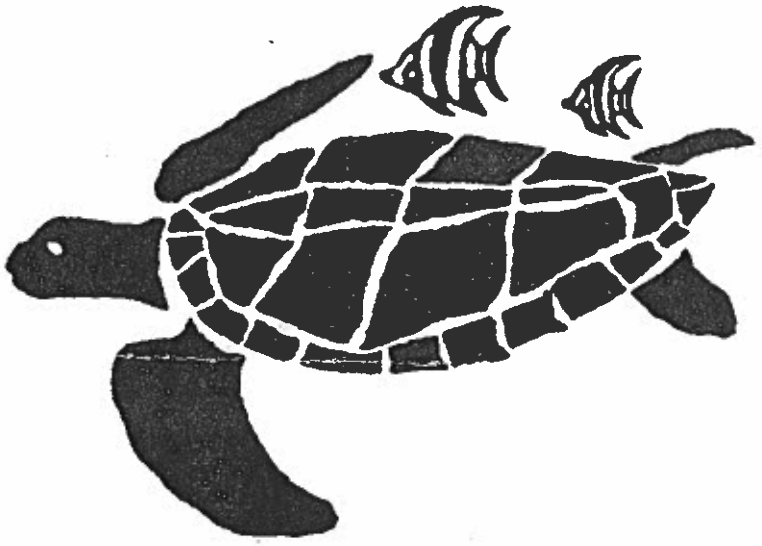
Marisa Jamson

Project Utila

A joint British-Honduran expedition to the Bay Islands of Honduras with members from the Universities of Newcastle, Edinburgh, Heriot-Watt, and the Universidad Nacional Autonoma de Honduras.



Preliminary Report 1997

HERIOT-WATT UNIVERSITY
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WATER OF LIFE

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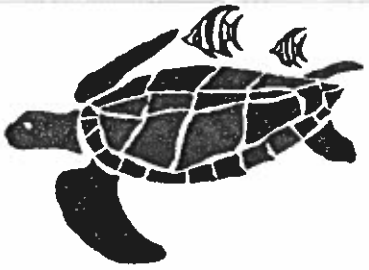
INTERNATIONAL YEAR of the REEF 97

Project Utila 1997 has the official approval of the Royal Geographical Society and International Year of the Reef, and is supported by Guinness PLC's Water of Life Initiative.

Project Utila



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Acknowledgements

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Project Utila is dedicated to the memory of Mark Smith

Section 1.

Introduction

In 1995, Project Utila was launched to study the marine ecosystems of Utila, a small Caribbean island that lies just off the north coast of Honduras. From its outset, the project has involved students from British Universities and has established strong links with students from the Universidad Nacional Autonoma de Honduras (UNAH) located in the Honduran capital of Tegucigalpa.

The primary aim of the project is to continuously monitor the state of the stunning coral reefs that surround Utila. The data from this work can then be used in two ways: firstly by the Honduran government, the Honduran university (UNAH) and regional conservation groups to help with the effective management of Utila's marine resources; and secondly by global coral reef databases, to help increase our overall understanding of coral reef community dynamics.

Each year a number of smaller scientific studies are carried out by the Project Utila team. Most of these studies have concentrated on the areas around Utila that are designated as marine reserves or proposed marine reserves, once again the data is then used to facilitate the effective management of these areas.

Finally, Project Utila has shown a commitment to community based projects such as education in the local schools and the training of our Honduran counterparts. Through this work the project hopes to promote the continued conservation of the marine ecosystems of Utila.

This year a core team of twelve students, eight from the U.K and four from Honduras, along with a number of other British and Honduran volunteers returned to Utila to continue the project work. The achievements this year were as follows:

- The five baselines laid down around Utila in 1995 were resurveyed, providing a third year of data for the reef monitoring programme.

- A team of diving Honduran students were fully trained to carry out the reef monitoring programme meaning that they can now continue the surveys in future years.

- The seagrass beds in the marine reserve of Turtle Harbour were fully mapped, and surveys were carried out to establish whether there is a link between fish species and seagrass density.

- The abundance and distribution of the coral disease known as black band disease was estimated at three sites around Utila.

- The team took part in a global monitoring programme known as REEFCHECK as part of International Year of the Reef (IYOR).

- Surveys of the local dive schools were carried out to allow us to make an estimate of the number of divers going down on Utila's reefs in 1997.

- Marine ecology lessons were carried out in one of Utila's schools to help stimulate interest about the importance of the marine environment.

The aim of this report is to provide an account of the work carried out in 1997 by the Project Utila team and to present some of the preliminary results. A full report with the complete statistical analysis of this years work and incorporation of the results of the last two years will be completed in 1998. Copies of the final report will be distributed to the following organisations: the governmental body in charge of the coastal regions of Honduras (COHDEFOR); the universities involved in this years work, namely UNAH, Newcastle upon Tyne, Edinburgh and Heriot-Watt; The Bay Islands Conservation Association (BICA) based on Utila; any global coral reef databases that may find the work of interest; and finally to the many organisations that provided funding for Project Utila 1997.

Section 2.

Reef Monitoring Programme.

Coral reefs have survived and flourished over millions of years despite great fluctuations in climate and sea level. However the increasing kinds and scales of human impact on coral reefs have raised fears of their widespread loss. The loss of reefs would consequently mean the loss of the many benefits that reefs provide for human society, such as a source of food and income.

