

Reef Briefs- No. 3 June 2001

Contents

Editorial

From the President s Desk

ACRS Annual Conference Update

Swimming with lizards: assessing the impact of the Jessica grounding in the Galapagos Islands

ACRS Student Prizes and Reports

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

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

Lyngbia Update

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

CRC Reef News

New soft coral book to be launched

NSW Report

New publication and bibliography for French Polynesia

Comings, Goings and Celebrations

[Council contacts for 2001-2002](#)

Events and Conferences Calendar

Editorial

Thanks to all the contributors to this edition of Reef Briefs, particularly at such a busy time for everyone. Our plan is to put out 4 issues per year, containing short interesting pieces. Please share any items of interest with your fellow Society members. Events in the near future include both AMSA and ACRS annual conferences in the Townsville area, so we hope to see many members there. The ACRS conference is always one of the highlights of our year. A new Council was elected at the Society AGM in April, and is listed below. There are plans to freshen up the ACRS website and to use it as a source of information about Society activities. Please pass on any ideas for roles that you believe the ACRS should be playing to your friendly local Council members!

Vicki Harriott, CRC Reef

From the President s Desk

Major initiatives are afoot with respect to coral reef ecosystems at both national and international arenas. Hopes are high at the national level for a favourable review of a bid from six Great Barrier Reef research stations. Within the next few days, announcements will be made for the short-list of Major National Research Facilities grants major infrastructure, which will see a networking and collaboration on reef research resources between the University of Sydney, University of Queensland, James Cook University and the Australian Museum. A new era indeed! The Tropical Island Research Network (TIRN an acronym perhaps to honour the hundreds of thousands of migratory visitors to the stations) will provide a cost-effective infrastructure for marine research along a latitudinal and cross-shelf gradient of tropical and subtropical environments with quality field and analytical facilities will be in close proximity to each other. Linkages between the stations will facilitate large-scale research and monitoring of Australia's tropical biological, chemical and geological patterns. Several other initiatives from UNESCO and IUCN are attempting to provide the same linkages and networks at the international level. UNESCO has formed a committee to guide research and direction on the issue of coral bleaching and reef degradation. IUCN has formed a working party to look at implications of reef degradation on tropical marine biodiversity. Across all these initiatives, there is a growing appreciation for the role of good science in support of the conservation of coral reefs. This should give heart to the up-and-coming generation of reef scientists, conservationists and those that love coral reefs.

Ove Hoegh-Guldberg, Centre for Marine Studies, UQ

ACRS Annual Conference Update

By Johnston Davidson

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The ACRS 2001 Conference on 6 - 8 July is fast approaching and, with over 100 registrations so far, it looks like being the biggest ACRS Conference yet. There is a broad geographic distribution of participants with contributions coming from around Australia which underlines the desire of the ACRS to support coral reef studies at a national level. The Conference starts on Friday evening at the Magnetic International Resort with Registration at 5pm and the official opening at 7pm (please note the ferry timetables listed below). This is followed by a welcome function with drinks and finger food. For those who think they'll be missing out on the Australian Chamber Music Festival in town, we will have our own classical music provided by a professional trio. A perfect evening for socialising and networking, and an excellent way to start the Conference.

Saturday and Sunday are two full days of presentations and posters, punctuated by plenary sessions. Topics will include: ecological processes, symbionts, dispersal, life history strategies, resource management and climate change. Social functions on Saturday evening will start with sunset drinks followed by a poolside buffet. An evocative after-dinner discussion session on the topic "Back to the future - the Great Barrier Reef in 2050" will be led by Dr Ove Hoegh-Guldberg.

The social functions continue on Sunday evening with a three-course meal and drinks at the resort, followed by presentation of awards and finishing off with live music and dance. It is expected that most participants will choose to depart Magnetic Island on Monday (see ferry timetable below). Don't forget, as an ACRS 2001 Conference participant, you can book onto the tours featured in our website at the discounted prices listed! For those enrolled in the post-Conference workshops the activities continue with Determining conservation priorities and Turbid waters. We hope that people register as soon as possible because we don't want you to miss out on the opportunity to enjoy such a fulfilling conference. See you there!

Ferry Time Table for the period of the ACRS conference (taken from Sunferries timetable, showing departures from Breakwater Terminal and Picnic Bay, Magnetic Island. Further details ph 47713855). Car ferry times can be found by phoning 47725422.

