Ecosystem Accounting in support of biodiversity management'

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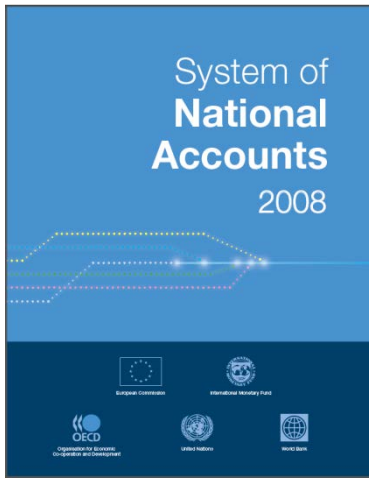
Reflecting work undertaken with Bram Edens (CBS), Roy Remme, Matthias Schröter, Elham Sumarga, Confidence Duku, Aritta Suwarno (all WU), Sander Zwart (AfricaRice), David Barton (NINA, Norway).

The ‘problem’

- Biodiversity conservation and management involves managing trade-offs between people’s use of ecosystems and habitat conservation. These trade-offs occur both within and outside protected areas.
- Biodiversity conservation may generate important co-benefits such as carbon sequestration or water regulation, and making these clear can provide an important impetus to protected area management
- A range of assessment methods for ecosystem services has been developed but there is a lack of standardised approaches to map, analyse and value them.
- Ecosystem accounting is grounded in the System of National Accounts, designed over a 50 years period to analyse economic activity, and provides such a consistent framework



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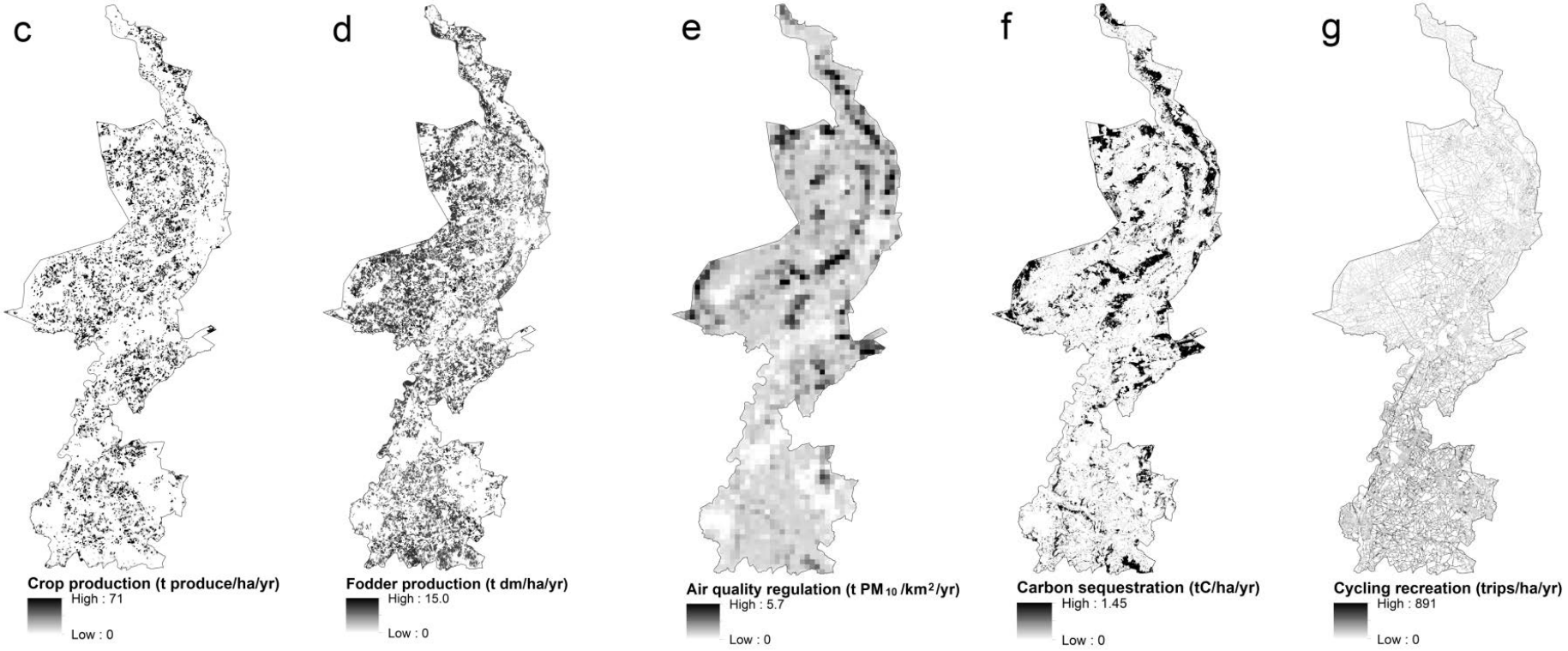
The ecosystem accounts

