

ACRS Newsletter, Reefs Briefs, March 2001, Number 2.

#### Editorial

As you will see from this newsletter, there has been a full program of activities by ACRS members in recent months, and more busy times in the months to come. You will soon receive more information about two important forthcoming events: the AGM and election of office-bearers on 6th April, and the ACRS scientific meeting on 7th-8th July. Mark these dates in your diary now.

We would like to encourage feedback from members on the new style of newsletter, now that you have seen two editions. Do you like it or not? Our hope is that with the more frequent issues (every two to three months) and informal style, members will be encouraged to send us just a paragraph or two to include. Think about it! We would love to hear from you. And don't forget to update us on changes to your e-mail address or you will not receive the newsletter.

Note: Some articles below have been edited for length. Please aim for a maximum of about a half page per story for the e-newsletter format. Longer articles will be published in the annual ACRS report.

Vicki Harriott, CRC Reef, Townsville.

From the President:

It couldn't be a more important time for remaining focused on the plight of coral reefs. Last week, I attended to invited workshops run by the IUCN and other international bodies on climate change and its implications for the earth's biotic assemblages. The evidence that climate change has already affected a wide array of biological communities and ecosystems is now overwhelming. The recent release of the IPCC (Intergovernmental Panel on Climate Change) third assessment report reinforces the growing opinions of many of us that have been watching changes role through ecosystems like coral reefs that seem to defy changes expected under so-called "natural" variability. Projections show that even modest warming will put coral reefs and other ecosystems under threat of severe damage.

So - what can we do as a community of scientists? The first has to be an active involvement in advising those people that are involved in either policy of management. More than often, politicians and managers are advised by individuals that are either not credentialed in relevant fields or are practitioners that are no longer current in their particular areas. We reef specialists then grumble on the side about how terrible thing are. But we have no excuse - poor scholarship within some parts (e.g. Chapter 6) of the IPCC third assessment report (mostly it is OK), for example, could have been

prevented. Unfortunately, poor scholarship once established is hard to reverse. Inaccurate statements on coral bleaching, for example, (i.e. apparently we still don't know what causes it!) were so entrenched that the author concerned chose not to respond to people like Yossi Loya, Jerry Wellington, Bill Fitt, Clive Wilkinson and Al Strong when they emailed him. Amazing really - but this shows the importance of taking a pro-active stance on these issues early rather than later.

The second thing is that we must show leadership in addressing climate change. Perhaps some of you will say, "it is all well and good but is it really part of our mission statement". I think it is, however - remember ACRS is here for coral reefs (not simply for research - remember - the "preservation of coral reefs" is our primary aim). If we have reasonable evidence that climate change is a threat to our reefs, then we should be addressing the cause of the problem as best we can. As discussed by Ray Berkelmans in this newsletter, addressing this issue is not too difficult or expensive as far as one's life style. I think he has a good point. Naturally, there is a lot more that has to be done. After being present at the negotiations in the Hague in October 2000, I was struck dumb by the fact that I was represented by politicians who were trying to push 25 cm scrub as forest (ie for carbon credit negotiations) and who (for political reasons) did not want to budge on Australia's poor emission reduction position. We Australians were the laughing stock in the Hague - as the French delegation were widely reported to be saying "a forest is not something a kangaroo can jump over!".

Professor Ove Hoegh-Guldberg, Centre for Marine Studies, UQ

#### 1. ACRS AGM

The AGM for the ACRS will be held at Rococo's at James Cook University (the former staff club) on Friday 6th April from 4 pm. The meeting will be followed by a barbecue in the adjacent barbecue area at approximately 1700 hrs. More details have been sent on the ACRS list. Information on Council elections will be sent shortly by post.

#### 2. ACRS Council meetings report

Since September, Council has met twice. We have trialed Net-Meeting to reduce the costs and time associated with face-to-face meetings. The verdict is good -

no serious problems or complaints have identified. The Council is developing some policies on how to deal with issues in an unfamiliar forum. In addition, compatible software is being sort for Macintosh users. Issues covered by Council include the annual conference, formal submissions to various organisations, further developments on the interconnectivity poster and ABC website, seeking of funds to support accounting assistance, and student grants. The minutes from the latest Net-Meeting are at the end of this newsletter.

### 3. ACRS Membership Reminder

A gentle reminder that your ACRS memberships were due at the end of December 2000. Relatively few members have yet paid. Please dig out your form from under that pile of urgent work, or just send us the cheque and we will sort it out. Annual membership is \$50 for full members, \$30 for student members and \$60 for overseas members. Credit card payment is an option on your form. If you need a new membership renewal form, please contact the Hon. Treasurer, Vicki Harriott.

### 4. ACRS Annual Conference

The Australian Coral Reef Society Conference will be held on the 7-9th July this year, straight after the AMSA conference. It will be at the Magnetic Island International Resort and promises to be a great event. A circular giving details of sessions, keynote speakers, excursions, workshop/s and registration will be in the mail soon.

The meeting will be an exciting one. Papers will be focused within a series of important areas including:

- (1) Climate change and coral reefs: Is there really a connection?
- (2) Marine Protected Areas: A good solution or is it a case of too little too late?
- (3) Biodiversity threats: What are we loosing and why?
- (4) Socio-economic costs of climate change: What will it cost?
- (5) The Great Barrier Reef: Is the report card that good or are we loosing an inevitable battle?
- (6) Fishing impacts: Is fishing pressure the source of all evil?
- (7) Reefs: Larval dynamics resolved?
- (8) Oceanography of coral reefs: new perspectives?