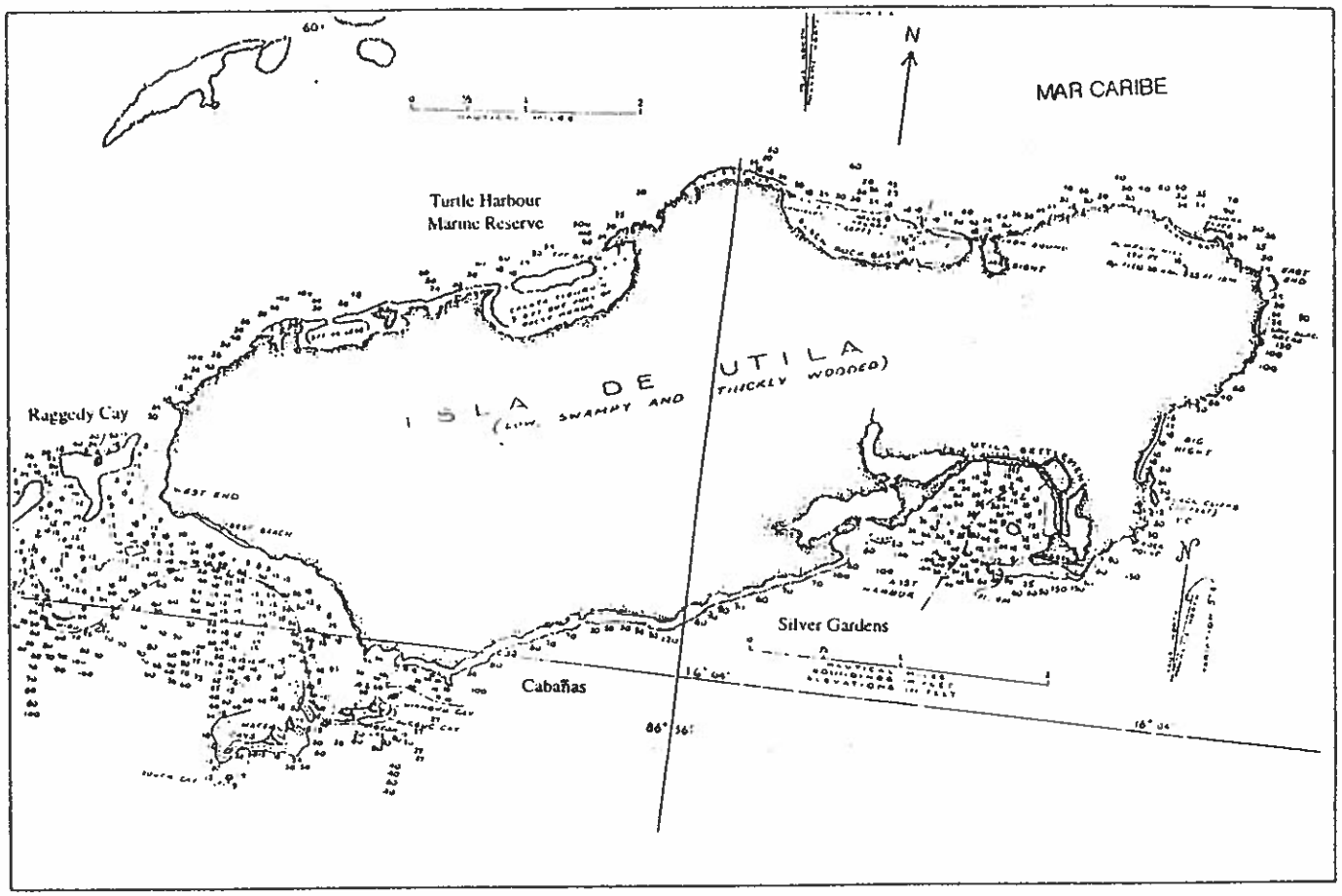
Scientists and conservationists have been reporting for many years that coral reef systems are under increasing stress world-wide from both natural and human induced impacts. Some of these stresses include: sediment run off from dredging or land clearing; nutrient influx from sewage; damage from boat anchoring; over-fishing; coral diseases; and coral bleaching. Monitoring of coral reefs over long time periods is the only way we have of assessing the rates at which coral reefs are degrading or recovering, and is essential in the process of identifying probable causative factors, and to determine the effectiveness of management measures.

It is for this reason that Project Utila considers it important to continue with the reef monitoring programme over the next few years to allow us to build up a picture of reef community dynamics, and to assess whether human induced impacts are having a deleterious effect on the reefs.

Reef Monitoring Methods.

A total of five 100m baselines at three sites were marked permanently by the 1995 Project Utila expedition. Due to the fact that scuba diving impact is considered to be a factor in reef degradation, and that diver pressure is relatively easy to estimate, the location of the baselines were chosen based on diving pressure around the island. The data on the areas dived was gathered from a questionnaire completed by all of the dive shops in July 1995. The baselines are located at Silver Gardens and Cabañas on the southside, the most heavily dived and least dived sites respectively. The third site supposedly affected by diving is in Turtle Harbour, the most heavily dived northern side site (Map 1). With an exception of Turtle Harbour there are two baselines at each

site, making a total of five baselines. The first of the two baselines is located immediately



Map 1. The island of Utila. The map shows the small town on the south side of the island. Also shown are the study sites (Cabañas, Silver Gardens and Turtle Harbour) used by Project Utila

beneath the mooring buoy and the second is located 100m away. The distance between baseline 1 and 2 should ensure that the two baselines are situated within the same reef community type, whilst the displacement allows the assumption to be made that the second baseline is in an area of lower diving pressure.

