IMPACTS OF PRAWN FARMING ON THE WATER QUALITY OF SEBANDAR RIVER, SARAWAK

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INTRODUCTION

Shrimp farming is one of the fastest growing aquaculture sectors in Asia and Latin America, and recently Africa (FAO, 2005) and the most important economic generators especially in developing countries and has accounted around 20 percent of the total value of international traded fisheries products (FAO, 2000) which is increasing by the years (World Bank, 2006). More than 3.3 percent (1.5 million metric tons) from 5.3 million metric tons total global production (aquaculture and capture) in 2003 was attributed to aquaculture. In 1975, the traditional shrimp aquaculture industry in Asia contributed 2.5 percent of total shrimp production, which gradually increased to around 30 percent in the 1990's (Rönnbäck, 2001). Today, three to four percent of global aquaculture production by weight is almost equivalent to 15 percent by value and 80 percent of the value comes from Asia with Thailand, China, Indonesia and India as the top producers (FAO, 2005).

In Malaysia, the number of shrimp farms and farming areas has also increased steadily over the years. There are currently about 11,580 farms operating in Malaysia, covering a total of about 7,309 hectares (ha). In Peninsular Malaysia, 7,115 farms are operating the 4,810 ha land area and 4,465 farms cover about 2,500 ha in Sabah and Sarawak (Asean Shrimp Alliance, 2006). In the year 2000, Malaysia produced a total of 12,000 metric tons of tiger shrimps (Nyanti *et al.*, 2002). However, the figure had increased to 21,866 metric tons in 2005 (Asean Shrimp Alliance, 2006).

In Sarawak, shrimp farming had started since 1992 (Personal communication, Lucy Gabriel Pusin). However, the activity has been blamed to cause several environmental impacts mostly associated with the emission of large amounts of nitrogen and phosphorus to estuaries (Lacerda *et al.*, 2006). Sampadi River, which is located at Lundu sub-district, has an aquaculture farm with the current project area 51.20 hectares. Sebandar River, a tributary of Sampadi River is the river that received wastewater and effluent from the farm. The project which covers the total area 1,018 hectares has potential for expansion and it is crucial to do water quality monitoring around the area to improve the information on water quality of the area for future development management. Besides that, the rivers are also important for fisheries activities among the local people. Therefore, the objective of this study is to determine the impact of shrimp farm effluent on Sungai Sebandar for management purposes.

MATERIALS AND METHODS

The sampling stations were S1 (downstream) and S2 (upstream) on Serenggok Besar River, the water source of the prawn farm; S3, the sedimentation pond outlet of the