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REEF ENCOUNTER

Newsletter of the International Society for Reef Studies

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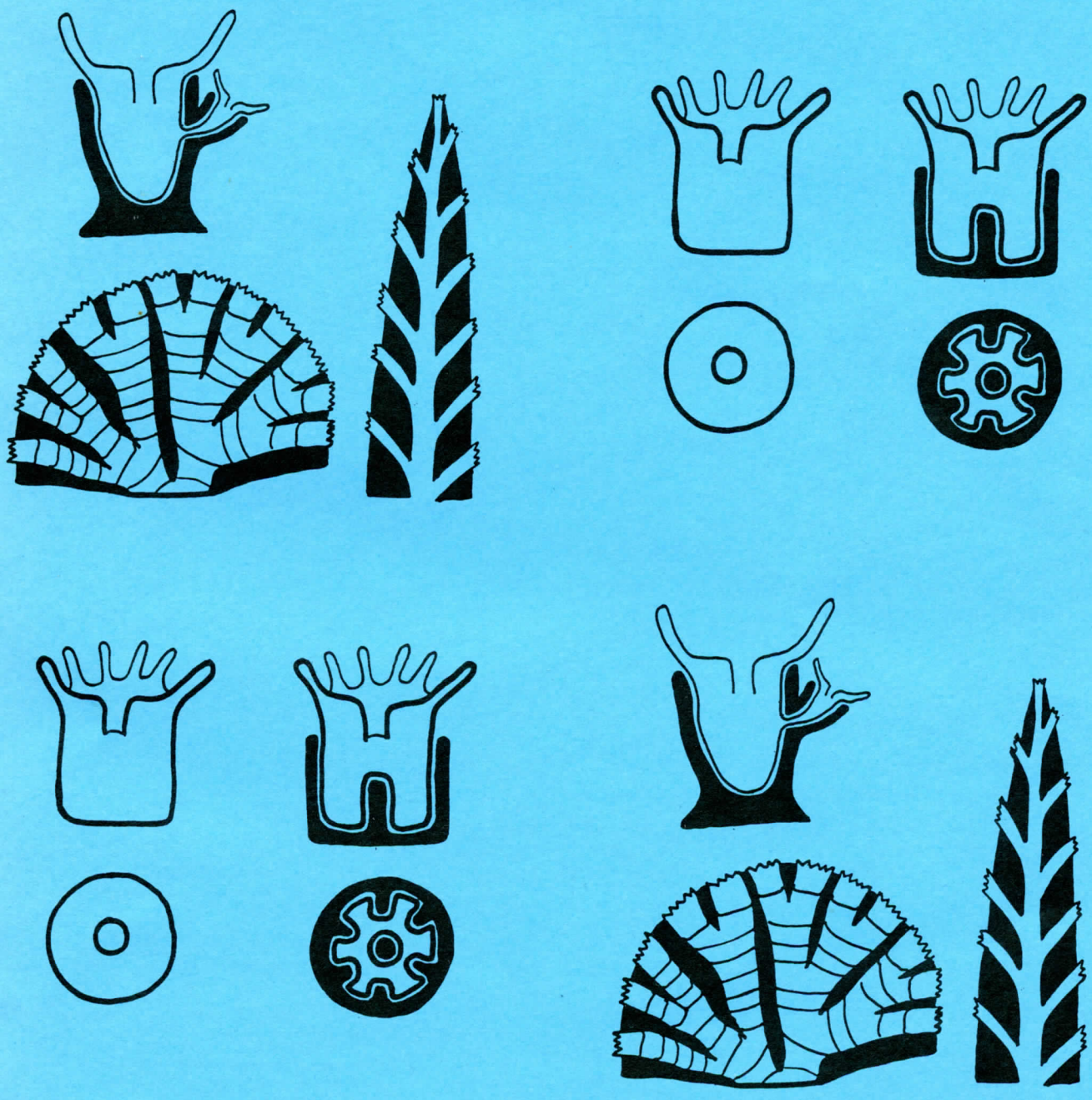

REEF ENCOUNTER No. 14 October 1993

NEWSLETTER OF THE INTERNATIONAL SOCIETY FOR REEF STUDIES

Editor Sue Wells
Associate Editor Callum Roberts

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Cover illustrations taken from: Walton Smith, F.G. 1948. Atlantic Reef Corals. *University of Miami Press.*

The **International Society for Reef Studies** was founded at a meeting in Churchill College, Cambridge, UK in December 1980.

Its aim under the constitution is to "promote for the benefit of the public, the production and dissemination of scientific knowledge and understanding concerning coral reefs, both living and fossil."

In order to achieve its aim, the Society has the following powers:

i. To hold meetings, symposia, conferences and other gatherings to disseminate this scientific knowledge and understanding of coral reefs, both living and fossil.
ii. To print, publish and sell, lend and distribute any papers, treatise or communications relating to coral reefs, living and fossil, and any Reports of the Proceedings or the Accounts of the Society.
iii To raise funds and invite and receive contributions from any persons whatsoever by way of subscription, donation or otherwise providing that the Society shall not undertake any permanent trading activities in raising funds for its primary objects.

The Society collaborates with Springer-Verlag in producing the quarterly journal *Coral Reefs*. This large-format journal is issued free of charge to all members of the Society, and concentrates on quantitative and theoretical reef studies, including experimental and laboratory work and modelling.

Membership

The annual subscription for full membership of ISRS is currently US$60, provided renewal payments are made by 1st March each year. Full Members receive the journal *Coral Reefs*, the newsletter *Reef Encounter*, and other periodic mailings.

Spouse membership is US$70.

Student membership costs US$10 and benefits include all of the above except the journal *Coral Reefs*.

Institutional subscriptions to *Coral Reefs* must be placed directly with Springer-Verlag.

Subscriptions to the Society should be addressed to the Treasurer (address given above).

EDITORIAL

This issue of *Reef Encounter* is unusual for two reasons. Firstly, those of you who failed to read the editorial in the last issue may be wondering why another issue is coming out now. This is because there is an important task for you carry out. The section in the middle which you may feel tempted to skip is the draft of the new Constitution for ISRS. Many of us find constitutional matters dull but, for the Society to function efficiently, they are occasionally essential. If you are a paid-up member of ISRS, please vote on whether the proposed new Constitution should be adopted. The instructions are on p. 6, and Daphne Fautin and John Ogden have helpfully provided an explanation of why we are going through this exercise and what it means. Unless you are attending the ISRS meeting in Vienna in December, **make sure you post your vote to Rene Galzin by 13 December.**

Secondly, many of the normal *Reef Encounter* features are missing from this issue. They have been replaced with a fairly extensive report on the Colloquium and Forum on Global Aspects of Coral Reefs held in June 1993 in Miami. Although participation at this was restricted in numbers, we think it merits good coverage, particularly as it needs a response from you. We must thank Bob Ginsburg for 'biting the bullet' and tackling an issue that has been touched on so many times in print and in meetings in recent years: what is happening to coral reefs and what can be done about it if we think it is serious? The gathering was very successful in airing a range of topics and, again thanks to Bob Ginsburg, some positive suggestions have arisen. Most importantly, it was decided that a special initiative on research and management of reefs should be launched in 1996. However, it is not clear whether this should be a '**Year** of the Reef' or a '**Decade** of the Reef'. Please read the report on p. 13 and send your comments to Bob Ginsburg.

The next issue of *Reef Encounter* will come out in March 1994. We urgently need contributions for this – reports on the Vienna meeting in December, comments on Bob Ginsburg's proposed reef initiative, and we are still waiting to hear from some geologists! Copy deadline is February 1st 1994, so please get scribbling in those dull moments when you have opened all your Christmas presents. And please note that contributions sent in on diskette (which are greatly appreciated) should be **IBM compatible** – full instructions for authors are given on the back page of every issue of the newsletter. Many thanks to Mark Spalding for last-minute proof-reading and to John Norton for helping to get this issue out so promptly.

Sue Wells

COPY DEADLINE FOR REEF ENCOUNTER 15 (due out March1994) IS FEBRUARY 1ST 1993

ISRS COMMENT

FROM THE PRESIDENT

Bernard Salvat

What does the President do? He has to act and report on behalf of Council. Yet he has his own personal perceptions and opinions on current and future problems. This message is a mixed one, coming from me both as President of ISRS and as an ordinary ISRS member.

Satisfaction

Over the last two years we have had a good team (of Officers and some of the Council and ordinary ISRS members) which has produced major results:

1. Membership has doubled to more than 500. This was essential for our survival; from now on we will be able to develop the Society.
2. We will soon have a new constitution. The old one has become obsolete, inefficient and impractical. Although some members consider this topic a red herring, we feel that there is no other solution that would enable us to work with maximum efficiency.
3. Numerous meetings have been organised under the auspices, or co-sponsorship, of the Society (Berkeley – December 1991 – Stoddart; Guam – June 1992 – Birkeland; Okinawa – November 1992 – Yamazato; Miami – June 1993 – Ginsburg; Okinawa PSA – July 1993 – Grigg, Hidaka; San Diego – July 1993 – Fautin) and others are planned for the future (Florida Keys – November 1993 – Ogden; Vienna – December 1993 – Piller; Townsville – July 1994 – Done; Luxembourg – September 1994 – Geister; Beijing, China PSA – June 1995 – Grigg; Panama 8th Coral Reef Symposium – 1996 – D'Croz and Jackson).
4. The newsletter *Reef Encounter* has appeared twice a year and is becoming increasingly appreciated by members. It serves as an excellent vehicle for raising controversy on current and future problems (see below).
5. Every other issue of *Coral Reefs* has a regular Society Page.
6. The new Editorial Board for *Coral Reefs* is working well under the direction of the Managing Editor and we now have a topic editor to cover environmental issues.

Frustration

It must be acknowledged that, even were we to increase our membership by 100%, it is unlikely that we would attract many coral reef scientists from developing countries. Our membership fees are too high and our main output, the journal *Coral Reefs*, is not considered of sufficient interest by potential members in these countries. It is my belief that we

are near the maximum number of members that we can expect to obtain, given our present activities. If we change direction and our output, we could attract new members. Do we want, and intellectually do we need, to move on from pure science, which is the current focus of the Society? This is the crux of the matter.

It has taken a long time to achieve the successes listed above under 'Satisfaction' and it is impossible for the Officers of the Society to devote more time to ISRS affairs. With 500 members, a lively programme of meetings, and with coral reefs as our interest, I am sure it would be possible for ISRS to be sponsored by a private or international body. But to organise such an initiative will require further time and energy from the Officers, and will need new and clear objectives. I am convinced that new objectives would not be pure science alone but would include socially and economically oriented activities.

Even with our doubled membership, almost all the fees received by the Society are passed on to Springer Verlag to print *Coral Reefs*. The editing and mailing of the newsletter, and the officers' expenses (secretary, telephone, fax etc) are not covered by the Society. This situation cannot continue. The Society cannot work indefinitely using officers and editors' money on the one hand and its revenue only for the printing of the journal. We have to define clear objectives and outputs based on financial autonomy, with separate budgets for outputs.

