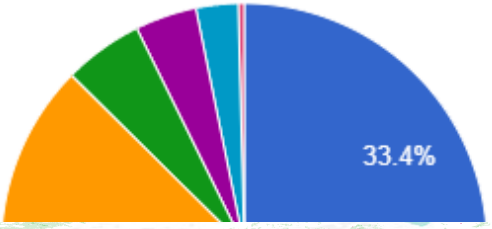
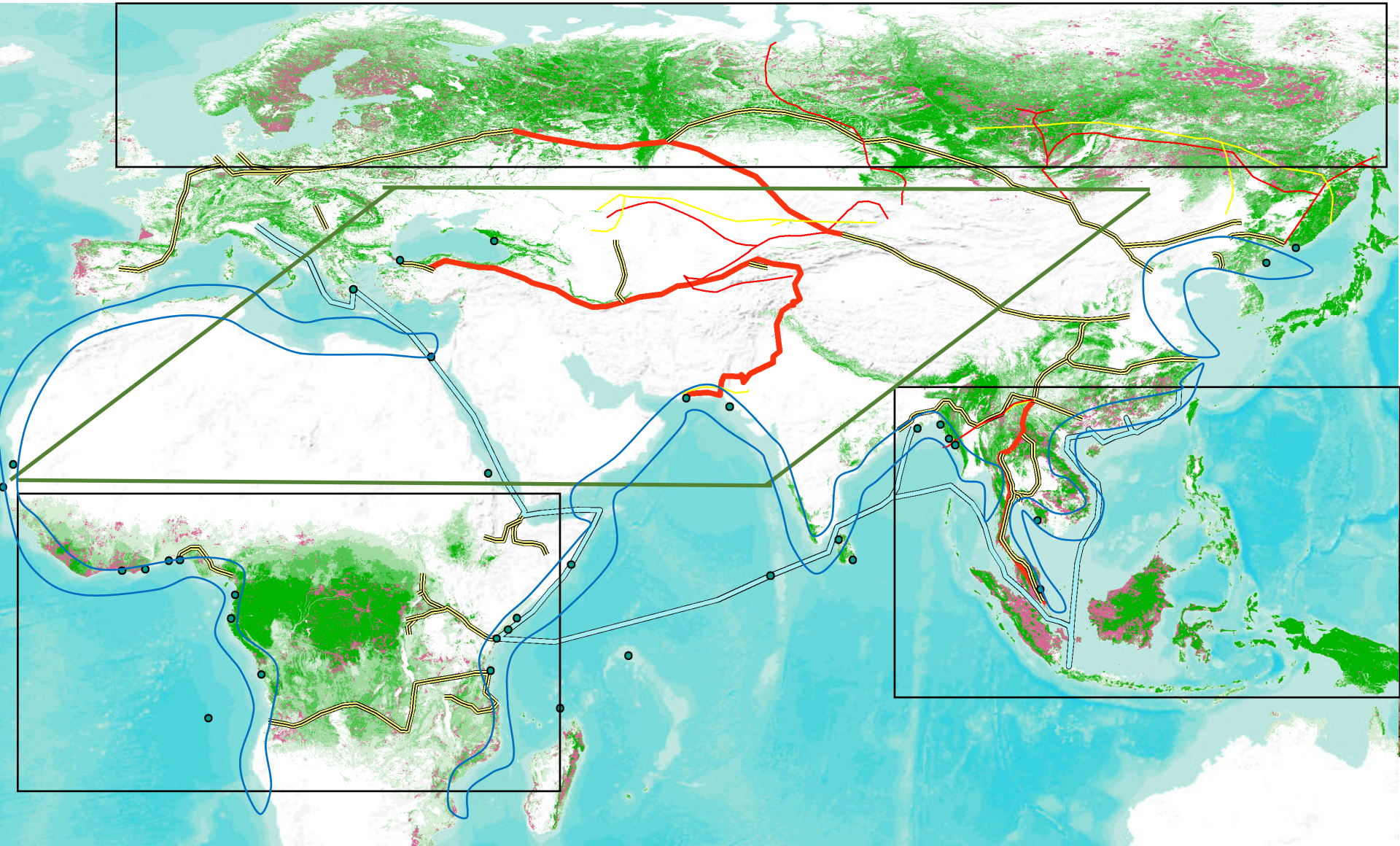
What is the BRI?



