Terrestrial Ecosystem Research Network

Australian Centre for Ecological Analysis & Synthesis

Analysis and synthesis centres: transdisciplinary and transorganisational facilitation for capitalising on existing information and knowledge

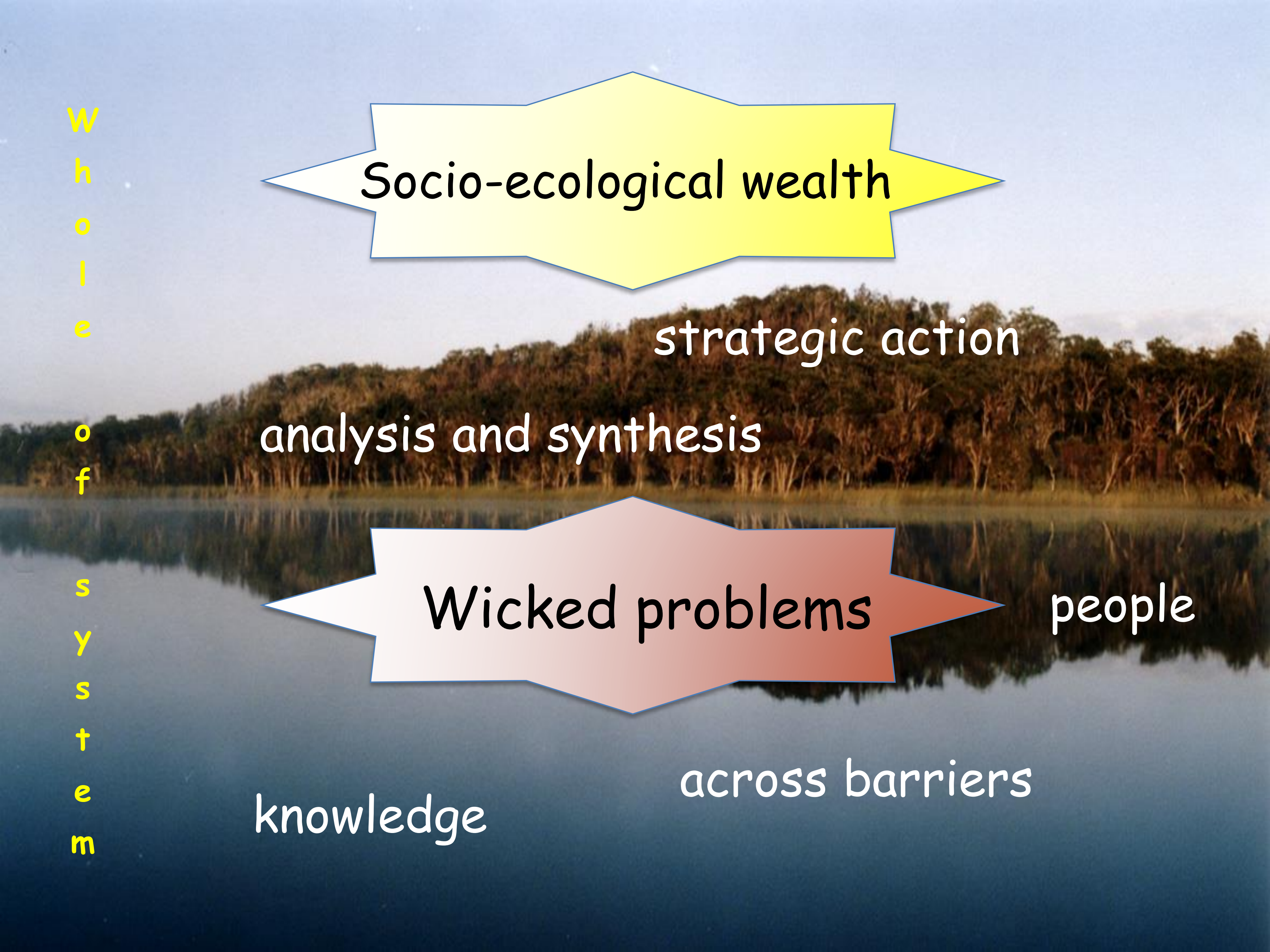
A. Specht

TERN is supported by the Australian Government through the National Collaborative Research Infrastructure Strategy and the Super Science Initiative.

Analysis and synthesis centres: transdisciplinary and transorganisational facilitation for capitalising on existing information and knowledge

A. Specht

TERN is supported by the Australian Government through the National Collaborative Research Infrastructure Strategy and the Super Science Initiative.


Whole of system
Socio-ecological wealth
strategic action
analysis and synthesis
Wicked problems
people
across barriers
knowledge

This presentation

- Wicked challenges
- The synthesis centre pilot
- Future possibilities

Terrestrial Ecosystem Research Network

Australian Centre for Ecological Analysis & Synthesis

This presentation

- Wicked challenges
- The synthesis centre pilot
- Future possibilities

Wicked challenges

Due to

- Big data and its availability
- Problem complexity

Big data


PERSPECTIVE

More Is Less: Signal Processing and the Data Deluge

Richard G. Baraniuk

The data deluge is changing the operating environment of many sensing systems from data-poor

PERSPECTIVE

Climate Data Challenges in the 21st Century

Jonathan T. Overpeck,[1*] Gerald A. Meehl,[2] Sandrine Bony,[3] David R. Easterling[4]

Climate data are dramatically increasing in volume and complexity, just as the users of these data in the scientific community and the public are rapidly increasing in number. A new paradigm of more open, user-friendly data access is needed to ensure that society can reduce vulnerability to climate variability and change, while at the same time exploiting opportunities that will occur.

Climate variability and change, both natural and anthropogenic, exert considerable influences on human and natural systems. These influences drive the scientific quest for an understanding of how climate behaved in the past and will behave in the future. This understanding is critical for supporting the needs of an ever-broadening spectrum of society's decision-makers as they strive to deal with the influences of Earth's climate at global to local scales. Our understanding of how the climate system functions is built on a foundation of climate data, both observed and simulated (Fig. 1). Although research scientists have been the main users of these data, an increasing number of resource managers (working in fields such as water, public lands, health, and marine resources) need and are seeking access to climate data to inform their decisions, just as a growing range of policy-makers rely on climate data to develop climate change strategies. Quite literally, climate data provide the backbone for billion-dollar decisions. With this gravity comes the responsibility to curate climate data and share it more freely, usefully, and readily than ever before.

The Exploding Volume of Climate Data

Documenting the past behavior of the climate system, as well as detecting changes and their causes, requires the use of data from instrumental, paleoclimatic, satellite, and model-based sources. The earliest instrumental (thermometer and barometer) records stretch back to the mid- to late 1600s, although widespread land- and ship-based observations were not initiated until the early to mid-1800s, mostly in support of weather forecasting and analysis. Changes in observations through time, due to shifts in observing practices, instrumentation, and land use, have made it necessary to develop and apply advanced data-processing algorithms in order to describe the time evolution of climate. Inevitably, there are uncer-

system behaves.

In addition to the already large body of digital instrumental data available in diverse holdings around the globe, a substantial number of critical observations, such as many early temperature observations, are not yet widely available as digital records. It is important to create and maintain central repositories of these data in a manner that firmly defines the origin and nature of the data and also ensures that they are freely available (1, 2). In addition, an increasing array of paleoclimatic proxy records from human and natural archives, such as historical documents, trees, sediments, caves, corals, and ice cores, are being generated. These records

magnitude of future climate change depends on what society decides to do now in terms of emissions reductions. Taking little action produces the greatest warming as reflected by the RCP8.5 trajectory, whereas aggressive reductions as represented by RCP2.6 result in stabilized warming at a much lower level.

[1]Institute of the Environment, 845 North Park Avenue, Suite 532, University of Arizona, Tucson, AZ 85721, USA. [2]National Center for Atmospheric Research, Boulder, CO, USA. [3]CNRS, Laboratoire de Météorologie Dynamique, Institut Pierre-Simon Laplace, Université Pierre et Marie Curie, Paris, France. [4]National Oceanic and Atmospheric Administration (NOAA)/National Climatic Data Center, Asheville, NC, USA.

*To whom correspondence should be addressed. E-mail: jto@email.arizona.edu

TECHNOLOGY FEATURE

THE BIG CHALLENGES OF BIG DATA

As they grapple with increasingly large data sets, biologists and computer scientists uncork new bottlenecks.

Extremely powerful computers are needed to help biologists to handle big-data traffic jams.

