

# A preliminary survey of the coral reefs in Man-o-War Bay, Tobago

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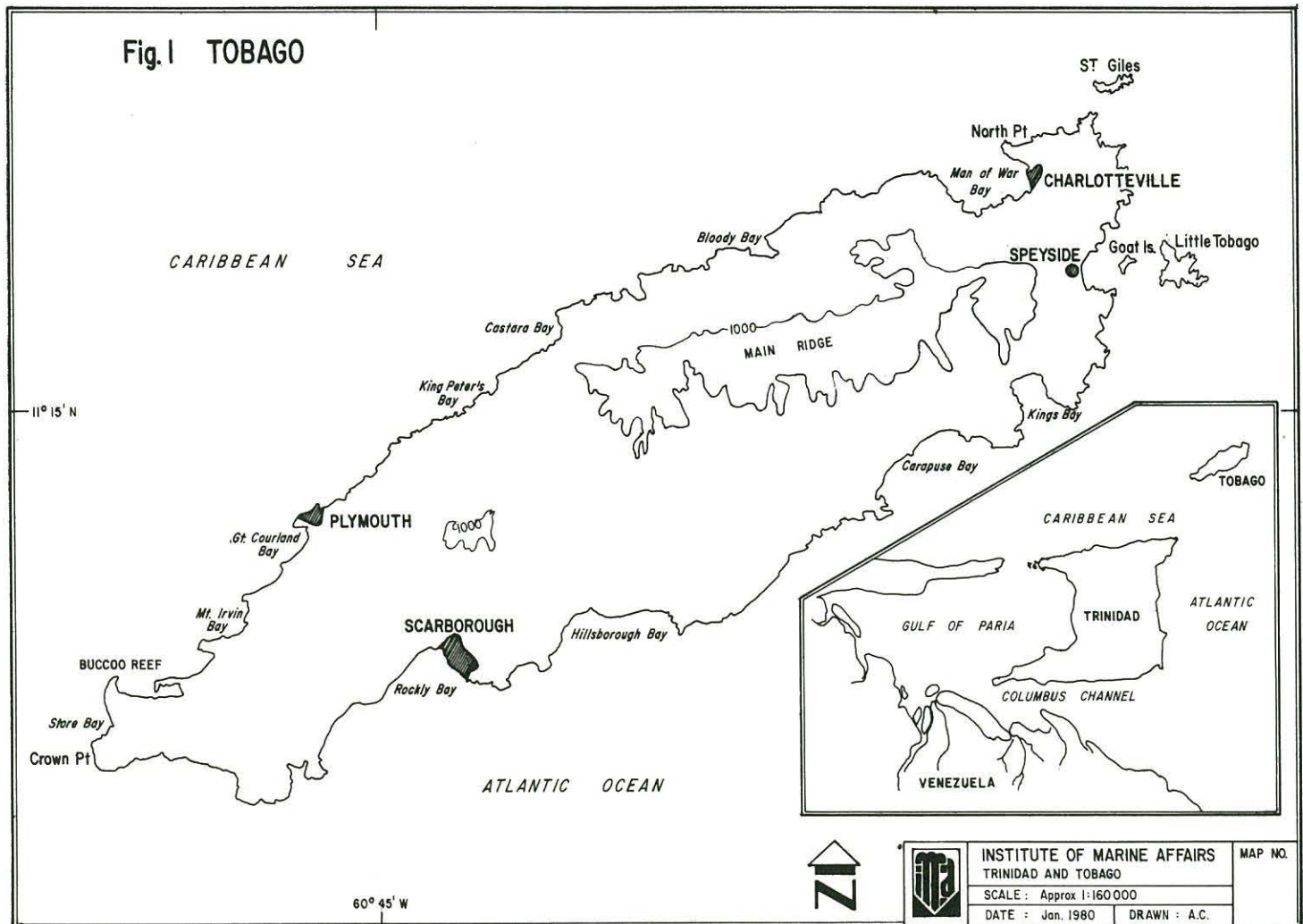
## INTRODUCTION

There are many coral formations around the island of Tobago, with Buccoo Reef being by far the largest and best known. However, there are several smaller reefs, especially at Kilgwyn, Speyside and Man-o-War Bay (Fig. 1) which possess communities that rival those of Buccoo Reef in beauty and diversity.

Studies on the coral reefs of Tobago have been confined

primarily to Buccoo Reef (Goreau, 1967; Kenny, 1976). However, there has also been a preliminary study on the composition of the octocoral fauna on reefs at Speyside, Man-o-War Bay, Kilgwyn and Buccoo (Ramsaroop, 1976).

The reefs of Tobago comprise a prime resource. Coral reefs in general play a critical role in coastal protection, are spawning and feeding grounds for many commercial species of fish, are tourist attractions, and are useful for educational purposes. They are also extremely fragile ecosystems, which are increasingly



being exposed to critical impacts from man's activities. There is an urgent need, therefore, for proper and effective management of these threatened ecosystems. At present, Buccoo Reef is in a state of deterioration, partially because of the dragging of anchors of the reef guide-boats, the trampling and souvenir collecting by visitors, the frequent and illegal removal of commercial species, and increased sedimentation induced by on-shore developments.

