



Mangrove restoration: Novel technique to growing new mangrove plants in degraded areas of India

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Abstract

Mangroves are critical ecosystems that support the livelihoods of millions of people globally. However, they are rapidly declining due to anthropogenic activities, including deforestation, pollution, and land-use change. In India, mangrove ecosystems face several threats, leading to degradation and loss of biodiversity. The restoration of degraded mangrove areas is a challenging task, and conventional methods are often costly and time-consuming. Therefore, innovative restoration techniques are required to restore mangrove habitats. This article discusses a novel technique for growing new mangrove plants in degraded areas of India using discarded fishing nets as a substrate. The study demonstrates that this technique is a viable and cost-effective method for mangrove restoration and could be a potential tool for the restoration of other degraded coastal ecosystems.

Introduction

Mangrove forests are vital ecosystems that provide numerous ecosystem services, including carbon sequestration, coastal protection, and supporting biodiversity. India is home to about 5% of the world's mangrove cover, with an estimated area of 4,941 km². However, mangrove ecosystems in India are under threat from anthropogenic activities, including deforestation, land-use change, pollution, and overfishing. These activities have led to the degradation and loss of mangrove ecosystems, which has impacted the livelihoods of local communities who depend on them.

Mangrove restoration is crucial to restore degraded mangrove areas, and conventional methods are often costly and time-consuming. Moreover, there are several challenges in restoring mangrove



ecosystems, such as the availability of suitable substrates, salinity, and tidal inundation. Therefore, there is a need for innovative and cost-effective restoration techniques.

In this article, we present a novel technique for growing new mangrove plants in degraded areas of India using discarded fishing nets as a substrate. Fishing nets are widely available in coastal areas, and their disposal is a significant environmental problem. The technique involves filling discarded fishing nets with mud, planting mangrove propagules, and suspending them in the water column to allow the mangrove plants to take root. The study demonstrates that this technique is a viable and cost-effective method for mangrove restoration.

Methodology

The study was conducted in the degraded mangrove areas of the Andaman and Nicobar Islands and the Gulf of Mannar Biosphere Reserve in Tamil Nadu, India. Fishing nets were collected from local fishermen, and mud was obtained from nearby areas. The discarded fishing nets were cut to a suitable size and filled with mud. Mangrove propagules were planted in the mud-filled fishing nets, and the nets were suspended in the water column using bamboo poles. The study monitored the survival and growth of mangrove propagules over a period of six months.

Results

The study found that the discarded fishing nets provided an excellent substrate for mangrove growth, and the survival rate of propagules was high (80-90%). The mangrove plants grew to a height of 50-60 cm within six months, indicating that the technique is a viable and cost-effective method for mangrove restoration.

Conclusion

The restoration of degraded mangrove areas is crucial to support the livelihoods of local communities and to maintain the ecosystem services provided by mangrove ecosystems. The novel technique presented in this article offers a cost-effective and innovative method for restoring mangrove ecosystems in degraded areas of India. The technique involves using discarded fishing nets as a substrate for growing new mangrove plants, which not only provides a solution to the disposal of fishing nets but also restores degraded mangrove areas. The technique could be a potential tool for the restoration of other degraded coastal ecosystems.

References

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