Its availability

Shedding Light on the Dark Data in the Long Tail of Science

P. Bryan Heidorn

Current Biology 24, 94–97, January 6, 2014 ©2014

The Availability of
Declines Rapidly w

Timothy H. Vines,[1,2,*] Arianne Y.K. Albert,
Florence Débarre,[1,4] Dan G. Bock,[1] Miche
Kimberly J. Gilbert,[1] Jean-Sébastien Moo
Sébastien Renaut,[1] and Diana J. Renniso
[1]Biodiversity Research Centre, University
6270 University Boulevard, Vancouver, BC
[2]Molecular Ecology Editorial Office, 6270 U
Boulevard, Vancouver, BC V6T 1Z4, Canad
[3]Women's Health Research Institute, 4500
Vancouver, BC V6H 3N1, Canada
[4]Centre for Ecology & Conservation Biosci
Exeter, Cornwall Campus, Tremough, Pen
[5]Institute for Sustainable Horticulture, Kwantlen Polytechnic University, 12666 72nd Avenue, Surrey, BC V3W 2M8, Canada
[6]Département of Biology, Université Laval, 1030 Avenue de la Médecine, Laval, QC G1V 0A6, Canada

mative response was received.

There was a negative relationship between the age of the paper and the probability of finding at least one apparently working e-mail either in the paper or by searching online (odds ratio [OR] = 0.93 [0.90–0.96, 95% confidence interval

To make good decisions
You need good data, access, and management

SPECIALSECTION

PERSPECTIVE

Challenges and Opportunities of Open Data in Ecology

O. J. Reichman,* Matthew B. Jones, Mark P. Schildhauer

Ecology is a synthetic discipline benefiting from open access to data from the earth, life, and social sciences. Technological challenges exist, however, due to the dispersed and heterogeneous nature of these data. Standardization of methods and development of robust metadata can increase data access but are not sufficient. Reproducibility of analyses is also important, and executable workflows are addressing this issue by capturing data provenance. Sociological challenges, including inadequate rewards for sharing data, must also be resolved. The establishment of well-curated, federated data repositories will provide a means to preserve data while promoting attribution and acknowledgement of its use.

Ecology is an integrative, collaborative dis-

dressing the profound environmental concerns we face today and, inevitably, in the future.

Unfortunately, only a small fraction of ecological data ever collected is readily discoverable and accessible, much less usable. Based on our own experience building data archives for ecology, we estimate that less than 1% of the ecological data collected is accessible after publication of associated results (6, 7). Rather than providing direct access to data, we share interpretations of distilled data through presentations and publications. To realize advances that are possible through ecological and environmental synthesis, we need to solve the technological and sociological challenges that have limited open access to data. While "open data" will enhance and accelerate scientific advance, there is also a need for "open science"—where not only data but also analyses and methods are preserved, providing better transparency and reproducibility of results.

Solving Technology Challenges

Reviews of ecological informatics have described three major technological challenges: data dispersion, heterogeneity, and provenance (8, 9). Ecosystems and habitats vary across the globe, and data are collected at thousands of locations. Although large quantities of data representing relatively few data sets are typically managed by major research projects, institutes, and agencies, most ecological data are difficult to discover and preserve because they are contained in relatively small data sets dispersed among tens of thousands of independent researchers. Data heterogeneity creates challenges due to the breadth of topics studied by ecologists and the varied experimental

DATA-SHARING

Everything on display

Researchers can get visibility and connections by putting their data online — if they go about it in the right way.

BY RICHARD VAN NOORDEN

grants or publications, and although posting

Decision-making challenges

Due to

- Big data and its availability
- Problem complexity

Complexity

Austral Ecology — A Journal of ecology in the Southern Hemisphere
Austral Ecology (2009) 34, 1–9

The big ecological questions inhibiting effective environmental management in Australia

RG,[2] D. B. LINDENMAYER,[3]
T. McCULLOCH,[6] S. McINTYRE,[7] H. A. NIX,[3]
. ANDERSEN,[9] M. A. BURGMAN,[10]
LOWE,[13] A. J. McMICHAEL,[14] J. S. PARSLOW,[15]
C. Z. WOINARSKI[17,18]
, Alice Springs, NT 0871, Australia (E-mail:
idies, University of Queensland, St Lucia, [13]School of
id, [3]Fenner School of Environment and Society,
ol of Earth Sciences, Australian National University,
omology, [14]National Centre for Epidemiology and
sity, Canberra ACT, [4]National Business Leaders Forum
rtment of Biological Sciences, Macquarie University,
nable Ecosystems, Wembley, Western Australia, [9]CSIRO
erritory Department of Natural Resources, Environment
nental Research, Charles Darwin University, Casuarina,
iversity of Melbourne, Parkville, Victoria, [11]Centre for
Marine and Atmospheric Research, Hobart, and
a

Journal of Ecology 2013, **101**, 58–67 doi: 10.1111/1365-2745.12025

FORUM

Identification of 100 fundamental ecological questions

William J. Sutherland[1], Robert P. Freckleton[2], H. Charles J. Godfray[3], Steven R. Beissinger[4], Tim Benton[5], Duncan D. Cameron[2], Yohay Carmel[6], David A. Coomes[7], Tim Coulson[8], Mark C. Emmerson[9], Rosemary S. Hails[10], Graeme C. Hays[11], ...3,

Vol. 35: 165–175, 2007
doi: 10.3354/cr00723
CLIMATE RESEARCH
Clim Res
Published December 31
OPEN ACCESS

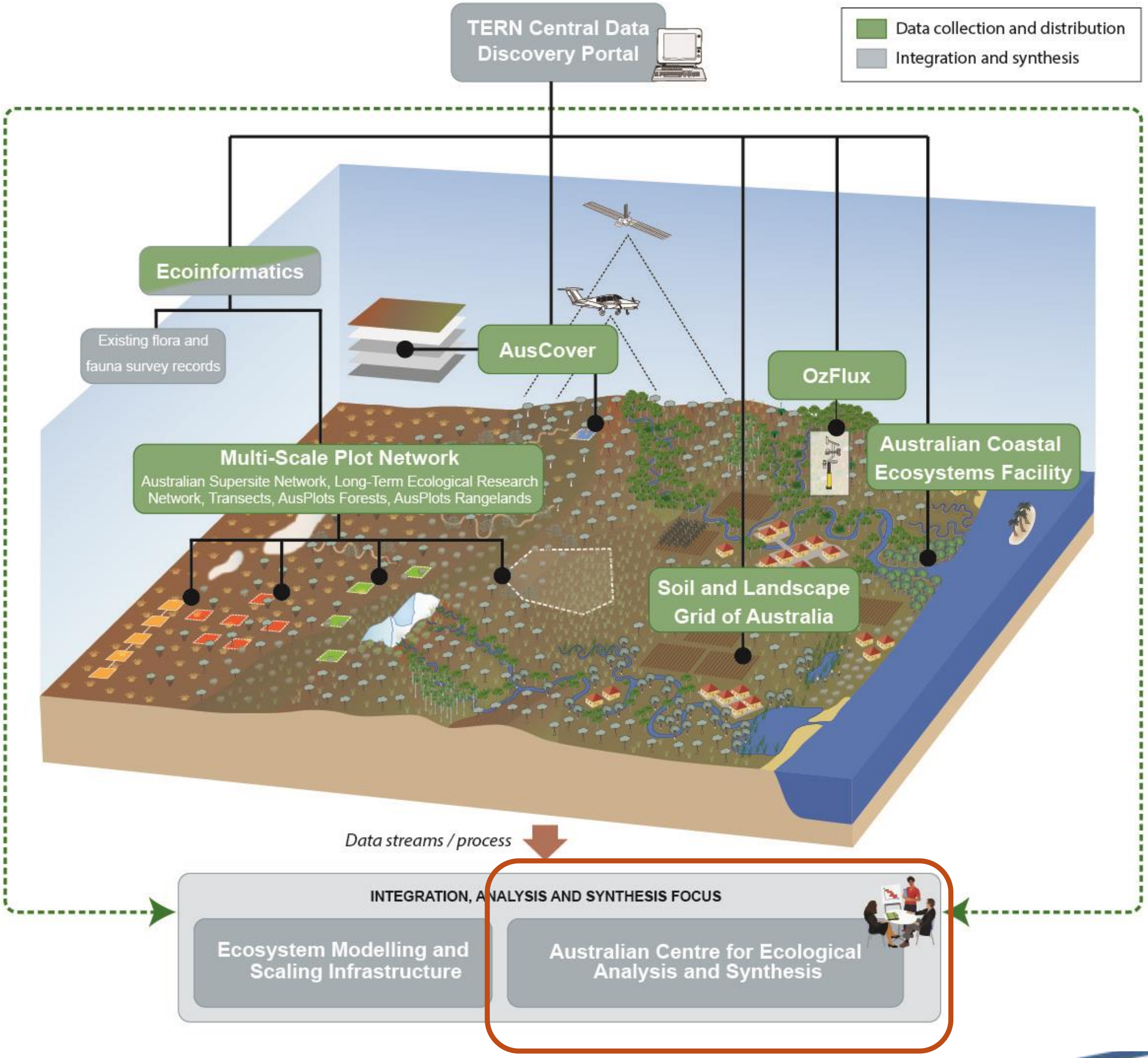
The complexity of predicting climate-induced ecological impacts

Karen Mustin[1,*], William J. Sutherland[2], J
[1]School of Biological Sciences, University of Aberdeen, Zoology Building, Tilly
[2]Department of Zoology, Cambridge University, Downing Stree
[3]School of Biological Sciences, and [4]Tyndall Centre for Climate Change Rese
University of East Anglia, Norwich NR4 7T

ELSEVIER
Available online at www.sciencedirect.com
SciVerse ScienceDirect
Current Opinion in Environmental Sustainability

Spanning disciplinary, sectoral and international boundaries: a sea change towards transdisciplinary global environmental change research?