What is a Horizon Scan

- A Horizon scan assays novel issues which may become an issue into the future
- Here our core team of 14 contacted 250 people to assay potential “novel” issues which may follow the construction of the BRI
- This resulted in the generation of over 100 novel environmental and social issues which may follow from the roads construction
- From these, through active discussion we shortlisted 11 issues which may have significant results for the environment but were typically overlooked

How obvious are the impacts?



Understanding priorities

- Understanding the impact of the BRI on biodiversity requires thinking holistically about what it takes to build infrastructure, to maintain it and what the implications of new infrastructure are
- This means the footprint may actually be far larger than initially anticipated
- We need to think what is at risk at all stages of development so we can minimise risk and look for opportunities rather than just adapt to change

Invisible Invasives: Incidental Spread of Fungi, Bacteria, and Viruses

- Connectivity-another form
- Much of this area has very little data, thus new pathogens and pests may utilize the route to mobilise spread
- Some of the greatest pathogens of native diversity are from other regions and use humans to hop from one area to where native populations are naïve-such as whitenose and chytrid
- Connectivity for people has consequences and biosecurity may become an increasing issue in these newly connected regions

Invisible Invasives: Incidental Spread of Fungi, Bacteria, and Viruses

- Novelty-good and bad
- 96% of Fungi are new in places like North Thailand, but this means pathogens can spread
- Covid-19 shows us how things can spread without effective biosecurity, and spread round the world from Europe due to ineffective biosecurity; major lessons to learn here
- Wildlife, people, crops and livestock are vulnerable to new pets and pathogens

Cementing Extinction

- Huge consumption for cement
- China used more in 2 years than the US in recorded history (6.6gt)
- 6% annual loss
- China itself accounts for around 63% of annual global cement consumption, at an equivalent of around 1.7 tonnes for each of its 1.34 billion people
- As the landscape matrix changes karsts may dry out and heat up-making them unsuitable for their species

Karst diversity in Southeast Asia

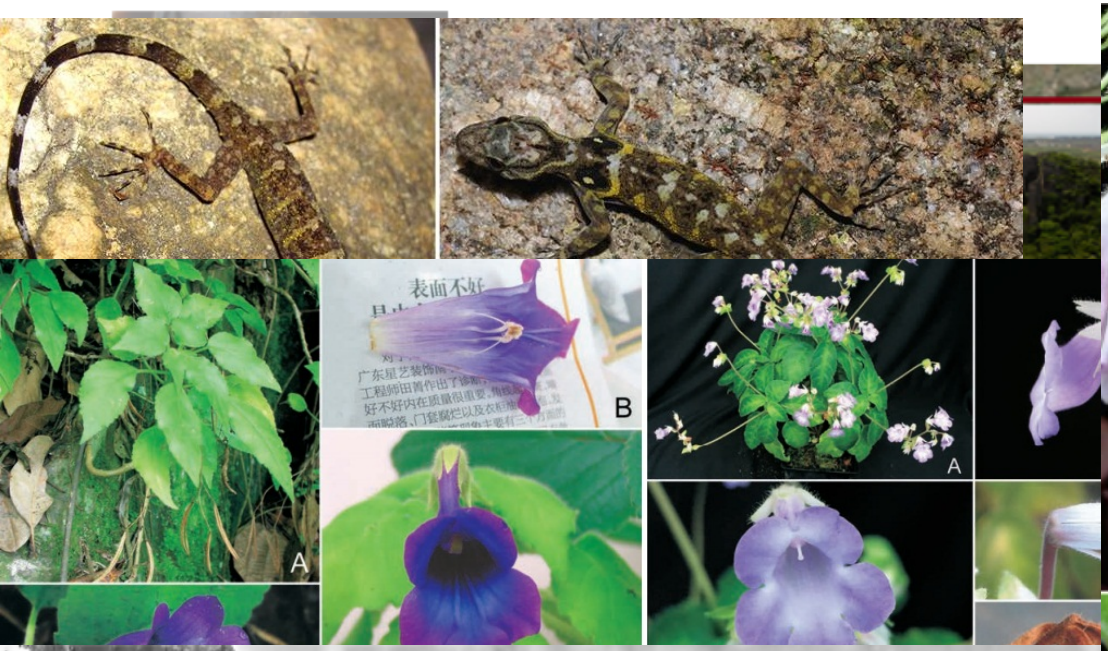


Fig. 1. A. *Didymocarpus aureoglandulosus* C.B.Clark. **B.** *D. bicolor* Craib. **C.** *D. biserratus* Barnett. **D.** *D. corchorifolius* Wall. ex DC. (Photos A, C, D: P. Nangngam, B: W. Makerd)

