KERALA

Ecological upshot of lilac devil

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Impacts source of income and decreases fish numbers

Its flowers may be a very pleasing and quaint shade of violet, but water hyacinth is not called the lilac devil for no reason. The ecological consequences of the invasive aquatic weed are numerous.

Above the water surface, the water hyacinth *Eichhornia crassipes* grows lustily and quick. All it needs is enough food to thrive on. And the minerals and nutrients (such as nitrogen, phosphorous and other byproducts of agricultural run-off) that flow into waterbodies provide an ample supply. The presence of hyacinth, therefore, is an indication of the eutrophication status of a waterbody, says T.V. Ramachandra, head of the Energy and Wetland Research Group at the Indian Institute of Science, Bengaluru, who has led studies on water hyacinths.

Once nutrients are at hand, its short reproductive cycle – of just 15 days – permits a colony of hyacinths to almost double during this time. It displaces native aquatic plants during this process.

Underwater bane

But there is more to the lilac devil than meets the eye. The thick layer of floating green on the water prevents sunlight — which aids the growth of algae and underwater plants that are important components of a waterbody — from reaching the depths below.

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Less sunlight and fewer underwater plants thus decrease the levels of dissolved oxygen inside the water. These decreased levels of oxygen, in turn, prevents native fish species — which are mostly gill fishes, which rely entirely on high levels of dissolved oxygen for breathing — from thriving, says Dr. Ramachandra.

"As a result, other exotic and invasive air-breathing fishes such as African catfish that can surface to the water surface for air thrive while native fish species suffer a setback," he says. Such a situation also benefits hardy fish species that can tolerate low levels of dissolved oxygen, such as the exotic and invasive tilapia. They too proliferate, displacing native freshwater fish species in the process.

Impacts livelihood

These ecological changes cascade across food cycles and webs, and ultimately affect the link between people and the freshwater ecosystems. Fishing is almost impossible when a carpet of

lush hyacinths smother a lake. Traditional gill-net fishermen are most affected, for fish numbers decrease. Even families dependent on agriculture are affected, says T. K. Hrideek, a scientist with the Kerala Forest Research Institute, Thrissur.