The baselines are divided into three depth zones: <10m; 10-20m; and 20-30m. Due to safety and time constraints no surveys were undertaken at depths greater than 30m. Transects running perpendicular to the baseline at randomly generated distances along the baseline were surveyed by teams of four divers. Each diver was responsible for surveying a different aspect of the reef community:

Diver 1 surveyed hard corals using a line intercept method along a 10m line transect.

Diver 2 surveyed soft corals and sponges within a 10m by 1m belt transect.

Diver 3 surveyed fish within a 50m by 4m transect.

Diver 4 recorded an estimate of the substrate type using a line point intercept method along a 50m transect.

Training

Before we could commence any diving work it was important that all team members had good buoyancy control so that whilst surveying no corals were damaged by survey divers. The safety of the team members was also considered to be of the utmost importance. The first few days of the trip therefore were spent practicing bouyancy skills and safety procedures. Due to the intense nature of the diving (two dives a day, six days a week) all dives were carried out within the no-stop limits of the BSAC sports diving tables. No diving activities were carried out deeper than thirty meters, and a safety stop of 3 minutes was incorporated into every dive.

It was necessary for all team members to learn to recognise and identify, through snorkelling and books, forty species of coral and one hundred species of fish (both adult and juvenile forms). Much to the teams chagrin, everyone had to pass an exam before they were allowed to carry out any surveys, it was felt that this would ensure accuracy of identifications and hence survey results. Several practice runs of the survey methods were carried out before baseline work commenced.

One of the main aims in 1997 was to train the Honduran team members to carry out the reef monitoring work using scuba diving. The aim being to allow the Hondurans to continue the surveys in future years without the assistance of the U.K team members. The training aspect of the work was a major undertaking and one that took up much of the first few weeks of the project. Some of the team had had little or no diving survey experience at the beginning of the project, and it took numerous practice dives before the whole team felt comfortable that they were carrying out the surveys smoothly and efficiently. However by the end of the expedition every team member's diving skills had dramatically improved and I felt we had become a highly accomplished group of survey divers.

Results

Full analysis of reef monitoring programme results from this year will be available in the final report which will be completed in 1998. For the results of the last two years, see the Project Utila 1996 Final Report.

Section 3.

Dive School Surveys

As in previous years, surveys of Utila's dive schools were carried out to ascertain the intensity of diving on the reefs surrounding Utila in 1997. There are currently 12 dive shops on the island (one less than in 1996). Each dive school recorded the total

number of divers each day at each dive site over a seven week period. The number of Open Water Students was also recorded as novice divers are more likely to have difficulty with buoyancy control and hence may have a greater impact on the reef.

On average about 6 dive schools completed and returned the survey forms each week. Since this accounts for only half of the dive schools on the island and does not take into account any dives by resorts or privately, these figures do not represent the full extent of diving intensity on Utila's reefs.

A total of 5,703 dives were recorded over the 7 week period, of which 1,260 (22.1%) were training dives by Open Water Students. It is difficult to make a direct comparison with last year's results since more dive schools took part in the survey last year and the survey was also conducted over a longer timescale. However, when the data is analysed by the number of dives per school per week this indicates that there has been a 22.4% increase in the numbers of divers each school is putting down each week. Despite the fact that the number of dive schools has decreased over the last year, these results indicate that there has actually been an increase, in the region of 13%, in the diving pressure that Utila's reefs are being subjected to this year.