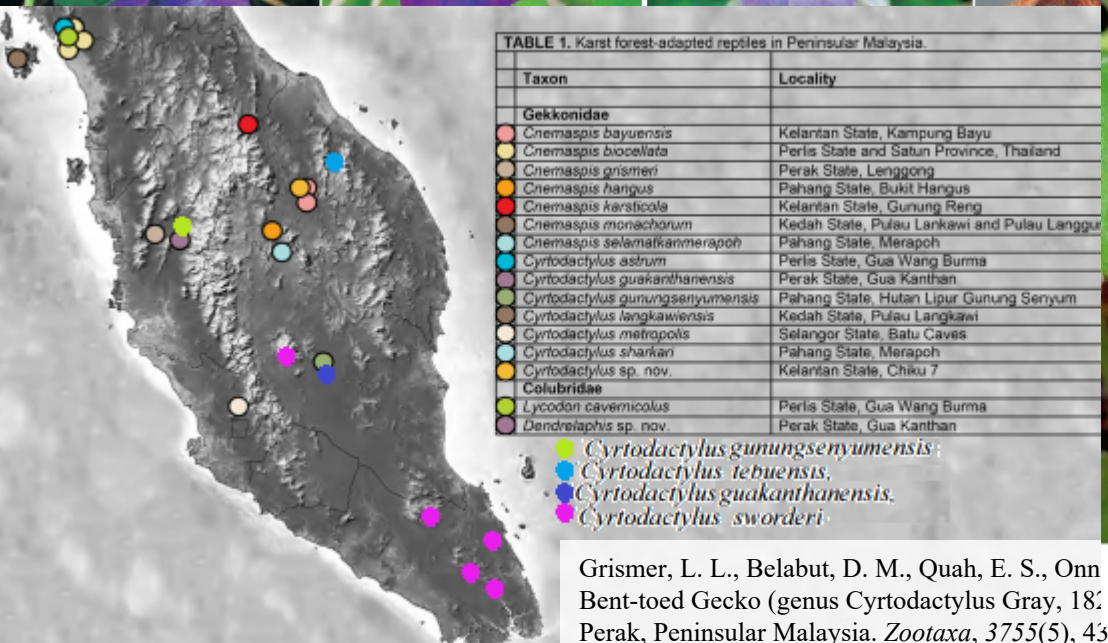
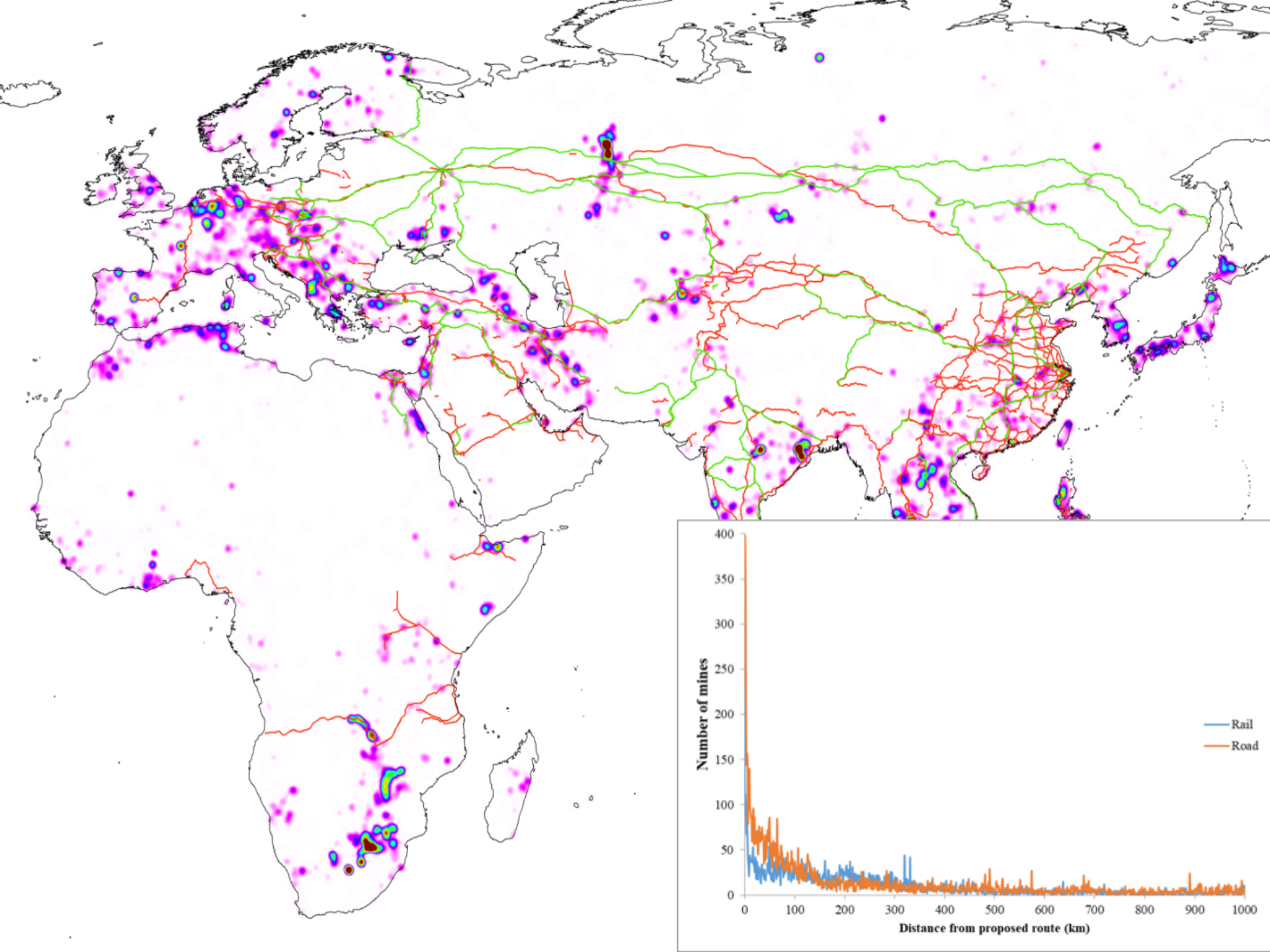