Looking Ahead

In *Reef Encounter* 11, June 1992, Sue Wells and Callum Roberts in their Editorial, and I in the President's Message, posed the question as to the extent to which the reef research community should become involved in environmental issues. Many opinions subsequently appeared in later issues of *Reef Encounter* (Mark Eakin, Terry Hughes, Michael Risk, Jamie Oliver, John McManus and John Ware, not to mention repeated editorials by Sue and Callum, the attempt by the lawyer Howard Latin to stimulate a more interdisciplinary approach, and Michel Porcher's attempt to set up a working party on coastal development and engineering related to reefs).

Almost all these expressed the need to integrate coral reef science into the social and economic pre-occupations of human society. It is up to each one of us to decide what to do personally, but in the context of ISRS we operate collectively and we must therefore define the limits of the Society's activities.

Personally (and here I write as a member of ISRS and not as its President) I agree with John McManus and would like to quote from his article (*Reef Encounter* 13): 'Management science is a combination of natural and social sciences. The new *Coral Reefs* retains the previous version's call for the former and the omission of the latter' and his conclusion 'While the management orientation of the ICRS (International Coral Reef Symposium) has grown rapidly since 1980, that of *Coral Reefs* has not. A substantial proportion of the ISRS membership specializes in research relevant to the management of coral reefs. Perhaps it is time to evaluate the objectives of the journal in light of the objectives of the scientific community that it represents.' I would also like to give my personal agreement to a conclusion of the Miami meeting on global aspects of coral reefs held in June (see p. 13) which stated 'We have decided that we can no longer simply do science as usual, but need dramatically to increase the attention we give to the management of coral reefs.'

I would like to emphasise that we in the Society are at a crossroads. We need to decide whether we want to be involved intellectually in management, including engineering, as well as science. If so, then we have to act accordingly. This will mean true management articles in *Coral Reefs*, in *Reef Encounter* and in other journals. This is the decision we have to take. Why? Because the need to exchange information on coral reef management exists and will be met elsewhere if not through ISRS. Journals, newsletters, symposia and meetings are the only tools. The question 'What do you want the Society to be?' is a major one that must be answered in the near future. Please contact the ISRS Council members or editors and give them your opinions; we will debate this in early 1994. And the decision will of course lie in the hands of those who actively participate.

NOTE FROM THE SECRETARY

During the ISRS meeting in Vienna, three ISRS meetings will be organized by the ISRS Council:

1. A Council meeting on the evening of Friday 17 December
2. The Annual General Meeting on the afternoon of Saturday 18 December
3. A Council meeting on Sunday 19 December 12.00–02.00 p.m.

The Agenda for the AGM is as follows:

1. President's report
2. Treasurer's report
3. Secretary's report
4. Managing Editor's report on *Coral Reefs*
5. Presentation of Best Paper Awards, Vols 10 and 11
6. Vote for the new constitution
7. If the new constitution is adopted, calendar for election of new officers
8. Any Other Business

THE COMPLEAT REEF ENCOUNTER

No. 14

"Coral reefs have survived thorughout the ages. How have they survived? They survived by dying!"

Bob Buddemeier, Colloquium on Global Aspects of Coral Reefs, Miami, June 1993.

A NEW CONSTITUTION FOR ISRS

The Constitution and Bye-laws under which ISRS has been operating since its founding more than a decade ago no longer serve the Society's needs. At its meeting in Guam in June 1992, the Council of ISRS therefore resolved to revise them. You are being asked to vote on whether to accept the revised version.

The proposed Constitution and Bye-laws have been considered by many people familiar with the workings of ISRS, and have been drafted by a committee headed by Daphne Fautin and John Ogden and modified according to comments from Councillors and an attorney. Many provisions and phrases are taken directly from the original documents. Others have been modified to bring governing rules into conformity with current practice, and some have been added to provide guidance on matters that were not previously covered. To help you make a decision, we explain some of the issues and articles.

The Constitution contains principles and is difficult to change; Bye-laws describe how these principles are implemented and are easier to change. Therefore, if you have reservations about provisions of the Bye-laws only, please vote in favor of the document and propose changes in the Bye-law(s) with which you disagree.

General points

The impetus for the revision was the challenge by an ISRS member to the last election of officers, in particular that of Daphne Fautin as Treasurer. Since no Councillor was willing to run for Treasurer, Fautin was asked by an officer to do so and, being unopposed for office, her name did not appear on the 1991 ballot. In fact, although no one realised this at the time, according to the existing Constitution which stipulates that officers shall be elected from among members of the Council, Fautin was ineligible for any office. The challenging member believed the membership should have the opportunity to vote – or not – for all vacant offices; on this point the existing constitution is mute. The challenges have been upheld by the Council and so new elections for officers must be held. Should the new Constitution and Bye-laws pass, the election will be held under its provisions; should it fail, the election will be held under provisions of the original documents.

There are other inconsistencies in the existing Constitution. For example, it stipulates that Trustees are to be entrusted with the non-cash assets of the Society. Not only are there no such assets, but terms of the original Trustees have expired and no new appointments have been made, which demonstrates the lack of need for them. The revised Constitution therefore has no provision for Trustees.

An overriding concern of Council in the revision of the Constitution and Bye-laws was to facilitate active participation in ISRS. Under the current Constitution, certain types of business can be transacted only in person at the annual general meeting (AGM), which, although required, has not always been held. For example, officers can only be elected by those attending the AGM. Many people who would like to participate more are prevented from doing so by their inability to travel long distances every year, perhaps especially those from countries where coral reefs are most abundant.

Moreover, since the time of the AGM has varied, terms of service have varied. This is now all specified, and linked to the fiscal year of the Society. To facilitate greater scientific and social interaction among ISRS members, the Council resolved in Guam to encourage regional meetings. To prevent meetings coinciding with each other, the Constitution requires that members be notified well in advance of the dates and of business to be transacted. Postal votes will be required on all business issues, which will make it less important to have a quorum at a membership meeting.

Several Councillors and Officers have noted the desirability of establishing a more-or-less permanent secretariat for ISRS. The new document has been written with that possibility in mind, so that none of the provisions will prevent such an eventuality.

Points relating to specific articles

Article 4:
The annual audit stipulated in the original Constitution has not been carried out for at least five years, suggesting that this is unworkable on an annual basis. However, the principle is important and the revised Constitution mandates that an audit should be held at least once every three years.

Article 5:
Inevitably, there are differences in interpretation of such a document. From reactions to the draft, it appears that in the British 'realm', 'members' can remain on the membership list for some years after dues have lapsed, but only those whose dues are current are considered 'financial'. This creates ambiguities over who is eligible to vote, receive mailings, etc. Article 5.ii therefore stipulates that a person is a member only during the calendar year(s) for which dues are paid.

Article 8:
Item ii explains how officers are elected; implementation is in Bye-laws 4 and 5. We had initially considered a three-year term, with a third of the officers and Councillors being elected each year, but annual elections are difficult and expensive to organize. Indeed, elections and assumption of office each two years, as specified in the current Constitution, have not been regular.

We no longer have the office of President-elect, which implied automatic accession to the presidency. Given the fluidity of professional commitments, we chose not to oblige a person to two consecutive terms of office. Under Item iv, the office of Vice President is envisaged as a mutual trial – the VP can learn what being President entails and is an automatic nominee for President at the next election (if he or she so desires), but the membership has the option of electing someone else.

With a membership nearly twice what it was two years ago, the burdens on officers have increased enormously. Under Items v and vi, a Corresponding Secretary (a function

now served mostly by the Treasurer) will be elected as well as a Recording Secretary. This is a solution followed by many organizations. The duties of each officer are clearly demarcated in the proposed Constitution.

The fiscal year of the ISRS is the calendar year. As in the existing Constitution, the Treasurer must report on the financial status of the Society at the close of the fiscal year, which allows legitimate inter-year comparisons (Item vii). This is a minimum, and does not preclude other reports.

Article 10:
Under Item i, notice of meetings should be 'timely', a term defined in Bye-law 13, which stipulates 'at least 8 weeks in advance'. If that should prove too short, the Bye-law can be amended.

The Bye-laws

1. The category 'family' replaces 'spouse' because we have at least one father-daughter 'spouse' membership. Furthermore these people need not reside together. This opens the possibility of two unrelated people sharing a membership, a chance we are willing to take because it has been our experience that the reverse is more common – several married couples are enrolled individually because each person wishes to receive his/her own copy of the journal.

6. Although the 16 Councillors now serving will remain for the time being, we propose to reduce their number to 12 in two years time. This is because: there are now more officers; it is difficult to find a sufficient number of people who will **actively** serve; it is expensive to send mailings several times a year; and enacting business is unwieldy with so many people. The provision for no re-election is to encourage as many people as possible to serve.

7. The requirement for a nomination to be seconded was removed in order to encourage participation by people in isolated places. The requirement for a statement of qualifications and purpose – which is far more difficult to compose than is obtaining the signature of a colleague as a second – should prevent frivolous candidacies. Moreover, each candidate for Council and office must reveal financial arrangements with publishers of scientific literature. Some publishers retain (pay) scientists to act as reviewers or to suggest topics or authors for books. Such an arrangement could influence (for good or ill) a person's vote in matters of Society publication, so members should know about it in order to choose leaders wisely.

9. Write-in candidates are explicitly prohibited (the current Constitution does not cover this) because of the need for members to vote on people whose views are publicized and who are known to be willing to serve (Bye-law 7).

HOW TO VOTE

You are entitled to vote if:

a. Your name appears on the membership list sent with *Reef Encounter* 13 in August 1993 (this included 410 full members, 7 Honorary members, 66 student members and 46 spouse members (i.e. 23 joint spouse memberships).
b. Those who joined since the above list was compiled and before 15 October.

The voting procedure

1. Cut out the voting slip on page 9. Spouse members should make a copy of this.
2. Place a cross inside **either** the box marked 'YES' **or** the box marked 'NO'.
3. Put one (and only one) completed voting slip inside an unmarked envelope (Envelope A) and seal it; this envelope must be completely unmarked.
4. Put Envelope A inside a second envelope (Envelope B). On the back of Envelope B, put your name in capital letters (please write clearly) and your signature (see example):

5. Seal and address Envelope B and either send it to: **René Galzin, ISRS Secretary, EPHE, Université de Perpignan, 66860 Perpignan Cedex, France** to reach him by midnight on **13 December 1993** or give it to him in Vienna before the ISRS General Assembly.

All envelopes B will be counted and checked to ensure that:

a. the name and signature of the sender appears on the back of the envelope
b. the sender is entitled to vote, as described above.

Only envelopes meeting these two criteria will be considered valid and will be opened. Similarly, Envelopes A and the voting slips themselves will not be considered valid if:

a. there is any distinctive mark on Envelope A
b. there is more than one voting slip inside Envelope A
c. there is any distinctive mark on the voting slip
d. both the two boxes (YES or NO) are crossed
e. neither of the two boxes (YES or NO) are crossed

Votes will be categorised into:

1. 'YES' votes
2. 'NO' votes
3. Null and Void Voting Slips
4. Invalid voters

Note: the voting slip is at the bottom of page 9.

