

REPORT TO THE RESIDENT COMMISSIONER IN SAIPAN

VISIT TO MAUG ISLAND OF THE LINDBLAD EXPLORER ON AUGUST 13TH 1976

General

Our ship spent just eight hours of one day anchored in the crater of this partly submerged volcano, but with eighty pairs of eyes this was sufficient to make a preliminary survey of the ecology.

The habitat consists of three steep islands of old eroded ash and lava, the remnants of a caldera surrounding a deep lagoon about 1.2 kms in diameter. The cliffs on the inside slope are for the most part bare and precipitous, but the outer slopes (particularly that of East Island) are more gradual and densely vegetated. Total land area is approximately 3.25 million square metres.

Botany

The major part of all three islands is disturbed vegetation - on the eastern slope of East Island by the hand of man and elsewhere by the loose cinder surface of the land. The dominant species is the dense sword grass Miscanthus floridus which acts as a stabilizing agent permitting the growth of scattered shrubs and herbs such as Scaevola sericea, Wedelia biflora and Derris elliptica. On the lower slopes creeping Ipomoea pes-caprae and Canavalia sericea serve a similar function.

In sheltered valleys and in moister areas on relatively flat ground at the base of cliffs a more settled vegetation exists. This is composed largely of Hibiscus tiliaceus, Pandanus tectorius, Morinda citrifolia, Terminalia samoensis and Herpandja sonora.

On the summit of East Island the site of the old Japanese station is surrounded by the usual windbreak of Casuarina equisetifolia and the plantation of Cocos nucifera on the eastern slope is now invaded with Carica papaya and thickets of Portulaca oleracea. Showy patches of a Crinum lily may also have been introduced by man.

Two:

### Ornithology

The steep cliffs provide perfect breeding grounds for seabirds and Sula dactylatra, Sula leucogaster, Sula sula, Anous stolidus, Anous tenuirostris and Gygis alba all make good use of them. Brown Booby, Red-footed Booby and Lesser Noddy are the most common - and nests of all three species were seen to contain young almost fully-fledged, indicated a laying period some time in early or mid July. Fairy tern were less common and several were seen still sitting on a solitary egg.

With thousands of Boobys in the vicinity, there was of course the usual attendant population (perhaps a hundred birds) of the Frigate Fregata minor. Two Tropicbirds (Phaethon rubricauda and P. lepturus) were present in fairly large numbers and almost certainly breed here. Wedgetail Shearwaters (Puffinus pacificus) circled high overhead in the early morning and probably have nest burrows in the cliffs. A single Sooty Tern (Sterna fuscata) was seen some distance offshore.

The only shore birds seen were dark phase Reef Heron (Demigretta sacra) migratory Turnstone (Arenaria interpres) and an unidentified Sandpiper.

The Marianas race of the White-collared Kingfisher (Halcyon chloris) was fairly common on all three islands - as were very dark forms of the Micronesian Starling (Aplonis opacus).

The most exciting ornithological discovery however was the Marianas Megapode (Megapodius iaperouse) which was seen on West Island, but almost certainly must occur on East Island where there would be better facilities for constructing nest mounds.

### Terrestrial Biology

As far as we could determine during our short visit, there are no mammals on any of the islands - no bats and no feral rats or goats. We saw no reptiles either, though it seems likely that there could be at least a resident skink.

Our entomological survey was very superficial - recording only three species of spider (Argiope sp. were most abundant) and a grasshopper.

Four:

|                                    |                             |
|------------------------------------|-----------------------------|
| <u>Tylosurus crocodilus</u>        | Garfish                     |
| <u>Adyoryx caudimaculatus</u>      | Surprised Squirrel Fish     |
| <u>Holocentrus spiniferus</u>      | Shy Squirrel Fish           |
| <u>Myripristis murdjan</u>         | Black bar Soldier Fish      |
| <u>Bothus sp. ?pantherinus</u>     | Spotted Flounder            |
| <u>Aulostomus valentini</u>        | Trumpet Fish                |
| <u>Fistularia petimba</u>          | Flute Mouth                 |
| <u>Cirrhitichthys falco</u>        | Spot-barred Hawkfish        |
| <u>Paracirrhites arcatus</u>       | Brown-eared Hawkfish        |
| <u>Paracirrhites forsteri</u>      | Freckled Hawkfish           |
| <u>Cirrhitus sp.</u>               | Black Hawkfish              |
| <u>Kuhlia (Dules) taeniura</u>     | Flagtail                    |
| <u>Aethaloperca rogaa ?</u>        | Black Grouper               |
| <u>Epinephalus maculatus</u>       | White-spotted Grouper       |
| <u>Cephalopholis argus</u>         | Blue Hind                   |
| <u>Cephalopholis urodelus</u>      | Tail-striped Hind           |
| <u>Variola louti</u>               | Swallow-tailed Grouper      |
| <u>Paramia sp. ?quinquelineata</u> | Yellow-spot Cardinal Fish   |
| <u>Ostorhynchus endekataenia</u>   | Black-spot Cardinal Fish    |
| <u>Caranx melampygus</u>           | Blue-fin Jack               |
| <u>Mulloidichthys auriflamma</u>   | Yellow-lined Goatfish       |
| <u>Mulloidichthys samoensis</u>    | Black-spot Goatfish         |
| <u>Pseudupeneus trifasciatus</u>   | Three-barred Goatfish       |
| <u>Parupeneus bifasciatus</u>      | Two-banded Goatfish         |
| <u>Parupeneus cyclostomus</u>      | Yellow Goatfish             |
| <u>Parupeneus sp.</u>              | Blue Goatfish               |
| <u>Centropyge flavissimus</u>      | Yellow Cherubfish           |
| <u>Centropyge bispinosus</u>       | Orange-barred Cherubfish    |
| <u>Pomacanthus imperator</u>       | Imperial Angol Fish         |
| <u>Pycnoptilus diacanthus</u>      | Royal Angel fish            |
| <u>Chaetodon ornatissimus</u>      | Orange-lined Butterfly Fish |
| <u>Chaetodon quadrimaculatus</u>   | White-spot Butterfly Fish   |
| <u>Chaetodon reticulatus</u>       | Grey Butterfly Fish         |
| <u>Chaetodon portensii</u>         | Merton's Butterfly Fish     |
| <u>Chaetodon auriga</u>            | Threadfin Butterfly Fish    |

Five:

|   |                                |
|---|--------------------------------|
| <u>Chaetodon citrinellus</u>            | Lemon Butterfly Fish           |
| <u>Chaetodon punctato-fasciatus</u>     | Spot-banded Butterfly Fish     |
| <u>Forcipiger flavissimus</u>           | Long-snout Butterfly Fish      |
| <u>Heniochus permutatus</u>             | Short-streamered Coachman      |
| <u>Acanthurus pyroferus</u>             | Fiery Surgeonfish              |
| <u>Acanthurus olivaceus</u>             | Orange-shouldered Surgeon Fish |
| <u>Acanthurus triostegus</u>            | Convict Tang                   |
| <u>Acanthurus glaucopareius</u>         | Golden-rimmed Surgeon Fish     |
| <u>Acanthurus leucopareius</u>          | Fuscous Yellow-tailed Surgeon  |
| <u>Acanthurus lineatus</u>              | Striped Surgeon Fish           |
| <u>Paracanthurus hepatus</u>            | Deep-blue Surgeon Fish         |
| <u>Ctenochaetus striatus</u>            | Brown-striped Surgeon Fish     |
| <u>Zebrasoma flavescens</u>             | Yellow Tang                    |
| <u>Naso brevirostris</u>                | Long-horned Unicorn Fish       |
| <u>Naso lituratus</u>                   | Smooth-head Unicorn Fish       |
| <u>Zanclus canescens</u>                | Moorish Idol                   |
| <u>Kyphosus lembus</u>                  | Large-tailed Chub (Drummer)    |
| <u>Pempheris japonica</u>               | Red Sweeper                    |
| <u>Lutjanus kasmira</u>                 | Blue-line Snapper              |
| <u>Lutjanus sp.</u>                     | White-spot Snapper             |
| <u>Gnathodentex aurolineatus</u>        | Yellow-spot Bream              |
| <u>Monotaxis grandoculis</u>            | Big-eyed Bream                 |
| <u>Caesio sp.</u>                       | Blue-shouldered Fusilier       |
| <u>Paracaesio xanthurus</u>             | Yellow-backed Blue Fusilier    |
| <u>Plectrorhynchus schotaf</u>          | Grey Sweetlips                 |
| <u>Abudefduf saxatilis</u>              | Common Sergeant Major          |
| <u>Abudefduf sordidus</u>               | Night Sergeant Major           |
| <u>Abudefduf imparipennis?</u>          | White Damsel Fish              |
| <u>Pomacentrus sp.</u>                  | Yellow-faced Damsel            |
| <u>Pomacentrus sp.</u>                  | Scarlet Damsel                 |
| <u>Amphiprion ekindynos</u>             | Clown Fish                     |
| <u>Dascyllus reticulatus</u>            | Reticulated Humbug             |
| <u>Dascyllus trimaculatus</u>           | Three-spot Humbug              |
| <u>Dascyllus aruanus</u>                | White-tailed Humbug            |
| <u>Chromis dimidiatus/margaritifer?</u> | White-tailed Puller            |
| <u>Chromis sp.</u>                      | Yellow-tailed Puller           |