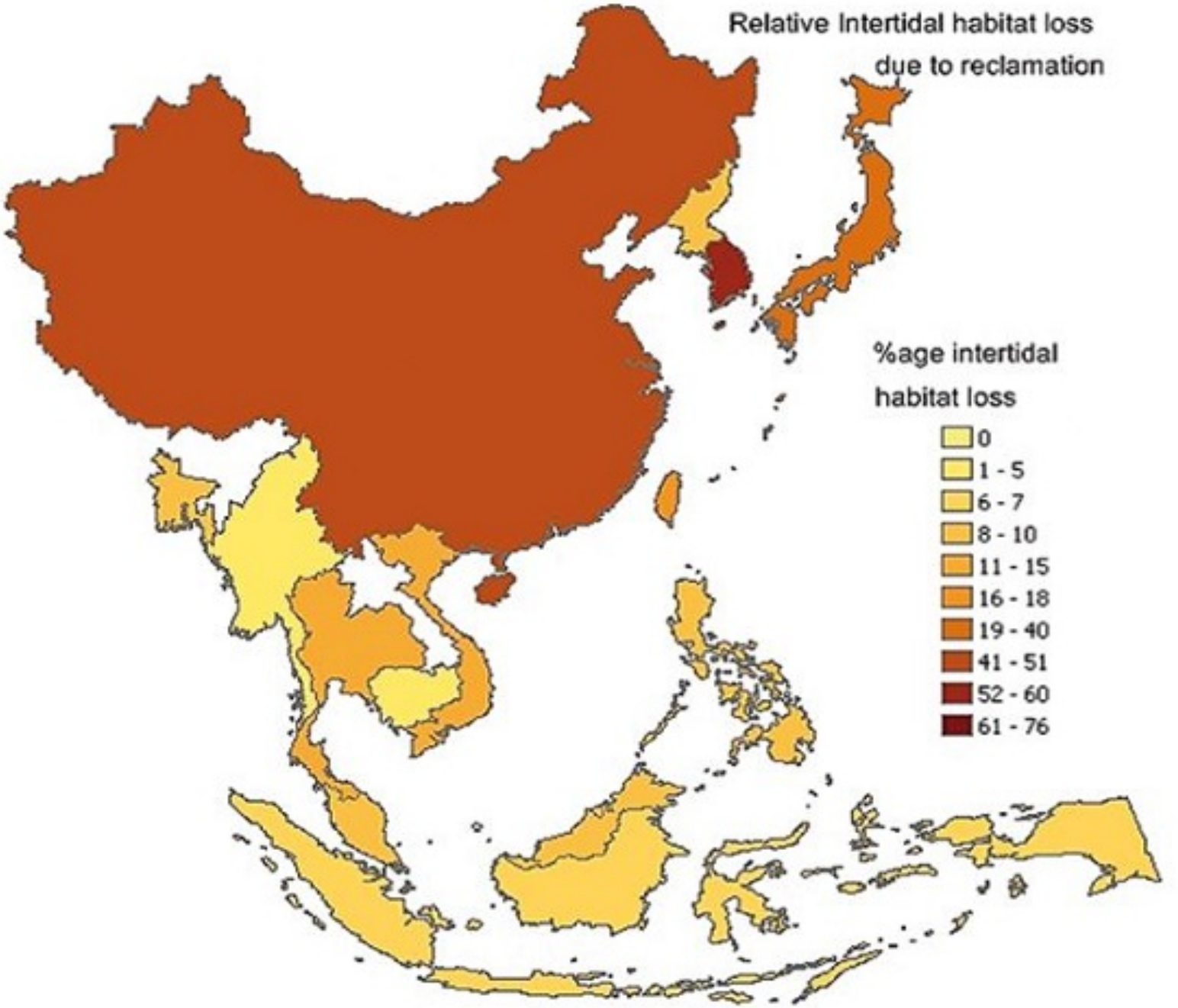


