LIZARD ISLAND RESEARCH STATION
a facility of The Australian Museum

Newsletter No 5 February '79

DEVELOPMENTS DURING 1978

To satisfy the growing demands for compressed air and power a new compressor and generator have been purchased.

The generator is a 25 KVA 3-phase alternator powered by a 40 horsepower Lister diesel. It has been installed in the powerhouse and connected to the Station's wiring via a new switchboard and distribution panel. A 1,000 litre diesel header/storage tank, courtesy of CALTEX Australia Pty Ltd., has been installed alongside the powerhouse. The laboratory block has been re-wired to make full use of the 3-phase power system and a colour-coded metre panel and circuit breaker board has been installed on the verandah. Two parallel, main power cables now run from the powerhouse to the laboratory and workshop. If necessary, both 12.5 and 25 KVA generators can be run simultaneously, with one providing power to the workshop for air compressors or salt water pumps, and the other providing a stable voltage power supply to the laboratory. Normally however, one generator only runs at a time, power being provided for 16 hours each day (0800-2400) or continuously when required.

In the dive shop, a 12 c.f.m. Bauer high pressure compressor has been installed to supplement the 7 c.f.m. unit. The air storage bank has been enlarged to 6 bottles and a new stainless steel manifold installed so that 3 SCUBA bottles can be filled simultaneously in an average time of 3 minutes each. The SCUBA bottle complement has been increased to 30.

With erection of a 10,000 litre fibreglass storage tank on the hill behind the Station (hidden among the trees) the pressurised fresh water system is now complete and fresh water is on tap in all houses, wet lab, aquarium room and tent/workshop area (which even has an outside shower with hot water during the day!)

The verandahs of all three houses have been concreted, making living a little bit more comfortable.

Another DeHaviland 5-metre aluminium boat has been purchased bringing the complement to 6 (3 Offshores, 1 Clark, 1 Quintrex with 35hp outboard and 1 Trojan with twin 70hp outboards). Three more ½ ton concrete moorings have been laid in front of the Station. These are now sufficient to hold the Station's 6 small workboats in most weather conditions.

Two permanent bunks with a small enclosed sleeping area have been constructed on the Platform. This should hopefully entice more visitors to use the structure. (See Newsletter No. 4)

A functional darkroom has been completed. Measuring 4 x 5 metres, it contains a double door light trap, large sink, filtered water supply, safe light, OMEGA enlarger and basic chemicals and papers for standard (35mm) black and white processing. The enlarger has a filter drawer for colour printing. The darkroom has ducted air conditioning, which also conditions the small microscope storage room alongside. Air conditioning has also been installed in the dry lab and is soon to be installed in the library.

Another 30 volumes have been added to the library bringing the total to about 150, together with numerous reprints, monographs and occasional journals which have still to be registered.

The aquarium room and laboratory verandah extensions have been completed. The room can be made lightproof for night/day experiments. Three drained aquarium trays have been installed inside the room, with two outside in the open, but under 50% shade-cloth (to stop direct sunlight). The plumbing is complete with incoming salt water running through insulated pipes to stop overheating on the hot summer days. The 120 metres of pipe from the pumps to the salt water header tank have been buried to 1 metre to also stop the water heating up during pumping. A second helical-rotor type salt water pump has been installed to provide a back-up for the aquarium system.

A wet-sorting tray with salt water on tap has been erected on the verandah of the wet lab for bulk sorting and preserving of specimens—hopefully most formalin work can now be kept outside the laboratory rooms.

A small diamond saw has also been installed on the lab verandah. This was purchased with assistance from the GBRMPA and can be used for cutting coral block samples etc. (initially it is to be used for Dr. Hutchings' project on coral infauna).

The aquisition of more tools and outboard spare parts now makes the workshop a much used and worthwhile part of the Station.

The ablutions block, pontoon and communal cooking/dining building are still planned for the future (together with a larger work boat) when funds become available.

STAFF

There have been no staff changes during the year. Trevor Barnes has been re-appointed for another 12 months as Maintenance Officer, Lois Goldman continues as part-time secretary and the position of Station Manager has been upgraded to Director with his re-appointment for another two years.