Departures Mon. to Fri. July 2001	
Breakwater Term.	Magnetic Isl.
05.50	06.25
06.45	07.20
07.15	07.55
08.30	09.00
09.25	10.00
10.45	11.15
12.15	12.45
14.15	14.50
15.45	16.20
17.20	17.55
17.45	18.15
18.55	19.20
20.30	20.50
20.00 (excl. Tue)	22.20 (excl. Tue)
23.30 (Fri. Only)	23.50 (Fri. Only)

Departures Sat. and Sun. July 2001	
Breakwater Term.	Magnetic Isl.
05.50 (Sat.Only)	06.25 (Sat. Only)
07.15	07.45
08.45	09.15
10.45	11.15
12.15	12.45

14.15	14.50
15.45	16.20
17.20	17.55
18.55	19.20
20.30	20.50
22.00 (Sat. Only)	22.20 (Sat. Only)
23.30 (Sat. Only)	23.50 (Sat. Only)

Swimming with lizards: assessing the impact of the Jessica grounding in the Galapagos Islands

By Paul Marshall

In April this year, I was approached by the Charles Darwin Foundation to conduct an impact assessment following the grounding and oil spill of the Jessica in the Galapagos Islands. The Galapagos is an amazing place, and the environment management setting is intense and fascinating. Needless to say, I leapt at the opportunity to help out and immerse myself in this fascinating ecosystem. Three weeks after the invitation, I found myself touching down on San Cristobel Island, 1000 km off the mainland coast of Ecuador.

From a distance, via undergraduate lectures in ecology, TV documentaries and books, we are all familiar with images of the spectacular ecosystem that is the Galapagos archipelago. Prehistoric-looking lizards sunbaking on black lava rocks; giant tortoises lumbering through forests of giant cacti; endemic Galapagos sharks and giant blennies; playful sea lions and dive-bombing blue-footed boobies. They were all there, but of course I didn't allow myself to be distracted from the important task at hand&&

The major objectives of the study were to evaluate the impact of the Jessica incident on marine communities in the vicinity of the wreck site; assess the risk of chronic impacts to the local marine community from residual oil, antifoulant paint or wreckage; assess the risk of invasion of non-native species as a result of the grounding; and establish a long term program to monitor marine communities in the vicinity of the wreck site.

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The Jessica, a coastal tanker registered in Ecuador, ran aground on January 16 off San Cristobel Island, en route from the coastal city of Guayaquil to supply tourist vessels operating in the Galapagos Islands. The 240,000 gallons of diesel and bunker fuel aboard began leaking from the damaged vessel two days after the impact. Although the potential damage was huge, the spill had relatively minor impact on the Galapagos wildlife, with only small numbers of birds and sea lions affected by the spill. The initial focus was on attempts to minimise the amount of oil that reached sensitive habitats, and treatment of affected wildlife. However, the Charles Darwin Research Station (CDRS), who played a key role during the incident, identified the need to conduct a full evaluation of the ecological impacts of the incident to ensure that there were no unforeseen medium-term effects on the Galapagos marine environment.

The preliminary assessment found that the impacts of the Jessica incident on marine communities were generally localised and within the natural variability of the local ecosystem. Physical impacts from the grounding were relatively minor, with a shallow furrow 50 m x 30 m evident in the rocky seafloor, although wreckage from the abandoned ship was strewn over 7500

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m . This wreckage may represent a minor but chronic source of pollution to the surrounding marine environment in the form of iron enrichment promoting algal growth. The hull of the wrecked ship was encrusted with large barnacles indicating that the antifoulant treatment was in poor condition. Sections of hull and bare steel had been rapidly colonised by filamentous algae and dense patches of a hydroid not known from surrounding areas. This hydroid has also begun to colonise adjacent rocks, suggesting that it may have invaded the site from the ship's hull.

Further investigations are planned to continue monitoring and assess the risk to local marine communities from this putative invasive species.

ACRS Student Prizes and Reports

The last edition of the newsletter carried student reports from the Bali conference. The report of Helen McGregor was accidentally omitted and is produced here. Apologies to Helen. Because the other reports were presented as fairly lengthy attachments to the newsletter, they will be reproduced in full in the hard copy annual report for ACRS to be produced later this year. The report received from **Anke Klueter** on "The ecological significance of fluorescent pigments in reef-building corals and their biochemical characteristics" will also be included with the hard copy report.