Martin Rice



TERN Central Data Discovery Portal
Data collection and distribution
Integration and synthesis
Ecoinformatics
Existing flora and fauna survey records
AusCover
OzFlux
Australian Coastal Ecosystems Facility
Multi-Scale Plot Network
Australian Supersite Network, Long-Term Ecological Research Network, Transects, AusPlots Forests, AusPlots Rangelands
Soil and Landscape Grid of Australia
Data streams / process
INTEGRATION, ANALYSIS AND SYNTHESIS FOCUS
Ecosystem Modelling and Scaling Infrastructure
Australian Centre for Ecological Analysis and Synthesis

Terrestrial Ecosystem Research Network

Australian Centre for Ecological Analysis & Synthesis

We are drowning in information while starving for wisdom. The world henceforth will be run by synthesizers, people able to put together the right information at the right time, think critically about it, and make important choices wisely.

—Edward O. Wilson, *Consilience: The Unity of Knowledge (1998)*

This presentation

- Decision-making challenges
- The synthesis centre pilot
- Future possibilities

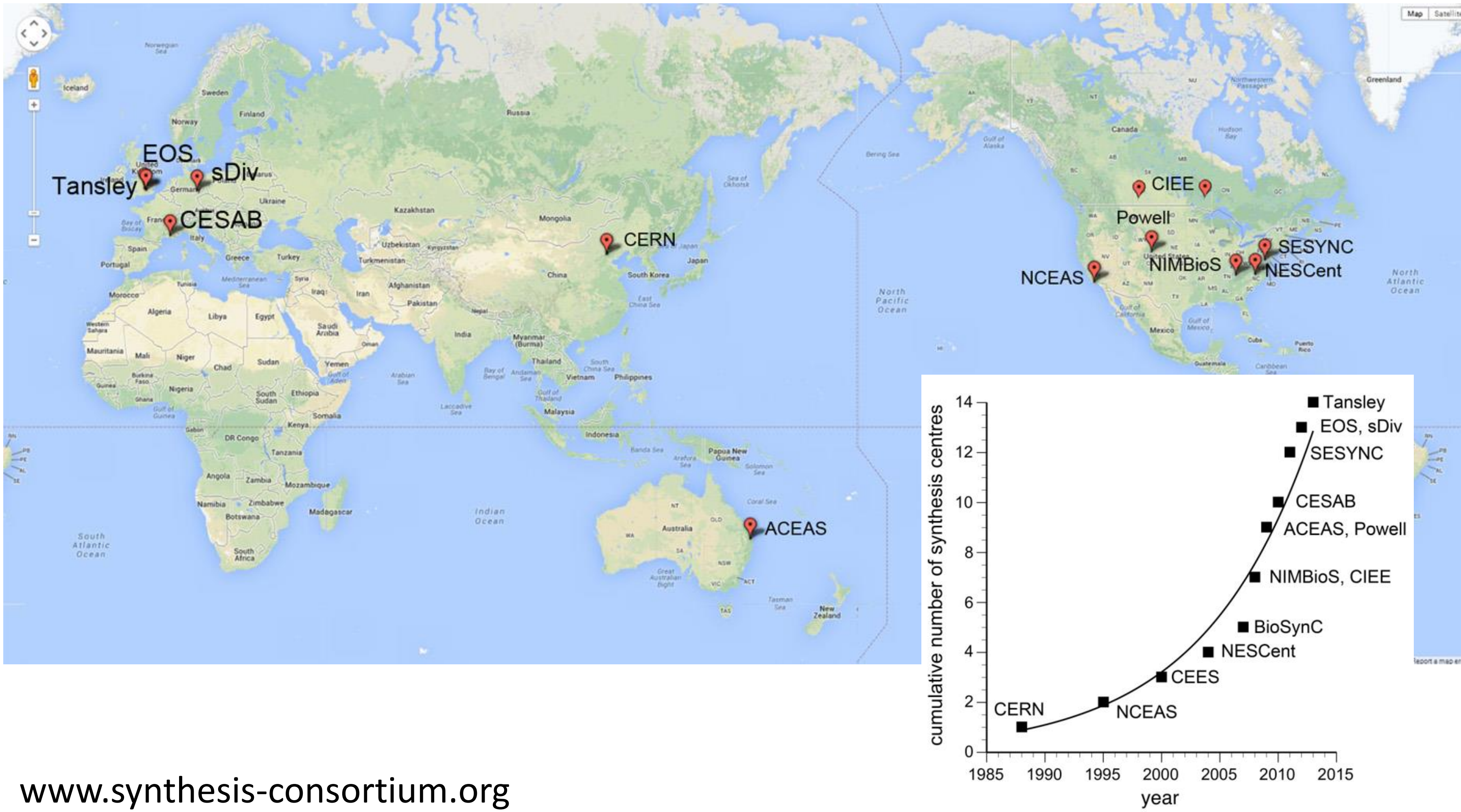
TERN
Terrestrial Ecosystem Research Network

Original vision

aceas
Australian Centre for Ecological Analysis & Synthesis

The *Australian Centre for Ecological Analysis and Synthesis* was to provide support for:

‘disciplinary and inter-disciplinary integration, synthesis and modelling of ecosystem data to aid in the development of evidenced-based environmental management strategies and policy at regional, state and continental scales’ (www.aceas.org.au).

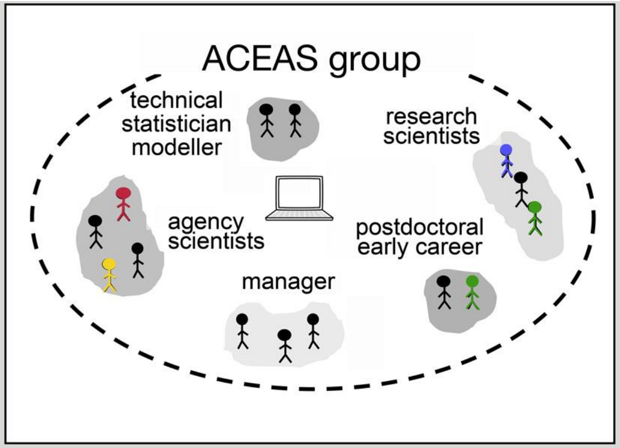


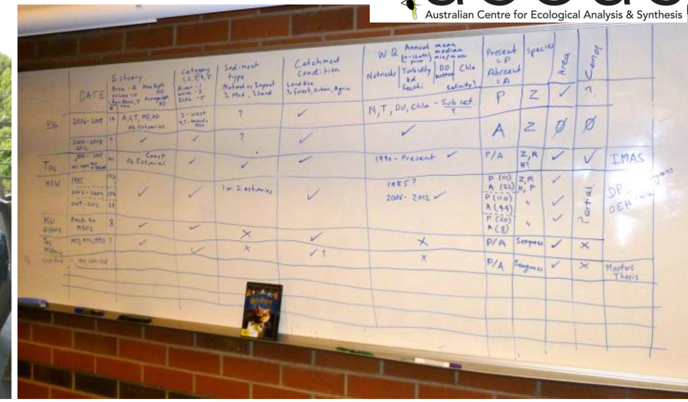
www.synthesis-consortium.org

TERN
Terrestrial Ecosystem Research Network

aceas
Australian Centre for Ecological Analysis & Synthesis

The process





APPLICATION

Final reports

aceas
Australian Centre for Ecological Analysis & Synthesis

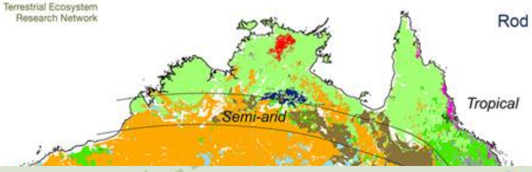
Pyrogeography: integrating and evaluating existing models of Australian fire regimes to predict climate change impacts

Principal Investigator: Brett Murphy[9]

Group Members

Matthias Boer[1], David Bowman[2], Ross Bradstock[3], John Carter[4], Geoff Cary[5], Mark Cochrane[6], Rod Fensham[7], Meg Krawchuk[8], Owen Price[3], Jeremy Russell-Smith[10], Dick Williams[11], and Grant Williamson[2].

