



Activity – Links between geographical knowledge and conservation science

This section assumes that you already know something about what has been described as the current “biodiversity crisis”. If you haven’t read or heard very much about the current high rate of biodiversity loss, and the threat to biodiversity caused by human activities (including the impacts of CO₂ emissions, deforestation and land-use change and pollution), then you should spend some time reading about this topic. Good places to start include newspaper websites and the websites of conservation organisations (again, see previous Activities), but there are lots of high-quality resources available on the internet, and there will be useful books in school and local libraries.

This section focuses on how geographical knowledge of the distribution of biodiversity is used to inform conservation policies aimed at preserving biodiversity. It can be summed up by the following question:

“In which areas would a given dollar contribute the most towards slowing the current rate of extinction?”

Essentially, in a world where there are limited resources available to preserve biodiversity, we should be focusing on identifying where we can save the most species using the resources that are available. But how should we do this?

One of the first attempts to answer this question was made by a British ecologist in 1988 and since then his ideas have been developed into the concept of Biodiversity Hotspots. Myers describes the concept of Biodiversity Hotspots in his paper “Biodiversity hotspots for conservation priorities”. Either use the link below, or search online for this paper.

Myers, N *et al.* 2000, Biodiversity hotspots for conservation priorities, *Nature*, 403, 853-858
<http://www.nature.com/nature/journal/v403/n6772/pdf/403853a0.pdf>

There is more information on the Conservation International website, including more recent updates of the classification conducted by Myers, and information on how the Biodiversity Hotspot concept has been implemented in practice:

http://www.conservation.org/where/priority_areas/hotspots/Pages/hotspots_main.aspx

HINT: Note that there is a difference between the hotspots and coldspots mentioned by Gaston in the first paper you read, and Biodiversity Hotspots as defined by Myers. Gaston considers hotspots to be places where biodiversity is particularly high, whilst Myers and Conservation International use the term to define a conservation strategy.

The Biodiversity Hotspot concept prioritises regions which:

- a) Have high biodiversity
- b) Are threatened by habitat destruction



However, this strategy has been strongly debated by scientists and conservation practitioners. Now that you have a good understanding of how this conservation strategy is designed, think about some of its strengths and weaknesses considering some of the key questions suggested below.

- What is your opinion of the way Biodiversity Hotspots measure biodiversity?
- Which regions of high biodiversity are excluded from the Biodiversity Hotspots? Why are they not included? Do you think they should be included? (Hint: Should a region need to have lost 70% of its habitat to be identified as a conservation priority?)
- How is biodiversity at levels other than at the species-level represented in the Biodiversity Hotspot classification? How well represented is ecosystem diversity? (Hint: which well-known biomes are not included? Do you think any biomes are over-represented?)
- Do you think that highly disturbed regions should be included, or are some areas already damaged beyond repair?
- What about marine biodiversity? Could the concept of Biodiversity Hotspots be useful for conserving marine biodiversity? What problems would you face conducting the required analysis for the oceans?
- Biodiversity Hotspots use historic habitat loss to assess the threat facing different regions. What other factors could be used to assess the threat to the biodiversity of a region posed by humans?