



Lizard Island Research Station

Newsletter July 98 / December 99

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## Lizard Island Reef Research Foundation

The Lizard Island Reef Research Foundation is an independent trust established to raise funds for the Station and to support research on the Great Barrier Reef. Its major commitments are to the Doctoral Fellowships program and to capital development of the Station. Donations to the Foundation are tax deductible within Australia and attract a partial subsidy from the NSW State Government through the Australian Museum Trust. More than \$1.8 million has been raised by the Foundation since its inception in 1978.

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Donors who have provided support in the current year are acknowledged and thanked in the body of the Newsletter



## Lizard Island Research Station Newsletter July 98 to December 99

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### **Directors**

Dr Anne Hoggett and Dr Lyle Vail

All photographs by Lyle Vail or Anne Hoggett unless otherwise indicated.

# Lizard Island - A hub for research on larval fishes

Almost all coral reef fishes reproduce by spawning eggs and sperm into the water where the eggs are fertilised. The tiny larvae hatching from these eggs live in open water for weeks or months, well away from the reefs occupied by their parents. Late-stage larvae settle onto reefs and metamorphose into adult fish. Because fish larvae are small, it has been assumed that larvae behave as passive particles in the sea, at the mercy of ocean currents. Other ideas about reef fish communities flow on from this assumption and these have important consequences for practical things like fisheries management. For example, if fish larvae are passively distributed by a unidirectional current, it is unlikely that any will settle onto the reef inhabited by their parents. This is the crux of the “open population paradigm”.

Reef-fish larvae are difficult to study in the field because of their small size and the fact that they look so different from the adults. It is only in the last few decades that research has challenged various assumptions about them. Lizard Island Research Station has played a major role in the advance of knowledge on larvae of coral-reef fishes: no other location has had so much larval reef-fish work based near-by.

The extensive collections of reef fish larvae taken in the vicinity of Lizard Island have provided the raw material for much taxonomic work by Australian and overseas researchers. To appreciate the contribution of the Research Station, one need only see the large number of illustrations in standard works on tropical fish larvae that are based on specimens collected from the Lizard Island area.

Work on the distributional ecology of fish larvae in the Lizard Island area by Jeff Leis of the Australian Museum featured prominently during the 1980s. This work was based on plankton-net collections and both vertical and horizontal distributions were studied. This helped establish that different species had different distributions, and showed where the larvae actually spent their pelagic

period. These findings helped lay the foundation for questioning the traditional notion that larvae were passively distributed by currents - if the larvae originated from the same reef and were passively drifting, how could they have different distributions? This was combined with dedicated studies of currents in the Lizard Island area to help work out the interaction between currents, larval input and distributions. Evidence emerged that individuals of some species probably lived and died in Lizard Island lagoon or in the waters immediately adjacent to the island, thus leading to an initial questioning of the open population paradigm.

Because of the types of sampling gear in use, this early phase of the work concentrated on smaller, younger larvae. The initial work was done from the Station's small (<7 m) boats, but in 1983 the Station's purpose-built research vessel RV *Sunbird* became available. *Sunbird* greatly expanded the types of work that could be done and for the next eight years it was used extensively for larval fish work, including forays into the Coral Sea to study larval fish ecology at isolated atoll-like reefs. It was during this period that the first rigorous comparison of various methods of capturing reef-fish larvae was conducted: methods included the newly-trendy light trap, plankton purse seines, and more conventional sampling gear. This study included scientists from three of the major institutions involved in research on the reef - the Australian Institute of Marine Science (AIMS), the Australian Museum (AM), and James Cook University (JCU). The larval purse-seine featured prominently in studies by Howard Choat and Mark McCormick of JCU, and this helped lead the way toward studies on the larger, older pelagic stages of reef-fishes.

In the late 1980s, the Lizard Island Research Station served as the base for the first sustained use of the larval light trap designed by Peter Doherty of AIMS, when Maria Milichich of JCU did her PhD work there. This provided unique, long-term data sets that have had a major influence on views of the way recruitment works.

R.V. *Sunbird* tows plankton nets  
PHOTOGRAPHER UNKNOWN





Starting in the 1990s, the light trap began a new life as a means of capturing late-stage larvae for both laboratory and field studies of larval biology. Several workers, including Geoff Jones and co-workers from JCU used light-trap larvae to “semi-naturally” increase recruitment in controlled experiments. Others, including Mark McCormick and Brigid Kerrigan of JCU, used the larvae for physiological and nutritional studies in the laboratory and in work on metamorphosis.

Behavioural studies on reef-fish larvae began at Lizard Island in the 1980s, when Hugh Sweatman of Macquarie University used natural recruitment to look at settlement. In the 1990s, Ilona Stobutzki of JCU used larvae caught in light traps to establish the amazing swimming endurance of late-stage larvae in the Station’s aquarium. In the field, Ilona was also able to demonstrate that larvae in open water know where the reef is. Jeff Leis and co-workers from the AM used light-trap larvae to study larval behaviour *in situ*, both in open “blue water” near Lizard Island, and near to the Lizard Island reefs. All this behavioural work has shown that reef-fish larvae:

- \* are effective swimmers in that they can swim faster than ambient currents;
- \* have very impressive swimming endurance;
- \* seem to be able to detect reefs from some distance away; and
- \* possess complex behaviour in relation to settlement and predator avoidance.

In short, reef-fish larvae are anything but the passive “biological drift cards” of tradition. This has major implications for the open population paradigm and importantly, for how reefs and marine protected areas are managed. Much larval fish work is underway today at the Lizard Island Research Station and we can expect that contributions from Lizard Island researchers will continue to open up new areas and push back the frontiers in larval fish biology.

*By Jeff Leis, Australian Museum*



Dr Brigid Kerrigan conducts experiments with fish larvae in the Sir John Proud Aquarium.

# Research & Education

## Doctoral Fellowships

Each year, a Lizard Island Doctoral Fellowship is awarded to a PhD candidate conducting significant long-term field studies in a scientific discipline relevant to the Great Barrier Reef. Tenable for up to three years, the Fellowship is worth up to \$6,000 per year. The Lizard Island Doctoral Fellowship program is fully funded by the Lizard Island Reef Research Foundation and is awarded by the Australian Museum. Applications for the 2000 Doctoral Fellowship closed on 1 October 1999 and applications for the 2001 Fellowship will close on 1 October 2000. For further information about the Fellowship, see our web site.

The 1999 Doctoral Fellowship was awarded to Jackie Wolstenholme of James Cook University for her work on species boundaries in reef-building corals (See "Corals - who's who?").

The 2000 Doctoral Fellowship was awarded to Ulrike Siebeck of the Vision, Touch and Hearing Research Centre at the University of Queensland for her project entitled "Neuroethology of colour and colour communication of reef fishes" (See "Why are coral reef fishes so colourful?").

Nick Gust (1998 Doctoral Fellow) and Phil Munday (1997 Doctoral Fellow), both of James Cook University, completed their field work at Lizard Island in March 1999.

## Augmentative Grants

An Augmentative Grant is occasionally awarded to a highly commended applicant for the Doctoral Fellowship. This grant comprises 100 person days at the Station which is worth approximately \$2,700. The 1999 Augmentative Grant was awarded to Jason Gedamke of the University of California at Santa Cruz for his work on vocalisations of minke whales. Jason and his assistants made two trips to Lizard during the 1999 whale season between May and September. The 1998 Augmentative Grant winner, Melany Puglisi of the University of Mississippi, visited the Station in early 1999 for her project on the chemical ecology of gorgonian corals. An Augmentative Grant was not awarded for 2000.

