Some summary comments and messages from: "The role of biodiversity in the sustainable use of ecosystem goods and services in agro-forestry, fisheries, and forestry"

OECD sponsored symposium

April 26-28, 2010

Waseda University, Tokyo

Many biodiversity-related ecosystem services are not recognized as important

- for example the role of biodiversity in:
  - mitigating climate change
  - prevention of disease
  - ecosystem resilience and stability
- this complexity is overlooked by managing single resources rather than considering ecosystem effects
- need to value services so far as is possible

Science is advancing our understanding of complicated and integrated biodiversity effects on ecosystem services

- insights into mechanisms by which communities assemble
- integration of food webs with habitat availability
- biodiversity removal effects on ecosystem function and resilience
- key roles of functional species
- complementarity and redundancy among species in their function in ecosystems
- still uncertainty about mechanisms and biodiversity effects
- massive under-valuation of forest services will produce a loss to the global economy of 7% of GDP in next 50 years

We heard many examples of how biodiversity has positive effects on ecosystem services

- increase natural forests in agro-forest systems to increase pollination and natural control of pest species
- increase landscape heterogeneity to increase richness of pollinator community, decrease pests, and to increase stability in biological communities
- reduce monocultures on a landscape to improve total goods and services
- react to fish species community structure by altering harvesting practices
- reforestation and recovery in tropical systems
- improving plantations for multiple values

We heard some examples of how science has influenced policy

- these examples were mostly related directly to human consumption and values:
- pollination failure significantly reduces yields – implications for landscape structure in agro-forests (e,g., coffee growing in Central/South America)
- IAS studies resulted in laws in Japan
- considering all species in the system, resulting in different fisheries management practices
- FSC certification has had a large influence in forest management

Role of science in operationalising sustainable forest management

- understanding the role of biodiversity
- guidelines for tropical forest recovery
- manage at large scales as well as at sites
- development of key criteria and indicators to indicate long-term trends – global agreement among processes
- maintain functional diversity and connectivity
- many ‘good news stories’ – successful case studies

Improving biodiversity considerations in decision making and policy

- improve the understanding of mechanisms by which biodiversity supports and maintains ecosystem goods and services
- identify and improve valuation of these services
- improve communication with policy makers and convey key messages on how biodiversity improves ecosystem function
- we need to be in a position to manage sustainably, instead of making mistakes and then having to react
- indicators may be useful (e.g., in SFM), but not in the absence of thresholds and meaningful quantifiable values

Failure by scientists to enable policy makers/politicians/public to understand issues

- indicators: forest loss continues at a rate of 13 million ha/year
  - 61% of Japanese public do not know the word ‘biodiversity’
  - climate change continues unabated
- e.g., MEA was wonderful, but MEA did not communicate well
- many foresters still consider biodiversity to be a forest product, instead of actually being the forest
- SFM criticized as an excuse to conduct ‘business as usual’
- biodiversity often considered as a conservation = preservation issue
- emphasis is still on non-declining even flow of limited goods
- “monoculture of the mind”

Problems faced by scientists

- few believe that ecology issues are urgent – translates to funding
- need to embrace other points of view and other methods
- no training in public communications and dealing with the media
- ‘biodiversity’ is often equated to ‘ecosystem services’
- interesting point made that not everyone came to this meeting with the same expectations
- all science has jargon that scientists take for granted

What to do – rules for scientists

- the journal publication is not the end of the project
- improve transfer of knowledge via workshops and in local communities
- involve local communities in research where possible
- give seminars to policy makers ‘where they live’
- find ways to value under-valued or non-valued services
- communicate messages in resource management policy journals
- communicate messages back to local communities and the general public

Key science messages

- diversity supports ecosystem functioning and enhances resilience
- diversity is higher in natural forests >secondary forests >plantations
- diversity in plantations increases goods and services
- diversity in pollinators increases crop yield
- diversity in landscapes that include natural forests (at close distances to crops) increases pollinators and reduces pest species
- intensifying land use drives extinctions
- aquatic and nearshore marine ecosystems are affected by land use practices, so adaptive management needs to be more holistic
- biomass in tropical old forests is substantially greater than in other tropical forest types, this has clear implications for climate change
- consider/manage the ecosystem, not just each individual resource

SFM and forest recovery science messages

- plantations can be managed to increase their biodiversity value and enhance goods and services
- tropical forests can recover and can be assisted to recover, but landscape legacies are important
- 8 SFM principles: complexity, authenticity, continuity, heterogeneity, proximity, redundancy, resilience, and uniqueness
- integrate planning on forest landscapes so that all zones, including aquatic areas, are managed in the context of each other
- always take a multidisciplinary approach
- 'CBD Ecosystem Approach' may be used to improve SFM, but is not an operational concept

Conclusions

- biodiversity underpins ecosystem goods and services – degrading the system degrades the goods and services
- better understanding of mechanisms improves our capacity to manage adaptively
- communications by scientists must improve to the public, local communities, and to policy makers
- continue to stress the urgency of the biodiversity issue
- valuing ecosystem services can be a strong argument to policy-makers
- management objectives should be defined by societal demands and the ecology of the ecosystem
- specifically, the CBD strategic target of 15% of lands in protected areas needs to be re-evaluated to improve its impact