on the current boom & great work undertaken by Beard to ensure we understand & effectively manage WA's unique vegetation for the benefit of future generations

C What do we do to get there?

1. **Think 'whole vegetation information system', but focus primarily on 'vegetation map' component**

	Map	Data
Vegetation	X Beard-Hopkins	
Community	Nature map	
Flora	Florabase	

2. **Build on existing maps while continuing to use them** *("change the engine while flying the plane")*
3. **Plan & manage as inter-generationally significant project**
   1. Engage key stakeholders & mobilise support
   2. Undertake preliminary detailed design (including definitions, hierarchy, linkages, products, methodology, sequence, governance structure, resourcing, change management)
   3. Mobilise political support (sustained leadership & in-principle funding commitments, legislation)
   4. Secure necessary funding (internal seed funding, then leverage external funding, break political cycles)
   5. Update detailed design if necessary (depending on results of phases 3 & 4 above)
   6. Establish project (recruit team, set-up base, form partnerships)
   7. Implement agreed plan
   8. Lock-in continuous improvement cycle

D How do we make this happen?

What?
1. Prepare & distribute workshop outp
2. Prepare & table scoping document DEC Corporate Executive
3. Implement will of DEC Corporate E

Who? When?

B Where do we want to be?

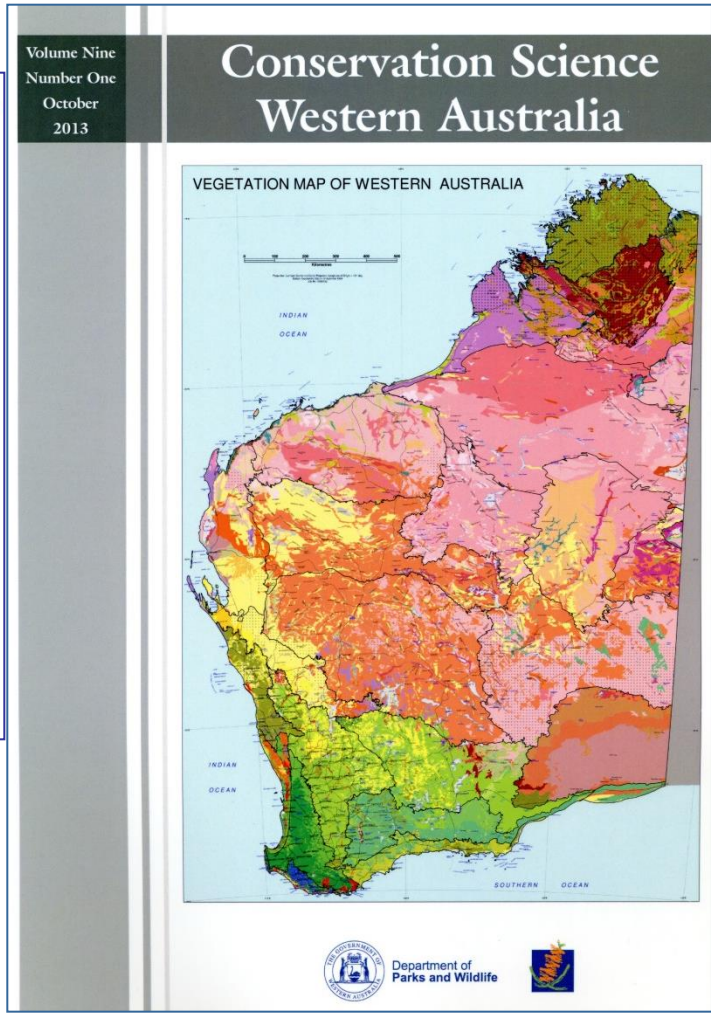
Statewide botanical information system
to inform....
- Conservation planning & management
- Development decisions
...about aspects of biodiversity
& its relationship to other natural resources

