Workshop Notes

Session 1: Ecosystem service – landcover relationships

Ecosystem service – landcover relationships

The session was presented by Carla Gómez-Creutzberg, with support from Jason Tylianakis of the University of Canterbury.

Working in eight breakout groups, participants recapped the topics traversed, and the areas for which the findings affirmed their own understanding. Participants then addressed the following questions:

What was a surprise?

How and to what area of your work could you apply this knowledge?

What else would you need to more easily use information like this in your work?

The compiled responses to these questions are detailed below.

What was a surprise?

Aspects that were reported as a surprise were:
Provision of Ecosystem services
- Monoculture/food production provide ecosystem services
- Native forests don't provide all ecosystem services
- Low-producing grassland producing some services similar to indigenous forest
- Comparatively low value of indigenous forest for ethical and spiritual values
- Low producing grassland provided similar ecosystem services to forest cover
- Productive grassland was the only land cover that had been compared to all other land covers included in the assessment
- Native forest and low production grassland were clustered together in terms of similarities in provision of ecosystem services

Gaps
- Flat topography versus rolling topography versus soil types (suitabilities) were not included
- Many unexpected gaps in data with some land covers and ecosystem services
- Not identifying limitations between stocks and services, i.e. these are not inter-tradeable.
- A number of gaps that signals areas of potential future research
- Very little data on traditional ecological knowledge

- We can alter the natural environment to improve ecosystem service performance
- Landcover could be a surrogate for biodiversity at the broad scale
- State/condition of land cover is going to influence the provision of ecosystem services, e.g. organic production versus not organic

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How and to what area of your work could you apply this knowledge?	*Management and decisions*

Management and decisions
- In the management of resources that are linked to each other
- To support land use decisions, especially where resources are depleted
- Use to see potential impacts on LUC (land use capability) scenarios (e.g. low producing grassland to trees)
- Use to promote resilient landscapes, e.g. impacts lots of trees (what are we gaining and what are we losing)
- Use to convince people downstream of what the impacts are of decisions
- Need more intergenerational thinking. This may help work through what are the landcovers and where should they go
- Application to farm-level management/informing restoration strategies
- Understanding what the effects are on Ecosystem Services of an individual organisation
- To support landscape thinking where environmental and financial sustainability are important to understand regional tradeoffs and long term thinking and planning
- Farm plans/spatial planning ➔ use to help move services and land uses around the landscape
- Implications of land use change at landscape scale, e.g.
  - Land urbanisation
  - Irrigation – for storage of water on a property
  - Plantation forestry and erosion

Policy
- Should/can be translated into regulations/implementation
- Look at broader effects on ecosystem services of single-issue policies (e.g. what happens when all land users in an area move to trees such as One Billion Trees programme)

Engagement and communications
- We need to persuade developers of the value of ecosystem services and sustainability
- Useful tool for communication or for decision making
- Educating decision-makers on the relationship of ecosystem process and biodiversity
- To stimulate decisions of the impacts of decisions, e.g. conversations about dairy conversions

- Helps (demonstrate) recognise the value of remnants and the functions they provide (don't destroy these remnants to maximise another service)
- To better explain ecosystem function which is not well understood (value of a mosaic in the landscape)
- To educate people on the values/services flowing from different land covers
- To discuss what ecosystem services orchards provide and the effect of surrounding land on the flow of services

Research
- Scenario modelling (for catchments) – and discussions trade-offs between ecosystem services

Other
- To support landscape thinking where environmental and financial sustainability are important to understand regional tradeoffs and long-term thinking and planning
- We need more landscape thinking and how to manage landscapes, e.g. for erosion
- To compare long term land protection versus capital gains
- Statistics putting together ecosystem services accounts
  - Trying to understand complex interactions for final basket of services
  - Spatial aspect still difficult to consider

What else would you need to more easily use information like this in your work?	*Additional information and data* - Traditional ecological knowledge (i.e. including mātauranga Māori) - Putting a value on ecosystem services (e.g. CBA (cost-benefit analysis) is complex) - More information about scale (both geographic and social scales) - Guidance on appropriate scales - Further disaggregation of indigenous systems to show their value for landowners - Application in an urban area. Could we improve well-being by getting a mosaic in urban space and therefore get multiple services - Need for a more 'nuanced' typology around land-covers (with within class variability) - Need to tighten up description of links between "biodiversity" and "ecosystems services" - A more detailed matrix of selected groups or individual ecosystem services or land use - Need national level data - Better understanding spatial effects - Data on historic land use change - More information on abiotic factors and soil data - Finer scale data especially at farm scale/property level

- More detail on other land use covers (e.g. wetlands) and the underlying land resource (i.e. soils), slope and the interaction with cover and biodiversity
- Analysis is quite high-level so information on who benefits and where would be helpful
- More information on whether it is possible/feasible to aggregate the numbers into a single number (e.g. like the Living Standard Framework). If not possible, how could we communicate the information more easily
- More insights into how to account for different values that individuals may hold
- Insights into how the matrix may change between regions/landscapes would be helpful
- Clarification if it is possible to take account of spatial effects, e.g. interactions in a multi-functional landscape
- More information on how to use the matrix

Linking to tools and frameworks

- Bringing in the spatial modelling component and linking it to existing models
- Knowledge to aggregate this information for initiatives like the Living Standards Framework

Policy and perception changes

- Changes in policy landscape
- Separate NPS (national policy statement) on ecosystem processes as it doesn't always align with biodiversity
- Ensure there is a focus on ecosystem processes
- Because of differences in the 'value' people have it is hard to get a common belief. Therefore, we need a way to articulate these values and show what land covers provide in terms of ecosystem services