

Distribution of *Ulva* (Chlorophyta) on Pacific Islands¹

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The presence or absence of certain pantropic genera of marine benthic algae on Pacific islands has presented some puzzling but interesting problems. Doty (1954), in a note on the distribution of *Sargassum* and *Rhipilia* on Pacific islands, discussed the apparent exclusiveness of range between the two genera and hypothesized that the genus *Sargassum* may be restricted to only high islands (igneous substratum).

The relative exclusion of the genus *Ulva* on Micronesian islands in the Pacific presents another interesting phytogeographic problem. The first record of this genus in the Micronesian area was reported by Tsuda (1964) and was based on four specimens of *U. lactuca* L. collected in July 1962 by Mrs. Jane Cooper, Hawaii Institute of Marine Biology, from the southern reef on Betio Island, Tarawa Atoll, Gilbert Islands. A second record of this species from the Gilbert Islands, reported by May (1966), was based on a collection made from Abemama Island during the months of March to July 1951 by Mrs. R. Catala.

A new distributional record of *Ulva* came to the author's attention when Mr. Richard A. Marin, World Life Research Institute, presented the author with some marine algae collected in the Palau Islands, Western Caroline Islands. Within the collection was an intact specimen of *U. lactuca* which had been collected on June 9, 1968 from a muddy area on the north side of Peleliu Island. Mr. Marin informed the author that the local inhabitants of the island had told him that this "type" of alga grew nowhere else.

Dawson (1956, 1957), Gilmartin (1960) and Taylor (1950) did not report this genus from the Marshall Islands. Dr. Gavino Trono, Jr. of the University of the Philippines (personal communication) also did not find *Ulva* in a large algal collection from the Caroline Islands nor did any of the earlier algal workers (see Tsuda, 1966) in this area. The author has yet to find this genus on Guam or Saipan, although its close relatives, *Enteromorpha* and *Monostroma*, occur on Guam, and Okamura (1897) has reported *U. lactuca* from the Bonin Islands which lie just northwest of the Mariana Islands.

By contrast, *Ulva* is quite common on many other islands in the Pacific. Gilbert (1965) reported five species from the Hawaiian Islands, but Buggeln and Tsuda (1969) did not find the genus on Johnston Atoll located 450 miles southwest of the nearest island in the Hawaiian Chain. Recently, Tsuda and Trono (1968) recorded *U. fasciata* Delile from Howland Island and Baker Island. The author

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has also identified this species from both Jarvis Island and Christmas Island in the Line Islands and Enderbury Island in the Phoenix Islands, based on collections made by Mr. C. R. Long, under the auspices of the Pacific Ocean Biological Survey Program, Division of Birds, Smithsonian Institution.

Setchell (1962) reported *U. lactuca* from Tahiti but did not report any species of *Uva* from Samoa (Setchell, 1924). Extensive field work on Tutuila Island, American Samoa, by the author in the summer of 1963 and by Mr. Richard G. Buggeln, University of Washington, the following summer, failed to find this

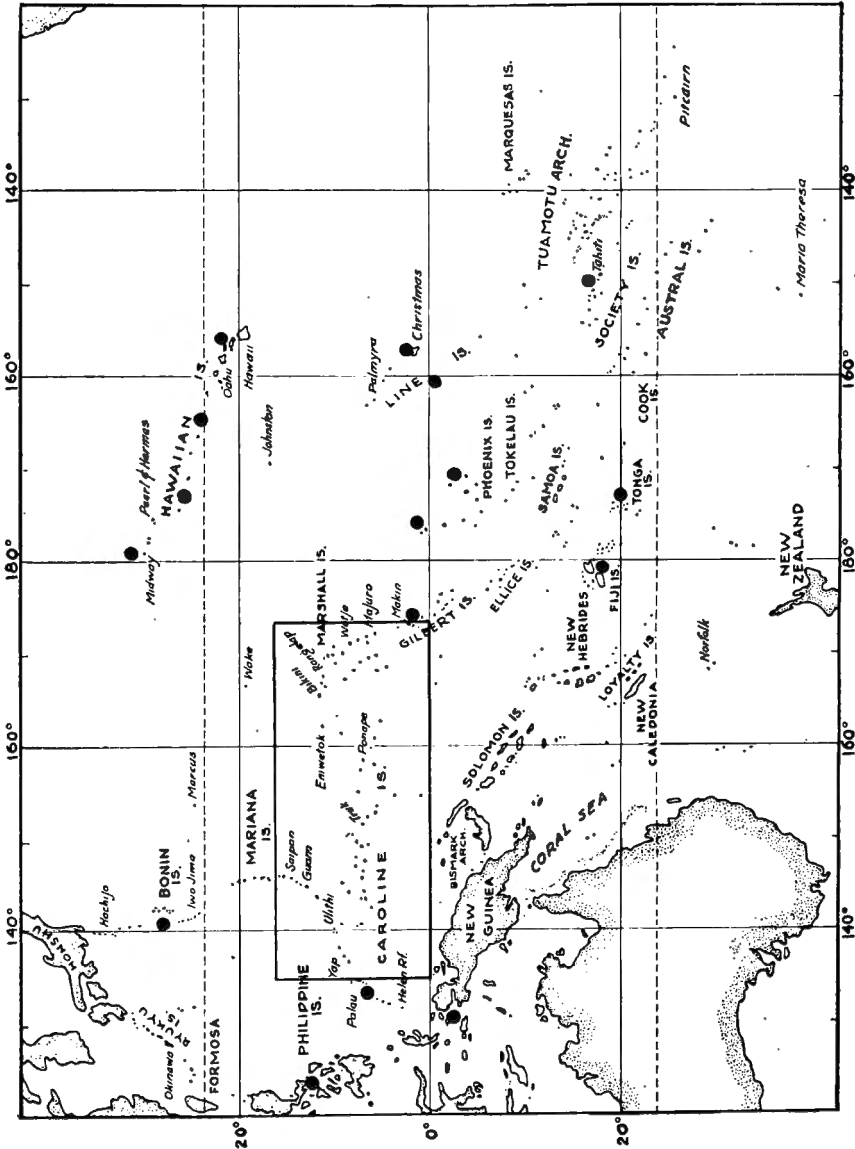


Fig. 1. Distribution of *Uva* on Pacific Islands.

genus. Dickie (1876) listed *U. lactuca* from Tonga. Through the courtesy of Dr. Maxwell S. Doty, University of Hawaii, the author has examined an unreported specimen of *U. lactuca* from Fiji.

From the brief review above, the genus *Ulva* seems to be excluded from an area between 0° to 16°N. Lat. and 135° to 173°E. Long. (Fig. 1). The presence of the genus on Peleliu Island represents the only record from a western island in Micronesia and may possibly be explained by its proximity to the continental islands which possess *Ulva*. Weber van Bosse (1913) listed *U. lactuca* from the Banda Sea area, and Gilbert (1959) and Taylor (1966) reported the same species from the Philippines.

The absence of *Ulva* in the Micronesian area cannot be explained on the basis of low and high islands, since this genus is present in both situations in other areas. Past observations of *Ulva* habitats in Hawaii seem to indicate that the available habitats in the Micronesian area are quite adequate to support this genus. The chlorophycean flora of Micronesia is by no means unique. Yamada (1962) has calculated that 85% of the chlorophycean species in Micronesia are also found in the Malay Archipelago and refers to the flora of Micronesia as simply "an eastern branch of what constitutes the big flora of the Malay Archipelago." Recent studies by Dr. Trono, Jr. (personal communication) reveal that 60% of the Chlorophyta in the Caroline Islands have been reported from the Philippines and the Malay Archipelago.

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