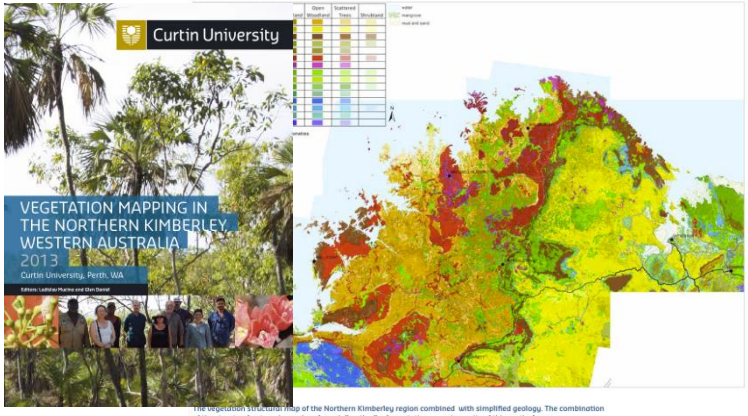
Underpinned by

A suite of integrated, scientifically rigorous maps covering all of WA
which...
- Enable effective bioregional & sub-regional planning, management & assessment
- Take account of varying regional biodiversity & land-use patterns
- Interface effectively with the broader vegetation information system

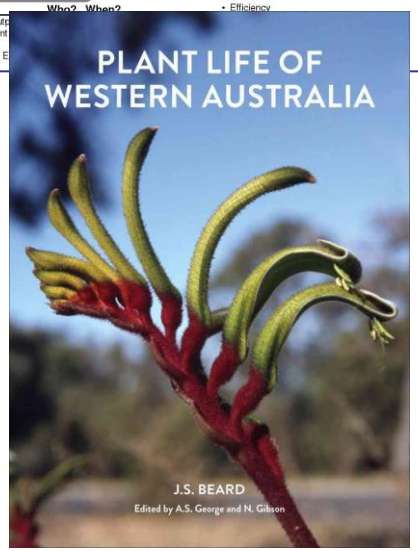
Key attributes
- User-friendly
- Widely-valued
- Fit-for-purpose
- Reliable
- Updatable
- Compliant (with relevant standards & protocols)

Guiding principles
- Flexibility
- Integration
- Transparency
- Collaboration
- Efficiency



