

# Research Bulletin

Faculty of Resource Science and Technology

Volume 1/2009 ISSN 1511-0788



**Coral reef of Patricia Shoal located at the offshore of Bintulu, Sarawak**  
(photograph courtesy of Dr Lim Po Teen)

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## Dean Message

*Prof Dr Shabdin Mohd Long*

I would like to express my warmest welcome and gratitude to all readers of the Research Bulletin FRST. This is the first issue for 2009 which focuses on the research activities at the Department of Aquatic Science. Thanks to all department members who have contributed to this issue and to the editorial board members for their efforts to ensure the publication of this issue is ready as scheduled.

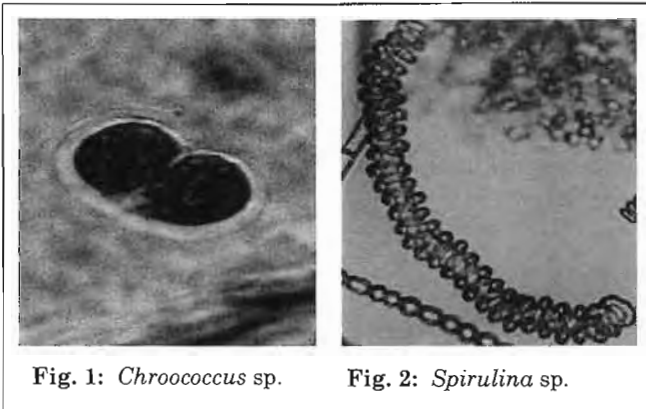
Research Bulletin FRST is a part of the faculty's on-going publications. This Research Bulletin not only serve as a platform to share information on research activities among staff members but also to disseminate current research information to counterpart at other institutions. It also serves as a venue for potential collaborators at both national and international levels for initial research networking.

Seven articles from the Department of Aquatic Science have been included in this issue, comprise of various research topic, ranging from diversity of tiny blue green algae, to razor clams and aquacultures system. Works on application of molecular tool on crocodile's research is also included.

Please feel free to direct your enquiry to me at email: [lshabdin@frst.unimas.my](mailto:lshabdin@frst.unimas.my) or to the editorial members if you need any further information on the Research Bulletin.

Thank you and happy reading.

(Fig. 2) was recorded in several of the sites. Further studies need to be carried out to clarify taxonomy of *Spirulina* obtained in this study.



The details of the  $\beta$ -similarity values were summarized in Table 1. The highest  $C_j$  value was recorded between Station 4 and Station 5. We may suggest that the high similarity in cyanobacteria genera between these sites may be due to accidental introduction during the empurau stock transfer. The lowest  $C_j$  value was recorded between Station 2 and Station 4. This is most probably due to the distance of the location (approximately 300 km) where the samples were collected and different types of cultivation ponds.

Table 1: Summary of  $\beta$ -similarity values between stations

	Station 1	Station 2	Station 3	Station 4
Station 2	0.50			
Station 3	0.29	0.31		
Station 4	0.25	0.21	0.44	
Station 5	0.38	0.40	0.41	0.53

Highest value       Lowest value

In sum, the wide range of  $C_j$  values (between 21 to 53) showed that there were different levels of similarity of cyanobacteria genera among the study sites. We may suggest that types, locations and distances of ponds have some influence on the physico-chemical dynamics of the water bodies and consequently support different or similar cyanobacteria assemblages.

#### Acknowledgements

We would like to express our gratitude to all staff from Indigenous Fisheries Research and Production Centre (IFRPC), Tarat, Serian and Batang Ai Inland

Fisheries Station for giving permission and assistance in sites selection and sample collections. Thanks to FRST staff during sampling and UNIMAS for supporting in terms of transportation and lab facilities. M. N. Harith is supported by UNIMAS Postgraduate Scholarship. This project is funded by grant FRGS/06(06)/658/2007(22).

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### Study on the reproduction of the razor clam, *Solen regularis* Dunker in Buntal and Asajaya Laut, Sarawak

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 Department of Aquatic Science

Razor clam or "ambal" of Sarawak is a kind of bivalve; highly priced ranging from RM 12.00 to RM 20.00 per kilogram. It can be found abundantly in the intertidal mudflats and sandy beaches in Kuching and Samarahan Division (Pang, 1992) namely Buntal, Bako, Muara Tebas, Moyan Laut, Sambir, Sebandi and Asajaya Laut (Loh, 2005). This clam is traditionally harvested from October to February of the following year by the local people as their food source or sells to fish mongers for subsistence income. Their body is elongated, covered by thin shell, having inhalant and exhalant siphon and a strong foot to dig into the sediment.

