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*Diversity and Change:  
Challenges and Opportunities  
for Managing Natural and Social Systems in Asia-Pacific*

**ABSTRACTS**



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## 1-14-1

### Vegetation and Plant Invasions in the Island of Moorea, French Polynesia

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Invasive alien species are recognized as one of the main causes of biodiversity erosion in island ecosystems. As a result of globalization, the number of naturalized introduced plants currently equals or even exceeds the number of native and endemic species in many tropical islands. Some of the naturalized plants have extended their distribution ranges and abundance with significant impacts on both species composition and ecosystem functions. The understanding of invasion patterns and processes is often a prerequisite for alien species management, endangered species conservation and habitat restoration.

The flora of the small high volcanic island of Moorea (142 km<sup>2</sup>) located in the Society archipelago (French Polynesia) comprises about 470 vascular plants, 43% of them are naturalized. Twelve major vegetation types can be recognized, five of them are highly disturbed by past and present human occupation. We established a network of 17 plots (for a total area of 6,600 m<sup>2</sup>) in five different sites located at low and mid-elevation (between 200-700 m) in secondary and native wet forests. Plot data were analyzed to design range distribution of native and alien species (especially woody species) and to compare species composition and abundance between sites. A total of 142 species including 112 native and 30 naturalized plants (54 woody species with dbh >1 cm) was recorded. Preliminary analysis reveals that the main invasive trees include *Miconia calvescens* (Melastomataceae) and *Spathodea campanulata* (Bignoniaceae) with a mean basal area of 39 cm<sup>2</sup>/m<sup>2</sup> (3% of the total basal area) and 215 cm<sup>2</sup>/m<sup>2</sup> (18%) respectively. *Miconia* abundance increases with elevation within sites and is higher on wind-exposed sites where it forms dense monotypic stands, whereas *Spathodea* is more abundant at low elevation. Our future plans are to increase the number of plots in other vegetation types (e.g. dry and mesic forests) and at higher elevation (up to 1,000 m), to integrate non-woody species (ferns and herbs) in further analysis, and to conduct long-term monitoring. This survey will contribute to a better understanding of vegetation dynamics and invasion processes in small Pacific islands.

Keywords: biodiversity, invasive plants, vegetation

## 1-14-2

### Non-native slugs as impediments to native plant restoration on Pacific Islands

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Mainly through accidental introductions, non-native slugs from around the world have become established on many Pacific Islands. Slugs are often recognized as important garden pests and predators of seedlings, but little is known about how introduced slugs are affecting native plant populations. Hawaii has no native slugs, but over a dozen slug species are now established. We reviewed Rare Plant Recovery Plans produced by the U.S. Fish and Wildlife Service and found introduced slugs mentioned as potential threats to 67 rare plant species, based on anecdotal observations by field biologists. We then initiated an experimental field study to assess impacts of slug herbivory on the growth and survival of three rare native plant species (*Cyanea superba*, *Nestegis sandwicensis*, and *Schideia obovata*) and two invasive plant species (*Clidemia hirta* and *Psidium cattleianum*). In mesic forest on the Island of Oahu, we tracked the fate of outplanted seedlings in replicated 1 m<sup>2</sup> enclosures on the forest floor, with and without slug control. Slugs significantly impacted seedling survival for two of the three native species (*Cyanea* and *Schideia*), decreasing their survival by 51%, on average. Slugs did not significantly affect seedling survival for the invasive plant species. Introduced slugs can be a serious impediment to restoring native plant populations on Pacific Islands.

Keywords: Mollusca, herbivory, rare plants