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REPORT

A Description of the Activities of the Maullin (Chile) Fishing Cooperative in the Extraction of the Marine Alga *Gracilaria* sp. January–March 1967

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Extraction of the marine alga *Gracilaria* sp. began in the summer of 1965–66 in the estuarine area known under the names of the Maullin River and the Quenuir River. Prior to this time this alga and other types of algae had been gathered by area farmers to be used as a fertilizer in crop production, especially for potatoes. The fishermen of the area began harvesting and drying this product with the express purpose of sale for agar extraction in the summer of 1965–66; the cooperative of the fishermen of the area, Cooperativa de Pescadores Maullin Ltda., began receiving this product, with purpose of exportation, in the summer of 1966–67.

This alga has been classified as *Gracilaria confervoides* by the Fish and Game Department (Pesca y Caza); it may be that there are other species of this genus to be encountered in the same locality and this behooves us to speak generally of *Gracilaria* sp., including all those species encountered in the zone where this type of alga occurs. This alga is a filamentous bottom plant, growing from a disc which can be noted attached firmly to a hard underwater surface, such as stones and shells.

The means of reproduction has been described by Dr. Hector Etcherry Daza in his report in the *Boletín de Pesca y Caza* in which he mentions several species of *Gracilaria* and describes the general reproductive cycle of the genus, listing the occurrence of the various reproductive stages with regard to the time in which they are to be encountered in each zone of Chile.

It is easily understood, the life cycle is closely identified with the period of greatest production and abundance of these plants. The liberation of billions of spores, each giving rise to an adult plant, causes an upsurge of the population. While this great number of plants lends itself well to the harvest of algae, it should also indicate how necessary a well-planned well-controlled season of harvest is for future maintenance of this resource. If the plants are harvested prior to the liberation of the spores, the subsequent stages are prevented and the plant is not given opportunity to complete its reproductive cycle; repeated occurrences of uncontrolled harvesting for a

number of years may eliminate the basic stock necessary to maintain the population, and eliminate the resource. On the other hand, if harvesting is postponed until after the liberation of the spores, the population can be heavily exploited. This surge in population, understandably, may also be related to other factors; the length of day, clarity of the water, depth of the growing area and the salinity may all affect population levels.

The management of this resource is very necessary for protection of what promises to be a beneficial industry for the people of this area. To accomplish this it is extremely necessary to understand the population cycle and use such information in determining the periods during which the extraction of this alga is to be permitted. The winter stock must be protected continuously during the winter months in order to guarantee adult plants to initiate the reproductive cycle each year, and harvesting initiated only after spore liberation has occurred.

Extraction of *Gracilaria* sp. in the Rio Maullin – Rio Quenuir Estuary is practiced by a variety of methods, the most simple of which is handgathering in shallow water at low tide. In the winter some plants are torn free and can be collected from the beach following storms. The most common method is that of the use of long-handled “ganchos” (rakes) which rip the plants free from their surface of attachment, or more infrequently gather the plants along with the stones or shells to which they are attached.

The amount of *Gracilaria* sp. that a fisherman can gather in one day varies, depending on the section of the estuary in which he is working and the type of vessel that he has; a fisherman working from a motorized launch is able to gather much more than a fisherman working from a rowboat. The author has observed that two fishermen working from one launch (10 meters length)

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