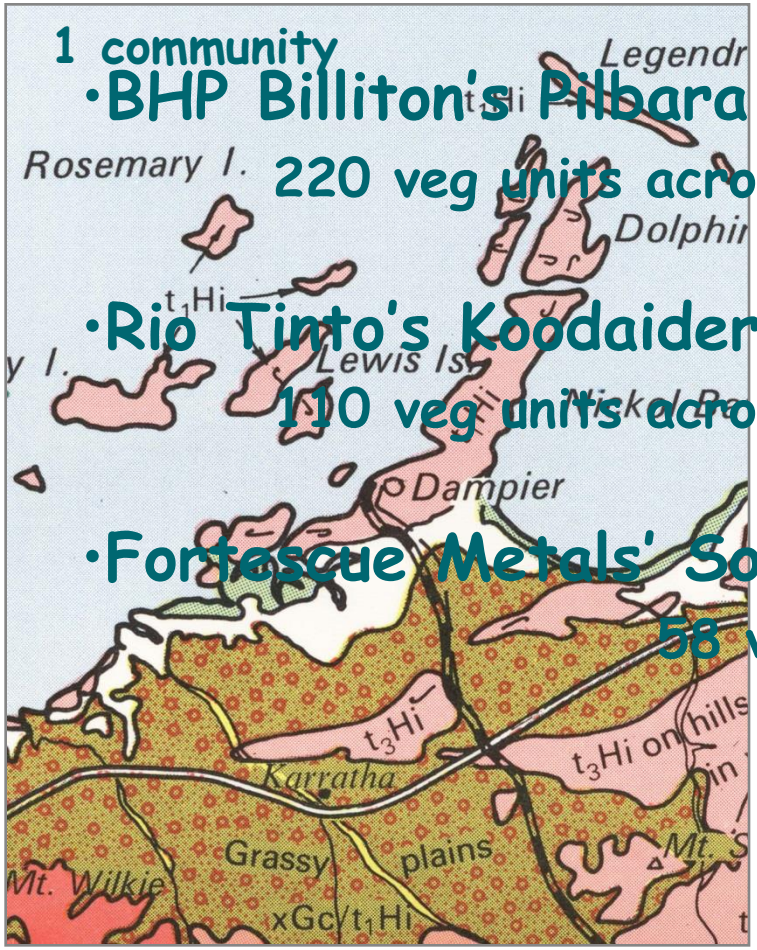


The vegetation structural map of the Northern Kimberley region combined with simplified geology. The combination of the structural categories and geology define the final vegetation mapping units of this particular map.

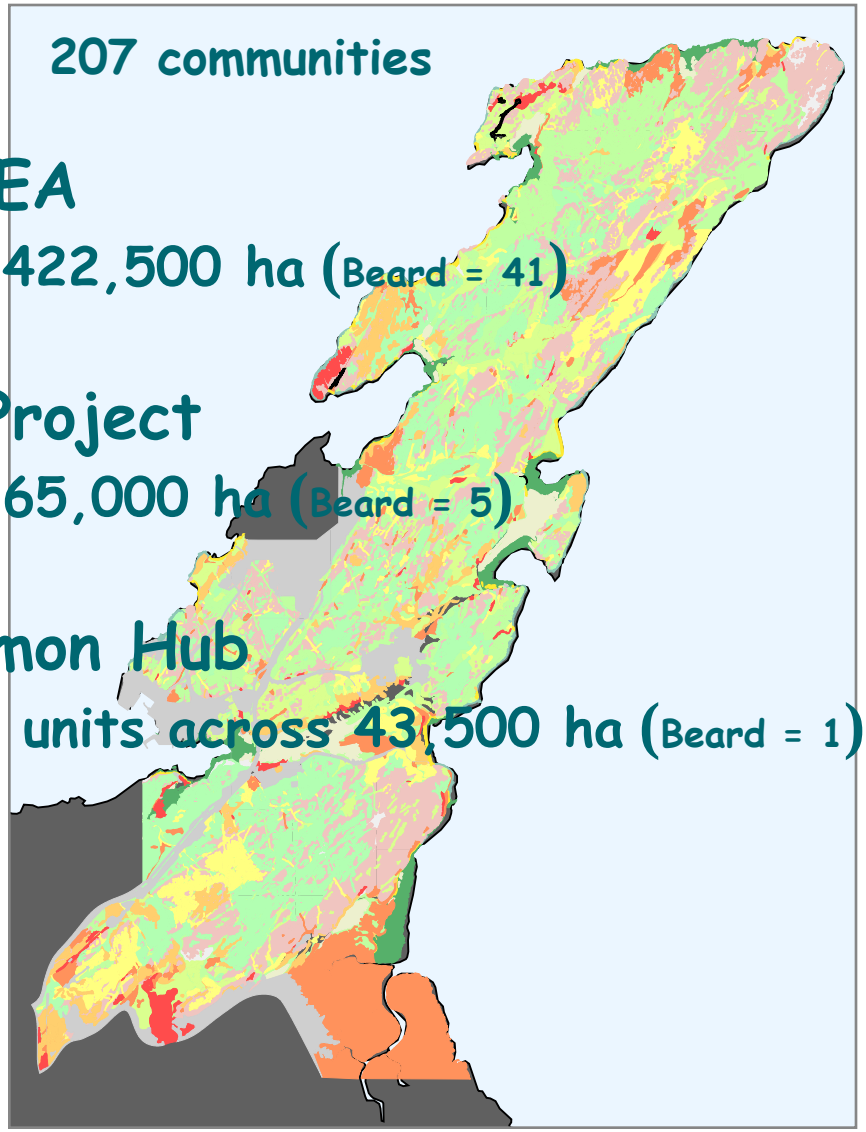


What is it? - Vegetation

NO LONGER 'FIT FOR PURPOSE'