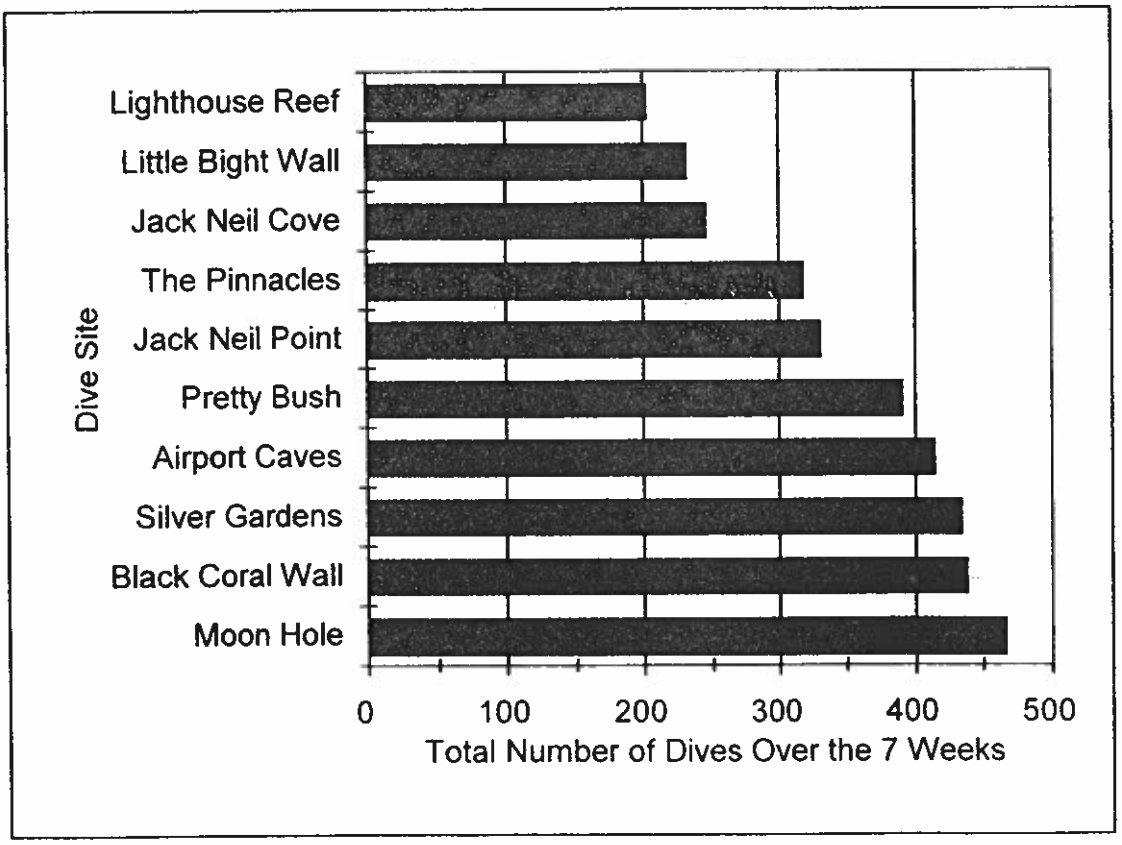


Figure 1. The total number of dives recorded on Utila's reefs at the top ten dive sites over the seven week period between July and September 1997.

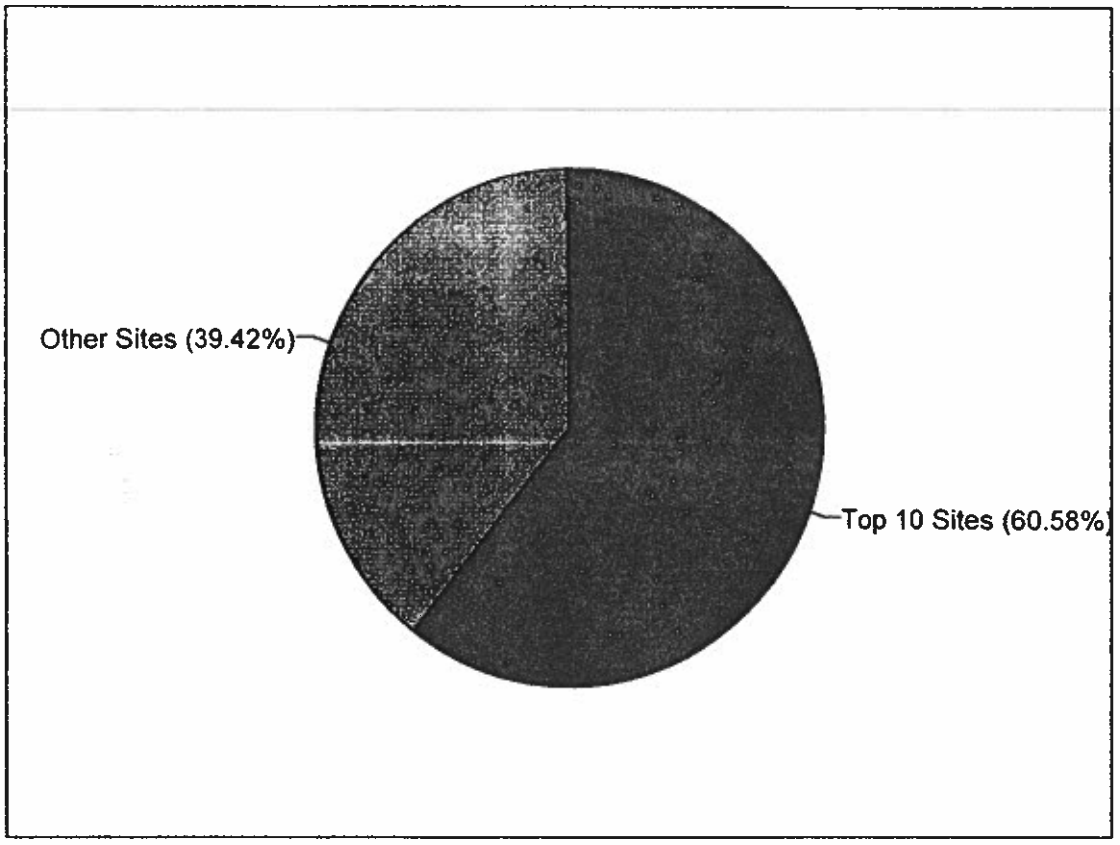


Figure 2. The proportion of dives at the top ten dives sites as a percentage of all dives over the seven week period. Diving was recorded at 55 sites around the island but the ten most popular sites accounted for 60.6% of the total number of dives during the survey. Although the most popular site this year did not feature in the 10 most popular sites last year, six of the other sites were included and hence are still receiving a disproportionally large number of dives.

Section 4.

