

69.

**AUSTRALIAN  
MARINE SCIENCE  
BULLETIN**



**No. 69**

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# AUSTRALIAN MARINE SCIENCES ASSOCIATION

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## OBJECTS OF AMSA

To promote liaison between scattered centres and workers in the many disciplines of marine sciences in all States, through a quarterly Bulletin, through meetings and conferences or any other means and to promote co-operation between them. Membership is open to scientists or corporate bodies engaged in marine research or to students of marine science approved by the Council of the Association. AMSA aims to improve the public's 'image' of marine scientists and to forward their interests generally.

## ANNUAL SUBSCRIPTION RATES:

Corporate . . . . .	\$32.00
Ordinary and Associate . . . . .	\$10.00
Student . . . . .	\$5.00
Corresponding and Library . . . . .	\$6.00

Subscriptions, applications for membership or any queries on membership matters should be sent to Mrs R. Allen, Hon. Treasurer, 192 Ewos Parade, Cronulla, N.S.W. 2230.

The Australian Marine Sciences Association and the Editors of the Bulletin are not responsible for the statements and opinions advanced by contributors.

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## COUNCIL MEETING

Some topics discussed at the Council Meeting held at CSIRO, Division of Fisheries and Oceanography, Cronulla, on 12 November 1979 are reported briefly.

### AMSA Handbook No. 3

Handbook No. 3 was tabled at the meeting.

The Secretary and Treasurer were asked to arrange for the supply of copies to libraries and kindred associations and the presentation of 25 complimentary copies to the author, Dr. A.D. Albani.

### Amendment to the Constitution

It was resolved that notice be given in Bulletin No. 69 that at the 1980 Annual General Meeting a motion relating to arrears of subscriptions and cancellation of membership, proposed by Dr. R.J. MacIntyre and Mrs. R.M. Allen, be considered. (See announcements in this issue.)

### Membership

The following were admitted to the Association as:

(a) Ordinary members:

Mrs. M. Apthorpe (Woodside Petroleum, Perth)  
Mrs. I.P. Harbison (University of Adelaide)  
W.M. Host (Aquaculture Internat, Adelaide)  
G.M. King (Vict. Geol. Survey, Melbourne)  
P.M. Lake (University of Newcastle)  
J.L. Reichelt (Roche Research Institute)

(b) Student member:

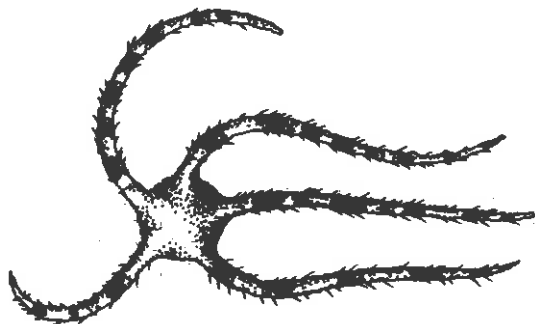
J.T. Vanderveide (University of N.S.W.)

(c) Corresponding member:

W.A. Maher (University of Southampton)

The following have resigned from the Association:

W. Copley  
Mrs. M.P. Hines  
G. Kennedy  
K.L. Sutherland



## NEWS

In November the Honourable D.J. Killen, M.P., announced a **major review of the Defence Science and Technology Organisation**. The official statement includes the information that this organisation "includes some 4,900 staff and has a budget of about \$90 million. It is the second largest government science organisation in Australia."

The review process will be in two parts, an external review which will concentrate on defence science and technology work as science, and an internal review will cover special defence aspects of the organisation including its objectives and interactions with the rest of defence.

The external review will cover the quality and research content of the work of the defence science and technology organisation, its effectiveness in meeting program objectives and its relationships with industry and other science in Australia.

The internal review will examine the objectives of the defence science and technology organisation, its interaction with the services and other elements of the department, its management procedures and the value of its association with defence science overseas.

The external review committee will be chaired by Dr. A.L.G. Rees, C.B.E., F.A.A., formerly Chief of the C.S.I.R.O. Division of Chemical Physics; and the internal review will have as its chairman Professor P.R. Fink, C.B.E., F.T.S., who is at present on contract appointment as Chief Defence Scientist, having previously been Dean of Engineering at University of N.S.W. During the period of his review chairmanship Professor Fink will be relieved of his present duties.

The official press release statements make no specific comments in relation to marine sciences, but it seems probable that those aspects of research in the seas which have any connection with defence (in its broader terminology) will be included in the review.

The **Annual General Meeting of the Great Barrier Reef Committee** was held at University of Queensland on Friday 9th November, 1979. Executive members of the Council were elected unopposed.

President	Professor H. Heatwole
Vice President	Mr. D.J. Rochford
Hon. Secretary	Dr. R. Bradbury
Hon. Treasurer	Dr. L.R.G. Cannon

As Immediate Past President, Professor F.H. Talbot is an ex-officio member of Council.