CONSTITUTION OF THE INTERNATIONAL SOCIETY FOR REEF STUDIES

1. Name

The name of the association shall be the INTERNATIONAL SOCIETY FOR REEF STUDIES (hereinafter referred to as the Society).

2. Objectives

i Promoting the production and dissemination of scientific knowledge and understanding of coral reefs, both living and fossil;

ii Holding and sponsoring meetings, symposia, conferences, or other gatherings to disseminate this scientific knowledge and understanding of coral reefs;

iii Printing and publication of any papers, treatises, or communications relating to coral reefs and to the business of the Society;

iv Raising contributions from the members of the Society and other persons for carrying out the objectives of the Society as specified above; and otherwise furthering the objectives of the Society in a manner lawful for a not-for-profit organization.

3. Membership

i Membership in the Society shall be open to any person who supports its objectives. A member shall be enrolled in the Society upon receipt of the appropriate dues.

ii All members shall be bound by the Constitution and Bye-laws of the Society. Each member of the Society shall be furnished with a copy of the Society's current Constitution and Bye-laws upon enrollment.

iii The Council shall have the power to refuse any membership application and to deprive any member of membership in the Society for cause. The applicant or member shall have the right to appeal such refusal or deprivation as specified in the Bye-laws.

iv The Council may elect as Honorary Members persons who have rendered distinguished service to the Society or to coral reef research. The number of Honorary Members shall not exceed 10 at any time, and no more than 3 may be elected in any calendar year. An Honorary Member shall have all privileges of individual membership and shall pay no dues.

v All members shall have the right to attend business meetings or other such gatherings of the Society and to vote on matters put before the general membership.

vi Members of at least some categories shall be entitled to receive, as part of their membership fees, documents such as a newsletter, journal, reports of meetings, and transactions that the Society may publish periodically.

vii Publications of the Society shall be offered to members and other persons pursuant to terms set by the Council or in agreement with organizations with which the Society has publishing agreements.

viii The Society shall be deemed to have discharged its duty when it dispatches meeting notices, election information, newsletter, or other such publication to a member at the address most recently supplied by the member.

4. Finance

i The Society shall be financed by dues or other fees from its members. Grants from other organizations or persons desiring to support the objectives of the Society may be solicited and accepted at the discretion of the Council. No member shall receive any compensation or pecuniary benefit from the Society except that members may be reimbursed for expenses incurred in effecting its objectives. The Council's decision in assessing any such reimbursal shall be final.

ii The fiscal year of the Society shall be from January 1 to December 31.

iii An audit shall be done of the Society's books by an external, impartial, professional auditor at intervals determined by the Council, but no less frequently than once every 3 years.

iv The Council shall not be empowered to borrow money on behalf of the Society for any purpose, including the continuance of the Society.

5. Dues

i The amount of annual membership dues for each category of membership shall be determined and reviewed annually by the Council. Dues shall be payable in advance and shall be due on January 1 each year. The Council may assess an additional amount for late payment of dues.

ii No person shall have the privileges of membership until dues for the current calendar year have been received by the Treasurer.

6. Council

i The affairs of the Society shall be managed by a Council, which, subject to this Constitution, shall have power to take such steps, and to apply the funds of the Society in a manner deemed in the interests of the Society's objectives.

ii The Council shall consist of President, Vice President, Corresponding Secretary, Recording Secretary, Treasurer, no fewer than 8 and no more than 15 Councillors, Editor-in-Chief of the journal (if the Society has a journal), and Editor-in-Chief of the newsletter (if the Society has a newsletter).

iii No person may simultaneously occupy more than one seat on the Council.

iv The Council shall have the power to appoint a member of the Society to fill any vacancy that occurs between elections except that Article 8, sections iv and vi govern replacement of the President.

v The Council shall meet at least once a year. A quorum for a meeting of the Council shall be 7 Council members actually in attendance; that is, proxies shall not be counted in determining a quorum. Included in the 7 Council members shall be at least 2 officers.

vi A Council member who is unable to attend a Council meeting may designate a proxy from among other members of the Council to cast his/her vote in general or only on specified issue(s). Any Council member may hold, at most, 2 proxies.

vii Decisions shall be made by a simple majority of the votes cast. The President, or, in the absence of the President, the member filling the role of President, shall have the power to break tie votes.

viii Minutes of Council meetings shall be distributed by the Recording Secretary to all members of the Council, and shall be available for inspection by any member of the Society who requests to see them.

ix The President, with the concurrence of the Council, may appoint from among members of the Council and general membership any committees deemed to be necessary or expedient, and may depute or refer to them certain powers and duties of the Council. All committees shall be directed by the President and be answerable to the Council.

x The Council shall be empowered to nominate the editor of any journal, newsletter, or bulletin that the Society shall cause to be published, provided that such power is exercised in accordance with any agreement that exists between the Society and a publisher.

7. Councillors

i Any member of the Society is eligible to stand for election as Councillor.

ii The term of service for a Councillor shall be set in the Bye-laws, but shall be no less than 2 nor more than 5 consecutive calendar years.

iii Councillors are elected to represent the views of the membership in decision-making. They may be assigned additional duties as specified in the Bye-laws and at the discretion of the President.

8. Officers

i Any member of the Society is eligible to stand for election as an Officer. Officers shall be voting members of the Council.

ii The term of service for an Officer shall be set in the Bye-laws, but shall be no less than 2 nor more than 5 consecutive calendar years. Election

of all officers shall not take place during a single calendar year; the order of election shall be stipulated in the Bye-laws. Officers shall be eligible for election to a maximum of 2 consecutive terms in any office or combination of offices, except that the President cannot be re-elected to that office. Thereafter, an officeholder must be out of office at least 1 year before being eligible to be elected or appointed to any position in the Council.

iii The President shall: preside over all meetings of the Council and general membership; represent the Society in dealings with publishers and funding agencies, or in any other financial arrangements as the Society may make; assign duties to Councillors and form committees; be an ex-officio member of all committees.

iv The Vice President shall: aid the President, carry out the duties of the President when the President is unable to serve, and be automatically nominated for the office of President at the end of the term as Vice President unless he/she declines the nomination.

v The Corresponding Secretary shall: be responsible for sending all correspondence concerning affairs of the Society to members of the Council and to the general membership of the Society; prepare and dispatch ballots for elections; issue to each member at least 12 weeks in advance of any meeting of the general membership a notice of such a meeting and a preliminary agenda, if one is available; issue in a timely manner to each member of the Council notice of Council meetings.

vi The Recording Secretary shall: record minutes at all meetings of the Council and the general membership of the Society, and distribute them as specified in the Constitution and Bye-Laws and by the President; receive ballots, participate in tabulating election results, and inform the Corresponding Secretary and President of the outcomes of elections; carry out the duties of the President when neither the President nor the Vice President is able to serve.

vii The Treasurer shall be responsible for handling the cash assets of the Society. Among the Treasurer's duties shall be receiving dues, paying bills, and maintaining bank account(s) in the Society's name. The Treasurer shall present to the Society in February of each year a financial statement detailing income and expenditures of the Society during the previous fiscal year, and a proposed budget for the current fiscal year. Eligibility for voting, nominating candidates for and holding elective position, and constitution of a quorum shall be certified by the Treasurer.

viii In the event that the Corresponding Secretary, Recording Secretary, or Treasurer is temporarily unable to execute the duties of office, that officer must, if possible, so inform the President and, with the President's agreement, arrange for another Councillor to carry out those duties. If the Officer is unable to inform the President, the President, with the concurrence of the Council, shall name a temporary replacement.

9. Elections

i Elections shall be held biennially, according to procedures specified in the Bye-laws, and in such a manner as to ensure that all members of the Society are afforded a reasonable opportunity to cast an informed vote. Offices shall be assumed the following January 1.

ii All members of record as of 2 weeks in advance of when the ballot is mailed will be eligible to vote.

iii A nomination for Councillor or Officer must be submitted in writing and be with the concurrence of the nominee.

iv The Council may nominate candidates for Councillors and for Officers. Candidates should be selected from various scientific disciplines and to achieve wide international representation.

v A ballot shall be sent by the Corresponding Secretary to each voting member of the Society. It shall contain the names of all candidates for each position to be voted upon, even if there is only one candidate for a position.

vi The candidates, up to the number of vacancies, who receive the most votes shall be declared elected, unless otherwise stipulated in the Bye-laws. Procedures for dealing with a tie vote shall be stipulated in the Bye-laws.

vii The Corresponding Secretary shall report the results of the election to the Council and the general membership in a timely manner.

viii The results of an election may be disputed for cause by any member of the Society. The member(s) must state the cause(s) of dispute in writing to the President, to be received no more than 6 weeks after the results of the election have been sent to all members of the Society. The President shall inform members of the Council of the dispute in person or by mail in order that the Council can adjudicate the dispute before January 1, when offices are to be assumed. Should the disputed results be upheld by the Council, the President shall so inform the disputing member(s) and the Councillor(s)/Officer(s) shall assume office as normally. Should the dispute be upheld by the Council, the President shall so inform the membership, a new election for the disputed position(s) shall be held, and the incumbent(s) in the disputed position(s) shall remain in office until the new election is completed.

10. Membership Meetings

i At least one meeting of the general membership of the Society should be held annually. Members shall be given adequate notice of meetings, and results of the meeting shall be communicated to the general membership in a timely manner.

ii Any 2 members of the Council may inform the President of their intent to hold a meeting of the Society at least 4 months in advance of that meeting. In the case of more than one meeting in a calendar year, the President shall work with members of the Council to assure coordination among them.

iii Any 2 members of the Society may propose issues to be voted on at a meeting of the general membership. This shall be communicated as stipulated in the Bye-laws.

iv A quorum for a meeting of the general membership of the Society shall be a minimum of 40 members or 25% of the membership, whichever is less. In addition, at least 1 officer and 2 Councillors must be present for the meeting to be considered official.

11. Bye-Laws

i Bye-laws to augment this Constitution shall specify details and less fundamental provisions but shall not alter the intended meaning of the Constitution nor circumvent its provisions.

ii Additional Bye-laws or changes in the existing Bye-laws may be proposed in writing by any 10 members of the Society. Such a proposal must be circulated to all members by the Corresponding Secretary at least 4 weeks in advance of a vote on it. The vote shall be conducted by mail. Approval shall be by a simple majority of members voting.

12. Alteration of Constitution

i This Constitution may be altered by a vote of the membership of the Society providing that the scientific, not-for-profit objectives of the Society are not altered.

ii Any proposed alteration to the Constitution must be proposed in writing by any 15 members of the Society. Such a proposal must be circulated to all members by the Corresponding Secretary at least 4 weeks in advance of a vote on it. The vote shall be conducted by mail. Approval shall be by a two-thirds majority of members voting, provided that at least 40% of the members vote. In the event that fewer than 40% of the members vote, the proposed alteration to the Constitution shall automatically fail.