If you have any ideas for a session to be sponsored by ACRS, please contact Ove Hoegh-Guldberg immediately (oveh@uq.edu.au). Also - if any of you would like

to join our organising committee, please contact Selina Ward by email or phone

(3846 7444 / 38761474 / 0410478467).

For non-Townsville members, Virgin Blue has just announced cheap(er) flights to

Townsville \$119 each way with minimal restrictions

(<http://virginblue.com.au>).

No doubt, these fares will be matched by other airlines, and represent a considerable saving on current costs.

#### 5. ACRS Student Prizes and Reports

Announcement of ACRS Student Grants for 2001.

We thank Drs Pat Hutchings, Zena Dinesen and Barry Russell for co-ordinating the committee awarding student grants. Four awards have been granted this year, as follows.

Terry Walker Award (\$2500) to Rebecca Fisher, James Cook University-- The behavioural capabilities of tropical reef fish larvae : implications for dispersal during the pelagic phase

Danielle Simmons Award (\$2500) to John Ackerman, James Cook University- Geographic variation in age-based demography of *Thalassoma*: a contribution to life history theory.

James Aumend- James Cook University (\$2000)- Trace element analysis of otoliths as a tool for retrospectively identifying the coastal nursery grounds of tropical snappers (*Lutjanus* spp) from the Great Barrier Reef

Mark Westera- Edith Cowan University (\$2000)- Does the removal of fishing pressure in Marine Park sanctuary zones alter fish populations and consequently affect the assemblage structure of benthic macro invertebrates, corals and algae?

Congratulations to these students on their successful applications.

Reports of student grants, 2000

(Reports have been received from ACRS student awards. These reports are quite lengthy, so have been included as a separate document in the ACRS Web site).

Rebecca Fisher, Department of Marine Biology, James Cook University

The vertical distribution of late stage larval reef fishes; discrete depth sampling using light traps

Michael J. Marnane, Department of Marine Biology, James Cook University.

The Ecology of Small, Cryptic Fishes: Implications for the Tropho-dynamics of Coral Reefs.

Giglia Beretta, Patterns of energy input and use by two species of broadcasting corals: Effects of temperature on reproduction

A report by Anke Klueter on "The ecological significance of fluorescent pigments in reef-building corals and their biochemical characteristics" will be included with the next newsletter.

Reports of ACRS student travel grants to ICRS, Bali 2000

Reports have been received from the following students, and are included in a separate section of the ACRS web site. Congratulations to these students on a successful conference.

Stewart Fallon, Australian National University  
Rebecca Fisher, James Cook University  
Morgan Pratchett, James Cook University  
Tyrone Ridgway, University of Queensland  
Shaun Wilson, James Cook University  
Jackie Wolstenholme, James Cook University

#### 6. ACRS Submissions

ACRS has made submissions on the Solitary Islands Marine Park (Commonwealth Water) and the Jurien Bay Marine Park, Western Australia.

#### 7. The end of Interconnectivity as we know it.

By Russell Kelley

Several years ago ACRS council voted to support the development of a simple cartoon sketch outlining the life cycle of the Red Emperor as an example of a species that can exhibit ontogenetic migration - a dependence on, or capacity to, move through different habitats during its life cycle. This simple graphic was proposed as an educational device for promoting the notion of, and need for, landscape scale environmental management.

Public awareness of between-habitat and cross-shelf linkages as evidenced by ontogenetic migrations is a very poor. At the time council felt that it was important to support such endeavours as the public debate over trawling was breathtakingly ill informed and, despite a quarter of a century, the GBRMPA had made not given the average Australian a simple model with which to grasp and understand the real nature of the Great Barrier Reef World Heritage Area.

Indeed, during the last ten years mismanagement of far north Queensland coastal plain has led to accelerated destruction / alteration of wetlands, riparian and near shore habitats.

The production sketches soon revealed that if we were to tell a coherent story we would have to find a way to illustrate the hidden seafloor habitats that make up > 95% of the Great Barrier Reef Marine Park. The problem was that there was neither images nor a classification system to do this with! Discussions with interested inter-reefal types (I.I.T.'s) gave a fragmented (shall we say "patchy") accounts of their respective areas of expertise. After a lot of hand ringing, wool gathering and a little arm twisting the 7 panel classification seen in the Interconnectivity Poster (accompanying the ACRS Newsletter) came into being.

There were no suitable images that could capture these communities in a single frame and so the decision was taken to build the habitat montages and describe their role in supporting the broader system using text. This required a lot of help from very busy people and the ACRS would like to record its thanks to the following people who found the time despite the endemic over-commitment of their lives.

Deep water thanks are due to Peter Arnold, Mike Cappo, Peter Doherty, Ed Drew, Katharina Fabricius, Richard Fitzpatrick, Warren Lee Long, Roland Pitcher, Melita Samoilys, Vern Vietch, David Wachenfeld, Eric Wolanski, Alan Zavodney and others. Historical thanks are due to Mark Simmons and Andrew Elliot.

The habitat montages serve as the only user friendly and scientifically defensible classification for the vast unseen and unsung non-reef component of the World Heritage Area.

By this time the pencil sketches had used up our modest budget. The construction of the montages from video frames, still images and pieces of beach drift, the colourising of line sketches and the final compositing and layout was an act of utter charity by renowned fish artist Gavin Ryan. Gavin's mastery of pen, brush and pixel is profound and the ACRS owes him bigtime for his powerful rendering of concepts and deft piscine touch. The AIMS helped the ACRS with final layout and print costs and thanks are due to Liz Tynan and Steve Clarke of

the Science Communication section.

