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Marotiri, Rock Pinnacles In the South Pacific

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ON ANY EXPLORING expedition there are incidents so striking that they long remain in the memories of the participants. I have a vivid recollection of landing and botanizing on Marotiri. These islands are a cluster of rock pinnacles located 46 miles southeast of Rapa Island, at 27° 55' S., 143° 26' W., in French Polynesia, South Pacific Ocean. Their flora was unknown; and the report in the *U.S. Sailing Directions, Pacific Islands* (1933:49), was "All these rocky islets are abrupt and without vegetation or any low ground."

The Mangarevan Expedition of the Bishop Museum made biological explorations in southeastern Polynesia in 1934. The month of July, a winter month, was spent at Rapa. Our Captain, William Anderson, said that if there should come a series of relatively calm days, we could attempt a trip to Marotiri on the third such day. By good luck there was some calm weather, and we started south at dawn on July 22. On arriving at Marotiri, the weather was not fully calm, but the breeze was gentle and the open sea showed only a series of low swells.

Marotiri consists of 4 major islands and 5 smaller ones. We chose the tallest one, Southeast Islet, which is 346 feet high. Its sides are steep or precipitous throughout (Figs. 1 and 2). We encircled it twice, searching for a possible landing place, but there was no beach, nor any quiet lee shore, for the swells built up in the shoal water, parted on the windward side of the island, swept along the sides, curled around, met and climbed on the lee side. On the island there were many nesting birds, much guano, and we could see some vegetation. I elected to try to get on shore.

While the landing boat was being launched, Capt. Anderson drew me aside and asked earnestly, "Do you really want to try a landing?" After my affirmative reply, he continued, "Remember, you have a wife and children!" Still thinking it possible, I jumped into the boat, and the 2 sailors with pair oars soon brought me in close.

The shore was a rocky face at about 50°, but we could see that it had numerous possible hand and foot holds. The difficulty was that as the waves broke on the slope, the distance from trough to crest of the waves was about 10 feet. I directed the sailors to turn the boat around and to back in, while I crouched on the stern seat and held on to the gunwales. We rowed in with a wave; I jumped, got a footing, started to climb, then was caught by the next wave which



Figure 1. Southeast Islet, Marotiri, Austral Islands, seen from the north.



Figure 2. Southeast Islet, Marotiri, Austral Islands, seen from the west, and showing the landing spot at the right.

rose to my waist. I held on, then the wave receded, and I was safely on the island. On the next trip my assistant, F. Raymond Fosberg, landed and, when we signaled that there were insects, so did our entomologist, E. C. Zimmerman.

Our departure was similar, but easier. A rope was tied to the rear seat of the boat, and when it was backed near the landing, the rope was thrown to the man on shore. When a good wave was swelling, a strong pull on the rope, together with backing with the oars, brought the boat in quickly and close enough so that one could jump into it. Then both oarsmen pulled vigorously, the boat sped out with the receding wave, and the embarking was accomplished. It *looked* easy.

We had about 2 hours for collecting and observing the flora. The slopes of the island were dry, but in crevices and on ledges of the basaltic rocks there were tufts or tussocks of plants.

They were buffeted and trampled, but were vigorous because of the abundant guano on and around them. Fosberg (Atoll Res. Bull. 162:10, 1972) has published a brief account of the island, and for the flora he listed *Solanum nigrum*, and 9 other plants by generic name only. Since the island is remote, inaccessible, and interesting, the species and their collection numbers, gathered by me, are listed below.

Now, to my great astonishment, there has been a second landing, and collection of plants on Marotiri. B. Richer de Forges, specialist on arthropods of the French expedition to the Austral Islands, landed on the South Islet (probably the same as our Southeast Islet) on May 17, 1979, and collected 8 plants, 4 of them identifiable as the same species of *Asplenium*, *Digitaria*, *Solanum*, and *Bidens* cited below. These are listed by the botanist N. Hallé (*Cahiers de l'Indo-Pacifique* 2:84-123, 1980).

In the following list the native species are indicated by an asterisk (*) before their names.

ALGAE

Siphonocladiales

**Rhizoclonium samoense* Setchell, 15,690, St. John's number.

BRYOPHYTA

Bartramiaceae

**Philonotis St.-Johni* Bartr., 15,685.

HEPATICAE

An hepatic, undetermined, 15,684.

LICHENES

Usneaceae

**Ramalina subpusilla* Nyl., 15,680.

PTERIDOPHYTA

Adiantaceae

**Cheilanthes tenuifolia* (Burm.) Sw., 15,676.

Aspleniaceae

**Asplenium obtusatum* Forst. f., 15,689.

Pteridaceae

**Nephrolepis exaltata* (L.) Schott, 15,686.

MONOCOTYLEDONES

Gramineae

Digitaria setigera R. & S., 15,687.

Cyperaceae

**Cyperus ferax* L.C. Rich., 15,679; 15,691.

DICOTYLEDONES

Portulacaceae

**Portulaca Fosbergii* v. *Poelln.*, var. *major* v. *Poelln.*, 15,677.

Euphorbiaceae

**Euphorbia ramossissima* H. & A., 15,678.

Solanaceae

**Lycium sandwicense* Gray. (Observed by Fosberg but not collected.)
Solanum nigrum L., 15,628.

Compositae

**Bidens Saint-Johniana* Sherff, 15,683; 15,688. Endemic to Marotiri.
Sonchus oleraceus L., 15,618.

This flora included 4 cryptogams, 3 ferns, 2 monocotyledons, and 6 dicotyledons. Three adventive weeds were present, but of the vascular plants there was the single endemic *Bidens*, and the remaining 7 species which are indigenous and also occur on Rapa, the nearest island, except for the *Portulaca* which is known on Raivavae and Tubuai.