## Why are coral reef fishes so colourful?

Ulrike Siebeck (2000 Doctoral Fellow) at the University of Queensland will be supported by the Lizard Island Reef Research Foundation during 2000 to investigate how coral reef fishes use their colours for camouflage and for signaling, both within and between species.

Many coral reef fishes are beautifully coloured and the colour patterns often contain an ultraviolet component that is invisible to the human eye. Uli's project addresses questions that arise from that observation. Are coral reef fish sensitive to UV radiation? If so, does the UV component play a role in recognition and communication? Humans, like many other mammals, block UV light at the level of their ocular media (lens and cornea). However, many fish and other creatures allow this light through and process it much as humans process red, green and blue light. During the first two years of her PhD, Uli studied the lenses and corneas of more than 300 species of coral reef fishes to discover that about half of them transmit UV light and are therefore likely candidates as users of UV light for communication.

The Lizard Island Fellowship will enable Uli to take these results into the field where she will carry out extensive behavioural experiments. She will be working on species that have a UV component to their skin colouration and that were shown in her previous study to be likely candidates for possessing UV vision. She will use various behavioural methods in the lab and in the field to investigate the ability of the fish to see UV light as well as the role of UV colour patterns in their behaviour. A remote camera will be installed on the reef to record the interactions of fish behaving naturally on the reef. Illumination conditions will be varied using filters so that the role of UV wavelengths can be determined by comparing behaviours with and without UV light. This research will improve our understanding of colour perception and colour communication in coral reef fishes.



Uli Siebeck examines fish eyes under a microscope.

# Activities

## Corals - who's who?

Funds from the Lizard Island Reef Research Foundation will be available to Jackie Wolstenholme of James Cook University (1999 Doctoral Fellow) for up to three years to conduct field work for her project "Species boundaries in scleractinian corals". This project addresses one of the most basic questions in coral reef biology: where does one draw the line between coral species?

Species of corals have traditionally been classified according to similarities and differences in the appearance of the skeleton. However, this has proved inadequate for many corals. Jackie's research will integrate traditional and contemporary techniques to clarify uncertainties in the classification of a group of corals within the genus *Acropora*. This is the most diverse and widespread genus of reef-building corals in the world and it includes the well-known staghorn and plate corals.

Because of the wide distribution of *Acropora*, Jackie will travel to coral reef locations around the world for this project. Lizard Island will act as a base for detailed work on the timing of reproduction of particular species groups, as well as an important site for obtaining data on similarities and differences in skeletal characters. A species is usually defined as a group of plants or animals that can interbreed and produce viable offspring; individuals in a single species have similar appearance because they are genetically related. Jackie began to investigate the synchronicity of spawning and fertilisation success of different "morphs" of currently accepted *Acropora* species at Lizard Island in 1999. She found several morphs that do not spawn at the same time as other morphs, so it is unlikely that the two groups interbreed. Jackie's research will provide an important foundation for resolving difficulties in the classification of corals, a major impediment to research, environmental management and assessment of biodiversity of coral reefs.

The Station has been involved in the following monitoring activities in the period covered by this newsletter:

- \* Weather (air temperature, wind speed and direction, rainfall and air pressure)
- \* Water temperature (loggers at 0, 2 and 6 metres depth)
- \* Water quality monitoring (long-term GBRMPA contract concluded in June 1999)
- \* Crown-of-thorns starfish numbers
- \* Human usage and potato cod at the Cod Hole

The Station also contributed to the following issues and initiatives during this period:

- \* Site planning for Lizard Island under the Cairns Area Plan of Management
- \* Scientific diving standard being developed by Australian Standards
- \* Core member of the National Tropical Marine Network
- \* Negotiations for renewal of the Australian Museum Trust's lease over the LIRS site
- \* Member of the Lizard Island Management Advisory Committee
- \* Management of the Cod Hole
- \* Determining "Representative Areas" of the Great Barrier Reef Marine Park by GBRMPA
- \* Review of Tropical Marine Science conducted by Dr Robin Batterham, Chief Scientist

Jason Gedamke loads batteries into hydrophones in the Purves Laboratory for deployment off Lizard Island to track minke whales.





# Donations - thank you!

The following individuals and companies have generously supported the Station through the Lizard Island Reef Research Foundation during the period covered by this newsletter. These funds have enabled us to develop the Station as outlined on page 7, and to support promising young scientists through the Doctoral Fellowships program. As well, sufficient funds have now been accumulated to allow construction of the second new staff house in early 2001. Special donors to the staff housing project are indicated with an asterisk (\*) and gifts in kind are indicated with a plus sign (+).

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and many anonymous donors

Lance Pearce puts the new tractor through its paces.







## Developments

During the period covered by this newsletter, the following improvements to the Station were made.

- \* The Station's tractor was replaced with a new one that has front-end hydraulics. The hydraulic frame can be fitted with forks or a bucket which greatly improves efficiency.
- \* The central air-conditioning system for the laboratories was replaced with individual split-system air conditioners in each area. The original system had been installed in the early eighties and was nearing the end of its useful life. The individual systems allow for less power to be used.
- \* Two new computers have been purchased to replace old ones: one is for the office and the other has been placed in a renovated room in the old laboratory building for visitors' use. The visitors' computer is equipped with Microsoft Office software and a printer. Since November 1999, visitors have had access to e-mail for the first time at Lizard Island, but web access is still too slow to be viable due to the Station's very slow radio link to the mainland.
- \* To comply with new boating regulations in Queensland, all the Station's boats are now registered as commercial vessels. This required all the boats to be surveyed and a liferaft to be purchased for the Station's 7.2 metre diesel workboat, NQEA 1. We acknowledge with gratitude the support of NQEA Australia who refurbished the trailer for NQEA 1 at no cost to the Station and provided assistance with the survey of that vessel.
- \* A second cooktop has been installed in each of Suntory and Kirby houses.
- \* Two of three freshwater storage tanks that were originally installed in the early eighties have been replaced.
- \* A new laboratory oven has been purchased.
- \* The regular replacement program for the Station's twelve outboard motors proceeded as planned.

## Foundation Members' News

The Foundation hosts a dinner each year to thank members for their support, as a social activity to meet other members, and to assist in recruiting new members. The 1998 dinner was held on 14 October, when Research Station Director Dr Anne Hoggett spoke about developments at the Station and some of the research being conducted. At the 1999 dinner on 1 September, the new Director of the Australian Museum, Professor Mike Archer, spoke thoughtfully and provocatively about biology, ecology and the importance of the time frame that is being considered. These functions were held on the Australian Museum's Rooftop and were well-supported by members. The success of the dinners was due, once again, to the efforts of the organisers Ken Coles, Rowena Danziger and Anders Ousback. Wine for both dinners was generously donated by Universal Wines and Fesq & Company.

Two fabulous members prizes were again made available to the Foundation by sponsors Captain Cook Cruises and Australian Resorts. One prize is a four-night stay for two at the Lizard Island Lodge with return air fares to Lizard Island, and the other is a four-night cruise for two to Lizard Island aboard the Captain Cook Cruises ship *Reef Endeavour* with return air fares to Cairns. In 1998, the prizes were won by Lord Catto of Cairncatto and The Australian Geographic Society, respectively. The latter prize was taken by the winner of a staff incentive program. In 1999, the Lodge prize was won by Trevor and Geraldine Haworth and the cruise was won by Alan and Lynne Rydge.