13. Dissolution

Upon the dissolution of the Society, any funds remaining after all financial obligations have been paid shall be applied or transferred, subject to the consents required by law, to some charitable or scientific purpose or object to be chosen by resolution of the meeting at which the resolution to dissolve the Society is passed.

14. Language

The official language of the Society is English.

BYE-LAWS

1. Categories of membership as of fiscal year 1994 shall be:
   i. individual member, who shall be entitled to a subscription to the Society's journal, a subscription to the Society's newsletter, and one vote on Society business;
   ii. student member, who shall be entitled to a subscription to the Society's newsletter, and one vote on Society business;
   iii. family membership, in which two people with the same mailing address shall receive one subscription to the Society's journal, one subscription to the Society's newsletter, and two votes (i.e. one per member) on Society business.

2. Annual subscription for the calendar year as of 1994 shall be:
   i. for an individual member of the Society US$60;
   ii. for a student member of the Society US$10;
   iii. for a family membership of the Society US$70.

3. A person whose application for membership is refused or who is deprived of membership in the Society shall have the right to appeal such refusal or deprivation to the next general membership of the Society, whose decision shall be final.

4. An election shall be held in September of alternate years; offices shall be assumed the following January 1.

5. An Officer shall serve for 4 consecutive calendar years. Election of President, Vice President, and Corresponding Secretary shall take place in one year, and that of Recording Secretary and Treasurer shall take place 2 years later. The year this provision is enacted, all officers shall be elected, the President, Vice President, and Corresponding Secretary for 4 years, the Recording Secretary and Treasurer for 2 years.

6. The number of Councillors shall be 12. A Councillor shall serve for 4 consecutive calendar years, and be ineligible for re-election or appointment as Councillor until having been out of office for at least 1 year. Half of the Councillors shall be elected in alternate elections. The year this provision is enacted, Councillors shall not be elected. In the election 2 years later, 6 Councillors shall be elected. For that election, Councillors shall retire in order of seniority so that the 6 most junior remain on the Council; in case of equal seniority, the order of retirement shall be determined by lot.

7. A nomination for Councillor or Officer must be in writing, be made by at least 1 member of the Society (who may be the candidate), and include a statement from the candidate of his/her qualifications for the position being sought and objectives while in that position. The statement shall include disclosure of any financial arrangements the candidate may have with any publisher of scientific literature. This information shall reach the Corresponding Secretary not less than 6 weeks preceding an election.

8. A ballot shall be sent by the Corresponding Secretary to each voting member of the Society in order to arrive not less than 4 weeks before it is due to be returned to the Recording Secretary. Included with each ballot shall be a list of names of retiring Councillors and the statement from each candidate of his/her qualifications, objectives, and financial arrangements with publishers of scientific literature.

9. Ballots shall be printed in such a manner as not to be easily reproduced. Ballots that are copied, spoiled, or late in arriving shall not be counted. In case of ballots on which more votes are cast than the number of vacancies to be filled, the ballot shall be considered void for that office but votes for other offices on that ballot shall be tallied. Write-in votes shall not be allowed.

10. The Recording Secretary and at least 1 other member of the Council who is not a candidate in that election shall count the ballots.

11. In the case of a tie vote, members of the Council shall vote by mail to determine the winner. This special balloting shall be carried out by the Corresponding Secretary within 4 weeks of the original election. The candidate who receives the most votes shall be declared elected.

12. The Corresponding Secretary shall report the results of the election to the Council no more than 3 weeks after the date of the election, and to all members of the Society no more than 5 weeks after the date of the election.

13. All members of the Society shall be informed at least 12 weeks in advance of any meeting of the general membership. This notice shall include at least the time and place of the meeting, and a preliminary agenda for the meeting, if one is available.

14. Intent to bring business requiring a vote before a meeting of the general membership shall be communicated to the President in writing in time to be included in the notice sent to members at least 12 weeks before the meeting. The text of any motion must be signed by the proposer and seconder. If it was not received in time to be included in the notice sent to members, it shall be deferred to the next meeting of the general membership.

INTERNATIONAL SOCIETY FOR REEF STUDIES

Voting Slip

I agree that the new constitution as proposed by Council should be adopted:

YES ☐

NO ☐

ISRS NEWS

HOW TO ORDER COPIES OF THE PROCEEDINGS OF THE CORAL REEF SYMPOSIUMS

Date	Venue	Reference	ISBN No.	Where to order	Cost
1969	Mandapam	Proceedings Symposium on Coral and Coral Reefs, Mandapam Camp, 1969	–	The Marine Biological Assoc. of India, PB No. 2673, Dr Salim Ali Road, Ernakulam, COCHIN 682031, Kerala, India	£100 sterling (around $150 US August 1993)
1973	GBR	Proceedings of the Second International Coral Reef Symposium. 1974. (Great Barrier Reef Committee: Brisbane)	0/909377/00/6 0/909377/01/4 0/909377/02/4	Out of print	
1977	Miami	Proceedings, Third International Coral Reef Symposium, Miami. 1977. 2 Volumes. Set of fieldguide books: Barbados, Belize, Grand Cayman, Jamaica, Panama, St Croix (limited number)		Comparative Sedimentology Lab, University of Miami, RSMAS/MGG, 4600 Rickenbacker Causeway, Miami, Florida 33149, USA	$51.00 post paid surface mail $23.00 post paid surface mail
1981	Manila	Proceedings. Fourth International Coral Reef Symposium, Manila, Philippines. 1981. 2 Volumes.	971-03-0015-6	Marine Science Institute, University of the Philippines, Diliman, Quezon City 1101, Philippines. Fax (632) 924-3735	$100.00
1985	Tahiti	Proceedings. Fifth International Coral Reef Congress, Tahiti. 1985. 6 Volumes.	2.905.630.00.0 (01.9, 02.7, 03.5, 04.3, 05.1)	SALVAT B., EPHE, Université de Perpignan, Avenue de Villeneuve, 66860 PERPIGNAN, France. Fax (33) 68 50 36 86	$400.00
1988	Townsville	Proceedings of the Sixth International Coral Reef Symposium, Townsville, Australia. 1988.	0731656032 (set) 0731656067 (vol 1) 0731656035 (vol 2) 0731656083 (vol 3)	James Cook University Bookshop Post Office, James Cook University, Townsville 4811, Australia	$A 150.00 (US $ depends on rate of exchange, etc.)
1992	Guam	Proceedings, 7th International Coral Reef Symposium, Guam. 1993. 2 Volumes.		7ICRS, Marine Laboratory, UOG, Mangilao, Guam 92923, USA Fax (671) 7346767	$125.00

FUTURE ISRS MEETINGS

16–20 December 1993
1993 EUROPEAN REGIONAL MEETING OF ISRS
This will be held in the Biozentrum, University of Vienna, is open to all, and will cover all aspects of recent and fossil reefs; special topics will be announced later if proposed. The meeting will be opened on the afternoon of 16 December. Presentations will be made 17–19 December. The meeting will be closed on 20 December, when there will also be opportunities for sightseeing around Vienna. The first circular has been mailed and those responding will receive the second.

Further information from: *Prof. Dr Werner E. Piller, Institut fur Palaontologie, Universitat Wien, Universitatsstr. 7/2, A-1010 Vienna, Austria. Tel. (43)-1-40103-2498; Fax. (43)-1-40205-33.*

9–11 July 1994
1994 ANNUAL ISRS MEETING
This will be held jointly with the Australian Coral Reef Society at James Cook University, Townsville, Queensland. The theme of the meeting will be 'Reef Science, Management and Sustainability of Reefal Habitats in the 21st Century'. The meeting will follow the format of the regular annual ACRS meetings. On the first day there will be a couple of keynote addresses, followed by papers on the theme of the conference. The next two days will be available for papers either on the theme or on other aspects of reef science. Informal gatherings will be arranged in the evenings to maximise discussion time.

A large number of marine scientists will be in Townsville over this period. Prior to the meeting, the Pacific Congress on Marine Science and Technology (PACON) will be held from 4–8 July, and the Australian Marine Sciences Association will be meeting from 8–10 July. Overseas scientists wishing to participate in the ACRS/ISRS meeting should contact ACRS who will try to arrange billets, although a wide range of accomodation is available in Townsville.

Further information available from: *Dr Terry Done, Hon. Sec. ACRS, Australian Institute of Marine Science, PMB No 3, Townsville MSO, Qld 4810, Australia. Fax (077)-725-852.*

30 August–2 September 1994
1994 EUROPEAN REGIONAL MEETING OF ISRS
This will be held in the new buildings of the Centre Universitaire in the Grand-Duchy of Luxembourg. The meeting is being jointly organised by Jorn Geister (Universitat Bern, Switzerland), Bernard Lathuilière (Université de Nancy 1, France), Alain Faber (Musée d'Histoire Naturelle, Luxembourg) and Robert Maquil (Service Géologique, Luxembourg). The first circular will be distributed **to those requesting it** in January 1994, after the regional meeting in Viena.

There will be a two day field trip before the meeting to the spectacular outcrops of Middle and Upper Jurassic coral reefs in Lorraine and southern Luxembourg. If there is sufficient interest (minimimum of 15 people), an additional field trip may be organised to the recent and Pleistocene coral reefs of the Sinai Peninsula (Egypt). Depending on flight schedules, this would probably take place after the meeting, starting from an airport in Germany or France.

For further information contact: *Jorn Geister, Geologisches Institut der Universitat Bern, Baltzerstr. 1, CH 3012 Bern, Switzerland. Tel. (41) 31 65 45 07; Fax (41) 31 65 48 43.*

CALL FOR PAPERS IN *CORAL REEFS*

A SPECIAL ISSUE: SCIENCE IN REEF MANAGEMENT

Following the Miami meeting on Global Aspects of Coral Reefs in June 1993, the co-ordinating Editor of *Coral Reefs* and I discussed a special issue of *Coral Reefs* addressing management-orientated science.

The issue would be published in 1995 as a pre-cursor to the Year of the Reef in 1996/97 and would target scientific papers which address management issues on coral reefs. John McManus (see *Reef Encounter* 13) has obviously been having similar thoughts to the Editors of *Coral Reefs* on the timeliness of such an initiative. He also claims that there may be concern that the quality of the journal may suffer if management-related papers are accepted for publication in *Coral Reefs* – and yet such papers may be of exceedingly high quality as exemplified by the work of Castilla and his group in Chile (see *Mar. Ecol. Prog. Ser.* 50: 203–214, 1989).

It is is clearly appropriate that management orientated papers be submitted to *Coral Reefs* and this issue will hopefully act as a catalyst in encouraging such submissions, the deadline for which will be 30 April 1994.