Black Band Disease Studies

Black band disease (BBD) is a well known disease of tropical, hard corals. It was first reported in 1973 affecting hard corals in the Caribbean, but has since been reported in locations such as the Red Sea and Indo-Pacific. The disease is easily recognised, it is characterised by a black to dark brown algal band composed of tightly woven filaments spread across the coral colony. Coral polyps are killed as the band advances, leaving only white limestone skeleton behind.

The disease is thought to be caused by a blue green algae known as *Phormidium corallyticum,* however there are a host of micro-organisms within the band. The band moves horizontally across the coral colony, killing the coral tissue as it advances. The exact mechanism that kills the corals is not known, however coral colonies afflicted with BBD will almost always suffer complete or partial mortality.

There is little quantitative data on the abundance of BBD on reefs around the world. Reports suggests that only a small proportion of Caribbean corals (i.e. <2%) are affected. Nonetheless, aggregations of BBD have been observed with as many as

ten diseased colonies being found within a 2 m radius, BBD is therefore considered to be an important factor in reef degradation.

It is not known if BBD is highly infectious between coral colonies, if this is the case one would expect the disease to have a clumped distribution on the reef. Clumped distributions of BBD have been observed in some locations, suggesting the disease may be locally infectious between colonies under certain environmental conditions i.e. only when there is sufficient water movement or during periods of elevated temperatures. The disease is thought to occur naturally, however the incidence of BBD may be increased by human impacts such as pollution.

Black band disease has been found around Utila particularly affecting smooth brain coral (*Diploria strigosa*). The aim of our study was to assess the abundance and distribution of BBD on Utila's reefs. To do this, no less than 36 circular searches were carried out by divers at three locations (Silver Gardens, Cabañas and Turtle Harbour). The data will be used to assess whether the disease shows evidence of being locally infectious. Furthermore a permanent Black Band disease monitoring site which was set up in 1996 was remapped to assess the extent of recovery or reinfection of the corals from BBD.

Results

A total area of 11,304 m^2 of shallow reef was searched exhaustively by divers. All live coral colonies of the following BBD susceptible species were counted: smooth brain (*Diploria strigosa*); giant brain (*Colpophyllia natans*); grooved brain (*D. labyrinthifomis*); mountainous star (*Montastrea annularis*); cavernous star (*M. cavernosa*); and smooth starlet (*Sidastrea siderea*). A total of 14,434 of the susceptible colonies were counted, on which only 7 active BBD's were found (a percentage abundance of 0.05%). All of the BBD's were found on colonies of smooth brain coral.

The abundance of BBD on Utila's reefs is lower than that found at two other Caribbean locations (US Virgin Islands, 0.2%; Florida Keys, 0.7%) using identical survey methods. A greater abundance of BBD was found at Turtle Harbour than at the south side sites (Turtle Harbour, 0.1%; Silver Gardens, 0.05%; and Cabañas, 0.00%). The lower abundance on the south side may be due to the heavier wave action on this side of the island as it is thought that BBD requires relatively still water conditions for infection to occur.

Section 5.

Work in Turtle Harbour Marine Reserve

As in previous years, Project Utila'97 carried out work in the marine reserve of Turtle Harbour. This year our aim was to map the extensive areas of seagrass in the marine reserve and to investigate possible relationships between sea grass density and number of fish species.

The results of this work will provide BICA and other groups with valuable information about the reserve. Additionally the project presented the team with an

interesting logistical exercise. To carry out the work it was necessary to utilise kayaks, snorkelling gear and numerous ropes, flags and compasses.

Areas of high, medium and low sea grass density were identified by divers swimming along transects from mangrove to reef, stopping every ten metres to count seagrass shoots. With this information it was possible to identify an area of particular seagrass density and then carry out random fish swims within that area. Furthermore, with the use of bearings and co-ordinates, it was possible to pinpoint accurately any position within the harbour. This will allow sea grass density as well as distance from the shore or the outlying reef to be incorporated into subsequent calculations.

Section 6.

International Year Of the Reef 1997

This year has been designated as the International Year Of the Reef (IYOR). IYOR is a collaboration between organisations and programmes that have a common interest in reef management and research. Throughout 1997 a host of activities have been carried out as part of IYOR. One such activity is Reef Check. Reef Check is an international event involving collaberation between divers and marine scientists. The survey was planned as a one off for IYOR 1997, due to its great success however it has now been established as a permanent programme. The goal of Reef Check is to raise awareness of the problems facing coral reefs and to provide a "snapshot" of global coral reef health.

Project Utila decided to carry out a Reef Check survey at the location of Silver Gardens. The surveys involved four divers surveying: abundance of important indicator species of reef fish (e.g parrotfish and groupers); overall coral cover compared to other substrates (e.g algae, rock etc.); and a broad estimate of the level of anthropogenic impact at that site (e.g anchor damage).

Results of Project Utila's Reef Check Surveys

Silver Gardens was chosen as the Reef Check survey site for Utila. Surveys were carried out at depths of 3.5m and 11m, the surveys started at the mooring buoy and moved in a westerly direction.

The average cover of hard coral was high at 29.5%, as was the overall cover of live coral (i.e. hard and soft corals together) at 38.25% compared to the average for the rest of the Caribbean (22%).

No large groupers or barracudas were seen on any of the fish surveys. No conch and only one lobster were found during the surveys of invertebrates.