One possible way of decreasing the harmful human impacts on Buccoo Reef, is to encourage the use of other reef areas in Tobago. However, before this is done, prudent management strategies must be developed to avoid a recurrence of the problems affecting Buccoo Reef. For this to be accomplished, there must be studies to gather relevant data. Some of the basic data needed would relate to location and size of reefs, species composition and zonation.

This study is an attempt to collect the above data on the reefs of Man-o-War Bay. It is the first in a series of similar studies which would eventually allow for the location and characterization of most of the coral reefs of Tobago.

### MAN-O-WAR BAY

Man-o-War Bay (Fig. 2) is situated in the northernmost

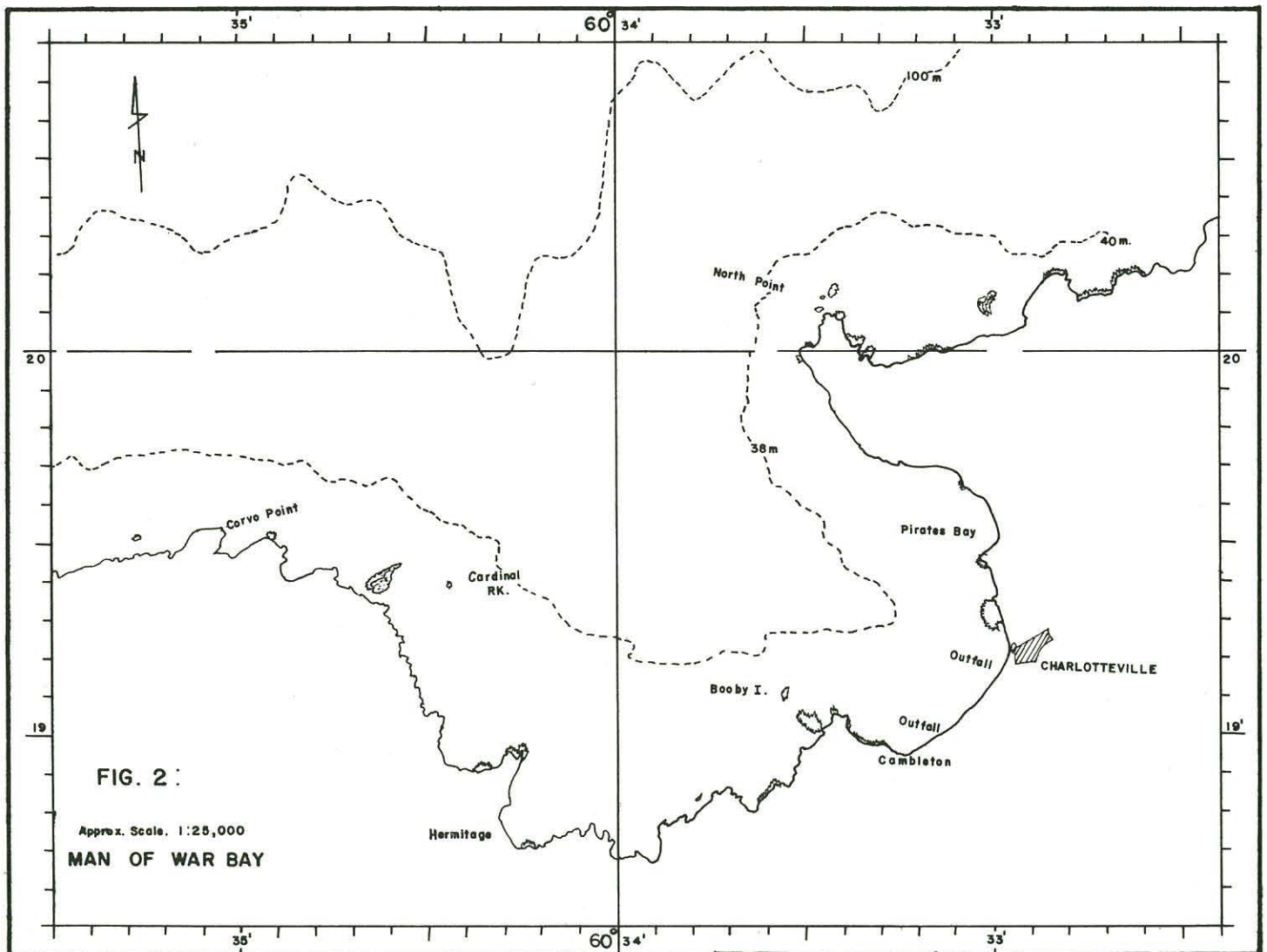
clockwise eddy and the waters are relatively calm, except during November and January when large ground swells are common.