MEETINGS

During 1978 there were two meetings of the Lizard Island Trust (in March and November). In addition, the Director attended a two-day workshop at James Cook University in April on the northern sector of the Barrier Reef sponsored by the Great Barrier Reef Marine Park Authority; and in November he attended a ten-day workshop at Heron Island on fish cencusing techniques (sponsored by the GBRMPA), participated in a working party at the Australian Institute of Marine Sciences in Townsville on developing a code of practice for scientific diving on the Barrier Reef, attended the joint meeting of Barrier Reef research stations held at the University of Queensland and the annual general meeting of The Great Barrier Reef Committee in Brisbane.

VISITORS

The occupancy rate for the Station for the year 1978 was 4.7 visiting scientists/assistants per day, with a total of 5.3 visitors per day including children and casual visitors. Throughout 1978, occupancy of the Station was more equable than in earlier years. Monthly averages ranged from 11 visitors per day in January to 2.2 in September (1977 ranges were 15 in January to 0.9 in March). The Station was vacant for only 2 weeks in late August (allowing us to catch up on needed maintenance work).

The following is a list of scientific visitors with their institution, time of visits, and research projects.

PETER PARKS Oxford Scientific Films, London, 2 months (plus 1 month in 1977) filming marine life and concentrating on microscopic organisms (some footage taken here used as special affects in "Superman: The Movie".)

HUGH SWEATMAN Macquarie University (research assistant to Prof. Talbot) 4 trips totalling 28 weeks, studies on recruitment of fishes into natural reef isolates.

SUE TALBOT University of Sydney, 3 weeks, accompanied by Prof. Frank Talbot, studies on behaviour and habitat requirements of lagoon plankton.

DR. RUDOLF SCHELTEMA and MRS AMI SCHELTEMA Woods Hole, Massachusetts, two visits totalling 3 weeks, studies on larval development and settlement of the tube worm spirobranchus.

JAN CAREY PhD student, Macquarie University, two visits for 4½ weeks, sedimentation and beach sand mobility around Lizard Island.

HOWARD SILVER MSc student, University of Queensland, 10 days, studies on gut evisceration in Holothurians.

DR. PAT HUTCHINGS Australian Museum, with assistant Penny Weate, 4 visits totalling 6 weeks, ecological and taxonomic studies on animals which bore into corals.

GREG STROUD PhD student, James Cook University, 4 visits totalling 21 weeks, continuing ecological studies on life history, behaviour and reproductive biology of sand weaver fishes (Parapercidae).

DR. BORIS PREOBRAZHENSKY Institute of Marine Biology, Vladivostok, USSR, 10 days, study of growth and calcification rates of corals under varying light conditions (aquarium study).

GORDON ANDERSON Australian National Parks and Wildlife Service, 3 visits totalling 4½ weeks, studies on the function of predators in maintaining fish community structure, especially species immigration and settling success.

JAN ALDENHOVEN PhD student, Macquarie University, 3 visits totalling 29 weeks, examination of social structure, reproduction strategy and foraging methods in the angelfish Centropyge bicolor.

DR. CARL EDMONDS Diving Medical Centre, Sydney, 3 day visit studying toxic animals on coral reefs.

SOAMES SUMMERHAYES Great Barrier Reef Marine Park Authority, Townsville, 1 week survey of reef fish populations as part of a zoogeographic study on butterflyfishes. Also, development of visual cencusing techniques for fish community studies.

ZENA DINESEN PhD student, James Cook University, 1 visit of 4 weeks, continuing work in ecological associations of cave-dwelling coral species.

DR. DAVE SMITH CSIRO Division of Fisheries & Oceanography, a one week visit to further studies in nocturnal behaviour of lagoon plankton (plus later).

DAVID MOUNTSEER MSc student, Macquarie University, Sydney, 2 visits totalling 2 weeks, undertaking an investigation of the thermal characteristics of the cement floor of the laboratory in a study of the effects of construction methods on the internal environment of buildings in the tropics.

DR. SUSAN OLDFIELD Australian Museum, Sydney, 10 day visit, taxonomic study of coral reef Ophiuroids.

DR. JIM SPECHT Australian Museum, Sydney, 4 day visit, surveying Aboriginal middens and sacred sites on Lizard Island.