For the ensuing year the rotating institutional Council membership system has resulted in the following

Institutional Members being invited to nominate representatives to the Council

Australian Museum  
Australian National University  
Flinders University  
Howard Florey Institute

### Defence Oceanography Research Consolidation

The oceanographic research activities of the Defence Science and Technology Organisation have been consolidated at the Royal Australian Navy Research Laboratory in Sydney, by the shifting of the physical oceanography section (previously located at the Defence Research Centre in Salisbury, S.A.) to the Sydney Laboratory.

When the new oceanographic research vessel COOK comes into service in 1981 it is expected that there will be a considerable increase in marine environmental research activity in Australasian seas by the R.A.N. research groups.

The University of Melbourne marine science group held a day of marine science research seminars, early in August (see BULLETIN No. 67). Those attending included many research workers from governmental and private research agencies as well as visitors from other tertiary educational institutions.

Titles of papers presented are listed:

- R.A. Gell (Geography)  
Origin and composition of Victorian beach sands
- Dr B.B. Sharp (Civil Engineering)  
River and estuarine studies supported by side scan sonar
- E.C.V. Butler (Chemistry)  
Iodine species in seawater
- G.L. Benwell (Surveying)  
Position fixing in Bass Strait
- I.L. Collings (Mathematics)  
Stability and meanders of the East Australian current
- N. Haritos (Civil Engineering)  
Dynamic response of offshore structures to wind and wave loading
- Dr L. Thomas (Geology)  
Sub-bottom profiling — Bass Strait, Port Phillip, and Corio Bay
- Dr J.B. Keene (Geology)  
Submarine canyons of eastern Bass Strait — morphology and sediments
- K.L. Blaze (Botany)  
Bass Strait phytoplankton
- Vicki B. Brown (Botany)  
Benthic algae of the Werribee outfall area
- R.W. Ricker (Botany)  
Sub-Antarctic marine botany

- Sue M. Ramm (Botany)  
Marine algal ultra-structure
- Dr J. Bavor (Microbiology)  
Availability of heavy metals to bacteria in marine sediments
- Dr J.H.G. Stephens and Dr N.F. Millis (Microbiology)  
Forms of nitrogen in sediments (Port Phillip Bay, Western Port mangroves)
- R.K. Howard (Zoology)  
Ecology of epibenthos of eelgrass beds in Western Port, Victoria
- J. Dorsey (Zoology)  
The benthic community structure offshore from the Werribee Sewage Farm, Port Phillip Bay

Further information concerning the seminar and the contents of papers presented may be obtained by writing to

M.A.H. Marsden  
Co-ordinator of Marine Sciences,  
University of Melbourne,  
Parkville, Vic 3052.

### Great Barrier Reef Marine Park Zoning Submissions

The majority of readers of the BULLETIN will, by now, be aware of the many statements, advertisements and notifications relating to the zoning plan for the Capricornia Section of the Great Barrier Reef Marine Park.

The Great Barrier Reef Marine Park Authority received more than 80 submissions in connection with its draft zoning plan for the Capricornia Park Section.

Some representations were signed by large numbers of people and several differing approaches to management of the park were suggested. There was considerable input from scientific interests, including universities and individual research workers. The continuing importance of the Capricornia Section of the Reef to marine science and research was emphasised.

The period for receiving public submissions on the "intention to zone" closed on 5 December and the Authority will now proceed with the preparation of the draft zoning plan. This should be available for public perusal and further comment by mid-February.

In preparing the draft plan, the Authority will be taking into account established uses of the Section and future projected activities. The zoning plan can provide for scientific wilderness areas where all activity other than scientific research is prohibited.

Public representations on the draft zoning plan will be invited by general advertisement.

The ocean sciences group at the Royal Australian Navy Research Laboratory has been working recently with CSIRO's Fisheries and Oceanography Division in a two-ship experiment within a large mesoscale eddy off

the eastern coast of Australia. Acoustical, thermal and chemical data were collected; correlations between acoustical backscatter, mesoscale oceanographic features and biological activity are being investigated.

The Queensland Government appointees to the four member **Great Barrier Reef Ministerial Council**, which is to co-ordinate the Commonwealth and Queensland governmental policies in relation to the Reef as a whole and marine parks, are the Honourable I.J. Gibbs, M.L.A. (Minister for Culture, National Parks and Recreation) and the Honourable M.D. Hooper, M.L.A. (Minister for Maritime Services and Tourism).

### **International Symposium on Estuarine Nutrient Enrichment**

Arthur McComb (Botany Department, University of W.A.) and Ernest Hodgkin (Department of Conservation and Environment, W.A.) attended the International Symposium on Nutrient Enrichment in Estuaries at Williamsburg, Virginia, at the end of May, 1979. They spoke on current research on estuaries in W.A. with special reference to the Peel-Harvey estuarine system. Publication of the proceedings from these meetings is expected early in 1980.

