

Hawaiian lineages have colonized Hawaii within the last 5 million years, subsequent to the formation of Kaua'i. In contrast, *Kadua* appears to have migrated to Hawaii after Gardner Island formed, which, until the formation of Kaua'i, was the only island to reach 4000 m above sea level in the past 30 million years. This suggests *Kadua* is one of the older plant lineages in Hawaii and a relatively recent colonizer of French Polynesia.

¹Old Dominion University, Norfolk, VA, USA

Moyle, Robert G.¹, Andersen, Michael J.¹, Filardi, Christopher E.², and Brown, Rafe M.¹

Evolutionary patterns of community diversification at local and regional scales in the tropical Pacific - Part 1, Birds

How do complex vertebrate communities form on Pacific island archipelagos? For a given island, island bank, archipelago, or region, have complex communities evolved in situ or assembled via ecological processes? Multilocus phylogenies were used for two focal bird clades as model vertebrate lineages representative of high relative dispersal abilities, and these questions were approached in two ways. First used phylogenetic estimates were used to reconstruct the geographic context of diversification and numbers of dispersal events, order of colonization events, and overall biogeographic history, of avian communities inferred in the SW Pacific. In addition to providing new insight into long-held paradigms of dispersal, speciation and community assembly in insular Melanesia, these new phylogenetic perspectives served as the basis for a new historical analysis of community formation. These results highlight the importance of geographic and taxonomic scale in diversification studies and demonstrate that avian communities are phylogenetically over-dispersed at local levels but clustered at archipelago and regional levels. This suggests that both ecological processes of community assembly and evolutionary processes of in situ diversification have contributed to the diverse avian communities of the Pacific.

¹University of Kansas, Biodiversity Institute and Department of Ecology and Evolutionary Biology Biodiversity Institute, Lawrence, USA

²American Museum of Natural History, Center for Biodiversity and Conservation, New York, USA

Nakamura, Koh¹, Kokubugata, Goro², Peng, Ching-¹, and Meyer, Jean-Yves³

Shallow genetic divergence of *Ophiorrhiza* species (Rubiaceae) endemic to the Society Islands (French Polynesia, South Pacific) and its conservation implications

The flora of the Society Islands is known for its high endemism. It is, however, severely threatened by anthropogenic pressures, mainly habitat destruction and plant invasions. Revealing phylogeny of island endemics does not only enhance our understanding of species diversification but also can benefit conservation by providing insight into past population dynamics. The genus *Ophiorrhiza*, comprising nine species restricted to the largest islands of Tahiti, Moorea, and Raiatea, are typical examples of these endangered endemics. This study was conducted on eight species collected in these three islands, associated with 15 taxa from Futuna (Western Polynesia), Philippines, Indonesia, Brunei, Malaysia, Thailand, Taiwan, Japan, China, and Bangladesh. Sequence analyses of ITS of nrDNA revealed that the Society Islands *Ophiorrhiza* are highly likely monophyletic. However, these species were not delimited based on ITS or four chloroplast DNA regions because most polymorphisms were shared among species. ITS and cpDNA phylogenetic networks and morphological species delimitation were incongruent with each other. The extensive sharing of polymorphisms and incongruence are unlikely explained by hybridization; the more plausible scenario is incomplete lineage sorting, i.e. sharing of ancestral polymorphisms due to morphological radiation in a short evolutionary time. Coalescent theory suggests that *Ophiorrhiza* of the Society Islands had large population size in the past. These data indicate that their current conservation status, with less than 50 known plants for some species, is the results of drastic population decrease.

¹Biodiversity Research Center, Academia Sinica, Nangang, Taiwan

²National Museum of Nature and Science, Department of Botany, Tsukuba, Ibaraki, Japan

³Government of French Polynesia, Délégation à la Recherche, Papeete, Tahiti