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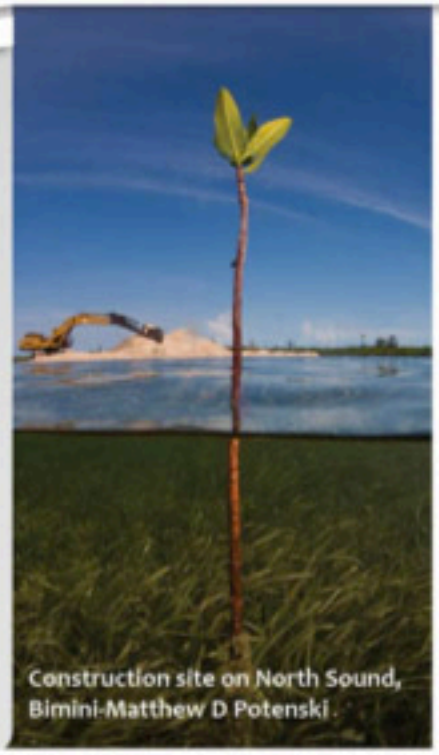
Mangrove Destruction

By Jillian Morris

Lacking the aesthetic appeal and explosion of colour that coral reefs enjoy, mangrove forests are often overlooked and underappreciated. Mangroves dominate about 75% of tropical ocean coastlines, and are essential to the health and maintenance of the ocean's ecosystems.

The destruction of mangroves will have a significant impact on life cycles and food chains of the organisms that inhabit these areas. As this issue places oceanography in the spotlight, Jillian Morris examines the impact of the destruction of Bimini's mangroves on related oceanic biospheres.



Construction site on North Sound, Bimini-Matthew D Potenski.

The north island of Bimini, like so many other Bahamian islands, is currently waging a battle against the inevitability of development. The massive holiday resort being developed on the northern island is pushing onward to obtain prime real estate around the North Sound.

By definition, mangroves are plants in tropic and subtropic regions that can withstand highly saline water conditions. The term is used to describe some 40 species of such plants individually, or a forest comprised of them. Due to their tolerance for seawater, mangroves are found in low-lying coastal regions between the high tide mark and the mean tidal level. This basic description does not however do justice to the crucial role mangroves play in both marine and terrestrial ecosystems globally. Not only do they create shelter and habitat among their dense web of spindly roots they also provide substrate for primary producers, prevent coastal erosion, act as buffers against storms, cycle nutrients, and filter heavy metal and excess organic materials.

In fact, according to a study conducted by Thorsten Dittmar et al., published in Global Biogeochemical Cycles, mangroves are a source of more than 10% of essential dissolved organic carbon supplied to the global ocean, from land. The work of a mangrove is ongoing, and no other ecosystem is as relentless in its endeavours.

To put the importance of the mangroves for ocean life into perspective, many of the species that rely on the mangroves of Bimini for example, including loggerhead and hawksbill turtles, smalltooth sawfish, Nassau grouper and great hammerheads, are threatened or endangered. Fishing is deeply rooted in Bimini's culture, and attracts "Big Game," anglers from across the globe. Overfishing is already responsible for reduced numbers and the increased habitat loss the islands are facing creates even more of a challenge to survival, by reducing refuge areas. Nutrient rich and protected areas are nurseries for juveniles before moving to sea grass beds, coral reefs and the open ocean. Without this crucial developmental stage, surrounding ecosystems far beyond the waters of Bimini feel a tremendous impact.

Thus, habitat destruction of these regions has far-reaching ramifications both environmentally and culturally. Located approximately 80 kilometres (50 mi) from the east coast of Florida, the islands of Bimini provide the only mangrove habitat in the western Grand Bahama Bank. This translates into the dependence of thousands of miles of surrounding ocean ecosystems on the mangroves of these small islands for survival.

Photo by Jillian Morris

As the tide falls, water flowing between the Bimini islands, once clear and clean, now appears filmy and green from the lack of filtration. Black smoke fills the air from trash being burned, while chemical and freshwater runoff flow into the waters of the Sound. The number of soft corals in the area has been reduced along with the number of juvenile lemon sharks caught during a yearly census. Since 2003, the sea grass beds closest to the development have seen a 46% decline and collectively all of the sea grass beds in the North Sound have seen a 20% decline. Spiny lobster and conch, staples in the local fishing community, rely on the sea grass for food and habitat along with the endangered green sea turtle.

