THE CORAL REEFS OF SWAINS ISLAND, AMERICAN SAMOA

1996

by Alison Green
Department of Marine and Wildlife Resources
PO Box 3730, Pago Pago, American Samoa, 96799

Swains Island is one of only two remote atolls in American Samoa. The island is privately owned and was incorporated as part of American Samoa in 1925, but it is actually situated 370 km to the north near the Tokelau Group. Swains is a ring-shaped island that is surrounded by coral reefs and encloses a large brackish water lagoon. The reef flats are narrow (100 to 300 m wide) and dominated by pink coralline algae. The reef front slopes gently down to about 20 m and then plunges almost vertically down to a depth of >60 m.

Very little was known about the coral reefs on Swains Island until 1986 when the Department of Marine and Wildlife Resources (hereafter DMWR) visited the island. At this time, the reefs were flourishing, water clarity was very high, and there was lush coral growth and abundant fish life.

In February 1987, Swains Island was badly damaged by Hurricane Tusi. Shortly after the hurricane (April 1987), DMWR visited the island to assess the extent of the damage on the coral reefs on the island. Unfortunately, they reported that most of the reefs had been devastated by the storm.

Prior to the hurricane, coral cover was extremely high (90-100%) at the majority of sites around the island. Most of the reef was dominated by branching corals (mostly *Pocillopora* and a few *Acropora* colonies) as well as encrusting and foliaceus species (*Montipora*) and a few massive colonies (*Porites* and *Favia*). After the hurricane, coral cover had been reduced to 0-12% in most places except on the eastern side where a small area had escaped damage.

There had also been a great change in the fish community at Swains as a result of the hurricane. Of particular note was the decrease in the abundance of small species, and a noticeable loss of larger predatory species. Almost one year later (January 1988), another survey by DMWR showed that there had been little recovery since the hurricane. The only noticeable change was an increase in the number of herbivorous fishes on the reef, possibly because of the increase in algae which had grown over the dead coral after the hurricane.

Nine years after the hurricane (March 1996), DMWR visited the island again to assess the condition of the coral reefs. This survey showed that the reefs appeared to have recovered from the hurricane. Coral cover was high (45-65%) and comprised similar species and growth forms to those present prior to the hurricane. Reef fishes were also more abundant and species composition was similar to prehurricane observations. Large predatory pelagic fishes were also common in the near shore waters, including yellow fin tuna, dogtooth tuna, giant

trevally, wahoo and barracuda. In fact, this study recorded a total of 131 fish species on the reefs at Swains. Previous surveys of the island also recorded an additional 32 species that were not seen on this survey, bringing the total number of fish species recorded at Swains to 169.

The coral reefs at Swains are characteristic of those found on remote oceanic atolls. As such they are more similar to the reefs at Rose Atoll than they are to those found on the other islands in the Samoan Archipelago. Coral species diversity is low compared to the other islands, but coral cover is high.

Fish species diversity is also low compared to the other islands, although fish biomass is high. The fish community on the reef front at Swains is dominated by planktivorous species, especially damselfishes (*Chromis acares*) and fairy basslets (*Luzonichthys waitei*, *Pseudanthias bartlettorum* and *Pseudanthias pascalus*). In general, there are more large fish at Swains than on the other islands, especially snappers, reef sharks and trevally. In contrast there are fewer herbivores (surgeonfishes and parrotfishes), although unicornfishes are relatively abundant. The fish community at Swains is also characterised by a group of species that are either absent or rare on most of the other islands in American Samoa: one angelfish species (*Centropyge loriculus*), two species of surgeonfish (*Ctenochaetus hawaiiensis* and *Zebrasoma rostratum*), two species of fairy basslet (*Luzonichthys waitei* and *Pseudanthias bartlettorum*) and a wrasse (*Pseudocheilinus tetrataenia*). Eels, surgeonfishes and damselfishes were also abundant on the reef flat, although the species that were abundant (*Siderea thyrsoidea*, *Acanthurus nigoris*, *Pomacentrus glauca* and *Stegastes fasciolatus*) were different to those that were common on the reef front (see above).

Only one giant clam (*Tridacna maxima*) was seen on the survey, which was the first time that giant clams have been recorded at Swains. This clam was a 13 cm individual that was seen on the reef slope south of the ava at Taulaga at a depth of 10m. No turtles, marine mammals or crown-of-thorns starfish were observed on this or previous trips.

In summary, the reefs of Swains Island have recovered well from the devastation of Hurricane Tusi and are among the most spectacular in American Samoa. They are in extremely good condition with lots of live coral and an abundant and diverse fish community. This, in combination with the steep drop-offs and exceptionally clear water conditions, make diving at Swains among the best in the Samoan Archipelago.

Acknowledgements
Special thanks to Captain Wally Thompson for the opportunity to visit this beautiful island and spectacular coral reef. I also thank Fale Tuilagi and Elia Henry for their usual expertise at organising and implementing a diving project on a remote atoll. This report draws heavily on the results of three previous trips to Swains Island in 1986, 1987 and 1988 by David Itano.

11 April 1996