The following Foundation members and associated people visited the Station during the period covered by this newsletter.

- \* Chairman Ken Coles visited Lizard Island twice in 1998. In September he stayed at the Lodge with his wife Rowena Danziger, and in December he stayed at the Station to observe the coral spawning (see box).
- \* Megumi and Nobuko Takahashi visited the Station during their stay at the Lodge in November 1998.
- \* Lord Catto of Cairncatto visited the Station during his stay at the Lodge in February 1999. Lord Catto's

daughter, Ariane Catto, and Robert Trethewey also visited the Station in June 1999.

- \* Sally and Ray Houlihan became members after visiting the Station during their stay at the Lodge in March 1999.
- \* Dr Penny Berents and Peter Berents stayed at the Station with their daughter Natalie in April 1999. Penny was appointed a trustee of the Foundation in May 1999.
- \* Prof Rudolph Gedamke became a member after visiting the Station in May 1999 as a research assistant to his son, Jason Gedamke.
- \* Prof Derek Tribe and Elizabeth Tribe visited during their stay at the Lodge in June 1999. This visit was made at the request of member Paul Slade because Derek is chairman of the research committee of the three Slade family foundations, which have contributed generously to the Station in the past. Russell Slade and Mary McKillop stayed at the Station in August 1999.
- \* Dr Barbara Hardy, AO became a member after staying at the Station during a special interest trip organised by The Australian Museum Society in June 1999.
- \* Bob Hochstetler and Dr Jill Kammermeyer became members after staying at the Station during a special interest visit led by prominent reef researcher, Prof Peter Sale, in June 1999.
- \* Dr Chris Dibden and his 7 year old son Andrew visited during their stay at the Lodge in July 1999.
- \* James Duplessie became a member after visiting the Station during his stay at the Lodge with his sons William and Andrew in June 1999.
- \* Patron and trustee Rob Purves stayed at the Station with his family in September 1999.
- \* Bill and Jan Rogers visited during their stay at the Lodge in September 1999.
- \* Prue and Andrew Kennard visited the Station during their stay at the Lodge in September 1999.

## Impressions of the 1998 coral spawning

It was a fascinating experience. We snorkelled from a boat in the Blue Lagoon on three nights between about 8pm and 10 pm and saw the spawning on the last night. Swimming in the dark was a new experience for me. They fitted me out with wetsuit, flippers, mask and snorkel. We had light sticks which we taped to our snorkels so we could see where everyone else was. We also had torches and could see the spawn very well popping out and rising to the surface. It was much smaller than I had imagined it.

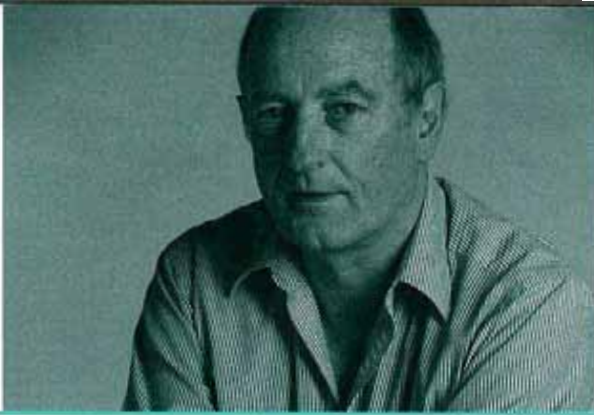
What we saw in the laboratories was really much more fascinating than what we saw in the sea. There were a number of experiments set up with high magnification video cameras so we could see the birth of the spawn slowly occur. We saw the spawn under the microscope with the eggs surrounded by tiny sperm trying to find their way in, and we saw fertilised eggs that had divided into two and later, into four. We were seeing the real stuff that life is made of.

*By Ken Coles*



Foundation chairman Ken Coles watches corals spawning in the John Proud Aquarium.





Dr Des Griffin, AM  
PHOTO: STUART HUMPHREYS

## For the record...

### Des Griffin retires

In September 1998, Dr Des Griffin, AM retired as Director of the Australian Museum, a position he had held for 22 years. Des was, and is, a great champion for the Station. He took the helm of the Museum when the Station was just a collection of tents. With vision and vigour, he oversaw its development into the internationally-recognised facility it is today. Des' contribution to the Station has been recognised by naming the instrument laboratory after him - it is now known as the Griffin Laboratory. The Lizard Island Reef Research Foundation has also acknowledged Des' importance to the development of the Station by making him a patron of the Foundation, its highest honour.

### Staff

Lyle Vail and Anne Hoggett completed their ninth year as the Station's Directors in August 1999.

They will be having a very different year in 2000. Their son, Alex, has done all his schooling to date on the island through distance education, but he will attend school in Sydney from now on. One of the directors will be working in Sydney for the whole school year to enable Alex to be a day student in 2000, while the other will be based at Lizard as usual - they will switch places several times during the year. In 2001, Alex will become a boarder and both Anne and Lyle will again be based at Lizard.

The Station's two full-time maintenance positions continue to comprise two couples who work six months on, six months off. Marianne and Lance Pearce do the summer shift from October to March while Tania and Bob Lamb are on duty for the remainder of the year. This arrangement continues to work extremely well. Lance and Marianne completed their eleventh year at the Station in late 1999 - is this a record for staff on Great Barrier Reef island research stations?

Sophie Stojic was Alex Vail's home tutor in 1998 and 1999.

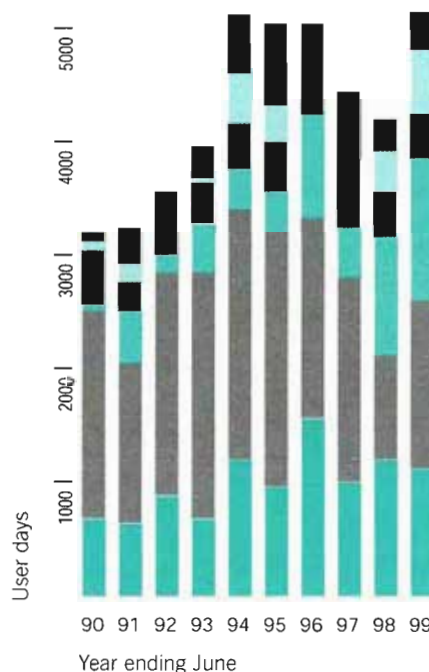
As volunteers, Jeff Leis and Sue Bullock assisted with running the Station while Lyle and Anne were on leave during December 1998 and January 1999. Renie Hood and Snow Amos filled this role during May 1999 and in late December 1999.

### Usage

Usage of the Station during the year to June 1999 was the highest on record at 5,246 user days. Our core users are researchers, postgraduate students, and educational groups. The graph shows that usage by these groups in 1998/99 was the second highest on record. It is pleasing to note that usage by postgraduate students increased markedly from last year's record low for that category, and usage by educational groups is the highest yet recorded. The non-core group that pushed the numbers up this year was commercial users, especially film groups.

### Diving

During the year to June 1999, 3,367 dives were made from the Station representing 3,726 person hours underwater. This is an increase of 22% on the number of dives carried out in the previous year, reflecting the greater level of research activity in 1998/99. As usual, most diving took place in very shallow water: 33% of this year's dives were to 5 m or less, 42% were between 6 and 10 m, 20% were from 11 to 15 m and the remaining 5% were between 16 and 30 m.