Following the Symposium visits were made to the Virginia Institute of Marine Sciences and the University of Georgia Marine Institute at Sapelo Island. Further short visits were made to other marine and general research establishments (Smithsonian Institution, Woods Hole Oceanographic Institute, University of Rhode Island and Berkeley campus of University of California).

Many AMSA members will be interested to note that Don Kinsey, previously in N.S.W., is now Director of the Sapelo Island Laboratories.

### **Great Barrier Reef Consultative Committee**

In October, the then Minister for Science and the Environment, Senator Webster, commented favourably on the Commonwealth-Queensland agreement to enable the proclamation of the Capricornia Section of the Great Barrier Reef Marine Park and announced the new membership of the Great Barrier Reef Consultative Committee.

The consultative committee is an important element in the co-operative arrangements which have been established between the two governments for the development and management of the Great Barrier Reef Marine Park.

The Minister said this committee would advise him and, through him, the Ministerial Council on matters relating to the operation of the Marine Park Act and would advise the Marine Park Authority on matters pertaining to the Park.

The Committee is made up of members nominated

by the Queensland and Commonwealth Governments in equal numbers plus one member appointed by the GBRMPA. A wide range of backgrounds, interests and fields of expertise covering industry, recreation, science and various governmental approaches is represented.

Members are appointed for a term of three years.

The members of the Consultative Committee are:

Mr D. Fraser, First Assistant Secretary of the Tertiary Industry Division of the Commonwealth Department of Industry and Commerce

Mr G. McKauge, Chairman of the Reef Region Tourism Task Force established by the tourist industry

Dr P. Saenger, whose professional field of interest is ecology, physiology and biochemistry of marine algae and sea-grasses; he is Deputy Chairman of the Queensland Amateur Fishing Council

Mr K. Thompson, First Assistant Secretary of the Environment Division of the Department of Science and the Environment.

Retiring members as of September who are to be reappointed are:

Mr J. Ballingall — Queensland Commercial Fishermen's State Council

Dr D. Connell — Australian Conservation Foundation

Mr P. Eccles — Commonwealth Department of Transport

Mr E. Hegerl — Australian Littoral Society and Queensland Conservation Council

Mr J. Izatt — Queensland Game Fishing Committee

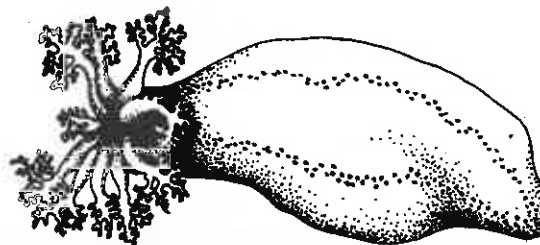
Dr P. Mather — Great Barrier Reef Committee

Dr G. Saunders — Queensland National Parks and Wildlife Service

Professor K. Stark — James Cook University of North Queensland

Mr J. Woods — Queensland Department of Mines

Dr J. Bunt, Director of the Australian Institute of Marine Science, was re-appointed earlier to the Committee, and the Great Barrier Reef Marine Park Authority proposes to appoint its Chairman, Mr G. Kelleher, as its representative.



## REPORTS

### The Australian Fishing Zone

*In view of the many general, political and media comments that have been made regarding the "200 mile fishing zone" and related matters the editors invited Dr R.D. Lumb to prepare the following statement. Dr Lumb, who is Reader in Law at University of Queensland, is a specialist in aspects of constitutional law and the author of "Law of the sea; and Australian off-shore areas".*

On the 1st November, 1979, certain amendments to Commonwealth fisheries legislation (passed in 1978) were brought into operation by a Proclamation of the Governor-General made in September, 1979. These amendments had the effect of substituting a 200 nautical mile Australian fishing zone (A.F.Z.) for the previous 12 mile declared fishing zone within which foreign fishing operations are prohibited except under licence by the Commonwealth. (It should be pointed out that Australia still adheres to a 3 mile limit of territorial water i.e. waters over which general sovereign rights may be exercised subject to a right of innocent passage of foreign vessels).

The 200 mile fishing zone can be regarded as being established in international law, although there is still some degree of uncertainty about the rights of access of foreign fishing vessels to that zone.

There are also questions of determining the boundaries of fishing and seabed resource zones between adjacent nations and their island territories. In the Pacific Ocean, the drawing of Australian boundaries will impinge on those of the Solomon Islands, France (New Caledonia and its islands) and New Zealand, while in the Indian Ocean there will be a need to determine the boundaries between the Australian continent and islands (such as Ashmore and Cartier) and Indonesian islands including Timor. Until negotiations on these matters are concluded, the Australian Government is adopting median lines drawn from baselines on the continent and islands.

The establishment of a 200 mile fisheries zone will lead to a huge increase in the area of waters within which Australian fisheries legislation will operate with consequential problems of surveillance and enforcement. The legislation on the statute books may be supplemented by regulations making provision for the inspection of foreign vessels, the reporting of their positions, and the carrying on board of Australian observers who "are engaged in marine research or are interested in methods of catching, capturing or processing fish."