- BHP Billiton's Pilbara SEA
  - 220 veg units across 422,500 ha (Beard = 41)
- Rio Tinto's Koodaideri Project
  - 110 veg units across 65,000 ha (Beard = 5)
- Fortescue Metals' Solomon Hub
  - 58 veg units across 43,500 ha (Beard = 1)



What is it? - Vegetation Issues

THERE IS A LOT OUT THERE!

Vegetation Reports

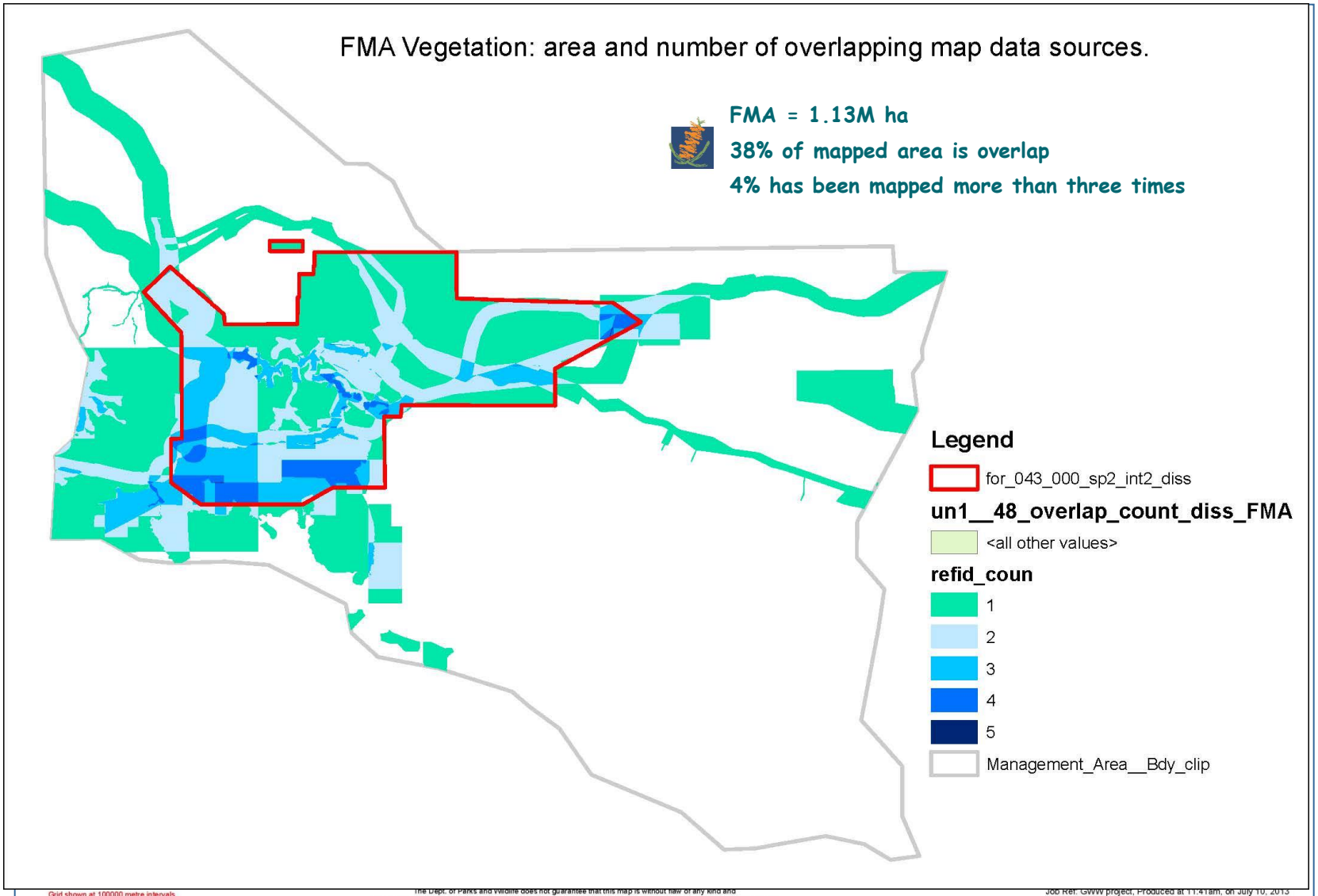
- Western Australia (1994): ~620 (Lyons & Gibson)
- Pilbara Biological Bibliography (2002): ~150 (~700)
- Avon baselining (2010): ~60 reports / ~450 maps
- Great Western Woodland (2013): ~270 reports / 75 maps
- BHP Billiton's Pilbara SEA (2016): ~225 reports