### Lizard Island Research Station Usage

- Researchers
- Post Graduates
- Education Groups
- Volunteers
- Commercial
- Others

### Bench fees

Visiting researchers are charged a bench fee that covers self-catering shared accommodation, use of a small boat, most laboratory and aquarium facilities, and scuba tanks and air fills to qualified divers. The fee is subsidised by the Australian Museum Trust.

During the period covered by this newsletter, the bench fee was \$75 per night for the principal scientist (non-student projects) and \$65 per night for each assistant. For postgraduate students working on their own projects, the fee was \$29 per night for the student and \$25 per night for each assistant. For visits longer than 28 consecutive days, a 10% discount applies to the whole period. Attractive rates are offered to groups of school and university students undertaking course work directed by teachers or lecturers from their own institutions.

Bench fees have been held at these levels for many years but an increase will take effect on 1 January 2000. The new rates are (A\$ per person per night):

Non-student researcher	\$80
Assistant	\$70
Postgraduate student (own project)	\$30
Student's assistant	\$27

A goods and services tax (GST) of 10% is being introduced in Australia on 1 July 2000. Accordingly, the above fees will be 10% more after that date to cover the tax.

Other costs involved in conducting research at Lizard Island include airfares between Cairns and Lizard Island (about \$410 for the round trip), barge freight for food and other supplies from Cairns (\$10 per grocery carton) and food (the supermarket bill plus a small cartage fee for delivery to the barge depot). Use of most laboratory and aquarium facilities is included in the bench fee although extra charges may be incurred for use of equipment that draws a lot of power or uses additional fuel. Use of a small self-drive boat is included in the bench fee, but if a larger boat is needed, the additional fuel cost is recouped on a distance basis and it is usually necessary to hire a staff boat driver at \$50 per hour. Scuba tanks and air fills are included in the bench fee for divers qualified according to the Station's regulations. Weights and belts are available to all visitors at no extra

charge. High quality snorkelling gear, wetsuits, regulators and BCDs are available for hire at reasonable rates. GST will apply to all the goods and services listed above after 1 July 2000.

### Volunteer program

The Station's volunteer program offers accommodation in exchange for four hours manual work per day. The work is maintenance, not research, but many volunteers are students or recently-qualified biologists keen to experience the coral reef environment and to mix with researchers. Only two volunteers are accepted at any one time, and opportunities are greatest during the Australian winter. Visit our web site for more details about the volunteer program.

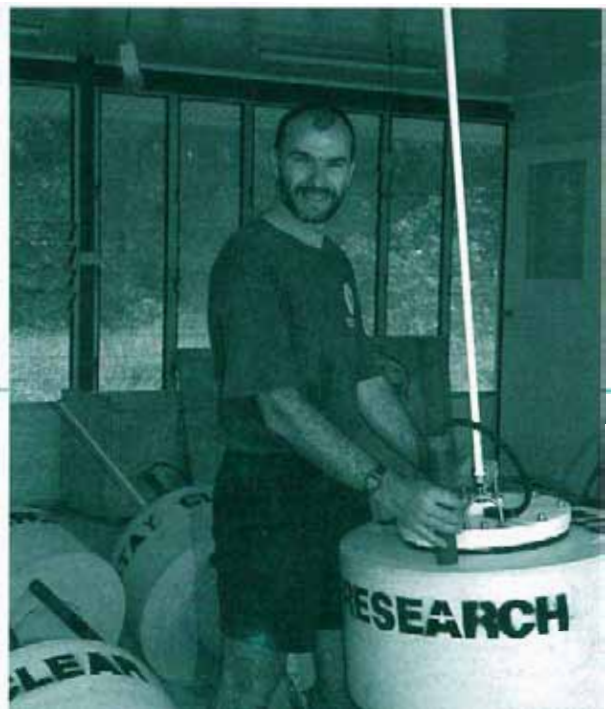
### Tours

Tours of the Station continued to be conducted on Monday and Friday mornings for island visitors.

A special tour was conducted in November 1999 for a delegation from the Smithsonian Institution and the Queensland government.

### Lizard Island Lodge sold

In May 1999, control of the Lizard Island Lodge was transferred from the Qantas subsidiary, Australian Resorts, to P&O Australian Resorts. P&O is substantially refurbishing the resort and the Lodge will be closed from 24 January to 30 June 2000 for this purpose. Sunstate Airlines ceased flights between Lizard Island and Cairns in October 1998, with Eastland Air taking over the route for a year. In October 1999, the route was transferred to Transtate Airlines. Flight arrangements will be irregular during the closure period, but several flights a week will be available according to demand from a charter operator.



Dr Dirk Zeller prepares ultrasonic telemetry gear in the Purves Laboratory for deployment in the field to track fish movements



# Research Projects and Participants

The following research projects were carried out during the year. Project leaders who are postgraduate students are indicated with an asterisk (\*).

## **Stress indicators in a coral reef environment (May 1999)**

\*Arnaud Lacoste (Station Biologique de Roscoff, France)

## **Algae as food for fishes (June 1999)**

\*Lindsey Zemke-White (University of Auckland, New Zealand) assisted by John Ackerman and Lisa Bielecki

## **Photosynthetic characteristics of zooxanthellae (July 1999)**

Dr Geir Johnsen (Trondheim Biological Station, Norwegian University of Science and Technology) accompanied by Hilde, Sindre and Tobias Johnsen

## **Chemistry and biochemistry of marine sponges (July 1998)**

Prof Mary Garson, Jamie Simpson and Richard Clark (University of Queensland, Brisbane)

## **Calcareous sponges of reef caves and cryptic habitats of the Great Barrier Reef (August 1998)**

Dr Gert Wörheide, Dr Sally Leys and John Kennedy (Queensland Museum, Brisbane) assisted by Nelson Lauzon

## **Reconstructing climate from corals and coralline sponges (August 1998)**

\*Stewart Fallon (Australian National University, Canberra)

## **Chemistry and chemical ecology of the tropical marine sponge *Haliclona* sp. (February 1999)**

\*Richard Clark (University of Queensland, Brisbane) assisted by Jamie Simpson and Peta Alexander

## **Taxonomy and biology of the Trematoda (Digenea) of teleost fish of the Great Barrier Reef (October/November 1998)**

Dr Jess Morgan as field leader for Dr Tom Cribb's project (University of Queensland, Brisbane) assisted by Steve Wesche and Ingo Ernst

## **Seeking an evolutionary/ ecological explanation for the diversity of gastro-intestinal helminths of acanthurid fishes (October/November 1998)**

\*Clinton Chambers (University of Queensland, Brisbane) assisted by Dr Jess Morgan, Ingo Ernst & Steve Wesche

## **Taxonomy, systematics and host associations of the Gyliarchenidae (Digenea) (October/November 1998)**

\*Kathryn Hall (University of Queensland, Brisbane) assisted by Dr Jess Morgan, Ingo Ernst & Steve Wesche

## **Hypodermic insemination in flatworms (February/March 1999)**

Dr Nicolaas Michiels (Max Planck Institute, Germany) assisted by Anne Peters, Peter Delvaux and Andrew Young

## **Behavioural and ecological aspects of the symbiosis between two free-living corals and a worm (July/August 1998)**

\*Sea Rottman (James Cook University, Townsville)