Since publication of the poster other incarnations of the Interconnectivity concept have crawled ashore. Interested people are referred to:

- the ABC Science Online gateway The Lab which has published its version of the ACRS Interconnectivity poster at...  
<http://abc.net.au/science/bluehighway/default.htm>

- "Physical and biological links in the Great Barrier Reef. Editor: E. Wolanski CRC Press 2001....  
<http://www.crcpress.com/us/product.asp?sku=0833+++&dept%5Fid=1>  
-- this volume is chock full of good IC data/stories including the delightful bedtime ditty....  
"Connectivity in the Great Barrier Reef World Heritage Area - an overview of pathways and processes - Mike Cappo & Russell Kelley." This chapter cites the hard science and, where possible, review papers behind the Interconnectivity assertions of the ACRS IC poster -it is an excellent IC resource for people wishing to relate their part of the GBR / FNQ / WHA to the IC concept. The chapter (illustrated by CD) also contains a detailed case study of interconnectivity based around the AIMS' Bowling Green Bay research - a superb Gavin Ryan graphic powerfully illustrates the connections between the Haughton River catchment and fishy business in the eastern Coral Sea.

Apart from the T-shirt and selling the domain name Interconnectivity.com to an overcashd start-up, that's about the end of Interconnectivity as we know it - and that's what worries me. In researching the book chapter it came to my attention that there is not a river or stream north of Mackay (and probably south) that doesn't have barriers to biology in the form of one or more of the following:

- dams, barrages, weirs
- flood gates
- tide gates
- riverbed sand dams
- ponded pastures / drainage boards

Moreover, the story of the clearing of North Queensland's catchments and coastal plain habitats without regard for ecosystem function or connections is an ongoing tragedy that, in concert with seafloor habitat modification, is likely to have already rendered dysfunctional the original fabric of poorly understood

linkages described in the book chapter above.

Editor's Note: ACRS would like to thank Russell and all the people mentioned in the above article for their fantastic work on the interconnectivity project.

8. News from Centre for Marine Studies (CMS), University of Queensland

Ove Hoegh-Guldberg <http://www.marine.uq.edu.au/>

It is a very busy time for the Centre with research, teaching and consultancies rapidly expanding. For those of you who are not aware - the Centre in its present form was started 12 months ago. After consolidating University of Queensland's marine holdings (Heron Island, Moreton Bay and Low Isles Research Stations) and establishing a larger presence in St Lucia (from 2 to over 40 people), we are ready for the second year of existence with a view to expand our presence within research and education at both national and international arenas. The two flagship facilities (Heron Island and Moreton Bay Research stations) have expanded business by up to 20% (HIRS) and as much as 90% (MBRS, we are still measuring the impact of re-furbishing the station). The intensity of interest has promoted a great feeling about the future. This is coupled with a growing realization of the importance of these important platforms for marine research and education. Statements by the Chief Scientist, and somewhat more indirect but just as meaningful statements by the Prime Minister have recently reflected these sentiments in direct statements. The Centre for Marine Studies (by the way) has changed the name of its newsletter, which was "Ripples" but was changed to "Marine Links" after we were told of the existence of another marine newsletter in Australia called "Ripples"! Copies of the latest newsletter are available at

<http://www.marine.uq.edu.au/cmsnews/feb2001/MarineLinkFeb01.htm>

9. Moreton Bay Research Station (Centre for Marine Studies, UQ)

Managers: Kathy & Kevin Townsend  
December was a very busy month at Moreton Bay Research Station. We started off the month by hosting a Coastal CRC Workshop. Drs Rob Feron and Bill Dennison gathered together scientists across multidisciplinary streams to exchange ideas and to discuss the monitoring and the health of Brisbane's Moreton Bay. The two-day conference was proclaimed to be a success by all involved.

The CRC workshop was followed closely by the MESA (Marine Education Society of Australia) workshop. In cooperation with Jan Taylor's Amity Village Holiday



Camp, MBRS co-hosted over seventy high school teachers and marine educators from around Queensland. Delegates participated in a plethora of activities that were designed to highlight the station and its facilities. Lead by CMS tutor's Lisa LeStrange and Jeff Kwik, activities included everything from the very small (microscope investigations) to the very large (marine mammal studies on the Sea Wanderer).

Other visitors to the station included The University of Queensland's Marine Botany department for a retreat, researchers from the Centre for Marine Studies (Dr Ron Johnstone) and the Queensland Museum (Dr John Hooper). Dr John Hooper had spent several past field trips looking for an elusive species of sponge. He was happy to report that with one dive during this last trip he was able to procure all the specimens he required. Serendipity smiled on his team that day.

#### 10. AUSCORE 2001

by David Barnes, AIMS

The fourth annual meeting of AUSCORE took place at the Moreton Bay Research Station on North Stradbroke Island from 17-19 February. The AUStralian CORal REcords group was established in 1997 to facilitate sharing of samples, expertise, instrumentation and information amongst Australian research groups. There are currently 29 members representing 14 organisations and departments.

AUSCORE 2001 was smaller than is usual because a number of members were overseas or had to pull out at the last minute because of sudden, new commitments. The meeting comprised thirteen presentations and 1 poster. Presentations were allowed an hour and speakers could be interrupted for questions and discussion. Everyone found this format enjoyable and very fruitful because the meeting became a more like a workshop. A similar format has been requested for future meetings.