It is to be noted that the objectives described in the fisheries legislation for the administration of its provisions are those

(a) of ensuring, through proper conservation and manage-

ment measures, that the living resources of the Australian fishing zone are not endangered by over exploitation, and

(b) of achieving the optimum utilization of the living resources of that zone.

Consequently the granting of rights of access to foreign fishermen (which are made on the basis of financial payments by the licensed country) must take account of these objectives.

The usual method of determining such access is by way of nation-to-nation fishing agreements. The recently signed Agreement between Australia and Japan relating to tuna long-line fishing falls within this category (although there are of course obvious practical difficulties in species-oriented agreements e.g. the control and regulation of the taking of "incidental" species). Foreign vessels may also be licensed by way of joint venture arrangements and for feasibility studies.

International legal rules relating to rights of access are still being worked out at the Third Law of the Sea Conference which began in 1973 and has continued since that year. Further sessions are to be held in 1980. The concept of the exclusive economic zone (E.E.Z.) which is embodied in a draft Text produced by the delegates to that Conference extends to the resources of the seabed both living (sedentary species) and non-living (mineral resources). Under the provisions of this Text (known as the Informal Composite Negotiating Text) the coastal State is empowered to determine the total allowable catch and the amount which it can harvest, granting rights to exploit the residue to other States on terms and conditions which it determines. In granting such rights the coastal state must take account, amongst other things, of the interests of States whose nationals have traditionally fished in the zone, or have made substantial efforts in research and identification of stock.

These principles have not as yet been incorporated into an international treaty. They do however, reflect a growing consensus among nations on the regulation of the 200 nautical mile fisheries zone. The concept of the total allowable catch depends on scientific evidence which will gradually be built up in a region or sub-region from year to year as fishing activity and research takes place. Consequently, the framing of agreements will be an activity subject to periodical revision.

### Cleveland Prawn Workshop

A workshop involving approximately 40 participants was held at the CSIRO Division of Fisheries and Oceanography, North-Eastern Regional Laboratory, Cleveland, Qld, to discuss current and proposed research in the field of prawn biology and fishery population dynamics. Contributors to the first day's session presented information relating to several prawn fisheries in Australia and Papua New Guinea. These included the

mixed species fisheries of the Gulf of Papua and Gulf of Carpentaria, the banana prawn fishery of Fog Bay, Northern Territory, and the offshore royal red prawn fishery in New South Wales. The workshop also provided the opportunity to discuss the biological aspects of fishery management. In this regard several interesting papers were given on various aspects of prawn biology, which included the species of commercial importance in the Gulfs of Papua and Carpentaria, western king prawns in South Australia, eastern king and school and greasy-back prawns in the Noosa Lakes, Queensland.

Submissions of proposed research were presented by the New South Wales, Queensland, and Northern Territory State Fishery Departments. A major component of these studies will be the collection of adequate catch and effort data for major fisheries in these areas, and the need for a central data processing authority was recognised. In the final session of the workshop, the role of the States and the Commonwealth in providing both short-term and long-term information needed for rational management of prawn resources was discussed. However, because of the complex nature of the problem and the lack of a co-ordinated research effort, no firm conclusions were reached. Divergent opinions on the importance of biological studies on early life history stages were expressed but it was generally recognised that more biological information was required before any more precise stock assessment analyses for prawn fisheries were possible.

*Derek J. Staples  
Peter C. Rothlisberg*

#### **Lizard Island Research Station**

*This report on the recent activities of and at the Lizard Island Research Station was written for the BULLETIN by Des Griffin and Barry Goldman*

Lizard Island Research Station has had an active year. Over one hundred different scientists visited the Station in the year ending 30th June, 1979, one-third of these being from overseas. There have been a number of particular developments (completed or underway) including the painting of the laboratories, relocation of pump houses, establishment of a temporary ablutions block, provision of better storage arrangements for fuel, expansion of boating and diving facilities; additional support has been provided by the recently formed Lizard Island Reef Research Foundation.

The Executive of the Station, chaired by Dr Joe Baker (who is President of the Australian Museum Trust) and including Des Griffin and Barry Goldman, met at the Station on the 29th July. A development program for the next two years was approved in principle. This program includes the erection of substantially improved accommodation for visitors, various improvements to the laboratory, additional work equipment, purchase and installation of solar hot water heaters, and installation of showers. It is also anticipated

that a new transport vehicle will be bought. Further power generation facilities, and a pontoon and ramp which will make it easier to load gear on and off boats, are anticipated improvements within the two year period. Barry Goldman is currently investigating the availability and purchase of appropriate equipment for the laboratory.

An expenditure program of just under \$90,000 has been approved for the current year; from which recurrent costs will use \$62,000.

A number of media groups, including the BBC and ABC will be visiting the Station late in 1979 as part of the production of new films about coral reefs.