Also, in 2014/15

- 31 EIA assessments
- 50 non-mining Native Vegetation Clearing Permits

What is it? - Vegetation Issues

THERE IS A LOT OUT THERE!



What is it? - Vegetation Issues

THE OPPORTUNITIES

NVIS for Western Australia

(WAVIS – WA Vegetation Information System)

- Standards & Protocols – NVIS, Essential Environmental Measures Veg Working Group
- Capture & store new Vegetation polygons, Structural description & Floristic inventory
- Make WAVIS RAD compliant
- Progress historical Vegetation Reconciliations

What do we know about it

THERE IS A LOT OF DATA OUT THERE!

Biological Survey Reports

- Western Australia (1994): ~2,300 (Lyons & Gibson)
- Pilbara Biological Bibliography (2002): ~720
  (2006): ~1,370
  (2015): ~3,000+
- BHP Billiton's Pilbara SEA (2015): ~375
- Terrestrial Ecosystems (Fauna only): ~609

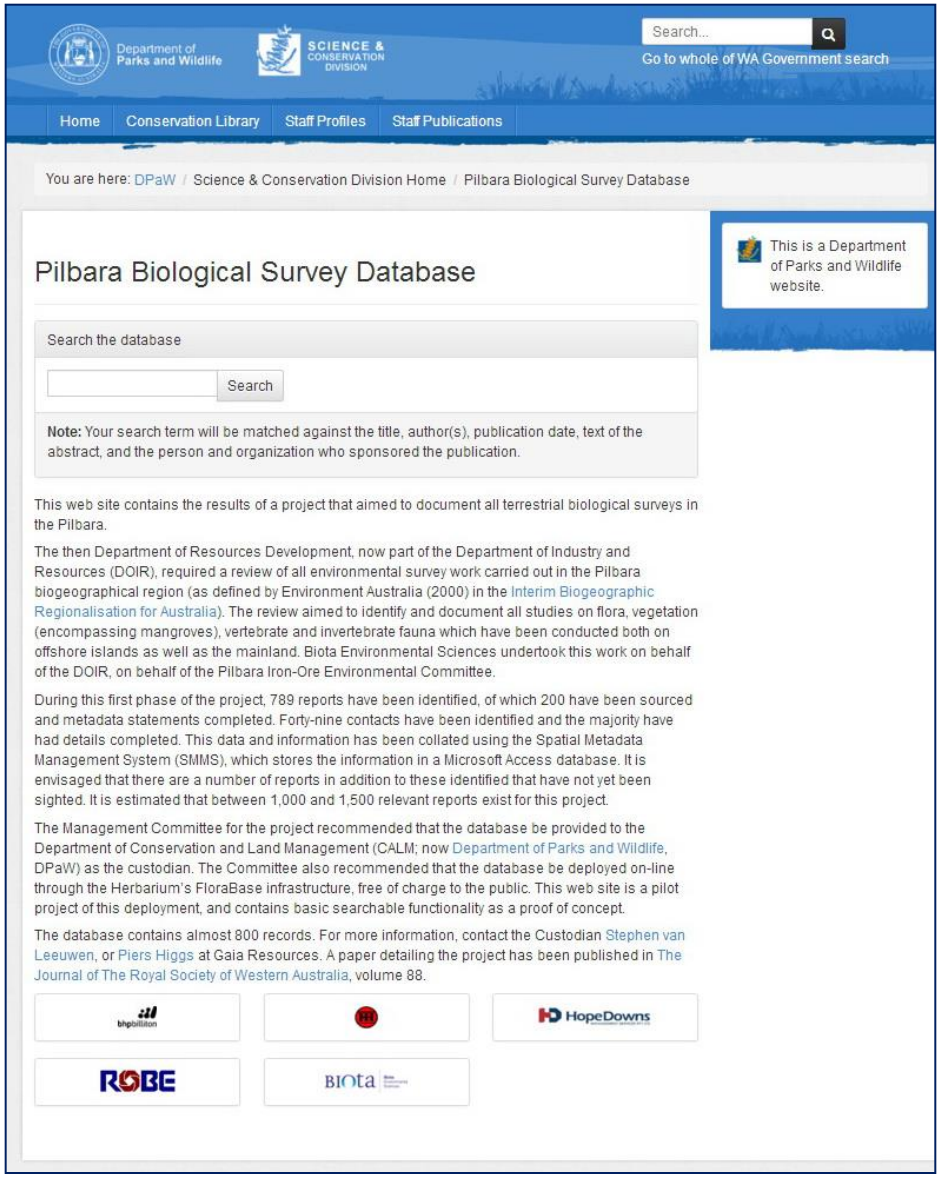
TERRESTRIAL ECOSYSTEMS

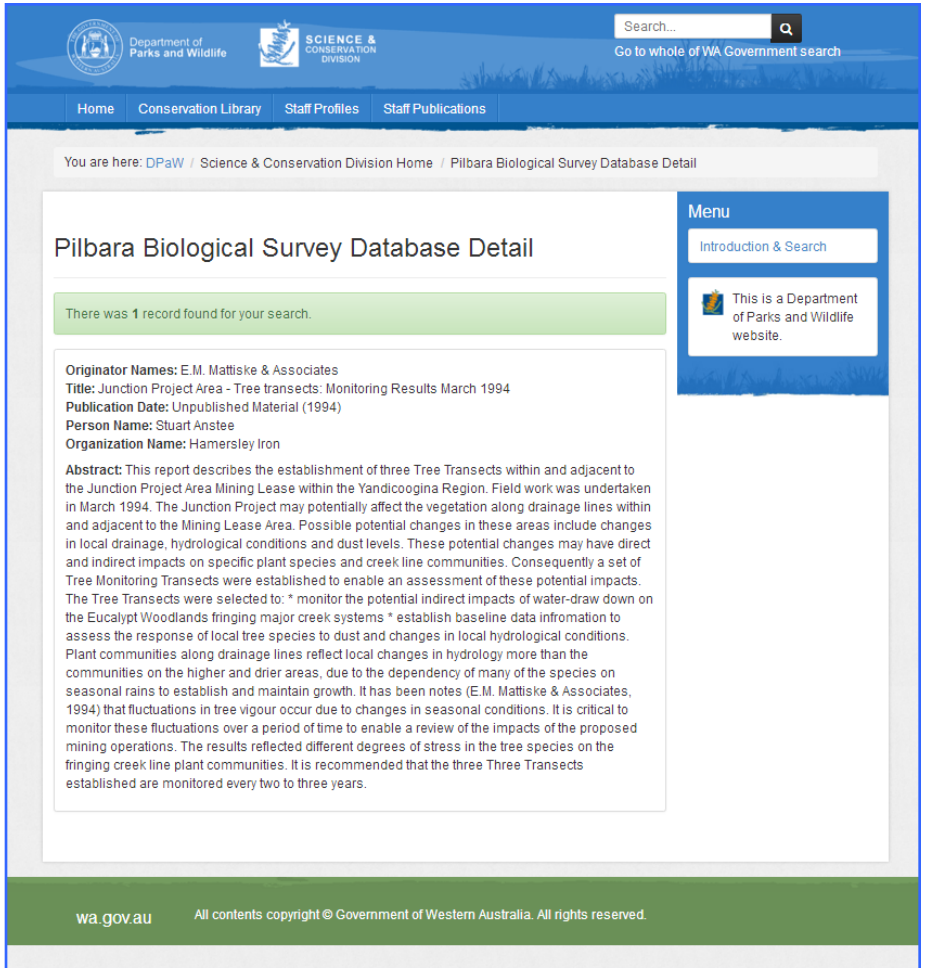
BUT MOST ARE OUT OF SIGHT & NOT ACCESSIBLE!