However, it is not all bad news. The lagoon located in the North Sound of Bimini is possibly the most investigated marine nursery in the world, drawing scientists from across the globe. It also supplies the marine tourism-dependent area with fish and lobster. Both scientists and locals see the potential revenue the resort will attract, but they do not want the valuable natural resources to be wiped out as a consequence. Sustainable resorts are possible and mangrove restoration can be extremely successful. It is possible for the existing resort to find a balance between making a profit and limiting further destruction of natural resources and the environment.

The next phase of development has been halted, with the temporary declaration of a Marine Protected Area. Environmental Impact Assessments indicated that not enough information was collected, and so research is ongoing. But if the MPA is not permanently established, it is likely that this region of the Bahamas, its immediate surrounding waters and neighbouring oceans will see massive decline in biomass diversity and density. «

For more information check out www.savebiminibay.org

Juvenile lemon shark in mangroves-Matthew D Potenski

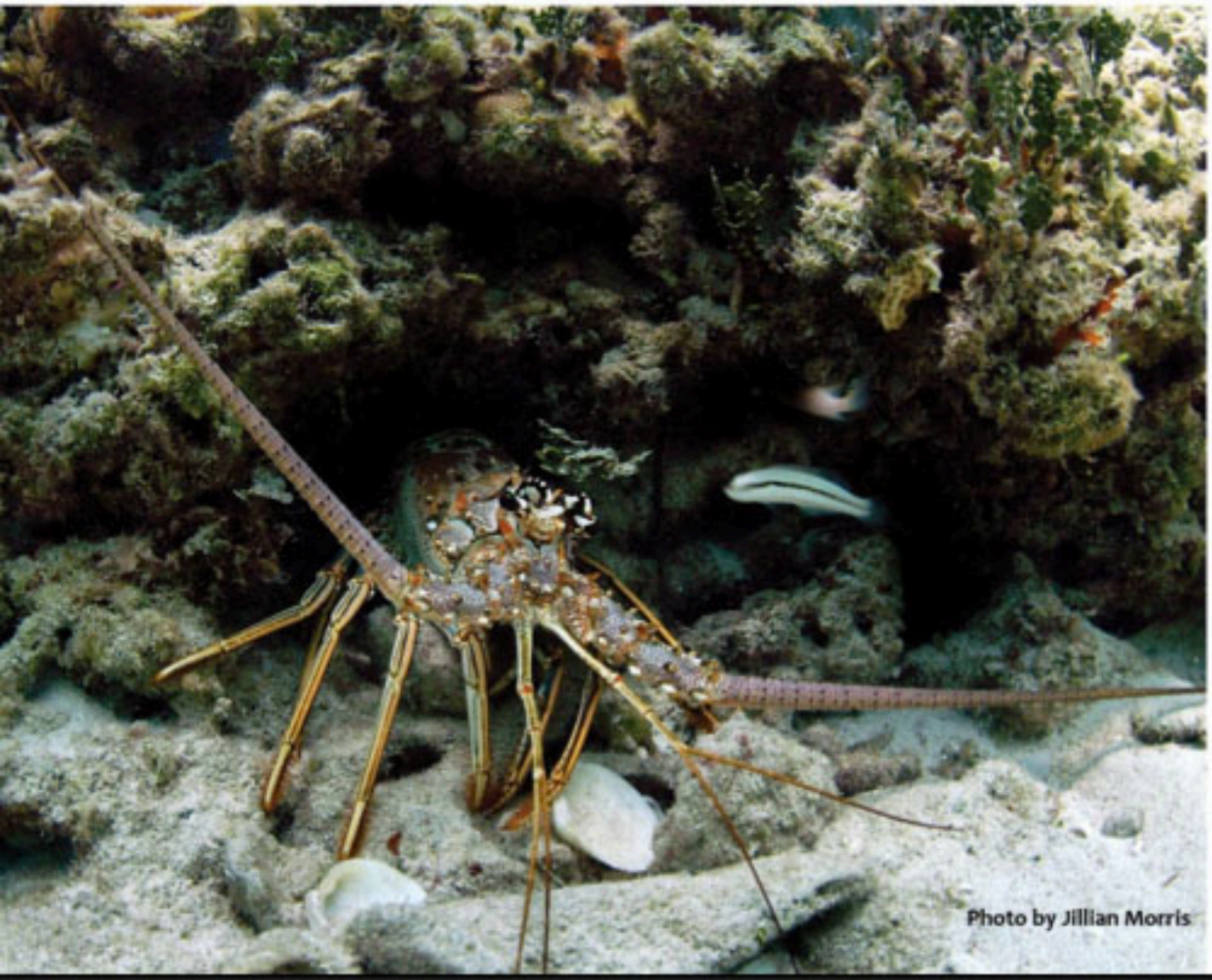


Photo by Jillian Morris