The bay is surrounded by hills which effectively shield it from the prevailing easterly winds. The coastline is precipitous, except where sandy beaches occur. The longest of these beaches extends between the villages of Charlotteville and Cambleton, a distance of approximately 0.5 kilometres. However, smaller beaches are found at Pirate's Bay on the east and Hermitage on the west (Fig. 2).

### METHODS

Observations were carried out using SCUBA in November, 1977. Most corals and fishes were identified underwater. A waterproof fish-watcher's guide (Chaplin & Scott, 1972) proved most useful for identifying fishes in their natural habitat. Fish and invertebrate specimens not easily ascertained underwater, were collected by hand, fish pots and hook and line, and subsequently named. Various texts (Bayer, 1961; Warmke & Abbot, 1961; Bohlke & Chaplin, 1968; Randall, 1968; Smith, 1971; Kenny et al, 1974; Zeiller, 1974; Zeiller, 1975; Ramsaroop, 1976; Voss, 1976) were used to identify the specimens during the study.

Size and location of reefs were determined from aerial



part of Tobago, and faces north. It is one of the larger bays in the island, being just under 2.5 kilometres wide at the mouth and extending as far as two kilometres inland.

The bottom of the bay is covered by sand and mud, except where coral formations occur in shallow water. The seafloor slopes towards the mouth of the bay where depths of around 80 metres are found. Circulation appears to be in the form of a

photographs supplied by the Mapping & Control Section of the Division of Lands & Surveys.

### RESULTS

There are several coral formations in Man-o-War Bay (Fig. 3). Two of the largest are found at Booby Island and Pirates'