All papers should be sent to: *Dr B.E. Brown, Environmental Editor of Coral Reefs, Dept of Marine Sciences and Coastal Management, The University of Newcastle upon Tyne, Newcastle upon Tyne NE1 7RU, UK.*

CHANGE OF ADDRESS

Dr Peter F. Sale will leave the University of New Hampshire at the end of 1993 to take up a new position as Head of the Department of Biology, University of Windsor, Canada, from January 1st, 1994. His new address and contact numbers are:

Department of Biology, University of Windsor, Windsor, Ontario, Canada N9B 3P4. Phone: 1-519-253-4232, ext. 2696. Fax: 1-519-971-3609.

Dr Sale wants his colleagues to know that Windsor is **south** of Durham, New Hampshire (by one degree of latitude) and that this move does **not** signal an end to his interest in coral reef research.

CURRENTS

CORAL REEF ENVIRONMENTAL SCIENCE: DICHOTOMIES, NOT THE CASSANDRAS, ARE FALSE

Charles Sheppard

It is gratifying to note that *Coral Reefs* is moving into the league of major journals by starting its issues with editorial material. The first of these (Grigg, 1992) demands a response, however, as it could be counter productive if taken too literally.

Grigg (1992) describes the saga of Cassandra and Apollo, and compares the former's predictions of disaster, which were not believed when it was important that they should have been, with coral reef scientists who predict disaster. Examples concerning *Acanthaster*, coral bleaching and effects of temperature rise are mentioned, and it is suggested that coral reef scientists might now show greater maturity by not predicting serious problems unless evidence is overwhelming.

In the case of *Acanthaster*, Cornell and Surowiecki (1972) are admonished for their predictions, as is Chesher (1969) for his: 'There is a possibility that we are witnessing the initial phases of extinction of Madreporarian corals in the Pacific.'

The statements of the above authors might well be considerably more alarmist than usual, and hence deserve to be criticised, but only because they were wrong. If their predictions, and those of others concerned with possible effects of temperature rise (e.g. Jokiel and Coles 1990) had been right, no blame would have been attached to their statements. So what position should mature scientists take about other, newly perceived problems for which there is some evidence, perhaps only strong pointers, but not totally conclusive evidence? What can the concerned scientist do if it appears likely that the full evidence could not in fact ever be obtained?

There are several reasons why it may not be possible to gather full evidence, ranging from denied access to necessary areas, difficult geography, and lack of funding. I mention here one example of a prediction made in the Caribbean on incomplete evidence, namely the consequences of extensive coral reef mortality from white band disease, and I use it to suggest that predictions can be responsible, rather than the reverse.

Dr John Bythell and I have just completed a ground truthing project in the British Virgin Islands for the production of a habitat atlas, involving a near-total coverage of every island, islet and submerged reef (Bythell and Sheppard 1993). One observation which resulted from this and which is now fully mapped (Sheppard and Bythell 1993), is that there is near-total destruction of the main shallow water reef builder *Acropora palmata*. The cause is white band disease, although the exact pathology of this disease remains unconfirmed.

Warnings were sounded about this disease in the 1970s and 1980s, amongst others by my colleague, John Bythell. Ironically, the latter had been awarded a grant to research this just before Hugo removed his study reefs, together with the laboratory in St Croix. Why were the warnings of mass mortality from this cause ignored? Firstly, it may be that it was realised that little could be done to stop the progress of white band disease anyway, and scientists like to focus on safe, solvable problems. Secondly, the topic developed at the same time as the Crown of Thorns story, and perhaps one reef issue at a time is all that can be comfortably handled. This suggestion is supported by the fact that the great Caribbean *Diadema* die-off received much more attention when it occurred after the Crown of Thorns issue had tailed off and when there were fewer distractions (or did people really think that the *Diadema* issue was more important than that of the main Caribbean shallow water reef builder?). In any event, the few Cassandras were ignored, and in this case, like the original Cassandra, they were right, at least through fairly extensive parts of the Caribbean.

This leads us, in the Virgin Islands at least, to a new starting point, namely one where coral reefs have been largely eliminated between sea level and about 3–5 metres deep. What predictions should be made now, and what should responsible scientists comment? Should we comment at all, in case our predictions turn out to be wrong? In this case, several predictions, or at least postulates, are demanded, even though each may have to be couched with qualifiers. Not being a shrinking violet, I offer the following.

1. It is too late to bother with research on the disease itself as far as the British Virgin Islands are concerned, since about 98% of this dominant shallow reef builder is already dead. However, other parts of the Caribbean which have not been affected could benefit from such research.
2. Wave energy on shorelines will probably be markedly greater without the protective barriers.
3. Sources of sand and amounts of sand available for deposition on beaches may shift and change. Indeed this is already starting to become apparent.
4. Fisheries are likely to be affected.
5. Protected mangroves are likely to be affected.
6. Several aspects of the vital tourist sector could be affected. This includes not only the obvious area of diving, but also aspects which rely on sandy beaches.
7. Important areas of coastal infrastructure will become damaged.

I would therefore predict that problems in this part of the Caribbean, at least, will be serious and extremely expensive to the developing nations there, or to the aid agencies that will have to step in later. I believe that a scientist should give warnings if s/he thinks there is good reason to do so even if predictions based on current evidence eventually turn out to be wrong. For this reason we have, with the agreement of the BVI's Department of Conservation and Fisheries, begun informing the government and media of this problem.

The flavour of the first editorial in *Coral Reefs*, focusing on *Acanthaster* and coral bleaching, is that foolish youth might now have been replaced by mature avoidance of sounding

alarms, and that 'coral reef science has become of age' (Grigg 1992). However, I would advocate that scientific responsibility demands sounding an alarm based on current evidence. There is usually scope for more, or better, or further, or more focused, or longer, or more detailed research, but waiting for all of it may be waiting for a post-mortem. Evidence may change too, just as populations may die out.

In another journal (*Marine Pollution Bulletin* which also takes editorial comment) an ongoing debate revolves around the Precautionary Principle (PP) – its merits, its costs, and whether it is even scientific. Opposite sides are taken in this debate, to alarming extremes in some cases, and even more extreme positions on the PP are now spilling over into magazines such as *New Scientist*. On one hand, there is straight rejection of the PP even where it is part of law on the grounds that it is unscientific, even hysterical as some would have it, to assume, for example, that something is harmful unless irrefutable proof has been obtained that it already has caused harm. On the other hand, there is the view best condensed by Hey (1993) that '... lack of scientific certainty shall not be used as a reason for deferring measures to enhance the quality of the environment.'

It seems that many of us too can only see things in black and white. This is not a meritorious condition! Sometimes it is necessary to sound a provisional alarm. This is the mature approach. A dichotomy here is a false one.

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Cornell, L. and Surowiecki, J (eds) (1972). The pulse of the planet – a state of the earth report from the Smithsonian Institution Center for short lived phenomena. Crown, New York. p 56.

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Jokiel, P.L. and Coles, S.L. (1990). Response of Hawaiian and other Indo-Pacific reef corals to elevated temperature. *Coral Reefs* 8:155–162.

Sheppard, C.R.C. and Bythell, J.C. (1993). *Habitat Atlas of British Virgin Islands*. Published by Natural Resources Institute, Chatham, UK. pp 20.

Charles Sheppard, Warwick Research Institute, University of Warwick, Viscount Centre, Milburn Hill Road, Coventry CV4 7H5, UK.

NEWS

COLLOQUIUM AND FORUM ON GLOBAL ASPECTS OF CORAL REEFS

These two consecutive meetings were held as part of the University of Miami's 50th Anniversary celebrations in June this year. The focus on reefs was in honour of F.G. Walton Smith, an early contributor to reef science and founder of the Rosenstiel School of Marine and Atmospheric Science. Bob Ginsburg deserves an accolade for his skill at organising meetings. In 1977, he organised the Third International Coral Reef Symposium which was the only ICRS at which participants received the proceedings at registration. Sixteen years later, he has repeated this *coup*, mailing a workbook of some 60 case studies, covering the health and history of and threats to reefs and the methods of studying these issues, to participants attending the Colloquium. Selected case histories will be published in a special issue of the *Bulletin of Marine Science* in September 1994.

THE COLLOQUIUM

The Colloquium was restricted to about 120 reef specialists and graduate students from 30 different countries. The authors of the case studies gave brief presentations to outline the key issues of their papers, and these were followed by either open discussion by all participants or within smaller groups. This structure, combined with the fact that everyone was housed together in university accommodation, ensured maximum exchange of information and ideas, even over the muffins at breakfast. Perhaps it will spearhead a new approach to meetings and a break with the tradition of ponderous presentations.

Much of the discussion was carefully directed by Bob Ginsburg, who gently (and sometimes not so gently) goaded everyone into developing answers and opinions to some of the fundamental questions about reefs today. Most crucially he wanted a consensus that could be put to the public Forum. As the minutes ticked past and the hours drew on, the idea of consensus seemed evermore distant. But to many people's surprise, general agreement was reached on the presentation that was to be made.

COLLOQUIUM CONCLUSIONS

A summary of the discussions is given at the end of this report. The participants at the Colloquium came to the following general conclusions:

1. There are significant declines in the condition of many of the world's reefs. However, an accurate global evaluation is not yet possible because vast areas of remote reefs have not been studied. Nearshore reefs adjacent to large populations are deteriorating most. In some cases, it is evident that combinations of anthropogenic impacts play the main role: degraded

water quality from runoff of untreated sewage and/or sediment; overfishing; mining of coral; and shoreline development. For other reefs, natural impacts may be wholly or partially responsible for their deterioriation: unusually high temperatures associated with the El Niño-Southern Oscillation (ENSO) in the eastern Pacific, various coral diseases in the Western Atlantic and predators (crown of thorns) in the Pacific and Indian Oceans, demise of a key animal in the reef ecosystem such as grazing urchins, and hurricanes. Often, the natural and anthropogenic impacts coincide to reduce what were thriving reefs to wastelands of coral rubble.

2. Compared to that for tropical forests, another highly vulnerable ecosystem, the database for evaluating the condition of the world's reefs is inadequate on all counts. For reefs that show decline, the extent of this is unknown and the relative importance of natural vs anthropogenic impacts is rarely clearly understood. Few of the inaccessible reefs have been properly surveyed or even visited by reef scientists. For example, the two largest areas of reefs in the Western Atlantic, the Bahamas and Belize, still have large parts that are unsurveyed.

3. There is an urgent need for researchers to appreciate how fundamental research can provide the necessary tools for reef management. Establishing the critical levels of nutrients and sediment impact on a reef community is not only a fundamental scientific question, but essential in designing protected areas for reefs. Determining patterns of coral recruitment is as essential to understanding the maintenance and renewal of reefs as it is to evaluating the long-term effects and potential recovery of damage from ship groundings. Knowlege of patterns of water movement can help to explain the distribution of reefs as well as the fate of oil spills.

"We should try to make a statement to the press that we have sworn an oath, signed in blood, that in all our papers for the next three years we include at least one paragraph stating the relevance of the work to reef managers!" (A. Bloom)

4. Most of the world's reefs are in or near developing countries with large human populations who depend on them for their livelihoods. It is essential to develop incentives to encourage the sustainable use of these resources. The most successful management case studies have tended to be those in which local people have been made aware that their careful management of reefs can make a difference to fisheries yields or other forms of income.