Topics ranged from coral records and global climate change to links between coral records of monsoons and fluctuations in small mammal populations in the Northern Territory. A couple of talks introduced ways in which bleaching events are recorded in coral skeletons. We heard presentations on density variations,

stable isotopes and other inclusive records, including rare earth elements. Erica Hendy provided some thought-provoking data for inclusive records associated with the same 5 years of skeleton in corals collected from sites along and across the Great Barrier Reef. While barium,  $^{13}\text{C}$  and  $^{18}\text{O}$  content could be explained by latitude, strontium and uranium temperature proxies could not, suggesting that they may be influenced by other factors. Abstracts can be found on the AUSCORE web site at [www.aims.gov.au/auscore](http://www.aims.gov.au/auscore) under a link called AUSCORE 2001 Abstracts. The listing includes abstracts provided by people who could not attend the meeting.

AUSCORE is grateful to Prof. Ove Hoegh-Guldberg of the Marine Sciences Centre at the University of Queensland for making available a superb venue. Thanks, especially, to Sophie Dove for organising things in Brisbane. Thanks also go to Kevin and Kathy Townsend, the station managers, for making everything easy, and to Gordon for his excellent catering.

#### 11. Heron Island Research Station (Centre for Marine Studies, UQ)

by Ted Upton

Heron Island Research Station will shortly be celebrating its fiftieth birthday and, to the great pleasure of those of us privileged to caretake the facility, there are still researchers using it who have done so almost from its inception. From the first tiny, temporary hut, the station has grown to a complex of over thirty buildings including five spacious and well-equipped laboratories, a large teaching laboratory, aquaria complex, library, computer room, seminar room and numerous residences. The fleet of small boats and diving gear are housed in a new building enabling them to be carefully maintained and provide a safe and efficient service for station clientele.

Up to one hundred researchers and students can be accommodated (although things can get a little cosy when we have that many at any one time, fortunately it usually only happens for major conferences). Researchers have the use of self-contained houses and cabins; student groups use basic but comfortable dormitories, with access to modern kitchens, dining rooms and other amenities.

Over the past five years the University has invested heavily in repairs to and renewal of the station's infrastructure. It has now resumed its rightful place as an international standard facility. In the coming year the main Roche

Laboratory building will be refurbished. With our current facilities, laboratories can become a little crowded if more than about 20-25 researchers and research assistants are using them at any one time. Not that sharing space with other researchers is entirely a disadvantage, it can also encourage a free-flow of ideas and exchange of material.

Use of the station is growing at around ten percent per year and, currently our annual visitors include four hundred researchers and assistants from all over the world and around twelve hundred undergraduates and high school students. Most undergraduates come from within Australia but students from Germany, Italy and growing numbers from the United States of America also use the station.

Heron Island workshop: Feb 1-13 2001.

#### Bioreactive Surfaces in Tropical Marine Environments

A very impressive group of researchers from both within Australia and the international community (Denmark, Germany and Britain) attended this workshop which focused on measuring key chemical flux rates (oxygen, light, calcium, carbon, nitrogen, phosphorus, etc.) across surfaces as diverse as corals, microalgae, sediments, benthic microalgae (BMA) and others. Next years' workshop is already being planned. It is anticipated that this will result in construction of a model for the relative prominence of the constituent processes. For more information on the program, contact Ove Hoegh-Guldberg.

## 12. Lizard Island Research Station News

### Web site

The Lizard Island Research Station's web site (<http://www.austmus.gov.au/science/projects/lizard/index.htm>) is currently being rebuilt. It will include many new features including a meeting-place for researchers who need volunteer field assistants and aspiring research volunteers. The new site should be online by April 2001.

### Lizard Island Doctoral Fellowship

Two Lizard Island Doctoral Fellowships were recently awarded for 2001. The fellowship program is fully funded by the Lizard Island Reef Research Foundation and each is worth up to \$6,400 per year for up to three years. Normally a single new fellowship is awarded each year but funds were available to support two PhD students to start in 2001. The new Fellows are Heather Patterson and Rebecca Fisher. They join Uli Siebeck (University of Queensland, 2000 Fellow) and Jackie Wolstenholme (James Cook University, 1999 Fellow) as recipients of Fellowship

funding in 2001.

Heather Patterson is currently enrolled at the University of Sydney but will soon move to James Cook University. Her project title is "Isotopes, early life history and potential self-recruitment of coral reef fishes". Heather will use otolith chemistry to track larval fishes and determine whether or not they remain on their natal reefs.

Rebecca Fisher (James Cook University) is examining the potential of reef fish larvae to behaviourally influence their dispersal. Her project title is "Development of behavioural capabilities of reef fish larvae: implications for dispersal during the pelagic phase". Becky is looking at the ontogenetic development of swimming ability, the relationship between swimming speed and sustained swimming ability, and developmental changes in depth preferences for a wide range of fish species.

Applications for the 2002 Lizard Island Doctoral Fellowship close on 1 October 2001 and details will be available soon at <http://www.austmus.gov.au/science/projects/lizard/index.htm>.

#### Bench fees

Bench fees at the Lizard Island Research Station will increase on 1 January 2002 to cover inflation. Current rates will be published on the new website. Until that site becomes operational, please contact the Station for rates.