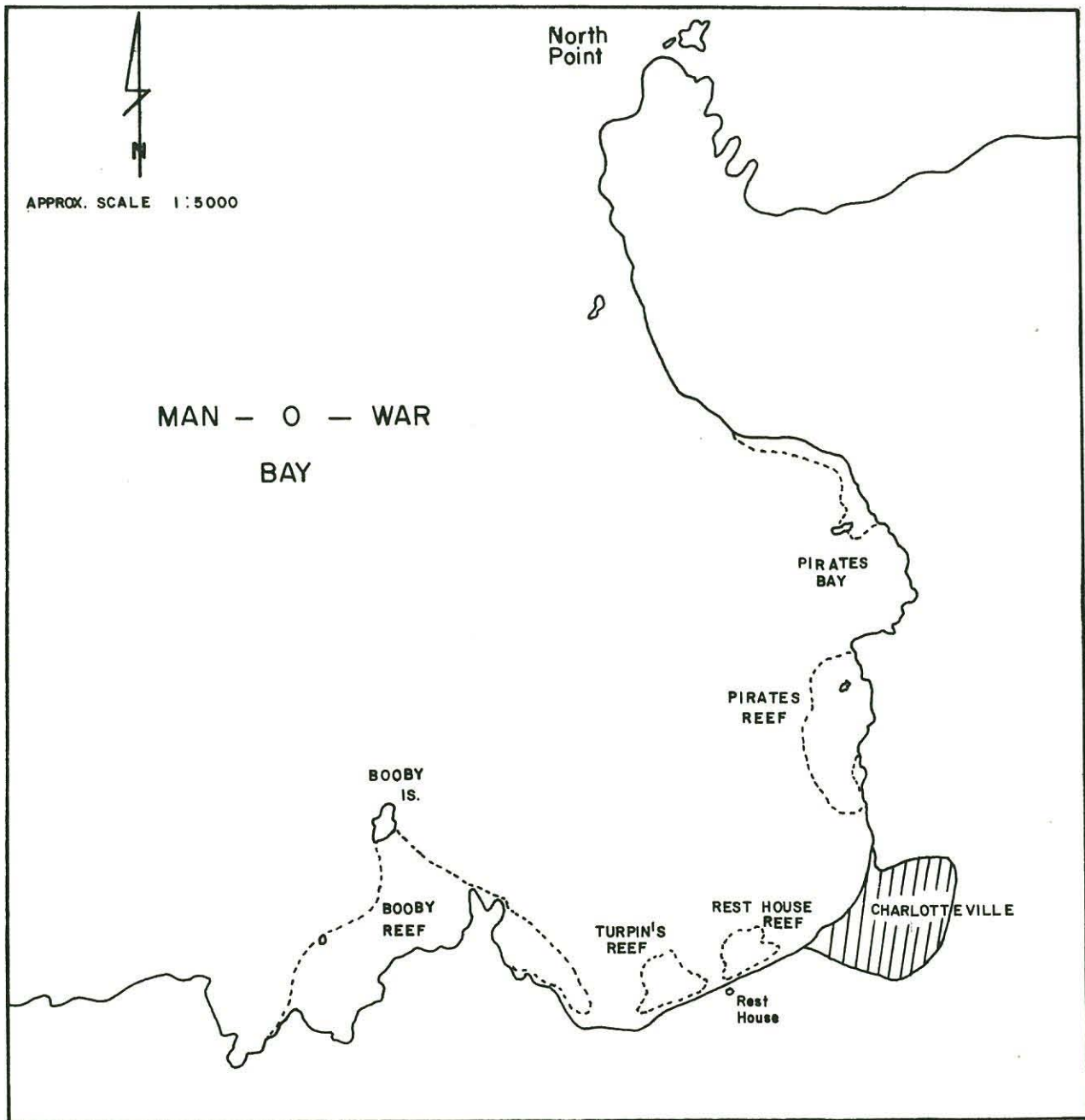


FIG. 3 : REEFS IN THE EASTERN PART OF MAN - O - WAR BAY

Bay. Smaller formations occur north of Pirates' Bay, opposite the Government's Rest House, and opposite Charles Turpin's house (Fig. 3). For purposes of convenience, these reefs are referred to in this study as Bobby Reef, Pirates' Reef, Turpin's Reef and Rest House Reef.

#### BOOBY REEF

Booby Reef is triangular in shape, the base of this triangle being at the shoreline and approximately 150 metres wide, while the apex is at Booby Island, a distance of approximately 85 — 90 metres from the shore.

The reef top is generally less than one metre below the surface near shore, and gradually deepens as it extends seawards to depths of between 2 and 3 metres near Booby Island. The dominant coral species is the elk's horn coral, *Acropora palmata*, which appears as an impressive, though monotonous, formation. However, occasional small colonies of the octo-corals *Gorgonia ventalina* and *Briareum asbestinum*, and the stony corals, *Diploria*

*sp.*, *Agaricia sp.*, *Favia fragrum* and *Montastrea annularis* occur among the *A. palmata*. The long-spined sea urchin, *Diadema antillarum*, was common in the area. Several species of reef fishes, specifically parrotfishes (*Sparisoma sp.*, *Scarus sp.*), surgeonfish (*Acanthurus sp.*) harlequin bass (*Serranus tigrinus*) and damselfishes (*Eupomacentrus sp.*, *Abudefduf saxatilis*, *Chromis cyanea*), were seen in these shallow waters.

To the east, the reef extends at its deepest to depths of approximately 25 metres near Booby Island. However, the lower limits of the reef become progressively shallower moving shorewards. Below the reef's lower limit, the substratum is generally sandy. On the east slope, communities were distributed into three major zones, apart from the *A. palmata* zone at the reef top. The first of these zones occurred at depths approximately between 3 and 7 metres. Here, the soft coral, *Palythoa mammillosa*, the fire coral, *Millepora alcicornis* and the elk's horn coral, were codominants. Other common species found in this zone were the gorgonians *Plexaura flexuosa*, *Muricea elongata* and *Eunicea tourneforti*, the stony corals, *Eusmilia fastigiata*, *Acropora cervi-*

TABLE I

## CORALS OF MAN-O-WAR BAY, CHARLOTTEVILLE

Scientific Name	Common Name	Booby Is. Reef	Rest House Reef	Pirate's Bay Reef
<b>SCLERACTINIA (Stony Corals)</b>				
<i>Eusmilia fastigiata</i>		X		
<i>Madracis asperula</i>			X	X
<i>Acropora cervicornis</i>	Stag's horn coral	X		X
<i>Acropora palmata</i>	Elk's horn coral	X	X	X
<i>Agaricia agaricites</i>	Leaf coral	X	X	X
<i>A. fragilis</i>	Hat coral	X		X
<i>Siderastrea radians</i>	Starlet coral	X	X	X
<i>S. siderea</i>	Starlet coral	X	X	X
<i>Porites asteroides</i>	Porous coral	X	X	X
<i>P. branneri</i>	Porous coral	X		X
<i>P. porites</i>	Finger coral	X	X	X
<i>Favia fragrum</i>	Star coral	X	X	X
<i>Diploria clivosa</i>	Brain coral	X	X	X
<i>D. labyrinthiformis</i>	Brain coral	X	X	X
<i>D. strigosa</i>	Common brain coral	X	X	X
<i>Colpophyllia natans</i>	Brain coral	X		X
<i>Solenastrea bournoni</i>	Star coral	X		X
<i>Montastrea annularis</i>	Common star coral	X	X	X
<i>M. cavernosa</i>	Large star coral	X	X	X
<i>Meandrina meandrites</i>	Brain coral	X	X	X
<i>Dichocoenia stokesii</i>	Star coral	X		X
<i>Mussa angulosa</i>	Large flower coral	X	X	X
<i>Scolymia cubensis</i>	Mushroom coral	X	X	X
<i>Mycetophyllia lamarkana</i>		X		
<b>HYDROCORALLINAE (Hydrocorals)</b>				
<i>Millepora alcicornis</i>	Fire coral	X	X	X
<i>M. complanata</i>	Fire coral	X	X	X
* <i>Macrorhynchia phillipina</i>	Stinging feather hydroid	X		
<b>OCTOCORALLIA (Horny Corals)</b>				
<i>Briareum asbestinum</i>		X	X	X
* <i>Iciligorgia schrammi</i>	Black sea fan	X		X
<i>Erythropodium caribaeorum</i>		X	X	X
<i>Plexaura flexuosa</i>	Bent Plexaura	X	X	X
<i>P. homomalla</i>	Black sea rod	X		X
<i>Pseudoplexaura porosa</i>		X		X
<i>Eunicea tourneforti</i>		X	X	X
<i>E. clavigera</i>				X
<i>Muriceopsis flavida</i>		X	X	X
<i>Plexaurella dichotoma</i>	Double forked Plexaurella	X		X
<i>P. nutans</i>		X	X	X
<i>P. grisea</i>	Grey Plexaurella			X
<i>Muricea elongata</i>		X	X	X
* <i>Lophogorgia punicea</i>		X		
<i>Pseudopterogorgia acerosa</i>	Dry sea feather	X	X	X
<i>P. americana</i>	Slimy sea feather	X		X
<i>Gorgonia ventalina</i>	Common sea fan	X	X	X
<i>G. flabellum</i>	Sea fan	X		X
<i>Pterogorgia citrina</i>		X	X	X
* <i>Ellisella elongata</i>	Sea whip	X		
* <i>Nicella schmitti</i>		X		
<b>ANTIPATHARIA (Black Coral)</b>				
* <i>Antipathes</i> sp.	Bottle brush coral	X		
* <i>Antipathes</i> sp.	Black sea fan	X		
<b>ZOANTHIDEA (Soft Corals)</b>				
<i>Zoanthus sociatus</i>	Green sea mat	X	X	X
<i>Palythoa mammillosa</i>	Knobby zoanthidean	X	X	X