## **Long-term monitoring of coral communities (November 1998)**

Dr Terry Hughes (James Cook University, Townsville) assisted by Liz Dinsdale and Jackie Wolstenholme

## **Recruitment processes influencing settlement of coral larvae (December 1998)**

Dr Andrew Heyward, Dr Andrew Negri, Max Rees and Luke Smith (Australian Institute of Marine Science, Karratha) assisted by Nicole Webster (AIMS, Townsville)

## **Survivorship of newly-settled corals (January 1999, February/ March 1999)**

\*Luke Smith (Australian Institute of Marine Science, Karratha) assisted by Michelle Devlin

## **Chemical ecology of Pacific gorgonian corals (January/ February 1999, May 1999)**

\*Melany Puglisi (University of Mississippi, USA) assisted by Dr Marc Slattery and Dr Dan Schlenk

## **Species boundaries in scleractinian corals (March 1999, October/November 1999, November/December 1999, December 1999/January 2000)**

\*Jackie Wolstenholme (James Cook University, Townsville) assisted by Tsai Sin, Jason McKenzie, Jan Strugnell, Dr Sandra Romano, Dr Kirsten Michael-Wagner, Xavier Pochon, Laurent Lehman and Ken Martin

## **Recruitment patterns of corals (February/March 1999)**

\*Michelle Devlin (Great Barrier Reef Marine Park Authority, Townsville) assisted by Luke Smith

## **Density and species composition of juvenile corals: the importance of life history strategies (March 1999)**

\*Ben Johnston (James Cook University, Townsville) assisted by Bernardo Blanco-Martin and Juan Cruz

## **Coral reef restoration (April 1999)**

Rohan Pratt (Flamingo Bay Research, Cairns)

## **Reticulate evolution in corals: population-species architecture of the *Acropora nasuta* group (October 1999)**

\*Jason McKenzie (James Cook University, Townsville)

## **Biogeography of tropical rocky shore prosobranch gastropods (August 1998)**

\*Benjamin Vallejo (James Cook University, Townsville) assisted by Juan Cruz

## **Bioerosion and encrustation of mollusc shells at Lizard Island (November 1998)**

\*LeAnn Southward (Otterbein College, USA & School for International Training, USA) assisted by Sophie Stojic

**Taxonomy and phylogeny of radula-less nudibranchs (July 1999)**

\*Gilianne Brodie (James Cook University, Townsville) assisted by Jon Brodie and accompanied by Nicola Brodie

**Reproductive systems of opisthobranch molluscs (July 1999)**

\*Annette Klussman-Kolb (University of Bochum, Germany) assisted by Dr Heike Wägele

**Evolutionary history of nudibranchs (July 1999)**

Dr Heike Wägele (University of Bochum, Germany) assisted by Annette Klussman-Kolb and accompanied by Lennie and Rikki Wägele

**Marine mites of the Great Barrier Reef (October 1998)**

Dr Jurgen Otto (Australian Institute of Marine Science, Townsville)

**Phylogeny of the Isopoda (July 1999)**

Dr Wolfgang Wägele (University of Bochum, Germany) accompanied by Lennie and Rikki Wägele

**Systematics, ecology and biogeography of amphitoid amphipods (November 1999)**

\*Rachel Peart (Australian Museum, Sydney) assisted by Kate Dempsey and Megan Huggett

**Biology of stomatopods (August 1998)**

Dr Roy Caldwell (University of California at Berkeley, USA)

**Evolution of monogamy in stomatopods (November/December 1999)**

Dr Roy Caldwell (University of California at Berkeley, USA) assisted by Dr Gloria Caldwell

**Chronic damage to corals by crown-of-thorns starfish (November 1998, January/February 1999)**

\*Morgan Pratchett (James Cook University, Townsville) assisted by Liz Dinsdale, Jackie Wolstenholme, Ross Thomas and David Pratchett

**Evolution of gamete characteristics in the brittlestar genus *Macrophiothrix* (October/November 1999)**

Dr Bob Podolsky (University of North Carolina, USA) assisted by Kirsty Kemp and Greer Howarth

**Egg size, larval ecology and development in the brittlestar genus *Macrophiothrix* (October/November/December 1999)**

\*Jon Allen and Dr Bob Podolsky (University of North Carolina, USA) assisted by Kirsty Kemp and Greer Howarth

**Invertebrate richness compared to patch size and isolation (June 1999)**

\*Christy Tarleton (University of New Mexico, USA)

**Vision in marine animals (July/August 1998)**

Dr Justin Marshall (University of Queensland, Brisbane), Dr Julian Partridge (University of Bristol, UK), Dr Tom Cronin and \*Chuan-Chin Chiao (University of Maryland at Baltimore, USA)

**Neuroethology of colour of the reef (July/August 1998, December 1999)**

\*Uli Siebeck (University of Queensland, Brisbane) assisted by Dr Justin Marshall and Guy Wallis

**Evolution of phenotypic plasticity (August 1999)**

Dr Julian Caley (James Cook University, Townsville) assisted by Ashley Frisch and Ronnie Baker

**Comparison of fishery nursery grounds (July 1998)**

\*Sarah Omundsen (James Cook University, Cairns) assisted by Charles Hatcher

**Soft bottom invertebrate communities and the influence of fish foraging (July 1998, October 1998, November/December 1998, May 1999, September 1999)**

Dr Mark McCormick (James Cook University, Townsville) assisted by Bridget Green, Vimoksalehi Lukoschek, Andrew Hoey, Susie Holst, Damian Thomson and Melissa Schubert

**The importance of short-lived fishes to the nutrient dynamics of coral reefs (August 1998)**

\*Michael Marnane (James Cook University, Townsville) assisted by Ross Thomas

**Hormones and behaviour in the spiny damselfish, *Acanthochromis polyacanthus* (December 1998)**

Prof Ned Pankhurst and Dr Tish Pankhurst assisted by Polly Hilder and Mark Hilder (University of Tasmania, Launceston) and accompanied by Sam and Mike Pankhurst

**Effect of habitat quality on the level of stress hormones in the spiny damselfish, *Acanthochromis polyacanthus* (October/November 1999)**

Prof Ned Pankhurst (University of Tasmania, Launceston) assisted by Harry King, Catriona McLeod, Dr Tish Pankhurst and Mark Hilder

**Gut morphology and diet in reef fishes (November/December 1998)**

\*Jason Elliott (James Cook University, Townsville) assisted by Sula Blake

**Ecology of bottom-feeding fishes (November/December 1998, January 1999)**

\*Vimoksalehi Lukoschek (James Cook University, Townsville) assisted by Elaine Vytopil and Christine Dudgeon

**Maternal and environmental factors controlling larval quality and survivorship (January 1999)**

Dr Brigid Kerrigan (James Cook University, Townsville) assisted by Lesley Walker, Dorothee Teboul and Jeff Lane, and accompanied by Dennis Kerrigan and Melissa Lane.

