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NIO to use sounds to check marine health

CSIR-NIO

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Effluents from River Sal could be affecting the wellbeing of the Terapon theraps fish species in Betul. Scientists at the National Institute of Oceanography (NIO), who have been using a unique device called a data logger to determine the health of marine life, said shoals of 'korkoro' — as the Terapon theraps are locally known - could be less healthy at Betul than at Grande Island.

Fish create sounds through swim bladders, stridulation (bone friction) and tail movements, which the data logger picks up, thereby helping scientists determine various parameters including the overall health of marine species.

A direct indication of the aquatic conditions of a particular area lies in the health of its marine life.

Scientists have therefore attributed the reasons of the korkoro's declining health in Betul to the water conditions there.

"Effluents at Betul could be coming from River Sal, thus affecting the health of marine life. However, long-term data collection and a routine study must be done to back this hypothesis," NIO senior scientist Bishwajit Chakraborty, said.

When sounds of korkoro from Betul and Grande Island were played, TOI observed a vast difference between the two. The Terapon theraps at Grande Island, true to their onomatopoeic local name, made an intense 'korr-korr' sound, while shoals of the same fish at Betul produced a weaker, muffled sound.

"The recorded sounds were validated by the data set of an Australia-based institute. Dr Douglas Cota, a scientist from the School of Geoscience, Sydney, verified that the sounds are indeed of the Terapon theraps," Chakraborty said.

Explaining fish sound analysis, research scholar Krantikumar Chandra gave the example of a sea horse. He said when food is offered to a sea horse, its head moves briefly, causing friction in the coronet bone (head bone) that produces a clicking sound. This sound can help determine the sea horse's gender, age, weight, length and body mass.

"The data logger helps determine such parameters in animals," he said.

The NIO has used this technology to also record the sounds of numerous humpback whales at Grande Island. The sounds of terrestrial birds at the institute's campus in Dona Paula have also been recorded with the device.

Though maximum activity can be acquired from the ocean with an underwater camera, it doesn't provide clarity, especially in the shallow ocean, unlike the data logger that records sounds from distances. "With camera lights and sometimes flash, marine behaviour is affected. Being inconspicuous, the data logger can serve as a passive monitor when compared to a camera," Chakraborty added.

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[TOI](#)

Underwater robots to search for washed away Dwarka city

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In India there is no telling when myth turns history.

The Hindus who believe in deity Krishna, have no doubt that the deity, with his tribe of Yadavs, travelled from Mathura in north India to build a new kingdom of gold in Dwarka at the western tip of the Saurashtra peninsula in Gujarat.

The devotees, some among them historians, believe that after Krishna's death a great flood washed away the city. The date of the event is not clear. But there seems to be some consensus that it could be 1500 BC. To find the truth of the city, the government is pressing into service underwater robots.

The modern version of Dwarka is at the opening of the Gomti River on the Arabian Sea. The famous Dwarkadheesh temple is located there. Every year during Janmashtami (the birth anniversary of Krishna), thousands of devotees from all over the world converge on the city.

The Department of Science and Technology is actively considering to entrust the mission to robotic vehicles that will go down into the sea near Dwarka to look for the fabled city and collect information.

The programme would involve organisations such as the National Institute of Ocean Technology, Chennai, and the National Institute of Oceanography (NIO), Goa.

The Chennai institute has already built robotic vehicles that can withstand the massive pressure of 5,000 metres deep underwater, and function. The NIO too has previous experience in marine archaeology.

Excavations at Dwarka have been going on for some time now. Nearly a decade ago, the underwater archaeology wing of the Archaeological Survey of India discovered copper coins and fragments of granite structures. Dwarka clearly was once a port city, and finds mention in ancient Greek texts.

In the process of the hope for discovery, the government also expects to test several technologies, such as underwater imaging, the mapping of the ocean floor with sonar waves, and dating of old stones and implements.

The first excavations at Dwarka were supervised by Deccan College, Pune, and the Department of Archaeology, the Government of Gujarat, in 1963 under the direction of H D Sankalia. Over the years, it has thrown up pottery that suggests that the city could be 3,000 years old.