Six:

|  |                            |
|--|----------------------------|
| <u>Coris naimard</u>                   | Cloud Coris                |
| <u>Coris aygula</u>                    | Eye spotted Coris          |
| <u>Halichoeres centriquadrus</u>       | Squarenet Slippery Dick    |
| <u>Halichoeres notopsis</u>            | Black-spot Lined Wrasse    |
| <u>Halichoeres hoevni</u>              | Two-spot Lined Wrasse      |
| <u>Labroides dimidiatus</u>            | Blue Cleaner Wrasse        |
| <u>Gomphosus varius</u>                | Bird Wrasse                |
| <u>Henigymnus fasciatus</u>            | Banded Wrasse              |
| <u>Bodianus axillaris</u>              | Coral Hogfish              |
| <u>Bodianus sp.</u>                    | White-peduncled Hogfish    |
| <u>Xyrichtys taeniurus</u>             | Feather Wrasse             |
| <u>Stethojulis albeovittata</u>        | Dancer Wrasse              |
| <u>Pseudocheilinus hexataenia</u>      | Six-lined Wrasse           |
| <u>Thalassoma lutescens</u>            | Yellow Wrasse              |
| <u>Thalassoma quinquevittata</u>       | Five-lined Wrasse          |
| <u>Thalassoma sp.</u>                  | Pink Ladder Wrasse         |
| <u>Thalassoma amblycephalus</u>        | Black and White Wrasse     |
| <u>Scarus capistratoides</u>           | Bullhead Parrot Fish       |
| <u>Scarus rubroviolaceus</u>           | Maroon Parrot Fish         |
| <u>Scarus sp.</u>                      | White-spot Parrot Fish     |
| <u>Euthynnus affinis</u>               | Bonito                     |
| <u>Crenimucil crenilabis</u>           | Mullet                     |
| <u>Nemeleotris magnificus</u>          | White-flag Eleotris        |
| <u>Exallias sp.</u>                    | Blenny                     |
| <u>Aspidontus sp. ?tractus</u>         | False Cleaner              |
| <u>Plagiotremus tapeinosoma</u>        | Brown Parasitic B.         |
| <u>Plagiotremus sp. ?rhinorhynchus</u> | Blue Parasitic Bl. y.      |
| <u>Diolomus sp.</u>                    | Rock-hopper Blenny         |
| <u>Rhinecanthus rectangulus</u>        | Black Diamond Trigger Fish |
| <u>Sufflamen bursa</u>                 | Dusky-tailed Trigger Fish  |
| <u>Sufflamen chrysoptera</u>           | Edge-tailed Trigger Fish   |
| <u>Melichthys ringens</u>              | Black Trigger Fish         |
| <u>Melichthys vidua</u>                | Widow Trigger fish         |
| <u>Balistapus undulatus</u>            | Waved Trigger fish         |
| <u>Ostracion meleagris</u>             | Yellow-spotted Box Fish    |

Seven:

Summary

Both above and below the water, MAUG ISLAND is relatively little disturbed and worthy of close biological investigation.

More than any other island we have seen in the Marianas, it merits the designation of Protected Research Area as suggested at the meeting of the International Biological Program held in Koror, Palau in November 1968.

We heartily recommend that such protection continue indefinitely and we urge those in authority to do everything possible to ensure that MAUG retains its character and accessibility to scientists.

