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Designing protected areas to conserve biodiversity: A case study of the Malagasy Lemurs

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Protected areas (PAs) that preserve biodiversity are an integral component of *in situ* conservation. Assessment of biodiversity resources and their protection within PAs is critical to ensure that conservation targets are met and protection is maximized. Systematic conservation planning employs scientifically defensible methods to allocate reserves that meet these objectives. Madagascar has been designated the world's single highest priority for primate conservation, and 94% of its species are at risk of extinction. This study assessed the current PA network in Madagascar with respect to lemur biodiversity. Two conservation planning models, Marxan and Zonation, were used to identify where to prioritize future conservation efforts. Lemur species distribution maps were compiled to produce diversity estimates, which were then used to inform species conservation targets (percentage of a species range required to be included in the output), based on conservation status. Marxan was used to generate the minimum expansion scenario necessary to meet all lemur conservation targets. The resulting scenario would require a 225% increase (i.e., 15% of Madagascar) to the PA network to meet targets. Zonation was used to identify priority areas for conservation while restricting the network to 10% of Madagascar. Our results demonstrate that political targets, such as the Durban Vision to preserve 10% of Madagascar within PAs, may be insufficient to adequately protect biodiversity. Assessments of diversity and extinction risk followed by systematic conservation planning can focus conservation efforts by identifying priority areas that maximize protection while minimizing cost.

Biography

Heather Peacock has a BSc in Wildlife Biology from McGill University and MSc in Geography from the University of Calgary. She is currently a GIS Analyst and Consultant conducting wildlife habitat models for Environmental Impact Assessments in Canada. She recently collaborated with several lemur experts on the extinction crisis in Madagascar.

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