#### Contact details

Dr Anne Hoggett & Dr Lyle Vail  
Lizard Island Research Station  
PMB 37, Cairns QLD 4870, Australia  
Phone and fax: + 61 (0)7 4060-3977  
Email: [lizard@amsg.austmus.gov.au](mailto:lizard@amsg.austmus.gov.au)  
Web page: <http://www.austmus.gov.au/science/projects/lizard/index.htm>

#### 13. CRC Reef News

##### Crown-of thorns starfish report

The most recent report on fine-scale surveys for crown of thorns starfish in the Central section of the GBR was released in February 2001. (Engelhardt, U, M. Hartcher, N. Taylor, J. Cruise, D. Engelhardt, M. Russell, I. Stevens, G. Thomas, D. Williamson, D. Wiseman (2001) Crown-of-thorns starfish *Acanthaster planci* in the central Great Barrier Reef. Results of fine-scale surveys conducted in 1999-2000. CRC Reef Technical Report No 32)

The study reports recruitment of significant numbers of juvenile starfish on reefs between Cairns and Townsville in the 1999-2000 period. Since these starfish are present on reefs which supported outbreaking starfish population in the 1994-95 period, it raises the question as to whether this is the beginning of a new outbreak, at a shorter interval than has previously been reported. The alternative is that these juvenile starfish will not survive to maturity because of a lack of food. Because surveys of juvenile starfish were not done during previous outbreaks, it is possible that similar multiple recruitment events may have occurred in the past on reefs that carried starfish populations over several years.

The CRC Reef is funding further surveys of selected reefs in 2001 to determine the fate of the starfish recruits. Analyses are also underway comparing the results collected by the fine-scale surveys and the AIMS Long-Term Monitoring Program over similar time periods and reefs using different methods. The pre-election announcement of a \$1 million grant from the Queensland state government over 2 years to assist marine tourism operators in implementing local controls will be welcomed by the tourism industry. Some large operators near Cairns are investing more than \$300,000 per year each in COTS controls at present.

#### 14. GBRMPA News

Ship grounding on Sudbury Reef: Impacts & response

Paul Marshall, Research & Monitoring Coordination, GBRMPA

The 20000 tonne container vessel MV Bunga Teratai Satu ran aground on the northwestern side of Sudbury Reef on Thursday 2nd November 2000. The vessel remained grounded on Sudbury Reef for 13 days. After two unsuccessful re-floating attempts, the vessel was refloated on the 14th of November 2000 without loss of fuel or cargo.

The ship ploughed a path through a small patch reef that was approximately 70m x 90 m in size: a quarter of the patch reef - equivalent to approximately 1500 m<sup>2</sup> of reef - has been destroyed by the impact of the vessel. In addition, rubble and blocks of reef rock have been pushed up onto the reef either side of the hull scar, creating a ridge 5-10 m wide and up to 1 m high.

When the MV Bunga Teratai Satu ran aground, abrasion of the hull by sand and reef substrate released antifoulant paint into the marine environment. The main active ingredient in the antifoulant paint on this vessel was tributyltin (TBT). TBT is used internationally on vessels over 25m in size (see Box 1 for further information on antifoulants and TBT). Antifouling compounds such as TBT are non-specific biocides and are known to be toxic above threshold concentrations to many marine organisms, including molluscs, corals and anemones.

Preliminary results of analyses indicate that sediments within 50 m of the hull scar have high levels of TBT, ranging from 60 to 3600 ng Sn/g sediment. We observed injuries on hard and soft corals in the vicinity of the grounding site that were consistent with the symptoms expected from contact with antifoulants.

A major cleanup operation is currently underway. The cleanup aims to:

1. Remove all visible signs of antifoulant paint;
1. Remove sediment and loose rubble that has been contaminated by TBT to the extent possible with available technology;
2. Relocate displaced reef boulders and large pieces of rubble shall into the scar to provide a substrate for growth of new corals and thus facilitate natural recovery;

By minimising residual antifoulant compounds remaining in the area and removing and stabilising loose rubble and substrate, natural recovery of the site will be facilitated. However, recovery of the damaged reef is still expected to take several years to decades.

An Environmental Site Supervisor has been appointed by GBRMPA to oversee all aspects of the cleanup operation. The vessel owners, Malaysia International Shipping Corporation, have accepted responsibility for the cleanup operation. The cleanup is expected to take 10-12 weeks, and costs will exceed \$500,000.

GBRMPA has implemented a detailed video monitoring program designed to assess the impacts of the grounding incident on coral and to provide a basis for long

term monitoring of the recovery of the damaged reef patch. GBRMPA is working with the Cooperative Research Centre for the Great Barrier Reef World Heritage Area to develop a plan for long term monitoring of the site. The long term monitoring program will help assess the effectiveness of the remediation efforts and document recovery. A number of research projects aimed at improving our understanding of the effects of antifoulant compounds on coral reef organisms are also being developed by the Reef CRC, in conjunction with the Australian Institute of Marine Sciences.

Fishery Management watershed: a new Trawl Management Plan

Following negotiations between the Great Barrier Reef Marine Park Authority, the Queensland Fisheries Service and Queensland Seafood Industry Association, a revised Management Plan entered into force for the East Coast Trawl Fishery (ECTF) on 1 January 2001.

For the first time, mechanisms are in place to cap and reduce fishing effort in the fishery. Under the new arrangements, effort units (i.e. fishing days x hull units) are granted to operators based on their historic involvement in the ECTF. These effort units are fully tradable, although penalty provisions apply upon transfer.

A voluntary \$20 Million Structural Adjustment Scheme accompanied the introduction of the revised Management Plan, to assist those operators wishing to leave the fishery. The Commonwealth and Queensland State Governments contributed \$10 million each to the scheme.

The revised plan had capped the ECTF at the 1996 effort level. The structural adjustment removed 98 ECTF licence packages from the fishery, which represented approximately 10% of the effort in the fishery. A further 5% was removed through a mandatory across-the-board reduction in effort, in lieu of industry's \$10 million contribution to the scheme.

The revised plan legislates for the introduction of turtle excluder and bycatch reduction devices in the fishery to reduce the impact of trawling on non-target species. Under the new plan, areas have also been closed to trawling in the Great Barrier Reef World Heritage Area that were previously only lightly fished or not fished.