Dr Lexa Grutter prepares fish in the Sir John Proud Aquarium for field experiments  
PHOTO: MARK JOHNSON





**Survival of recently settled reef fishes (November/December 1998, January 1999, December 1999)**

\*Andrew Hoey (James Cook University, Townsville) assisted by Susie Holst, Dr Mark McCormick, Selina Stoute, Vimala Ferrari and Josiah Pit

**Condition and persistence of coral reef fish recruits (October 1998, November/December 1999)**

Dr David Booth (University of Technology, Sydney) assisted by Giglia Beretta and Ralph Alquezar

**Larval fish behaviour (December 1998, February 1999, December 1999)**

Dr Jeff Leis and Brooke Carson Ewart (Australian Museum) assisted by Amanda Hay, Uli Siebeck, Tim Dempster, David Priddle and Tanya Compton

**Ecological morphology of labrid fishes (November/December 1998, January/February 1999)**

Dr David Bellwood (James Cook University, Townsville) assisted by Phil Osmond, Michael Marnane, Jason Elliott, Sula Blake and Elaine Vytopil

**Territorial dynamics of four species of *Dischistodus* (February 1999, March/April 1999)**

\*Line Bay (James Cook University, Townsville) assisted by Ron Baker, Dr Geoff Jones and Marie-Lise Schläppy

**Do cleaner fish "farm" parasites? (October 1998, November/December 1998)**

Dr Lexa Grutter (University of Queensland, Brisbane) assisted by Dr Redouan Bshary

**Cleaning behaviour of reef fishes (March 1999, May/June 1999)**

Dr Lexa Grutter (University of Queensland, Brisbane) assisted by Mark Johnson, Carley Bansermer and Jan-Maree Murphy

**Effects of gnathiid isopods on coral reef fish condition (October 1999, November 1999)**

Dr Lexa Grutter (University of Queensland, Brisbane) assisted by Mark Johnson and Jan-Maree Murphy, and accompanied by Sylvia Baldwin

**Testing game theory models on co-operation between cleaner fish and their hosts (October/November 1998)**

Dr Redouan Bshary (Max Plank Institut für Verhaltensphysiologie, Germany) assisted by Dr Lexa Grutter

**Comparative study of cleaner wrasse behaviour (March 1999)**

\*Céline Arnal (University of Perpignan, France) assisted by Carley Bansermer

**Influence of *Labroides dimidiatus* life phase on host posing behaviour (June 1999)**

\*Camille Alexander (University of New Mexico, USA)

**Rarity in coral reef fish communities (February 1999, June 1999)**

\*Peter Nangle (James Cook University, Townsville) assisted by John McLellan, Roisin O'Reilly, Chris Fulton and accompanied by Sam Nangle

**An evaluation of herbivory in the Blennidae (August 1998, February 1999)**

\*Shaun Wilson (James Cook University, Townsville) assisted by Ross Thomas and Kate Buckley

**Diet evaluation of herbivorous reef fish (December 1998)**

\*David Crossman (University of Auckland, New Zealand) assisted by Dr Kendall Clements

**Growth rates and longevities in exploited reef fishes (December 1998, January 1999)**

Prof Howard Choat (James Cook University, Townsville) and Dr Kendall Clements (University of Auckland, New Zealand) assisted by John Ackerman, Will Robbins and Jake Kritzer, and accompanied by Ada, Brendan and Malcolm Choat

**Ecology of herbivorous fishes (June 1999)**

Prof Howard Choat (James Cook University, Townsville) and Dr Kendall Clements (University of Auckland, New Zealand) assisted by John Ackerman and Lisa Bielecki

**Effects of line fishing - visual surveys (September/October 1998, February 1999)**

Dr Tony Ayling (Sea Research, Daintree) assisted by Dr Avril Ayling, Warren Nott and Gabriel Codina, and accompanied by Bliss Ayling, Xenica Ayling and Melba Nott

**Effects of line fishing experiment - monitoring the opening of Eyrie Reef to fishing (March 1999)**

Annabel Miles and Stephanie Slade (CRC Reef Research Centre, Townsville)

**Quantification of flux rates of adult coral reef fishes across marine reserve boundaries: mark-release-recapture and ultrasonic telemetry (October 1998, April/May 1999, July/August 1999)**

Dr Dirk Zeller and Dr Garry Russ (James Cook University, Townsville) assisted by Peter Wulf, Carole Eros, Selina Stoute, Jake Kritzer, Andrew Hoey, Gary Carlos and Gabrielle Poy, and accompanied by Darren and Grant Russ

**Quantification of flux rates of adult fishes across the boundaries of fisheries reserves - trapping (July 1998)**

\*Charles Hatcher and Dr Garry Russ (James Cook University, Cairns and Townsville) assisted by Sarah Omundsen

**Effects of enhanced fishing pressure on the movement patterns of reef fish across marine reserve boundaries (April/May 1999, July/August 1999)**

\*Selina Stoute (James Cook University, Townsville) assisted by Dr Dirk Zeller, Carole Eros, Dr Garry Russ, Andrew Hoey, Gary Carlos and Gabrielle Poy

**Life history, reproductive biology and population dynamics of *Lutjanus carponotatus* (April/ May 1999)**

\*Jake Kritzer (James Cook University, Townsville)

**Factors influencing sex change in parrotfishes (February/March 1999)**

\*Nick Gust (James Cook University, Townsville) assisted by Stuart Watson, Anne Trevena, Christine Dudgeon, Mark Thomas and David Kjar

**Population ecology of habitat specialised fishes (November 1998, March 1999)**

\*Phil Munday (James Cook University, Townsville) assisted by Melissa Schubert, Marlene Davey and Marie-Lise Schläppy

**Role of skin toxins in the ecology of coral-dwelling gobies (March 1999)**

\*Melissa Schubert (James Cook University, Townsville) assisted by Marie-Lise Schläppy

**Implications of swimming ability on habitat use and feeding ecology in wrasses (September/October 1999)**

\*Christopher Fulton (James Cook University, Townsville) assisted by Christian Fallea, Pete Donovan, Martial Depczynski and Yael Eisner

**Behavioural ecology of the parrotfish *Chlorurus sordidus* (November 1999)**

\*Claire Zimmerman (School for International Training, USA)

**Effect of outbreaks of crown-of-thorns starfish on corallivorous and herbivorous fishes (November 1999)**

\*Lindsay Conlon (School for International Training, USA)

**Effect of reef zonation on fish distribution and diversity (November 1999)**

\*Jesse Port (School for International Training, USA)

**Effect of food availability, population density and body size on territory size of a damselfish (November 1999)**

\*Holly Noble (School for International Training, USA)

**Effect of small predators and interference competitors on fish community structure of small patch reefs (November 1999 to January 2000)**

\*Glenn Almany and \*Michael Webster (Oregon State University, USA) assisted by Tess Freidenberg

**Isolation of avian influenza viruses from cloacal swabs and droppings from pelagic birds (July 1998)**

Prof Graeme Laver (Australian National University, Canberra) and Dr Elspeth Garman (UK) accompanied by Catherine Garman

**Anthropogenic impacts on seabirds (transfer to Rocky Islets study site) (December 1999)**

Dr Barry Goldman, Karen Tutt and Denise Oliviera, accompanied by Ayla Goldman

**Localization and tracking of minke whales (July/August 1998, May/ June 1999, July/ August 1999)**

\*Jason Gedamke (University of California Santa Cruz, USA) assisted by Fleur O'Neill, Prof Rudi Gedamke, Ambra Santini and Todd Gedamke

**Airbourne particles near coral reefs (September 1998)**

Dr Keith Bigg (Stockholm University, Sweden) assisted by Rilda Mossop

**Integrated systems and survey techniques (July/August 1998)**

\*Malcolm Cullen (James Cook University, Townsville) assisted by Jody Kruger and Sarah Dobbs

**Survey of proposed "designated anchorage" in Watson's Bay, Lizard Island (January 1999)**

Ray Berkelmans, Heather Lloyd, Donna Turner and Ken Anthony (Great Barrier Reef Marine Park Authority, Townsville)

