

The snow leopard suitable habitat analysis and climate refugia identification in Qinghai province, China

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Abstract

Global climate change poses major challenges for current biodiversity conservation efforts. Assessing species' vulnerability to climate change is a prerequisite for developing effective strategies to reduce emerging climate-related threats. We used the maximum entropy algorithm (MaxEnt model) to assess potential changes in snow leopard (*Panthera uncia*) suitable habitat in Qinghai Province, China under a mild climate change scenario. Our results showed that the area of snow leopard suitable habitat in Qinghai Province was 302,821 km² under current conditions and 228,997 km² under 2050's climatic scenario, and that its mean elevation would shift upward 90 m. At present, nature reserves protect 38.78% of the currently suitable habitat and will protect 42.56% of future suitable habitat. Current areas climate refugia amounted to 212,341 km², mainly distributed in Sanjiangyuan, Qilian mountains and surrounding areas. Our results provide valuable information for formulating strategies to meet future conservation challenges brought on by climate stress. We suggest that conservation efforts in Qinghai Province should focus on protecting areas of climate refugia and on maintaining or building corridors when planning for future species management.

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