DR. MICHAEL BORITSKA Australian Institute of Marine Science, Townsville, Bruce Hatcher (Sydney University) and Robert Steneck (Smithsonian Institute, Washington) 1 week visit, collection of algae for taxonomic studies. (It is believed that several new species were taken.)

DR. NORM MILWARD James Cook University, 1 week, field supervision of Greg Stroud's PhD project.

BRIAN LASSIG PhD student, Macquarie University, Sydney, 2 visits totalling 16 weeks, investigation of the role of predators in maintaining fish community structure.

DR. GRAEME BAINES Government advisor in Environment, Fiji, 1 week, study on terrestrial ecosystems of small islands.

PROF. ADRAIN HORRIDGE Australian National University, Canberra, 1 week, examination of visual mechanism in compound eyes of anthropods, especially the giant mantis shrimp.

PETER IKIN PhD student, University of New South Wales, Sydney, 1 week,

DR. BRAD MACURDA University of Michigan, 2 weeks, ecology and feeding behaviour of crinoids.

JIM LUONG VAN James Cook University, Townsville, 2 visits of 1 week each, physiology and ultrastructure of algae associated with ascidians (accompanied by Prof. Dylwin Griffiths for second visit).

DR. DAVID SHAW Australian National University, Canberra, 5 days, chromosome rearrangement and mechanisms of speciation in grasshoppers.

DR. JENNIFER McDOUGAL University College Hospital Medical School, London, 2 weeks, collection of material for comparative ultrastructure study of lung tissue of reptiles and amphibia.

MS. SOPHIE DUCKER University of Melbourne, 1 week, study of sea grasses and coralline algae.

DR. ALAN JONES and DR. JIM LOWRY Australian Museum, Sydney, 3½ weeks, distribution study of infauna (especially crustacea in lagoonal sediments).

DR. GERRY GOEDEN Queensland Fisheries Service, 1 week, (joined by Dr. Burk Hill for 2 days), general reef survey for marine park management.

IAN CAMPBELL Caulfield Institute of Technology, 1 week, investigation of freshwater stream fauna on Lizard Island.

DR. JOHN PAXTON Australian Museum, Sydney, 2 weeks, physiology and ecological studies on luminous reef fishes.

DR. DOUG HOESE and HELEN LARSON Australian Museum, Sydney, 3 weeks, ecological and taxonomic studies on Gobioid fishes, especially obligate invertebrate associates.

DR. DAVE MEYER University of Cincinnati, USA, 4 weeks, habitat requirements and feeding behaviour of crinoids, also in conjunction with:

DR. DAVE SMITH CSIRO Fisheries & Oceanography, Perth, 3 weeks, feeding dynamics of crinoids using radioactive tracers (with D. Meyer), plus study of heterotrophic potential of a water mass as it moves over the outer Barrier Reef (study based on Platform at Carter Reef for 3 days).

PROF. RON AITCHESON Macquarie University, Sydney, 4 days, supervision of MSc project of Dave Mountseer.

PROF. MICHEL PICHON, DR. MIREILLE PICHON and JANICE MORRISEY, James Cook University, Townsville, 3 weeks, continuing study of coral reef geomorphology and coral taxonomy.

MR. A. BIRTLES James Cook University, Townsville, 3 days, crinoid taxonomy and ecology, in collaboration with Dave Meyer.

DR. TERRY DONE James Cook University, Townsville, visited the Station several times in his vessel Vellela while studying coral distribution on the reefs near Lizard and the outer Great Barrier Reef.

MR. JACK MOYER Tatsuo Tanaka Biological Station, Japan, 1 week, behaviour of angelfish in collaboration with Jan Aldenhoven.

The R.V. Kallisto from the Institute of Marine Biology, Vladivostok, USSR, with Dr. Preobrazhensky, Dr. Krasnov and other marine scientists called at Lizard Island in June. The Kalisto was to have spent a week working around Lizard Island and at the Station but plans were frustrated by external causes.

In addition, the Station received visits from:

DR. D. F. McMICHAEL, formerly chairman of the Great Barrier Reef Marine Park Authority and now Director of the Department of Home Affairs (January).

MR. RAY GROOME, Minister for Environment, Housing and Community Development (April).

