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Niche model based abitat delineation and IUCN reassessment of obligate riparian species (*Syzygium occidentale* (Bourd.) Gandhi) incorporating flood impact population data and comparison with ecosystem prediction pattern

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ABSTRACT

Syzygium occidentale (Bourd.) Gandhi, a threatened obligate riparian large shrub species endemic to southern Western Ghats is reassessed for its threatened status. Scrutinised taxonomic distribution records were used for estimating Extent of occurrence (EOO) 10244 km2 and Area of occupancy (AOO) 56 km2 and also for prediction of potential habitats based on bioclimatic Niche modelling. The AOO could be relatively low since it is a strictly riparian rheophytic species and its habitat has been threatened heavily with recent floods (2018 and 2019) as a cumulative impact of climate change and mismanagement of dams. The pre flood (Bachan and Devika, 2020; Bachan, 2010) and post flood (Bachan et al., 2019) population data indicate complete wash out of nine reported locations out of the 16 in six ecoregions in the southern Western Ghats. This has been used for IUCN threatened status reassessment using Species Information Service (SIS) facility. The species reassessed as Endangered (EN) and there is 20% reduction in EOO and 57% in AOO. The species distribution model used for prediction of potential habitats and the detailed composition elucidated for conservation and ecorestoration planning. The Maxent based niche model prediction as modified to cover the factors of Eltonian \ niche (Bachan and Devika, 2022) has been used here for accurate prediction of potential habitats within and outside PAs and also for impact of factors of degradation. The prediction model of this single obligate riparian species is compared with prediction output of the endangered low elevation riparian forest ecosystem (Bachan et al., 2021) for methodological aspects of conservation planning of threatened species and their ecosystems.

Keywords: Flood impact, Niche modelling, Red list assessment, Riparian, Western Ghats