

6. Neridid Polyvhaete Worms- Environment

New 'bio-warrior' species discovered in Bay of Bengal ecosystem; meet the worms thriving where others die

ZSI researchers have identified two new polychaete worm species, *Namalycastis solenotognatha* and *Nereis dhritiae*, along the West Bengal coast. Termed "bio-warriors," these worms are ecologically significant for their ability to aerate sediments and survive in highly polluted, sulfide-rich environments, serving as potential bioindicators for coastal health.

Context- Discovery of "Bio-Warriors"

Researchers from the Zoological Survey of India (ZSI) have discovered two new species of nereidid polychaete worms along the West Bengal Coast in the northern Bay of Bengal.

Significance- These worms are being described as "bio-warriors" due to their remarkable ability to thrive in polluted, extreme environments where most other species cannot survive.

Understanding Polychaete Worms

Classification- Polychaete worms are marine segmented worms belonging to the phylum Annelida.

Etymology- They are called "polychaetes" because they possess many bristles (chaetae) on their body segments.

Ecological Importance

Seabed Health- They improve seabed health by mixing and aerating sediments through their burrowing activities, which supports nutrient cycling.

Food Web Support- They serve as a crucial food source for fishes, crabs, and seabirds, supporting marine food webs.

3. Details of the Newly Discovered Species

The two new species exhibit distinct features and adaptations.

Feature	<i>Namalycastis solenotognatha</i>	<i>Nereis dhritiae</i>
Etymology	Derived from Greek words meaning "channeled jaw," referring to its unusual jaw structure containing multiple canals.	Named after Dr. Dhriti Banerjee, the first woman director of the Zoological Survey of India (ZSI).
Habitat Preference	Thrives in extreme environments such as sulfide-rich, foul-smelling mudflats.	Found inside wooden dock piles on sandy beaches that are submerged during high tide.
Ecological Niche	Commonly found on decomposing mangrove wood and hardened clay surfaces.	Demonstrates specialised survival strategies in human-altered coastal zones.
Key Adaptation	Shows high tolerance to toxic habitats and harsh environmental conditions.	Adapted to survive in intertidal zones impacted by human structures.

Ecological Significance of Nereidid Worms

These worms play a vital role in maintaining the health of coastal ecosystems.

Nutrient Cycling- They are crucial for recycling organic matter, breaking down detritus and returning nutrients to the ecosystem.

Sediment Aeration- Their burrowing activity significantly improves oxygen flow into the sediment, preventing the buildup of toxic compounds and enhancing overall sediment health.

Ecosystem Productivity- They contribute to sustaining the productivity of mudflats and near-shore habitats, which are often nurseries for other marine life.

Indicator of Pollution Resilience

The discovery highlights the potential of these species as biological tools.

Survival in Polluted Zones- Both species were discovered in habitats heavily impacted by industrial pollution and human activity, showcasing extreme resilience.

Bioindicator Potential- Their presence can serve as an ecological marker (bioindicator) for monitoring coastal health and assessing pollution levels. If these "bio-warriors" are the only species present, it may indicate high pollution levels.

Research Implication- Polychaetes are increasingly viewed as useful tools for environmental assessment and monitoring programs.

Conclusion & Conservation Relevance

Policy Relevance- The discovery reinforces the importance of safeguarding fragile marine ecosystems even when they appear degraded.

Biodiversity Value- It underscores that even polluted environments can harbour unique biodiversity that has adapted to survive human-induced changes.

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