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9 International Coral Reef Symposium Report - Helen McGregor

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I recently attended the 9 International Coral Reef Symposium (9ICRS) in Bali, Indonesia, with the assistance of an ACRS Travel Scholarship. I presented the paper Coral records of mid-Holocene climate variability in the Western Pacific Warm Pool in the Coral Proxy Records session. I received many positive comments on the results presented and was able to compare the results directly with those of other presenters.

I had several highlights from the 9ICRS. The first were two of the plenary talks. I learnt a lot from Dr J. Veron's entertaining talk Reticulate evolution: the alternative paradigm as reticulate evolution is a topic I have not had much exposure to in the earth sciences. I also enjoyed the talk by Mr N. Idechong, Coral reef conservation in Palau: a success story as he showed that by working with local communities it is possible to achieve sustainable reef management. In general, I thought the evening meeting on Coral reefs and climate change, provided a good summary of mini-symposium sessions pertaining to this theme and provoked an interesting and lively discussion. Hopefully, some of the issues raised will be debated further on the International Society for Reef Studies email list.

The experience of presenting my work to an international audience was invaluable. I found meeting the experts face to face and receiving immediate feedback on my work extremely useful. By presenting my work at such a large meeting, I was able to view my work in light of similar work throughout the world and this has given me new insights into my PhD studies. I was also exposed to the latest research in a diverse range of disciplines and found this of great benefit.

Overall, I thoroughly enjoyed my time at the 9ICRS and would like to thank the Australian Coral Reef Society for providing me with the opportunity to attend. Based on my experiences at the

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9ICRS, I would offer the following advice to students considering attending the 10 ICRS in Okinawa, Japan 2004 or other large conferences:

- Carry a folder containing a copy of the visuals from your talk plus additional diagrams of material that you are not necessarily presenting. This can be really handy when discussing your work with others at lunch breaks etc, both before and after your talk.
- Start a contacts book with a brief summary of who you met, useful comments and issues you have to follow up on when you return to University.
- Be pro-active in seeking feedback on material presented ask the experts what they thought (this will come in handy when preparing your work for publication).
- Often at large meetings there are several sessions of interest on at the same time. I found it best to stick with the one session rather than trying to go back and forth between sessions.

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

The Centre for Marine Studies has just completed its first year of existence. Amid champagne corks and celebration, review of progress has been extremely favourable and foresees a very bright future. Despite the time spent renovating the new premises and establishing most of its new staff, the Centre for Marine Studies has been instrumental in creating several new degree programs including Bachelor of Marine Studies and the postgraduate courses Certificate, Diploma and Master of Philosophy in Marine Studies. It has also been an active player in the establishment of the new National degree in marine science. This degree will be co-taught by the University of Sydney, University of Queensland and James Cook University and starts next year. Sharing expertise and subject matter, the three universities and the Australian museum will be able to offer some of the best courses available in the tropical marine sciences.

The Centre for Marine Studies has also centralised the management of the three research stations (Heron, Low Isles and Moreton Bay facilities), opened the \$2.4 million renovated facility of Stradbroke and has developed a new boating and diving program at St Lucia. The program in boating and diving safety held its first Scientific Diving course last year and will be running a similar match to the new diving regulations later this year. Staff and student numbers have grown from approximately 5 to over 40 staff, postdoctoral fellows and postgraduates. The growth in numbers has been accompanied by a growth in research income and in international teaching. In addition to three US universities, the Centre for Marine Studies has a Japanese university sending its students to Australia for a marine program.

So, what is next? The Centre for Marine Studies wants to continue building the marine studies profile of UQ in Queensland and internationally. While some might see this as a competitive challenge to other marine programs in Queensland, we don't. In a similar way to the ecological principle, competition will only occur if resources are limited. You might jump at this point and say but they are and hence that competition is inevitable. Our vision, however, is that we are under-exploiting our position as a supplier of marine expertise and training to Australia and the world. As with our experiences with attracting US and Japanese universities to Australia, we feel that there is plenty of pie for all in fact, by collaborating in the delivery of research and teaching within Australia, universities will develop a much larger market and potential than if they were to remain as competing entities. Initiatives like TIRN (see above), for example, are likely to return huge benefits for universities that choose the collaborative path.

