

**INVESTIGATION OF CHANGES IN COASTAL MORPHOLOGY
AND HOW IT AFFECTS TO TURTLE NESTING SITES OF
SOUTHERN COAST OF SRI LANKA BY GIS AND REMOTE
SENSING METHODS OVER PAST 15 YEARS PERIOD**

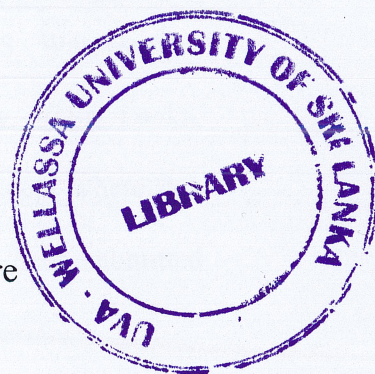
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ABSTRACT

Shoreline is very dynamic and complex area that specify as boundary between land and sea. Its changes arise as short or long term. Long term shoreline changes could lead to erosion and accretion. Coastal erosion is a global problem that affect almost every country around the world having a coastline. GIS and Remote sensing techniques possible to used investigate coastal monitoring activities quantitatively and qualitatively. According to objectives of study identification of changes in coastal morphology and impact on nesting site using satellite images is cost effective and accurate. Shoreline changes were analyzed by obtaining high resolution satellite images from Google Earth (GE) pro and Vegetation analysis was done by obtaining Sentinel 2 images from USGS earth explorer between 2005 and 2020. Shoreline changes were estimated by calculating shoreline change statistics by Digital Shoreline Analysis System (DSAS) in Arc-GIS software. Length and number of hard structures, area of physical alterations was calculated using GE pro software. Area of vegetation cover within 2 km land ward were calculated using Arc-GIS software. Accuracy asses via ground truthing. Shoreline changes, vegetation changes on sea turtle nesting sites along Southern coast were analyzed. Results shows that average coastal accretion rates are 0.37 ± 1.18 m/yr in Galle district, 0.02 ± 0.99 m /yr in Matara district and average erosion rate is -0.45 ± 1.21 m/yr in Hambantota district. Mirissa and Rekawa nesting sites subjected to erosion and Koggala, Habaraduwa, Kalamatiya, Ussangoda, Bundala and Yala subjected to accretion. Application of hard structures and other physical alterations increased within 15 years. Questioner survey result revealed villagers have 84% of satisfaction about established hard structures. Vegetation cover decreased by 1.025 km^2 in 2020 and Kappa coefficient of 2017,2018, 2019 and 2020 year is 0.91, 0.76, 0.78 and 0.83 respectively. This study demonstrated that both natural and human influences may be affected to these changes. Continuous monitoring changes in coastal morphology is essential to environmental Management, Conservation, Protection and Development.

Keywords: Shoreline changes, Coastal morphology, GIS, Remote sensing, Turtle nesting site, Sri Lanka,