

RESILIENCE INDICATORS AND DISTRIBUTION-SHIFT OF NATIVE TREE SPECIES IN CONTINENTAL ECUADOR ACCORDING TO PREDICTED ENVIRONMENTAL CHANGE

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Many people living in tropical regions depend directly on the forest as resource for income, food, construction, energy and medicine. In the tropical mountains of Ecuador these human activities promote land-use change, which together with the effects of climate change can pose a major threat to conservation. One counter-measurement to prevent the negative impacts is to improve current forest management strategies, paying special attention to the resilience of forest species against environmental change. This study uses species distribution models to assess the potential impact of climate change on the geographical distribution of important tree species native to continental Ecuador. Tree species were selected based on the relative importance for local livelihoods, e.g. providers of timber or non-timber forest products; as well as their importance for biodiversity, whether they are considered as umbrella species or classified as threatened by the IUCN red list. We obtained geographical distribution of species from national and international herbaria and other databases. In order to construct current and future species distributions, we used Maxent based on Worldclim scenarios and IPCC last assessment report. Our findings predict that suitable habitat of most tree species will shift in their location. In the case of long-lived species i.e. timber species, this could occur as soon as only 50 years from now. Future steps of this study, will attempt to answer how resilient these tree species are individually to new environmental factors e.g. CO₂ concentration, temperature increases and deficit or surplus of rainfall values. To evaluate the resilience on a species by species basis, we propose three approaches, 1) molecular analysis to see the genetic diversity among different tree provenances, 2) comparative studies of dendrochronology belonging to dissimilar habitats and 3) seed germination tests under the new predicted climate conditions.