\*Ahermatypic species or species without zooxanthellae

TABLE 2

## REEF ORGANISMS OBSERVED AT MAN-O-WAR BAY APART FROM CORALS AND FISHES

	Scientific Name	Common Name
SPONGES	<i>Oligoceras sp.</i>	Bleeding sponge
	<i>Iricinia sp.</i>	Vase sponge
	<i>Dysidea sp.</i>	Heavenly sponge
	<i>Callyspongia sp.</i>	Tube sponge
ANNELIDS	<i>Hermodice carunculata</i>	Green bristle worm or fire worm
MOLLUSCS	<i>Lima scabra</i>	Flame clam
	<i>Spondylus americanus</i>	Atlantic thorny oyster
	<i>Tridachia crispata</i>	Ribbon nudibranch
	<i>Strombus gigas</i>	Queen conch
	<i>S. costatus</i>	Milk conch
	<i>Cyphoma gibbosum</i>	Sea leopard
	<i>C. signatum</i> * <i>Chiton marmoratus</i>	Fingerprint cyphoma Marbled chiton
ECHINODERMS	<i>Astichopus multifidus</i>	Fissured sea cucumber
	<i>Isostichopus badiionotus</i>	Sea cucumber
	<i>Diadema antillarum</i>	Long-spined urchin
	<i>Nemaster grandis</i>	Giant sea lily
	<i>Tropiometra sp.</i>	Black sea lily
	<i>Ophiocoma echinata</i>	Spiny ophiocoma (Brittlestar)
	<i>Ophioderma brevispinum</i>	Short-spined Ophioderma (Brittlestar)
CRUSTACEANS	<i>Panulirus argus</i>	Spiny lobster
	<i>P. guttatus</i>	Spotted lobster
	<i>Grapsus grapsus</i>	Sally lightfoot or rock crab
	<i>Stenorhynchus seticornis</i>	Arrow crab

\*For a drawing of this species see Studies on the Trinidad Chitons by Baboolal et al — Ed.

TABLE 3

## FISHES OF MAN-O-WAR BAY

Family Name	Specific Name	Common Name
Carcharhinidae (Requiem sharks)	<i>Carcharhinus springeri</i>	Reef shark
Elopidae	<i>Megalops atlanticus</i>	Tarpon
Synodontidae (Lizard fishes)	<i>Synodus intermedius</i>	Sand diver
Muraenidae (Moray eels)	<i>Gymnothorax moringa</i>	Spotted moray
	<i>G. funebris</i>	Green moray
Belonidae (needle fishes)	<i>Strongylura timucu</i>	Atlantic needle fish
Fistulariidae (Cornet fishes)	<i>Fistularia tabacaria</i>	Cornet fish
Aulostomidae (Trumpet fishes)	<i>Aulostomus maculatus</i>	Trumpet fish
Syngnathidae (Pipe fishes and sea horses)	<i>Syngnathus rousseau</i>	Caribbean pipe fish
Holocentridae (Squirrel fishes)	<i>Holocentrus rufus</i>	Squirrel fish
	<i>H. ascensionis</i>	Long-jaw squirrel fish, Marianne
	<i>Myripristis jacobus</i>	Blackbar soldier fish
Sphyraenidae (Barracudas)	<i>Sphyraena barracuda</i>	Great barracuda
Trichiuridae (Cutlass fishes)	<i>Trichiurus lepturus</i>	Aluminium fish, machete
Serranidae (Groupers and Sea bases)	<i>Epinephelus guttatus</i>	Red hind
	<i>E. adscensionis</i>	Rock hind
	<i>E. striatus</i>	Nassau grouper
	<i>Cephalopholis fulva</i>	Coney
	<i>Petrometopon cruentatum</i>	Graysby
	<i>Mycteroperca tigris</i>	Tiger grouper

