Biodiversity and Ecosystem Services - Getting our act together through IPBES

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Background to IPBES

- Improved science-policy interface concept launched in 2005 (MA; IMOSEB)

- CBD COP 9 (2008) convened Ad-hoc Working Group leading to first meeting in Malaysia

- Further consultative meetings in Nairobi and Busan – leads to the 'Busan Outcome'

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- Session 1 of the first plenary negotiated in Nairobi Oct 2011- 92 countries participated

- Session 2 (final) negotiations planned for April 2012 in Panama

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Purpose and Principles

- Aim is for IPBES to emulate the IPCC
- Aims to respond to requests from Governments and MEAs as well as NGOs and scientific agencies
- Aims to catalyse new knowledge generation, but not undertake its own research
- Aims to perform regular assessments of the status and trends of B&ES at regional and global scales

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- Aims to identify policy – relevant tools and methodologies of use in decision making

- Aims to prioritise capacity-building to improve the science-policy interface

- Aims to be an independent inter-governmental body

- The plenary will be the decision-making body

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What does it mean to us?

- Recognise that regional and global assessments must be underpinned by national data and analyses
- DOC has invested in a nationwide NHMS I&M to assess status and trends of B and some ES as well as guide decision-making and funding of priorities
- NHMS now extending to RCs

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- DOC is leading NZs commitment to IPBES (MOC mandate and $$)

- NRS has been briefed

- A wider state sector engagement is now highly desirable (eg. data and knowledge sharing)

- The future focus is now on practical and meaningful measurement tools and methodologies

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Biodiversity and Ecosystem Services

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Landcare Research's core purpose is to help enable the following outcomes for NZ:

- improve measurement, management and protection of New Zealand's terrestrial ecosystems and biodiversity, including in the conservation estate
- achieve the sustainable use of land resources and their ecosystem services across catchments and sectors
- improve measurement and mitigation of greenhouse gases from the terrestrial biosphere
- increase the ability of New Zealand industries and organisations to develop within environmental limits and meet market and community requirements.

Four work streams of IPBES

- Assessment (of biodiversity and ES)
- Identifying and addressing knowledge gaps
- Policy support tools and methods
- Identifying and addressing capacity building needs

10 Portfolios of Research

Supporting Trade

Controlling Weeds, Pests & Diseases

Enhancing Policy Effectiveness

Managing Biodiversity

Realising Land's Potential

Understanding Ecosystem Services & Limits

Measuring Biodiversity Change

Characterising Land Resources

Measuring Greenhouse Gas & Carbon Storage

Defining Land Biota

Integrated Solutions

Threats & Resilience

State & Trend

**OUTCOME 1**　　**OUTCOME 2**　　**OUTCOME 3**　　**OUTCOME 4**

1) Assessment

Ecological Integrity (Lee et al. 2005)

- Long-term indigenous dominance
- Site occupancy by all potential biota
- Full representation of ecosystems