"For coral reefs, the major problem with climate change is that it is unlikely to be severe enough to eradicate humans". (B. Buddemeier)

THE FORUM

The two-day public Forum that was held immediately after the Colloquium was a more formal affair, indicated by Bob Ginsburg's anxiety that everyone should dress appropriately. (A certain well-known coral taxonomist from Australia found this particularly hard to achieve, but perhaps he should not have worried as the Dean of the University, in his opening speech, urged anyone who became too hot to remove their clothing as the air conditioning was not functioning).

"For the next topic, I have to take my clothes off". (G. Multer, promoting the ISRS T-shirt)

The Forum included nine keynote talks from specialists, a panel discussion, and ample time for questions from the audience. Despite the earlier apparent consensus, and through no fault of the Organizing Committee, there was nevertheless controversial debate, partly stimulated by the media. A provocative case study of a deep-ocean sewage outfall generated much attention, and local problems in the management of the reefs of the Florida Keys were aired. As regular readers of *Reef Encounter* are well aware, there are considerable differences of opinion about the significance of observed changes on reefs today and there was little chance of disguising these entirely in a public meeting such as this, with informed and penetrating journalists present.

"The only safe kind of relationship with a reporter is abstinence!" (J. Porter)

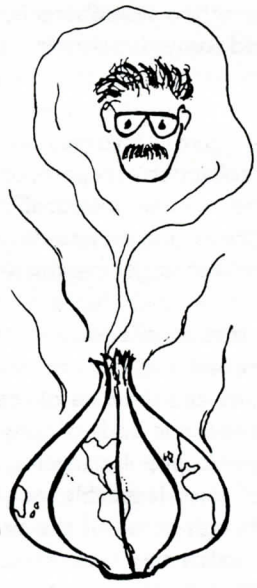
The meetings, however, were successful in making participants think and air their views. Its long-term success will depend on the follow-up.

NEW REEF INITIATIVE TO BE LAUNCHED

A major conclusion of the Colloquium was a proposal for major reef initiative in research and management, to start at the beginning of the 8th International Coral Reef Symposium that will be held in 1996 in Panama. Modelled on the International Geophysical Year, this would provide the impetus for:

1. Expanded assessments of the condition of reefs, both those in decline as well as those considered pristine;
2. Research on fundamental problems of reefs as well as aspects relevant to management and conservation;
3. Education of non-specialists and pre-university students in both developing and developed countries.

Bob Ginsburg provided a pungent acronym to direct thinking about projects to be undertaken as part of this initiative. Under the 'GARLIC' criteria, projects should be:



1. of **G**lobal concern
2. **A**rresting, and take new directions
3. **R**elevant to current issues
4. show **L**eadership of the field and in determining policy
5. **I**nnovative
6. **C**ommunity-oriented

The Organising Committee is developing ideas on how this initiative will be carried out. Such endeavors have often failed in the past and this one will need very careful marketing. To be fully successful, it will have to involve not only the scientists and scientific institutions and funding bodies that support them, but also the many international agencies, governmental bodies and NGOs that are concerned with the management and sustainable use of the world's reefs.

"We're flopping along like an albatross trying to take off" [in our efforts to bridge the gap between science and management, since several past symposia have had this theme but have made little headway]. (C. Birkeland)

"Once the albatross is airborne it is magnificent!" (B. Buddemeier)

YEAR OR DECADE?

Discussions following the Colloquium have led to the idea that a year is insufficient to accomplish the objectives in the three areas indicated above. For example, a substantial survey of even a significant number of the world's reefs can hardly be accomplished in a year even with thorough preparations. A decade of monitoring is certainly preferable to a year's effort especially for reef areas under stress. A successful effort to educate the general public and especially students can only develop over several years.

Arguments in favour of restricting the initiative to a year include the fact that this will provide more focus and be more attractive to funding agencies and environmental organisations, who might well be deterred by the idea of a decade. The initiative can in any event only be seen as the launch of projects; it should not be implied that monitoring, education or other long-term projects should cease after 10 years.

To help decide on a Year or Decade, please send your comments on the two options. The Organising Committee is not asking for a simple vote for one or the other. Depending on the number of responses, they may not be able to answer everyone individually, but promise to provide an honest summary in the next issue of *Reef Encounter*, which will also report on the progress that has been made in taking the initiative forward.

Please send you comments to: *Robert N. Ginsburg and Peter W. Glynn, University of Miami, RSMAS, 4600 Rickenbacker Cswy, Miami, Florida 33149-1098, USA. Fax: (305) 361-4094 e-mail: ginsburg @rcf.rsmas.miami.edu.*

SUMMARY OF DISCUSSIONS AT THE COLLOQUIUM

There were two general sessions, followed by a region-by-region assessment of the world's reefs.

1. Geological history of reefs

The five case histories that were presented resulted in the conclusion that the changing rate of sea level rise over the past 10,000 years and its interaction with the pre-existing limestone landscapes have had a profound effect on the present state of reef development. Early in this period, sea level rise was so rapid that some reefs literally drowned. Over the last several thousand years, as areas of suitable foundation were increasingly flooded and as the rate of rise slowed down, reef communities were established widely, and many of these have grown up to sea level. In several areas, the pattern and age of modern reef development were dictated by the configuration of the foundations, either by providing local elevations for initiation or by controlling water movements to provide more favorable habitats.

The present-day coral fauna is geologically young with a third of the modern genera in the Western Atlantic only a few million years old. Over this period, corals have been subjected to numerous periods of sea level rise and fall that have forced migrations up and down the margins of shelves and platforms worldwide. This entirely natural stress may have acted to select hardier species both for the shallower communities near sea level as well as those that are vigorous at depths near the lower limits of coral growth.

"Pleistocene reefs are the only pristine reefs." (P. Swart)

2. Methods of assessing the condition of coral reefs

Assessing the condition of coral reefs is as difficult as evaluating the condition of a city or town using remote sensing. It is,

therefore, not surprising that a wide variety of field observations are in use.

Some form of census of reef builders and/or inhabitants is probably the most widely used method. Estimates of the percentages of corals, fishes, algae or other reef organisms, and in some instances, their condition, can provide useful snapshots of populations. Evaluating these estimates however requires similar data from a control 'pristine' reef or from a large number of adjacent reefs with similar characteristics. Just as repeated censuses of human populations are necessary to determine demographic changes, so long-term monitoring on both small scale (quadrats) and large scale (transects) of reef building communities is essential. The various proposed regional and international monitoring programmes will help to answer some of these questions.

> **"Enough reefs have been monitored to death in the world. For example in Barbados there has been extensive monitoring but now the reefs are all dead". (P. Bell)**
>
> **"You're not saying the monitoring killed them are you?" (T. Hughes)**

It is evident that the census approach is only a starting point for evaluating the condition of reefs. The demographics of the various elements of the reef community and their interactions, metabolism and history of disturbance must also be understood. Assembling such information on marine communities is only just beginning and to develop this further will require major commitments in effort and funding.

Three case histories described the use of indicator species as 'canaries' of reef condition, using fish, benthic invertebrates such as sponges and rare coral species that appear to be particularly sensitive to environmental disturbance.

There was no discussion of methods to measure the physical environment of reefs, although it is well established, for example, that changes in temperature and circulation can result in decline or even demise of reef builders, as has happened in the Eastern Pacific following ENSO. Clearly there is an urgent need for continuous records of physical parameters, a need that is being met through some of the regional monitoring programmes such as CARICOMP.

A major conclusion was that there is no single method for assessing reef health and that the selection of methods must be question-driven. For example, some reefs are in such decline that a cursory, non-quantitative survey is sufficient. For others, such as those under attack by predators or disease, quantitative data on rates of decline, selectivity by species, etc. are required.

3. Regional Assessment of Coral Reefs

A major goal of the Colloquium was to critically evaluate the condition of reefs worldwide. This exercise was carried out in six regional groups. Participants familiar with the reefs of each region met together to consider the evidence from the case histories and from other sources, and reported on their findings in the plenary session.

This exercise produced an appreciation of the problems of assessing the state of the world's reefs, but for several reasons it produced only first-order or preliminary conclusions:

i. Although the case histories represented an unprecedented collection of reports on reef conditions and histories, their number was small compared to the world's total of reefs, and they could not be said to be representative of the larger regions from which they came.

ii. It was evident that an adequate inventory or large-scale assessment needs to draw not only on published scientific literature and the data of reef scientists, but also on the considerable body of 'gray literature' (e.g. government reports, popular articles, etc) and on the observations of knowledgeable non-specialists and laypersons. Although some of the participants were aware of the existence, and in some cases the implications, of this type of information, its inaccessibility is a major barrier to incorporating it into assessments.

iii. For several regions (the Caribbean being cited in particular) where marine stations are numerous and density of local observations is high, the database appears adequate for first order conclusions but suffers from a lack of coordinated surveys over wide areas.

iv. There are very few organisational approaches such as Australia's coordinated technically-oriented management of the Great Barrier Reef that can provide large-scale assessments (although it was recognised that such initiatives are now being developed in several regions); in most parts of the world vast areas of reefs have never been surveyed or visited by reef scientists.

> **"Perhaps we should have a roving team of 'Rambo' divers to go around the world monitoring the conditions of the world's reefs" [to overcome problems comparing studies using different methods and the expense of setting up a worldwide monitoring network]. (G. Hodgson)**

Each regional group was also asked to prepare lists of all existing and potential threats to reefs and to rank the impacts of these. Although an attempt was made to collate the results, the lack of a systematic approach to this task meant that the global assessment had a number of biases and flaws. Nevertheless, there was clear consensus on the most important human-induced threats: degradation of water quality through nutrient enrichment and sedimentation, and overfishing.

i. Bermuda, Florida, Bahamas and Gulf of Mexico

There are no obvious signs of decline in the reefs of atoll-like Bermuda and the reef-capped prominences of the northwestern Gulf of Mexico. The extensive reefs of the Bahamas archipelago, including the third largest barrier complex in the Atlantic (off Andros Island) are largely unstudied. In south-east Florida where the reefs are heavily used for fishing, diving and tourism, there are well-substantiated reports of local declines in coral populations based on long-term monitoring of quadrats, but there remains

uncertainty about the areal extent of these changes. The newly established Florida Keys National Marine Sanctuary plans the first ever extensive survey of these reefs and an ongoing programme of measurements in water quality.

ii. Caribbean

The reefs of the Caribbean are relatively small and almost all are near islands with large populations and extensive tourism. The presence of marine stations and national parks has provided more localized data on the nearby reefs than probably in any other part of the world. In four of the well-studied sites there are significant declines in coral cover and fish populations. Destruction of reefs by hurricanes and the loss of grazing sea urchins that feed on macroalgae are believed to be principal causes of the declines at several sites; overfishing is probably a major factor in Jamaica and elsewhere. For some local areas, runoff from the islands or from dredging are considered to be contributory causes. However, although many of the reefs are well-studied, those beyond easy access are still poorly known. The Caribbean is a natural laboratory for assessing the short and long-term effects of both natural and anthropogenic impacts.

iii. Central and South America

As in other regions, a combination of natural and anthropogenic effects have produced significant local declines in reef populations. Examples include reefs off Santa Marta City (Colombia) which is a source of pollution and runoff, and which are less diverse, have lower coral cover and more dead coral than those at a distance from the city; a small fringing reef in Costa Rica which is being smothered by terrestrial runoff from areas cleared for agriculture; and the San Blas Islands (Panama) where the combination of bleaching, loss of grazing urchins, coral mining, sediment run-off and excess nutrients, has led to declines in abundance and variety of coral species. This region however includes the largest and the most luxuriant and diverse reefs of the entire Western Atlantic – the Belize Barrier Reef complex – of which only a few small areas have been studied or surveyed.

iv. Indian Ocean

Reefs of coastal Kenya provide a model of how reduction in fishing pressure effects the community. In protected marine parks, reef fishes are more abundant and diverse than in nearby unprotected areas. Conversely, large populations of rock-boring sea urchins characterize unprotected areas, while predation by trigger fish reduces their numbers significantly in protected areas.

