

# The Bulletin

OF THE NATIONAL TROPICAL BOTANICAL GARDEN

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Summer 2009



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ON THE COVER: Some of the world's least known and most endangered plants are located in remote areas like this ethereal spot on the island of 'Uapou (Ua Pu) in the Marquesas. When botanists ventured into these areas they discovered more than they expected. See story on page 6 (also back cover).  
*Photo by Ken Wood*

The Bulletin is a publication for supporters of the National Tropical Botanical Garden, a not-for-profit institution dedicated to tropical plant conservation, scientific research, and education.

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# **Field Trippers** *by Jon Letman, Associate Editor*

**T**raveling by helicopter, plane, skiff, freighter, dugout canoe, and most importantly, on foot, NTBG botanists hike, hack, climb, paddle, and slog to some of the world's most remote tropical forests, collecting rare species and discovering new ones previously unknown to man, all in the name of science and conservation.

Such fieldwork often involves going to far-flung corners of the earth and heading for the least-known areas — high peaks, ridges, summits, and swaths of virgin native forest where humans, animals, and introduced or invasive plants have had the least impact. Whether conducting a plant census in Kaua'i's Wahiawa Bog or collecting seeds on a mountain top on the Marquesas Islands' Fatu Iva (Fatu Hiva), the Garden's fieldwork has yielded some of the most diverse and detailed plant information and material collections in modern tropical botany.

This year, while collecting a tiny fern (*Didymoglossum tahitense*) on the island of Kosrae for the Micronesian Flora project, Director of Science Dr. David Lorence surpassed the 10,000 species collected mark. Including duplicates of specimens for trade with other institutions, Lorence's career collection totals number around 40,000 specimens.

When Lorence was hired in 1987, NTBG was approaching its 23rd year and had already established a herbarium collection with over 10,000 specimens. Twenty-two years later, thanks to Lorence and fellow botanists, that herbarium, one of the most active in the central Pacific, now has more than 62,000. Perhaps the most immediate, tangible benefit of fieldwork are the tens of thousands of wild-collected seeds, roots, rhizomes, and cuttings which can be

used to expand the Garden's living collections and leaf fragments to preserve valuable plant DNA.

This plant material serves as a priceless physical record that documents and reflects the biodiversity of the tropics, provides vital tools for scientists and researchers, and helps establish conservation priorities.

Much of the growth in the herbarium, living collections, and contributions to science and conservation are a direct result of hundreds of collecting trips and field expeditions. In order to collect, study, and protect the world's tropical plants, someone needs to go out there and find them and that's what gets Lorence out of the laboratory and into the field.

Lorence has been part of the field efforts to expand scientific and



▲ Lorence and Research Biologist Ken Wood in a cloud forest on Mt. Mutunte, Kosrae, Micronesia. NTBG scientists have played an important role in researching this island group. *Photo by Steve Perlman*

▼ This new discovery found on a summit on the island of 'Uahuka (Ua Huka) in the Marquesas is critically endangered. Lorence and Wagner named it *Ixora uahukaensis* (recognized as a member of the genus *Ixora*; the two scientists named the species to honor its native island). *Plant discovery and photo by Ken Wood*



exploration endeavors for more than two decades, during which he has collected across the Hawaiian Islands, Mascarene Islands, Canary Islands, Florida Keys, Australia, New Caledonia, Singapore, Peru, and American Samoa. His primary focus is on two Pacific island groups – the Marquesas Islands and the Micronesian islands of Belau (Palau), Kosrae, and Pohnpei.

On one recent expedition to Kosrae, Lorence and colleagues climbed to the summit of a forested peak where a colony of fruit bats swirled in the surrounding clouds. He recalls, “It was all native forest, with bats hanging in the trees and circling overhead looking as it must have before human contact – it felt very primeval.”

Another trip found Lorence with fellow collectors and local guides holed up in thin nylon tents in a mountain-top palm forest on Pohnpei listening as a nearby section of forest canopy crashed down with a terrible shudder during a ferocious midnight tropical thunderstorm.

“Generally the most remote areas and highest peaks are where you find the most intact native vegetation. Up in the cloud forests, in places collectors haven’t visited before, is where we find some of the most unique plants and often fewer invasive species and weeds.”

Because these high peaks often lack fresh water sources, field staff



▲ Fruit bats swirl in the mist on Mt. Oma on Kosrae in Micronesia. Lorence recalls "It felt very primeval." *Photo by Steve Perlman*

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must carry their own water and supplies. Despite the rigors of long, arduous journeys, trail-blazing, and the extensive pre- and post-expedition work, Lorence enjoys getting out of the laboratory and into the forest.

“Our packs are full of equipment, cameras, food, GPS, plant press, and we’re cutting our own trails with machetes in very rainy areas where we’re soaked the whole time. Some of my co-workers do this three or four times a week. For me it can be a challenge keeping up with biologists half my age, but I love it and jump at every chance I get.”

In collaboration with the Smithsonian Institution’s National Museum of Natural History, Lorence and Warren Wagner, the Smithsonian’s Curator of Pacific Botany who also holds an appointment at the Garden as its McBryde Chair, along with other NTBG collectors and colleagues in French Polynesia, have discovered about 60 new

species in the Marquesas Islands, increasing the known flora by about 17% over two decades. The results of this exhaustive study of these previously under-documented islands are being published as a book and Internet resource (individual papers describing each new species discovered are also being published in scientific journals).

Another product of the Garden's collaborative fieldwork in the Pacific is a 12-year long project conducted jointly with The New York Botanical Garden in which NTBG scientists co-authored the recently published *Ethnobotany of Pohnpei*, an extensive examination of the relationship between plants, people, and traditional culture in a region of floral wealth that exemplifies the importance of biodiversity, conservation, and scientific knowledge.

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as part of the Marquesas project

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Fieldwork also affords Lorence the opportunity to document the presence of invasive and potentially harmful species and conduct survey work in sensitive areas vulnerable to development, agriculture, or other environmental degradation. Additionally, these trips have allowed Garden staff to train and educate students in host countries who will conduct similar work in collaboration with and independent of NTBG.

As Lorence and staff pursue fieldwork in the Pacific, their discoveries continue to benefit the Garden, countless other institutions, and the larger scientific community. Field exploration, collaborative exchanges, and cooperation on a global scale advance the Garden's own mission while contributing to a greater scientific understanding of the world's irreplaceable biodiversity.



*Apetahia longistigmata*: This lovely member of the campanula or bellflower family (Campanulaceae) is confined to high mountainous areas in French Polynesia —Marquesas, the Society Islands, and Rapa Iiti. (See page 6.) *Photo by Ken Wood*



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