DOC's NHMS

- Explicitly comparable methods
- Consistent sampling method and intensity
- Agreed set of indicators nationally
- Indicators and measures of "ecological integrity" agreed by DOC and Regional Councils
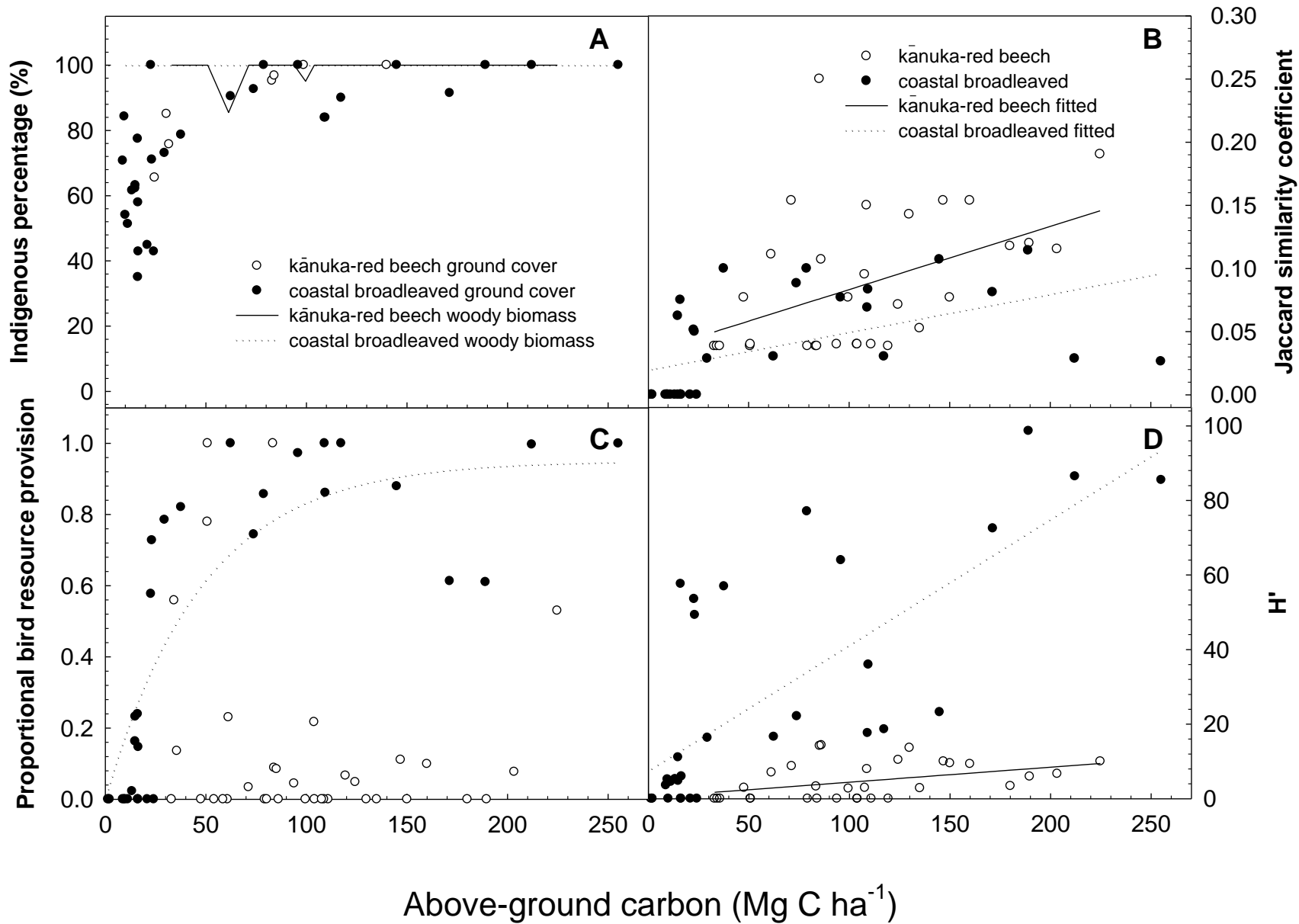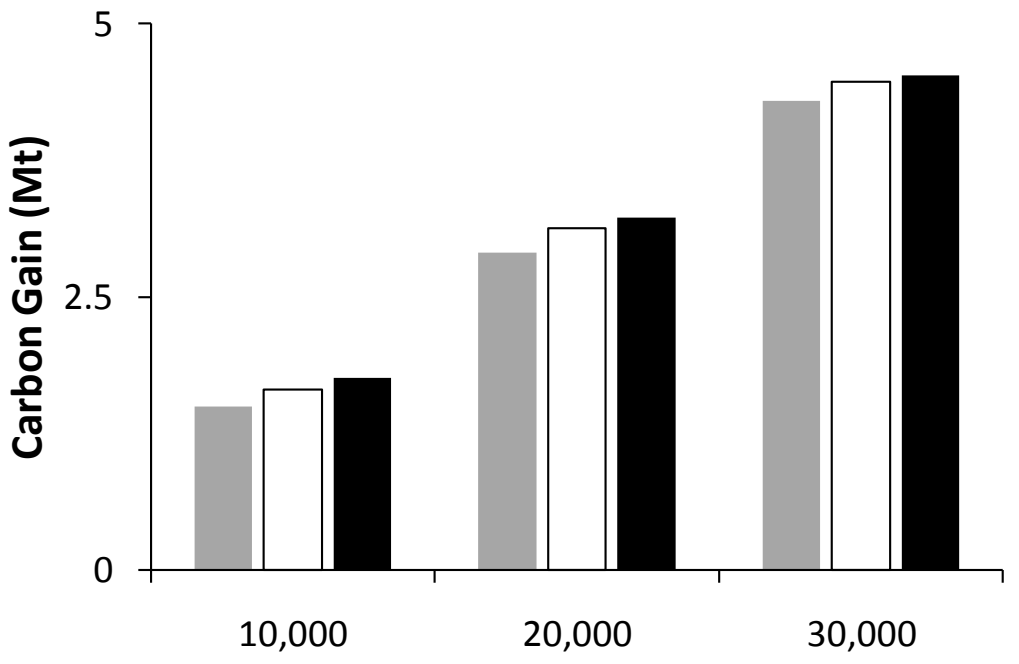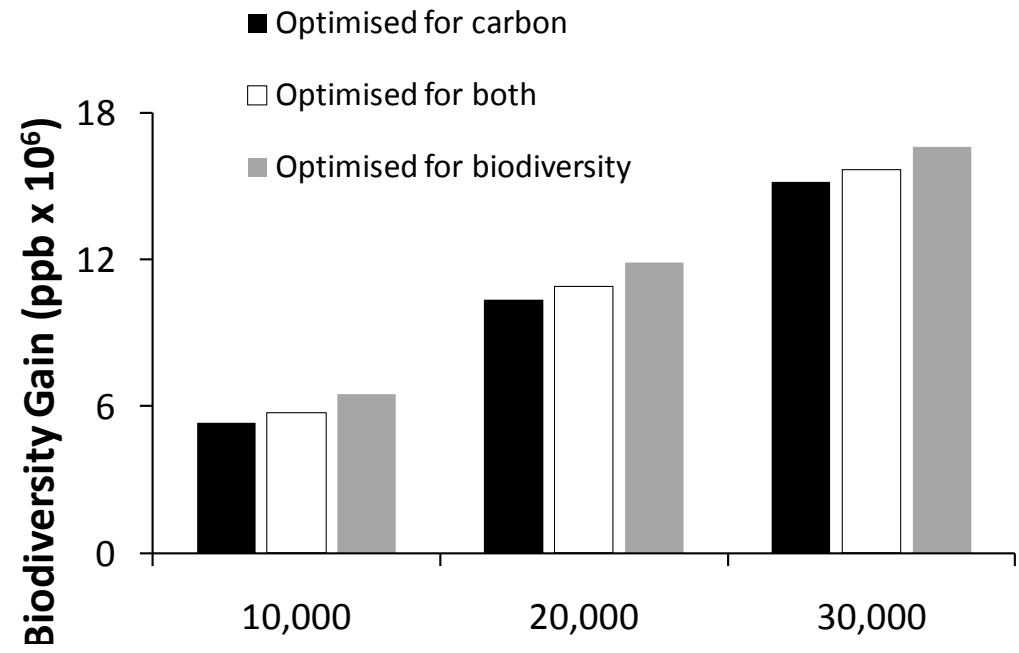
Gradual declines in 'common' forest birds
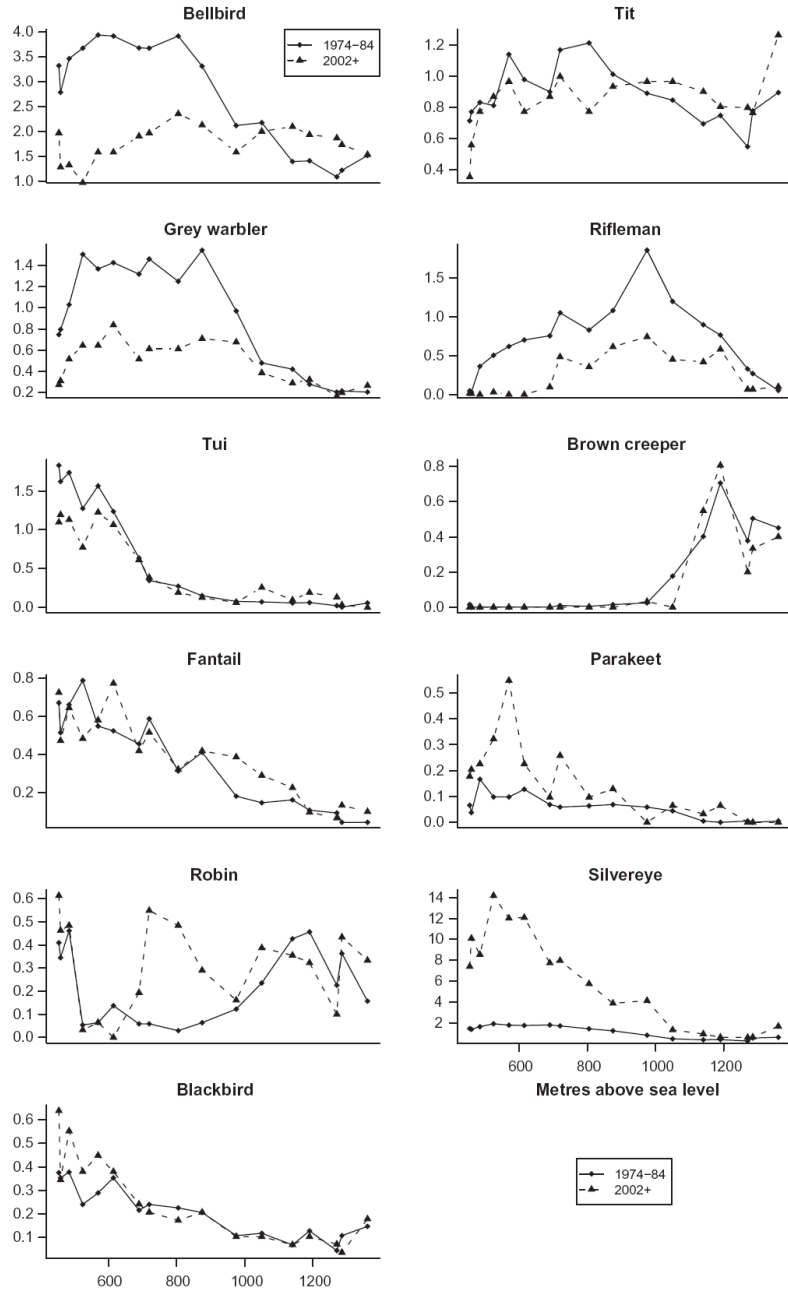
Nelson Lakes
National Park

