

## Tonga's Precious Coral Reefs Abused and Broken

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The Government of Tonga is concerned about the health of the Kingdom's coral reefs. Not long ago no one would have thought twice about such a thing. Coral was everywhere in Tonga's shallow water and if anything, people considered it a problem because its sharp branches made it hard to walk on the reef and fish hid deep inside its many holes and caves, making them hard to catch.

Even today many people think of coral as a rock, not something which is alive and could be either healthy or sick. But corals are living animals and, like any other animal, they get sick and die. This has been a bad generation for the living corals of the Kingdom. Many areas of living coral reefs have died.

### *Corals are Dying*

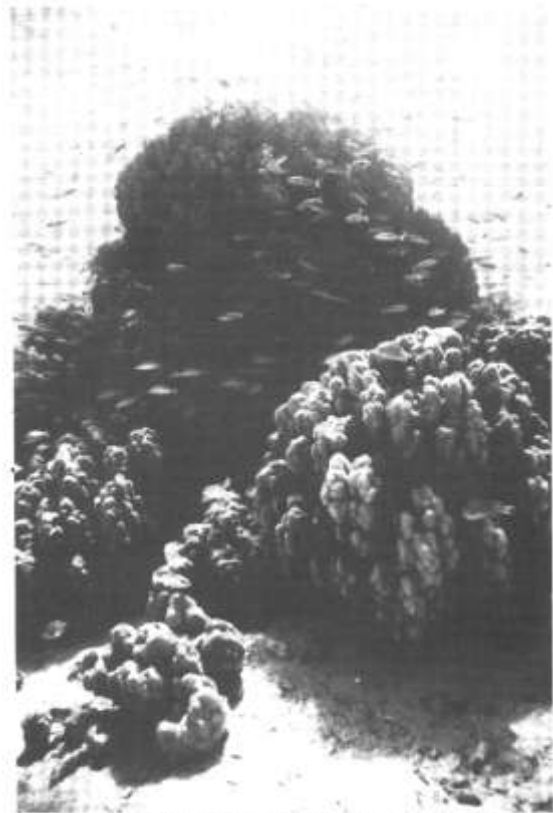
First I would like to tell you why it is bad for the corals to die. Then I will explain why they have been dying. This way you can understand why the government is concerned and what you can do to help.

Corals are one of the oldest kinds of animals of the sea and are important, perhaps the most important, member of the shallow water undersea world of the tropics. Corals grow very slowly. Some branching yellow and blue corals can grow one inch a year. The round, solid corals grow more slowly; some one quarter of an inch a year; some one half an inch a year.

A big round coral head five feet in diameter is more than 200 years old. Most corals you see on the reefs of Tonga are smaller and younger than that and research shows there are corals which only live two or three years and never grow very large. Depending on the reef the age of the average coral may be only 20 or 30 years.

In a village, the average age of the people who live there might be 15 years but the village in which the people are living can be more than 200 years old. A coral reef is like that. The corals living on it today may average 20 to 30 years old but the coral village itself is actually many thousands of years old.

In fact, the coral reefs in the Kingdom of Tonga today, the ones we are familiar with, are the same coral reefs which were here when people first came to these islands thousands of years ago. They are a priceless Tongan heritage. They have been there, those living corals, growing, giving birth to new baby corals, and dying through the years, producing, as they worked, homes for fish and shells, and protection for the islands from storm waves. The Tongan people have used the food from these undersea villages since they got here. Probably, they would not have been able to survive here



*A patch reef with living corals in Vava'u, a small undersea village which is home to many kinds of fish and other sea life*

'without the coral reef's supply of food so, in a very real way, the Tongan people of today would never have existed without the living coral reefs.

## ***Slow growth***

The slow growth of all the living corals on a reef, over thousands of years, builds coral reefs. Some coral reefs are so big they have become islands. With the exception of the volcanic islands along the western edge of Tonga, the people of Tonga live on top of very old coral reefs. You only have to look in a quarry or dig in the ground to find the long dead skeletons of coral.

You can see how important the living corals are to Tonga. They have built the islands and have given food for the people to survive with. They are still helping to build islands and to protect the shores from big waves during storms by growing slowly, year after year after year. Scientists are saying the sea will rise between one to three feet in the next 40 years. The Government of Tonga, like many other Pacific Nations, are worried about what rising sea levels will do to the low-lying coastlines of some islands. It is interesting that the growth rate of corals is about the same rate as the average predicted rise in sea level. If the coral reefs are healthy and alive the living corals might be able to grow upward enough to help protect the shorelines from being destroyed by storm waves. Tonga really needs its living corals now.

## ***Fish homes***

Where living corals grow they form the homes, the underwater islands and villages, for many kinds of fish and shells and other things the Tongan people like to eat. Fishermen know the best fishing will be where the coral is very well developed and alive. Women and children know the best shells are found in places where there is live coral. This is true because the sea life of the shallow water areas of Tonga, depends on the living corals in many ways. Just like birds depend on trees. Just as Tongans depend on their islands, their village and gardens.

There are many animals and plants which depend upon living coral. When the coral dies all these animals begin to go down in numbers. If the coral dies and does not come back after awhile most of the fish and shells will go.