The results show that while Silver Gardens is an impressive site in terms of coral cover, it has low levels of important fisheries species such as grouper, conch and lobster. I believe that the results are representative of most of the reefs around Utila, and that the low levels of these species are a direct result of overfishing. Sadly, the

same was true for most of the sites around the world that were surveyed as part of Reef Check.

Statement by the Reef Check Organisers

Reef Check 97 Press Conference
October 16, 1997 3:00 pm
Institute for Environment and Sustainable Development
Hong Kong University of Science and Technology

Reef Check '97, the first global survey of human impacts on the world's coral reefs has been completed as part of the International Year of the Reef, and the preliminary results are being released today. Organized by HKUST's Institute for Environment and Sustainable Development, the survey involved over 100 marine scientists and 750 recreational divers who surveyed 300 coral reefs in 30 countries and territories between 15 June and 31 August 1997. The project was badly needed, according to Global Coordinator and coral reef biologist Dr. Gregor Hodgson, "because coral reefs are the rain forests of the sea. They are one of the world's most valuable natural resources, a storehouse of billions of dollars worth of genetic material for drugs and an important factor in coastal protection. They are a tourist attraction for 7 million sport divers and a source of food for several hundred million people. " Sadly," says Hodgson, since 1990 we have been getting reports from sport divers of rapidly increasing damage to reefs all over the globe, but scientific data have been lacking." The few hundred reef scientists in the world study many different aspects of the reef, at different times and places. Traditional coral reef science has not kept pace with the spreading effects of humans on reefs. A new approach was needed to quickly gather comparable data on human impacts from many reefs at the same time.
The Reef Check approach was to create a global network of regional, national and local coordination centers, each being responsible for matching up teams of experienced recreational divers with professional marine scientists. Each Team Scientist was responsible for training the team divers in use of Reef Check methods, then leading them on the actual field surveys, checking and submitting data to headquarters in Hong Kong.
The Reef Check methods differ from those used in traditional ecological surveys in that they were focused specifically on detecting the effects of humans on the coral reef ecosystem. The criteria for choosing Reef Check survey methods were as follows. The methods should:

- *be simple enough that experienced divers with a minimum of a high school education, could be fully trained in less than one day,*
- *allow each team to survey one reef per day,*
- *include a strict quality control system,*
- *produce results that provide scientifically valid answers to key questions about human impacts on coral reefs.*

To focus the field methods on human impacts, both worldwide and regional "indicator species" were chosen based on: 1) their high market value, and

2) ease of identification due to distinctive shape and color e.g. the humphead wrasse as an Indo-pacific indicator of poison fishing, and the lobster as a worldwide indicator of shellfish harvesting pressure. In addition to the 20 high-value seafood organisms chosen. other indicators of human impacts were included such as broken corals (anchor damage) and blooms of fleshy algae (sewage pollution). A large sample size (800 m2) was selected -- an area 100 m2 larger than a soccer field -- to be surveyed twice, once for shellfish and once for fish. A third survey along a 100 m line would be used to determine the condition of the corals themselves. Teams were instructed to survey reefs which they believed were in relatively untouched condition first.

In October 1996, the Reef Check methods were posted on an Internet list server for coral reef scientists run by the US NOAA and professional criticism was invited. The methods were revised, and in January, and posted on a new website created for Reef Check. In addition to methods, the website was also loaded with registration forms, team lists, fund-raising information and even downloadable photos of target organisms. Regional and national coordinators were selected and posted, and teams identified. Many teams needed to raise large sums to cover their travel, hotel and diving expenses. For example, the German coordinators were successful in obtaining sponsorship for a special Red Sea expedition that was featured in a TV documentary.

"Aside from the scientific and educational achievements, this project is a remarkable for two reasons," says Professor Gary Heinke, IESD Director, "first, the project was run completely by internet, and second, the project was almost entirely volunteer. From an investment by IESD of a few thousand dollars in management costs, the project has produced worldwide about US$2 million worth of invaluable data. We are indebted to the hundreds of generous sponsors and volunteers who made the surveys possible."

The preliminary results from about 230 sites are being released today because they reveal such a clear pattern of global damage to coral reefs. particularly due to overfishing and destructive fishing. A full report will be published later this year. The results for lobsters, which used to be abundant on reefs throughout the world, were dismal. None were recorded at 81% of reefs surveyed. In the Indo-pacific region, out of 179 reefs checked only 25 lobsters were found, and 11 of these were recorded at one reef in an Indonesian marine reserve. Large grouper are heavily fished throughout the world, and none were reported at 40% of the study reefs, with small numbers at most. However, more than 20 large grouper were recorded at two sites in the remote Maldive Islands, and at three sites in the Red Sea where no poison or dynamite fishing occurs, giving a hint of what populations used to be like in other areas. In the Caribbean, the highly prized and previously common Nassau grouper was found at only 4 of 51 sites, giving a total of 12 fish.

The corals themselves appeared to be in better shape globally than the fish and shellfish. The mean percentage of living coral cover on reefs was 31% globally, with the Caribbean recording the lowest value at 22%, possibly reflecting recent losses due to bleaching and diseases. In the Red Sea, there was less than half the dead coral (3%), than the other two regions. The ratio of live to dead coral was highest in the Red Sea, suggesting that these reef corals are the healthiest in the world.

