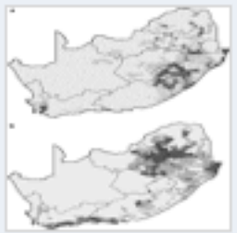

Abstract

Ecosystems services sustain humans all over the world. The unsustainable use of ecosystem services around the world has led to widespread degradation which now threatens human health and livelihoods. Although the maintenance of ecosystem services is often used to justify biodiversity conservation actions, it is still unclear how ecosystem services relate to different aspects of biodiversity and to what extent the conservation of biodiversity will ensure the provision of services. The aim of this study was to find out whether biodiversity priorities, biomes, species richness and vegetation diversity hotspots co-occur in space with ecosystem services. The distribution of the ranges and hotspots of five ecosystem services (surface water supply, water flow regulation, carbon storage, soil accumulation, and soil retention) was assessed in South African biomes. Coincidence, overlap, and correlation analyses were used to assess spatial congruence between ecosystem services and species richness (plants and animals) and vegetation diversity hotspots. The grassland and savanna biomes contained significant amounts of all five ecosystem services. There was moderate overlap and a generally positive but low correlation between ecosystem services hotspots and species richness and vegetation diversity hotspots. Species richness was mostly higher in the hotspots of water flow regulation and soil accumulation than would be expected by chance. The water services showed varying levels of congruence with species richness hotspots and vegetation diversity hotspot. These results indicate that actions taken to conserve biodiversity in South Africa will also protect certain ecosystem services and ecosystem services can be used to strengthen biodiversity conservation in some instances.

Keywords

Conservation planning; Species; Hotspot; Soil; Water; Carbon