

JNF Helps Reforest the World's Coral Reefs

CORAL REEFS AROUND THE WORLD ARE endangered and while they cover less than 1% of the oceans' area, reefs provide habitat for nearly one third of all saltwater fish species. As islands of high biodiversity, coral reefs are known as the "rainforests of the sea." Losing them would be devastating.

Israeli scientists have invented the leading methodology for restoring coral reefs. Count on the Start-up Nation and JNF to address a local challenge and find solutions that benefit the world.

Coral gardening, created by Prof. Buki Rinkevich of Haifa's National Institute of Oceanography (NIO), bears a remarkable resemblance to JNF's forestry techniques. Just as JNF establishes a forest by raising greenhouses



full of healthy young saplings, and transplanting them in ways that promote survival and propagation, Prof. Rinkevich and his colleagues at the Israel Oceanographic & Limnological Research Institute (IOLR), which includes the NIO, devised an approach of raising coral "seedlings" in protected nurseries to become healthy "saplings," and then replanting them onto a barren or degraded reef.

Fragments of healthy coral are collected and divided into small "nubbins," nurtured in the lab and then transferred to a floating nursery platform in the Red Sea that hangs from buoys and is anchored to the bottom. Suspended in the water column under ideal growing conditions and protected from predators below and storms above, the coral grows more than twice as fast as native corals on the reefs. They are more fertile and produce more offspring, which develop into larger new colonies. Creating marine-protected areas gives these reefs the opportunity to recover, and with time a stronger, healthier coral community emerges.

Today, JNF supports coral research in Israel as it develops into a discipline of ecological engineering that will make active restoration cheaper, faster, and easier to perform. New sophisticated approaches involve using coral nurseries as seed factories instead of as greenhouses, reducing the need to transplant "saplings." In one approach, a nursery is placed upstream from an impacted reef and its larvae reseed the reef naturally. In another,

a series of nurseries placed by eco-engineers between widely dispersed reefs creates a biological corridor that shares diverse genetic material and rehabilitates isolated reefs downstream. These mid-water nurseries attract fish and invertebrates and develop into small floating reef ecosystems, establishing oases in blue waters.

Israel's scientists are sharing coral restoration technology with countries around the world, and projects have been undertaken in tropical seas including the Caribbean (Jamaica and Colombia), the Indian Ocean (Tanzania, Madagascar and Mauritius), the South China Sea (Thailand, Singapore, and the Philippines), the Arabian Gulf, and of course the Red Sea (Israel and Jordan). What could be more "Positively Israel" and more characteristic of JNF than teaching the world how to reforest its oceans?

In the Gulf of Eilat, next steps depend on new funding. The NIO would like to attempt industrial-sized restoration with large-scale nursery production followed by large-scale transplantation in selected areas. Meanwhile, the nurseries can also supply corals for recreational transplantation to popular dive sites, beginning to restore local damage from overuse. Whatever comes next, with JNF as their partner, Israeli marine scientists will continue to lead the way. ■

To learn more about JNF's work in coral reef restoration, visit jnf.org/coral-reef-restoration.