

## Preface

### **Biological Uniqueness and Conservation of Island Ecosystems**

An island is a closed ecosystem separated from the mainland by geographical distance. Especially regarding oceanic islands, this distance works as a barrier to organisms dispersing from the mainland to the island. This is the main reason that the plant and animal components on an oceanic island are usually 'disharmonic' compared to those observed on the mainland. An island ecosystem often lacks particular taxonomic groups of plants and animals, which would otherwise have an important role in structuring the mainland ecosystem. Another distinctive characteristic of an island ecosystem is its evolutionary uniqueness. Since Darwin's era, oceanic islands have been recognized as evolutionary laboratories, where unique evolution has taken place in many phylogenetic groups. In this sense, island ecosystems are worth paying attention to from the viewpoint of conservation of biodiversity, in spite of the fact that islands occupy only a small proportion of the world's landmass.

Biologically unique species often exist as small-sized and/or fragmented populations on a single or few islands. These species are susceptible to extinction in nature due to stochastic disastrous events. With increasing impacts of human activities on island ecosystems, the risk of extinction has markedly increased. Extinction may occur implicitly at a DNA level, possibly caused by hybridization with genetically close exotic species. Now, conservation of biodiversity of islands should be recognized as a global environmental issue.

Biological uniqueness of island ecosystems has recently received the attention of tourists, islanders and governments as a sustainable natural resource, which is called an 'ecological service.' Ecotourism seems an attractive approach to the unique island ecosystem aiming to promote coexistence of humans and nature. However, in consideration of the biological uniqueness of islands, we have to be careful in developing island ecotourism.

In this special issue of *Global Environmental Research*, nine papers are presented from a variety of backgrounds. The first three papers introduce our present understanding of the biological uniqueness and conservation of the Bonin (Ogasawara) Islands, a subtropical group of oceanic islands of Japan. The fourth paper reviews the status of unique vegetation on the Galapagos Islands in relation to the impact of alien species. The fifth and sixth papers deal with biological uniqueness and conservation of the Izu Islands, in a warm-temperate region of Japan. The seventh paper reports on the impact of alien animals on endemic mammals of Amami Island in the Nansei Archipelago in a subtropical region of Japan. The eighth paper proposes an alternative way for humans and nature to coexist against development of a nuclear power plant on an island in the Seto inland sea of Japan. The last paper describes the challenging activities of a prefectural government for conservation of Yakushima Island, which is listed as a World Natural Heritage Site. We are still on the way and hopefully the right way to coexistence of humans and the unique nature of islands.

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