

NOTES

Further Records of *Ulva* (Chlorophyta) in Micronesia¹

As further collections are made on the various islands and atolls in Micronesia, algal genera and species which were once considered rare or absent are gradually being documented from this region. One such case is the green alga *Ulva* which I reported (Tsuda 1968) as being restricted to the peripheral margins of Micronesia, i. e., Tarawa and Abemama Atolls in the Republic of Kiribati (formerly Gilbert Islands) and Peleliu Island in the Republic of Belau (formerly Palau Islands).

Since my 1968 paper, collections of *Ulva lactuca* L. have been made in the Mariana Islands (Guam, Saipan, Farallon de Medinilla, and Pagan) and in the state of Yap, Federated States of Micronesia. All specimens are deposited in the Herbarium of the University of Guam Marine Laboratory.

On 11 August 1971, specimens (RHR 227-110871C2) of *U. lactuca* were dredged by R. H. Randall off the northeast coast (Pati Point) of Guam in waters 136 to 201 m deep. The brilliant green specimens were healthy and attached to coralline nodules. The Yap specimens were observed growing detached among the seagrass *Thalassia hemprichii* (Ehrenb.) Aschers. on the reef flat off Balabat at the south entrance to Tomil Harbor on 10 July 1977 (RT 5366) and again on 17 March 1978. *U. lactuca* was abundant and covered an area about 1 km². The species was not found elsewhere on Yap despite the abundance of seagrasses fringing the shores of the islands (Kock and Tsuda 1978).

Specimens of *U. lactuca* were collected in 1975 by R. Rechebei in the intertidal zone of Garapan Lagoon in Saipan; however, the specimens were misplaced after identification was made. A visit to the same collection site in both June and August 1977 by both R. Rechebei and I proved fruitless. On 28 January 1979, D. R. Lassuy collected several specimens (RT 5388) of *U. lactuca* on a wave-washed platform near the sewer outfall at the south end of Garapan Lagoon on Saipan. All specimens possessed a distinct holdfast and differed from the detached specimens collected on Yap.

Recently on 6 May and 6 June 1982, specimens of *U. lactuca* were obtained from gill nets set by personnel of the RV TOWNSEND CROMWELL and retrieved from a depth of 104 m off the southwest coast of Pagan (RT 5420)

and 90 m deep of the south coast of Farallon de Medinilla (RT 5419), respectively. A single holdfast was observed on the Pagan specimen and no holdfast was present on the Farallon de Medinilla specimens.

After a period of 14 years since the report of *U. lactuca* in the Republics of Kiribati and Belau, the question now arises whether the genus *Ulva* is a recent arrival to Micronesia or is simply a case whereby a rather conspicuous alga was always present in these waters but went unnoticed because of the lack of field observations at the specific sites. In the case of *Ulva*, the latter explanation seems more reasonable. *Ulva* can easily go unnoticed, even by a trained observer, if its occurrence is restricted to a specific site around an island. The Yap specimens occurred at only one site on the reef flat. In Saipan, specimens were found only at two sites in Garapan Lagoon. The deep-water collections off Guam and Farallon de Medinilla are evidence that *U. lactuca* can survive in deeper waters.

The paucity of *Ulva* on the reef flats of Micronesian islands is real and this generalization is based on our numerous trips to those islands. The extent of *Ulva* stands in deeper waters is not yet known; however, *Ulva* has consistently appeared in the few deep-water samplings undertaken in waters off the Mariana Islands. The deep-water thalli may serve as the "seed stock" whereby reproductive bodies are distributed on the reef flats around islands which lack mature *Ulva*. Doty (1978) suggested that *Ulva* may be present in the planktonic or other resting stage during most of the year, and only germinates in highly fertile waters. In the Micronesian situation, the zygote or spores of deep-water *Ulva* would germinate and mature on the reef flats under suitable habitat conditions, i. e., nutrient-rich water and in areas of minimal herbivore interaction.

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