Why should the coral of Tonga die? They are so big and there are so many of them it seems as if nothing could harm them. About 50 years ago, that was true, very little the Tongan people did could harm the living coral reefs. But times have changed.



*A close look at an injured coral in Vava'u. The branches at the top are infected with a cyanophyte bacteria killing the coral. Infections are very common where coral is broken often.*

## ***Modern tools***

This is the first generation of Tongan people who have easy access to the modern tools of technology. Only 20 years ago there were not many face masks and flippers in Tonga; today there are thousands. Only 30 years ago there were not many Tongans walking on the coral reefs with shoes and boots. Today almost everyone who walks on the reefs wears shoes or boots. Forty years ago most people fished with traditional methods; today almost all fishermen use monofilament nets, iron poles, spear guns, monofilament lines and steel hooks, and have access to a boat with a motor or outboard motor so they can work reefs further from where they live. Today there are more fishermen than ever before and more people who walk the reefs looking for food.

This makes a big difference to the corals. Before, when people walked without shoes, they were careful because live coral is sharp and cuts bare feet and ankles. Today, wearing shoes or boots, people walk where they please and step on many live corals. This injures them because although corals have very strong skeletons, the living part is just a thin, very soft skin on the outside. Young boys wearing boots run through beds of small corals, crushing and killing them for fun. Their mothers pay no attention at all.

Women use hammers and steel knives and men use iron poles when walking on the reef looking for Huluhuh or shells. They break and turn over many live corals as they look. The broken corals die.

Shells and fish lay their eggs under live corals and under dead coral rocks. When people turn live or dead coral rocks over looking for shells, the eggs dry out in the sun and die. There can easily be thousands of eggs under a single rock and if they are killed, many thousands of little fish and shells will never be born. People should never turn over living corals. And when they turn over dead rocks, when they are through looking for shells, they should put the rocks back just the way they found them so the eggs will survive.

Fishing methods Sometimes, people still catch octopus (feke) with lures but most fishermen now simply bust away the reef to take a feke. When they break the coral to take the feke they destroy a feke-home where another feke could have come to live. If they break the home of a female feke protecting its eggs, the hundreds of baby feke still in their eggs die. The old way of lure fishing made sure there would always be plenty of feke. The new way of fishing can ruin the fishing for feke for everyone.

Fishermen now have very big monofilament nets which they sometimes put across the entrance to a shallow lagoon or around a big thicket of branching coral. Then some of the fishermen go inside with poles and masks and break the coral to small pieces to frighten the fish into the nets. If it is shallow they wear shoes and break many small corals, too.

When fishermen take kukukuku from the reef they put an iron bar into the shells of the vasuva and break it loose from the reef, often breaking many corals around the vasuva.

## ***Commerce***

There was, not long ago, a foreign fishing boat, working in partnership with a Tongan man, which fished everything from the coral reef by putting down a big heavy steel bar with a drag net made of chain. They pulled this through the coral and broke everything, ruining the coral. Even today you can go and look in the places they did this and the reef is dead and the fish gone. These people were stopped by fishermen who were very angry about the destruction of their fishing grounds.

There are people who take coral from the reef to sell overseas. One man in Tongatapu was taking all kinds of corals from the reef to send overseas to be sold as decorations. One of Tonga's most valuable resources would, if this man was allowed to continue, become dusty, broken decorations in some European apartment building for a few years and then thrown into the garbage. This man had a huge pile of corals behind his house and his boat was filled to nearly sinking when he came in with it filled with coral. He did not have a permit to export this coral and when he was

discovered, the government stopped him from doing this.

## ***Coral mining***

In Vava`u, another coral mining operation began in 1988. The men involved say they want to take one particular kind of coral to sell to a company in the United States to be used to make artificial bones. While this is a better thing to do with coral than selling it for decorations, the men want to take quite a lot of it and the government must be sure they are doing what they say and that there will be no damage to the rest of the coral reef when the coral is taken.

## ***Problems***

Breaking living coral can cause many problems. Some of these are not obvious and, because the undersea villages are so old and so complicated, even scientists do not understand all the problems breaking coral causes. Some problems do not happen right away and breaking coral on the reef today may cause very serious problems several months later or even several years later.

## ***Coral diseases***

Sometimes coral is broken by big storms. Normally, this happens only once every five or 10 years. In Tonga, big cyclones, the kind which can break and kill much coral, have been rare. The years between storms give broken coral time to heal and regrow. If a coral is broken, it can regrow from the broken part. So, after a big storm, the coral reef can heal itself; like a person can heal a broken bone or a cut in the skin.

But today, the coral is being broken every day. There is a disease called *Oscillatoria* which is a cyanophyte bacteria that infects broken coral. Because of the constant breakage of coral during the past 20 years, this coral disease is now common in Tonga. Whenever a coral head is cut or broken - even a small cut from a flipper or a boy stepping on a coral - it can become quickly infected and in two or three months even large and old coral heads can die from the disease.

Whole sections of Tonga's coral reefs are now dead, especially in shallow water near villages where breakage is most common. These reefs do not produce as much food as living healthy reefs. It is important to prevent coral breakage in areas where the coral is now alive and healthy to prevent the spread of this disease. Breaking living coral can cause plagues of the crown of thorns starfish.