TABLE 1. Karst forest-adapted reptiles in Peninsular Malaysia.

Taxon	Locality
Gekkonidae	
Cnemaspis bayuensis	Kelantan State, Kampung Bayu
Cnemaspis biocellata	Perlis State and Satun Province, Thailand
Cnemaspis grismeri	Perak State, Lenggong
Cnemaspis hangus	Pahang State, Bukit Hangus
Cnemaspis karsticola	Kelantan State, Gunung Reng
Cnemaspis monachorum	Kedah State, Pulau Lankawi and Pulau Langgur
Cnemaspis selamatkanmerapoh	Pahang State, Merapoh
Cyrtodactylus astrum	Perlis State, Gua Wang Burma
Cyrtodactylus guakanthanensis	Perak State, Gua Kanthan
Cyrtodactylus gunungsenyumensis	Pahang State, Hutan Lipur Gunung Senyum
Cyrtodactylus langkawiensis	Kedah State, Pulau Langkawi
Cyrtodactylus metropolis	Selangor State, Batu Caves
Cyrtodactylus sharkan	Pahang State, Merapoh
Cyrtodactylus sp. nov.	Kelantan State, Chiku 7
Colubridae	
Lycodon cavernicolus	Perlis State, Gua Wang Burma
Dendrelaphis sp. nov.	Perak State, Gua Kanthan

Grismer, L. L., Belabut, D. M., Quah, E. S., Onn
Bent-toed Gecko (genus Cyrtodactylus Gray, 182
Perak, Peninsular Malaysia. *Zootaxa*, *3755*(5), 434-446.


400
350
300
250
200
150
100
50
0
Number of mines
0
100
200
300
400
500
600
700
800
900
1000
Distance from proposed route (km)
Rail
Road

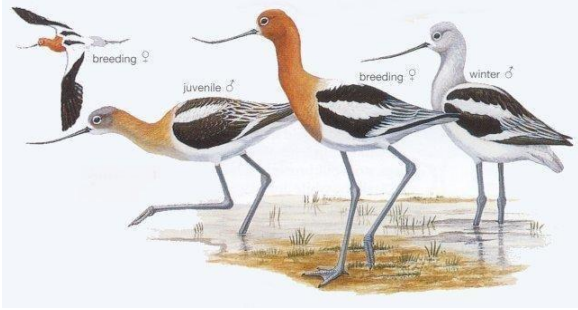


* Data from Taiwan, Province of China, is represented separately because of the difference in intertidal habitat loss percentage.