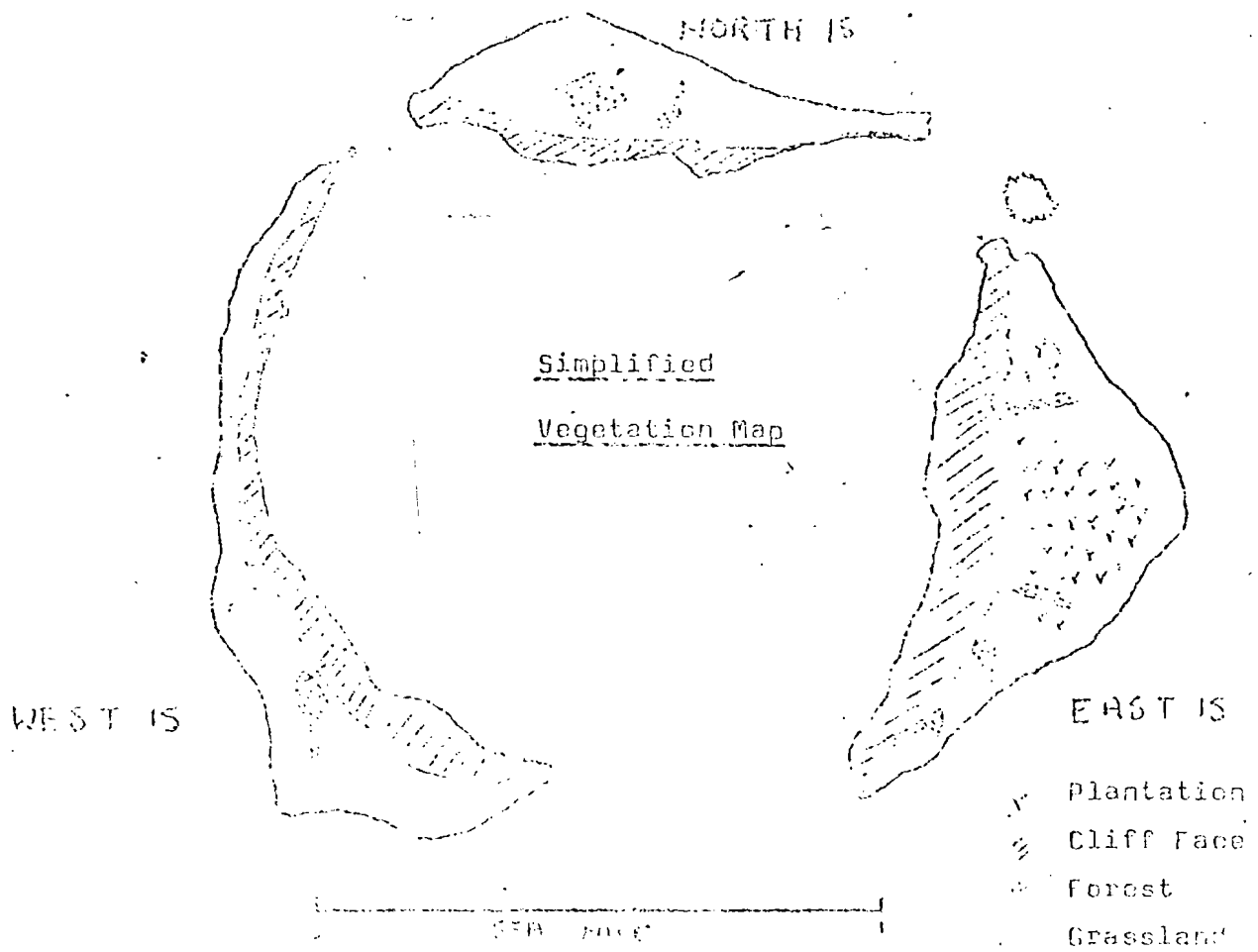
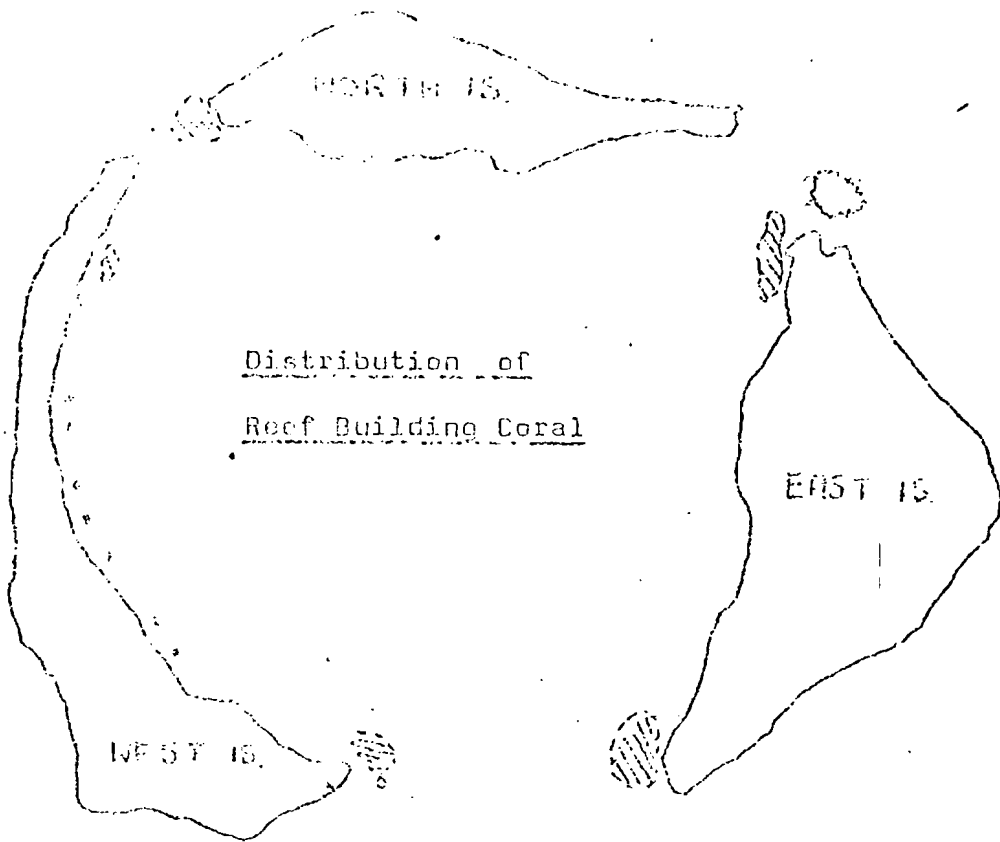
We would further recommend that a restraint be placed on research there similar to that which we ourselves have exercised - which is a total embargo on the collection of specimens.