In summary, the new plan is an improvement on previous management arrangements and will assist in providing greater ecological sustainability in the ECTF.

New Species Conservation reports released

The Species Conservation Program of GBRMPA recently published two documents:

- Fauna and Flora - a compendium of information and basis for the species conservation program of the Great Barrier Reef Marine Park Authority;

and

- Marine turtles in the Great Barrier Reef World Heritage Area - a compendium of information and basis for the development of policies and strategies for the conservation of marine turtles.

Copies are available by contacting GBRMPA and both should be available for downloading from the Authority's website in the near future. Comments on both documents are welcome, and should be forwarded to either Tony Stokes (t.stokes@gbbrmpa.gov.au) or Kirstin Dobbs (k.dobbs@gbbrmpa.gov.au) or mailed to GBRMPA at PO Box 1379, Townsville, Qld 4810.

Also, copies of the Whale and Dolphin Conservation Policy for the Great Barrier Reef Marine Park are also available by contacting the Authority.

15. Report from Sydney by David Booth

Here's a voice from the deep south of ACRS territory (New South Wales).

During January/February this year, two Sydney-based research groups worked from One Tree Island Research Station on the southern GBR. Mike Kingsford (Sydney University- soon to be Professor K at JCU) collaborated with the physical oceanographer Kerry Black from NIWA (New Zealand) and Graham Symonds of the Australian Defense Force Academy in a study of lagoonal plume signatures in the waters surrounding the Island. The highlight was a mega-science release of 600 litres of biodegradable fluorescent dye into the outflowing lagoonal waters. This made an exciting aerial spectacle, and the water mass was tracked for several days. Following such plumes may be a mechanism for inter-reef transport of larval fishes.



David Booth's group from the University of Technology, Sydney, continued a 3-year study of the role of larval condition in the recruitment of damselfishes.

Like the previous summer, recruitment of this taxon was at a 10-year low, and

may reflect the hammering that reef in the centre of the lagoon has received

during bleaching events. A series of experiments demonstrated the influence of

recruit fish condition on their vulnerability to predation.

As a long-term visitor to One Tree, I am excited at the improvements to facilities over the last 4-5 years. These include better boats for outside-lagoon access, running seawater facilities, computing and communications, creature comforts (better bush showers!), the best composting

toilet in the Southern Hemisphere, and a very useful "biochem lab".

Thanks in

no small measure to some very progressive Directors and station managers Pam and

Konrad Beinssen. A new arrangement will see Pam and Konrad sharing the job with

Matt and Ali in what we hope will be a long-term arrangement. We are looking

forward to a continued show of support by the University of Sydney for One Tree

Island Research Station-it forms a critical link in our network of tropical marine stations.

There was also a strong Sydney contingent at the ICRS meetings in Bali last November. A group of us headed to Lombok on the other side of Wallace's biogeographic line. While we weren't confronted with birds flying backwards and

a marsupial welcome at the ferry dock, we did enjoy a few relaxing days in a

place a bit less spoilt than Bali. Four of our friends on the Lombok trip from

Oregon and the US Virgin Islands were aboard the ill-fated Singapore Air jet

that met its end in Taipei- thankfully all survived!

## 15. Comings and Goings

In this new section, we welcome information on the movements of ACRS members

between positions, to keep us all updated. A sentence or two to the editors

will suffice.

Prof Howard Choat formally retired as Head of Department of Marine Biology at

James Cook University. Howard will stay on at the university to devote more time

to his research, and will continue to supervise postgraduate students.

Prof Mike Kingsford from Sydney University replaces Howard as Head of Marine Biology, and will take up his appointment in April. We wish both Howard and Mike well in their new careers.

In July 2000, long time ACRS newsletter editor Jamie Oliver left GBRMPA to take up a position as Senior Scientist (Coral Reef Projects) with the International Centre for Living Aquatic Resources Management (ICLARM), based in Penang, Malaysia.

## 16. Going Green

In an appended article, Ray Berkelmans, with his very personal interest in global climate change and the impacts of warm water on corals, urges us to look at "putting our money where our mouth is" and examining our life style decisions. An edited excerpt from Ray's article is printed below, and check the appendix (1.5 pages) for the full story. With all the publicity around the global coral bleaching event of 1998, most people will be aware of the sensitivity of corals to temperature extremes and the probable link between coral bleaching and climate change. Did you know that the average Australian car contributes 4.3 tonnes of CO<sub>2</sub> to the atmosphere every year? Did you also know that the average Australian household contributes a further 9 tonnes of CO<sub>2</sub> per year through electricity usage?

Through a little research I've discovered that it is surprisingly cheap and easy to become totally CO<sub>2</sub> neutral! The two easiest ways are to buy 'Green Power' and/or to soak up CO<sub>2</sub> by planting trees. Throughout most of Australia, your local electricity supplier can supply your electricity needs from 'green' sources (mostly from hydro-electric generation). This so-called "Green Power" cost around 2 cents per KWH more than standard electricity, or about 17% extra. If you want to buy Green Power, ring your local electricity supplier.

As an alternative, a company called 'Greenfleet' is willing to sequester our CO<sub>2</sub> by planting native trees in approved tree planting schemes for as little as \$6 per equivalent tonne of CO<sub>2</sub>. To my surprise also, the cost for us to become completely CO<sub>2</sub> neutral, including transport, is only \$120 per year - which is TAX DEDUCTIBLE too! If you want to have your CO<sub>2</sub> sequestered, visit the Greenfleet web site at [www.greenfleet.com.au](http://www.greenfleet.com.au)

## 17. Events and Conferences Calendar

## Second Warmwater Aquaculture Conference

April 21-22, 2001, Pinjarra Hills Aquaculture farm (CMS, UQ).

