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What will you do for water today?...

What is the role for biodiversity research and policy in mitigation and adaptation strategies?

Peter Bridgewater

Secretary General

Ramsar Convention.

CONVENTION ON WETLANDS

CONVENTION SUR LES ZONES HUMIDES

CONVENCIÓN SOBRE LOS HUMEDALES

(Ramsar, Iran, 1971)

The Ramsar Conve

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What will you do for water today?...

Do we have the right message?

Themes:

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- How can biodiversity research contribute to the development of climate change adaptation and mitigation strategies?

Resilience and Storage

Maintaining ecological resilience will help mitigate against climate change

But will this maintain carbon storage?

IPPCC – “maintenance of biodiversity requires natural disturbance regimes while management for maximal carbon storage tends to avoid disturbance”

Coral reefs - GBRMPA

- Develop a system to forecast bleaching events
- provide early warnings of a major bleaching event
- measure the spatial extent and severity of bleaching events
- assess the ecological impacts of bleaching events
- Promote re-colonisation experiments

Coral reefs - GBRMPA

- Use resistant coral varieties to ensure the maintenance of the productive and protective ecosystem services provided by the reef

Broader landscape

- With climate change, populations of species in the Mediterranean regions of Israel may become extinct, whereas in the desert/non-desert climatic transition zone, some genotypes may persist.
- Immediate conservation of ecotones in Israel (such as on the Hermon and the Upper Galilee mountains, where butterfly species of several biomes meet), may be key to maintaining high genetic diversity.

Broader landscape

- More research is needed to determine sensitivity or resistance to climate change among ecotone peripheral populations, but the mechanisms that maintain the high genetic diversity in ecotones are not fully understood.

