

**SHORT COMMUNICATION****Red Seaweed *Gracilaria Arcuata* in Cage Culture Area of Lawas, Sarawak**

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**ABSTRACT**

Red seaweed *Gracilaria* sp. is known as 'Janggut Duyong' by the local people of Sarawak. This macroalgae is well-distributed in both temperate and tropical seawaters. *Gracilaria* sp. could be processed to produce agar for industrial purposes whereas some people consumed it directly and become part of their daily diet. In terms of ecology, *Gracilaria* sp. is one of primary producer in the seawater and its presence can form habitats to support other aquatic organisms. Despite its socio-economic and ecological importance, little is known about *Gracilaria* sp. in Sarawak. Hence, this study is designed to: (i) determine the diversity and abundance of *Gracilaria* in cage culture of Lawas, Sarawak (ii) assess the water quality of the cage culture area where *Gracilaria* is found and (iii) determine other aquatic organisms that found within *Gracilaria* population. Three field samplings had been conducted from October 2013 to November 2014 at cage culture areas of Awat-Awat Village, Lawas, Sarawak. Only single species of *Gracilaria* was found namely *Gracilaria arcuata*. Besides *G. arcuata*, *Acanthophora* sp. and *Padina* sp. were also found but in small patches. In addition, five different groups of aquatic invertebrates were observed namely tunicates, bivalves, polychaetes, small crabs and brittle stars. The selected water quality parameters namely temperature, pH, dissolved oxygen, salinity, turbidity, total suspended solid, orthophosphate, silicate and chlorophyll *a* were significantly different ( $p=0.000$ ) during all the three field samplings except for nitrite ( $p=0.588$ ). However, the values recorded were within normal range of standard water quality for tropical estuarine area. Since healthy population of *Gracilaria* could be easily found here, therefore this area has the potential for future seaweed aquaculture.

Keywords: Ecology, *Gracilaria arcuata*, invertebrates, seaweed, water quality

Seaweed is defined as macroscopic and multicellular algae but certain life stages of seaweed like spore or zygote is categorized as unicellular and microscopic. According to Lobban and Harrison (1994), seaweed is divided into three groups which are green seaweed (Division Chlorophyta), brown seaweed (Division Phaeophyta) and red seaweed (Division Rhodophyta). The group of seaweed is classified according to type of pigment present, namely chlorophyll *a*, phycoerythrin, phycocyanin and other accessory pigments. Seaweed can be found in marine and brackish water, in intertidal and deep area, attach to substrate such as rock, dead coral, shells, pebbles and aquatic plant (Anantharaman, 2002). Seaweed has the same

characteristic as terrestrial plant where both undergo photosynthesis and release oxygen.

*Gracilaria* has important roles in ecological and socio-economic aspects. It plays crucial part as one of primary producer especially in the area where the availability of light is low. Besides, juvenile fishes and marine invertebrates use this seaweed as protection against tides, predators, waves and also as food source. Hence, the presence of *Gracilaria* can form important habitats for aquatic organisms (Nyberg *et al.*, 2009).

From socio-economy point of view, *Gracilaria* is edible, consumed by human and its extraction is currently used in pharmaceutical and fertilizer industries. Recently, a study on extraction of methanolic

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