Ove Hoegh-Guldberg, Director

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

Quandamooka (Moreton Bay) is one of the largest and diverse shallow estuarine bays in Australia. The range of marine habitats includes seagrass beds, mangrove forests and coral reefs. Although the coral community of Moreton Bay is not the largest of these habitats, corals, and the biota they support, add enormously to the bays biodiversity. The newly renovated Moreton Bay Research Station, North Stradbroke Island, provides laboratory and teaching facilities close to these marine habitats. Some of the current research includes the following areas:

Ida Fellagara (PhD student) CMS, UofQ is investigating the factors influencing the distribution of corals in Moreton Bay. The corals living inside Moreton Bay are quite unique because they survive in extreme conditions: water temperature ranges between 13° C and 32° C, turbidity is relatively high and flooding events (freshwater input) are frequent. A number of hypotheses have been suggested to explain the present distribution of the corals within Moreton Bay but are yet to be tested. Ida is monitoring variations in physical parameters (temperature, salinity and turbidity) from the Brisbane River mouth into the bay to determine if there are correlations of these physical parameters with changes in coral community structure. Ida will run tank and field (translocation) experiments to test the susceptibility of *Favia speciosa* and *Acropora digitifera* to changes in salinity and turbidity to understand to what extent these variables influence the coral communities.

Ailsa Kerswell, a PhD student with the Centre for Marine Studies, is investigating the relationship between coral bleaching, photosynthetic impairment and reduced salinity on the dominant acroporid species in Moreton Bay, *Acropora digitifera*. The overall aim is to determine whether the mechanisms that underlie salinity-induced bleaching are the same as those that lead to thermal bleaching. While this study is primarily laboratory based, all corals are collected from inshore sites adjacent to Stradbroke Island.

Dr Norman Duke, Andrew Watkinson and Lloyd Godson from the Marine Botany Group, U of Q are investigating the relationship between gene mutation and polycyclic aromatic hydrocarbons (PAHs). Recent observations of lethal genetic mutation of mangrove trees, notably *Avicennia marina* var. *australasica*, have been correlated with petroleum oil and PAHs have been identified as the most likely mutagenic agent. The study aims to answer the following questions: how widespread is the mutation, how many species of mangroves are affected and is the occurrence of mutations correlated with oil in sediments? The group has begun setting up experiments at Moreton Bay Research Station to answer these questions.

Paul Hallam, Acting Manager

Lyngbya Update

Dr Judy O'Neil heads a group from the Centre for Marine Studies and Marine Botany UQ investigating what makes the cyanobacterium (blue-green algae) *Lyngbya majuscula* tick, as part of an ARC SPIRT grant. Over the last few years blooms of this toxic cyanobacterium have been quite prolific in Moreton Bay, particularly in Deception Bay and Amity and Moreton Banks. *Lyngbya majuscula* can contain several toxins, which have been responsible for severe dermatitis in humans, respiratory, and asthma like symptoms. Fish tend to avoid the areas; hence fishing in some of these regions is decreased. *Lyngbya majuscula* grows on seagrass and macroalgae, and may cause problems with turtle and dugongs as they graze the seagrass affected by *L. majuscula*. Additionally the *L. majuscula* can shade out seagrass and macroalgae. Tons of rotting, putrid material on beaches has also been a large problem, particularly in Deception Bay.

Currently the *Lyngbya majuscula* has a patchy distribution in Moreton Bay, confined mostly to some small areas of Amity Banks as the temperatures start to cool down, its growth slows down. We are looking at how various factors, light, temperature; nutrients affect the physiology of this cyanobacterium, including nitrogen fixation, photosynthesis and nutrient uptake. Recently we have also been investigating a proliferation of *L. majuscula* on Hardy Reef off the Whitsundays growing directly on *Acropora* spp. To date results indicate that high light; bioavailable Fe (with organic matter) and phosphorus enhance the growth of *L. majuscula*. Collaborators from UQ, NRCET and UNSW are also investigating the toxicology, Fe chemistry, sediment, light and water quality interactions, as well as potential biotic interaction with grazers.

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

The past 6 months at Heron Island Research station have been varied. The year started with a full house with research ranging from the vision in Reef Teleosts (Shaun Collin and Justin Marshall et al), RNA extraction from Porifera (Bernie Degnan et al) and Parasite analysis in Reef Teleosts (Tom Cribb et al). These were the main research projects in January although not all, as the research station was fully booked for the whole month. February was dominated by the inaugural International Workshop on Bioreactive Marine Surfaces. This was the highlight of the year so far as it brought internationally credentialed researchers from as far a field as The Max Planck Institute in Bremen, Germany and The Marine Biological Laboratories at The University of Copenhagen, to name a couple, as well as a many Australian scientists. This was a workshop to exchange ideas between scientists from all over the World. A large number of the visiting scientists chose to stay on after the workshop to continue their research making February the busiest month seen here for a while.