- Pilbara Biological Bibliography (2002): ~83% grey literature
- Terrestrial Ecosystems (Fauna only): ~86% grey literature

TERRESTRIAL ECOSYSTEMS

What do we know about it





What do we know about it

GOVERNMENT OF WESTERN AUSTRALIA

Parks & Wildlife Data

Datasets Organisations Groups About DPaW Map

Search data

E.g. environment

Popular tags mpa_report Knowledge Managemen... KMI

Parks & Wildlife Data statistics

1.2k	30	17	0
datasets	organizations	groups	showcases

GOVERNMENT OF WESTERN AUSTRALIA

Parks & Wildlife Data

Log in Register

Search

Datasets Organisations Groups About DPaW Map

/ Datasets

Filter by location Clear

Map data © OpenStreetMap contributors
Tiles by MapQuest

Pilbara

91 datasets found for "Pilbara"

Order by: Relevance

Pilbara Corridors Wetland Survey

Surveys of wetland and fringing flora and aquatic invertebrates to provide analyses of biodiversity patterning to Rangelands NRM Pilbara Corridors Project.

PDF CSV

Decision-support tool for Pilbara islands

This project will develop a decision support tool for day-to-day use in making accountable and cost-effective decisions about where to spend limited funding on management of...

GeoJSON CSV

Pilbara River Pools Project

These data come from a project funded by Department of Water in 2009 to describe 1) the aquatic invertebrate biodiversity values of coastal river pools and 2) their responses to...

PDF

Regional Profile Pilbara PIL04

Statistics and maps produced by GIS Branch, Department of Parks and Wildlife (2014)

PDF

Regional Profile Pilbara PIL03

Organisations

- Marine Science (76)
- Science and Conserv... (4)
- Corporate Data Deli... (4)
- Wetlands Conservation (3)
- Animal Science (3)
- Pilbara Region (1)

Groups

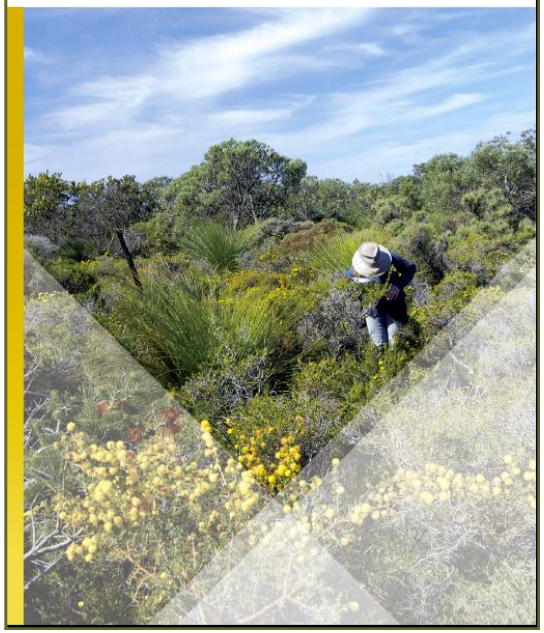
- MPA reporting (64)
- Biodiversity Audit (4)
- Media images (2)