A matter of considerable interest to the Executive of the Lizard Island Research Station Committee of Trustees is the development of other research facilities on the Reef, and the developing situation in regard to marine science programs in Australia. These will be matters for discussion with the Heron Island Research Station Board in the next few months when it is anticipated that there will be a joint meeting. Two such meetings have been held in previous years.

#### **Tasmanian Marine Studies Centre**

*This report on the recently established Marine Studies Centre has been prepared for the BULLETIN by A. Martin (Co-ordinator of the Centre), at the request of the editors.*

An innovative thrust into marine education is well underway in Woodbridge, Tasmania, at the new Marine Studies Centre. The Centre is funded by the Innovations Program of the School's Commission and its facilities are designed to cater for groups of sixteen secondary science students, accompanied by their teacher, for a day's tuition in marine studies. The project is extremely popular with schools throughout Tasmania and is backed by the Education Department which will take over the Centre at the end of 1981.

The Centre is sited on the foreshore of D'Entrecasteaux Channel and includes a laboratory/lecture room, display area, fishing gear workshop and aquarium room. A jetty has been constructed to facilitate the mooring of boats and as a support structure for an aquarium salt water feed pipe.

Since its original funding, the project has received substantial assistance and co-operation from the local community, council, business houses, and the State Government. This support reflects the tremendous interest in fishing and fisheries development in Tasmania at present. Through the Fisheries Development Authority, the State Government has generously made available the 15-metre 'F.R.V. PENGHANA', with maintenance and running costs. The State Education Department has provided additional funding for a 5.25-metre aluminium work runabout.

## ACTIVITIES IN THE CENTRE

The interior of the centre has been designed so that children can learn about as many aspects of marine studies as possible. The entrance area houses a small maritime museum, a magazine stand and two large display aquaria. In the workshop, first hand knowledge of fishing equipment such as trawl nets, craypots etc. can be experienced and skills in rope and network can be learned.

In the laboratory/lecture room students are taught how to record environmental conditions in the marine environment prior to going to sea. After a day at sea, specimens ranging from plankton to sharks are brought back to the laboratory for appropriate work, such as classification or dissection. The dissection tables can also be used as chart tables for learning about navigation.

The aquarium room is unique for schools, as it includes a system of eight aquaria which are continuously fed with sea water. These easy to maintain tanks are stocked with a wide variety of specimens which children can study in a realistic way.

Emphasis is placed on relating the theory and practice learned inside the Centre to the actual marine environment outside.

Not only does D'Entrecasteaux Channel have an interesting foreshore and marine ecology but it is also a varied, sheltered and safe waterway for children to work in boats.

The Centre is well equipped with vessels. The 'F.R.V. PENGHANA' is a proper research boat which has been especially modified for carrying groups of school children. On average, about four hours are spent at sea each day with a group.

Although most teaching programs are run by the co-ordinator, the skipper demonstrates wheelhouse instruments, such as the echo sounder, radar, compass, automatic pilot and sonar. He may also demonstrate a practical fishing technique, such as longlining for sharks.

On deck, children can experience a wide range of practical activities. The safe hydraulic winch gear allows the operation of real equipment for children to see. A 1.0 metre lip dredge is towed and used for sampling the benthos. This dredge provides excellent live material for classification work on the large specimen bench situated amidships. A 0.5 metre long pipe dredge is used to gouge out a sediment sample for classification according to grain size. A 3m beam trawl is also worked to catch bottom fish.

Children can catch fish themselves by handline, shoot a plankton net, use a secchi disc, a Van Dorn sampler, and monitoring equipment, such as salinity, temperature, pH and dissolved oxygen meters. These meters have thirty metres of cable attached for profile work.

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Other activities at sea on 'F.R.V. PENGHANA' include basic practical navigation with both compass and sextant. Children can also visit a local fish factory by vessel and view this aspect of the fishing industry at first hand.

Our smaller, faster aluminium vessel is the 'LARUS'. This 5.25 metre workboat is beamy and is equipped with a fish tank for bringing back live specimens. It is licensed to carry eight students and is often towed behind 'F.R.V. PENGHANA' for work in shallow water.

## LIAISON WITH OTHER ORGANIZATIONS

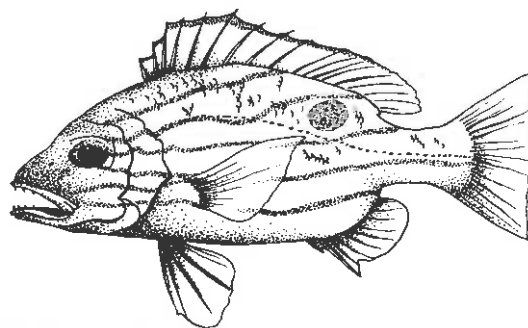
The Centre has an experimental raft for the culturing of mussels. This mariculture venture is dovetailed into a research project run by the Tasmanian Fisheries Development Authority's Research Station. Children not only view a "new" type of fishery but can be involved in practical fisheries research.