Elliott *et al.* (2010) *Biological Conservation 143*, 2119–2126

2) Knowledge gaps

Above-ground carbon (Mg C ha^{-1})

Key

■	Biodiv
■	Erosion
■	GHG
■	Mean/Biodiv/Nitrate
■	Mean/Erosion/Nitrate
■	Mean/GHG/Biodiv/Nitrate
■	Mean/GHG/Erosion
■	Mean/GHG/Erosion/Nitrate
■	Mean/GHG/Nitrate
■	Mean/Nitrate
■	Nitrate
■	Nitrate/Mean

0   5   10   20 Kilometers
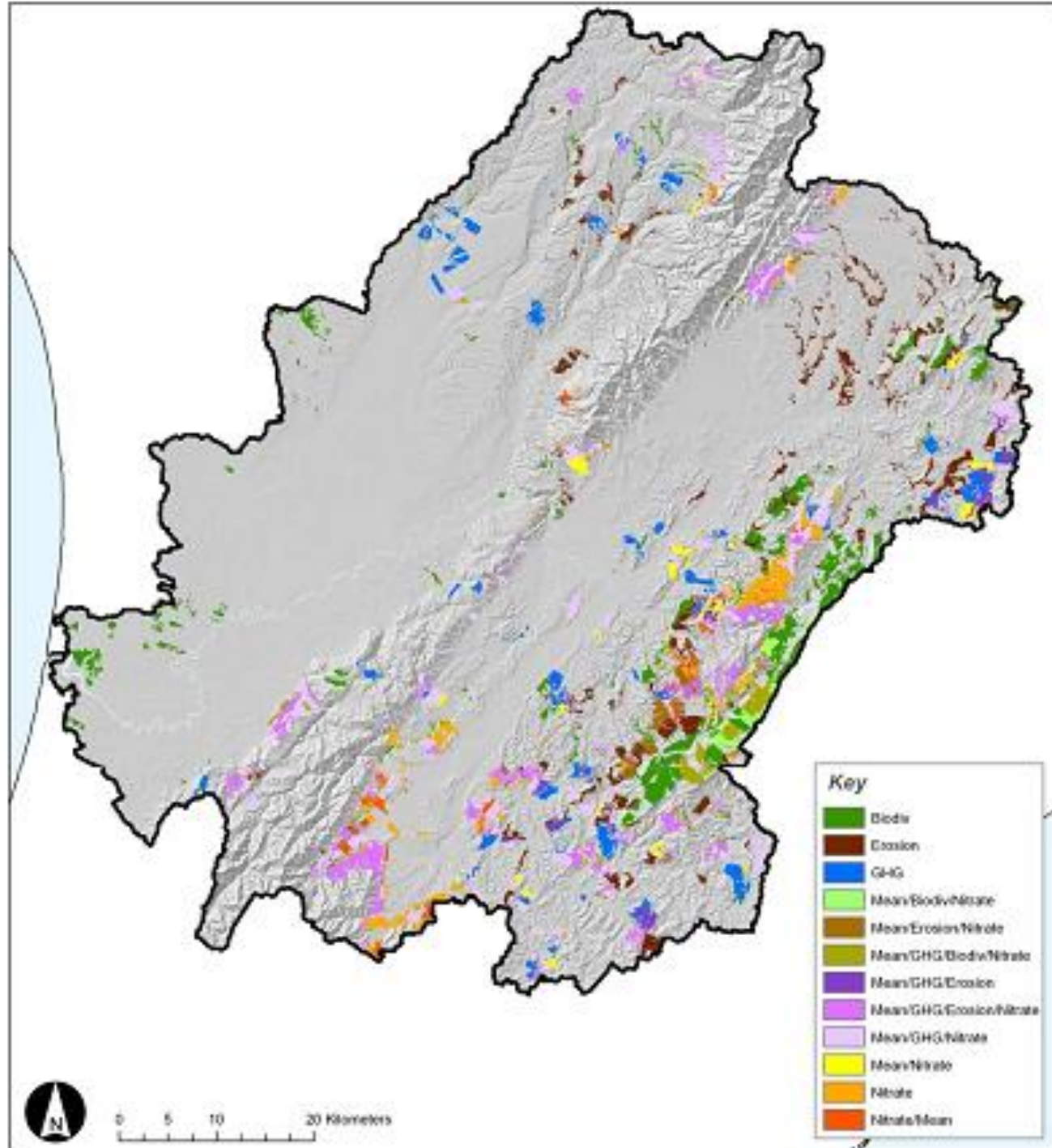
3) Policy support tools and methods

