SDG 14: Life Below Water

Conserve and sustainably use the oceans, seas and marine resources

INTRODUCTION

Protecting oceans, coasts and the people who depend on them

Sustainable Development Goal 14 aims to conserve and sustainably use the oceans, seas and marine resources. Its focus spans the reduction of marine pollution, the protection of coastal and marine habitats, and the support of coastal communities that depend on healthy waters. Because oceans, estuaries and wetlands are interconnected with the land and with the people who live near them, progress on this goal relies on sound science, responsible everyday practice and informed communities.

SRM University-AP follows this goal in principle through research and awareness. Located in Andhra Pradesh near the Bay of Bengal coast and the Kolleru Lake wetland, the university's Department of Environmental Science & Engineering studies aquatic ecosystems through its curriculum and laboratories, with research strengths in hydrogeology, water treatment and marine biogeochemistry. Alongside this work, student volunteering through the NSS Cell encourages young people to take practical responsibility for shorelines and water bodies.

> **From the Kolleru Lake wetland to the Bay of Bengal coast, the university studies aquatic ecosystems in the laboratory and cares for them in practice.**

SDG 14 DATA AND KEY HIGHLIGHTS

SDG 14 at a glance

55
publications mapped to SDG 14
2024–2025

95
participants in the Beach Cleaning Drive
4 April 2024

Nearly 3
tractor loads of waste cleared
Beach Cleaning Drive · 4 April 2024

Rs 1,00,000
approximate expenditure on the drive
Beach Cleaning Drive · 4 April 2024

COMMUNITY OUTREACH ACTIVITIES

Cleaning the shoreline

Beach Cleaning Drive

4 APRIL 2024 · NSS CELL

Date: 4 April 2024, 4 pm to 6 pm

Host: NSS Cell, SRM University-AP

Nature: Voluntary service

Location: Machilipatnam Beach (Manginapudi)

Chief guest: Sri. K V R Krishnnaiah, Senior Civil Judge, Krishna District

Attendees: 89 undergraduate students · 1 faculty member · 5 external participants

The Beach Cleaning Drive addressed environmental degradation and waste accumulation along the shore at Manginapudi, Machilipatnam Beach. Students took up the task of restoring the natural beauty of the coastline.

The drive carried the message “Save Our Shores! Join the Beach Cleanup Drive!”, with Sri. K V R Krishnnaiah, Senior Civil Judge, as chief guest.

OUTCOME

Through hands-on work and teamwork, students cleared waste from the site and gained insight into preserving natural resources and responsible waste management. The activity also built camaraderie among volunteers from diverse backgrounds.

The drive reflects the NSS Cell’s commitment to social welfare and environmental sustainability, nurturing socially conscious students who care for coastal environments.

PHOTOGRAPHS



Event flyer for the Beach Cleanup Drive


Volunteers collecting litter from open ground

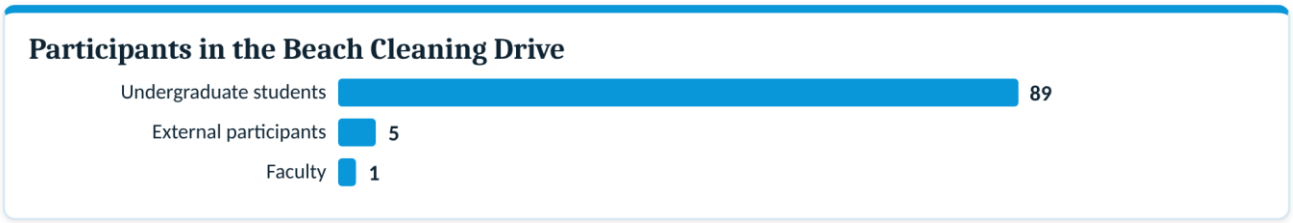

Volunteers spread across the site placing litter into a bin


A tractor and trailer carrying collected waste


Volunteers beneath a banner reading “Under the aegis of NALSA”

ACKNOWLEDGED PARTNERS

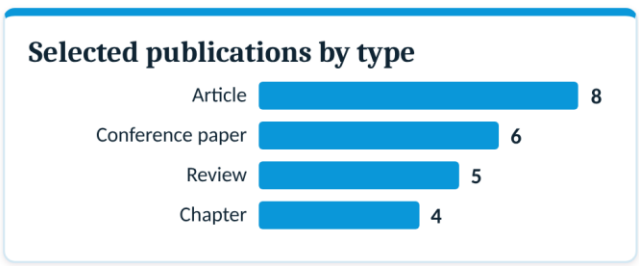
The drive was held under the aegis of NALSA, with the NSS Cell of SRM University-AP as host.

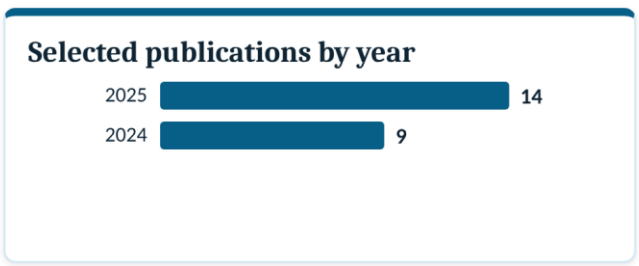


RESEARCH AND PUBLICATIONS

SDG 14 research, 2024–2025

SRM University-AP has 55 publications mapped to SDG 14 for 2024 and 2025. Twenty-three selected publications are listed below in order of Field-Weighted Citation Impact (FWCI). Topics include microplastics in aquatic and marine environments, coastal wetlands and estuaries, aquaculture, coral reef monitoring and marine plastic waste detection.





