Critical biodiversity hotspots for terrestrial forest insects and freshwater biota in French Polynesia

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Since 1999, the Pacific Biological Survey of the Bishop Museum conducted biological surveys as part of an Inventaire et Valorisation de la Biodiversité or inventory and evaluation of biodiversity, a research program conducted in French Polynesia with the assistance and financial support of the Gouvernement de la Polynésie française. The objectives of surveys in the Marquesas and Austral Islands were: 1) to assess the native aquatic insect fauna and describe the overall biodiversity of this fauna, 2) assess the biodiversity and status of Heteroptera and other important insects in native forest areas, 3) to assess the impacts or lack of impacts of introduced aquatic species on native stream biota, 4) to qualitatively assess the impacts of introduced species, feral ungulates, urbanization, on native insects, and 5) to provide museum specimens and an information baseline for future researchers. Significant findings of these surveys include a pristine native freshwater fauna lacking introductions of non-indigenous fish, amphibians, or aquatic reptiles found in most islands of French Polynesia. Extensive research in Hawaii has shown the devastating impacts of alien fish species on the native stream fauna, and every effort should be made to avoid introductions of any non-native aquatic species to French Polynesia. Numerous undescribed aquatic insect species have been found in the Marquesas and Austral Islands, including new species and range extensions of Heteroptera (true bugs), Diptera (aquatic flies), and Odonata (dragonflies and damselflies). A rich terrestrial native insect fauna with numerous undescribed species of Coleoptera (beetles), Diptera (flies), Heteroptera (true bugs), and Homoptera (planthoppers) and has also been found in remnant areas of native forest on each island surveyed. The native species found in French Polynesia are important on a worldwide basis, and preservation of this biodiversity is critical. Areas containing significant levels of terrestrial insect and aquatic native biodiversity in the Marquesas and Austral Islands have been identified. To preserve this rich native biodiversity and Polynesian cultural heritage, it is imperative to protect the limited remaining native forests and aquatic ecosystems in French Polynesia.
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