

Six action projects for the enhancement of green turtle nesting habitat at French Frigate Shoals and the possible increase in the numbers of green turtles in the Hawaiian population

by

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1. East Island has 10 concrete foundations from an abandoned U.S. Coast Guard facility which constitute obstructions to turtles and render the habitat unusable for nesting purposes. The largest slab covers 134 m², while the combined area of all 10 slabs is 165 m² or 0.4% of the 4.0 ha comprising East Island. The destruction of these slabs could be accomplished using sledge hammers and a portable jack hammer obtained from a rental agency in Honolulu. The resulting concrete rubble could be transported by a small boat to deep water for marine disposal.

Erosion which continues to occur along the northeast shore of East Island has resulted in the loss of 6,000 m² of land or 13% of the island since 1948. Over 50% of nesting by green turtles in the Hawaiian Archipelago presently takes place on East Island. It would therefore be desirable to make all remaining areas of the island suitable as nesting habitat.

2. In addition to concrete foundations, East Island also contains considerable abandoned debris in the form of wood, stakes, iron, electrical cables, and antenna ground wire. The removal of these obstructions would further enhance this important nesting habitat.
3. Ghost crabs, Ocypode ceratophthalmus and O. laevis, are known to prey on hatchling turtles at French Frigate Shoals. While this predation is low in comparison to many other sea turtle rookeries, it nevertheless involves an estimated 5% of all hatchlings emerging from nests. Further investigations are necessary, and such work could include an experimental ghost crab control program, ideally on Tern and Whale-Skate Islands where the greatest numbers exist. The experimental elimination of ghost crabs along select beach areas could be accomplished with little adverse impact to other entities by using baited traps and a BB gun.
4. Analysis of natural nests at French Frigate Shoals has found that 76.7% of the eggs in each clutch hatch, but only 70.8% of the eggs yield hatchlings that reach the surface and emerge. The remaining turtles, an average of six per nest, remain hopelessly trapped underground where they eventually die. The excavation, salvage, and release of many of these hatchlings could take place with only a modest effort. In order to measure the ability of these salvaged turtles to survive, small rearing studies could be conducted on Tern Island for periods of 5 to 10 days.

5. At French Frigate Shoals, tiger sharks, Galeocerdo cuvier, are known to prey on resident juvenile turtles, as well as mature adults that seasonally migrate to the area for breeding purposes. Experimental shark fishing conducted at this location during recent years has shown that 31% of the tiger sharks captured had been feeding on turtles. An experimental control program designed to coincide with the turtle breeding season could reduce mortality to turtles and provide further data on the nature and magnitude of this predation.

6. Predation on hatchlings by frigatebirds, Fregata minor, has never been recorded at French Frigate Shoals, however, such mortality is known to occur at some sea turtle rookeries. In order to confirm this absence of predation at French Frigate Shoals, a short-term but intensive food sampling program could be carried out concurrent with the peak months of hatchling emergence. If predation is discovered, appropriate experimental management steps could be taken to reduce this loss.

Transplant algae to FFS ?