Grammidae (Fairy Basslets)	<i>Serranus tigrinus</i>	Harlequin bass
Priacanthidae (Big eyes)	<i>Gramma loreto</i>	Royal gramma
	<i>Priacanthus cruentatus</i>	Glass eye
	<i>P. arenatus</i>	Big eye
Apogonidae (Cardinal fishes)	<i>Apogon maculatus</i>	Flame fish
Echeneidae (Remoras)	<i>Echeneis naucrates</i>	Sharksucker
Carangidae (Jacks)	<i>Caranx hippos</i>	Crevelle jack
	* <i>Caranx lugubris</i>	Black jack
	* <i>Decapterus punctatus</i>	Round Scad
		Round Robin
	* <i>Selar crumenophthalmus</i>	Big eye Scad Goggle eye jack
	* <i>Seriola dumerili</i>	Greater amberjack
	* <i>Trachinotus palometa</i>	Pompano
	* <i>T. falcatus</i>	Permit
	* <i>Oligoplites saurus</i>	Leather jacket, Sapate
Scombridae (Tunas and Mackerels)	* <i>Scomberomorus maculatus</i>	Spanish mackerel, carite
	* <i>S. cavalla</i>	King mackerel
		King fish
	* <i>Sarda sarda</i>	Common bonito
	* <i>Thunnus atlanticus</i>	Blackfin tuna
	* <i>T. albacares</i>	Albacore tuna
Lutjanidae (Snappers)	* <i>Lutjanus jocu</i>	Dog snapper
	* <i>L. synagris</i>	Lane snapper
	* <i>Ocyurus chrysurus</i>	Yellow tail snapper
Pomadasydae (Grunts)	<i>Haemulon striatum</i>	Striped grunt
	<i>H. carbonarium</i>	Caesar grunt
	<i>H. macrostomum</i>	Spanish grunt
	<i>H. steindachneri</i>	Latin grunt
	<i>H. chrysargyreum</i>	Small-mouth grunt
	<i>Anisotremus virginicus</i>	Pork fish
Sparidae (Porgies)	<i>Archosargus rhomboidalis</i>	Sea bream
Sciaenidae (Croakers and Drums)	<i>Equetus acuminatus</i>	Cubbyu
	<i>E. punctatus</i>	Spotted drum
	<i>Bothus lunatus</i>	Peacock flounder
Bothidae (Left eye flounders)	<i>Scorpaena plumieri</i>	Spotted scorpion fish
Scorpaenidae (Scorpion fishes)	<i>Chaetodon capistratus</i>	Foureye butterfly fish
Chaetodontidae (Butterfly fishes and Angel fishes)		
	<i>C. striatus</i>	Banded butterfly fish
	<i>C. ocellatus</i>	Spotfin butterfly fish
	<i>Pomacanthus arcuatus</i>	Grey angel fish
	<i>P. paru</i>	French angel fish
	<i>Holacanthus tricolor</i>	Rock beauty
	<i>H. ciliaris</i>	Queen angel fish
Pomacentridae (Damsel fishes)	<i>Eupomacentrus fuscus</i>	Dusky damsel fish
	<i>E. leucostictus</i>	Beau gregory
	<i>E. partitus</i>	Bicolor damsel fish
	<i>Abudefduf saxatilis</i>	Sergeant major
	<i>Chromis cyanea</i>	Blue chromis
Labridae (Wrasses)	<i>Halichoeres bivittatus</i>	Slippery dick
	<i>H. garnoti</i>	Yellow-head wrasse
	<i>H. maculipinna</i>	Clown wrasse
	<i>Thalossoma bifasciatum</i>	Bluehead
Scaridae (Parrot fishes)	<i>Sparisoma viride</i>	Spotlight parrot fish
	<i>S. radians</i>	Bucktooth parrot fish
	<i>Scarus vetula</i>	Queen parrot fish
	<i>S. taeniopterus</i>	Princess parrot fish
	<i>S. coeruleus</i>	Blue parrrot fish
	<i>Ophioblennius atlanticus</i>	Redlip blenny
Blennidae (Combtooth blennies)	<i>Gnatholepis thompsoni</i>	Goldspot goby
Gobbidae (Gobies)	<i>Coryphopterus glaucofraenum</i>	Bridled goby
	<i>Acanthurus coeruleus</i>	Blue tang
Acanthuridae (Surgeon fishes)	<i>A. bahianus</i>	Surgeon fish
	<i>A. chirurgus</i>	Doctor fish
	<i>Balistes vetula</i>	Queen trigger fish
Balistidae (Trigger fishes)	<i>Melichthys niger</i>	Black durgon
	<i>Cantherhines pullus</i>	Tail light file fish
Monacanthidae (File fishes)	<i>Lactophrys triquetter</i>	Smooth trunk fish
Ostracionthidae (Trunk fishes)	<i>L. bicaudalis</i>	Spotted trunk fish
	<i>Acanthostracion quadricornis</i>	Scrawled cowfish
	<i>Sphaeroides greeleyi</i>	Caribbean puffer
Tetraodontidae (Puffer fish)	<i>Canthigaster rostrata</i>	Sharpnose puffer
Canthigasteridae (Sharpnose puffers)	<i>Diodon hystrix</i>	Porcupine fish
Diodontidae (Porcupine fishes and burrfishes)		
*Commercial species generally caught outside Man-o-War Bay.		

