



Terrestrial Biodiversity

Information in Western Australia



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Department of
Parks and Wildlife



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)

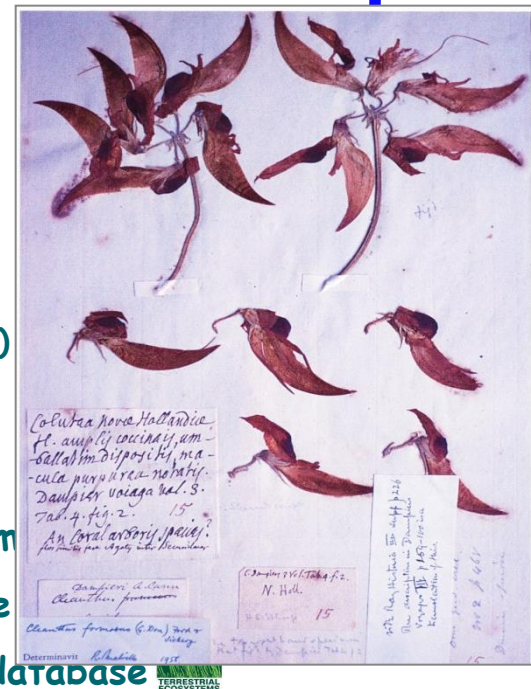
1.05M vouchers (AVH - April 2016)

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

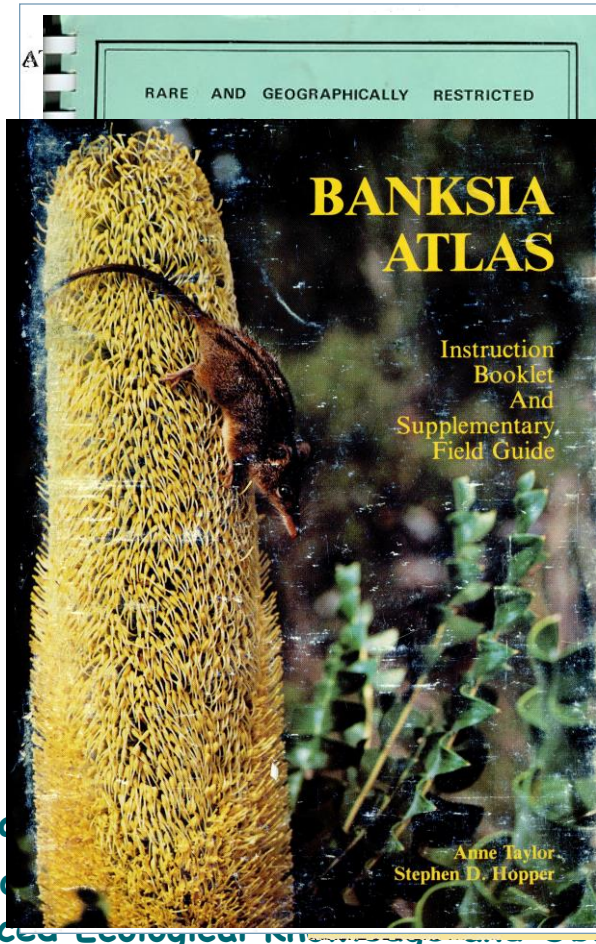
Credible track record of Information Management

Specimen plotting

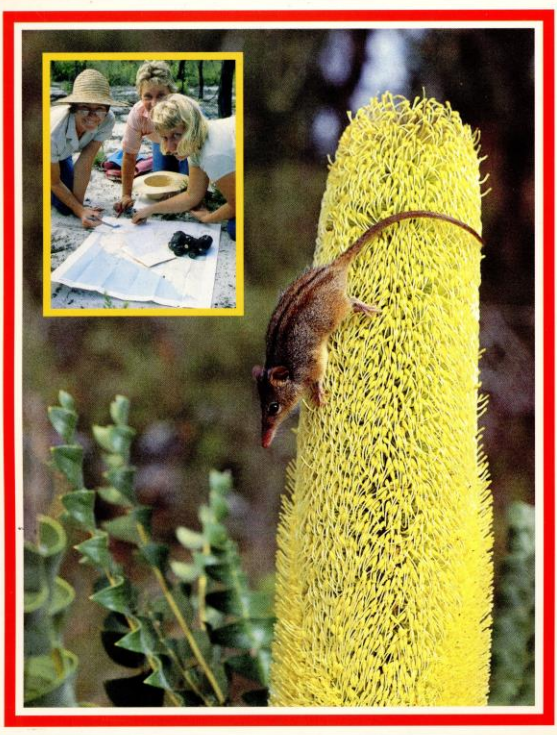
Poorly collected flora
Acacia phytogeography

Atlases

Kangaroo Paw
Orchid
Banksia
Rare eucalypts
Birds



The Banksia Atlas



Great Tools

FloraBase - Australian Flora

NatureMap - Atlas of

Advanced Ecological Knowledge



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)

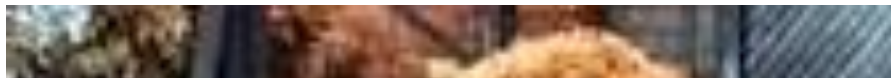
Lead - Environmental Protection Authority (2009-11)

