

In this issue

Fishing from Sea Shores

Mechanized boats have broadened the area for fishing in the sea. But fishers in the coastal areas of India still practice shore seine.

Early in the morning, boats leave the shore creating a great arc with a net, leaving ropes tied to the ends of the net, on the shore. When the boats are sufficiently far from the beach, the net is dropped. A part of the net sinks vertically down due to weights, but the buoys tied to the other part make a vertical reticulate barrier in the sea. The fishers on the beach start pulling the rope and the fish near the shore are trapped in the net. The whole operation takes about three or four hours. It is less expensive and saves more time than fishing further into the sea.

Though shore seine is considered more eco-friendly than trawler fishing using mechanized boats, a General Article on **page 40** in this issue, suggests that it is not entirely harmless. Scientists at the Suganthi Devadason Marine Research Institute studied the process in six villages, in Tuticorin, on the east coast of India, over a year. They find that benthic flora and fauna are also scooped up in the process, denuding the sea floor and reducing ecological niches where fish can thrive. Though data on the catch does not show any remarkable reduction, the fishers claim that there is a reduction in bigger fish in their catch.

When the catch is separated, categorized, sold and used by humans, a large part of the benthic organisms, as well as juveniles of edible fish, are discarded. Any legal intervention into this wasteful ecological damage become difficult: shore seine is a source of livelihood for many. Harm reduction by awareness building among fishers is, perhaps, an important strategy that can be adopted.

Nangal Wetlands *Healthy diversity*

The Nangal wetland came up as corollary to the construction of a barrage on the River Satluj. The wetland at Nangal

city, Punjab, covers an area of 700 acres. It is now considered a wetland of national importance.

Zoologists at the Punjabi University, Patiala, examined the diversity and density of the macro invertebrates of the Nangal wetland – sponges, worms, insects, molluscs... – that generally dwell at the bottom but may occasionally travel upwards. Most of these benthic fauna are scavengers or detritivores. They help recycling nutrients in aquatic ecosystems. They serve as food for a wide range of fishes, birds and other aquatic organisms. So the biodiversity of these organisms serves as index of the health of wetlands.

In a Research Article on **page 116** in this issue, the researchers present their findings from monthly collections from three sampling sites over two years. A total of 24 genera were identified. And the numbers have actually increased during the study period, say the authors. In terms of indices such as the Shannon–Weaver index of diversity, Simpson index and Evenness index, the Nangal wetlands is presently healthy, in spite of anthropogenic impacts.

Offshore Wind Energy *Availability, accessibility*

India generates some 300 gigawatts of energy and the contribution from wind is not even 10% of the total. But a Research Article on **page 62** in this issue says that there are some 400 TWh of energy waiting to be tapped from the coasts of Gujarat and Maharashtra.

Though on-shore wind energy technology has seen a tenfold reduction in cost in the recent past, offshore wind turbines may become even more attractive, because of higher and more stable wind speeds. And the monopole foundation technology makes it economically feasible to erect wind turbines for depths up to 35 m. Scientists at the Pandit Deendayal Petroleum University, Gandhinagar, Gujarat, combined the bathymetric and satellite data of wind for five years to estimate the amount of energy that coastal cities, including Mumbai, can access.

India has a long coastline of about 7600 km. Besides the Konkan and Kutch coasts in the west, the eastern Odisha coast, Rameswaram and Kanyakumari, too, hold promise, say the authors. Though offshore wind farms may involve higher investment, the long-term benefits have to be factored in, for the energy planning of the country.

Mediating Monsoon Activity *Forecast, hindcast, broadcast*

Media in India got confused by the differences in the 2015 monsoon forecasts issued by IMD and SKYMET. While IMD forecast a deficient monsoon, forecast as early as April and reasserted it in June 2015, SKYMET issued a forecast of normal rainfall.

After a below normal monsoon in 2014, the chances of a repeat in 2015 were small. Yet the IMD had a confidence gained by hindcasting monsoons over many decades, using statistical models based on the data of the historical relationship between the monsoon and its predictors, obtained from global patterns of atmosphere and ocean parameters, on the one hand, and dynamical models, which use general circulation models of the atmosphere and ocean to simulate the monsoon circulation, on the other.

A Research Article, on **page 68** in this issue, explains the recent advances in monsoon forecasts. Besides the effects of El Niño, many other factors such as the Indian Ocean dipole, extra-tropical sea-surface temperatures over the north Pacific, northern hemispheric land heating, mid-latitude wave activity, etc., also have an impact on the monsoon. Though complex, long-range forecasts using the version 2 of the global climate forecasting system have shown improved reliability. The forecasts are now available on the 15th of every month from IMD Pune and IITM Pune websites.

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