Coastal Ecosystems under Threat

- Only 700 spoonbilled sandpipers left worldwide
- Important part of the East-Australasian flyway for breeding and migration
- The most dramatic waterbird declines globally are in Asia, with 61% of waterbird species decreasing vs 15% increasing
- In East Asia 143 (64%) of the 225 waterbird species are decreasing
- In South and Southeast Asia 164 (62%) of this subregion's 263 waterbird species are in decline

Migratory birds

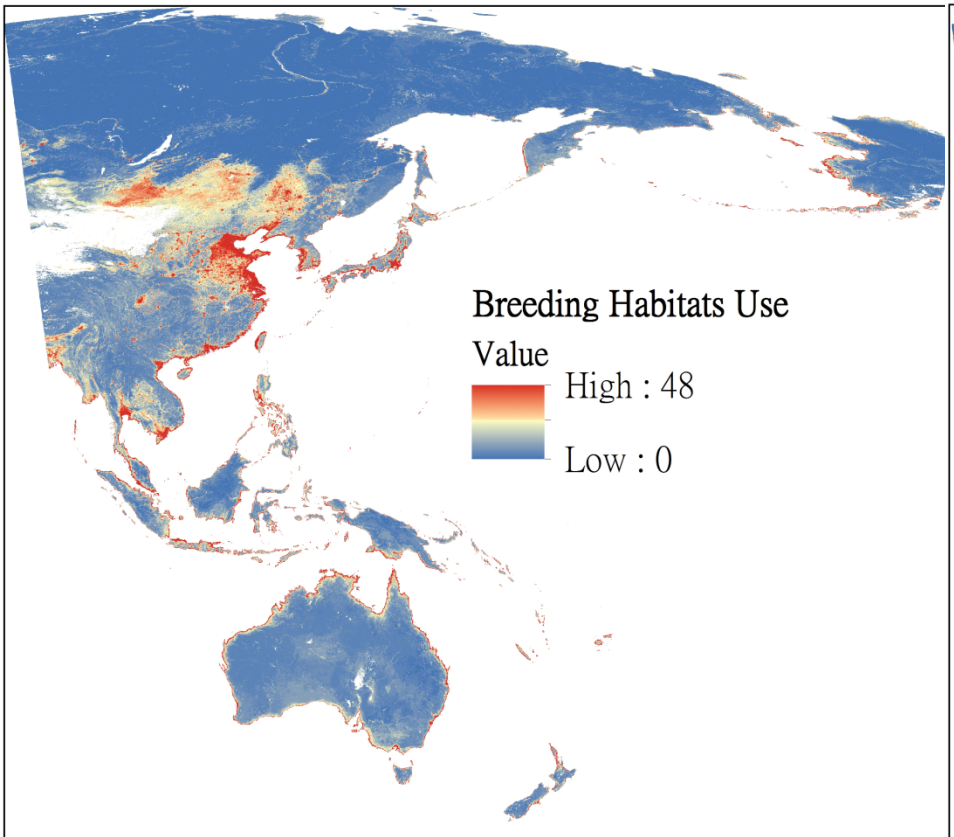


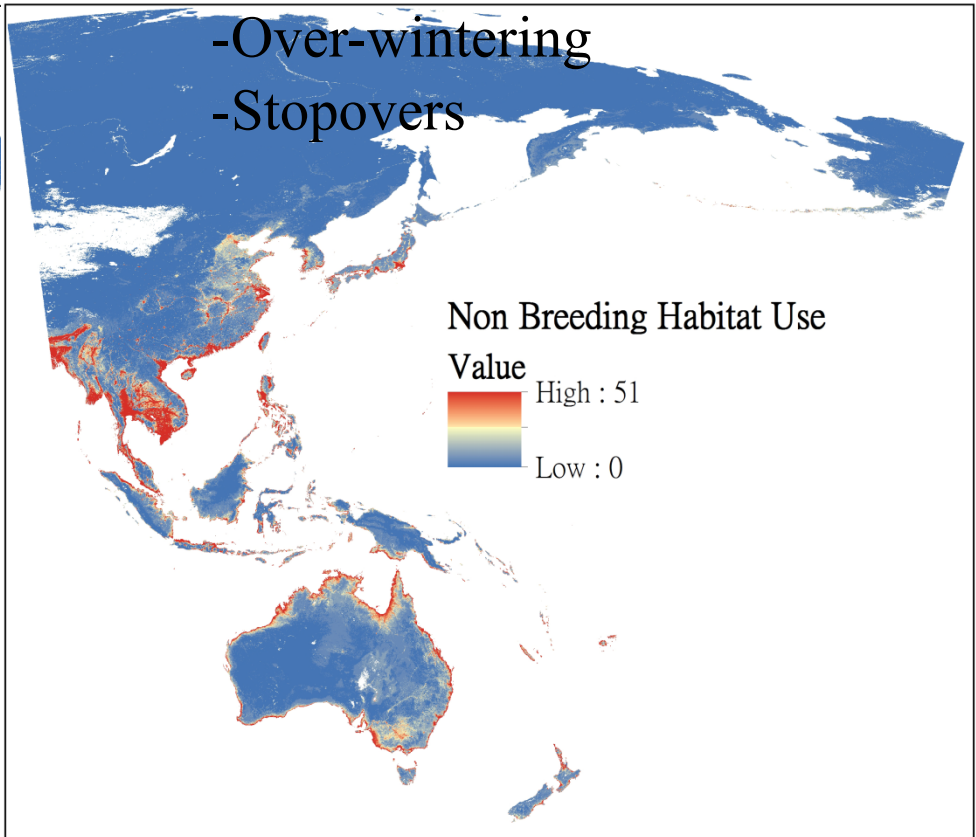
Conservation of these species is dependent upon conserving areas important for all essential components of behaviour

-Breeding

-Over-wintering

-Stopovers





Regreening the desertification' Natural Ecosys

- All ecosystems have
- Many of these ecosy when it comes to ef management
- Desert ecosystems a neglected of all ecos from direct and indi
- Understanding these them

LETTERS

edited by Jennifer Sills

Forgotten Biodiversity in Desert Ecosystems

AS THE WORLD'S GOVERNMENTS CONGREGATE FOR THE UNITED NATIONS CONFERENCE ON Sustainable Development (Rio+20), we call on them to address one of the greatest oversights in conservation in recent years: the neglect of desert ecosystems. Deserts cover 17% of the world's land mass and harbor surprisingly high biodiversity (*1*), including some of the most endangered species in the world (*2*). They are also home to 6% of the world's population (*3*), including some of the poorest and most marginalized people in the world (*4*), who depend on deserts to deliver sustainable