State Environmental Data Library (SEDL)

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

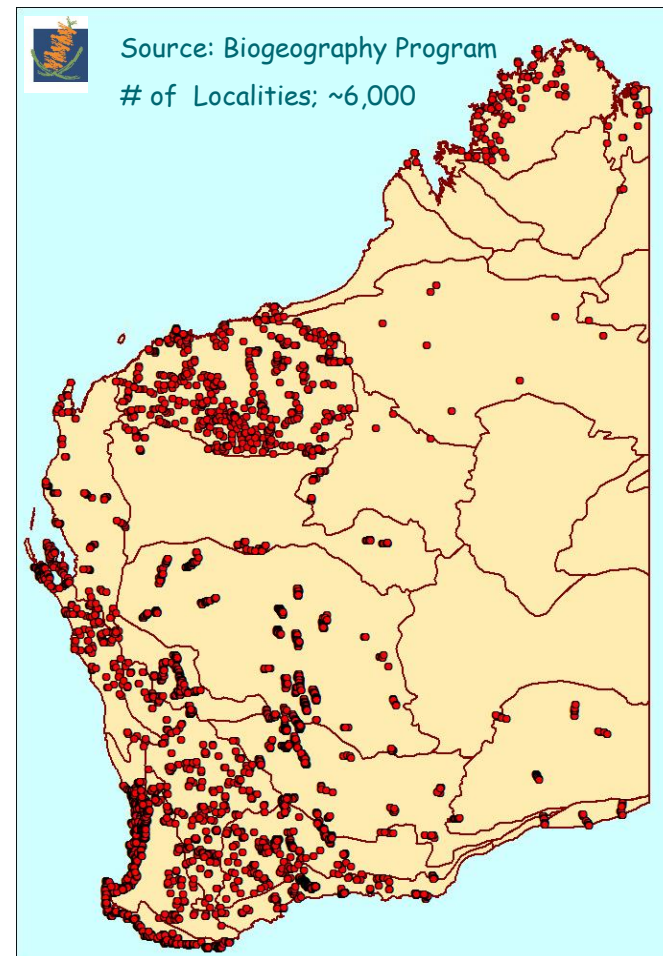
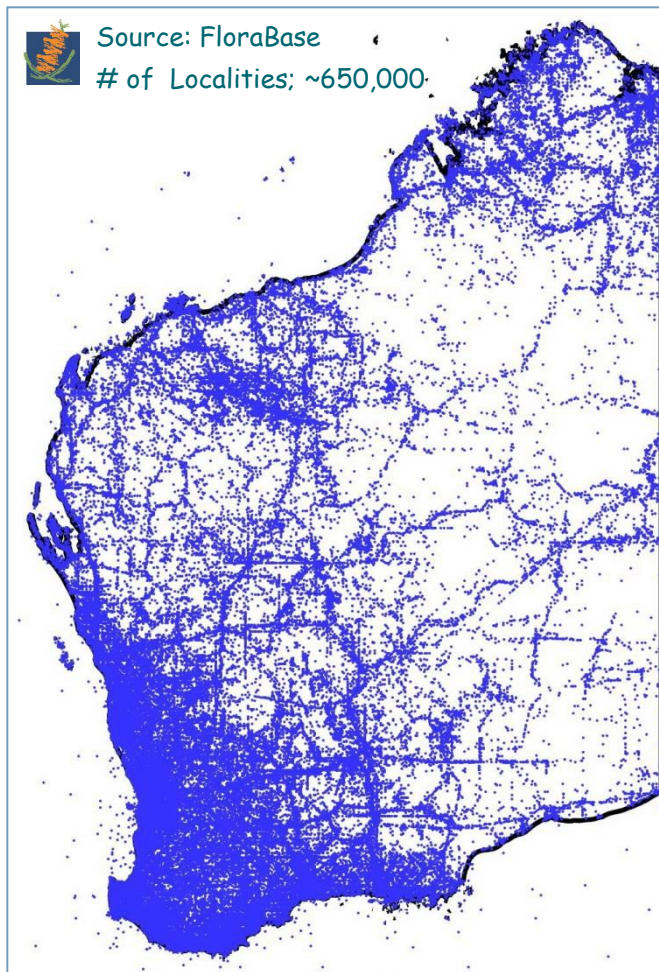
Community-level modelling & assessing cumulative biodiversity impacts

