

Alert and stress indicators and fish behaviour/reporting

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Fishes are attracted to the reef mainly by visual sensors, light, acoustic signatures, chemical and chemosensory cues and shadows/shelter and feed availability. Different fish groups behave differently as they grow. For eg., barracudas remain in large shoals when juveniles but as they grow into larger adults they swim in groups of lesser numbers; similar instances are seen in spiny lobsters, gobiids, scorpion fishes, lion fishes and snappers. Smaller carangids, rabbit fishes and cardinal fishes continue to remain in the same populations in similar densities in all phases of their life. Therefore, an assessment should be made of selective species which are indicators of large assemblies, indicators of singular forms, and indicators of migrants and visitors separately, based on which judging the reef performance would be ideal.

However, artificial reefs are susceptible to negative impacts, both natural or induced, which may in turn negatively affect the reef communities. The ARSC members and the active fisher community should always remain in communication regarding the fishery and performance of the reefs and indicate the changes and information in their log books. Poor catch rates, reduced CPUE and lack of indicator species or signs of fish life should induce curiosity in the fisher's mind. In the event of such signs, they must demand an immediate inspection of the reef engaging a diver to verify whether the structures were physically removed or dismantled or rolled up in large nets.

If the AR modules are covered in ghost nets and the nets harbour large numbers of dead fishes, then they emanate a very bad smell into the adjoining waters and the fauna that have settled there moves out. Although this is a temporary phenomenon the impact can remain for at least a month. The nets then age with the reefs and become an integral part of the system because they assemble a lot of fauna and microorganisms, and many tiny creatures and fishes find these extra spaces as useful refugia. But these nets are extremely dangerous to marine mammals and reptiles and therefore, the AR sites are to be periodically monitored and cleaned.

Stressed fishes often search for adjacent reefs or shelters and move temporarily out until they find a suitable hide-out with sufficient feeds. The smaller groups and resident dwellers re-adapt to the changed structures; however, the corals and broken-shelled invertebrates lose out. The foraging fishes stay away for a long time when the ghost nets are with dead material. But larger predators remain.

The constitution of the ARSC empowers the members to raise, discuss and report the incidents and violations regularly through peaceful means to their fisher leaders, who can then report the matter to the adjacent village leaders; further, the matter can be represented to the State Department officials with evidence such as on-field photos or vessel registration numbers etc.

Alert signs:

1. Poor fish catch and rates
2. Fishes not biting the baits
3. Live fishes not available as earlier
4. The lead weights of the hook & lines and jigs getting entangled in nets
5. Indications of operations by other fishers employing bottom set gill nets and trammels
6. Indications of sepia nets and set gill nets
7. Indications or reports of trawlers operating over the sites
8. Indications of larger seine operators fishing over the sites
9. Dead fish floating
10. Anoxic conditions at the bottom, for instance, upwelling periods during August-September in Tamil Nadu bringing up the bottom fauna in a semi-sedated state. Even fishes which are truly benthic like the halibut and flat fishes and trigger fishes will surface indicating and zero oxygen state due to excessive bottom upwelling in the reef zone.