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## workshop summary

## Biodiversity Synthesis meeting on the biogeography of Melanesia

A Multi-Taxa Approach Towards the Biogeography of Melanesia: Higher Order Science to Inform Conservation – Suva, Fiji, 11-15th August 2009

The islands of Melanesia (New Guinea, The Solomon Islands, Vanuatu, Fiji and New Caledonia) present a unique challenge to biogeographers. They possess a recondite geologic history where ancient and modern forces interact to create enigmatic patterns of species diversity. Melanesia has served as the laboratory from which some of the greatest works of biogeography have been launched, including seminal works on the biological species concept (Mayr 1947), the island biogeography (MacArthur and Wilson 1963) and island speciation (Diamond 1974).

Despite the importance of Melanesia, there is a lack of knowledge pertaining to the large-scale, multi-taxa biogeographic trends in the region. The lack of work on concordant biogeography is regrettable, as it has hamstrung the development of a synthetic approach towards biogeographic research, and its corollary identification of conservation management units. For example, although a recent biogeographic study of a multi-taxa patterns of marine biodiversity (Roberts et al. 2002) has invigorated research into the processes underlying its evolution (Barber & Bellwood 2005; Carpenter & Springer 2005; De Boer et al. 2008) none of these papers have incorporated salient work from the ornithological (Filardi & Moyle 2005; Mayr & Diamond 2001) or entomological (Wilson 1959) literature (although see Drew et al. 2008).

To address these shortcomings we convened a workshop entitled “A Multi-Taxa Approach Towards the Biogeography of Melanesia: Higher Order Science to Inform Conservation” in August 2009 in Suva, Fiji. This workshop, funded by the Biodiversity Synthesis Center, a component of the Encyclopedia of Life housed at the Field Museum of Natural History (<http://synthesis.eol.org/>), brought together researchers who focus on a variety of taxa, ranging from vas-

cular plants to coral reef fish. The goal was to identify what patterns of distribution are recapitulated across taxonomic boundaries, and what biological differences are key to influencing the geographic distribution of life.

The majority of these researchers showed a pattern of decreasing species diversity and endemism as one moves away from the center of diversity in Papua New Guinea. This generality of this pattern was difficult to assess because of variances in sampling effort. In particular Fiji, which has been relatively better studied appeared to have more species of ants and flies than the Solomon Islands, however with further research within the Solomons this pattern is most likely to be reversed. Another relatively common pattern was that in no areas had species discovery curves reached saturation. In short, despite 150 years of serious collections based research in the region, we have not yet adequately characterized the diversity of life in Melanesia.

Another common theme throughout the meeting was the need to encourage stronger relationships between local students and international researchers. As in many places, working within the local culture can vastly improve a research project's success and increase awareness of the area's biodiversity. Given the complex tapestry of national and local and traditional governments, the prevalence of place based communal property rights and management and the intricacies of marine tenure, working without local expertise bound to hinder research projects. On the other hand, many regional students are hindered by lack of formal expertise, mentorships and access to research materials. There is clearly an opportunity for win-win partnerships for biodiversity research to be developed within this region.

Finally, with the generous support of the International Biogeography Society, we were able

to take a first step towards integrating local students into the international research environment by providing them free memberships into the society. In areas where journal access is often prohibitively expensive, the on-line access to the four journals will allow these students the ability to see the diversity of research being carried out by their new colleagues. We are also developing a bibliography of Melanesian biogeography containing approximately 150 abstracts and reprints covering the range of critical papers in the region.

The workshop also took aim at integrating the academic findings into a broader management and conservation context. With representatives from both government agencies and non-government organizations participating the workshop provided a unique opportunity for those who produce knowledge to meet with those who apply that knowledge. Several topics were presented including a lively discussions on “open ended taxa” (Bickel 2009) and the role of community based conservation projects (Aswani 2006).

This workshop provided the opportunity for scientists coming from diverse taxonomic backgrounds to discuss some of the major patterns of species distribution. It provided an opportunity for scientists and managers to work hand in hand to find unique and innovative ways to protect biodiversity within the islands of Melanesia. We have much to learn about the biogeography of the region, however this workshop identified several concrete next steps towards elucidating those patterns.

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