A new site for the freshwater jelly fish *Craspedacusta sowerbii*

Freshwater jelly fish are unpredictable in their appearance within bodies of water. *Craspedacusta sowerbii* is distributed worldwide and may appear in large numbers one year, not appear in the next, and come back several years later. According to Fritz et al., the freshwater jellyfish *C. sowerbii* was first recorded in a water lily tank in Regent’s Park in England. In India, *C. sowerbii* have been reported only at a few localities out of which the Cauberry River is one of the best known and interesting sites to observe them (www.amoghavarsha.com/journal/2000/02/09/freshwater-jellyfish-Craspedacusta-sowerbii).

An abandoned rock quarry is located about 200 m north of the 13th km milestone on M. C. Road, commonly known as Kunnanpara near Thrivananthapuram. It is more than 30 m in diameter and approximately 5–6 m deep, filled with rain or groundwater. A closer look into the still waters of the abandoned quarry revealed the presence of many pulsating white transparent, disc-like, gelatinous jellyfish (Figure 1). The diameter of the medusa is around 1.5–2.0 cm with fine thread-like tentacles (1.0–2.0 cm long), located all around its periphery. A few large tentacles (more than 2.0 cm) are found arising from its centre. The tentacles, which are about 50 in number, are provided with nematocytes which are used for capturing food and may also serve as a type of protection against predators.

During winter, the polyps are known to contract and become dormant to form podocysts. These podocysts are dispersed by animals, more commonly by birds. At the onset of summer, the podocysts transform into polyps. It is quite probable that the species *C. sowerbii* was transported from a distant source, as podocysts, by some migratory birds, especially cormorants, into the abandoned, water-filled rock quarry at Kunnanpara near Thrivananthapuram. It would be worthwhile to check the presence and distribution of *C. sowerbii* in other freshwater areas in and around Thrivananthapuram. This distribution pattern of *C. sowerbii* can be utilized to understand the effect of global warming on this species.


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Rhododendrons in Manipur need attention

Rhododendrons attract mankind by their aesthetic, ethnic and ecological value contributing substantially to biodiversity in the timberline ecotone of the fragile ecosystem. Though cosmopolitan in distribution, maximum concentration of rhododendrons is found in the Sino-Himalayan region. *Rhododendron* is one of the largest and most diverse genera in the plant kingdom having about 1000 species. Of these 72 species are reported from India, with 71 of them found in North East (NE) India. In spite of much interest, several species of rhododendron are gradually becoming rare in their natural habitats. In India, nine rhododendron species are red-listed.

Manipur, a remote state in NE India, and a part of the Indo-Burma biodiversity hotspot, is home to 11 rhododendron species, viz. *R. arboreum* ssp. *arbo-

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This rhododendron is a rare species, known to be found at the Japfu range, including Mt Esii (highest peak in Manipur), Dzuko Valley (famous for Dzuko lily) and Koubru range (sacred place of the Meiteis, the valley inhabitants of Manipur) in Senapati District, and Ukhrul and Shiroy hills (famous for

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Shiroy lily) in Ukhrul District, where temperate forest (1500–2500 m asl) gradually changes to sub-alpine type of vegetation (2500–2900 m asl). Winter season is severe with night temperature going below zero and snowfall is a regular feature. In this fragile environment, rhododendrons form the dominant or co-dominant species in the forest ecosystem. However, R. arboreum ssp. arboreum, which is common and widely spread of all the rhododendrons is seen sporadically in the higher elevated subtropical pine forest (1200–1800 m asl) of these two districts. Though there are no ethno-botanical uses, rhododendrons are in demand for their beautiful flowers. In ‘Mao’ dialect (Senapati District), they are called ‘Lidainpa-Lidai-pa’ differentiated by suffix ‘kakra’, ‘kongho’ and ‘kava’ for the colour of the flowers being white, red and yellow respectively. In ‘Tangkhul’ dialect (Ukhrul District), they are called ‘Kokluvin’ with the suffix ‘kahunga’ and ‘kacharra’ for red and white flowers respectively. In ‘Meitei’ (Manipur), they are called ‘Khorom lei-shak’ with the suffix ‘angangba’ and ‘angouba’ for red and white flowers respectively.

Rhododendrons are constantly exposed to various threats, both anthropogenic and natural calamities. The major threats are shifting cultivation, fuel-wood collection, surface forest fires (mainly accidental), landslides and plucking of flowers and collection of plants by the locals (especially when they venture into the forest for NTFPs collection and hunting), tourists (in case of Dzuko Valley and Shiroy Hills), and pilgrims (in case of Koubru range).

In spite of their ecological importance to the fragile environment and their endemic and red-listed status, no measures have been taken up by the authorities for the conservation of rhododendrons. Some local youth at Shiroy hills have started providing tourist guidelines to prevent disturbance to this fragile environment. However, this practice is restricted during the peak season only (May and June when Shiroy lily is in full bloom). In other states, the scenario is quite different. Two sanctuaries, viz. Shingbha and Varsay Rhododendron Sanctuaries, have been already set up in Sikkim mainly for the purpose of their conservation. In Manipur, strategies based on eco-tourism are most welcome as the places where rhododendrons grow are visited by people for various reasons. Enforcement of proper tourist guidelines and conducting awareness programmes for the locals to understand the importance of the rhododendron species in such a fragile environment and the utmost need to protect them will be appreciated.


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Cloud burst-triggered debris flows around Leh

In the early morning hours of 6 August 2010, cloud burst-triggered debris flows led to large-scale destruction around the Leh Valley. It was unusual event considering the fact that Leh (34°09’N and 77°34’E) is located in the semi-arid Trans-Himalaya, where the mean precipitation seldom exceeds 115 mm. More so no individual month has an average of more than 20 mm rainfall. The meteorological observatory at Leh recorded 12.8 mm of rainfall between 0530 h of 5 August and 0530 h of 6 August 2010. India Meteorological Department (IMD) suggested that the recent cloud burst was highly localized based on the analysis of satellite imageries (probably after the tragedy) which indicated that an intense convective cloud cluster developed to the east of Leh by 2130 h IST of 5 August 2010 (http://imdc.gov.in/doc/cloud-burst-over-leh.pdf). We could see that an unusual dark patch of rather low cloud was building up at the east of Leh town during the evening of 5 August.

Being in the rain-shadow zone, no appreciable vegetation cover exists to protect the sediment from the onslaught of falling rain drops during abnormal rainfall events. The Indus Valley was extensively glaciated in the past; hence the valley is not sediment-limited. Whenever, there is availability of moisture, hill-slope sediments are mobilized (as debris flows) because such slopes are close to the threshold angle for failure. Considering that during the abnormal monsoon years, the southwest summer monsoon penetrated into the semi-arid Trans-Himalaya, such events tend to mobilize large-scale sediments (debris flow) from the unprotected steep mountain slopes, implying that an extreme rainfall event and associated debris flows are not new to the Trans-Himalayan ecosystem.

The geomorphology of the Leh Valley is dominated by past glacial and periglacial processes. However, presently the glaciers that were extensive in the past have receded to higher elevations, exposing the wide ‘U’-shaped valley, and debris-laden south-facing slopes around Leh. The retreated glaciers have also given rise to innumerable dried channels that are trending NW to SE around the Leh Valley. At present, little ice patches are present in the distal parts of the relic glaciated valleys, particularly along the Khardungla ridge in the north. These ice patches feed some of the perennial streams that eventually drain into the Indus River.

During the cloud burst rainfall-induced run-off caused failure of debris-laden slopes around Leh. The slope sediments

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