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Dinoflagellate flora of the Cape Maeda coast, Okinawa

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Dinoflagellates, unicellular eukaryotic microorganisms, play important roles in the natural ecosystem *viz.*, primary producers, support coral reef ecosystem through symbiotic associations mostly the genus *Symbiodinium* called as zooxanthellae; and red tide causing capability of some species which create physical damage, oxygen depletion and direct poisoning such as PSP, DSP and Ciguatera toxin. They are of tremendous global economic significance because of the biotechnological applications, impact of toxin blooms which may lead to the economic loss by killing fish in the coral reef and coastal areas and subsequently human health. Cape Maeda is located in northern coastal part of Okinawajima Island (26°26'N, 127°46'E) which consists of diverse marine ecosystems like sandy beach with corals, natural coast, lagoon, seaweeds and sea grass beds and easily accessible less polluted area. Previous work reported ciguatera production by the benthic dinoflagellates from coral reef areas in the world including Okinawa. No detailed information is available on the distribution, diversity, taxonomy and molecular phylogeny of microphytobenthos especially benthic dinoflagellate population from this location. This ongoing study is carried out to gather information on the diversity of dinoflagellates from Cape Maeda in order to address the future challenges regarding the toxicity and conservation of coral reef ecosystems. As of October 2007 monthly samplings have been carried out to collect sand sediments. Dinoflagellates were isolated, observed and photographed using light microscopy (LM). From this preliminary study, 28 species of dinoflagellates under 12 genera (armored and unarmored) have been recorded. *Prorocentrum* and *Amphidinium* are the most abundant genera. Among the identified taxa, the species *Prorocentrum lima*, *P. concavum*, *P. maxicanum*, *P. belizeanum*, *P. hoffmannianum*, *P. maculosum*, *P. emerginatum*, *Ostreopsis heptagona*, *O. siamensis*, *O. lenticularis*, *Amphidinium operculatum*, *A. carterae*, *Lingulodinium polyedrum*, *Gambierdiscus toxicus* and *Coolia monotis* are reported to be toxic. Other genera included *Roscoffia*, *Metaphalacroma*, *Herdmania*, *Gymnodinium*, *Duransika*, and *Sinophysia*. Yasumoto *et al.* (1987) and Fukuyo (1981) recorded different species of toxic benthic dinoflagellates from Okinawa and other tropical coral reef areas which are almost similar to the present observation. Further in-depth investigation on the taxonomy and molecular phylogeny of different dinoflagellate taxa from the Cape Maeda and near coasts is needed.