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Mapping lakebed cover types for aquatic habitat identification: Preliminary study at Belum-Temenggor Lake

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Abstract: Man-made lakes in Malaysia are not only important for water supply and hydro-electric energy but also formed as vital ecosystem for freshwater fish and other aquatic species. Due to these high biodiversity values, effective conservation and management plans are needed to protect endangered and threaten species. One of the first steps to achieve this is to prepare adequate information of lakebed cover that can later be used to inferred aquatic habitats. This study is intended to highlight the application of underwater acoustic sonar system that was used to investigate the spatial distribution of lakebed cover types in Belum-Temenggor Lake, Perak. In this preliminary study, acoustic sonar technique using two systems were deployed at five different locations in Belum-Temenggor areas to explicitly investigate the physical characteristics of lakebed cover. The first approach used a single beam echo sounder to estimate lakebed cover types based on statistical classification of two important acoustic parameters (i.e. roughness and hardness). The latter technique used a side scan sonar instrument to remotely 'taking photos' of the lakebed surface using acoustic sound measurement. The results show that both methods agreed in which the dominant cover types were identified as submerged and dead trees. Lakebed cover/sediment types (i.e. predicted by the single beam system) at shallow areas was mainly dominated by gravel and dead trees. Acoustic image constructed by the high resolution side scan sonar provide the ability to study the lakebed properties such as predicting different sediment types. Incorporating this with sufficient ground truth sample can be useful for habitat suitability modelling to gain more knowledge about spatial distribution of a particular aquatic species.