

Biodiversity in China's mountains

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China, one of the world's "megabiodiversity countries", is home to more than 30 000 vascular plant and 6300 vertebrate species. Over thousands of years, however, cultivation has led to the disappearance of many of these species from the plains and lowland areas. The mountain regions still harbor large numbers of species, because there have been fewer human and natural disturbances and there are more diverse habitats. We used county level species distribution databases to explore patterns of biodiversity and to identify biodiversity hotspots within China. Ten hotspot ecoregions were identified, containing 3110 plant genera (92.0% of the country's total), 220 (90.5%) endemic plant genera, 366 (94.3%) endangered plants, and 254 (72.2%) endangered vertebrates, 427 (91.0%) terrestrial mammal species, and 65 (85.5%) endemic mammals. All 10 hotspot ecoregions are located in the mountainous areas of China. Although high richness of overall, endangered, and endemic plants and animals co-occurred in many of the same hotspot ecoregions, they often occurred in different counties within these ecoregions and showed low spatial congruence. In conclusion, China's mountain regions are critical for protecting biodiversity and should be made conservation priorities in the future.

摘要: 中国是全球“巨大生物多样性国家”之一，分布着30,000多种维管束植物和6,300多种脊椎动物。几千年的农耕文化使平原地区的生物多样性受到了严重破坏，而山区由于较少的人为干扰和多样的生境而具有丰富的生物多样性。本文利用县级分布的中国种子植物和脊椎动物分布信息，探讨了中国生物多样性的分布格局，确立了10个生物多样性的热点地区。这些热点地区都处于山区，共包含了3110个种子植物属(占中国总数的92.0%)、220个中国种子植物特有属(90.5%)、366种珍稀濒危植物(94.3%)以及427种陆生哺乳动物(91.0%)、65种中国特有哺乳动物(85.5%)和254种珍稀濒危脊椎动物(72.2%)。依据物种总数、特有种、珍稀濒危物种多样性等不同测度确定的生物多样性热点县具有较低的空间一致性。虽然它们都分布于相同的生态区内，但常常分布于该生态区的不同县。总之，山区对于中国生物多样性的保护具有极为重要的作用，应成为特别关注的区域。

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China spans a huge geographical area, ranging from tropical to boreal zones and from very low altitudes (156 m below sea level in the Turpan Desert, Xinjiang) to the world's highest mountain, Mount Qomolangma (Everest), on the border of Tibet and Nepal. Almost all of the different types of biomes found on Earth, from rainforests to deserts, are found in China. This geographic diversity provides abundant habitats for plants and animals. Home to more than 30 000 vascular plants (surpassed only by Brazil and Colombia) and 6300 vertebrates, China is one of the world's "megabiodiversity countries" (McNeely *et al.* 1990). However, this biodiversity has suffered severe degradation due to the density of the human population, a long history of cultivation, and an increase in the intensity and extent of human disturbances in the plains and lowland areas.

The mountain regions of China provide rich habitats for much of the country's remaining biodiversity, owing to the heterogeneity of climates and soils, rapid elevational changes, varying aspects of slope direction, abun-

dant microhabitats, and limited suitability for cultivation (Körner and Spehn 2002). Thus, China's mountains are likely to be especially important for preserving its remaining biodiversity (Chen 1998).

In this study, we used well-developed county level distribution data for plants and animals to explore the patterns of richness of plant genera and terrestrial mammals, endemic plant genera and mammal species, and endangered plant and vertebrate species in China. Our goals were to identify hotspots for three different aspects of biodiversity (overall, endemic, and endangered) and to investigate the potential role of the mountain regions in conserving China's biodiversity.

■ Data sources

There are 2383 counties in China. A county level map was digitized and overlaid with a Digital Elevation Model (DEM) with 1 km x 1 km resolution, obtained from the United States Geological Survey (USGS), to document the topographic attributes of each county.

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