This article presents a six months preliminary analysis on the reproduction of the razor clam *Solen regularis* at two different locations (Buntal and Asajaya Laut). It is important to study and determine the reproductive cycle of the razor clam for establishment of seed production purposes. Sampling was performed at a two-week interval or monthly starting from early March to end of August 2007. Water temperature, pH, dissolved oxygen, saline

Water temperature, pH, dissolved oxygen, salinity and chlorophyll-a were measured throughout this study to observe and monitor beds and to correlate the data with the Gonadal Condition Index (GCI) study (Fig. 1). Live specimens of razor clam were transported back to the laboratory for the study. A maximum of 30 specimens depending on the

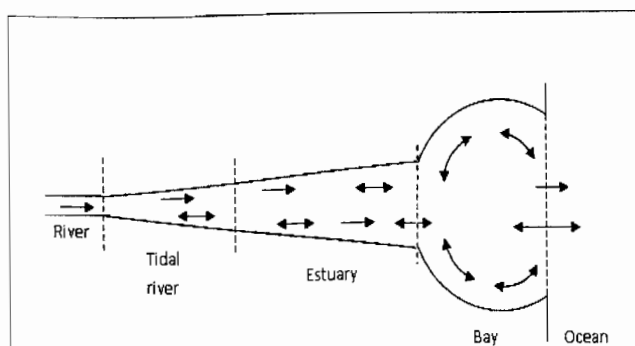


Fig. 1: A schematic of the various zones in an estuarine system

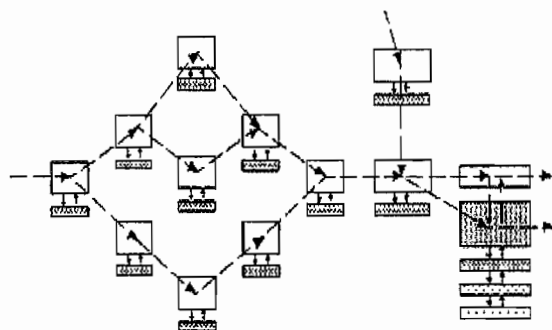
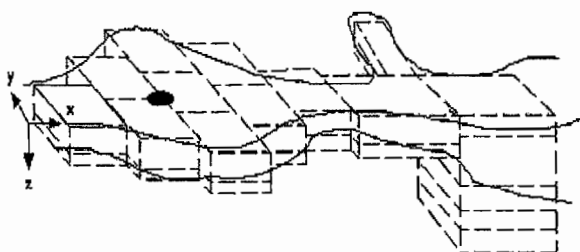


Fig. 2: Model network (Wool *et al.*, 2004)

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## “SUSTAINABILITY OF SHRIMP INDUSTRY IS THREATENED DUE TO POOR MANAGEMENT PRACTICES”

### Similarity assessment on cyanobacteria assemblages in selected Sarawak aquaculture ponds

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Cyanobacteria (blue green algae), belong to the class Cyanophyceae, have the characteristics of both bacteria (prokaryotic cell organization) and algae (ability to photosynthesize like plants). They can grow in most diverse ecological conditions and are very beneficial to mankind, for example, *Spirulina* is a source of food for the native people near Lake Chad, Africa (Sze, 1998). In contrast, they may produce toxins that cause deleterious health effects on humans and animals (Skulberg *et al.*, 1993).

Beta ( $\beta$ ) similarity index is one of the methods to assess the inter-community or inter-habitat similarity. In contrast to the  $\beta$ -diversity proposed by Routledge (1977),  $\beta$ -similarity is the mean proportion habitat or communities occupied by a single species. It allows comparison of habitat similarity of two different study systems and provides information about the degree of partitioning of habitat by species.

In this brief report, the Jaccard's index of floristic similarity,  $C_J$  (Mueller-Dombois & Ellenberg, 1974) was analyzed to evaluate the  $\beta$ -similarity of cyanobacteria in terms of genera composition. Five stations involving three types of empurau (*Tor tambroides*) aquaculture ponds namely HDPE (High Density Polyethylene) layered ponds, earth ponds and cage culture in Serian and Batang Ai, Sarawak were selected for this study. The cyanobacterial samples were identified up to genera level based on keys from credible references.

A total of 25 genera were identified in all five sampling stations, with 23 genera recorded at Batang Ai whereas 10 genera were documented at Serian. In general, aquaculture ponds in Batang Ai supported more cyanobacteria genera compared to those in Serian. *Chroococcus* (Fig. 1) was the most common genera and potentially commercial genera *Spirulina*