MARIANA'S ACTIVE ARC: A BIBLIOGRAPHY

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INTRODUCTION

The Mariana Archipelago is divided into a system of two discrete arcs. The Frontal (or Outer) Arc composed of Guam, Rota, Aguijan, Tinian, Saipan and Farallon de Medinilla lies at the southern end of the Archipelago. These islands are composed primarily of raised limestone and are of a much older age than the remaining islands. The line of islands between Esmeralda Bank and Farallon de Pajaros (Uracas) constitutes the Active (or Inner) Arc. These islands are volcanic, have little or no coral reef development, and are much younger geologically. Most of them are active volcanoes.

The geology of these islands as they are related to crustal movements in the Western Pacific has been studied by Karig (1971 and in a number of other publications), Meijer (1976, 1981), Meijer and Glasley (1973), and Stern (1979, 1981). A general geological survey of Pagan was conducted by Corwin et al. (1957), of Agrihan by Stern (1978, 1979), and of Sarigan by Meijer and Reagan (1981). The geochemistry of Esmeralda Bank has been studied by Stern and Bibee (1980a, 1980b), and the activity of the same bank was studied by Gavrilenko et al. (1980) and Gavrilenko (1981). Ruby Volcano was named as a result of acoustic observations by Johnson (1973).

The first and most extensive climatic survey was that of Chief of Naval Operations (1944). A somewhat later survey included oceanographic information (CINPAC-CINCPOA, 1945). The climatic conditions at Pagan have been specifically detailed by U.S. Naval Weather Service Command (1971). The physical oceanography of the islands has been investigated by de Witt (1972). The general oceanographic conditions of the northwest Pacific Ocean near the Marianas has been reviewed by Eldredge (in press).

The biota of the islands is not well known. Maug is the only island from which a "natural history" has been published (Eldredge et al., 1977). Some information is available concerning other islands (Abbott et al. 1982). Botanical studies were originally made by Hosokawa (1934 and other papers) and Kanehira (1934 and other papers). The most extensive studies have been those of Fosberg (1958, 1960) and Fosberg et al. (1975, 1977, 1980). The majority of plants have been noted in the checklists of Fosberg et al. (1979, 1982) and Fosberg and Sachet (in press). The marine algae from most of the islands have been reported by Tsuda and Tobias (1977a, 1977b) who noted a number of rare and unusual forms.

Among the marine animals, the molluscs are the best known group (Abbott, 1939, 1960, 1961, 1968; Carlson and Hoff, 1972; Cernohorsky, 1976, Dickinson, 1976; Emerson and Cernohorsky, 1973; Houbrik, 1978; Powell, 1973; Rosewater, 1970; Vermeij et al., in press). Hermit crabs have been reported by Wooster (1979, in press), and one species of deepwater crab was reported by Eldredge (1980). Some fishes have been reported (Gawel, 1975; Jones et al., n.d.) from several islands; a detailed list has been prepared from Maug (Eldredge et al., 1977). Birds have been reported by Baker (1951) and more recently listed by Owen (1977). Falanruw (1975) recorded the megapode from all the islands. A subspecies of fruit bat has been described from Pagan (Yamashina, 1932).
Although few whales have been reported, whaling efforts have been described (Longhorn, 1979; Martin, 1979; Townsend, 1935; Ward, 1967). Numerous fishery surveys have been conducted among these northern islands (Hosmer and Kami, 1981; Japan Marine Fishery Resources Research Center, 1975, 1976, 1977; Kearney et al., 1979, 1980; Skipjack Programme, 1980, 1981). The fisheries of all the islands is reviewed by Uchida (in press).

Historically, the islands have been quite well documented from their discovery (Garcia, 1683) to the nineteenth century (Beechey, 1831; Ibanez y Garcia, 1886; Marche, 1891; Sanchez y Zayas, 1866). The memories of de la Cortes' governorship between 1855 and 1866 have been translated (Corte, 1926-27). Scientific studies to the present time have been outlined by Eldredge (in press). Little archaeological information is available. Egami and Saito (1973) described sites on Pagan, and Yawata (1940a) described sites on Alamagan.

Most of the literature of the islands of the Active Arc is of a general or popular nature. One of the earliest (Fritz, 1902) detailed an official trip among the islands and described how coconuts and other food products were planted. Prowezak (1913) described all the islands of the German Marianas. More recently, Eldredge (1975), Evans (1977), Farrell (1979), Kluge (1968), Ronck (1975a, 1975b, 1975c), Smith (1964), and White (1976) described various trips throughout the islands. Lehne and Gabler (1972) provided the most extensive information for all the islands.

Some planning efforts have been made. Johnson (1957) reviewed each island and proposed development plans. Recreation studies were conducted by H. Mogi (1977) and resort development (Towa Real Estate, Inc., 1970) and a physical development master plan for Pagan (Pacific Planning Design Consultants, 1978). Mineral resources were outlined by Dela Cruz (1971) and beach and aggregate resources at Pagan by Doan and Siegrist (1979).

Numerous investigations on individual islands have been conducted. The index cross references studies and islands.

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