TERN
Terrestrial Ecosystem Research Network



Project Objectives

Fire is a critical process in Australian landscapes, affecting biodiversity and ecosystem function, atmospheric greenhouse gas concentrations, and human health, safety and property. Yet our understanding of the drivers of fire regimes remains limited. Only recently has there been impetus to form unifying theories of the biogeography of fire at regional and
...ng theories have yet to be rigorously evaluated using extensive, continental-scale datasets.
...fire regimes are related to environmental conditions is made urgent by rising atmospheric
...ssociated prospects of rapid climate change. Given the strong effect of CO_2 on vegetation
...d of climate on fire weather and fuel availability, future dramatic shifts in fire regimes have
...magnitude and even direction of the predicted changes tend to be highly uncertain.

...address important knowledge gaps in the biogeography of fire in Australia by:
...o classifying and mapping broad fire regimes at a continental scale. A continental description
...s is a key step in understanding the global drivers and constraints of landscape fire, as well
...ite change effects by providing potential analogues for future fire activity
...ition in fire regimes and their relative importance
...for assessing the vulnerability of fire regimes to change.

...ralia's fire regimes, we reclassified a continental-scale vegetation map, defining classes
...litter, grass, shrubs) and fire types (e.g. surface, crown, and ground). Classes were
...iate classification to derive a map of twenty broad fire regimes (Figure 1). Using expert
...arch, we validated each fire regime and characterised typical and extreme fire intensities
...-derived active fire detections were used to determine seasonal patterns of fire activity

...he most likely impacts of climate change on fire regimes would be via changes in: (1)
...ort- to medium-term fire weather, affecting the availability of fuel to burn and rates of fire
...d a climate space with axes representing annual means of (1) rainfall (a surrogate for
...potential evapotranspiration (a surrogate for fire weather). Plotting a surface representing
...frequency (1997-2010) within this space (Figure 2) allowed us to infer the likely driver of
...20 broad fire regimes. The location of fire regimes relative to this surface indicates whether
...eather are likely to be the main drivers of change.

...map interactively go to http://www.aceas.org.au/portal/

aceas
Australian Centre for Ecological Analysis & Synthesis

Major findings

Australia's fire regimes are closely correlated with the latitudinal gradient in summer monsoon activity. Frequent, low intensity fires occur in the monsoonal north, and infrequent, high intensity fires in the temperate south, demonstrating a trade-off between frequency and intensity. That is, very high intensity fires are only associated with very low frequency fire regimes in the high biomass eucalypt forests of southern Australia. While these forests occasionally experience extremely intense fires, these regimes are exceptional, with most of the continent dominated by grass fuels, typically burning with relatively low intensities. Fire is rare in dense-canopied vegetation, such as arid Acacia shrublands, due to sparse fine fuels, and rainforests, due to the combination of sparse fine fuels and infrequent microclimatic conditions suitable for fire.

The approach we have developed to define continental-scale fire regimes, using a combination of remote sensing and thematic data, expert elicitation and literature review, will provide insights into the spatiotemporal patterns of fire, informing models that predict effects of climate change on fire regimes. Our approach can be applied globally, providing opportunities to undertake comparative pyrogeographic analyses.

The climatic correlates of recent fire activity provide insights into the vulnerabilities of Australian fire regimes to global environmental change. Maximum fire activity occurs at high levels of mean annual rainfall and potential evapotranspiration, where fuel loads are typically high and fire weather seasonally severe (Figure 2), consistent with the predictions of recent conceptual models (Meyn *et al.*, 2007; Bradstock, 2010). Annual fire activity is severely constrained at low values of either mean annual rainfall (biomass limited) or potential evapotranspiration (fire weather limited). We expect that fire regimes in high rainfall areas, such as southern Australia, will be most strongly affected by changes in the frequency of severe fire weather, while fire regimes in low rainfall areas, such as central Australia, will be most affected by changes in productivity and fuel abundance, possibly as a result of changes in rainfall or atmospheric CO_2 concentration.

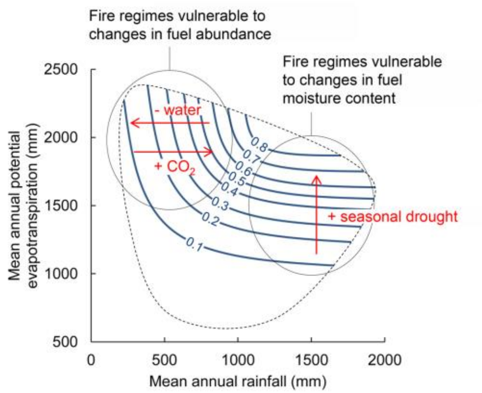


Figure 2: Climatic control of maximum fire frequencies throughout Australia, and climatic zones with fire regimes vulnerable to changes in either fuel abundance or fire weather. The contour lines describe a surface representing the upper bound (99% quantile) of AVHRR satellite-derived fire frequency (1997-2010) (expressed as fires year^{-1}); highest fire frequencies occur at high levels of mean annual rainfall and potential evapotranspiration, where fuel loads are typically high and fire weather seasonally severe. The dashed line represents the climatic envelope occupied by the vast majority of the Australian continent.

How will this affect Australian ecosystem science & management?

The generation of a broad fire regimes map for Australia will help to contextualise regional approaches to fire management. A concept that arose from the working group is that of 'fire countries' - broad biogeographic areas with similar patterns of fire regimes and fire management issues. Such a concept will help scientists convey to policymakers that fire management practices appropriate for one 'fire country' may be entirely inappropriate for another (e.g. grazing as a fire management tool in central Queensland vs. the Australian Alps). The approach we have developed to quantify the vulnerability of fire regimes to changes in fuel abundance and fire weather will allow land managers to better predict the impacts of global environmental change on ecosystems.

Outputs and products

Murphy B.P., Williamson G.J. & Bowman D.M.J.S. (2011) Fire regimes: moving from a fuzzy concept to geographic entity. *New Phytologist* 192: 316-318.

Bowman D.M.J.S., Murphy B.P., Boer M.M., Bradstock R.A., Cary G.J., Cochrane M.A., Fensham R.J., Krawchuk M.A., Price O.F. & Williams R.J. (submitted) Forest fire management, climate change and the risk of catastrophic carbon losses.

Murphy B.P., Bradstock R.A., Boer M.M., Carter J., Cary G.J., Cochrane M.A., Fensham R.J., Russell-Smith J, Williamson G.J. & Bowman D.M.J.S. (submitted) Fire regimes of Australia, a pyrogeographic model system.

Boer M.M., Bowman D.M.J.S., Bradstock R.A., Cary G.J., Cochrane M.A., Fensham R.J., Krawchuk M.A., Murphy B.P., Price O.F. & Williams R.J. (in prep.) Tree-grass ratios determine transformational shifts of fire regimes in response to climate change.

