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Shipwreck as Artificial Reef: Trash to Treasure

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SUMMARY

Shipwrecks can easily be transformed into artificial reefs and help to make productive zones in the sea. It has many advantages, such as hotspots of fish diversity, a refuge for ecologically vulnerable species, marine protected areas, underwater cultural heritage, exclusive species, and attract divers (tourism). Shipwrecks are facing severe threats due to dynamite fishing and trawling. Around 45% of the estimated 3 million shipwrecks worldwide are affected by industrial-scale trawling and the fish population clustered on a shipwreck could quickly get reduced due to dynamite fishing. Shipwrecks are a unique ecosystem that provides a variety of benefits to humankind and it is important to protect the system for attaining continuous support. This will help develop marine tourism, transform the less productive areas into more productive, and restore and protect damaged and endangered fish stocks.

INTRODUCTION

The artificial reef is a human-made structure deployed underwater, mainly to promote marine life. Whenever an ocean current encounters a vertical structure, it creates upwelling with rich plankton that act as a feeding ground for small fishes, which subsequently attract pelagic predators. Over months or years, the reef structure becomes encrusted with algae, tunicates, hard and soft corals and sponges. Many reefs are built using objects built for other purposes, such as sinking oil rigs (through the Rigs-to-Reefs program), scuttling ships (deliberate sinking of a ship), or deploying rubble construction debris. Shipwrecks are the remains of a wrecked ship, which are beached on land or sunken to the bottom of a body of water. It also served as artificial reefs when preserved on the seafloor. It provides hard surfaces for algae and invertebrates such as oysters, barnacles, and coral attach; the accumulation of attached marine life attracts fish for shelter and food.

Why Shipwrecks?

- In January 1999, Angela Croome estimated that they were about 3 million shipwrecks worldwide (an estimate rapidly endorsed by UNESCO and other organization) and the number increasing every year.
- The world most prominent online wreck database has data on 1,79,490 wrecks and 1,58,270 positions, 57,550 images, 2284 maritime charts, 30,180 ship owners and builders and a lot more.
- Sunken vessels are easily and naturally transformed into artificial reefs, serving as a suitable habitat for local fish biodiversity and fish conservation.
- Shipwrecks are hotspots of fish diversity along with coastal ecosystems. The higher species abundance and diversity on shipwreck indicated that it acts as a complex artificial fish habitat with diverse feeding niches that attract diverse fish assemblages and contribute to local fisheries.
- The abundance of ecologically vulnerable species underlines that shipwreck acts as a refuge for them.
- Shipwrecks are rich sources of fish variety (fish diversity) and provide shelter to hide and feed on algae available there.

Factors affecting the formation of coral reef on a submerged shipwreck?

Depth

Depth is the critical factor. Depth above 40m is recommended and has to land in a place connected with other coral reefs via ocean currents. These currents bring the coral larvae to the ship to settle and start growing.

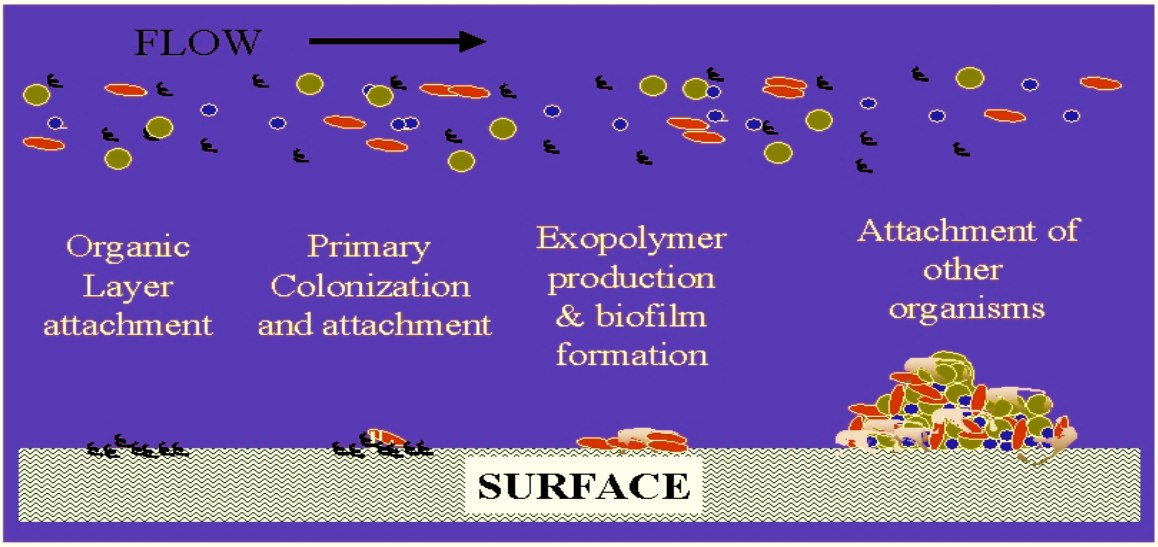
Crustose Coralline Algae (CAA)

Survival of coral larvae is more if they settle on the surface covered in CAA. It is really important because Coral larvae have a much better chance of survival if they settle on a surface covered in CCA. Corals take more time to grow with a maximum of 7cm/ year and a minimum rate of 1cm/ year. The wreck should need

to be left undisturbed for a while, preferably out of reach of any troublesome storms or hurricane for the better formation reef.