March and April were dominated by long time users such as Alan Marshall from La Trobe University in Melbourne, Mary Garson et al from ZEN, U of Q. and return trips from Justin Marshall, Shaun Collin, Vision, Touch and Hearing Research Center, U of Q, Dr Bernie Degnan from ZEN, U of Q. and Tom Cribb from Microbiology and Parasitology, U of Q. The month of May

was quiet due to the closure of the P & O Resort for refurbishment. As we are reliant on the Resort for the transportation of clients we were severely restricted. June is traditionally the quiet month of the year due to climatic conditions. Throughout the whole year we have had a steady flow of University groups, International and Australian as well as a large number of Secondary school groups. Wildlife wise we also had a varied year so far. It has been an average Whitecap Noody and Wedge Tailed Shearwater breeding season. However after a very successful Turtle breeding season last year, this year was disappointing. We are expecting to sight our first Humpback Whales of the season in the channel between Heron and Wistari Reefs at any moment.

So far this year we have had well below average rainfall and above average atmospheric and water temperatures for autumn and winter.

Rod Forbes, Acting Manager

CRC Reef News

CRC Reef on the move

In July, CRC Reef offices will be relocated from James Cook University to new accommodation in the Townsville CBD. The move is prompted by space limitations in the present accommodation, and will allow for the expansion of the International Marine Project Activity Centre (IMPAC), a subsidiary of CRC Reef, which aims to provide support for cooperative international projects. Information on new contact details will be distributed as soon as they are available.

New CRC Reef website

The CRC Reef website has been completely revised and expanded. Take a look at the new site at the old address www.reef.crc.org.au for information on the CRC Reef and its research programs. There is also a large section on general reef biology for access by the community.

Crown of thorns starfish news

In conjunction with AMPTO (Association of Marine Park Tourism Operators), CRC Reef held a science-industry workshop on local controls of crown of thorns starfish in Cairns in April. The Cairns marine tourism industry was well-represented at the workshop and presented evidence on the most effective methods that they have used for COTS control in the last 3 years. Dr Mike Hall from AIMS also presented an original perspective on how starfish attractants, similar to those used in prawn aquaculture, might enhance control efforts. The information has been collated by CRC Reef and circulated within the industry, and has also informed the process of developing a pilot study for local controls using \$3000,000 funding provided by the Queensland government for starfish controls. The workshop also saw the launch of an updated colour brochure on Crown-of-thorns starfish on the Great Barrier Reef: Current state of knowledge. Copies of the brochure are available on request from crcreef@jcu.edu.au, and the information is reproduced on the new website.

Latest reports from AIMS long-term monitoring program report fresh COTS outbreaks on the reefs in the central GBR. The report by Ben Fitzpatrick is reproduced below:

Here is a short note on the latest Australian Institute of Marine Science Long-Term Monitoring trip, conducted on the Great Barrier Reef between the 1st - 16th May, 2001. During this latest trip the team, among other tasks documented incidence of coral mortality.

In the Townsville sector we completed manta tow surveys on nine reefs, with Rib Reef and John Brewer Reef supporting large populations of COTS and classified as actively outbreaking. Five reefs in the Cape Upstart sector were also surveyed with low numbers of COTS recorded on Jacqueline Reef and Bowden Reef, while five reefs in the Whitsunday sector were surveyed with juvenile COTS found on two reefs in very low abundances. A comprehensive summary of this data can be obtained from our monitoring webpage. Further, interesting photos of coral mortality/diseases encountered are also included.

<http://www.aims.gov.au/pages/research/reef-monitoring/lrm/lrm20010500-gbr.html>

New CRC Reef Technical Report

For copies of the report by Adam Lewis (2001) Great Barrier Reef Depth and Elevation Model: GBRDEM. CRC Reef Research Centre Technical Report No. 33, contact CRC Reef crcreef@jcu.edu.au

New soft coral book to be launched

The long-awaited book on soft corals by Katherina Fabricius and Philip Alderslade will be launched on 4 July at the AMSA conference in Townsville. The book contains over 270 pages of full-colour images of all shallow water soft corals and sea fans in shallow waters of the GBR. The book has been supported by AIMS, CRC Reef, Australian Biological Resources Study and the Museums and Art Galleries of the Northern Territory. For a copy of this book. Contact AIMS on 07 4753 4409 or bookshop@aims.gov.au.