In Sri Lanka, reefs that are accessible to large human populations along the coast are severely affected by mining of coral for building, and by a variety of destructive and intense methods of fishing e.g. use of dynamite, special nets, and uncontrolled collection of ornamental reef organisms. Reefs in the remote offshore areas of the north-west and south-east are relatively immune from these impacts.

Fringing reefs of the islands of Reunion and Mauritius that have been well studied all show significant declines from a combination of the effects of sewage discharge, overfishing and hurricane damage.

v. Java and South China Seas

This region is distinctive for its high diversity of coral and other species and its varied reef types, and at the same time for its large human population (over 440 million for peninsular and insular south-east Asia alone) and its examples of locally severe reef degradation. For example, the reefs in the vicinity of Jakarta, a city of 9.5 million, are dead or destroyed as a result of the combined effects of eutrophication from untreated sewage, sedimentation and reduced light intensity, coral mining and physical destruction of reefs. Similar problems occur locally throughout the Philippines. There are reasons to believe that reefs in more remote areas are in better condition, although the presence of wide-ranging fishing fleets may have more impact than is now known.

Information on the condition of reefs in this vast region is highly variable. For areas such as Taiwan, the Philippines and Thailand, reconnaissance surveys have been carried out for up to half the total reefs, with greater emphasis on nearshore than offshore reefs. For other areas, including the reef-rich country of Indonesia, fewer than 10% of the reefs have been examined by scientists. There is a large amount of less specialised information available in the form of observations and reports by divers, tour operators, fishermen and government officials but it has not been assembled or reviewed.

vi. Pacific

In this, by far the largest region of coral reefs in the world's oceans, lack of information is a major problem; overall it was estimated that only about 10% of the reefs in the Pacific have been visited by reef scientists. Where information is available, there are extremes in the condition of reefs. On the one hand, there are reef areas that have undergone major degradation. Examples include: a severe decline in coral populations in the Eastern Pacific as a result of warming by ENSO events; burial and destruction of reefs in the Ryukyus by construction activities; and severe, but local and temporary reef destruction from cyclones on some atolls of French Polynesia. At the other extreme, most of the Great Barrier Reef in Australia and other areas remote from centres of human population are evidently quite healthy such as most atoll reefs in the Marshalls, Caroline and Cook Islands. Overall reefs in the Pacific were rated to be about 70% excellent to good and about 30% fair to poor. About 50% of the impacts were judged to be natural, such as El Niño events and large storms, and the other half related to anthropogenic factors.

> **"Japan is a very safe place to swim because there is absolutely nothing left in the water which could bite you". (C. Veron)**

This report was based on a variety of materials received by the editors; particular thanks go to Bob Ginsberg, Peter Glynn, Bob Buddemeier, Rick Grigg and Chuck Birkeland. Any distortions are the fault of the editors! We will be happy to print further comments on the Colloquium, Forum and the proposed new initiative in the next issue.

NEW RESEARCH INITIATIVE FOR GREAT BARRIER REEF

The Cooperative Research Centre for the Ecologically Sustainable Development of the Great Barrier Reef was established on 1 July 1993 as part of the Commonwealth Cooperative Research Centre (CRC) Program. It is located at James Cook University in Townsville, and is an unincorporated joint venture between the Australian Institute of Marine Science (AIMS), the Association of Marine Park Tourism Operators (AMPTO), the Great Barrier Reef Marine Park Authority (GBRMPA), the James Cook University of North Queensland (JCU) and the Department of Primary Industries, Queensland (DPI).

The CRC Program is a recent initiative of the Australian Commonwealth Government and aims to bring together key industries and scientific institutes to carry out research development, training and extension activities which will benefit Australia. Some 52 CRC's have been established under the Program since May 1990. This CRC – known as 'CRC: Reef Research Centre' – has representatives on its board from AMPTO, commercial and amateur fishing bodies, and the research organisations mentioned above. Like other CRCs, the Centre activities are funded by all parties, plus Commonwealth funding. The Centre budget totals $45 million over 7 years, $13 million from the Commonwealth, about $6.4 million from industry of which $6 million is expected to be raised through the environmental management charge on tourists using the Great Barrier Reef.

The Centre is undertaking an integrated programme of R&D, training and extension aimed at enhancing the viability of reef-based industries, expanding sustainable reef-based economic activity, with particular emphasis on tourism, and providing an improved scientific basis for reef management and regulatory decision-making.

The research activities are integrated, interlinking researchers, managers and industry personnel, and, fundamental to the Centre operation, are all issue-driven. The issues are identified by industry users (especially tourism) and environmental managers of the Great Barrier Reef. Major efforts are being made to ensure that research outputs are comprehensible and of value to the user. To achieve these goals, the Centre has developed three research programmes, an education and an extension programme. The research programmes include:

1. Research on the regional environmental status of the Great Barrier Reef, looking at 'health' through studies on the physics and chemistry of waters, sediments and nutrients and their effects on organisms.
2. Tactical research, solving problems associated with the use of reef resources and addressing social issues and tourist activities and needs.
3. Engineering research, aimed at better information and guidelines for structures on the reef and infrastructural developments in reefal environments.

Some 33 projects are underway throughout the Great Barrier Reef, ranging from questions related to the 'health' of the reef to tourist use and expectations. Progress will be reported in later newsletters.

For further information contact: *Dr C. Crossland, Director, CRC Reef Research Centre, James Cook University, Post Office, Townsville, Qld 4811, Australia. Fax 77-81-4099.*

MONITORING PROTOCOLS PUBLISHED

The methods recommended for use in the global monitoring programme for reefs that is being developed by a consortium of agencies as part of the 'Long-term Global Monitoring System of Coastal and Near-shore Phenomena related to Climate Change' have now been published (see *Reef Encounter* 11, June 1992). The methods are a revised version of those used by the ASEAN-Australia Marine Science Project: Living Coastal Resources. They are being made available through two agencies:

UNEP/AIMS 1993. Monitoring Coral Reefs for Global Change. *Reference Methods for Marine Pollution Studies* 61. UNEP, Nairobi. 72 pp. Available, free, from: *Programme Activity Centre for Oceans and Coastal Areas, UNEP, P.O. Box 30552, Nairobi, Kenya.*

Pernetta, J.C. (Compiler) 1993. Monitoring Coral Reefs for Global Change. *A Marine Conservation and Development Report*, IUCN, Gland, Switzerland. 72 pp. Price £5/US$10. Available from: *IUCN Publications Services Unit, 181a Huntingdon Road, Cambridge CB3 ODJ, UK or IUCN Communications Division, Rue Mauverney 28, CH-1196 Gland, Switzerland.*

Both reports contain identical versions of the methods. The IUCN report includes some background information and reports on some of the meetings that have taken place in the development of this project.

BOOK SHELF

THE TURF ALGAL FLORA OF THE GREAT BARRIER REEF. PART I. RHODOPHYTA.

Ian R. Price and Fiona J. Scott.

James Cook University Press, Townsville. 1992. xii + 266 pp. (including 81 figs). Softcover. Available from: The Bookshop, James Cook University, Townsville, Qld 4811, Australia. Fax: 077 251 209. Price A$61.95 (surface mail). Cheques payable to 'James Cook University Bookshop'. Credit card payment: specify card type, number, expiry date, name of holder and include signature.

This volume deals with the turf-forming species of red algae occurring on the Great Barrier Reef. The publication provides detailed descriptions and illustrations of the 74 species recorded, with emphasis on vegetative features. In addition, data are given on nomenclature, type material, voucher specimens, habitat, seasonality and geographical distribution. Genus descriptions, keys to genera and species, a glossary and taxonomic index are also included. This is the first detailed treatment of the taxonomy and distribution of the turf algae which occur on coral reefs, where they are of major importance in trophodynamics. Although written for Australia's Great Barrier Reef, the book should prove useful throughout the tropical Indo-Pacific Region.

REEF BIOLOGY: A SURVEY OF ELIZABETH AND MIDDLETON REEFS, SOUTH PACIFIC

The Australian Museum, Sydney (numerous contributors).
Australian National Parks and Wildlife Service Publication, Canberra. 1992 xviii + 230 pp. ISBN 0 642 17486 5. Available from: The Botanical Bookshop, Australian National Botanic Gardens, Clunies-Ross St, Acton, ACT. Tel: (06) 257 3302. Price A$49 + postage A$10 (in Australia), A$16 (overseas).

Observing the changes which occur in an ecosystem at its environmental extremes can focus the mind on what really makes that system tick. Where the system is as complex as a coral reef, this is perhaps one of the most effective ways of defining the processes that generate patterns and is exemplified by the studies that have been made of the sub-tropical reefs of western Australia and the reef mosaics of Arabia.

This book provides the raw material for such an approach in another region. The Elizabeth and Middleton Reefs lie 500km off the coast of eastern Australia and miss out on the title of the most southerly reefs in the world by a few hundred kilometres. Nevertheless, at nearly 30°S they are the most southerly coral atolls. They owe their existence to the warm East Australian Current which sweeps southwards past the Great Barrier Reef, carrying with it propagules of coral reef organisms from more favourable latitudes. For the majority of propagules riding this current it is a one way trip to oblivion. However, a few settle out which explains the faunal similarity of these reefs, albeit in a relatively impoverished way, to the southern Great Barrier Reef. Since the current also prevents the return of species originating this far south, relatively high levels of endemism are found here.

This book documents in impressive detail what is known of these southerly bastions of coral calcification. It provides a thorough review of the literature pertaining to Elizabeth and Middleton, and presents the results of a fresh survey by a team from the Australian Museum (led by Pat Hutchings) in December 1987. It should be of interest to people from a wide range of disciplines, from geologist to ecologist.