Objectives: maximise carbon sequestration   minimise nitrogen leaching
               maximise gross margin   minimise erosion

Ausseil & Herzig
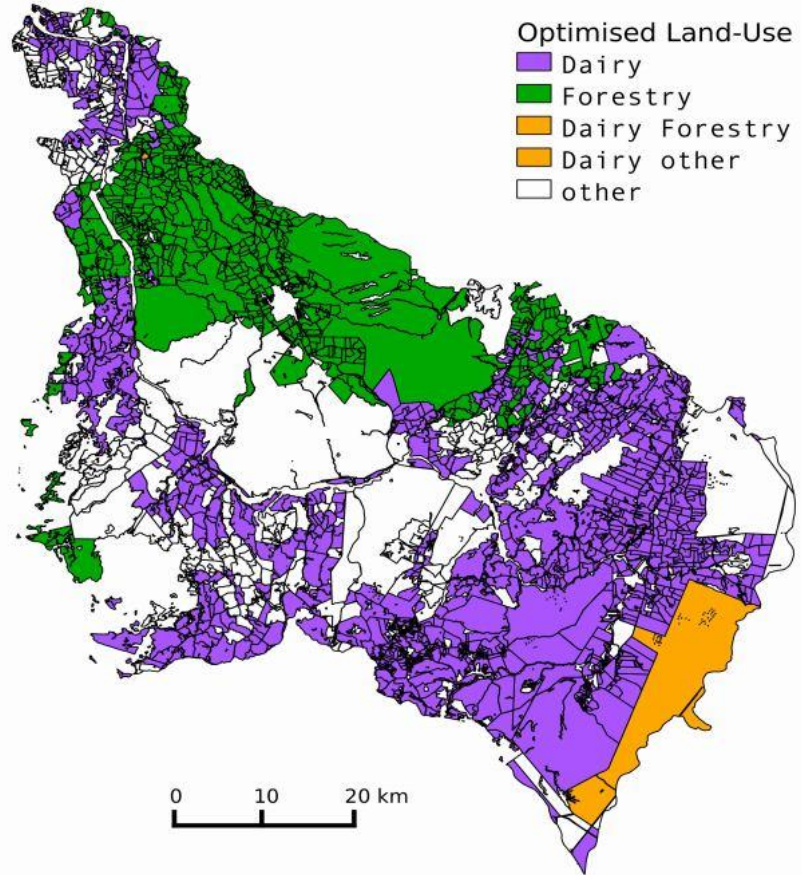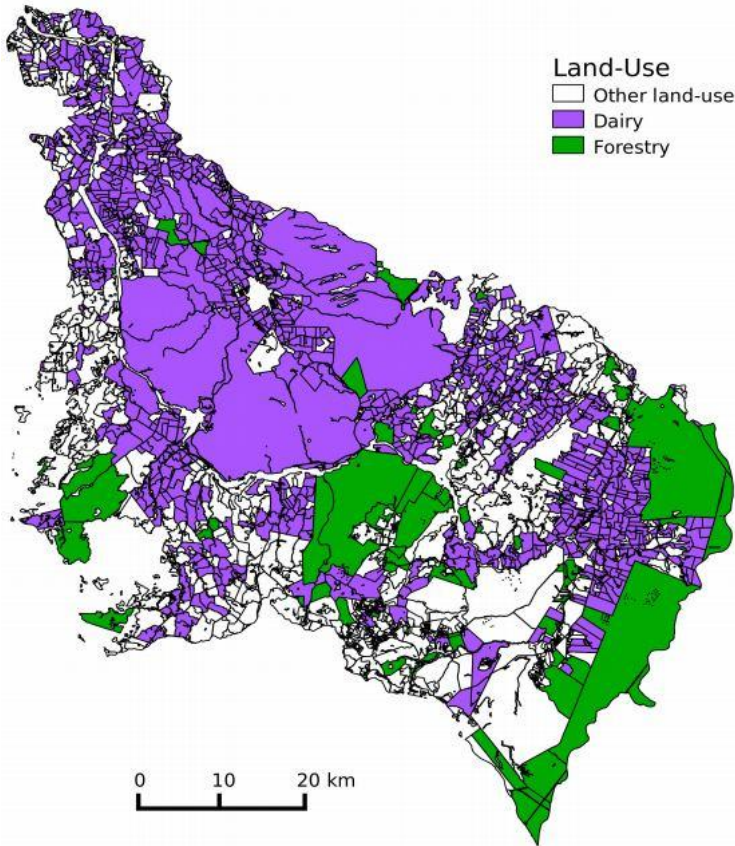
4) Capacity building and needs?

