

Abstract

Geographical names and the entities they represent act as a fundamental cornerstone across numerous disciplines. However, inconsistent geographical names and arbitrarily defined regional geographical scales are common, hindering cross-disciplinary communication and synthesis. The Pan-Tibetan Highlands, comprising the Tibetan Plateau, Himalaya, Hengduan Mountains and Mountains of Central Asia, is a case in point. To rectify these inconsistencies of terminology, we employed a multi-disciplinary approach to standardize the nomenclature of the Tibetan Plateau and the three adjacent mountain regions, defining their spatial extent using historical and contemporary perspectives. A literature meta-analysis indicated that ‘Tibetan Plateau’, ‘Himalaya’ and ‘Hengduan Mountains’ are the most suitable names for these regions in terms of both priority (earliest use) and popularity, whereas ‘Mountains of Central Asia’ emerges as appropriate for the mountain chains to the west of the Tibetan Plateau. The new term ‘Pan-Tibetan Highlands’ is proposed to replace the less precise and arguably misleading ‘High Mountain Asia’ for these regions collectively. Additionally, new geographical boundaries, applicable back through time, are proposed for each region, based on geological and geomorphological features. Using these new boundaries, the Pan-Tibetan Highlands area is $3.95 \times 10^6 \text{ km}^2$ with a mean elevation of 3824 m, while the Tibetan Plateau is smaller ($1.82 \times 10^6 \text{ km}^2$) and higher (4465 m) than commonly assumed. Across the Pan-Tibetan Highlands, the proportion of protected areas is far below the proposed 30% anticipated in the post-2020 Global Biodiversity Framework target with only a few exceptions. Additionally, the Hengduan Mountains showed the highest vascular plant species richness and endemism, followed by Himalaya, Mountains of Central Asia and the Tibetan Plateau. The obvious conservation gap in the Pan-Tibetan Highlands calls for urgent research-based optimization of conservation networks. Our approach benefits quantitative spatial analysis by providing well-defined geographical scales for various fields, aiding cross-disciplinary comparisons and synthesis.