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Local-scale SDM as a tool for uncovering *Dillenia megalantha* habitats in EDC Leyte

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Trees are essential in forest maintenance and ecosystem stability, but increasing anthropogenic activities are putting many species at risk of extinction. In response, the Energy Development Corporation (EDC) has chosen five tree species as conservation icons for each of their geothermal production sites. Among these, *Dillenia megalantha*, an endemic tree of the Philippines with a previously undefined range, was studied within the EDC's Tongonan Geothermal Plant on Leyte Island. We employed MaxEnt-based distribution modelling to generate suitable target areas based on several environmental parameters, including isothermality, which accounted for 53.3% of the model's predictive power. The model identified five target areas where we performed field validation through distance sampling across 16 transects that led to the discovery of 171 individuals, which revealed new populations and expanded known ranges. Across sites, the varying densities of different tree stages—saplings (1.88 ± 0.22 per ha), small trees (14.22 ± 0.60 per ha), medium trees (8.13 ± 0.45 per ha), and large trees (2.50 ± 0.25 per ha)—reflect an active process of regeneration, with evidence of successful seedling establishment and progression to mature tree sizes, indicative of healthy forest dynamics. This study highlights the effectiveness of integrating predictive modelling and fieldwork for targeted conservation of rare species. By accurately identifying critical habitats and threats, we can develop bespoke conservation strategies, crucial for preserving biodiversity and ecosystem health at a local scale.