Bioflim & Biopolymer

The biopolymer produced by small organisms like bacteria is attached to any hard surface in the marine environment. These include the biofilms produced by bacteria to anchor them and protect them from environmental conditions.



Importance of shipwrecks

Acts as marine protected areas

- If the shipwrecks are protected, it becomes breeding grounds for commercially valuable fishes—these populations "spillover" to increase the fish resources available for commercial fishing outside the protected area.
- Creating new MPAs around areas with more shipwrecks is an easy way to make the conservation of marine resources more effectively.

Underwater Cultural Heritage

Shipwrecks contain prominent elements of underwater cultural heritage (National Institute of Oceanography along the Sunchi reef- one of the oldest along the western coastline of India). Portuguese ship disasters in the trivial Goa waters due to the precarious reefs, sand bars and the unsafe topography of the water bodies. They help in recreating the maritime history of civilizations – its culture, economy, trade and commerce.

Naturally preserved shipwrecks act as cultural heritage

Exclusive species

The wreckfish (Polyprionidae) of perciform. They are deep-water marine fish associated with caves and shipwrecks. Some of the most enjoyable and consistent fishing can be had on wrecks. Sending a shrimp or a piece of cut bait to the bottom near a wreck might yield a fun little grunt or even a backbreaking monster.

Species diversity

Indian Council of Agricultural Research -Central Coastal Agricultural Research Institute (ICAR-CCARI) studied the Suzy's Wreck. They documented 115 fish species in the coral reef of Grande Island. Many of these were also found in the shipwreck, but about 30 of those found in Suzie's Wreck are exclusive and not found in the coral reef. There were also 32 ecologically less resilient fish species and 23 vulnerable fish species observed on the wreck. The shipwrecks act as the refugee site for endangered and vulnerable fish.

Diver's paradise

Shipwrecks are common and most famous place for diving adventures. Shipwrecks support "table-top" coral reef, 18 species of fish, including parrotfish, damselfish, butterflyfish, sea urchins and sea cucumbers in Goan waters.

e.g. 'St George's Reef Wreck; This site lies at a depth of around 15 metres.

Double Boiler; This wreck lies at a depth of 14 – 19 mts.

SS Rita'; This ship lies at a depth of around 8-12 metres

Threats to the Shipwrecks

Trawling

Shipwrecks in areas excluded from fishing are in better condition and support diverse fish communities than wrecks that have been damaged by trawling. Around 45% of the estimated 3 million shipwrecks in the world are affected by industrial-scale trawling. Once shipwrecks have been struck by fishing gear, they and their content are obliterated forever.

Dynamite fishing

In the past, fishers in many areas around the globe used dynamite as a fishing tool. Underwater detonations would kill or stun fish, bringing them to the surface where the fishermen could collect them. With repeated targeting of a fish population clustered on a shipwreck, the wreck could quickly reduce rubble.

CONCLUSION

Shipwreck regions should be designated as protected areas. Development of Marine tourism is possible by shipwrecks. They help to transform the less productive areas into more productive. The mean length of fish stock can be increased by using the shipwrecks as protected areas. Restoration and protection of damaged and endangered fish socks are possible by shipwrecks. Proper policy and guidelines will help us to make the waste ship into the reef eco-friendly. Awareness about shipwrecks should be created among the resource users.

REFERENCES

Blakeway, D., Byers, M., Stoddart, J., & Rossendell, J. (2013). Coral Colonisation of an Artificial Reef in a Turbid Nearshore Environment , Dampier Harbour , Western Australia, 8(9), 1–13.

Kingsley, S. A. (2009). Odyssey Papers 4 Deep-Sea Fishing Impacts on the Shipwrecks of the English Channel & Western Approaches.

Perkol-finkel, S., Shashar, N., & Benayahu, Y. (2006). Can artificial reefs mimic natural reef communities ? The roles of structural features and age, 61, 121–135.

Reefs, C., & Econcrete, S. P. (2004). Community structure of stony and soft corals on vertical unplanned artificial reefs in Eilat (Red Sea): Comparison to natural reefs Community structure of stony and soft corals on vertical unplanned, (May 2014).