The Centre enjoys close liaison with the University of Tasmania and a number of very successful joint trips have been made on 'F.R.V. PENGHANA' for particular requirements ranging from nautical surveying to marine biology.

For the first time in Tasmania, children have the opportunity to experience the marine environment in a practical, safe, and meaningful way. The specialized facilities at the Centre, backed up by excellent vessels provide a unique opportunity for children to learn about the sea which surrounds us.

Additional information about the Marine Studies Centre can be obtained by writing to

Allister Martin,  
Co-ordinator,  
Marine Studies Centre,  
Jetty Road,  
Woodbridge, Tasmania, 7162.





## ANNOUNCEMENTS

### Australian Marine Sciences Association, May 1980 Conference

#### General

This notification is the last which will have general circulation. All further notices and information will be posted only to those persons who responded to the 'PRELIMINARY QUESTIONNAIRE' or who write to the Organising Secretary requesting to be placed on the conference mailing list.

#### Timetable

Thursday 8 May,

1900–2100: Registration and pre-conference activities

Friday 9 May,

0900–1000: Registration and payment of fees

1000–1030: Welcoming address, then keynote address

1030–1730: Presentation of papers

Saturday 10 May,

0900–1730: Presentation of papers

1930– : Conference Dinner

Sunday 11 May,

0900–1100: AMSA 1980 Annual General Meeting

1130–2100: Barossa Valley Winery tour

#### Papers

This is the final call for papers, which are welcomed from any relevant discipline. Each presentation should be about 20 minutes, with a further 5 minutes for questions. Persons wishing to speak are asked to submit a 50-word abstract (not for circulation) and a title of the paper to the Organising Secretary as soon as possible, and not later than mid-January. Speakers will be sent further details in late January.

Abstracts of papers will be posted to persons on the conference mailing list, in April.

Papers are invited on either of two themes:

- (1) resources of the sea
- (2) current research in marine science

#### Venue

The conference facilities of the Haven Motor Inn, 6–10 Adelphi Terrace, Glenelg North, South Australia.

#### Accommodation

The Haven Motor Inn: offers excellent accommodation with all facilities (except for cooking) contained within each suite. Charges are about \$30 per person per night for own suite, \$17 per person per night with 2 persons sharing a suite. Meals are extra.

Marineland Caravan Village: is 2.5 kilometres from the conference venue and about 3.5 kilometres from Adelaide airport. It offers modern, 6-berth on-site caravans containing all cooking facilities. Linen and blankets are not supplied. With 4 or more people

sharing, accommodation charges are less than \$5 per person per night. The caravan village is a pleasant walking distance from Glenelg.

Other hotel or motel accommodation nearer to the conference will be arranged on request.

Accommodation bookings will be particularly heavy in Adelaide during May 1980, because of the ANZAAS Congress which starts immediately after the AMSA Conference. To ensure accommodation of first choice, requests and accommodation deposits should be sent to the Organising Secretary by the end of January at the latest. Make all cheques payable to "AMSA 1980 CONFERENCE ACCOUNT".

#### Barossa Valley Winery Tour

Air-conditioned coaches will leave Glenelg at 1130 Sunday 11 May. The tour will include lunch at a rustic setting in the Barossa Valley, visits to several wineries for tastings, visits to places of historical interest, and then a 6-course gourmet barbeque with drinks in the wine cellar of the Kaiser Stuhl winery at Nurioopta. Buses will return to Glenelg by 2100.

Cost of the tour, including lunch, gourmet barbecue, wines and fruit juices is \$25. Non-alcoholic drinks and vegetarian meals will be available.

#### Further Information

For any further information, brochures regarding accommodation, and further notices, please contact:

Dr John R. Ottaway,  
Organising Secretary, May 1980 AMSA Conference,  
School of Biological Sciences,  
Flinders University of South Australia,  
Bedford Park, S.A. 5042

#### Reminder

The AMSA 1980 Annual General Meeting will take place on Sunday 11 May at 0900.

#### AMSA Council Elections May 1980

Nominations for councillors and office-bearers are being called for the closing date of 18 April 1980.

The general meeting of AMSA will be held during the AMSA Conference in Adelaide, May 9-11, 1980. All members of the Council shall retire at that time but all, *except the President*, are eligible for re-election.

Details required in relation to nomination—

- Name of nominee
- Nominated for position
- Occupation
- Present employment
- Professional qualifications

Proposed by  
Seconded by  
Nominee's signature

Please complete all details and send nominations to

Dr R.J. King  
Hon. Secretary, AMSA  
School of Botany  
University of NSW  
P.O. Box 1  
Kensington, NSW 2033

to arrive by 18th April 1980.

#### Amendment to the Constitution

Notice is given that at the Annual General Meeting the following motion proposed by Dr R.J. MacIntyre and seconded by Mrs R.M. Allen will be considered.