The Modi government seriously believes that many things mentioned, like flying machines and versions of In Vitro Fertilisation (IVF), in ancient texts like Mahabharat and Ramayana are for real, and that the Indian civilisation was very advanced then.

The underwater robotic expedition is in keeping with that belief. In case evidence is found for the existence of Dwarka, it would be a great boost to the BJP-led government: they would have historical basis to the idea of Hindu myths and their professed faith in things ancient.

This isn't the first attempt by the government to search for evidence for mythological structures. In October, a committee of geologists, archaeologists and hydrologists said it had found evidence for the course of the dried up Saraswati, a river mentioned in the Rig Veda and in Hindu mythology.

The study was commissioned by the Water Resources ministry and led by Professor K.S. Valdiya of the Jawaharlal Nehru Centre for Advanced Scientific Research.

His report said evidence suggested that the Sarsuti-Markanda rivulets in Haryana "were water courses of the eastern branch of a Himalayan river". It was not clear what that river was.

It is possible that once the underwater expeditions in Dwarka succeeds, the robots will have more work coming in their way.

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[Khaleej Times](#)

IHBT signs pact to extract catechins from tea leaves

CSIR-IHBT

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The CSIR-IHBT has signed an agreement with INDCOSERVE (The Tamil Nadu Small Tea Growers Industrial Cooperative Tea Factories Federation Ltd. at Coonoor, Nilgiris, Tamil Nadu), for transfer of technology for extraction of catechins from tea leaves.

Catechins are high value antioxidants having numerous health benefits. For extraction of one kg catechins, 40-50 kg fresh tea leaves are required and its price in international market is Rs 12,000-15,000. Catechins are 7-9 times more beneficial compared to commercial tea production.

INDCOSERVE has 16 industrial cooperative tea factories under regular production, catering to an area of 36,327 acres of 25,115 small tea growers with the main object to transform their socio-economic conditions. Currently commercial tea processing in the region has been adversely affected due to poor marketing.

The establishment of this enterprise will boost the economy of farmers involved in tea plantation. The CSIR-IHBT technology of catechins production is a green and sustainable process.

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[The Tribune](#)

Divya Himachal Page 4, Panjab Kesari, Himachal Dastak Page 4, Amar Ujala Page 6

New Tech-Boat to Clean Lakes

CSIR-NAL

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The photograph last week in most newspapers shows ‘snowfall’ in Bengaluru, which by itself would have been wonderful. Had it happened. But what really happened is that the white puffs blowing around and landing on everything was chemical pollutant from the famous Bellandur Lake. But now the pollution levels of the water bodies is being taken up by environmentalists

and conscious residents alike as a matter of concern that deserves serious intervention. It is perhaps not surprising that an initiative to clean lakes more efficiently has emerged from the city. The National Aerospace Laboratories (NAL), a city-based aerospace firm, has come up with an innovative solution to deal with the cleaning of mushy and dirty lakes.

NAL has developed an airboat which can push weeds and other contaminants towards the borders of the lake, from where it is easier to take them out. According to a report in the media the airboat will be tested at Ulsoor Lake in a few weeks along with the army’s Madras Engineers Group personnel.

It is comparatively easier to clean the borders of a lake, however it takes lot of time, energy and manpower to clean weeds in the middle of any lake. NAL chief scientist S Selvarajan said, “The airboat will have an air propulsion system which will push it forward. The boat will also have a flat bottom. This kind of boat is ideal for cleaning water bodies. The boat can be pushed into the water and can be scooped out easily. Besides, they have good buoyancy.”

The air propulsion system is different in air boats from conventional motor boats, and enabled weeds to be cleared from marshy lakes. While the powerful propellers are useful to push forward the weeds, the power generated by the air prevents the engine from getting jammed. As NAL is located close to Bellandur Lake, whose dire condition has grabbed headlines in recent months, the boat can also be tested there. According to Selvarajan, if the trials go well these air boats can be taken up for production by the industry.

However, though this new-tech boat will help handle weeds and other floating or near-surface pollutants, the chemical pollutants, from which the ‘snow’ appeared will have to be dealt with in an altogether different manner, experts say.

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[Sulabh Swachh Bharat](#)