NSW Report

By David Booth

While a considerable hole in the coral reef research effort in the Deep South has been created by the departure of Prof. Mike Kingsford to the tropics, NSW has a diverse range of folk focussed on Australian coral reefs. Centres of activity include Sydney, Wollongong and Lismore. Relevant events in the last few months have been site visits by the ARC, including the Chair and the Panel head of the Biological Sciences. The latter specifically questioned my efficiency of use of the GBR research laboratories, and appeared pleased with their role in my research, so hopefully such support will filter through to research station funding!

There also have been several initiatives to develop marine research laboratories around the Sydney and central NSW coasts. It seems absurd that such a biodiverse coast adjacent to 30% of Australia's population is without such facilities, so hopefully we'll achieve some success.

We feel that it is critical to maintain links between researchers in southern states and coral reefs to allow diversity of ideas and comparison with temperate marine habitats, and also due to the concentration gradient of polities and policy people away from the tropics&

New publication and bibliography for French Polynesia

The recent publication on French Polynesia- Hutchings, P.A. & Salvat., B. (2000) Seas at the Millennium Volume 11-Regional Chapters: The Indian Ocean to the Pacific. Chapter 21. French Polynesia. pp.813-826 Elsevier - included a limited bibliography. A more extensive bibliography for the French Polynesian region which includes citations to dissertations and some grey literature has been put onto the home page of Elsevier.

Please find the link at: <http://elsevier.com/homepage/sad/seas/welcome.htm>

Comings, Goings and Celebrations

Congratulations to long-time ACRS Council member Paul Marshall, of GBRMPA, who graduated with his PhD from James Cook University in April. Paul's thesis was on the recovery of corals following physical damage.

Council contacts for 2001-2002

At the ACRS AGM in March, the following new Council was elected. Congratulations to Emma Gyuris who took up the vacant secretary position, and many thanks from the outgoing Council to Selina Ward who carried out the role for many years.

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: Emma Gyuris, emma.gyuris@jcu.edu.au, Tropical Environmental Studies and Geography, James Cook University.

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

Councillors:

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Bette Willis, bette.willis@jcu.edu.au

Events and Conferences Calendar

(thanks to Coastal CRC for collating some of these events)

1-5 July, International Symposium on Environmental Toxicology of Metals on the Great Barrier Reef at South Molle Island, Great Barrier Reef. Contact: www.uq.edu.au/nrcet/metals2001.html

3-6 July AMSA conference, Townsville. Contact AMSA@jcu.edu.au for more information.

7-8 July ACRS conference, Magnetic Island, Townsville. Contact selinaward@bigpond.com

18-23 August, International Conference on Photosynthesis, Brisbane. Contact Tony Larkum email: alark@bio.usyd.edu.au or conference questionnaire: www.botany.uq.edu.au/ps2001

29-31 August, International Riversymposium, Brisbane. For more information on the Riversymposium visit www.riverfestival.com.au or telephone 07 3846 7444.

23-26 September, Australian Science Communicators Conference, 2001 & A Science Odyssey, Sydney. Presentations, papers, professional development and international speakers. More information contact david.ellyard@business.nsw.gov.au

25-28 September, Coasts & Ports 2001, Surfers Paradise Marriott Resort, Surfers Paradise, Gold Coast, Queensland, Australia. Incorporates the Australasian Coastal and Ocean Engineering Conference and the Australasian Port and Harbour Conference. Contact website: <http://www.icms.com.au/coastsandports> or: www.ieaust.org.au/nccoe/ or email organisers: coastsandports2001@icms.com.au

26-28 September, Ecological Society of Australia national conference, University of Wollongong, NSW. To register or get more information, visit the website: www.uow.edu.au/science/biol/esa

2-3 November, Practical solutions for coastal and ocean management - Comparative and international approaches, Brisbane. The conference involves community environmental legal centres and environmental agencies around Australia. For further information, contact the Queensland Environmental Defenders Office, phone 07 3210 0275 or email: edoqld@edo.org.au

20-23 November Sustaining our aquatic environments- implementing solutions. Townsville.
Contact Symposium Secretariat, Australian Water Association, PO Box 388, Artarmon, NSW.
events@awa.asn.au. www.awa.asn.au/AquaticEnvironments