The University of Queensland Centre for Marine Studies (Aquaculture) and Aquaculture Technologies are co-hosting the "Second Warmwater Aquaculture Conference" at the University of Queensland, Australia, on 21st and 22nd April, 2001. The conference will be industry oriented and will be addressed by representatives from the main aquaculture industries in Queensland: the fin fish sector (barramundi, freshwater table fish and ornamental), and the crustacean producers (freshwater prawns/shrimp, crayfish). In addition to the broad sweep of industry presentations there will also talks by staff from Queensland Department of Primary Industries and The University of Queensland, and Dos O'Sullivan, the manager of DOSAQUA will present an overview of world aquaculture scene. For further information, contact Dr Ian Johnson Phone 61 7 3365 5649 Fax 61 7 3365 5650 E-mail [i.johnson@mailbox.uq.edu.au](mailto:i.johnson@mailbox.uq.edu.au)

## Symposium on Ashmore Reef

Understanding the Cultural and Natural Heritage values and Management Challenges of the Ashmore Region.

This symposium/workshop, sponsored by Environment Australia, the Museum and Art Gallery of the Northern Territory and the Australian Marine Sciences Association (NT Branch), will give all interested researchers the vehicle to present information already gathered to date and to gain insights to the directions and efforts of others interested in this dynamic tropical region.

Contributions are sought that will review the current state of knowledge of the region, including geology and geomorphology, climate and oceanography, biogeography, marine and terrestrial flora and fauna, prehistory, history and archaeology, traditional fishing, fishery resources, and conservation and management issues. It is intended that the results of the symposium will yield a quality reviewed proceedings volume.

To assist people in focusing their efforts, the geographical area of the Ashmore platform has been selected as the centre of discussion. This area, adjacent the international boarder of Indonesia and Australia, takes in the reefal environments of Hibernia Reef, Ashmore Reef and Cartier Islet at the north western end of the Bonaparte & Browse Basin transition zone.

Where Museum and Art Gallery of the NT theatrette.

When 4-5-6 April, 2001.

Why To inform others, focus the current and future research programs.

Who All parties involved with research in the Ashmore region.  
Cost \$30 per person

For further details see:

<http://www.environment.gov.au/marine/mpa/ashmore/symposium.html>

18. Minutes of the ACRS Net Meeting - 14th December 2000.

Present

Ove Hoegh-Guldberg (chair), Barry Russell, Selina Ward, David Wachenfield, Andrew Chin, Pat Hutchings, Zena Dinesen, Emma Gyuris, Kenneth Anthony, David Booth

Apologies

Russell Kelley, Russell Reichelt, Johnston Davidson, Paul Marshall

Meeting opened 8.43am

Ove Hoegh-Guldberg welcomed council to the Netmeeting.

1. ACRS Conference 2001

At last actual meeting council voted in favour of a meeting on Magnetic Island following the AMSA Conference. A conference organizing committee was formed with Selina Ward as chair and Kenneth Anthony, David Booth, Emma Gyuris, Pat Hutchings and Zena Dinesen as members. Selina Ward has begun discussions with Magnetic Island International Hotel and the facilities are available for the 7-9th July 2001. Emma Gyuris will make enquiries about the cost and role of a professional conference organizer. The committee will hold email discussions on roles and will report on progress to council on Jan 20, 2001.

2. Royal Geographic Society.

The Royal Geographic Society is organising scientific studies in relatively inaccessible areas of Queensland and whilst they are not at the point of calling for formal expressions of interest for their proposed multi-disciplinary study in the Cape York/Gulf of Carpentaria area they would appreciate suggestions from ACRS about research topics that would have relevance and value. Councilors should send ideas to Ove by 20th December and he will send a summary of these to the society.

3. Treasurer's position

The outcome of our last Netmeeting discussion about the treasurer was confirmed.  
(ACRS treasurer will operate out of CRC (supervised by Ann, with Hon Treasurer

Vicki Harriott) with \$4k in contributions to the CRC to support a backfill position (subject to financial considerations and a review at the end of 12 months) (Motion carried on Dec 4).

#### 4. Minutes

It was decided that two sets of minutes would be written: the formal set containing the motions, actions arising and important points of discussion and a longer discussion report for the record and benefit of absent councilors. For net meetings the discussion report will essentially be a transcript of the meeting

#### 5. Western Australian Management Plans

CALM sent ACRS information about management of existing and proposed marine parks in Western Australia. Selina Ward will send more information to Pat Hutchings, Barry Russell, Russell Reichelt and Zena Dinesen so that they can contribute to submissions.

Next meeting will be an actual meeting at the end of February - date to be confirmed. Will discuss via email whether we need a Netmeeting before then.