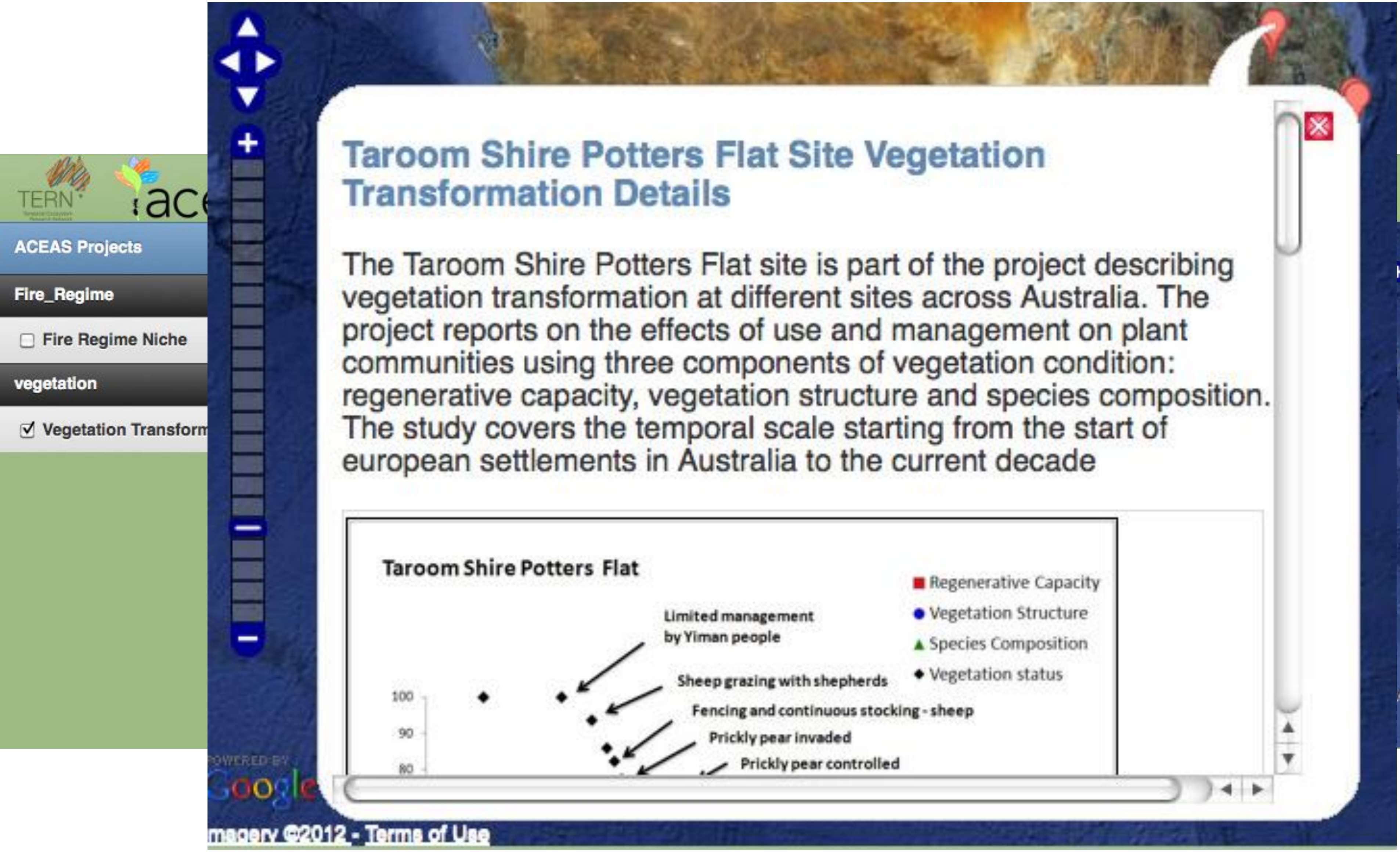
References

Bradstock, R. A. (2010) A biogeographic model of fire regimes in Australia: current and future implications. *Global Ecology and Biogeography.* 19: 145-158.

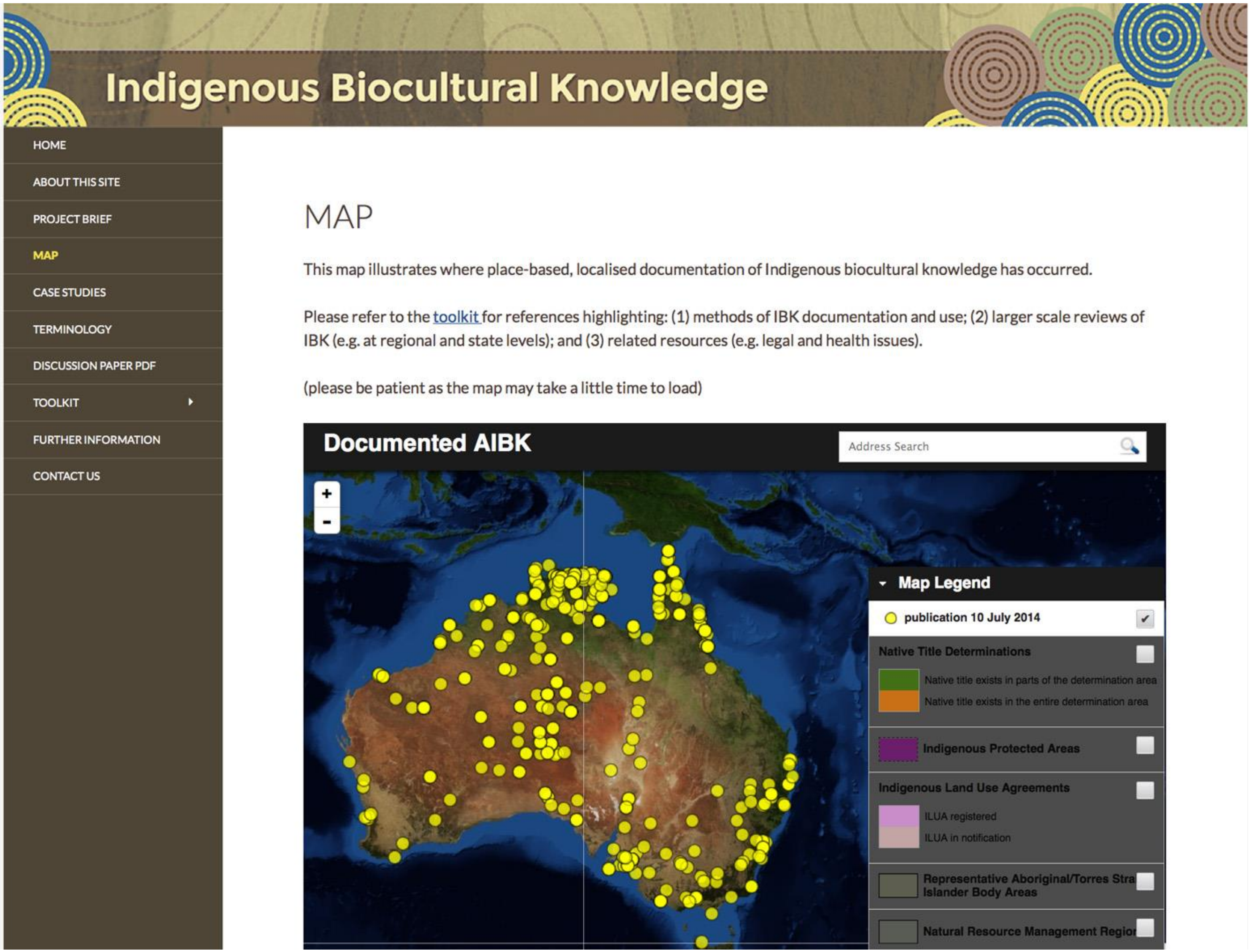
Meyn, A., White, P. S., Buhk, C. & Jentsh, A. (2007) Environmental drivers of large, infrequent wildfires: the emerging conceptual model. *Progress in Physical Geography* 31: 287-312.

Participant's institutions: [1]University of Western Sydney, [2]University of Tasmania, [3]University of Wollongong, [4]Queensland Department of Environment and Heritage Protection, [5]Australian National University, [6]South Dakota State University, [7]University of Queensland, [8]University of California, Berkeley, [9]University of Melbourne, [10]Bushfires NT, [11]CSIRO Ecosystem Sciences.

Data visualisation



Data links…and capability building



aceas
Australian Centre for Ecological Analysis & Synthesis

Refereed publication

Bryan B.A., Meyer, W.S., Campbell, C.A., H
K., Rickards L.A., Summers D.A., Thackv
transformation of Australian landscapes

Fisher, D.O., Johnson, C.N., Lawes, M.J., Fr
Abbott, B., Frank, A., Legge, S., Letnic,
The current decline of tropical marsupia
Biogeography. doi: 10.1111/geb.12088

Haberle, S.G., Bowman, D.M.J.S., Nernhan
Erbas, B., Godwin, I., Green B.J., Huete,
Thibaudon, M., Vicendese, D., Williamsc
airborne pollen in Australian and New Z

Murphy B.P., Bradstock R.A., Boer M.M., C
Smith J, Williamson G.J. & Bowman D.M
model system. *Journal of Biogeography*

O'Grady A.P., Mitchell P.J.M., Pinkard E.A.,
unravelling the roles of carbon and wate
297. DOI: 10.1111/nph.12451

And of course the upcoming Special Issue of
transdisciplinary synthesis in the ecos

Global Ecology and Biogeography, (Global Ecol. Biogeogr.) (2014) **23**, 181–190

RESEARCH PAPER

The current decline of tropical marsupials in Australia: is history repeating?