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

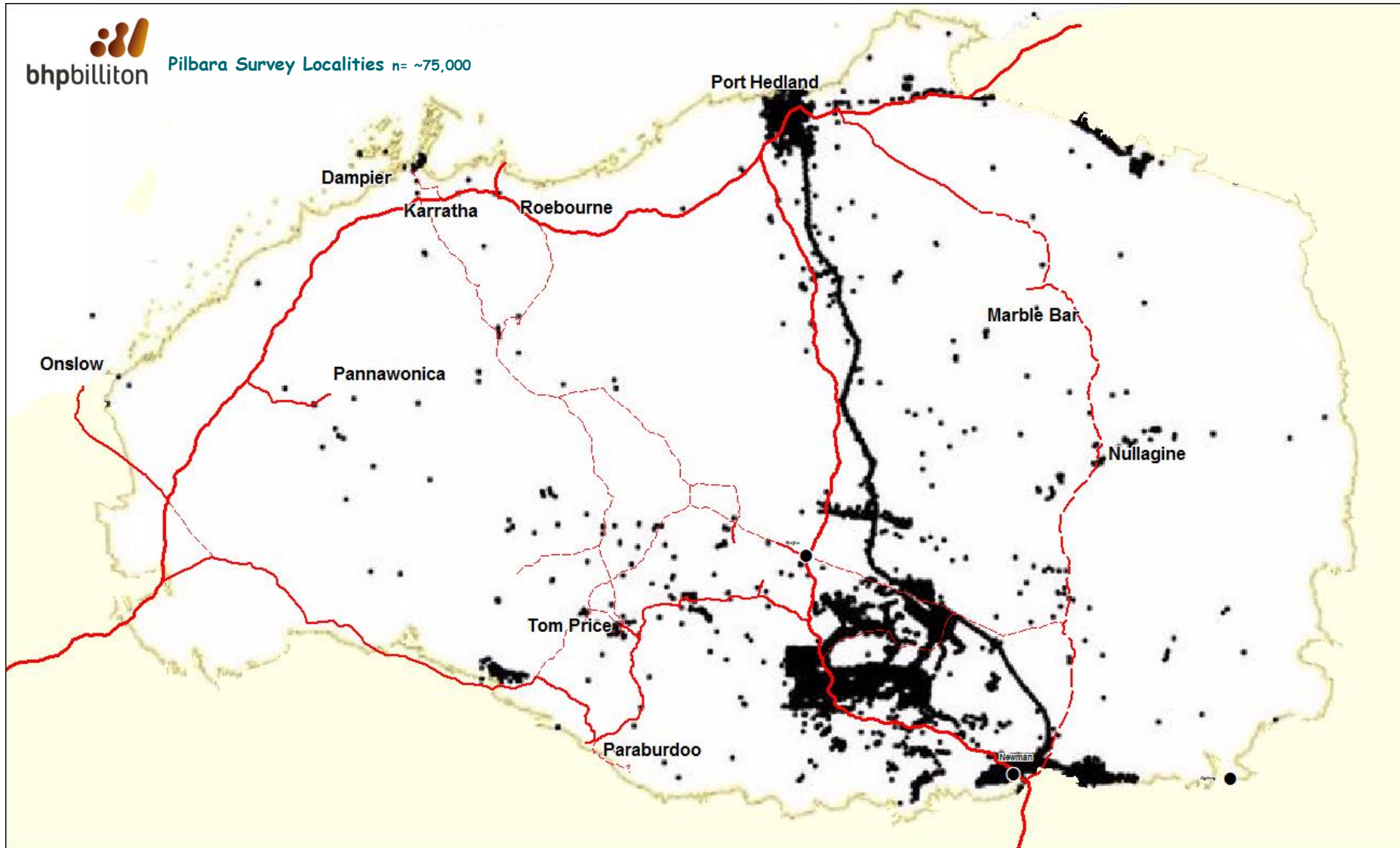


Where is it? - Sites & Species

Survey Site Network



Where is it? - Sites & Species

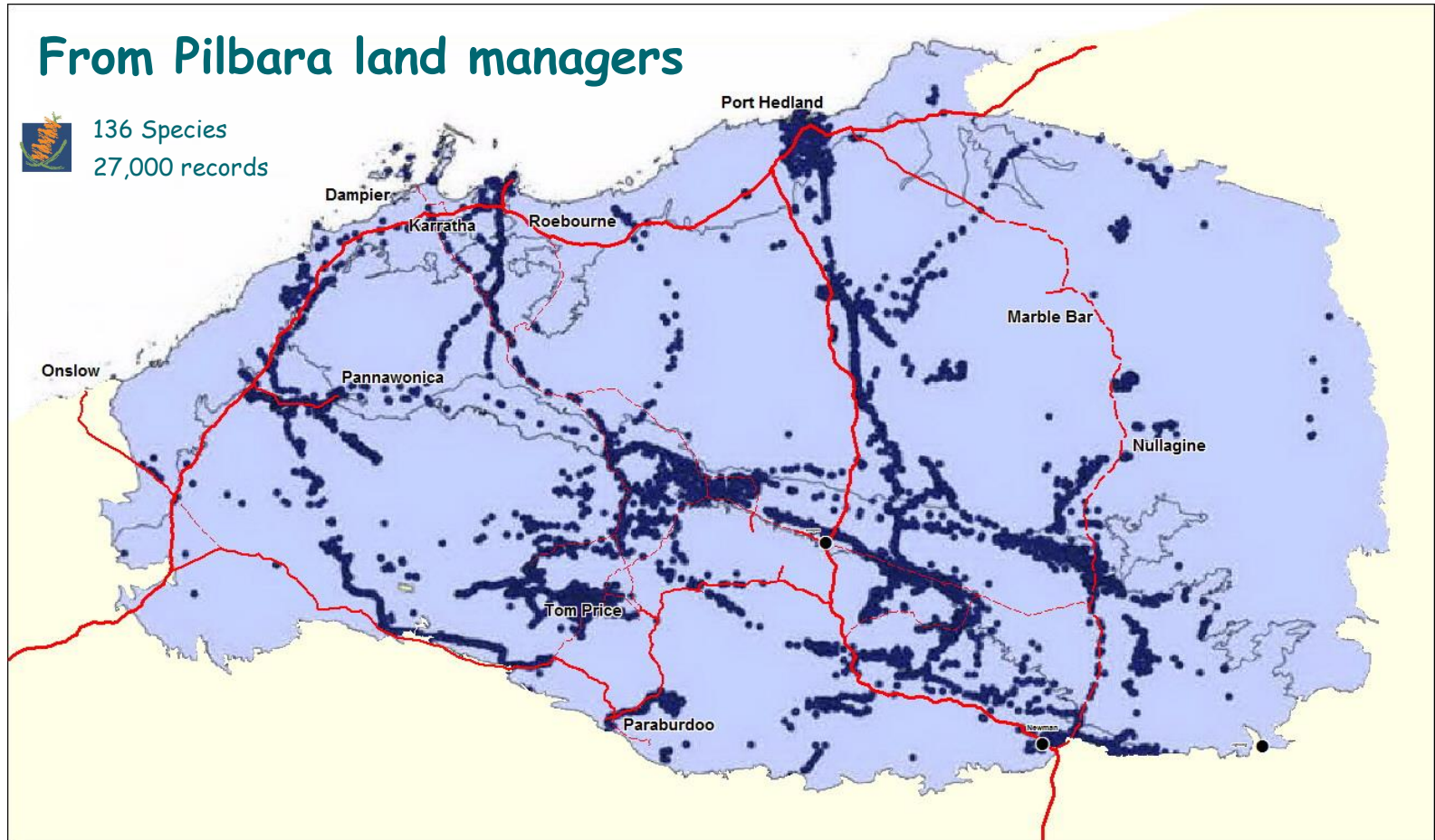


Where is it? - Sites & Species Outputs - Pilbara Weeds

From Pilbara land managers



136 Species
27,000 records



