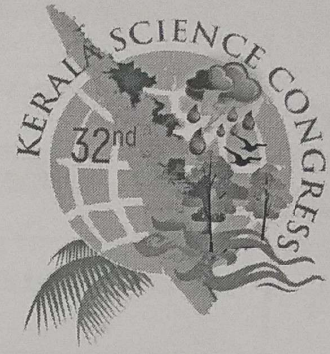


KERALA SCIENCE CONGRESS



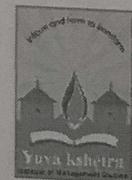
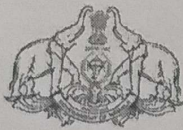
32nd KERALA SCIENCE CONGRESS

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Yuvakshetra Institute of Management Studies, Mundur, Palakkad

Focal Theme: "Science & Technology for Climate Change
Resilience & Adaptation"

Abstracts



KERALA STATE COUNCIL FOR SCIENCE TECHNOLOGY AND ENVIRONMENT
Sasthra Bhavan, Pattom, Thiruvananthapuram.

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of the sanctuary, *S. spectabilis* was mainly distributed along the boundaries of Sulthanbathery and Muthanga ranges. In Muthanga, *Senna* invasion was extended up to "Kakkapadam" (2.5 km from Muthanga station). Among the IAPS, *Chromolaena* showed the highest density in all the three vegetation types, while the density of *Senna* was lowest in all the three vegetation types in WS II area.

Conclusion: *Lantana camaras* widely distributed over the WS II part of sanctuary. Higher densities of *Chromolaena* were seen in Kurichiat RF of Kurichiat range, Mavinahalla and Noolpuzha RF of Muthanga range. *Senna* was seen only in Muthanga range.

Keywords: NF (Natural Forest)

06-19

DIVERSITY OF YEASTS FROM MANGROVE OF MULAVUKAD: A PRE AND POST KERALA FLOOD STUDY

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Mangrove wetlands are a unique ecosystem rich in bioresources (Chi et al., 2012). The microbial community of this ecosystem has been found to be composed mainly of bacteria, fungi and actinomycetes (Cao et al., 2008). Mangroves provide several microhabitats that harbour yeast communities (Chi et al., 2012). Yeasts in these ecosystems play an important role in the food web, decomposition and nutrient cycling, biodegradation of xenobiotics and as parasites. Some human-associated species too have been isolated from polluted water of mangrove ecosystem (de Araujo et al., 1995). Very little is known about the effect of natural disasters on these communities. Therefore, this study therefore aims to investigate the effect of 2018 Kerala floods on the diversity and hydrolytic potential yeasts from the mangroves of Mulavukadu, also known locally as Bolgatty island.

Sampling was done during two different periods a) April–May 2018 (pre flood) b) September–October 2018 (Post flood). The colony count of yeast in water was found to be less than that found in sediment samples. The yeast population of both the sediment and water samples was found to be greater during the pre flood sampling (sediment 1985 cfu/gm & water 1000 cfu/ml) than during post flood (sediment 1825 cfu/gm & water 420 cfu/ml) sampling. The isolates were screened for the production of different hydrolytic enzymes. All the isolates were lipolytic. The percentage of lipolytic, ureolytic, amylolytic forms were, 100%, 35%, 15%, and respectively. In Sept–Oct sampling, no caseinolytic forms were isolated. There was a drop in ureolytic forms (20%) amylolytic (13.2%) and increase in gelatinolytic (2.9%) forms in the Sep–Oct sampling. The isolates were identified up to generic level based on morphological, biochemical and physiological characteristics. The identified isolates were found to belong to 4 genera, i.e., *Trichosporon*, *Candida* sp, *Cryptococcus* sp, and *Rhodotorula*. The diversity (H' (log₂)), Peilou's evenness (J') and Species richness (d) was found to be reduced during the Sep–Oct (Post flood) as compared to Apr–May sampling (Pre-flood). This reduction is likely to have been caused by the floods in the month August 2018 in Kerala.