ecosystem services in a changing climate. Deserts and other dryland ecosystems currently harbor almost one-third of terrestrial global carbon stock (*5*), with further potential for carbon sequestration through improved land management. Furthermore, desert genetic biodiversity is key to improving dryland agricultural productivity (*6*).

Deserted land. The Ahaggar Cultural Park, Algeria, is home to overlooked biodiversity.

Over the past two decades, however, conservationists have argued that targeting funding at tropical forests and other "biodiversity hotspots" maximizes the number of species conserved per conservation dollar and contributes to climate change mitigation by reducing greenhouse gas emissions from forest loss and degradation (*7*, *8*). Consistent with these goals, between 1992 and 2008 only 1% of Darwin Initiative funding went to projects in deserts, compared with 24% to forests (*9*). Similarly, between 1991 and 2009 only 11% of Global Environment Facility funding to Africa went to Saharan nations (*10*). Lack of financial support is mirrored by lack of scientific information: Between 2000 and 2011, most scientific publications in ecology focused on forest biomes (67%) compared with deserts (9%) (*11*).

We call on governments to reverse the historic neglect of deserts and include them with forests at the top of the agenda at Rio+20; to support the UN Convention on Combating Desertification minimum target of halting land degradation; and to set a clear target for restoration of desert ecosystems to benefit biodiversity and people.

