

Abstract S2-31

Long-Term Study of Forest Dynamics and Monitoring of the Impacts of Plant Invasions and Climate Change in the Islands of Tahiti and Moorea (French Polynesia)

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Abstract

Long-term monitoring of island forest ecosystems is crucial to investigate changes in plant communities, to assess their vulnerability or resilience to disturbances, and to conduct effective conservation or restoration efforts, especially in the context of climate changes and biotic homogenization. A network of permanent plots was set up in the two high volcanic islands of Moorea and Tahiti (French Polynesia, South Pacific) to study the native forest composition, structure and dynamics of native forests, and to assess the impacts of invasive alien plants and the future effects of global warming. We monitored ten 20x20 m plots on Moorea since 2006 located between 200 and 500 m, and eight 10x20 m plots on Tahiti since 2013 located along an elevation gradient between 600 and 2000 m. Forest structure and composition were analyzed by measuring basal areas of all woody alien and native plants (>1.3 m in height). Seedling abundance was studied in twenty 1x1 m quadrats in selected plots. Temperature and humidity sensors were also installed in Tahiti at six different elevations between 600 and 2000 m to record hourly data for a period of about 2 years. Our results showed that, so far, Tahitian cloud forests are relatively resilient to invasion by introduced trees (mainly *Miconia calvenscens* and *Spathodea campanulata*) between 1,300 and 2,000 m where mean temperatures range between 14 and 17°C, but occasional disturbances causing canopy openings may favor invasion by other pioneer species. On Moorea, no clear pattern of change in forest structure and composition was observed during the 8 years monitoring period with the absence of large natural and anthropogenic disturbances. However, the potential upward shift of some alien species elevational ranges with future temperature increase, associated with more frequent or intense cyclones, might dramatically affect the integrity of these still relatively preserved native forests.

[Sub-Theme 2] Biodiversity and Natural Resources
2-10 Impact of Invasive Alien Species in the Ecosystems of the PABITRA Islands



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Short Biography:

Jean-Yves Hiro MEYER (PhD at University of Montpellier in 1994, Post-doctoral research scholar at University of Hawaii in 1997, Scientific Director at the Conservatoire Botanique National de Mascarin, La Réunion Island in 2001, Research Associate in Botany at the National Tropical Botanical Garden of Hawaii since 2008) is a research scientist working in French Polynesia and other Pacific Islands for the past 25 years. He was hired at the French Polynesian Department of Research in 2002, and is now its Director since Sept. 2014.

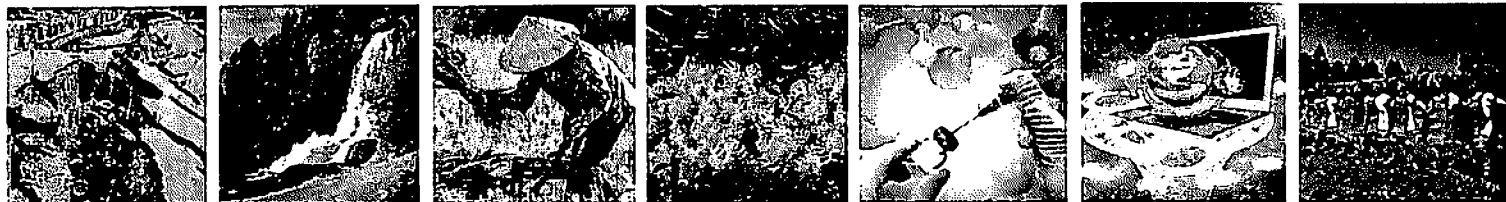
A plant ecologist, field botanist and conservation biologist, and a recognized expert on invasive alien species (member of the IUCN Invasive Species Specialist Group), he is actively involved in research studies on the native and alien flora and fauna of French Polynesia where he organized multidisciplinary field-expeditions. He also collaborates as an expert on numerous biodiversity and biological invasion initiatives across the Pacific (for the South Pacific Regional Environmental Programme, the Pacific Invasives Learning Network, Conservation International Micronesia-Polynesia Hotspot, IRD New-Caledonia, National Park of Rapa Nui, Service de l'Environnement of Wallis & Futuna). A guest Lecturer at the University of French Polynesia and the UC Berkeley Gump South Pacific Research Station on Moorea, he advises and mentors undergraduate, graduate, doctoral, and post-doctoral students working in French Polynesia, with projects in the areas of botany, plant ecology, conservation biology, habitat restoration, terrestrial biodiversity and invasive species management.

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