One apparent bit of good news is that only 7 sites showed greater than 10% cover of fleshy algae, indicating that nutrient enrichment associated with sewage pollution was not a problem at most of these "good" sites. Sewage pollution may be more important at reefs near urban areas which were not common in this study.

In the Indo-pacific, the humphead wrasse and barramundi cod were once moderately abundant on reefs, but none were reported at 85% of 179 reefs surveyed. Of more than 25 km of Indo-pacific reef surveyed in detail, only 26 humphead wrasse were seen. At the 125 Asian and Australian reefs surveyed, only 5 barramundi cod were recorded. These results suggest that cyanide and other forms of fishing have severely damaged populations of these once moderately abundant species. High-value, edible sea cucumbers used to litter the seabed around many reefs. The three species included in Reef Check were totally absent from 41% of Indo-pacific reefs surveyed demonstrating the extent of over-harvesting. An average of 17 giant clams was found on the Indo-pacific reefs. An indication of what natural populations used to be like was provided by the 150 to 250 giant clams recorded at several protected sites in the Red Sea and Australia.

Hong Kong provides an example of coral reefs subjected to almost every form of disturbance: overfishing, poison and dynamite fishing, pollution and sedimentation. Out of 11 collectible or edible indicator species only two (Trochus shells and butterflyfish) were recorded. Several of these once-abundant species are now effectively extinct in Hong Kong.

In addition to making measurements, each team subjectively assessed the intensity of human impacts at their sites. Based on this, 45% of the reefs were rated as being subjected to low or no human impacts. In contrast, the low numbers of fish and shellfish recorded in the surveys indicate that almost all sites have been affected by heavy fishing of one or more indicator species. One reason for this is that many fishing activities occur at night, when sport divers are not present. In some areas such as the east coast of Borneo, the reefs had not been previously surveyed, and some scientists previously assumed that they would still be untouched. But according to the Sarawak Reef Check team, "99% of the reefs have been damaged by blast fishing."

According to Dr. Hodgson these results are an urgent reminder that "ocean resources are not limitless." The low numbers of edible and collectible indicator species is strong evidence that "coral reefs have been plundered on a global basis." The good news is that results from marine parks with proper management demonstrate the effectiveness of conservation to allow populations of indicator species to recover. High numbers of indicator species were reported from marine protected areas in several countries.

The goal is sustainable use of marine resources. If unsustainable practices are allowed to continue, populations of coral reef organisms will dwindle, many seafood items will become even more expensive than the US$100/kilo now charged, and more fishermen will be forced out of work. International eco-politics may intrude. Some nations have already begun to impose environmental regulations on imports through e.g. "green" packaging rules. Countries whose seafood and fishing industries support cyanide fishing could find all of their seafood subject to import bans by trading blocs opposed to

unsustainable fishing methods.
The world has reached the stage where it is technologically possible to monitor and to manage marine resources. Reef Check works well as a rapid assessment tool, and indicates where additional, more detailed scientific studies are needed. Repeated annual surveys will be useful to determine if management practices are working, and populations of indicator species are recovering. An annual "State of the World's Reefs" report is needed, based on both Reef Check and more detailed studies.
The solutions to the problems affecting coral reefs are well-known and include tighter control of fishing through traditional as well as newer methods e.g. international satellite monitoring of fishing boat movements. Reef Check results clearly show the necessity to increase the number and size of marine protected areas and to improve their management so that they can serve as "seedbeds" for the surrounding areas. In addition, more research and testing is needed on aquaculture of high-value reef species to meet the growing demand for seafood and other products that coral reefs will never be able to supply. And just as education and legislation were used to reduce the ivory trade, a similar effort is needed to reduce demand for cyanide-caught live fish, particularly large animals that have a high value for dive tourism and that contribute greatly to reproduction. Public education is needed in S.E. Asia to teach people why it is not "cool" to eat reef fish larger than a dinner plate. Funding agencies, political leaders and natural resource managers need to focus on implementing these solutions now so that we will all have plenty of reef fish and lobster to eat in the future.

Section 7.

Educational Work

One of the aims of Project Utila 1997 was to continue with the educational work carried out in 1995 and 1996. It was our belief that by fostering a better understanding of the way the marine ecosystem works, and of the interconnections with the terrestrial environment, we would help to spark the interest of the younger generation in the marine environment and perhaps raise awareness of the importance of marine conservation.

We chose to work with the 4th, 5th and 6th grade classes of the Utila Public School. The lessons were carried out by a mixed group of 9 Honduran and British team members each Monday for three consecutive weeks.

On the first day we talked about the basic requirements for an animal's survival, including predatory adaptations and feeding. We used the children's considerable knowledge of marine life to find examples of animals which are predators and prey, and to illustrate the concept of predator/prey interactions. We also talked about how animals use communication and locomotion in order to obtain their basic needs.

On the second day we talked about energy flow, food chains and food webs, and introduced the concept of trophic levels. Again the children used marine

examples they were familiar with to fill out worksheets and to complete a drawing of a Coral Reef Food Web.

On the third day we introduced the concept that an Ecosystem contains a Community, whose organisms have both Habitats and Niches. The theory was backed up using examples of three island ecosystems: Coral Reef, Seagrass and Mangrove. The interdependence and importance of the three ecosystems to island ecology was emphasised. On each day we used games and activities to demonstrate and exemplify the basic ecological concepts.

