

THE THREAT OF INVASIVE PLANTS IN NATIVE FORESTS OF EASTERN POLYNESIA

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Eastern Polynesia, a phytogeographical subregion of Polynesia in the Pacific Ocean, comprises the archipelagoes of the Cook Islands, the Australs, the Society, the Tuamotu, the Marquesas, the Gambier, the Pitcairn Islands, and Rapa Nui which is the easternmost inhabited island of Polynesia. These tropical to subtropical oceanic islands are among the most remote in the world. Because of this strong geographic isolation and their small terrestrial surface, their native flora is impoverished, disharmonic, and with a low number of endemic genera. However, some high volcanic islands within these archipelagoes display a great diversity of habitats and a highly endemic flora with striking cases of adaptative radiation. Most of these endemic taxa are restricted to montane rain forests and cloud forests. The main threat to these upland wet forests is not habitat destruction by man, or over-grazing by large mammals, but rather the insidious biological invasion of alien plants. Native forests of Eastern Polynesia are threatened by the same aggressive introduced species (e.g. *Psidium cattleianum* and *Syzygium jambos* in Pitcairn and the Marquesas Islands, or *Ardisia elliptica* and *Cestrum nocturnum* in Rarotonga and the Society Islands). Therefore, one of the highest priority for the long-term conservation of these native upland forests should be given to the study (invasion dynamics and ecological impacts) and control (strategy and methods) of the current invasive plants, and to the early detection and eradication of potential plant invaders.

A SIMPLE METHOD TO MEASURE PLANT BIODIVERSITY ACROSS THE PABITRA ISLANDS

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The PABITRA field comprises a variety of vegetation from the west to the east in the Pacific. A simple and easy method measuring species-richness is needed as a PABITRA baseline study, to compare the vegetation structure under the situation of varied flora.

Minimum task in field is a sampling of 100, or more, individuals with species discrimination (unnecessary with identification of taxonomic name). The sampling can be carried out with quadrat method, or with random sampling in a trail walking in a plant community. Then you can have a data of total number of species (S) in a collection of N individuals. Two indices of species diversity can be easily calculated. 1) Fisher's alpha (α): The value means the theoretical number of species represented by a single individual in the biotic community, and can be calculated by the formula, $S = \alpha \ln(N/\alpha + 1)$.

2) Hurlbert's $S(100)$: The value means the number of species found in a collection of 100 individuals. The most simple community will be $S=1$, while the most species-rich community is $S=100$. For the data comprising more than 100 individuals, the value can be calculated by the formula, $S'(100) = \sum [1 - (1 - 100/N)^{x_i}]$, where $N = \sum x_i$.

ABSTRACTS

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ABSTRACTS

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search for new
paradigms
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