Through the skill and experience of Peter Scott (with the assistance underwater of Ron & Valerie Taylor and Soames Summerhays) we were able to identify 113 species of reef fish without touching one. The limitation of research in the initial stages at least to sight records only would do a great deal to preserve the habitats for future and more thorough exploration.

Sir Peter Scott      CBE   DSC   LL.D  
Dr. Lyall Watson    Ph.D  
Soames Summerhays   B.Sc  
Robert Hernandez    B.S

Expedition Staff of the Lindblad Explorer

August 13th, 1968



Three:

### Marine Biology

Reef building corals are found in extensive formations mainly on the inside of each of the sea channels between the islands. Isolated coral heads occur elsewhere singly or in small groups.

The reef chosen for detailed analysis lay on the North West side of East Island. It is approximately 200 metres long, 50 metres wide and drops away to over 10 metres in depth on the open water side where it stands on a coral sand floor with a large number of garden eels.

The coral heads are well developed, undamaged by pollutants and untouched by the predatory starfish Acanthaster planckii.

There has been moderately heavy browsing by several species of Parrot Fish, particularly a Pavona sp.

The dominant coral on the reef is a branching species of Acropora (possibly A. hyacanthus) coupled with Atropora cuneata. Millepora species are also very common. Other species of secondary importance were largely representatives of the genera Favia, Porites, Polyphyllia and Tubastrea.

The coral in itself is abundant and impressive, but perhaps the best measure of its productivity as a habitat is the large number of fish species in residence on the reef.

### Ichthyology

#### Cartilaginous Fish:

Carcharinus melanopterus      Black tipped Shark

#### Bony Fish:

|   |                         |
|---|-------------------------|
| <u>Sardinella</u> sp. ? <u>sirm</u>     | Sardine                 |
| <u>Thrissocles</u> sp. ? <u>baelama</u> | Anchovy                 |
| <u>Exocoetus volitans</u>               | Common Flying Fish      |
| <u>Cypselurus siurus</u>                | Blue backed Flying Fish |
| <u>Cypselurus ocellipterus</u>          | Spot finned Flying fish |
| <u>Cypselurus atrisignis</u>            | Red winged Flying fish  |