Diana O. Fisher[1]*, Chris N. Johnson[2], Michael J. Lawes[3], Susanne A. Fritz[4], Hamish McCallum[5], Simon P. Blomberg[1], Jeremy VanDerWal[6], Brett Abbott[7], Anke Frank[2,8], Sarah Legge[9,10], Mike Letnic[12], Colette R. Thomas[13], Alaric Fisher[8,10], Iain J. Gordon[11] and Alex Kutt[14]†

[1]*School of Biological Sciences, The University of Queensland, St Lucia 4072, Queensland, Australia,* [2]*School of Zoology, University of Tasmania, Private Bag 5, Hobart, Tasmania 7001, Australia,* [3]*Research Institute for the Environment and Livelihoods, Charles Darwin University, Darwin, NT 0909, Australia,* [4]*Biodiversity and Climate Research Centre (BiK-F) & Senckenberg Gesellschaft für Naturforschung, Senckenberganlage 25, 60325 Frankfurt, Germany,* [5]*School of Environment, Griffith University, Nathan Campus, 170 Kessels Rd, Nathan, Qld 4111, Australia,* [6]*Centre for Climate Change and Tropical Biology, School of Marine and Tropical Biology, James Cook University, Townsville, Qld 4811, Australia,* [7]*Ecosystem Sciences, CSIRO, PMB PO, Aitkenvale, Qld 4814, Australia,* [8]*Northern Territory Department of Land Resource Management, PO Box 496, Palmerston, NT 0831, Australia,* [9]*Australian Wildlife Conservancy, PO Box 8070, Subiaco East, WA 6008, Australia,* [10]*National Environmental Research Program Northern Australia Hub, Charles Darwin University, Casuarina, NT 0909, Australia,* [11]*James Hutton Institute, Invergowrie Dundee DD2 5DA, Scotland, UK,* [12]*School of Biological, Earth and Environmental Sciences, University of New South Wales, Randwick, NSW 2052, Australia,* [13]*TropWATER, James Cook University, Townsville, Qld 4811, Australia,* [14]*School of Marine and Tropical Biology, James Cook University, Townsville, Qld 4811, Australia*

*Correspondence: Diana O. Fisher, School of Biological Sciences, Goddard building (8), The University of Queensland, St Lucia, Qld 4072, Australia. E-mail d.fisher@uq.edu.au.
†Current address: PO Box 151, Ashburton, Vic 3147, Australia.

ABSTRACT

Aim A third of all modern (after 1500) mammal extinctions (24/77) are Australian species. These extinctions have been restricted to southern Australia, predominantly in species of 'critical weight range' (35–5500 g) in drier climate zones. Introduced red foxes (*Vulpes vulpes*) that prey on species in this range are often blamed. A new wave of declines is now affecting a globally significant proportion of marsupial species (19 species) in the fox-free northern tropics. We aim to test plausible causes of recent declines in range and determine if mechanisms differ between current tropical declines and past declines, which were in southern (non-tropical) regions.

Location Australian continent

Methods We used multiple regression and random forest models to analyse traits that were associated with declines in species range, and compare variables associated with past extinctions in the southern zones with current tropical (northern) declines.

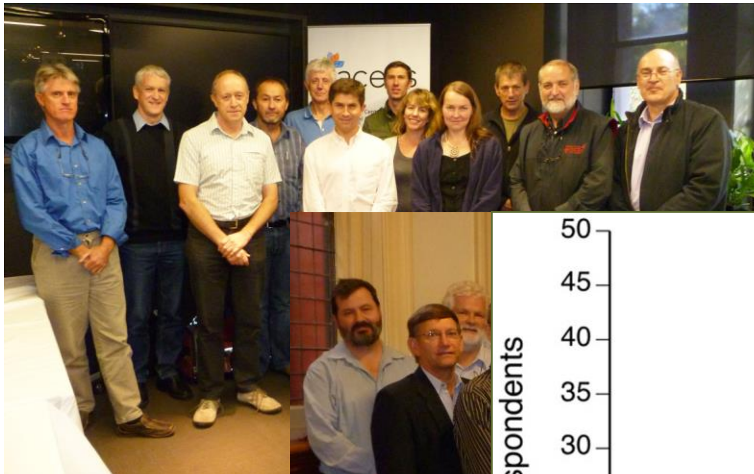
Results The same two key variables, body mass and habitat structure, were associated with proportion-of-decline in range throughout the continent, but the form of relationships differs with latitude. In the south, medium-sized species in open habitats of lower rainfall were most likely to decline. In the tropics, small species that occupy open vegetation with moderate rainfall (savanna) are now experiencing the most severe declines. Throughout the continent, large-bodied species and those in structurally complex habitats (rainforest) are secure.

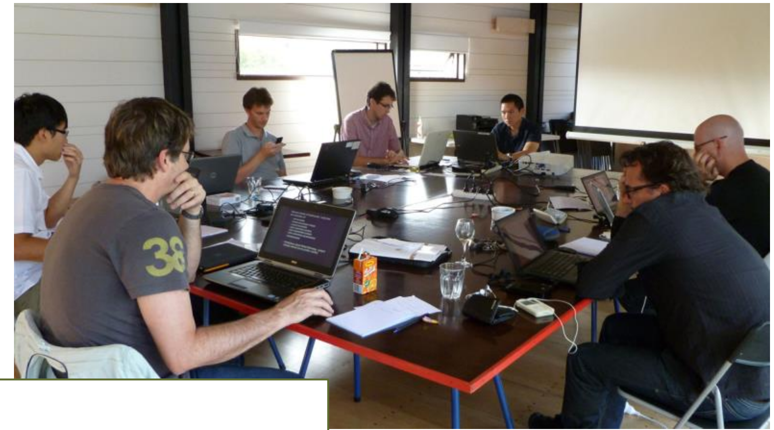
Main conclusions Our results indicate that there is no mid-sized 'critical weight range' in the north. Because foxes are absent from the tropics, we suggest that northern Australian marsupial declines are associated with predation by feral cats (*Felis catus*) exacerbated by reduced ground level vegetation in non-rainforest habitats. To test this, we recommend experiments to remove cats from some locations where tropical mammals are threatened. Our results show that comparative analysis can help to diagnose potential causes of multi-species decline.

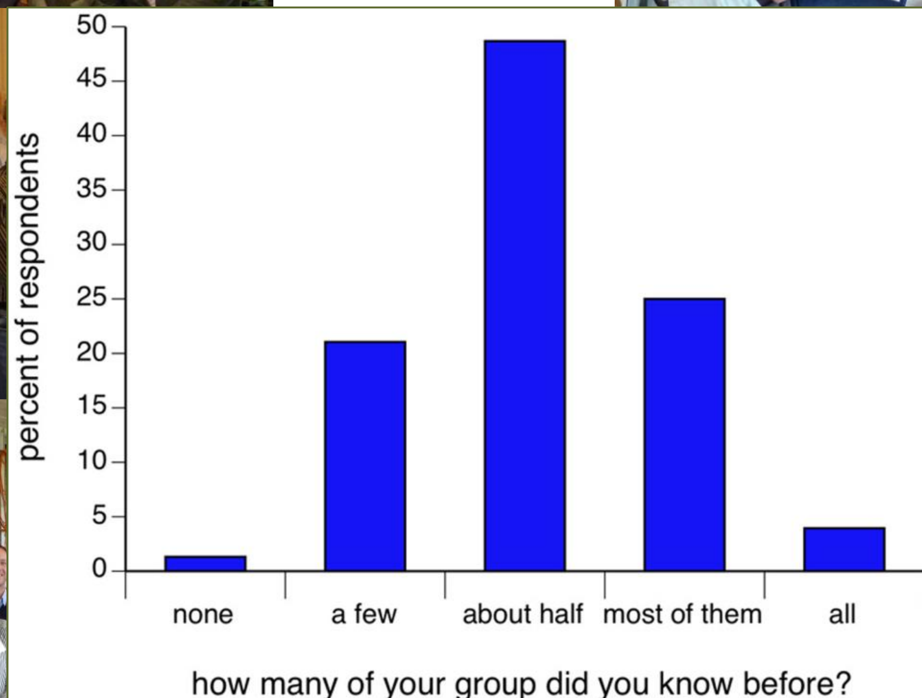
Keywords
Comparative methods, critical weight range, introduced predators, mammal extinction, marsupials, random forest models, tropical conservation.

