

# LIZARD ISLAND RESEARCH STATION GREAT BARRIER REEF AUSTRALIA

A facility to support coral reef research.



## NEWSLETTER

NUMBER 3

March 1977

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In the three years he was here, Steve was very much responsible for converting a hot, bare, uninhabited and isolated corner of Lizard Island into a viable and well used marine station. While there are still many problems, and more growth is planned for the future, the 'worst' is over. I would like to take this opportunity as Steve's replacement, to thank him for his considerable and sometimes thankless endeavours in making the station the success it has become.

Since Christmas, Lizard Island has been a hive of activity. There have been 38 visitors to the station spending a total of 650 man-days. There was much overlapping between the 11 different scientific groups - at one stage there were 33 people at the station together. The station is still designed to cater for 14 visitors and while some brought extra tents, bedding and cooking equipment, many of the facilities (such as the compressor) were stretched to their limits. Fortunately there was no shortage of fresh water and one party had chartered a 14 meter vessel from Innisfail, which eased the demand on our boats slightly. Nevertheless, I do not envisage this situation developing again.

The following is a listing of the scientists who have visited the station since Christmas, and a brief description of their projects:

Ms. Keren Kleinspehn spent 2 weeks studying phyletic relationships and behaviour among Gastropod molluscs as part of her Doctoral program at Princeton University.

Dr. David Smith from the C.S.I.R.O. Division of Fisheries and Oceanography at Cronulla spent 2 weeks using radio-isotope labelled zooplankton to investigate coral reef food webs. He was assisted by -

Dr. David Moriarty (from the same institution) who was also looking at the trophic role and biomass of bacteria in the sediment and open water.

Ms. Sue Talbot (University of Sydney) with the assistance of Professor Frank Talbot (Macquarie University) spent 2 weeks studying the behaviour of mysid shrimps and other lagoonal zooplankters. Professor Talbot also continued his work on the spatial



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Professor Michel Pichon from James Cook University returned for another 5 weeks to continue his studies on the growth and development of coral reefs, and on coral taxonomy.

Ms. Zena Dineson, also from James Cook University, spent 5 weeks on her Doctoral program in conjunction with Professor Pichon.

Mr. Alistair Birtles (James Cook University) spent 6 weeks studying the ecology and taxonomy of crinoids.



Dr. Bob Olafson from the Australian Institute of Marine Science in Townsville (A.I.M.S.) arrived for 5 days to extend his studies on land derived pollutants in reef province waters. As there is no significant useage of pesticides and fertilizers north of Cooktown, Lizard Island waters are assumed to be relatively free of pollutants. Dr. Bill Hamner (A.I.M.S.) stayed for 3 weeks studying zooplankton behaviour, and investigating the importance of zooplankton to the energetics of the planktivorous fishes of the outer barrier and patch reefs.

Mr. Gordon Anderson (Macquarie University) spent 2½ weeks on his continuing Doctoral program investigating predation in reef fish communities, and recruitment patterns among reef fishes on artificial reefs in the Lizard Island lagoon.

Dr. Pat Hutchings of the Department of Worms and Echinoderms at the Australian Museum spent 4 weeks examining coral reef cryptofauna with particular emphasis on the polychaete worms.

Mr. Brad McCulloch from the Kamerunga Horticultural Research Institute in north Queensland spent 4 days collecting native fruit flies.

Mr. Greg Stroud, a Doctoral student at James Cook University, returned for a further 6 weeks to continue his studies on the parapercid fishes.

Ms. Helen Larson, from the Department of Ichthyology at the Australian Museum, spent 2½ weeks collecting gobies for taxonomic studies and examining the association between certain gobies and soft corals, notably the gorgonians.