To finish the educational work on a memorable and fun note, we decided to complete the undersea mural which began on the wall by the public dock as part of Project Utila-96. The children all practised their drawings of marine life - everything from phytoplankton up to sharks - before putting brush to wall. The mural is now the first thing seen by newcomers arriving by boat to the island, and serves as a lasting reminder of Project Utila's work.

Section 8.

Project Utila 1997 Personnel

This year the expedition consisted of 11 core members, 7 from the U.K and 4 from Honduras. In addition a number of volunteers from Honduras and the U.K joined the expedition for short periods to help out with aspects of the work.

United Kingdom:

James Guest, Expedition Leader. 26, final year marine biologist (Newcastle). BSAC Dive Leader, PADI Divemaster. Was the diving officer for Project Utila 1996. Has had previous marine survey experience with Coral Cay Conservation in Belize.

Janine Killough, Communications Officer. 21, 3rd year ecology/spanish (Edinburgh). PADI Open Water. Has previously worked as a teacher in a Honduran bilingual school. Janine co-ordinated the education programme in the schools.

Martin Ellwood, Medical Officer. 26, animal science graduate (Newcastle). PADI Advanced Open Water. Has had previous expedition experience in Indonesia and Africa. Martin is familiar with first aid procedures and treatment of tropical diseases.

Judith Dickson, Diving Officer. 20, final year marine biologist (Heriot-Watt). BSAC Advanced Diver, HSE Part IV Diver. Previous experience as a Coral Cay Conservation expedition member in Belize.

Christa Upjohn, Expedition Treasurer. 22, marine biology graduate (Newcastle). BSAC Sports Diver. Previous marine survey and expedition experience with Frontier in Mozambique.

Moira Johnston, Fund-raising Officer. 33, 3rd year ecologist (Edinburgh). PADI Open Water Diver. Moira co-ordinated the collection of data for the dive school surveys.

James Massey, Equipment Officer. 21, final year marine biologist (Heriot-Watt). BSAC DiveLeader, HSE Part IV diver. Previous marine survey and expedition experience with Coral Cay Conservation in Belize.

Honduras:

Miriam Chantal Rodriguez, Co-ordinator. 22, final year biologist (Universidad Nacional Autonoma de Honduras(UNAH)). Qualified diver with the Honduran Navy. Returning Project Utila team member.

Pedro Portillo Osorto. 23, final year biologist (UNAH). PADI Open Water Diver.

Lorraine Sierra Hodges. 23, final year biologist (UNAH). PADI Open Water Diver.

David Juen. 25, graduate biologist (UNAH). Qualified diver with the Honduran Navy. Returning Project Utila team member. Since working with Project Utila, David has been employed to gather data for the management plan of the marine reserve at Turtle Harbour.

Gilda Ordonez, Honduran Communications. 23, final year biologist (UNAH). Returning Project Utila team member.

Volunteer Members:

In addition to the core members, Project Utila was joined by a number of people, who kindly assisted with the work on Utila and in the U.K:

Tracey Stead, graduate ecologist (Edinburgh).

Charlie Lindenbaum and Iain Macdonald, 3rd year marine biologists (Newcastle).

Cecile Brugere and Emma Whittingham, MSc in ecological economics, and zoology graduate (Edinburgh). Emma is a previous Project Utila team member.

Tomas Peschak, final year marine biologist (Plymouth)

Marilena Rodriguez, biology graduate (UNAH), returning Project Utila team member.

Nigel Binns, though an original core member Nigel unfortunately could not join the expedition in Utila, he helped in the planning and fund-raising for the expedition.

Katherine Bennet, kindly offered advice on the content and structure of the school lessons.

Summary

Expedition Leaders Report

I am happy to say that Project Utila 1997 was a resounding success. I believe that this can be directly attributed to three different factors: to the hard work that all the core and voluntary team members put in, both in the preparation and execution of the project; to the assistance of the funding bodies who kindly offered financial support and with out whom Project Utila '97 would not have been possible; and to the many people and organisations both in Britain and Honduras that offered advice and encouragement throughout.

I believe we have achieved pretty much what we set out to achieve: that is to continue to study and monitor the marine ecosytems of Utila; and to promote the conservation of these systems through education, training and dissemination of information. The details of how we achieved these goals are described in this report. Left now is the task of fully analysing this years data, producing a final report and distributing the results of our work to all of the relevant people and organisations.

The story does not end there however, two points remain: firstly, as a result of the extensive training that took place this year, there is now a team of Honduran diving students ready to carry out the reef monitoring programme independently of the U.K team. Furthermore, the Honduran team have secured funding in the order of £1000 from the Honduran National University to continue with the project work, ensuring that the monitoring of Utila's reefs will continue next year. Secondly, plans for another Project Utila are now afoot, with a team from the U.K and Honduras planning to return to Utila in the summer of 1998.

As I have already mentioned earlier in this report: coral reef monitoring programmes that are carried out over large spacial and temporal scales are essential if we are to gain a better understanding of reef community dynamics; to assess the causative factors of degradation and recovery of reefs; and to address important ecological management questions. The factors mentioned above should ensure that reef monitoring around Utila will continue next year, and hopefully for a number of years to come.