

## Do Wetlands Contribute to “Cooling Effects”? A Case Study from Anawilundawa Ramsar Site, Sri Lanka

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Wetlands are characterized by a unique combination of water, soil and vegetation. They are among the most productive and important ecosystems on earth which render significant ecosystem services to the community. Water and vegetation in and around wetlands help in regulating the microclimate, specially lowering the temperature in the local environment.

The present study attempted to investigate the cooling effects provided by Anawilundawa, a Ramsar site in Puttalam District where diverse land uses exist surrounding the wetland. Land Surface Temperature (LST) variation above different land use classes was investigated during the dry months of January, February, June and July of 2016 and 2020 in natural (water bodies, marsh, thick vegetation, grassland) and anthropogenic areas (built-up areas, coconut cultivation and bare lands). The LST values were obtained at 500m points along seven transect lines starting from the center of the water body and extending up to 7km over different land use areas and reaching towards the anthropogenic area.

The mean LST over the wetland (24.10°C) was significantly lower than that of anthropogenic areas (25.01°C) ( $P < 0.05$ ). The temperature range, mean  $\pm$  standard deviation for different land use areas were as follows: water body (23.21°C-24.67°C; 23.89°C $\pm$ 0.58), marsh (23.49°C-25.94°C; 24.57°C $\pm$ 1.02), thick vegetation (22.99°C-25.03°C; 24.04°C $\pm$ 0.56) grassland (23.18°C-25.93°C; 24.36°C $\pm$ 0.77), built up area (24.00°C-28.32°C; 25.40°C $\pm$ 1.40), coconut cultivations (23.19°C-24.23°C; 23.93°C $\pm$ 0.38) and bare land (24.54°C-26.39°C; 25.29°C $\pm$ 0.60). The lowest increase of LST was over the water body (+1.13°C) and the highest was over the built-up area (+4.32°C).

Findings of this study presents important implications for policy makers to conserve wetlands for community well-being especially during the dry season and for climate change adaptations.

**Keywords:** Wetland, Ecosystem Services, Cooling effect

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