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SPATIO-TEMPORAL PATTERN OF LANDSCAPE CHANGE DUE TO URBANIZATION: A CASE OF BATANGAS CITY

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ABSTRACT – The new housing and other infrastructure built on former agricultural and green areas for the growing population usually lead to irreversible land use change. The loss and fragmentation of green areas, functional changes in habitat structure, terrestrial and aquatic ecosystems are among the ecological consequences that diminish essential ecosystem services, which are regarded important to human population living in urban areas. This study was conducted to determine the nature and magnitude of the landscape structural changes in Batangas City and suggest implication on the hydrology. The 2002 and 2008 satellite images (ASTER, 30m resolution) of Batangas City were downloaded from the National Astronomy and Space Administration (NASA). Images were processed and analyzed in Geographic Information System (GIS). Landscape metrics were computed using Patch Analyst extension for ArcGIS. All patch types tend to become evenly distributed (2002 to 2008) with agricultural land use (cropland with annuals and perennials) dominantly increasing and tend to aggregate in irregular shape. Built-up enormously increased in area (143.13%), number (56.73%), and density and tend to be irregular in shape. Grassland and shrubland decreased in area and number, patch size and density. Secondary forest decreased in area and patch size but increased in patch number and tends to be circular in shape. Landscape change has brought about by the rapid urbanization in Batangas City and its implications to hydrology were discussed.

Key words: landscape change, patch type, agricultural land use, built-up, grassland, shrubland, secondary forest, Batangas City

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