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Letters to the Editor

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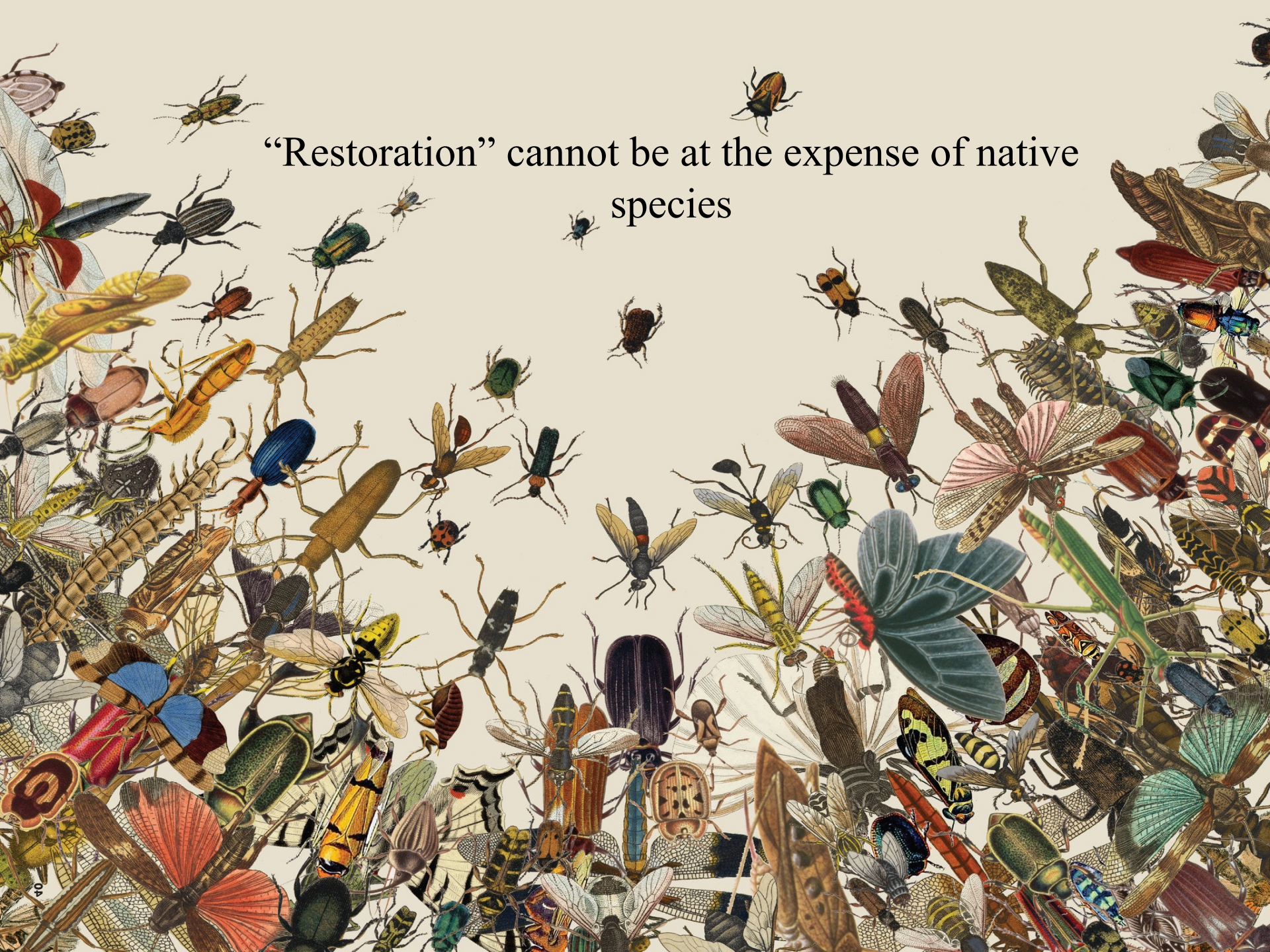
Landscape scale priorities


“Restoration” cannot be at the expense of native species

Ecosystems-the need for protection and data

- In all the four cases shown here the lack of data in these regions and for these systems makes effective planning impossible
- How can we protect areas without understanding priorities
- How can we estimate impacts with no baseline?
- Initiatives like the redlist of ecosystems, and careful and through ESIAs are essential to mitigate potential impacts and ensure that plans are informed by the data