CROWN-OF-THORNS STARFISH ON THE GREAT BARRIER REEF: REPRODUCTION, RECRUITMENT AND HYDRODYNAMICS

Craig Johnson, editor.
CSIRO, Australia. 1992, 146pp. ISBN 0 643 05325 5. Available from CSIRO Bookshop, PO Box 89, East Melbourne, Victoria 3002, Australia. Fax: +61 3 419 0459. Price A$45 (Australia) or US$45 (overseas). Prices include postage and handling (economy air mail).

The recent wave of Crown-of-Thorns starfish plagues has been matched in intensity, with a lag of a few years, by a plague of papers on Crown-of-Thorns starfish. This outbreak threatens to undermine the existence of other forms of reef science by pre-empting huge tracts of journal space. Within this slim and attractively bound book lurk a further twelve *Acanthaster* papers, also published in the *Australian Journal of Marine and Freshwater Research*, and arising from a symposium held in Townsville in May 1991. However, potential readers should cast aside any prejudices against the thorny devil and forgive the space devoted to these studies. They represent some of the most interesting attacks on the problem of starfish outbreaks made to date and in doing so illuminate processes of fundamental significance to the entire reef biota.

The conviction has grown over the past 15 years that much of what drives the population dynamics of reef organisms lies in the processes of pre-settlement dispersal, mortality and recruitment. Whilst no sensible person would advocate ignoring post-settlement processes such as predation and competition (and indeed these may yet hold the key to *Acanthaster* biology), too little attention has been given to understanding the pre-settlement phase. Perhaps this has been mainly due to the immense methodological difficulties involved in studying the fates of eggs and larvae. It has taken the extent of the *Acanthaster* problem to provide at last the focus for a concerted delving into the details of dispersal and recruitment of a single organism, particularly at larger scales, and it is on the fruit of this effort that this book reports. All the papers in this volume are good and some are excellent. Whilst *Acanthaster* may not be your favourite topic, almost any biologist will benefit from the innovative and detailed studies presented. It would be surprising if we do not soon see the approaches taken in this book extended to other taxa.

OCEAN YEARBOOK, VOLUME 10

E. Mann Borgese, N. Ginsburg and J. Morgan (editors)
The University of Chicago Press, Chicago and London. 1993. xviii + 545 pp. ISBN 0 226 06613 4. Available from The University of Chicago Press, Journals Division, P.O. Box 37005, Chicago, Illinois 60637, USA. US$67.95.

The *Ocean Yearbooks* are published by the International Ocean Institute with the aim of assessing the wealth, health, management, strategic importance and future of the world's oceans, and are based on the premises that the oceans are the common heritage of mankind and that the issues and policies now pertaining to them have become extremely complex. The value of these volumes lies very much in their multi-disciplinary approach, covering law, economics, geography, oceanography, marine biology, industrial management and international politics.

Volume 10, published in collaboration with the East-West Center in Honolulu, has papers on a wide range of topics including the Law of the Sea, management of island ecosystems, the greenhouse effect, and case studies of various regional approaches to marine issues. Nearly half the volume comprises a series of Appendices. These include reports on important programmes and directions being pursued by selected major international organisations (e.g. Intergovernmental Oceanographic Commission (IOC), Scientific Committee on Oceanic Research (SCOR)); a selection of international agreements and proceedings of meetings (e.g. the Baguio Resolution on Coastal Resources Management in ASEAN countries; and tables of selected information relating to living resources (fisheries, with particular reference to the Indian Ocean), nonliving resources (ocean drilling etc), environment (aspects of pollution) and other topics.

This is probably a 'must' for libraries of any institution involved with marine issues, but given the selective nature of each volume, it is probably necessary to invest in the full set.

A CORAL REEF HANDBOOK

Australian Coral Reef Society
264 pp. Price A$29.95 plus $4.50 postage. Available from Surrey Beatty and Sons, 43, Rickard Road, Chipping Norton, NSW, Australia 2170.

This was published some time ago, but we have been informed that prices will shortly being going up. The handbook is a guide to the Great Barrier Reef for interested laymen, teachers and their students at secondary and tertiary level.

DIARY

Conferences

2 February 1994, Royal Society of Edinburgh, Scotland
BIOLOGICAL INDICATORS OF CLIMATE CHANGE
This symposium will draw together geologists and biologists to review the biological evidence for past and present climate changes. Contributions will include: Spectrum of climate change over the last 100,000 years and its reflection in the biosphere (Prof. G. Boulton, Edinburgh); Plankton animals as indicators of changing climate (Prof. A. Southward, Plymouth); Corals as climate indicators (Dr B. Brown, Newcastle upon Tyne). Further details available from: *The Meetings Assistant, The Royal Society of Edinburgh, 22-24 George St, Edinburgh EH2 2PQ, UK. Tel. (44)-31-225-6057; Fax: (44)-31-225-6277.*

15–18 February 1994, International Conference Center, Havana, Cuba
MARCUBA '94: 3rd CONGRESS ON MARINE SCIENCES
The Congress is organised by the National Oceanographic Committee and the Cuban Society of Marine Sciences and has the theme 'A Comprehensive Knowledge of the Sea for Sustainable Development'. The programme includes special lectures, work sessions, round tables, two fora (on algae culture and on marine and coastal ecosystem interaction), and a number of parallel meetings. Further information from: *Lic. Argelia Fernandez, Secretaria Ejecutiva, Comite Organizador III Congreso de Ciencias del Mar, Calle 1a, No. 18406, entre 184 y 186, Playa, La Habana, Cuba. Tel: 21-99-88. E-mail: oceano@ceniai.cu.*

4–8 July 1994, James Cook University, Townsville, Australia.
PACON '94. 6TH PACIFIC CONGRESS ON MARINE SCIENCE AND TECHNOLOGY
The biennial PACON congress brings together scholars and resource people to discuss key issues concerning marine technology related to the economic potential of the ocean in the region from a multi-disciplinary perspective. The 1994 meeting will be held under the auspices of the Australian Marine Sciences Association and other organisations. Technical papers will be presented on a number of themes, and there will be workshops on topics such as global

positioning systems, mapping and Pacific Basin Marine Science Organisations. The registration circular will be mailed in 1993 to those completing a pre-registration form. Further details are available from: *PACON '94 Organising Committee, c/o Sir George Fisher Centre for Tropical Marine Studies, James Cook University, Townsville, Qld 4811, Australia. Fax: 61 77 755429.*

5–12 June 1995, International Convention Center, Beijing, China
XVIII PACIFIC SCIENCE CONGRESS
Sponsored by a number of Chinese scientific institutions, this will have 'Population, Resources and Environment: Prospects and Initiatives' as its central theme. There will be six general symposia as well as scientific sessions organized by the Scientific Committee of the Pacific Science Association, including one on coral reefs. The first circular is available from: *XVIII Pacific Science Congress Secretariat, c/o Institute of Atmospheric Physics, Chinese Academy of Sciences, P.O. Box 2718, Beijing 100080, P.R. China; Fax: 86-1-2562458.*

10–14 July 1995, Amsterdam, Netherlands
2ND INTERNATIONAL CONFERENCE ON PELAGIC BIOGEOGRAPHY (ICoPB)
Following several meetings of the SCOR Working Group on Pelagic Biogeography, this conference will be held to discuss new developments in biogeography of plankton and nekton, its relation to climate, hydrography and history and the results of the 1993 Working Group meeting. The meeting will be held in the Amsterdam area. The conference language will be English. The programme will probably include lectures, poster sessions and working groups, and proceedings will be produced. Further information from: *S. van der Spoel, Institute of Taxonomic Zoology, P.O. Box 94766, 1090GT Amsterdam, Netherlands. Fax: 20-5255402.*

17–21 July 1995, Amsterdam, Netherlands
6TH INTERNATIONAL CONFERENCE ON COELENTERATE BIOLOGY (ICCB)
This will present new developments in ecology, symbiosis, morphology, taxonomy, biogeography, evolution, reproduction, population biology, behaviour, physiology, cellular biology, growth, genetics, natural products, biodiversity, palaeontology, conservation and pollution in relation to coelenterates. The conference language will be English. Visits to laboratories and museum collections will be organised. Further information from: *S. van der Spoel, Institute of Taxonomic Zoology, P.O. Box 94766, 1090GT Amsterdam, Netherlands. Fax: 20-5255402.*

Courses

30 May–24 June 1994, Coastal Resources Center and Department of Marine Affairs, The University of Rhode Island
SUMMER INSTITUTE IN COASTAL MANAGEMENT
The Summer Institute is for professionals responsible for planning or managing coastal management programmes for the whole range of agencies and institutions that work in this field. The aim is to provide participants with the practical skills required to design and implement coastal management programmes, particularly in developing nations. Instructors include faculty and staff at the University of Rhode Island and practitioners in coastal management with experience from around the world.

Course fees are US$3,900 and cover meals, housing, field trips and reading materials. Further information from: *The Training Co-ordinator, Coastal Resources Center, The University of Rhode Island, Narragansett Bay Campus, Narragansett, RI 02882, USA. Fax: (401) 789-4670.*

NOTES FOR CONTRIBUTORS

The aim of *Reef Encounter* is to provide a magazine-style newsletter on any aspect of reefs, the livelier the better. In addition to news, meeting and expedition reports and announcements, we aim to have discussions and debates about particular issues concerning ISRS or the broader field of reef science in general. *Reef Encounter* does not publish original scientific data, so please do not submit such papers. The newsletter aims to complement the journal which carries scientific papers only, in that it provides an outlet for book reviews, discussion of papers in the journal and a correspondence column (**Upwellings**). It also carries short reviews of recent trends and developments in reef research or events that bear on reef studies. In the tradition established by the first editor, *Reef Encounter* is cheerfully illustrated, with cartoons, newpaper cuttings and other entertaining material.

Please note that *Reef Encounter* is an entirely voluntary effort. We do not have funds to pay authors, and the editors are also unpaid. Please help ISRS by submitting material on a regular basis and in a form that does not require too much editing.

To save time and postage, we shall not normally acknowledge submitted material and material will not normally be refereed or returned for corrections. Opinions expressed and errors of fact will have to remain largely the authors' responsibility. No published item should be taken as ISRS opinion unless indicated.

Please help by sending items of not more than 2,000 words in length and in double-spaced typescript, or, preferably, on diskette using Wordperfect or DOS-text and in an IBM compatible format. You can expect some gentle editing for flow and sense and to address our readership as appropriately as possible. Illustrations should be of a size compatible with our format. Black line drawings are preferable at present, although we hope eventually to be able to afford photographs. Diagrams should have legends and/or captions to explain all symbols, abbreviations and shading patterns etc. Maps should have a scale and indication of orientation. Use *World List* abbreviations in references. Please use metric, or imperial-with-metric units, but not imperial units on their own. Do not forget to give your name and full address, or any other contact address where applicable.

We have no regular reprint system, but contributors will receive a free copy of the relevant issue.

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University of Kansas, Lawrence, Kansas 66045-2106, USA.