

Taxonomic Revisions of Threatened Plants Based on Species Identification Technology Developed Using Nextgeneration DNA Barcodes

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[Abstract]

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The aim of this study was to identify new species in Japan and describe them in order to support the Ministry of the Environment's Red List and Species Conservation Act. The study also aimed to develop techniques to identify threatened species that are difficult to distinguish taxonomically. The researchers employed three methods: studying known candidate new species, investigating groups with potential for new discoveries, and examining areas with high species diversity and threatened species. Field surveys were conducted in 42 prefectures to collect DNA samples and voucher specimens of around 4,000 vascular plant species. Phylogenetic analyses using MIG-seq were conducted on approximately 300 species, resulting in the discovery of 110 new species and 20 new subspecies. Additionally, 58 species previously treated as synonyms or doubtful taxa were identified as independent species. A provisional assessment of Red List categories was made for these 188 species and subspecies, with 54% identified as threatened and potential candidates for designation as nationally endangered species. The findings showed that more new species were discovered than initially expected, highlighting the importance of continued taxonomic research.

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