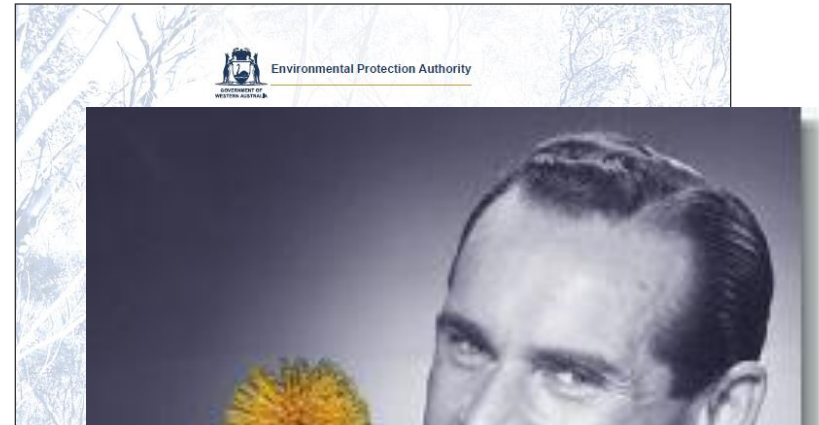
Where is it? - Sites & Species

THE OPPORTUNITIES

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



= BioSys



BioSys - WA Biological Survey Database About BioSys

Welcome to Biosys

Please enter your username and password

Username

Password

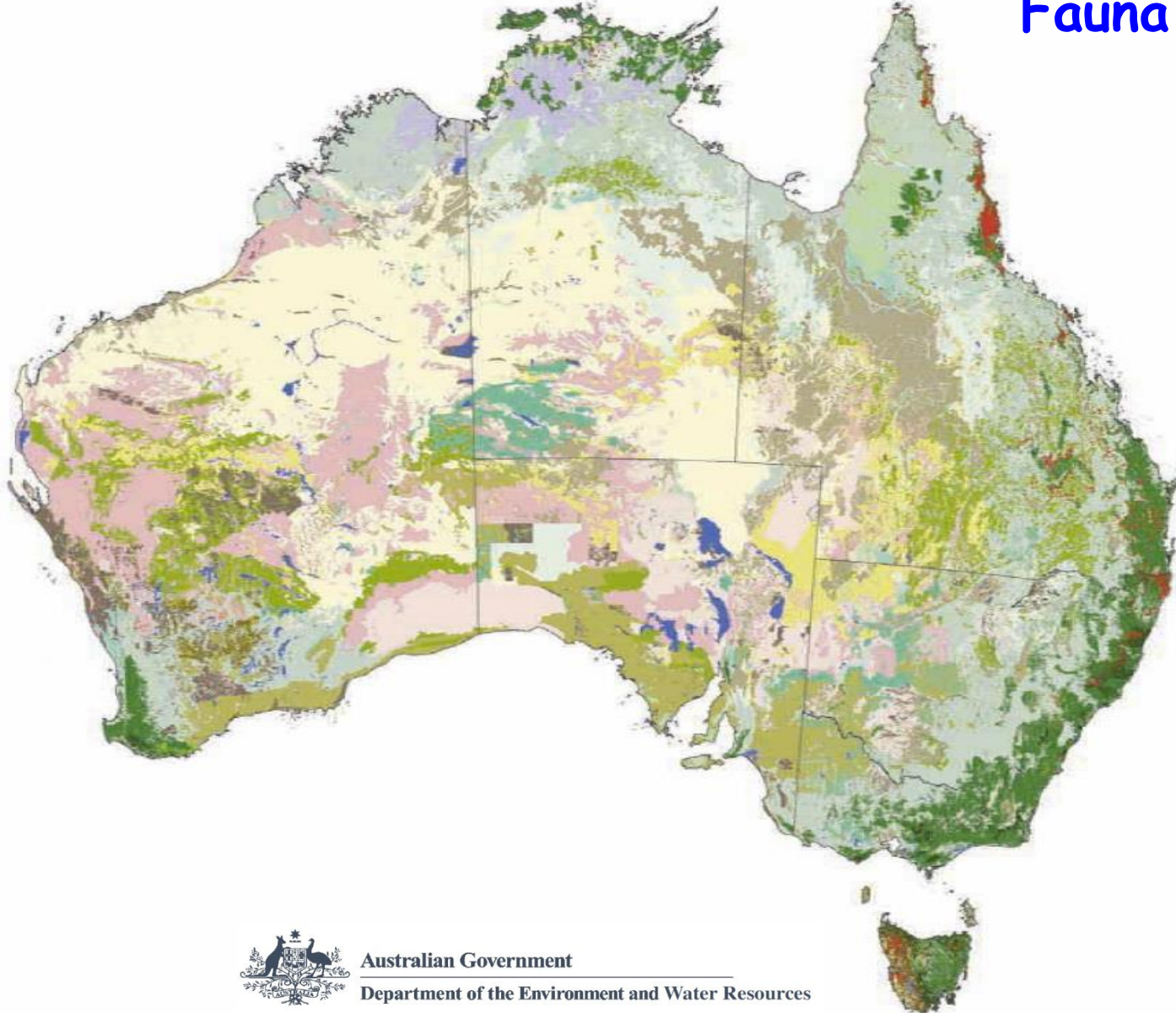
[Login](#)