That clause 9 under item 8 (Membership of the Association) be altered by the addition of the following 'providing always that in the case of a member who pays a subscription lower than that of an Ordinary member, arrears of one year may be deemed, at the discretion of the Council, grounds for cancellation of membership.' The present clause 9 reads as follows —

'9. If any member whose subscription is in arrears for two years, shall fail to pay such arrears after notification in writing from the Treasurer, the Council may cancel his membership, and he shall cease thereupon to be a member'.

#### AMSA Student Prize and Junior Travel Award

Details of these awards were given, in full, in BULLETIN No.68. Closing dates are in March 1980 and must be strictly observed.

#### Student Membership

The relevant clause in the Constitution (8-ii) states:

Student members. Student members shall be persons who are studying relevant subjects and have not yet taken their first degree, provided that the Council may admit to the student membership persons who, although having taken their first degree, are still in full-time student status.

The student subscription at the present time is \$5.00 per annum, half the subscription of the Ordinary members.

Following some recent misunderstandings and misinterpretations of this rule, the Council has authorised the Hon. Treasurer to require any person claiming to be eligible for the lower student rate, whether on application for admission to membership or on renewal

of subscription, to produce a certificate signed by an appropriate Professor/Lecturer, etc., stating that he/she is a *bona fide* full-time student.

Such a certificate will be attached to the annual subscription reminder to student members, and must be returned, duly signed, if payment is made at the lower rate.

#### A.N.Z.A.A.S. — 50th Jubilee Congress — Adelaide, South Australia, 12-16 May 1980

The 50th A.N.Z.A.A.S. Congress will follow the A.M.S.A. Conference (Adelaide, May 9th—11th, 1980) and precede the planned Aquatic Botany Meeting (Monash, May 16—17th, 1980). The theme of the Congress is 'Science for a suitable society by 2000 A.D.'

Afternoon symposia will be of broad general interest and are intended to 'explore the scientific, technical and social needs of a sustainable society.' Some of these will consider 'Future energy supplies,' 'Australia's oceans' and 'Management of water supplies.' The morning programs will be scientifically oriented, organised by forty independent Sections, and will include symposia and contributed papers on topics entitled, for example, "Effects of man on inshore flora and fauna" (Zoology and Botany), "Cartographic techniques" (Geography) and "An evolving model for optimal management of the southern Bluefin tuna fishery" (Economics). These and many others, as well as excursions and general discussion, will be of particular interest to marine scientists.

Further information relating to the program and registration is available from A.N.Z.A.A.S. Office, 141 Rundle Mall, Adelaide 5000.

E. Woolaston.

#### Inaugural Meeting of the Australian Society for Aquatic Botany/Phycology

Since the last announcement concerning this meeting there have been changes in the arrangements. The meeting will now be held on Friday the 16th and Saturday the 17th May, 1980 at Monash University.

Persons interested should contact

Dr Michael A. Borowitzka,  
Roche Research Institute of Marine Pharmacology,  
P.O. Box 255,  
Dee Why, N.S.W. 2099.

#### International Conference of Biology and Evolution of Crustacea, 1980

This Conference, sponsored by the Australian Museum, will be held on 19th-23rd May, 1980 at The Australian Museum, Sydney.

The aim of the Conference is to bring together people

working on Crustacea in various disciplines, to promote discussion of interrelated problems and to increase awareness of the current range and directions of research on Crustacea.

Papers and posters will be presented on evolution, ecology, behaviour, physiology, systematics, and biogeography of Crustacea.

A variety of excursions are being planned to take place before, during and after the Conference.

Preliminary advice about the Conference has been sent out and some 80 papers have been offered. Applications are still open and further information is available from

Dr D.J.G. Griffin,  
Crustacea Conference,  
The Australian Museum,  
P.O. Box A285,  
Sydney South, N.S.W. 2001.

A **National Fisheries Seminar** will be held at the University of Melbourne from 6th to 8th February 1980. The seminar, titled, "Economic aspects of limited entry and associated fisheries management measures" has been made possible by a grant from the Commonwealth Government's Fishing Industry Research Trust Account. It is suggested that the discussions will concentrate on economics rather than biological aspects of fisheries management.

Details and information relating to this seminar may be obtained from

T.F. Meany  
Fisheries Division  
Department of Primary Industry  
Canberra, ACT, 2600.

The **First world conference on behaviour of marine animals in relation to ecology and pollution** will be held in Concarneau, France, early in May, 1980. Plenary sessions, presentations of specific papers, films, round table discussions and exposition displays are planned during the six day duration of the meetings.

Inquiries and requests for further information should be addressed to

Dr Yves Rouger  
Laboratoire Maritime  
Concarneau, 29110,  
FRANCE.