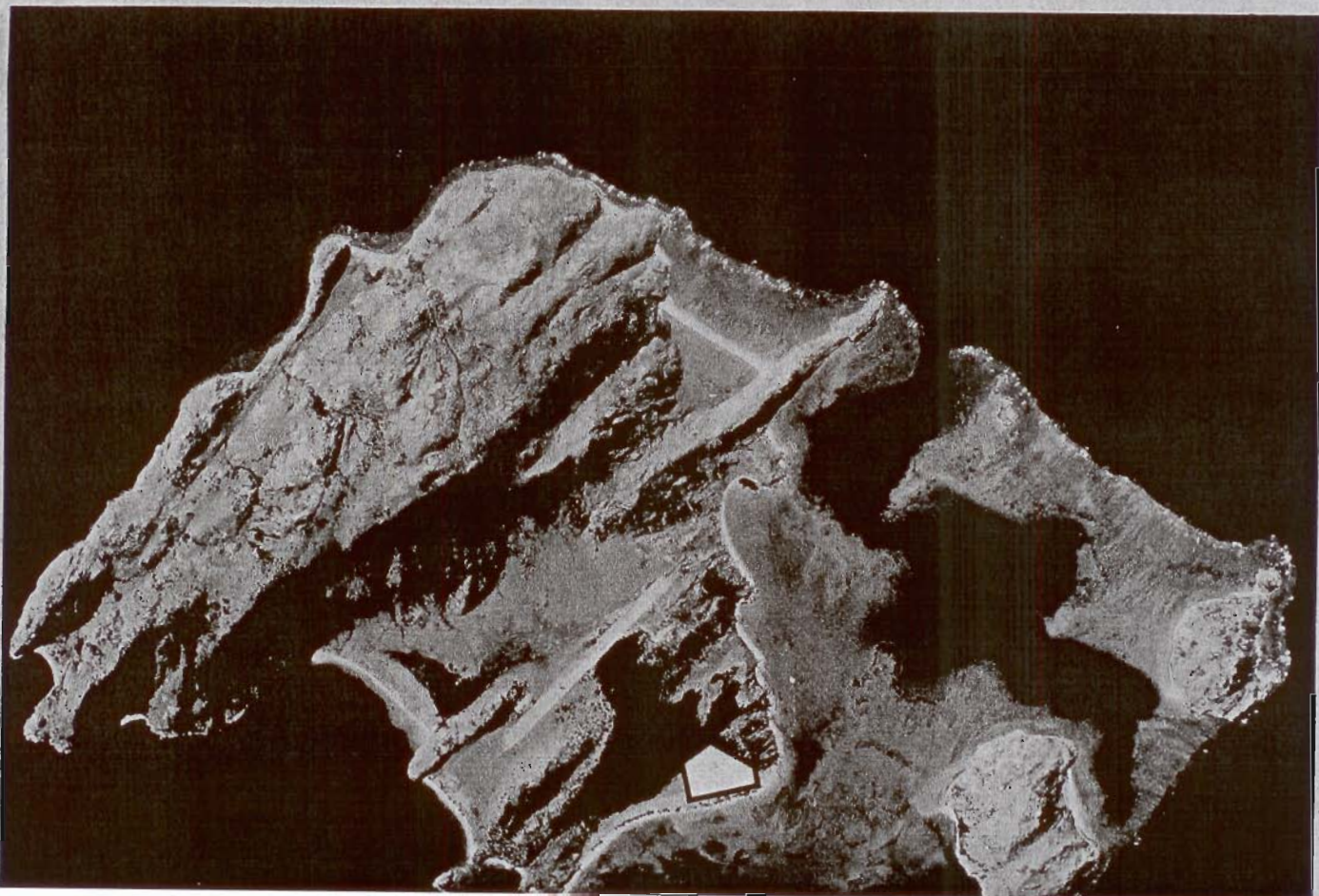
#### PRESENT STAGE OF DEVELOPMENT

Because of the time since the last newsletter the following description of the present facilities is provided:

Accommodation - the station provides facilities for 14 visitors. This includes beds and bed linen, (but not towels), cutlery, crockery, and cooking utensils. The visitors cottage has been completed and consists of a large kitchen/dining room and two bedrooms - one large with 4 bunks, the other smaller with 2 bunks. There is a small gas stove with an oven, a kerosene fridge and water supplied from two storage tanks outside the back door. Plumbing is not yet connected and sanitation is primitive but works satisfactorily. In addition, there are 4 'sleeping' tents each with 2 bunks and a small table; and two 'kitchen' tents each of which has a small gas stove, kerosene fridge, and tables and chairs. A 13 cu. ft. deep freeze unit is located in the laboratory and is available for general food storage.

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*The Lizard Island Research Station is managed by a Committee of Trustees for the Australian Museum.*





Fresh water - Tank storage of fresh water is now 120,000 litres (26,000 gallons). During the wet season from December through March there is abundant water but for the remainder of the year fresh water will be available for all necessities but must be used with care. Two unsuccessful bore holes have been dug, but it is still believed that suitable ground water will be found to provide the station with water all year. This is one of the high priorities for the near future as the availability of abundant fresh water will affect the future development plans for the station.

Laboratory - The laboratory building is completed and measures 21 meters by 5½ meters and has 3 meter wide verandas on each side. It consists of a wet lab, dry lab, balance room, dark room (not yet equipped) and library/reading room. Plumbing is not yet connected but fresh water is available immediately outside in tanks. It is hoped to shortly have running salt water available in the wet lab.

Other buildings - There is a work shop (formerly the lab.) which now has a work bench, vice, and limited hand and electric tools for visitor's use. Also housed in the work shop is the Bauer compressor for filling the diving bottles. Another small shed houses the 8.5 KVA diesel generator, a small portable petrol generator and the Weston compressor which is a standby for the Bauer. There is also a storage shed/tractor shed behind the station compound where scientists may have equipment stored between visits.

Power - 240 volt electricity is connected to all tents, buildings and houses (except the storage shed). It is normally provided during the evenings from 6 P.M. to 10 P.M. but can be made available at any time when needed. 415 Volt, 3 phase power is also available at special outlets on request.