*cornis*, *Porites porites* and *Millepora complanata*.

Fishes were most numerous in this zone, and in addition to the species commonly found in the *A. palmata* zone, moray eels (*Gymnothorax* sp.) squirrelfishes (*Holocentrus* sp.), groupers (*Epinephelus* sp., *Cephalopholis* sp., *Petrometopon* sp.), flame fishes (*Apogon maculatus*), grunts (*Haemulon* sp.), drums (*Equetus* sp.), butterflyfishes (*Chaetodon* sp.), angelfishes (*Pomacanthus* sp.), were all common in this zone.

The long-spined sea urchin was also observed, while the ovulid gastropod, *Cyphoma gibbosum* (sea leopard), was occasionally found, generally in pairs, feeding on gorgonians.

The next major zone occurred at depths approximately between 7 and 15 metres. This zone could easily be referred to as the *Pseudopterogorgia* zone. Large and numerous colonies of the gorgonian sea feathers, *Pseudopterogorgia acerosa* and *P. americana*, appeared to be the dominant forms here. Some colonies were up to 2 metres high. This zone had the most diverse coral fauna, including the stony corals *Diploria clivosa*, *Montastrea cavernosa*, *A. palmata*, *Siderastrea radians*, *M. alcicornis*, *Mycetophyllia* sp., *Agaricia* sp., *Mussa angulosa*, *Porites branneri*, *P. porites*; the soft corals, *P. mammillosa*; and the gorgonians *E. tourneforti*, *Pseudoplexaura porosa*, *Plexaura flexuosa*, and *Muriceopsis flavida*.

All the fishes observed in the previous zones were also seen in this zone. In addition, green morays (*G. funebris*), trumpetfishes (*Aulostomus maculatus*), the big eyes (*Priacanthus cruentatus* and *P. arenatus*), porkfishes (*Anisotremus virginicus*), scorpionfishes (*Scorpaena plumieri*), queen triggerfishes (*Balistes vetula*), black durgons (*Melichthys niger*), trunkfishes (*Lactophrys* sp.), puffers (*Sphaeroides* sp. and *Canthigaster* sp.), and porcupine fishes (*Diodon hystrix*) were also encountered.

*C. gibbosum* was common in this zone, and was mostly found feeding on polyps of the sea feather, *P. acerosa*. This mollusc was usually found in single or multiple pairs, at times numbering as many as a dozen individuals on one gorgonian colony. The giant crinoid, *Nemaster grandis*, occurred frequently in this zone, while the flame clam, *Lima scabra*, was found in narrow crevasses. The arrow crab, *Stenorynthus seticornis*, was seen both in this zone and the zone immediately above. Sponges were also numerous, and these included the bleeding sponge (*Oligoceras* sp.), the vase sponge (*Iricinia* sp.), the heavenly sponge (*Dysidea* sp.), and the tube sponge (*Callyspongia* sp.).

The last zone was found to occur at depths between 15 metres and the lower limit of the reef. Here the seafloor was covered by large boulders, and was quite rugged and irregular. Gorgonians were more sparsely distributed, with the most common being small colonies of *P. acerosa* and *P. americana*. Most of the stony corals found above also occur at these depths. Other species found here include *Mycetophyllia lamarkana*, *Meandrina meandrites*, *Scolymia cubensis* and *Dichocoenia stokesii*. Most fish and sponge species found in the shallower zones were also seen here, but in lesser numbers. The spiny lobster, *Panulirus argus*, and the spotted lobster, *P. guttatus*, were also observed in this area.

The queen conch, *Strombus gigas*, the milk conch, *S. costatus* and the sea cucumbers (*Astichopus* sp., and *Isostichopus* sp.) were found on the sandy substrate at the lower edge of the reef.

The west slope of Booby Reef was similar to the east slope and was characterized by the same general zonation pattern. On this slope the reef also ended at a sandy bottom, at depths varying between 20 and 25 metres. The sea floor was extremely rugged and irregular. The species found on the east slope were also found on the west slope.