Unable to login? Please contact the [system custodian](#) to arrange an account

Version: 1.0 © 2015 Department of Parks and Wildlife

What is it? - ~~Vegetation~~

Fauna Habitat

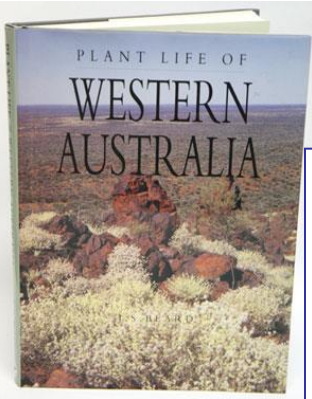


Australian Government

Department of the Environment and Water Resources

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

What is it? - Vegetation



WA vegetation mapping BlueSheet
(Last updated September 2008)

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

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

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's Hopkins
Community		Naturemap
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

- Engage key stakeholders & mobilise support
- Undertake preliminary detailed design (including definitions, hierarchy, linkages, products, methodology, sequence, governance structure, resourcing, change management)
- Mobilise political support (sustained leadership & in-principle funding commitments, legislation)
- Secure necessary funding (internal seed funding, then leverage external funding, break political cycles)
- Update detailed design if necessary (depending on results of phases 3 & 4 above)
- Establish project (recruit team, set-up base, form partnerships)
- Implement agreed plan
- Lock-in continuous improvement cycle

D How do we make this happen?

What?

- Prepare & distribute workshop outputs
- Prepare & table scoping document
- Implement will of DEC Corporate Executive

Who? When?

Volume Nine
Number One
October
2013

Conservation Science Western Australia

VEGETATION MAP OF WESTERN AUSTRALIA

INDIAN OCEAN

SOUTHERN OCEAN

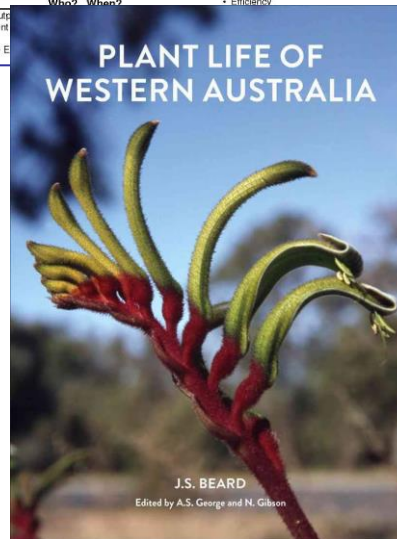
Department of
Parks and Wildlife

Curtin University

VEGETATION MAPPING IN THE NORTHERN KIMBERLEY WESTERN AUSTRALIA 2013
Curtin University, Perth, WA