Boats - there are four small boats, all of aluminium construction and powered by outboards. Two are 5 meters long with 6 H.P. Evinrudes; one is 5½ meters long with a 20 H.P. mercury; and the fourth is a DeHaviland Trojan, 7 meters long, with a cabin, built-in fuel tanks (500 liters for long range trips) and powered by twin 70 H.P. Mercurys. The 20 H.P. boat is capable of travelling to nearby islands and reefs within a radius of 5 miles while the Trojan can take parties up to 6 to the more distant reefs such as the outer barrier, and normally within a radius of 20 miles. Hand held CB radios provide communication between the research station and vessels leaving Lizard Island.

Diving Equipment - The station provides SCUBA bottles with harnesses and lead belts to visiting scientists who hold internationally recognised diving certificates and current health certificates. (Personal diving equipment such as regulators, wet suits, diving vests, masks etc. must be brought by the visitors). There are 19 aluminium SCUBA bottles which are filled by a Bauer 4-stage compressor which pumps 12 cu. ft./minute. A smaller Weston 2-stage compressor provides back-up facility for the Bauer. There is also a 110 p.s.i. Hookah compressor which provides 8 cu. ft./minute.

After consultations with the Diving Medical Centre in Sydney, it has been decided that a portable recompression chamber would not be practical for Lizard Island. We now have, instead, a bank of medical oxygen bottles, a regulator, 9 meters of hose and a demand valve for underwater recompression (for which tables are now available). A small oxy-viva is also available. In case of diving accidents, there is a radio-telephone connection with the Royal Flying Doctor Service through which a Navy Diving Medical Officer can be available for consultation (in Sydney) almost immediately.

Aquarium system - This is still very elementary and consists of a 1,000 liter header tank which is filled with fresh sea water each night and which gravity feeds into a bank of aquaria on the veranda of the work shop. Although very simple, some interesting and unique behavioural studies on mysids have just been completed.

Laboratory equipment - This is also very minimal. It includes two stereo zoom Nikon microscopes, an electric balance, a beam balance, an oven, a small centrifuge, an all glass still, some sorting trays, limited glassware and limited quantities of preservatives. A Nikonos underwater camera is available for specific usage.

Library - The Gilbert Whitley Memorial Library is at present being catalogued by Dr. Paxton at the Australian Museum and should be arriving on the island shortly. Other acquisitions are a set of Atoll Research Bulletins (1971-1976) and the three volume set of collected papers from the Eniwetok Marine Biological Laboratory (1955-1974).



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#### DEVELOPMENT PLANS FOR 1977

Powerhouse - a new 12.5 KVA 3 phase diesel generator plant and all materials for constructing the new powerhouse will be arriving on the island in early March. The new powerhouse will be built next to the storage shed and will house both diesel generators and the small petrol standby generator.



Aquarium system - an extra, electrically driven helical rotor pump (10,000 liters per hour capacity) has also been purchased and will be the prime pumping unit for the new aquarium system. The present pump will be mounted in parallel and usage will alternate between them. Water will now be pumped in the evenings into a 25,000 liter bulk storage/header tank system and gravity feed into the aquaria. Glassware for another 25 aquaria has been purchased and these should be assembled shortly.

It is now planned to construct a separate aquarium section as an extension of the laboratory block. It will contain numerous outdoor, shaded, aquarium stands and a central aquarium room from which all light can be excluded if desired. The system will be essentially an open circuit one with fresh sea water continually flowing into the tanks. A closed circuit system will be incorporated later when certain power problems have been resolved. Researchers will be able to maintain organisms in conditions of illumination and water quality close to those of the natural environment.

Boating - to increase our working capabilities around the nearby and outer barrier reefs, and to make occasional trips to Cairns to collect equipment and sometimes parties of scientists we are now looking for a large, diesel powered work boat about 12 to 14 meters in length. It is hoped to purchase this vessel and have it in operation within 6 months.

Diving - in keeping with our motto 'unlimited free air' it is planned to install a 'cascade system' consisting of 3 E.H.P. 300 cu. ft. cylinders. A reinforced concrete filling tank is also to be constructed to minimise the very remote danger of a SCUBA bottle exploding while being filled. The underwater oxygen recompression system is to be improved with the addition of an air supply for an attendant together with full face masks with communications for both patient and attendant.

Living - the main additions to improve living standards at the station will be an ablutions block with a salt water septic system, and washing facilities. In the more distant future it is hoped to construct a large communal cooking/dining/meeting block to replace the present 'kitchen' tents. It will provide a common room for seminars, slide shows and general gatherings. Cooking facilities will, however, be maintained on a modular basis with the different visitor groups being assigned different cooking units.

It seems that with the amount of usage and upsurge of interest, the Lizard Island Research Station is providing a much needed research facility for Australian marine science. And, as the station improves, so too can we expect the amount of research to increase. I'm sure that all of those who have used the station are extremely grateful to those who have made it financially possible.

For further information or for bookings, please write to:

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or send cables to:

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