The full set of Ecosystem accounts includes, in its most comprehensive form, the following:

- Ecosystem condition account
- Ecosystem production account (measuring ecosystem services)
- Ecosystem asset account (measuring ecosystem assets)
- Biodiversity account
- Supply-Use account (linking suppliers and users of ecosystem services)

All accounts include tables and maps, except the User-Supply account which is in the form of a table only (given the complexity of the spatial relationships involved)

Ecosystem production accounts Limburg, NLs

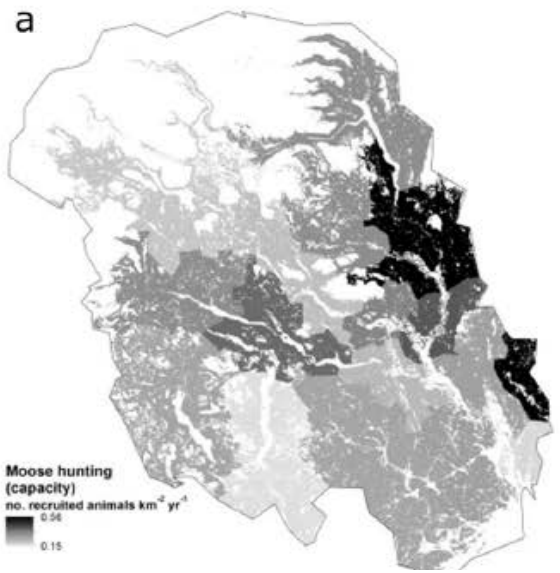


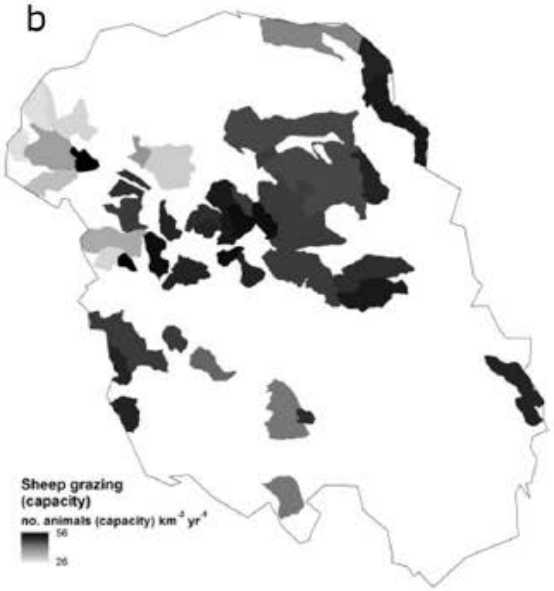
Source: Remme et al., 2014

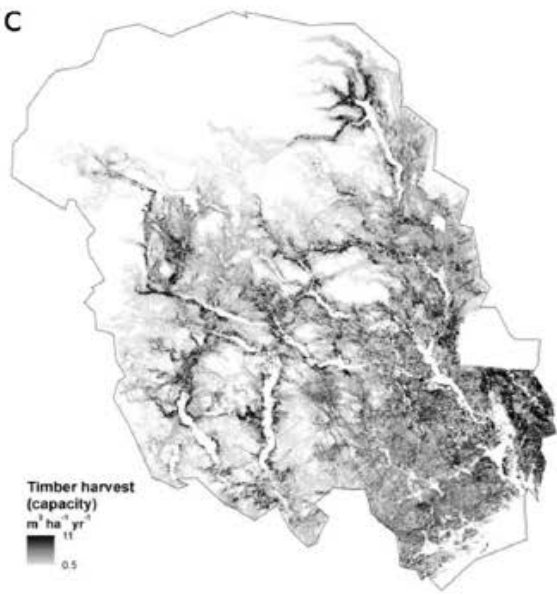
Analysing assets requires modelling regrowth of stocks /i.e. capacity to support ecosystem services use

Capacity to support ecosystem use was modelled, jointly with NINA Norway, by M. Schröter for Telemark County, Norway (15.000 km2)