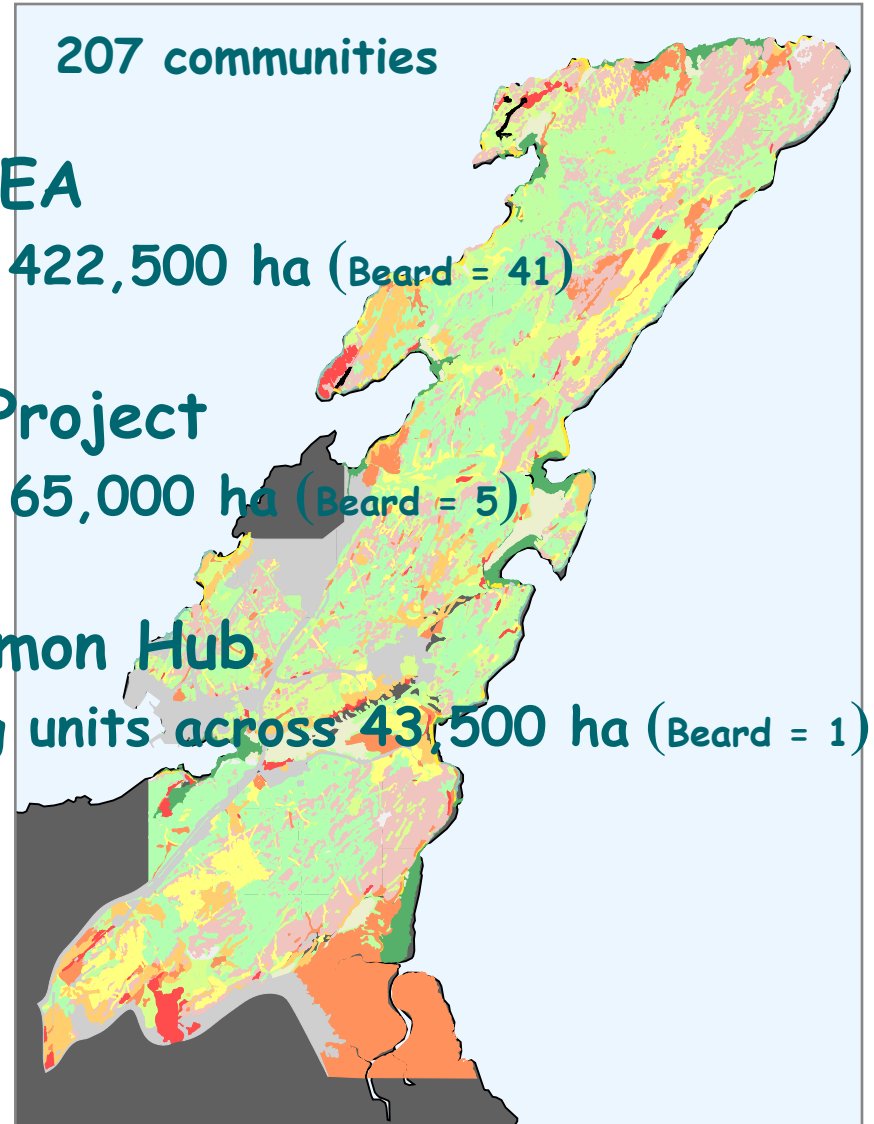
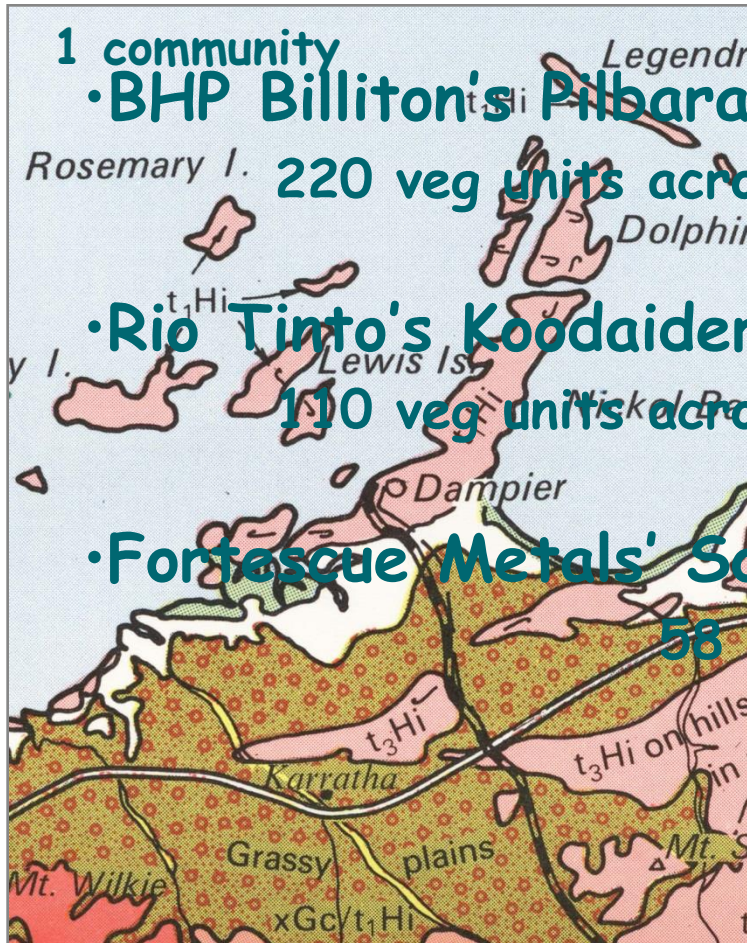
Authors: Lashley Plummer and Greg Jordan

The vegetation information 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'



What is it? - Vegetation Issues

THERE IS A LOT OUT THERE!