DOI: 10.1111/geb.12088
http://wileyonlinelibrary.com/journal/geb

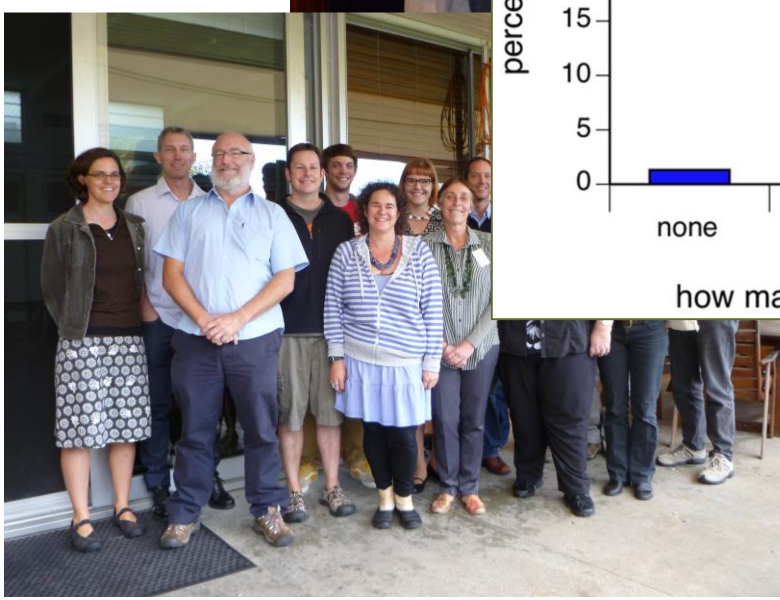
Expanding networks

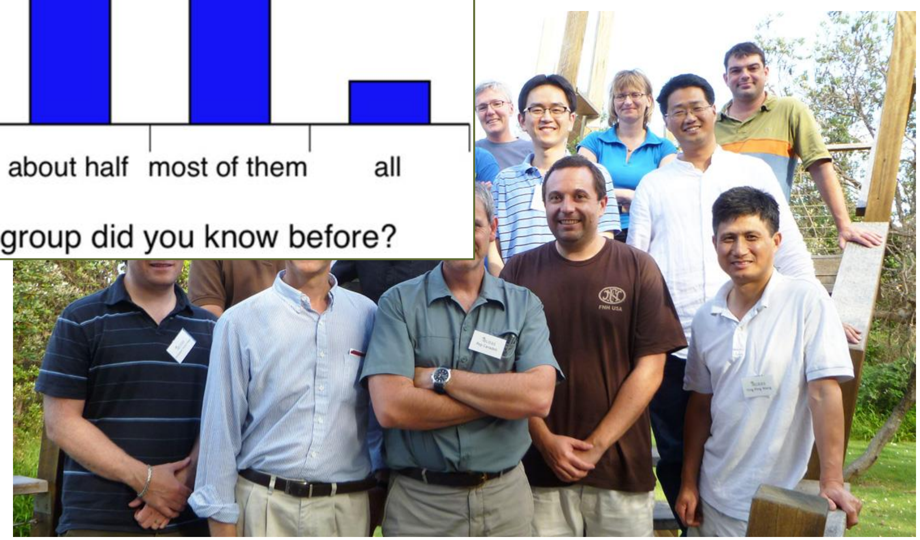




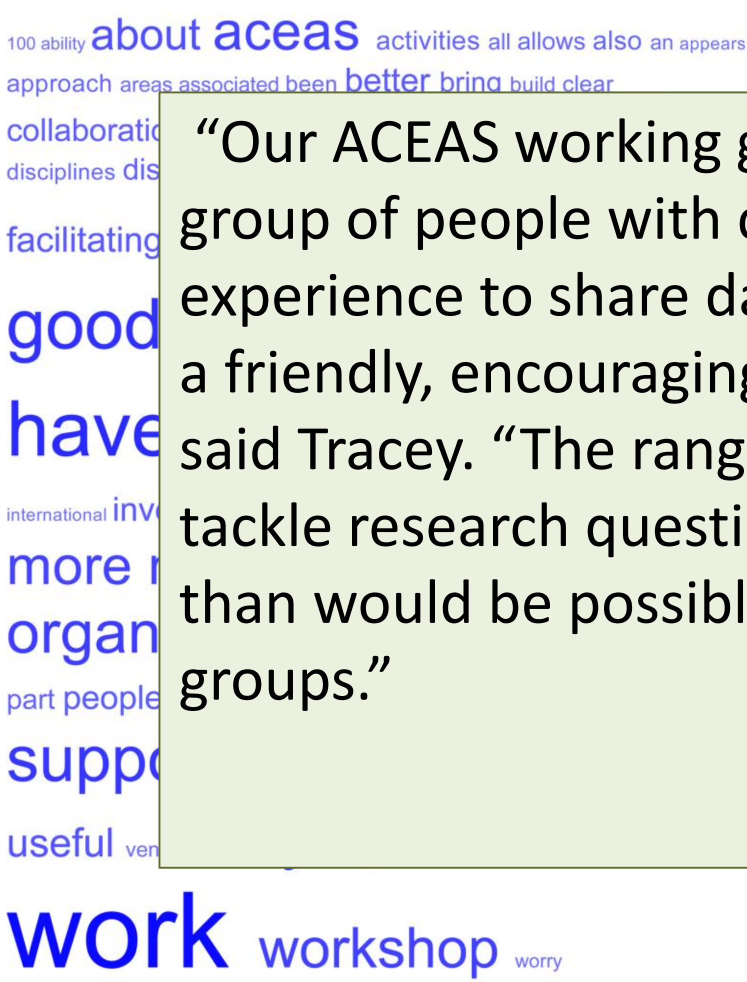


aceas
Australian Centre for Ecological Analysis & Synthesis

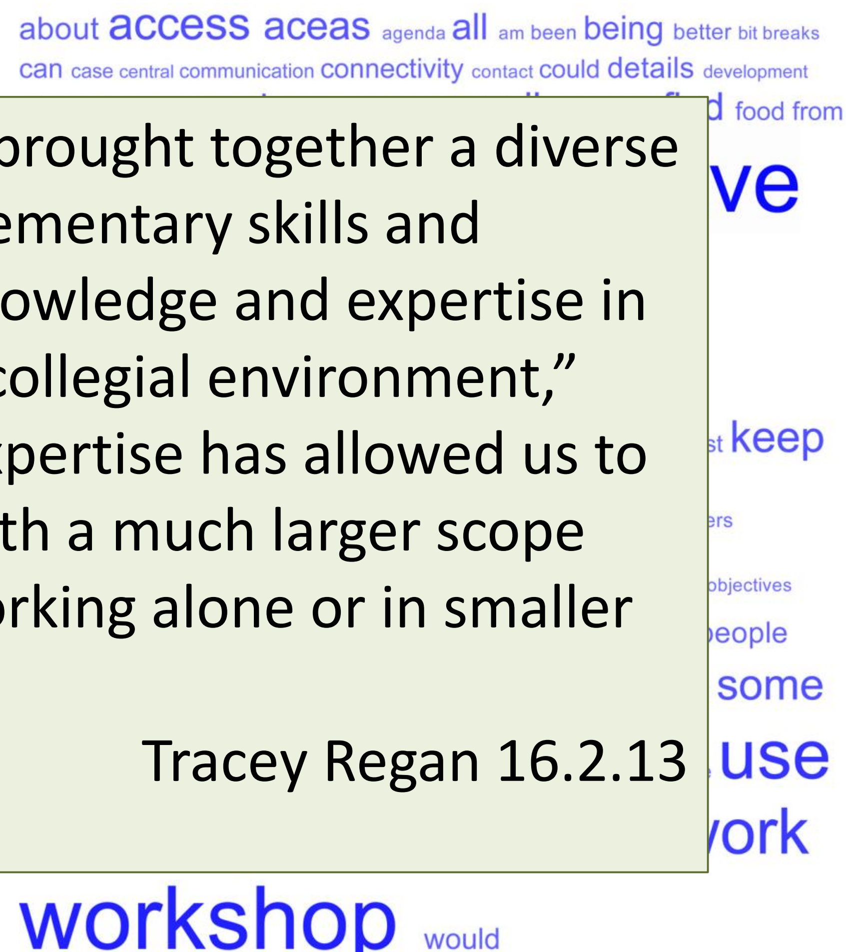




How different is ACEAS



ACEAS support



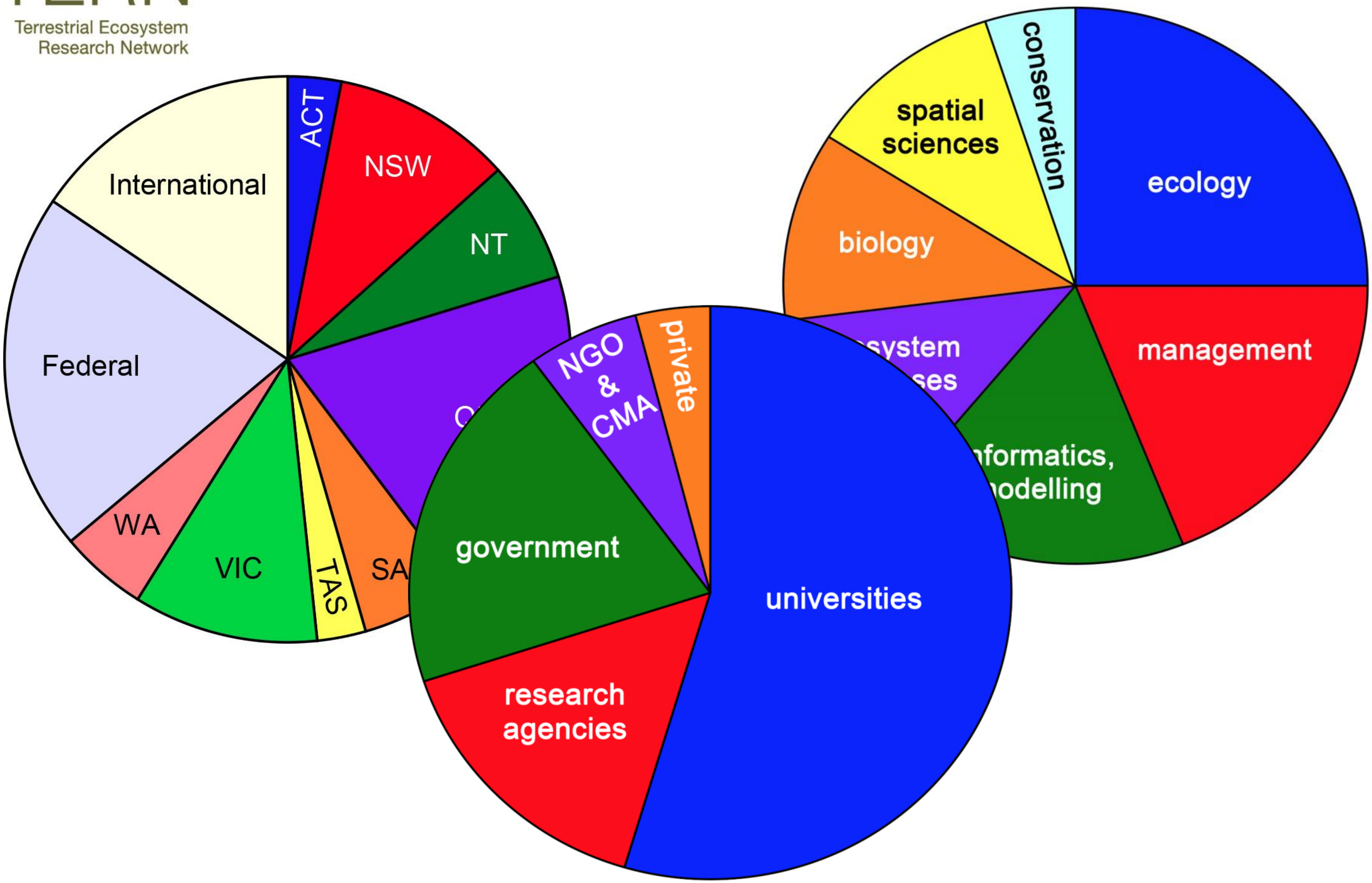
"Our ACEAS working group brought together a diverse group of people with complementary skills and experience to share data, knowledge and expertise in a friendly, encouraging and collegial environment," said Tracey. "The range of expertise has allowed us to tackle research questions with a much larger scope than would be possible if working alone or in smaller groups."

Tracey Regan 16.2.13

TERN
Terrestrial Ecosystem Research Network

The community

aceas
Australian Centre for Ecological Analysis & Synthesis



23 Final reports published

