

## Oceans at risk of reef loss

The axe of civilization has rendered the coral reefs – dubbed as the rainforests of ocean – at the risk of being endangered. Corals rank next to the amphibians as the most threatened group of animals according to the findings of the recently held International Coral Reef Symposium in Florida<sup>1</sup>. As of now, 10% of the world's reefs have been destroyed by human activity and 70% of it is anticipated to be completely destroyed over the next 40 years and massive species extinctions are likely to happen if the process is not reversed<sup>2,3</sup>. Of the 704 reef-building corals, 231 are grouped under the most-threatened species category<sup>1</sup>.

Corals face the pressure of pollution, sedimentation, destructive fishing practices, mining, ocean warming and over population<sup>4</sup>. Corals breed between 25°C and 29°C, and a temperature rise of 1–2°C could have devastating effects on the corals<sup>2</sup>. Ocean warming causes coral polyps, stressed by heat or ultraviolet radiation, to expel the algae (zooxanthellae). Absence of zooxanthellae renders the corals discoloured and unable to photosynthesize. In absence of favourable conditions, the corals become vulnerable and eventually die. The El Niño and La Niña induced climate changes of 1998 destroyed about 16% of the world's coral reefs in less than a year<sup>5</sup>.

A UNESCO report alerts the authorities in 96 countries about their coral status. In Taiwan alone, 70% of the coral reefs have been lost due to bleaching<sup>6</sup>. About 80% of the coral reefs are threatened by coastal development and fishing pressures in Southeast Asia<sup>5</sup>. Around 322 sites spread over 13 Caribbean countries are facing perils of coral destruction due to increasing human populations<sup>7</sup>. If the present decline of coral reefs continues, annual economic losses to the tune of US\$ 870 million are speculated<sup>8</sup> to occur in the region by 2015. In Lakshadweep, growing human density has put a pressure on this fragile ecosystem<sup>9</sup> through over-fishing and increased sewage. However, Pacific reefs are reportedly least threatened due to a relatively lesser magnitude of risk<sup>5</sup>.

With the world population gestating towards the 9 billion mark by 2050, corals may face serious ecological crisis if effective conservation strategies, including policies on population planning fail to be implemented<sup>7</sup>. In Sri Lanka and India, besides polluting the reef with solid waste, risks to this fragile ecosystem exist in the form of mining, drainage of untreated residual waters and through anchoring and contact of ship<sup>2</sup>. An illegal activity of dynamiting the coral reefs to harvest small fish is practised in many countries. Cyanide, a potential poison is used in the process that ultimately kills the corals<sup>10</sup>. Unfortunately, not much is done in terms of law enforcement to stop the live reef fish trade<sup>11</sup>.

Besides being at the receiving end of the climate change, coral reefs also play an important role in predicting the climate change as they are sensitive recorders of past sea-level and environmental changes. The geological parameters of the corals can be employed to analyse ocean/atmosphere variability as they are known to be a storehouse of past global climate records<sup>12</sup>. Coral reefs make up less than two-tenths of 1% of the ocean floor but provide habitat for more than 25% of all marine life<sup>8</sup>. The destruction of this complex ecosystem will put many a marine species at risk of extinction. The Washington Convention on International Trade in Endangered Species of Wild Fauna and Flora should incorporate more marine species for protection by the international law<sup>11</sup>.

In India, the National Committee for conservation and management of wetlands and mangroves gives recommendations to the government on policy issues regarding coral reefs. While the State level steering committees are set up to formulate and implement the Management Action Plans for the identified coral reef areas. Of the seven main coral reef areas in India, the Gulf of Kutch and Andaman islands have been assigned the status of marine national park while the Gulf of Mannar has been designated as the biosphere reserve. However, the areas in the west coast, Palk bay and Nico-

bar are yet to receive government protection<sup>9</sup>.

Though around 400 marine parks and reserves with coral reefs are known to exist, these marine resources in 40 countries are yet to receive protection<sup>5</sup>. Creation of MPAs with boundaries that include areas critical for survival of protected coral reef and other marine communities can lead to effective management of marine resources at large<sup>13</sup>. The United Nations Environment Programme and World Conservation Monitoring Centre (UNEP–WCMC) provides an insight into the status of coral reefs of the world in *A World Atlas of Coral Reefs*, which gives country-wise information of reef areas. The UNEP–WCMC combine functions around the globe and garners support at various levels to protect the coral reefs<sup>5</sup>.

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