Vegetation Reports

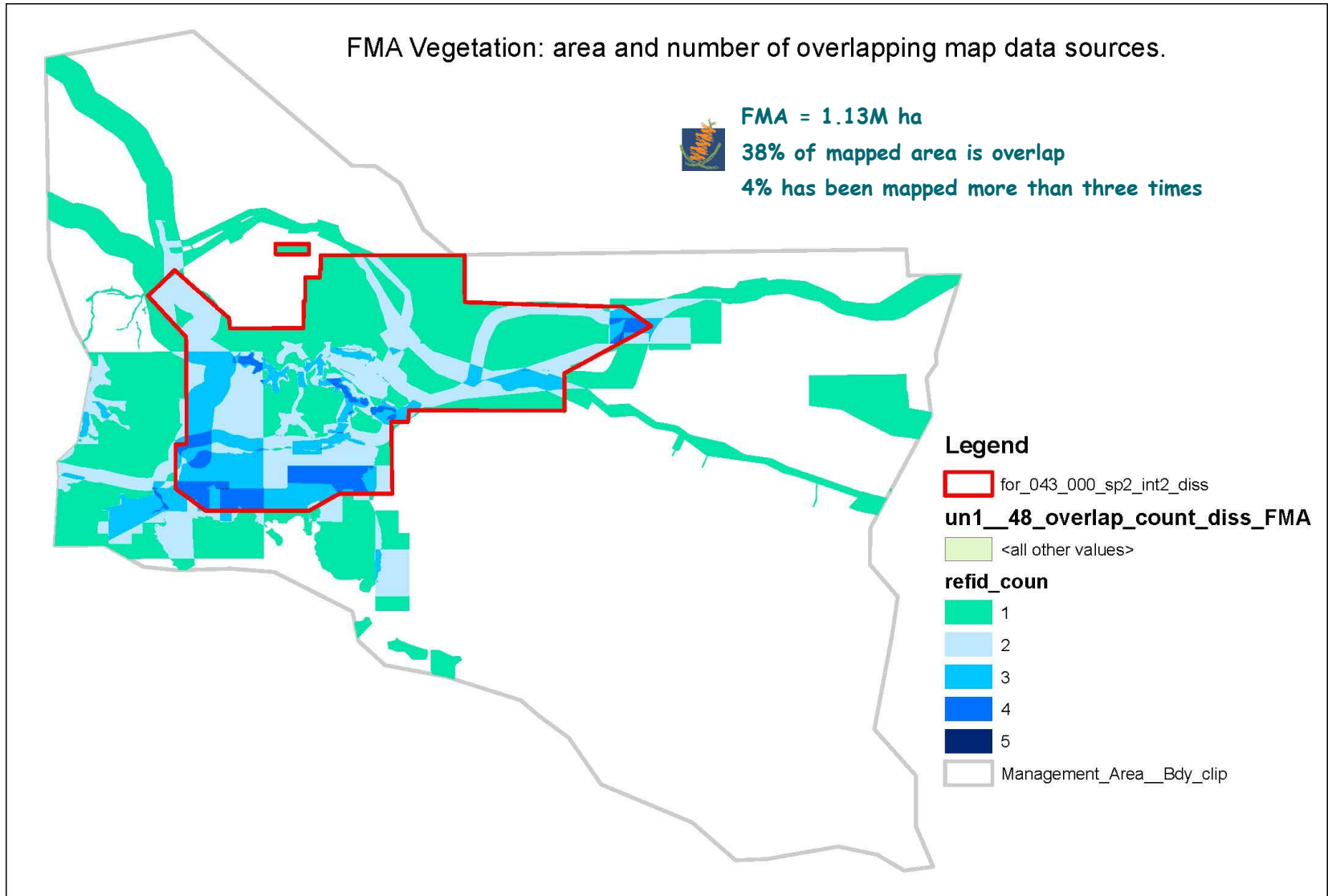
- Western Australia (1994): ~620 (Lyons & Gibson)
- Pilbara Biological Bibliography (2002): ~150 (~700)
- Avon baselining (2010): ~60 reports / ~450 maps
- Great Western Woodland (2013): ~270 reports / 75 maps
- BHP Billiton's Pilbara SEA (2016): ~225 reports

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





BUT MOST ARE OUT OF SIGHT & NOT ACCESSIBLE!

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



What do we know about it


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You are here: [DPaW](#) / [Science & Conservation Division Home](#) / [Pilbara Biological Survey Database](#)

Pilbara Biological Survey Database

Search the database

Note: Your search term will be matched against the title, author(s), publication date, text of the abstract, and the person and organization who sponsored the publication.


This web site contains the results of a project that aimed to document all terrestrial biological surveys in the Pilbara.


The then Department of Resources Development, now part of the Department of Industry and Resources (DOIR), required a review of all environmental survey work carried out in the Pilbara biogeographical region (as defined by Environment Australia (2000) in the *Interim Biogeographic Regionalisation for Australia*). The review aimed to identify and document all studies on flora, vegetation (encompassing mangroves), vertebrate and invertebrate fauna which have been conducted both on offshore islands as well as the mainland. Biota Environmental Sciences undertook this work on behalf of the DOIR, on behalf of the Pilbara Iron-Ore Environmental Committee.