What do we know about it

WALGA
WORKING FOR LOCAL GOVERNMENT

Environmental Planning Tool

A geographic information system (GIS) especially tailored to WA Local Governments.



GREAT VICTORIA DESERT
BIODIVERSITY TRUST

HOME ABOUT US OUR REGION OUR PROJECTS WHAT WE DO WORK WITH US RESOURCES NEWS CONTACT

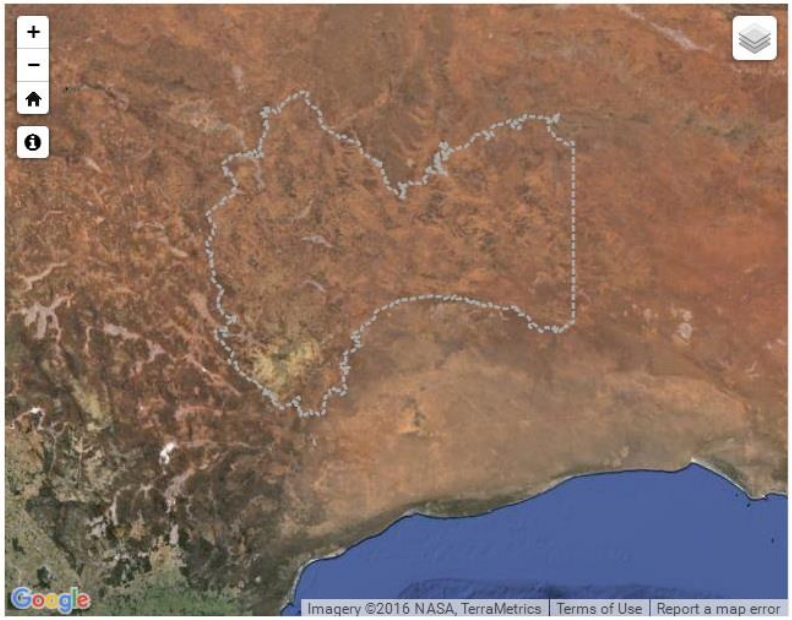
MAPPING – KNOWLEDGE HUB

Home / Our Region / Mapping – Knowledge Hub

OUR REGION

- Mapping – Knowledge Hub

The 'Knowledge Hub' is designed to capture all available information and reports on the GVD (WA parts). This will be an ongoing project as reports are added to the collection. We invite you to use and interrogate the map and provide us with feedback on what we're missing / how it could be improved and if you have any reports to contribute. To provide feedback, please contact: Kathryn.sinclair@gvdbiodiversitytrust.org.au



Future Considerations

- **Lots has happened & is happening**
- **There is a need & demand**
  - Scientific Sites Portal
  - Biological Survey Database
  - WAVIS
  - Spatially enabled Biological Data Catalogue
- **Lots of OPPORTUNITIES**
  - '*Its Time*' - Coalition of the Willing
  - Data everywhere
  - Citizen Science
  - Joint Management – Traditional Owner ecological knowledge
  - Innovation will help, requires development & deployment
  - **WA BIODIVERSITY SCIENCE INSTITUTE (WABSI) EcoInformatics Node**
- **Some Challenges**
  - Sharing & Access to data (RAD)
  - Managing expectations
  - 'One Stop Shop' – 'Toolbox of Leatherman Tools'

(*Fit for Purpose* solutions when both the *Purpose* and the *Goodness of Fit* may be unknown)

THANK YOU