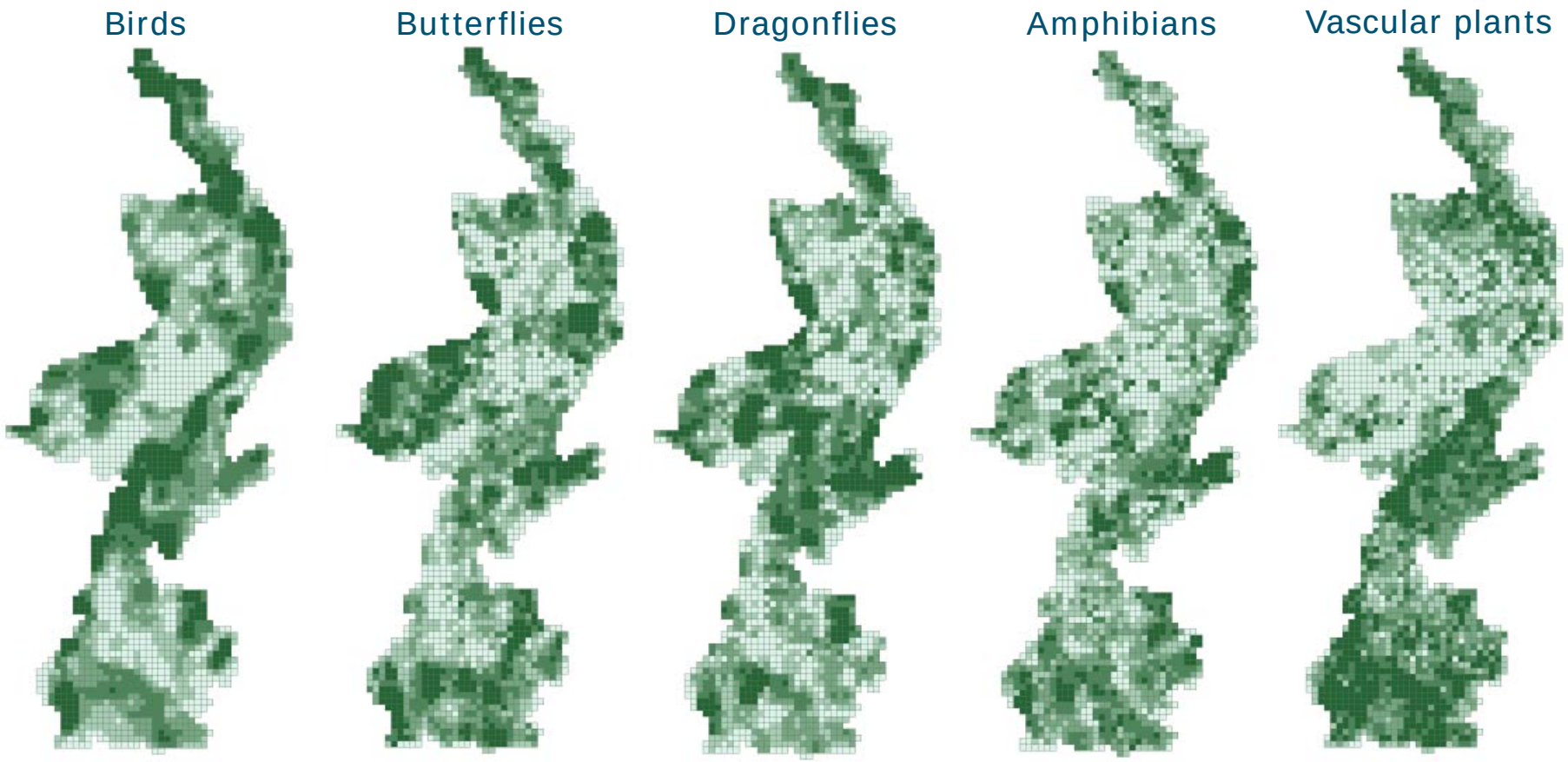
M. Schröter et al. / Ecological Indicators 36 (2014) 539–551







Biodiversity account: species richness



Source: Remme et al., in prep

Work in progress shows little correlation between species richness of different species groups in Limburg, the Netherlands, and a range of different indicators are being tested

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Conclusions

- Ecosystem accounting is feasible, also in data-poor environments...
- ..but requires significant investment for capacity building, model development and data collection.
- It can support biodiversity conservation by showing co-benefits of conservation and trade-offs involved in land use change, and by monitoring long-term trends.
- Critical is a long-term commitment, need to allow for learning-on-the job and progressive data collection in the implementing countries

Thank you.

Publications:

- Schröter, Remme, Hein (2012). How and where to map supply and demand of ecosystem services for policy-relevant outcomes? *Ecological Indicators.*
- Obst, Hein, Edens (2013) Ecosystem services: accounting standards. *Science.*
- Edens and Hein (2013). Towards a consistent approach to ecosystem accounting. *Ecological Economics.*
- Schröter, Barton, Remme, Hein (2014) Accounting for capacity and flow of ecosystem services: A conceptual model and a case study for Telemark, Norway. *Ecological Indicators.*
- Sumarga and Hein (2013) Mapping ecosystem services for landscape planning, the case of Central Kalimantan. *Environmental Management.*
- RP Remme, M Schröter, L Hein (2014). Developing spatial biophysical accounting for multiple ecosystem services. *Ecosystem Services, 2014*