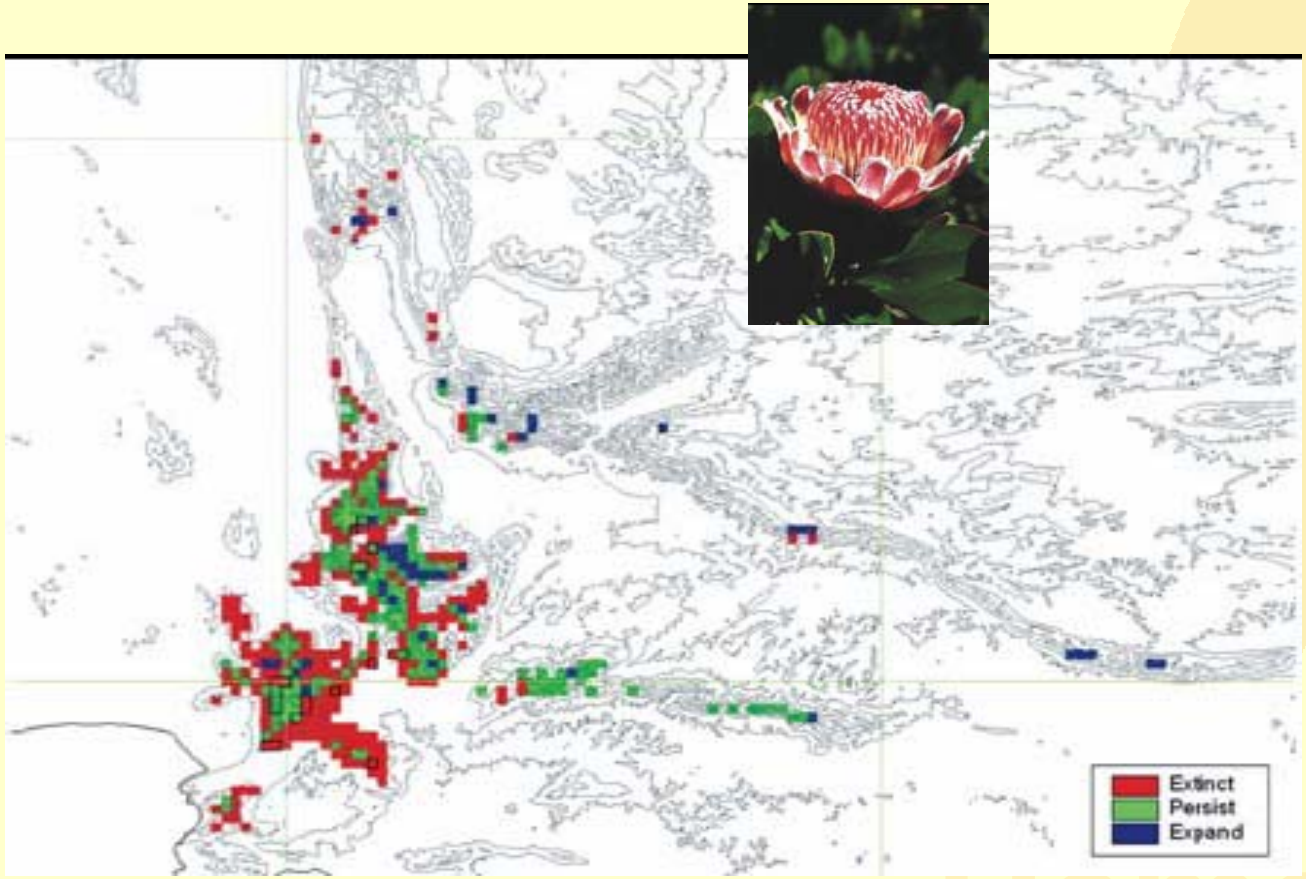
Broader landscape

- Maintaining connectivity between ecotones and other ecosystems is recommended worldwide as an adaptation to climate change. North-south cross-Israel corridors, one at each side of the country's major water divide are recommended. With anticipated climatic and anthropogenically induced changes, these corridors will play a major role in biodiversity conservation in Israel.

Cape flora bioclimate models

- *Bioclimatic modeling, accounting for both projected climate changes and biological species responses show that the envelope of the Fynbos biome vegetation will contract significantly by 2050 with an estimated overall loss of area of up to 65%.*
- *about 10% of the 330 Proteaceae taxa have ranges restricted to the biome area predicted to be lost by 2050 and are therefore most likely to become extinct*

Protea lacticolor



Other Bioclimatic modelling/approaches

- UK MONARCH
  - Modelling Natural Resource Responses to Climate Change
  - Looked at species in NBAP
- Australian BIOCLIM
  - Species ranges for survival
  - Species ranges as
  - invasives

Wetlands – Pew study

- *Shallow freshwater wetlands are already stressed as ecological transition zones between aquatic and upland terrestrial ecosystems, making them particularly sensitive to changes in temperature and precipitation.*

Themes:

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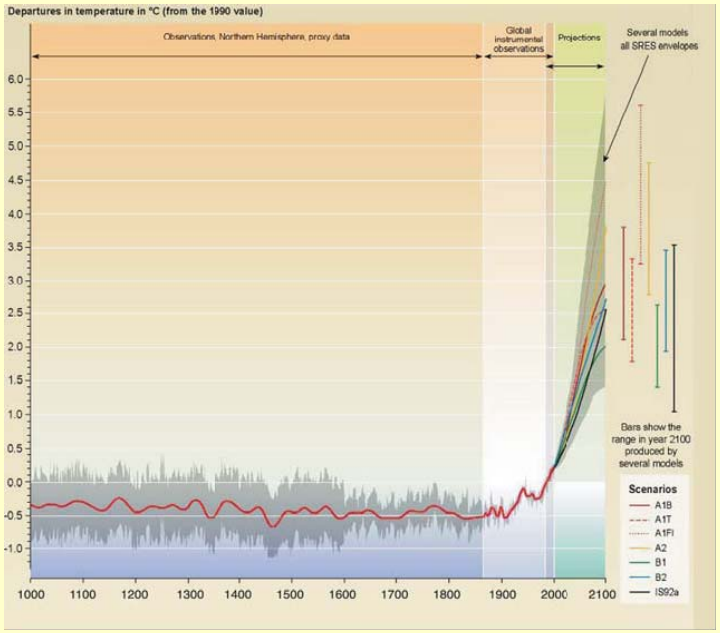
- Which aspects of climate change science would benefit from engagement from the biodiversity community?



