

# by the Santo 2006 Botany Team

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## Exploration

European botanical exploration of Vanuatu began in 1774, when the Forsters (father and son) and W. Anderson visited the islands of Tanna and Malekula during James Cook's second voyage. Significant collecting expeditions, including to Santo, were conducted by F.A. Campbell in 1872-1873 and by a team led by J.R. Baker in 1933. More recently, scientists from several institutes participated in the 1971 Royal Society-Percy Sladen Expedition; botanists from IRD (formerly ORSTOM) in Nouméa, New Caledonia, visited Santo between 1965 and 1985; and a team from Tsukuba Botanical Garden collected there in 1996-97.

The Santo 2006 Botany team included 16 members from eight institutions in the Pacific, Europe and North America — the largest ever to work in Vanuatu. They focused on two complementary themes: Mountains & Rivers, to document the native flora of largely undisturbed habitats, and Fallows & Aliens, to record plants in human-modified environments. Most field work was conducted in a few key areas, including the Cumberland Peninsula (especially the Penaoru valley), Mt Tabwemasana, the area around Butmas, and the Vatthe Conservation Area near Matantas.

During the three months when team members were on Santo, they made a total of 1950 fertile collections, almost always in multiple sets. In addition, 943 trees were marked and identified in a series of permanent plots established in the Penaoru area. One duplicate of each fertile collection was deposited at the Vanuatu national herbarium in Port Vila (PVNH) and additional sets were sent to the Muséum in Paris (P) and the herbarium at the IRD Center in Nouméa (NOU); duplicates were sent to specialists working at other institutions.

Members of the Santo 2006 Botany Team made preliminary identifications as material was collected. Most specimens were dried and processed at the Penaoru base camp (Fig. 61), although some were preserved temporarily in alcohol and dried later, especially material collected during the difficult Mt Tabwemasana ascension. Following the expedition, field notes were entered into a database. Most angiosperms collections were identified by M. Tuiwawa, G. McPherson and J. Munzinger in Nouméa in February-March 2007, and by G. McPherson in Paris in June 2007. Ferns were identified by G. Rouhan (April and August 2007) and orchids by M. Pignal (2006-2008), both working in Paris. In parallel, specialists with knowledge on certain groups provided identifications.

Much of the identification work has now been completed, although a few problematical groups still require study. The team documented *c.* 650 species on Santo, belonging to 366 genera and 140 families of flowering plants, gymnosperms, ferns and bryophytes. An estimated 20 species collected during Santo 2006 are new to science and are being named by members of the team.

This exemplary effort has made a significant contribution to our knowledge of the flora of Vanuatu and toward documenting the plants of Santo, the archipelago's largest, highest, and botanically most diverse island. Establishing permanent plots also enabled the first-ever characterization of the structure and composition Santo's humid forests. Our work, summarized in the following pages, has helped fill a major gap in our botanical understanding of the southwest Pacific, and gave the team members an unparalleled opportunity to discover and share some of Santo's most exciting botanical treasures.



Figure 61: The Santo botany team at the Penaoru base camp, processing plant specimens after a long day in the field.

# Santo

## The Natural History of

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# Santo

## The Natural History of

The islands of the Pacific are renowned for the high levels of endemism of, and threats to, their unique faunas and floras. Espiritu Santo, affectionately known simply as Santo, is an island of superlatives: the largest and highest in Vanuatu, Santo is an extraordinary geographical and cultural microcosm, combining reefs, caves, mountains, satellite islands, and a history of human habitation going back 3 000 years. In the spirit of famous voyages of discovery of the past, the Santo 2006 expedition brought together over 150 scientists, volunteers and students originating from 25 countries. With contributions by more than 100 authors, *The Natural History of Santo* is a lavishly illustrated homage to the biodiversity of this "planet-island". Bridging the gap between scientific knowledge and conservation and education, *The Natural History of Santo* was written with local stakeholders as well as armchair naturalists from all over the world in mind.

Les îles du Pacifique sont célèbres pour le très haut niveau d'endémisme et la grande vulnérabilité de leurs faunes et de leurs flores. L'île d'Espiritu Santo, ou Santo, cumule les superlatifs : la plus grande et la plus haute du Vanuatu, Santo est un extraordinaire microcosme géographique et culturel, avec récifs, grottes, montagnes, îles et îlots satellites, et une occupation humaine qui remonte à 3 000 ans. Renouant avec l'esprit des "Grandes Expéditions Naturalistes", l'expédition Santo 2006 avait mobilisé sur le terrain plus de 150 scientifiques, bénévoles et étudiants de 25 pays. Petit tour de force éditorial avec plus de 100 auteurs, ce *Natural History of Santo* est un éloge de la biodiversité de cette "île-planète". À la fois beau livre richement illustré et bilan des connaissances scientifiques, *The Natural History of Santo* se veut un outil de connaissance pour sa conservation durable. Il s'adresse autant aux acteurs locaux du développement et de l'éducation qu'aux naturalistes du monde entier.



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