Partnership
Partnership
Partnership!

Is IPBES likely to be a context or a driver for DOC/MfE/Regional Councils and others?

UK National Ecosystem Assessment

Table 2.2 Ecosystem services in the UK NEA classified according to both ecosystem service type (provisioning, regulating, cultural and supporting) and whether or not they are final ecosystem services or intermediate services and/or processes. For each final ecosystem service an example of the good(s) it delivers is provided in italics.

Ecosystem processes/intermediate services		Final ecosystem services (*example of goods*)	
Supporting services	• Primary production • Soil formation • Nutrient cycling • Water cycling	**Provisioning services**	• Crops, livestock, fish (*food*) • Trees, standing vegetation, peat (*fibre, energy, carbon sequestration*) • Water supply (*domestic and industrial water*) • Wild species diversity (*bioprospecting, medicinal plants*)
• Decomposition • Weathering • Climate regulation • Pollination • Disease and pest regulation • Ecological interactions • Evolutionary processes • Wild species diversity		**Cultural services**	• Wild species diversity (*recreation*) • Environmental settings (*recreation, tourism, spiritual/religious*)
		Regulating services	• Climate regulation (*equable climate*) • Pollination • Detoxification and purification in soils, air and water (*pollution control*) • Hazard regulation (*erosion control, flood control*) • Noise regulation (*noise control*) • Disease and pest regulation (*disease and pest control*)

UK National Ecosystem Assessment (2011)
The UK National Ecosystem Assessment: Synthesis of the Key
Findings. UNEP-WCMC, Cambridge.

Developing an inventory and monitoring programme for DOC

- Explicit indicators and measures developed for each objective.

- Three tiers at which to report
  1. National
  2. Regional
  3. Sites of intensive management

Implementing DOC's inventory and monitoring programme – ecological integrity

Five measures developed during 2009 – 10 including field testing, evaluation of precision of estimates, and a cost-effective sampling design

1. Distribution & abundance of exotic weeds
2. Size-class structure of canopy dominants
3. Representation of plant functional types
4. Distribution & abundance of exotic mammal pests
5. Assemblages of widespread common birds

Parts per billion (ppb)

- Assumes an ecological "eutopia" of 1 billion – i.e., if all species and all ecosystems occupied their full original distributions

- Values derived from the number and abundance of species present (flora and fauna) plus how special the ecosystem is nationally

Vital Sites model (Overton)

Can be used to establish change in ecological integrity
•under a given **management** scenario,
•over a defined **time** period.