



Members of a research team measuring seagrass.
— Instagram@ReefCheck

Mapping the life of seagrasses

WHERE Sungai Johor meanders sluggishly into the sea, the coastline between the sleepy fishing villages of Teluk Sengat and the glitzy industrial complex in Pengerang is a series of nooks and sudden turns.

This is where a team of researchers from Universiti Malaya are working.

The team has been engaged by Reef Check Malaysia to map seagrass meadows along a 30km stretch of Sungai Johor.

The water in the river can be quite turbid which makes it harder to use remote sensing technologies, so much of the mapping work still has to be done manually in the field by the team.

Team members are hoping that their work will contribute to the compilation of national data on seagrass meadows in the country and help determine the current status of this vital habitat.

According to Reef Check assistant programme manager Raveena Kim Lai, there is a lack

of comprehensive data on where seagrass meadows are located in and how they are changing over time.

"That is why surveys and long-term monitoring are so important to support conservation planning," she says, adding that they are now seeing more researchers mapping seagrass meadows around Malaysia.

"They are our natural carbon storage bank, helping to remove carbon from the atmosphere and fight climate change.

"Perhaps this is one of the reasons for the growing interest among governmental and corporate organisations to support local seagrass conservation efforts," says Raveena.

Besides helping researchers understand where seagrass habitats are located and assess their health, such data also enables them to identify the areas that may need greater attention as well as ensure that these ecosystems continue to support local livelihoods.

"Our survey estimated that

seagrass meadows cover about 5.2sq km along the east bank of Sungai Johor, and we observed fishing activities in almost every meadow we visited," Raveena says.

"This really highlights how important seagrass ecosystems are, as they are not only valuable for marine biodiversity but also support the livelihoods of coastal communities who depend on these areas for fishing and food resources."

During the team's Sungai Johor survey, it recorded six seagrass species from two families. The family Hydrocharitaceae included *Enhalus acoroides*, *Halophila major*, *Halophila minor*, *Halophila ovalis*, and *Halophila spinulosa*, while the family Cymodoceaceae was represented by *Halodule uninervis*.

These species occur in an estuarine environment characterised by muddy substrates and turbid waters.

For its mapping work, the team works closely with local communities, who are knowledgeable

about these areas and whose involvement is key to successful conservation.

Overall, the response from coastal communities, says Raveena, has been very positive, with many fishers and gleaners already understanding the importance of seagrass habitats as they depend on them for fishing and collecting seafood.

"Local communities also shared their observations about environmental changes in the area.

"Some mentioned that in the past, marine wildlife such as dugongs and dolphins used to be seen in the area, but now there are no sightings," she says.

As Sungai Johor is an active industrial area, the team observed several pressures on the ecosystem, including indicators of water pollution, aquaculture runoff, land clearing, and coastal reclamation, all of which affect seagrass health and contribute to habitat fragmentation.

"Based on the seagrass mapping report, the meadow in the area shows signs of habitat fragmentation, most likely due to the impacts of human activities.

"This degradation may help

explain the decline in sightings of species such as dugongs, which rely on seagrass meadows as their primary habitat and food source," she says.

One of the biggest challenges for seagrass conservation in Malaysia is that these ecosystems – which provide a home and food for various marine megafauna species – are often overlooked, says Raveena.

"Because seagrasses grow underwater, they are less visible compared with mangroves, so they do not always receive the same level of attention.

"Also, despite their significant ecosystem roles and importance, seagrass ecosystems in Malaysia do not have specific legal protection.

"In most cases, seagrass meadows are only protected when they occur within designated marine protected areas, such as marine parks," she says.

Beyond these marine parks, however, seagrass habitats remain vulnerable to coastal development and other human activities.

While there are efforts to transplant seagrasses to rehabilitate damaged sites, Reef Check's

recommendation, says Raveena, is to always address the local impacts and sources of pollution first before considering large-scale seagrass planting or conservation initiatives to optimise the environment.

"While some seagrass conservation efforts that practice the initial planting of seeds in hatcheries show promising results, normally, transplanting seagrasses into the field to rehabilitate damaged sites often produces mixed outcomes with relatively low success rates.

"The controlled hatchery environment provides optimum conditions for seagrass to grow, but field conditions, especially those affected by existing anthropogenic impacts, often result in low survival rates for transplanted seagrass," she says.

However, a recent publication by researchers from Universiti Putra Malaysia reported promising results when their transplanted seagrass at Merambong Shoal near Gelang Patah, Johor, recorded a more than 60% survival rate.

"We are keen to learn more about this research and hopefully apply their techniques in our area in the future," Raveena says.