Meeting closed 9.33 am

#### 18. Council contacts for 2000-2001

President: Ove Hoegh-Guldberg, oveh@uq.edu.au, Centre for Marine Studies, University of Queensland

Vice-President: Russell Reichelt, Russell.Reichelt@jcu.edu.au, CRC Reef, Townsville, QLD

Secretary: Selina Ward, , selinaward@bigpond.com , Centre for Marine Studies, University of Queensland

Treasurer: Vicki Harriott, vicki.harriott@jcu.edu.au, CRC Reef, Townsville, QLD

#### Councillors:

William Dennison W.Dennison@botany.uq.edu.au

Pat Hutching path@austmus.gov.au

Anne Tucker Anne.Tucker@jcu.edu.au

David Wachenfeld davidwa@gbrmpa.gov.au

Andrew Baird andrewbaird@ozemail.com.au

David Booth David.Booth@uts.edu.au

Johnston Davidson Johnston.Davidson@jcu.edu.au

Zena Dinesen zena.dinesen@jcu.edu.au

Emma Gyuris emma.gyuris@jcu.edu.au

Russell Kelley h2omark@ultra.net.au

Paul Marshall paul.marshall@jcu.edu.au

Laurence McCook l.mccook@aims.gov.au

Barry Russell Barry.Russell@nt.gov.au

Terry Done tdone@aims.gov.au

Andrew Chin achin@gbrmpa.gov.au

Ken Anthony kenneth.anthony@jcu.edu.au

Brian Lassig [brian.lassig@ea.gov.au](mailto:brian.lassig@ea.gov.au)

## Become a Carbon Buster – it's cheap and easy!

**Ray Berkelmans**

With all the publicity around the global coral bleaching event of 1998, most people will be aware of the sensitivity of corals to temperature extremes and the probable link between coral bleaching and climate change. For those of us working on coral reefs, it's hard not to be concerned about the long-term changes we could be facing on the GBR as a result of climate warming. It's easy to blame "the government" for not doing enough to curtail our greenhouse emissions, but when you think about it, it is really "us" who are doing the polluting through all the energy we consume.

Did you know that the average Australian car contributes 4.3 tonnes of CO<sub>2</sub> to the atmosphere every year? Did you also know that the average Australian household contributes a further 9 tonnes of CO<sub>2</sub> per year through electricity usage? We have all heard the things we are supposed to do to reduce our energy usage – share ride the car to work (or better still, ride a bike), reduce our use of lights and air conditioners and appliances, reduce hot water usage, insulate the house and hot water system, buy energy efficient appliances etc. – but for most of us, actually achieving a measurable energy saving is very difficult. Short of dropping out of society, we are basically stuck with our energy use and our huge contribution to the greenhouse problem, right? Wrong!

Through a little research I've discovered that it is surprisingly cheap and easy to become a carbon buster – yes, become totally CO<sub>2</sub> neutral! The two easiest ways are to buy 'Green Power' and/or to soak up CO<sub>2</sub> by planting trees. Throughout Queensland (and indeed most of Australia), your local electricity supplier can supply your electricity needs from 'green' sources (mostly from hydro-electric generation). This so-called "Green Power" cost around 2 cents per KWH more than standard electricity, or about 17% extra. For my household (with all its 5 air conditioners...), that's about an extra \$300 per year to be completely green. Bit rich??

Try this one – there is a company called 'Greenfleet' who are willing to sequester our CO<sub>2</sub> by planting native trees in approved tree planting schemes for as little as \$6 per equivalent tonne of CO<sub>2</sub>. When you consider that "carbon credits" on the commercial futures market are worth around \$50 per tonne, the Greenfleet option is pretty cheap. Although Greenfleet is primarily aimed at greening the Australian transport fleet, they will accept any money offered and plant the equivalent number of trees. Not only will your money clean our air, it will also help our soil salinity and erosion problems – more bang for your buck! When I did the sums for my household, I was shocked that we contribute over 18.5 tonnes of CO<sub>2</sub> to the atmosphere annually. We would have to plant around 70 native Australian trees every year and leave them in the ground forever, just to keep up with our own emission (see Table 1). To my surprise also, the cost for us to become completely CO<sub>2</sub> neutral, including transport, is only \$120 per year – which is TAX DEDUCTIBLE too! Try doing the sums for your household!?

It is a pretty safe bet that our kids and their kids are going to hate us for what our generation has done to the planet. Let's do them a favour and stop looking at others to "do something". It's time to do that "something" ourselves. Make your household CO<sub>2</sub>-neutral and spread the word!

If you want to buy Green Power, ring your local electricity supplier. If you want to have your CO<sub>2</sub> sequestered, visit the *Greenfleet* web site at [www.greenfleet.com.au](http://www.greenfleet.com.au)

Table 1. Calculation of total energy, equivalent CO<sub>2</sub> contribution and cost of sequestering the CO<sub>2</sub> for the Berkelmans household in 1999.

<b>Category</b>	<b>Electricity(KWH)</b>	<b>Total energy (GJ)</b>	<b>kg CO<sub>2</sub>/GJ</b>	<b>Equivalent CO<sub>2</sub> (kg)</b>
Home - light and power <sup>1</sup>	5200	19	260 <sup>2</sup>	4,867
Home - aircon. and hot water <sup>1</sup>	9600	35	260 <sup>2</sup>	8,986
Car – 15,000km (~1830 l) <sup>3</sup>		63	66 <sup>2</sup>	4,129
Bike – 5,000km (~250 l) <sup>3</sup>		9	66 <sup>2</sup>	564
<b>TOTAL</b>		<b>124</b>		<b>18,546</b>
<b>Estimated no. trees/yr<sup>4</sup></b>				<b>69</b>
<b>Cost<sup>5</sup></b>				<b>\$120</b>

Notes:

1 Conversion: 1 KWH electricity = 0.0036 GJ energy

2 CO<sub>2</sub> intensity conversion from "Energy Use in Commonwealth Operations 1997-98" by Dept Industry Science and Resources

3 Conversion: 1 litre of unleaded petrol = 0.0342 GJ energy

4 Conversion: 1 'Biodiversity tree' can sequester 268 kg CO<sub>2</sub> over its life – Centre for Forest & Tree Technology

5 Cost based on 17 'Biodiversity trees' planted per \$30 subscription – [www.greenfleet.com.au](http://www.greenfleet.com.au)