During this first phase of the project, 789 reports have been identified, of which 200 have been sourced and metadata statements completed. Forty-nine contacts have been identified and the majority have had details completed. This data and information has been collated using the Spatial Metadata Management System (SMMS), which stores the information in a Microsoft Access database. It is envisaged that there are a number of reports in addition to these identified that have not yet been sighted. It is estimated that between 1,000 and 1,500 relevant reports exist for this project.


The Management Committee for the project recommended that the database be provided to the Department of Conservation and Land Management (CALM; now [Department of Parks and Wildlife, DPaW](#)) as the custodian. The Committee also recommended that the database be deployed on-line through the Herbarium's FloraBase infrastructure, free of charge to the public. This web site is a pilot project of this deployment, and contains basic searchable functionality as a proof of concept.


The database contains almost 800 records. For more information, contact the Custodian [Stephen van Leeuwen](#), or [Piers Higgs](#) at [Gaia Resources](#). A paper detailing the project has been published in *The Journal of The Royal Society of Western Australia*, volume 88.














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You are here: [DPaW](#) / [Science & Conservation Division Home](#) / [Pilbara Biological Survey Database Detail](#)

Pilbara Biological Survey Database Detail

There was 1 record found for your search.

Originator Names: E.M. Mattiske & Associates
Title: Junction Project Area - Tree transects: Monitoring Results March 1994
Publication Date: Unpublished Material (1994)
Person Name: Stuart Anstee
Organization Name: Hamersley Iron


Abstract: This report describes the establishment of three Tree Transects within and adjacent to the Junction Project Area Mining Lease within the Yandicoogina Region. Field work was undertaken in March 1994. The Junction Project may potentially affect the vegetation along drainage lines within and adjacent to the Mining Lease Area. Possible potential changes in these areas include changes in local drainage, hydrological conditions and dust levels. These potential changes may have direct and indirect impacts on specific plant species and creek line communities. Consequently a set of Tree Monitoring Transects were established to enable an assessment of these potential impacts. The Tree Transects were selected to: * monitor the potential indirect impacts of water-draw down on the Eucalypt Woodlands fringing major creek systems * establish baseline data information to assess the response of local tree species to dust and changes in local hydrological conditions. Plant communities along drainage lines reflect local changes in hydrology more than the communities on the higher and drier areas, due to the dependency of many of the species on seasonal rains to establish and maintain growth. It has been noted (E.M. Mattiske & Associates, 1994) that fluctuations in tree vigour occur due to changes in seasonal conditions. It is critical to monitor these fluctuations over a period of time to enable a review of the impacts of the proposed mining operations. The results reflected different degrees of stress in the tree species on the fringing creek line plant communities. It is recommended that the three Tree Transects established are monitored every two to three years.

Menu

[Introduction & Search](#)

This is a Department of Parks and Wildlife website.

What do we know about it




Parks & Wildlife Data

Datasets Organisations Groups About DPaW Map

Log in Register

Search Q



Parks & Wildlife Data

Datasets Organisations Groups About DPaW Map

Search data

Q

Popular tags

mpa_report
Knowledge Managemen...

KMI

Parks & Wildlife Data statistics

1.2k

datasets

30

organizations

17

groups

0

showcases

Filter by location Clear

+
■

Map data © OpenStreetMap contributors
Tiles by MapQuest

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)

Q

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

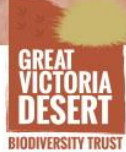
What do we know about it



Environmental Planning Tool

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





[HOME](#) [ABOUT US](#) [OUR REGION](#) [OUR PROJECTS](#) [WHAT WE DO](#) [WORK WITH US](#) [RESOURCES](#) [NEWS](#) [CONTACT](#)

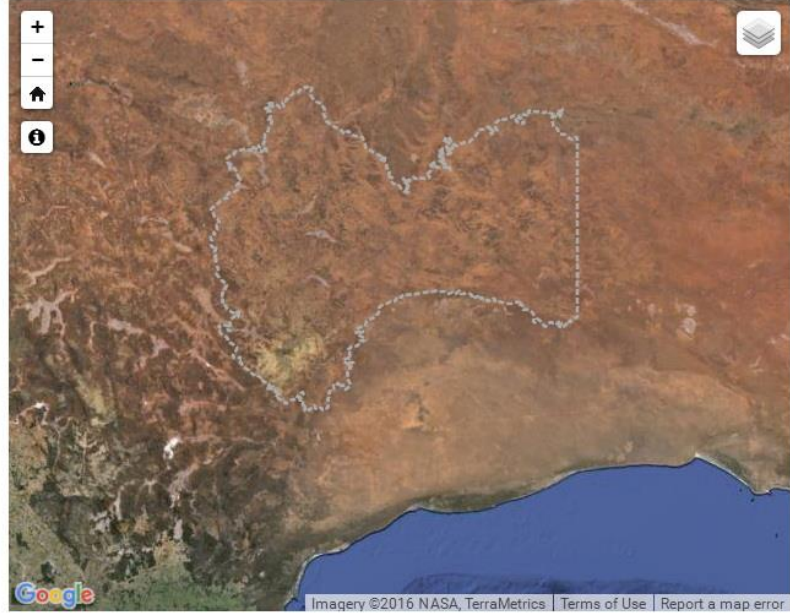
MAPPING – KNOWLEDGE HUB

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