SELECTED PUBLICATIONS

#	Title and first author	Year	Type	FWCI
1	**Oil Spill Classification using Machine Learning** Ravulakollu, K.K. et al.	2024	Conference Paper	48.89
2	**Advanced Aquaculture Management: A Smart System for Optimizing Oxygen Levels, Shrimp Health Monitoring** Kuncha, P. et al.	2025	Chapter	3.44
3	**DeepFishNet: A Hybrid Deep Learning Model for Real-Time Fish Disease Classification** Biswal, S.R. et al.	2025	Conference Paper	3.02
4	**Integrated Underwater Data Transmission and Object Detection System Using TinyML and Multi-Hop Networks** Bhushan, C.M. et al.	2025	Conference Paper	2.71
5	**Microplastics under siege: Biofilm-forming marine bacteria from the microplastisphere and their role in plastic degradation** Joshi, G. et al.	2025	Article	2.67
6	**Enhancing Coral Reef Restoration: Integrating YOLOv8 and Deep Learning for Real-Time Monitoring and Intervention** Gollapalli, G.S. et al.	2025	Conference Paper	2.3
7	**Microbial role in degradation and removal of microplastics from aquatic environment** Dayal, L. et al.	2025	Chapter	1.52
8	**Optimizing aeration efficiency and forecasting dissolved oxygen in brackish water aquaculture: Insights from paddle wheel aerator** Ramesh, P. et al.	2024	Article	1.31
9	**Environmental impacts and effects on greenhouse gas emissions in shrimp feed production system for aquaculture – A case study in India** Ramesh, P. et al.	2024	Article	1.25
10	**Linking carbon storage with land use dynamics in a coastal Ramsar wetland** Dar, S.A. et al.	2024	Article	1.21
11	**Abundance of Microplastics in Marine and Freshwater Ecosystem and it's Impact on Biotic and Abiotic Components** Dayal, L. et al.	2024	Article	1.13
12	**Microplastics: Hidden drivers of antimicrobial resistance in aquatic systems** Goswami, P. et al.	2025	Review	1.12
13	**Salinity and phosphorus as key regulators of methane emissions in tropical aquaculture ponds** Patel, L. et al.	2025	Article	0.97
14	**Real time Coral Reefs Monitoring and Protection using Computer Vision: A Case Study on COTS Detection** Gollapalli, G.S. et al.	2024	Conference Paper	0.78
15	**Nitrogen and carbon cycling and relationships to radium behavior in porewater and surface water: Insight from a dry year sampling in a hypersaline estuary** Murgulet, D. et al.	2024	Article	0.76
16	**Potential Threat of Microplastic Pollution on Coastal-Marine Ecosystem– An Emerging Economic Setback and Question to Blue Economy?** Dey, U. et al.	2025	Review	0.68
17	**Microplastics in Indian aquatic systems and its effects on plants, aquatic organisms and humans, and its methods of remediation** Kumari, P. et al.	2024	Review	0.64
18	**Trade-offs in ecosystem services of a Ramsar wetland due to conversion into aquaculture ponds in the coastal region of Indian peninsula** Dar, S.A. et al.	2025	Article	0.63
19	**Tracing the Footprint of Microplastics: Transport Mechanism, Degradation, and Remediation in Marine Environment** Mukherjee, A. et al.	2025	Review	0.16
20	**Investigation on plastic-aggregates in coastal and marine pollution: Distribution, possible formation process, and disintegration prospects** Chell, S. et al.	2025	Review	0

#	Title and first author	Year	Type	FWCI
21	**Detecting Marine Plastic Waste Using Aerial and Satellite Images: A Multimodal Fusion Approach** Sai, P.L. et al.	2025	Conference Paper	0
22	**Cultural and scientific understanding of submarine groundwater discharge** Ismaeel, N. et al.	2024	Chapter	0
23	**Microplastics and Aquatic Limnology: Conception of Biogeochemical Processes** Dash, S. et al.	2025	Chapter	0

RESEARCH SPOTLIGHT | MICROPLASTICS AND ANTIMICROBIAL RESISTANCE IN AQUATIC SYSTEMS

A review led by Dr Prasun Goswami, Assistant Professor, Department of Environmental Science and Engineering, SRM University-AP, published in NanoImpact (a Q1 journal) in collaboration with the National Institute of Animal Health, National Agriculture and Food Research Organization (NIAH-NARO), Tsukuba, Japan.

Microplastics in oceans, rivers and lakes gather layers of bacteria and other microbes into a community known as the “plastisphere”. These communities can carry antibiotic-resistant bacteria; the microbes and the genes they carry are collectively termed the “Plastiome”. The review argues that microplastics can spread microbes and resistance genes that make infections harder to treat, posing risks to marine life and people, for example through contaminated seafood or drinking water sources.

The authors call for better waste management, reduced plastic use, and policies to monitor microplastic pollution and its microbial contents. Future work will examine how different plastic polymers affect microbial communities and antibiotic resistance genes, to identify which plastics pose the greatest risks.

CONCLUSION

Progress towards life below water

SRM University-AP contributes to SDG 14 by combining research on marine, coastal and aquatic systems with hands-on community action along the shoreline. Publications on microplastics, coastal wetlands, aquaculture and coral reef monitoring extend scientific understanding of life below water, while the NSS Cell’s Beach Cleaning Drive shows students putting responsible stewardship of coastal environments into practice.