**Developing a scientific basis for zoning the Great Barrier Reef Marine Park (April 1999)**

Dr Brigid Kerrigan (Great Barrier Reef Marine Park Authority, Townsville)

**View reef habitats (July 1998)**

Dr Carolyn Heath (California, USA) accompanied by Tony Spooner and Melea Heath Spooner

**Research for book about coral reef science (November/December 1998)**

Sneed Collard (independent author, USA)

**Preparation of article for diving magazine (September 1999)**

Hermann Classen (Germany)

**Preparation of resort guide to Lizard Island (December 1999)**

Prof Pat Rich (Monash University, Melbourne) accompanied by Tim Rich

**Transfer from research vessel (October 1999)**

Alastair Cheal (Australian Institute of Marine Science, Townsville)

**High school group (July 1998)**

Students of Ascham School (Sydney: Brooke Alderson, Yiota Angelos, Trelawney Chapman, Jamie Dinihan, Sophie Erskine, Fleur Fletcher, Chasna Harper, Nina Gothelt, Michelle Huang, Emma Maxwell, Lucy McEwen, Jane McPhee, Victoria Mornsen, Anna Scrimshaw, Georgina Todd, Chloe Zylstra) led by Jane Valentine, Andrew Powell, Val Darby and Jol Valentine

**University group (August 1998)**

Students of the University of California at Davis (USA; Shane Breschini, Jeff Castle, Sania Fong, Julie Garvin, Paula Lin, Carolyn Stephens, Josh Thall, Jackie Waldman, Jenny Wang) led by Dr Tim Herrlinger and Jennifer Diehl





School and university groups of up to 20 people use four dinghies to get around the island.

#### **University group (September 1998)**

Japanese students under the auspices of RMIT University, Melbourne (Miki Aono, Fumiko Aso, Akiko Endo, Naoki Endo, Yuri Fujikawa, Kozumi Harada, Daisuke Horigome, Ayako Ishikawa, Joji Mabuchi, Aya Matsumoto, Yukiko Miyahara, Miki Nemezawa, Toshie Ota, Keiko Takahashi, Haruka Watanabe, Shinobu Yamada), led by Dr Mitsumasa Okada, Dr Brian Leonard, Dr Ali Temara and Robert Faggian

#### **University group (October 1998)**

Two groups of students of the School for International Training (USA; Group 1: Jenny Block, Anne Cammack, Lara Gammon, Amy Girifalco, Dana Greenwood, Amanda Kurnos, Elissa Margolin, Aran Mooney, Jenn Murray, LeAnn Southward, Jess Wortman; Group 2: Chris Balerna, Jordan Bell, Helen Edwards, Alison Hopcroft, Dave Hubbard, Kara Johanssen, Mary Laux, Emma Lebelle, Nathene Newman, Liz Sanford) led by Heidi Freiburger, Dr John Grant and Dr Andrew Lewis

#### **University group (March/April 1999)**

Two groups of students from the School for International Training (USA; Group 1: Julianne Anderson, Laura Burkle, Jacques Delori, Dary Goodrich, Dinah Hanson, Jeremy Kott, Phoebe Longaldon, Jennifer Mast, Hilde Peterson, Jen Post; Group 2: Jesslyn Bryk-Lucy, Dina Liebowitz, Jennifer Murrin, Aaron Philmus-Gudubawambe, Marram Plapp, Veronica Raggi, Jessica Rice, Jennifer Scott, Andrew Taylor) led by Heidi Freiburger, Dr John Grant, Dr Steve Purcell and Niklas Taylor

#### **High school group (April 1999)**

Students from Geelong College Preparatory School (Victoria; Joel Bartlett, Sophie Betts, Tasha Bolsin, Simon Campbell, Peter Dennis, Jackie Doran, Jodie Farquharson, Kate Goldsworthy, Philly Herd, Sebastian Jeremiah, Cava Lidgerwood, Andrew McLarty, Stefanie Pegg, Alister Rose, Phoebe Simmonds) led by Stuart McCallum, Chris Mitchell and Margaret Oates

#### **University group (April/May 1999)**

Students from the University of Guelph (Canada; Anna Calvert, Erin Corstorphine, Jeremy Dewaard, Dylan Fraser, Leila Garvie, Paul Gelok, David Hardie, Jaci Kuker, Jo Leech, Tanya Leverette, Jason McLeod, Robyn Morgan, Jacey Scott, Alison Sivers, Jillian Spencer, Shannon Stephens, Brook Thiessen, Sue Voisin, Michelle Wagner, Meridith White, Robyn Wilkes) led by Prof Paul Hebert, Prof Jim Ballantyne and Graham Nancekivell

#### **University group (June 1999)**

Students of the University of New Mexico (USA; Camille Alexander, Andy Annalora, Shree Chanchani, Elizabeth Cotell, Brenda Garcia, Adam Iragillo, Nikki Jernigan, Deanne Londerbough, Fred Melendres, Kate Smith, Nicole Tafoya, Christy Tarleton, Brian Williams) led by Prof Ursula Shepherd, Dr Lisa Ellis, Dr Josh Leffler and Dr Andrew Lewis

#### **University group (July 1999)**

Students of RMIT University (Melbourne; Miles Barraclough, Rebecca Citroen, Emma Dore, Ally Dosser, Danielle Farmery, Adele Gibbs, Jenelle Heffernan, Kate Henderson, Angela Hendrickson, Dylan Humphries, Chan Lay, Rebecca Learmont, Matt McPherson, Tam Ngoyen, Skye Noble, Jacob Savkis, Alyson Thomas, Kylie White, Bree Wilson) led by Dr Brian Leonard and Gale Spring

#### **High school group (July 1999)**

Students of Mecosta-Osceola Maths, Science and Technology Centre (Michigan, USA; Matt Bluhm, Nathan Buege, Mark Cencer, Emmett Dempsey, Chris Elliott, Polly Fraser, Fred Goldthwait, Adam Gregory, Megann Harbaugh, Joe Hopkins, Dena Isabell, Ron Leyder, Eric Malone, Rebecca Neal, Julia Schneider, Sarah Scott, Adam Van Alstine) led by Paul Bigford, Kathy Lovgren, Dr Andrew Lewis and Scott Sledge

#### **University group (August 1999)**

Students of the University of Maryland at College Park (USA; Heather Ashley, Melissa Border, Suzanne Cohen, Bree Garczynski, Elizabeth Gladmon, Lisa Krinsky, Kim Linden, Kristen Markelonis, Lisa Morgan, Jennifer Roth, Lieba Sanow, Bernard Schultz, Monica Tiu, Erin Thomas) led by Prof Lee Hellman, Peggy Marfori, Elizabeth Hellman and Robert Stano

#### **High school group (August 1999)**

Students of Kirkwall Grammar School (Scotland; Angus Ballantine, Matthew Butcher, Caroline Eunson, Craig Gall, Liam Grieve, James Linklater, Steven Marwick, Tracy Ross, Sarah Rowe, Helen Wallace) led by Alastair Skene and Alison Stewart

#### **High school group (September 1999)**

Students of SCECGS Redlands (Sydney; Jess Allison, Nick Briggs, Alex Cave, Georgi Glover, Sally Hamilton, Bridget Inglis, Tim Keeling, Peta Morton, Claire Mitchell, Lucy Molt, Tim Sayer, Emma Simpson, Buck) led by Rachael Elphick, Don Elphick, Trent Driver and Brooke Mainprize and accompanied by Lucy Elphick

