OUTLINE OF SUBJECT II: DEVELOPMENT OF AQUACULTURAL RESOURCES IN THE COASTAL AND CORAL REEF REGIONS OF PAPUA NEW GUINEA

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The three main purposes of the investigation of this survey team were first to understand the current state of the coastal fisheries of Papua New Guinea. The second objective was to search for useful marine animals and algae inhabiting the coral reef and coastal waters either for food or for industrial uses. And the third was to evaluate the water quality in terms of inorganic nutrients, pH, salinity and dissolved oxygen along the shoreline and in the coral reef regions which dominate the primary production to determine the feasibility of the aquacultural development of some useful marine organisms.

On the occasion of the start of this three-year project in Papua New Guinea, in 1989, the members of this team concentrated on the measurement of inorganic nutrient contents in coastal and coral reef areas and the ecological and taxonomical study of marine algae. The distribution of a causative unicellular alga, *Gambierdiscus toxicus* responsible for ciguatera, a poisoning which sometimes causes serious symptoms to people who eat coral reef fishes, was also investigated. The surveys were carried out in coral reef areas around Madang, Lae, Finschhafen and Port Moresby in November and December. In the estuarine region of the Markham River in Lae the concentrations of inorganic nutrients were also measured.

The outline of the surveys in 1989 is as follows:

1) The concentrations of inorganic nitrogen, phosphorus and silicon compounds which dominantly control the primary production in marine environment were measured in filtered water samples collected around Lae, Madang and Port Moresby. The distribution of a toxic dinoflagellate, *G. toxicus*, growing on benthic macroalgae was also investigated in the same areas (INOUE).

2) An ecological survey of *Sargassum* (Fucales, Phaeophyceae) was carried out extensively in the above areas and Finschhafen. Detailed morphological studies in the laboratory were carried out on two species, *Sargassum peromii* (MERTENS) C. AGARDH and *Sargassum polyporum* MONTAGNE, collected near Motupore Island (AJISAKA).

3) An ecological survey of marine algae was carried out in the same regions aimed at determining the feasibility of developing aquaculture for food or for industrial uses. The algal population was very poor throughout the surveyed areas. Some utilizable algal communities were found growing in limited areas which were too few to collect and use as raw materials for carageenan and other chemical substances (ENOMOTO).