Montane systems

- Develop spatial explicit models for climate change effects based on climate parameters specific to the multi-summit data sources.
- Establish in different life zones, master stations for monitoring complementary indicator sets,.
- Investigate the range of orographically controlled variation in meso-scale (downscaled or instrumental) meteorology, especially the effects of duration and depth of snow cover.

GCM's

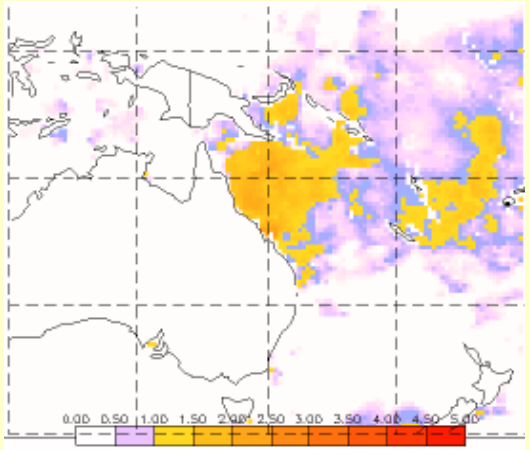
- The general circulation models (GCMs) used to predict climate change are currently unable to provide the level of detail needed to predict local or regional responses of aquatic ecosystems to climate change (Indeed, GCMs diverge significantly in their regional projections of temperature and precipitation change). The models diverge substantially in their regional projections of precipitation changes, particularly those for summer and autumn.

Runoff

- Arid lands are most sensitive to modest changes in runoff and that a shift in mountainous watersheds from snow to rain would significantly alter seasonal patterns of runoff.
- The most certain projection is, therefore, that colder regions are likely to warm faster, and this will directly alter runoff patterns by decreasing the amount of winter precipitation that falls as snow, causing earlier runoff..

Themes:

- How can we use climate change science to benefit biodiversity, biodiversity dependent livelihoods and sustainable development?



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- For events like coral bleaching, coastal inundation, better linkage between climate science, modeling and observation and biodiversity observation and modeling will increase times for management agencies to take actions.

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Islands – a special case

- Problems faced by SIDS with regard to climate related data and observations include linking historical and anecdotal information to climate variability, climate change and sea-level rise.
- GCOS is currently implementing Regional Action Plans which will help respond to these problems.
- SIDS used both top-down, scenario-driven approaches (some accompanied by regional downscaling techniques), and bottom-up vulnerability based approaches when carrying out their vulnerability and adaptation assessments.

Sundarbans

In addition to eustatic sea-level rise, there is a continuous natural subsidence in the Sundarbans, which causes a sea-level rise of about 2.2 mm per year. The resulting net sea-level rise rate is 3.1 mm per year at Sagar

Themes:

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- How can climate change and biodiversity (environmental) policy be developed and implemented together.
  - What are the key mechanisms at the international and regional levels?
  - How can we ensure that their implementation has positive impacts on human livelihoods?

Quick answer – the intergovernmental process are not enough - and public awareness with QUALITY information is vital.

A way forward?

Perhaps we should adopt the view that the world is a garden and that we are the gardeners. With this view in mind, our future lies then with “gardening” (landscape management) in the most effective way.

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This gardening then means:

- Improving carbon sequestration
- Promoting ecological resilience
- Maximising delivery of ecosystem services
- Managing at system level not species
- Understanding exactly how protected areas can help

Using a robust assessment process, with dependable and definable indicators.

And all this within a global governance framework that sets the key parameters and priorities.

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So, Capability Brown; where are you now???!!!

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