06-20

NATURAL WATER PURIFICATION OF SASTHAMKOTTA LAKE IN SOUTHERN KERALA - A REALITY BEHIND MYTH AND SCIENCE

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Background: Sasthamkotta Lake also famous as "The Queen of Lakes" is an incomparable charm in "Gods



own Country", Kerala. A classical folklore spinning around the lake is that the water is extremely pure owing to an enormous population of a kind of larva that mainly consumes on bacteria in water. Pioneer researchers believed that the larva is *Chaoborus*. So the water has been a drinking source to Kollam city and suburban areas. The present investigation is focused on the authenticity behind the myth regarding the purification of water by benthic larva in lakebed.

Methods: Sasthamkotta Lake is located between latitudes 9°00'-9°05' North and longitudes 76°35'-76°40' East in Kollam district of Southern Kerala, India. The rain fed lake is flanked by moderately sloping hillocks, valleys and plains and no tributaries connect the lake with other waterbodies. Water and sediment samples were collected from ten randomly selected stations during the period from January 2016 to December 2016. Physicochemical parameters of water and sediment were estimated following Trivedy and Goel (1986) and APHA (2005). Quantitative and qualitative analysis of the organisms were done as per the methods of Michael (1984), Morse *et al.*, (1994) and Merrit and Cummin (2008). Bimonthly collections of water, sediment and benthic fauna were made from six stations for microbiological analyses. Enumeration of TBC in water, sediment and benthic samples was carried out using pour plate method of IS 1622-1981 (Reaffirmed 2003) Edn 2.4 (2003-2005) and IS 5402:2002. A semi diurnal experimental study on the distribution of bacteria in water in terms of Total Plate Count (TPC) was carried out in the laboratory conditions in one week interval to find out the absorption of microbes by benthic larva in Sasthamkotta Lake.

Results: The physicochemical parameters of water and sediment are within the desirable limit. A total of eight species of benthic invertebrate are recorded. Six species belong to Order Diptera, one species each on Order Trichoptera and Order Tubificida. *Phaenopsectra* sp. belonging to the order Diptera is dominant organism accounting to about 97.927% of the total benthic invertebrates. Maximum bacterial count was found in sediment-dwelling organism related to sediment and water. The rate of microbial load was in the order benthic invertebrate > sediment > water. The bacterial count shows that natural microbial pollution in the lake is regulated by this benthic invertebrate by feeding on bacteria. The quantity of microbes in experimental sample set up was reducing from time to time compared to the control. Experimental study established an association between bacterial decrease in water and consumption of bacteria by the benthic invertebrate. The investigation on the bacterial load from lake environment and laboratory environmental set up noticed that the bacteria are consumed by the sediment-dwelling larva.

Conclusions: The large benthic population that consumes bacteria is *Phaenopsectra* sp. *Chaoborus asiaticus* is found to be the least benthic invertebrate in Sasthamkotta Lake. The water in Sasthamkotta Lake is of pristine quality due to the presence of this benthic dwelling larva. The investigation proved that water in Sasthamkotta Lake is purified by *Phaenopsectra* sp. which endorses the ancient myth.

Keywords: myth, water, purification, *Phaenopsectra* sp., Sasthamkotta Lake

06-21

POST-FLOOD MONITORING OF NELLIYAMPATHY HILLS IN SOUTHERN WESTERN GHATS, KERALA, INDIA

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The present investigation focuses on the aftermath of flood 2018 at Nellyyampathy hills in southern Western Ghats. The heavy downpour had seriously affected Nellyyampathy hills with heavy landslides, mudslides and uprooting of trees in different sites making the area isolated for more than one week. Visible habitat modification and species loss was evident in this area and flow of water has destroyed the small herbaceous surface dwelling taxa. Uprooting of large trees has opened up the canopy increasing light penetration to the under-storey causing drying up of ground vegetation. The survived taxa suffered a higher temperature than the temperature before the calamity. This study assimilated data on resilient and vulnerable