#### **University group (October 1999)**

Two groups of students from the School for International Training (USA; Group 1: Stephanie Berghuis, Alex Caldwell, Alissa Dangel, Sarah Denby, Janet Eddins, Lindsey House, Steven Jones, Monica Magari, Holly Noble, Sarah Peet, Jesse Port, Janna Shackeroff, Amy Squire; Group 2: Heather Brandon, Lindsay Conlon, Luke Davis, Carolyn Heller, Erin Jaworski, Jaimi Johnson, Kerri McAllister, Keith Miller, Michael Shepard, Sarah Stein, Megan Wright, Claire Zimmerman) led by Heidi Freiburger, Dr John Grant, Dr Andy Lewis, Sepp and Melissa Varoy

#### **Exploration for possible student group visit (January 1999)**

Shigeru Sugawara (EcoQuest, Japan) and Ko Fujiwara

**Special interest group (June 1999)**

Members of The Australian Museum Society (Sydney; Jean Anderson, Jose Brown, Christine Dunstan, James Friend, Judith Friend, Barbara Hardy, Fancy Lawrence, Roslyn Low, Brian Low, Alison McIntyre, Jocelyn Plate, Judith Steanes, Robert Steanes, Margaret Titterton, Margaret Tuckson, Mart Vesk, Maret Vesk, Stanley Webster) led by Prof Hal Cogger

**Special interest visit (December 1998)**

Ken Coles (Chairman and member, Lizard Island Reef Research Foundation)

**Special interest visit (April 1999)**

Dr Penny Berents, Peter Berents (Trustee and Members, Lizard Island Reef Research Foundation) and Natalie Berents

**Special interest visit (June 1999)**

Prof Peter Sale (University of Windsor, Canada), Donna Sale, Bob Hochstetler and Dr Jill Kammernyer

**Special interest visit (August 1999)**

Russell Slade (contributor to Lizard Island Reef Research Foundation) and Mary McKillop

**Special interest visit (September 1999)**

Rob Purves (Patron and member, Lizard Island Reef Research Foundation), Michelle, Rhett and Scott Purves

**Palfrey Island lighthouse maintenance (May 1999)**

Australian Marine Safety Authority staff

**Work experience (July/ August 1999)**

Elias Constantinopodos (Conservatorium, Sydney)

**First aid training for staff (November 1998, September 1999)**

Charlie Makray (First Aid Training Services, Cairns) and Dr Julie Armour

**Lizard Island Research Station management (November 1999)**

Dr Gary Morgan (Australian Museum, Sydney) accompanied by Sue Harders

**Documentary "The Blue Planet" (October/November/ December 1998)**

Hugh Pearson, Diane Tanner, Steve Downer, Martha Holmes, Katie Walker, Andy Byatt, Dave Ruddick, Jeff Wayman, Michael Pitts (BBC, England), Peter Parks, Justin Peach, Tim Hellier, Helen Brylewski (Image Quest 3D, England) with scientific advisors Dr Andrew Lewis (James Cook University, Townsville), Dr Ann Gronnell (CSIRO, Hobart) and Dr Craig Mundy and technical advisor Pete West (NUMA, Port Douglas)

**3D filming and photography (November/December 1998/ January 1999)**

Peter Parks, Chris Parks, Justin Peach, Tim Hellier, Heidy Parks, Suzi Parks and Helen Brylewski (Image Quest 3D, England)

**Documentary "Too Close for Comfort" (November 1998)**

Dr Wendy Darke and Jessica Powell (BBC England) with crew Pete West (NUMA, Port Douglas), Peter Heatherwick, Ross Isaac, Neil Munro, Andrew Harcourt, Emma Watkin and scientific advisor Andrew Baird (James Cook University, Townsville)

**Documentary about fish and corals (December 1998)**

Dr Richard Smith (ABC TV, Sydney)

**Filming for educational TV program "Brilliant Creatures" (April 1999)**

Andrea Arnold (for ITV, England) with crew Terry, Richard, Richard, Klaus Aleschewski and Alex Vail

**Art film "All days are nights" (July 1999)**

Paula Dawson (Australian Museum and University of New South Wales, Sydney) with crew

**Videography of minke whale project (August 1999)**

Richard Fitzpatrick and Angelina Fitzpatrick

**Reconnaissance for live broadcast in November on coral spawning (August 1999)**

Yoichi Minowa (OP Work Vision, Southport) with three others

**Documentary about fish (October 1999)**

Maria Baltazzi (World Gone Wild, USA) and crew Mark McGrouther, Michael Pattini, Terry Meeham, Klaus Aleschewski and Rob Weekes

**Background filming for live broadcast in November on coral spawning (October/ November 1999)**

Ryo Miyakoshi, Kenichiro Maeda, Kaoru Kono and Kaoru Nakashima (Japanese TV) assisted by NUMA crew on charter boat

**Documentary "The Shape of Life" (November/ December 1999)**

Anna Fitch (Sea Studios, Monterey, CA, USA), Ernie Kovacs, David Hannan and Sophie Stojic

**Documentary "Extreme Australia" (November 1999)**

Dr Richard Smith (Blue Planet Productions, Sydney) assisted by Julian Mather, Leigh Wayper, and NUMA crew aboard charter boat

## Volunteers

Sylvia Adams	Arthur MacMaster
Snow Amos	Denis O'Hare
Helen Brylewski	Roan O'Sullivan
Sue Bullock	Jane Pawle
Karen Burnett	Sara Piddlesden
Nicolas Elbez	David Priddle
Brooke Carson Ewart	David Rogers
Tanya Compton	Jean Rogers
Ros Cooper	Valeria Rosa
Anthea Dailey	Robin Ruff
Cynthia Friedrich	Martin Sherwen
Jean Groat	Ian Stephens
Amanda Hay	Sally Symonds
Erika Heine	Alex Syriatowicz
Renie Hood	Diane Tanner
Vicki Jaeger	Mary Turnipseed
Jeff Leis	Val Van Nieuwkuyk
Thomas Lionel	Emma Watkin
Heather Long	



# Publications

During the eighteen months covered by this newsletter, 61 publications based in whole or in part on work carried out at the Lizard Island Research Station were received into the Station's collection. All visiting scientists are urged to send for inclusion two copies of papers resulting from their work at Lizard Island.

**Ayre, D.J., T.P. Hughes and R.J. Standish, 1997.**

Genetic differentiation, reproductive mode, and gene flow in the brooding coral *Pocillopora damicornis* along the Great Barrier Reef, Australia. *Marine Ecology Progress Series*, 159: 175-187.

**Baird, A.H. and T.P. Hughes, 1997.**

Spatial variation in coral recruitment around Lizard Island, Australia. *Proceedings of the Eighth International Coral Reef Symposium, Panama*, 2: 1207-1210.

**Baker, A.C., 1999.**

The symbiosis ecology of reef-building corals. PhD thesis, University of Miami, USA.

**Caley, M.J., 1997.**

Are local patterns of reef fish diversity related to patterns of diversity at a larger scale? *Proceedings of the Eighth International Coral Reef Symposium, Panama*, 1: 993-998.

**Chen, L., 1999.**

Ontogenetic development in post-settlement scarids (Pisces: Scaridae): transition in feeding modes. PhD thesis, James Cook University, Australia.

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