Climate Smart Landscapes

The following questions were asked during our live webinar with Sandra Lavorel but due to time restrictions, we were unable to answer these in the session.

Third of land is 'conserved' but activities such as grazing still occur on public conservation land

Yes, this is why it is counted as the <=20% lightly managed land in addition to a recommended 10% under strong protection

What governance level is best for NBS? Is this a particular focus for regional councils?

NbS are by definition related to ALL governance level, typically from top-down state or regional governments (i.e. councils) to community-based initiatives.

Looking at the complexity of interaction features (structures and resulting functions) at a local/paddock scale, there is an inherent amount of complexity. In your opinion how does this complexity scale as you move to larger landscape scales. My suspicion would be that the complexity of these process would scale more exponentially (rather than linearly) - if this is the case, how can we go about operationalizing these concepts at a landscape scale?

The scale at which this complexity is resolved is indeed a critical question. In fact, a central question for managing for multiple adaptation solutions is whether multifunctionality is targeted at parcel, farm or landscape scale. New Zealand's landscapes tend to rather apply the so-called 'land sparing' model where different functions, and here adaptation solutions are distributed across different locations in landscapes. The so-called 'fortress conservation' strategy is such an example. The opposite model is that of 'land sharing' where multifunctionality is sought at smaller scales. While, as illustrated in my presentation for pasture diversification, some level of multifunctionality can be attained at parcel level, very often it will be a mixed of solutions across scales.

How well can 'nature's services' be used to better respond to unanticipated future 'surprises' (and is this 'better' than tackling known or predicted issues individually)?

This is the idea behind considering ecological resilience and ecological transformability as two essential components for adaptation, including to unanticipated or compound drivers / extremes. Both are linked to a number of diversity and connectivity properties which can be considered as insurance against future 'surprises'.

I really like the idea of how we can better manage landscapes; what can be done to resolve conflicts and trade-offs among functions/services that might occur?

A first important question is the scale at which to manage trade-offs. Not all can be managed at parcel scale ('radical' multifunctionality). Instead the challenge is to identify potential solutions based on spatial heterogeneity (which multiple functions can be synergistic where) and complementarity (considering the outcome at landscape scale). This is of course assorted with challenging issues for management (e.g. options that are viable given human / infrastructure / equipment resources) and governance (formal through institutions and informal through social networks).

Trees/planting and pasture seem to be the focus of your talk, but they are only part of the landscape in terms of nature's contributions e.g. peatland and coastal wetlands are recognised as rich carbon sinks. Have you looked at how landscape arrangements can consider other habitats in landscapes and limit perverse outcomes?

They are indeed totally part of NbS although these weren't the examples I developed because our current work focuses more on farmland pastures and woody vegetation. Peatlands and coastal wetlands and their spatial arrangements do indeed need to be incorporated in analyses for landscapes where they are relevant, e.g. the Hauraki.

What might be a good set of indicators to track progress when seeking to improve the eco-services capacity of our managed ecosystems?

Include but not exclusive: species and functional diversity of biota supporting ecosystem services, soil organic matter, landscape diversity and connectivity indices, aggregate indicators at catchment scale (e.g. for water, nutrient and sediment flows)

How do landscapes relate to water catchments?

Please see response during seminar. They are two overlapping concepts and physical units. Their use depends on context.

How can we balance the need for tourism, especially in NZ's COVID context, the idea of freedom of movement & access to land for recreation, and the ideals of adaptation & sustainability?

This is a complex question, hard to address without exchanging directly. In short adaptation / sustainability can be compatible with some forms of recreation and tourism with appropriate management, education and regulation. Happy to exchange more on this!

The slide showing the climate change composite map for Hawke's Bay - what is the source of the map and how was it derived? Can I find it in a paper or report?

Sorry this is not published yet. This was generated using NIWA climate projections.

The meaning of NCP and NCA?

NCP = Nature's Contributions to People is the expanded concept from ecosystem services - see IPBES.
NCA = Nature's Contributions to Adaptation

Has any thought been given to native regeneration on Pastoral Lease land for carbon sequestering & moisture yield & soil carbon?

Yes, this is another excellent example of Nature's Contribution to Adaptation which we are currently analysing, and I did not have a chance to develop in this presentation.

In the Mackenzie basin, much significant biota is in naturally unforested systems. How can this be integrated in your restoration/protection, % land use model?

Yes!

How can the government firstly educate farmers and then support the implementation of nature-based solutions?

I am sorry, but I don't have a specific answer to this.