Senate Select Committee on Oil and the Environment, including Senator Hodges (Chairman), Baillieu, Cohen, Fisher and Simon (June).

MRS. FLO BJELKE-PETERSON, wife of the Queensland Premier (October).

PUBLICATIONS

The following publications result from work done wholly, or in part at the Lizard Island Research Station.

Allredge, A.L. and J.M. King, 1977
Distribution, abundance, and substrate preferences of Demersal reef zooplankton at Lizard Island Lagoon, Great Barrier Reef.
Mar. Biol. 41: 317-333

Barnes, D.J. et al. of LIMER 1975 Expedition, 1976
Metabolic processes of Coral Reef Communities at Lizard Island, Queensland.
Search, 7 (11-12): 463-468

Byrnes, N.B., S.L. Everist, S.T. Reynolds, A. Specht and R.L. Specht, 1977.
The vegetation of Lizard Island, North Queensland.
Proc. R. Soc. Qd. 88: 1-15

Domm, S.B., 1977.
Sea Birds and Waders of the Lizard Island Area.
The Sunbird, 8 (1): 1-8

Domm, S.B. and W. Deas, 1976
Corals of the Great Barrier Reef.
Ure Smith, Sydney, 127 pp.

Ehrlich, P.R., F.H. Talbot, B.C. Russell, and G.R.V. Anderson, 1976.
Observations on the behaviour of Chaetodontid fishes with special reference to Loren's poster colour hypothesis.
J. Zool. Lond. (1973) 183: 213-228

Frankel, E., 1978.
Evidence from the Great Barrier Reef of Ancient Acanthaster aggregations.
Atoll Res. Bull., 220: 75-93

Harvey, N., 1977.
The identification of subsurface disconformities of the Great Barrier Reef, Australia, between 14°S. and 17°S. using shallow seistic refraction techniques.
Proc. Third Intl. Coral Reef Symp., Florida: 45-51

Hopley, D. 1977.
The age of the outer Ribbon Reef surface, Great Barrier Reef, Australia: Implications for Hydro-Isostatic models.
Third. Intl. Symp. Coral Reefs, Miami: 23-28

Hutchings, P., 1977.
Opportunists in hiding.
Aust. Nat. Hist., 19 (3): 86-89

Hutchings, P., and P.B. Weate, 1977.
Distribution and abundance of Cryptofauna from Lizard Island, Great Barrier Reef.
Mar. Res. Indonesia, 17: 99-112

Hutchings, P.A. and P.B. Weate, 1978.
Comments on the technique of acid dissolution of coral rock to extract endo-cryptolithic fauna.
Aust. Zool., 19 (3): 315-319

Hudson, R.C.L., 1977.
Preliminary observations on the behaviour of the Gobiid fish Signigobius biocellatus Hoese and Allen, With particular reference to its burrowing behaviour.
Z. Tierpsychol., 43: 214-220

Kinsey, D.W., 1977.
Seasonality and zonation in coral reef productivity and calcification.
Proc. Third Intl. Coral Reef Symp. Miami, Fla. 1977.
Vol. 2: 383-388.

Larson, H.K., 1977.
Gobies at Lizard Island.
Paper presented at Fourth Annual Conference Aust. Soc. Fish. Biologists., August 1977.

Moriarty, D.J.W., 1979.
Biomass of suspended Bacteria over Coral Reefs
Mar. Biol., in press.

Lubbock, R. and N.V.C. Polunin, 1976.
Notes on the Indo-West Pacific genus Ctenogobiops (Teleostei: Gobiidae) with descriptions of three new species.
Revue Suisse Zool., 84 (2): 504-514

Scheltema, R.S. and A.H. Scheltema, 1978.
Development, settlement and metamorphosis of Spirobranchus giganteus corniculatus (Grube, 1862).
M.S. pp. 1-3

Scott, B.D. and H.R. Jitts, 1977.
Photosynthesis of Phytoplankton and zooxanthellae on a coral reef.
Mar. Biol. 41: 307-315

Smith, D.F. and W.J. Wiebe, 1977.
Rates of Carbon fixation, organic carbon release and translocation in a reef building Foraminifer, Marginopora vertebralis.
Aust. J. Mar. Freshwater Res., 28: 311-319

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