On the northern side of Booby Island, the sea floor dropped precipitously down to depths varying between 20 and 25 metres. Below this the sea floor dropped less rapidly, and was composed primarily of sand, coral fragments and occasional patches of rock. Above 20 metres, stony corals and gorgonians abounded. Here also were found the only ahermatypic corals of the reef. These include the octocorals, *Ellisella elongata* (white sea whip), *Lophogorgia punicea* (orange sea fan), *Iciligorgia schrammi* (black sea fan), *Nicella schmitti* and two antipatharians

(black corals) of the genus *Antipathes*, commonly referred to as the bottlebrush coral and the black sea fan. Large specimens of tube and vase sponges and feather hydroids were also observed. Extremely large specimens of the Atlantic thorny oyster (*Spondylus americanus*) were found at depths below 13 metres, together with large specimens of sea cucumbers (*Astichopus* sp. and *Isostichopus* sp.) and the giant crinoid, *Nemaster grandis*.

#### PIRATES' REEF

Pirates' Reef extends southwards from the southern end of Pirates' Bay to the northern limit of the village of Charlotteville (Fig. 3). This reef extends from the shoreline to about 50 or 60 metres offshore, its lower limits varying at depths between 12 and 15 metres. At greater depths, the substratum is composed of sand and coral rubble. The communities on this reef also follow a vertical zonation pattern similar to that of Booby Reef.

The reef top occurs at depths between 0.5 and 2.0 metres. *A. palmata* was common, but unlike the reef top at Booby Reef, there were large patches of the soft coral, *P. mammillosa* and many colonies of the stony corals, *M. complanata*, *M. annularis* and *Diploria* sp. Occasional colonies of the gorgonians *G. flabellum* and *G. ventalina* were also observed.

At depths between 2 and 5 metres, the community was more diverse than at the reef top. Gorgonians were sparse, except for the common seafan (*G. ventalina*), while the stony corals, *M. annularis*, *A. palmata* and *S. radians*, and the soft coral, *P. mammillosa*, were common. Also occurring among these were occasional colonies of *P. porites*, *Agaricia* sp., *E. caribaeorum*, *D. clivosa*, *P. asteroides*, *M. complanata* and *M. alcicornis*.

At depths between 5 and 15 metres, the seafloor community was similar to that found at corresponding depths on the east and west slopes of Booby Reef. Here also, the gorgonians, *P. americana* and *P. acerosa* were the dominant species. The fish communities were also similar in species composition to those on the west and east slopes of Booby Reef.

#### REST HOUSE REEF

The Rest House Reef lies opposite the Government's Rest House (Fig. 3), and extends to distances varying between 25 and 30 metres offshore. This reef is approximately 40 metres at its widest and terminates seaward at depths between 6 and 7 metres. Below this depth, the substratum is sandy. Only 30 species of corals were observed as compared with 48 species and 42 species noted for Booby Reef and Pirates' Reef respectively. At depths above three metres, *A. palmata* and *Madracis asperula* predominate, while below this depth gorgonians, especially *P. americana*, *P. acerosa*, *Plexaura* spp., *Pseudoplexaura* spp. and the stony corals, *M. meandrites*, *Diploria* spp. and *Millepora* spp., were abundant.

#### TURPIN'S REEF

Turpin's Reef lies to the West of the Rest House Reef, and is similar in size. Insufficient observations were made on community composition and species distribution to allow for a description at this time.

All species observed in this study are listed in Tables 1-3.

#### DISCUSSION

The reefs of Man-o-War Bay are considerably smaller than those at Speyside, Kilgwyn and Buccoo. While a lagoon separates Buccoo Reef from the mainland, the reefs of Man-o-War Bay extend to the shoreline which may suggest that the latter are geologically younger than Buccoo Reef.

Being further removed from the effects of Orinoco River effluent, especially lower salinity and higher turbidity levels, it is reasonable to expect that there will be a larger number of species on the reefs of Man-o-War Bay than at Buccoo Reef. Although preliminary indications are that there are more stony

coral, octocoral and fish species in the former area, a definite statement cannot be made for all groups until more comprehensive collections are made in both areas.

Booby Reef is the largest and most diverse of the reefs studied. The vertical zonation of the communities on this reef is the most distinctive, and this is probably related to the fact that this reef extends to greater depths than the other reefs. The reef top, for instance, was the most striking, being comprised almost entirely of the elk horn coral, *Acropora palmata*, while the reef tops on the other reefs consisted not only of *A. palmata* but significant numbers of other coral species.

While Booby Reef is the most diverse, and would offer the best snorkelling and SCUBA diving, it is the most inaccessible, being backed by a shoreline which is precipitous. The shoreline at Pirates' Reef is also precipitous, but this reef can easily be approached from Pirates' Bay. Rest House and Turpin's Reef are the most accessible, lying next to a beach with road access. This could easily develop into a disadvantage, in that the reefs could eventually fall prey to souvenir collectors.

Further biological studies of these reefs are needed, supported by physical oceanographic and geological information, if we are to develop prudent management strategies.

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