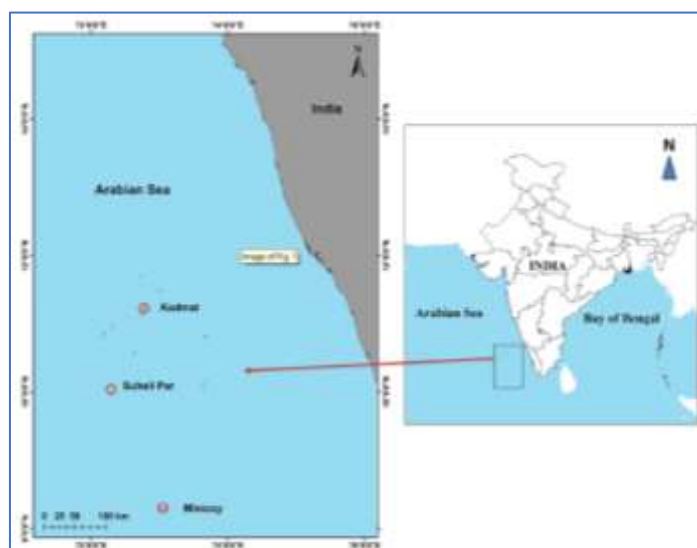


## Plastic pollution threatens Lakshadweep islands: study

New Delhi, Oct. 23 (India Science Wire): The Lakshadweep islands in India are under the threat of beach pollution mainly from plastic, a recent study has found. Done by scientists at the National Centre for Coastal Research (NCCR), Chennai; the study evaluated beach litter at three islands of the Lakshadweep—Kadmat, Suheli Par, and Minicoy. It found that majority of litter was hard plastic (nearly 87 percent), followed by rubber (5 percent), glass (3 percent), foamed plastic and metal (2 percent), and others (1 percent) in these islands. Plastic litter comprised of items such as bottle caps, rope, and pieces.



*Locations of the islands – Kadmat, Suheli Par, and Minicoy in the Lakshadweep, Arabian Sea where the study was conducted.*

Dr. M V Ramana Murthy, Director of NCCR and a co-author of the study said, “the presence of plastics in Lakshadweep islands is of concern as these are turtle nesting grounds. It can impact turtle rookeries by altering the temperature and sediment permeability. It is recommended that periodic beach cleaning must be conducted before litter disintegrates into microplastics”. The study found a total of 1,231 litter items from three Lakshadweep island beaches.

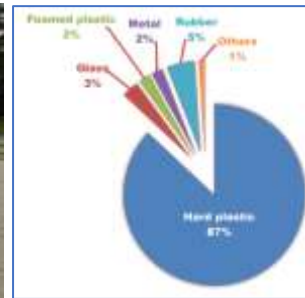
The highest average abundance of marine litter was found in Kadmat, followed by Suheli Par and Minicoy. Based on these results, Kadmat and Suheli Par were categorized as moderately polluted and Minicoy was listed as clean. “The three beaches surveyed were found to be moderate or clean but the accumulation of litter in the Lakshadweep islands should not be ignored, as it has an important coral reef ecosystem and turtle nesting habitat,” said Dr. Pravakar Mishra, Scientist at NCCR and corresponding author of the study.

His team sampled foreshore and intertidal zones at each site during low tide three using transects sized 400 square meters (m) during August of 2019. They collected and counted large-sized litter between 2.5 centimeters to 1 m within each transect. Finally, this data was analyzed to study the abundance and distribution of beach litter. The findings were published in a recent issue of the journal Marine Pollution Bulletin.

Minicoy Island is the largest of the three islands studied with an area of 4.4 km<sup>2</sup> and a coastline of 9.5 km. Kadmat has a land area of 3.2 square kilometers (km<sup>2</sup>) with a coastline of about 8 km. These islands have several human settlements mostly fishing villages. Suheli Par is the smallest island with an area of about 0.5 km<sup>2</sup> and is uninhabited. The economy of these islands mostly depends on tourism, fishing, and coconut cultivation.



The research team from the National Center for Coastal Research (NCCR) marking the transects for sampling on Minicoy Island beach. (L) A close-up of the transect marking. (R)



Litter collection, segregation, and counting from the transects on Kadmat Island beach. (L) A pie-chart showing the type of litter material with their percentage composition in the three study sites in the Lakshadweep islands. (R)

The uninhabited Suheli Par island recorded a greater amount of litter than the higher populated Minicoy Island. The main component of beach litter was fishing nets that came from fishing and related activities. “This is likely due to frequent assemblies of fisherfolk at Suheli Par Island for tuna fishing” said Dr. Mishra.

His group also found two items of foreign origin at Kadmat Island which were probably from international shipping. In Minicoy, thermocool (expanded polystyrene) was found, which likely came with packing material from the Indian mainland. Medical and sanitary waste was also observed at Kadmat and Minicoy indicating that solid waste management protocols were not followed appropriately.



Foreign origin items found in the beach litter at Kadmat Island. Google Lens results indicate that plastic bottle (R) is a product of China.

“The local government has some litter management policies, but they are not followed effectively as there is lack of garbage collection facilities near the beaches, compulsory enforcement, and there is weak public awareness and attitude”, said Dr. Mishra.

The study group included T Kaviarasan, Subrat Naik, S K Sivadas, K Dhineka, M Sambandam, David Sivyer, Pravakar Mishra, and M V Ramana Murthy. It was done in collaboration with the Centre for Environment Fisheries and Aquaculture Science, United Kingdom. NCCR is under the Ministry of Earth Sciences, Government of India. (India Science Wire)

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