12 ARCs stemming from ACEAS activity

65 Analysis and synthesis activities

939 Downloads of the most popular ACEAS final report 'Conserving koalas in the 21st century' to Oct. 2014

747 participants

207 organisations

2 ACEAS groups provided advice directly to government

85,452 Unique visitors to the ACEAS website since 2012

8 data product visualisations published on ACEAS portal

138 mammal visualisations

3 independent web sites

3 Apps

140 Facebook page likes

9,230 slideshare views

>29 Conference presentations, including 1 keynote address

14+ Refereed journal articles

3 special editions

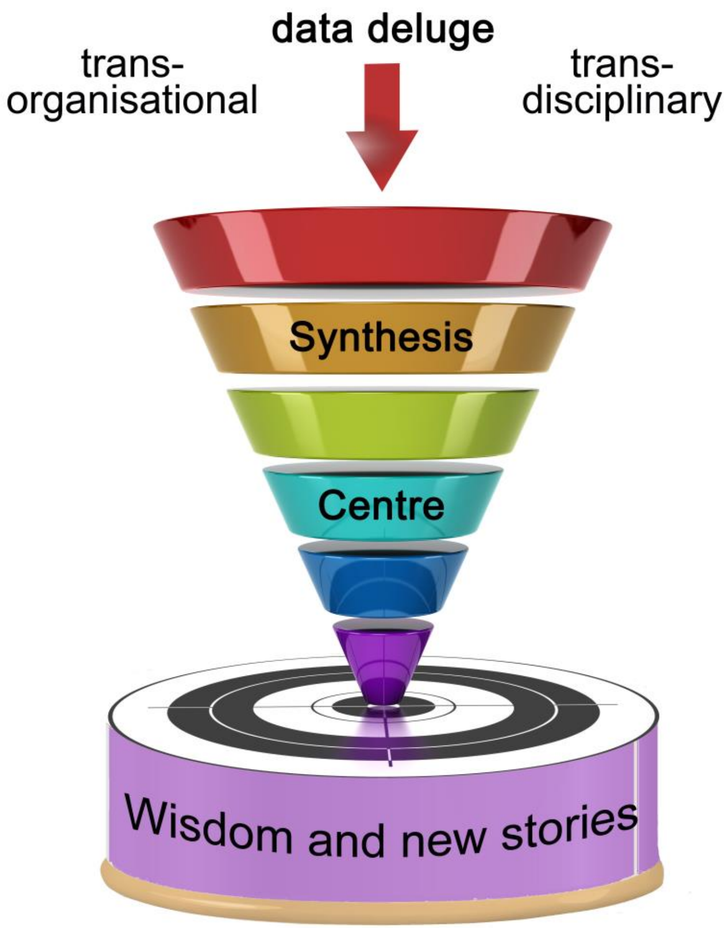
501 Twitter followers

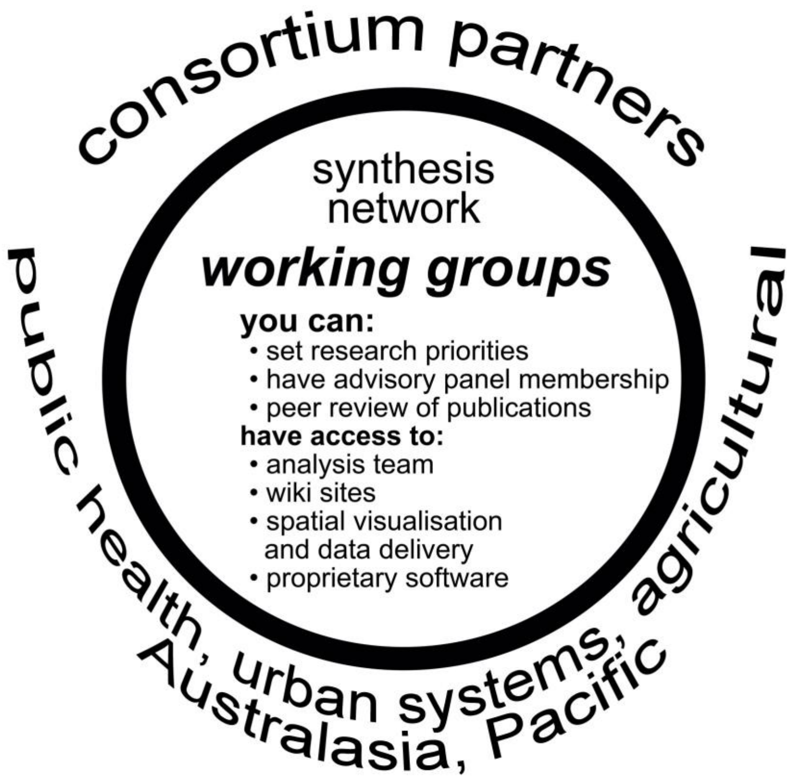
This presentation

- Decision-making challenges
- The synthesis centre pilot
- Future possibilities

Future possibilities

aceas
Australian Centre for Ecological Analysis & Synthesis





Australian Centre for Ecological Analysis & Synthesis

thankyou