Fish Farming Activities and Spatial Distribution in Sungai Siput, Perak using Geographic Information System (GIS) and Remote Sensing

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Abstract: Fishes that are kept in home aquariums, or for aesthetic purposes are considered as ornamental fish and it encompass a wide variety of species, of many shapes, colors and sizes. It could be considered as one of the fastest-growing in Malaysia's agriculture sector, especially in the export-oriented sub-sector. Along with the high demand in local market, the industry successfully penetrated the global market. Nevertheless, in year 2015, the Malaysia's ornamental fish industry started to face an embargo on exports to the European Union (EU). The study was conducted to solve the issue of import restrictions adjacent ornamental fish by establishing the compartment system, using GIS and remote sensing. It is supplemented by off-farm employment information of the fish farmers. A total sample population comprised of 21 ornamental fish farmers in Sungai Siput, Perak. The data sources used in this study were based on non-spatial data (survey) and supplemented by spatial data (GIS) and Spot-6 images to capture farm location effect on the farm operational activities especially in fisheries biosecurity terms and regulations. Fundamentally, the descriptive analysis was used to describe the respondent's socio-economic fish farmers profile and thus, the relationship between farming participation and the independent variables identified were cross-tabulated. Chi-square analysis was used to test the null hypothesis. The GIS, supported by Spot-6 images was used to determine farming activities to the spatial characteristics in distinctive regions. The result specifically shows that majority of the farmers were male and married. The majority farmers are at the middle age group of 45-55 years old (38.8%). Results shows the highest number of the people who had participated in secondary education level were SPM holders with 44.6%, majority of 9 (36.8%) respondents had a scale more than 10ha of farm size and average total of more than 2 millions of production a year. Most of the farmers breed koi (80%) and other cyprinidae family (9%). Education level, age, total of production and income have a very significant relationship with farming participation. Spatially, the results indicated that most of the fish farmers live near the town, Sungai Siput, which it is less than

ten (10) kilometres away from their farm and house. A proper and well-managed spatial database of the compartmentalization system, simplifies the monitoring of the registered farms. The system also benefits the Department of Fisheries, specifically the Fisheries Biosecurity Division, in the management of aquatic animal health for the country's export trade value.

Keywords: Ornamental Fish, Spatial Analysis, GIS, Fisheries Biosecurity, Compartmentalization