The **second symposium on management, conservation and utilization of the ocean and coastal zone** with the title COASTAL ZONE 80 will be held in Florida, in mid-November, 1980. The symposium will be sponsored by the American Society of Civil Engineers and it is intended that the meeting should be a multidisciplinary forum allowing interaction between scientists, engineers, planners and "citizens" — all of whom may wish to

express points of view on the suggested general topics, which are

Environmental concerns  
Management of development  
Access to the shore  
Intergovernmental co-ordination  
Role of states in ocean management  
Onshore impacts of offshore energy development  
New directions in marine policy

Further information may be obtained from

Billy L. Edge  
Chairman, COASTAL ZONE 80  
Dames and Moore  
7101 Wisconsin Avenue  
Washington, D.C. 20014, U.S.A.

### Churchill Fellowships

We have received recently information relating to the Winston Churchill Memorial Trust Fellowships for the ensuing years (1980-81). Applications for the 1981 period close on 28th February 1980.

The Churchill Memorial Trust was established in Australia in 1965 (the year in which Sir Winston Churchill died) and the major aim of the Trust is to enable Australians, from varied walks of life, to undertake special studies, research work or observational investigations in fields which cannot be fully explored within Australia.

In general Churchill Fellows are awarded finance which will allow them return economy class air fares to their major area of investigation and some overseas living expenses.

Application forms and further information may be obtained from

The Winston Churchill Memorial Trust  
P.O. Box 478,  
Canberra City, A.C.T. 2601.

The **second World Wilderness Conference** has been mentioned in an earlier issue of the BULLETIN (No.66). We are now reminding you that this major international conference (with several field trip possibilities) will be taking place in Cairns between the 9th and 13th June. Some aspects of the conference are directed towards the Great Barrier Reef and associated northern Australian marine areas.

Information relating to the conference and excursions to be arranged in conjunction with the meetings may be obtained from

The Executive Director  
World Wilderness Congress  
P.O. Box 823,  
Cairns, Qld, 4870.

The **Seventeenth International Conference on Coastal Engineering** will be held in Sydney between the 23rd and 28th of March, 1980. These meetings are jointly sponsored and arranged by the Coastal Engineering Research Council of the American Society of Civil Engineers and the Institution of Engineers, Australia.

Numerous major topics have been listed as subjects for discussion during the conference; some of these are—

- Wind, current and wave action
- Tidal, storm surge and tsunami analysis and effects
- Estuary and inlet behaviour
- Sedimentation problems in coastal areas
- Coastal morphology, including beach and dune stability
- Design criteria of coastal structures
- Environmental impact of coastal engineering works
- Dispersion and diffusion phenomena
- Aspects for designing of recreational facilities
- Progress in measuring methods and instrumentation

Other information, further details (including arrangements for several extensive field tours along the N.S.W. Coast), and a full listing of authors and titles of papers to be presented may be obtained from

The Conference Manager  
17th I.C.C.E.  
The Institution of Engineers, Australia  
11 National Circuit  
Barton, A.C.T. 2600.

In BULLETIN No. 67 the **Fourth Australian Water and Wastewater Summer School** was announced. Further details are now available. The School will be held from the 4th to 8th February (inclusive) 1980, at Flinders University, Adelaide.

A series of lectures and technical workshops will take up the five days of the school. The workshops will cater for groups of 10 to 15 people.

Visits are planned to the state Water Laboratories and to two water filtration plants.

Further information can be obtained from

Dr J. Cugley  
Secretary, A.W.W.A. Summer School Committee  
State Water Laboratories,  
Private Bag,  
P.O. Salisbury, S.A. 5108.

#### Notice of future publication

Proceedings of the Townsville Seminar/Workshop on Dugongs held at James Cook University, May 8-13,  
*Page 10*

1979, will be published by James Cook University, and will be sold for \$10 Australian per copy. The number of copies printed will be determined by orders received by May 31st 1980.

The proceedings will include the papers presented at the Seminar/Workshop, background papers prepared for the Workshop, a precis of the discussion sessions, and the results of the Age Determination and Aerial Survey Workshops. Data sheets used by the various research groups will be included as an appendix.

Orders and inquiries should be addressed to

Mr P. Channells,  
Zoology Department,  
James Cook University,  
Townsville, QLD. 4811.

#### World Wildlife Fund

It is now more than a year since the formal establishment of the World Wildlife Fund, Australia (earlier editions of the BULLETIN have commented on the formation of this organisation). In November the WWF issued a Newsletter giving further information about its activities.

In particular, it lists the thirteen projects (commenced or about to be initiated) as a result of the WWF "Business Appeal" for funding. Of these, only one programme could be considered as a generalised marine oriented biological research scheme.

The Newsletter particularly mentions the importance of the visit to Australia during 1979 of Dr Sylvia A. Earle; Dr Earle's major research interests are centred around the ecology and systematics of deep water benthic algae and the inter-relationships of plant-herbivore-carnivore ecological systems.

#### Antarctic Programme

In August, Senator Webster announced plans for maritime and shipping developments to expedite the Australian Antarctic Research Programme; these plans will be initiated during the current summer. Many of the existing buildings at the several research stations in the Antarctic and Sub-antarctic are described as "becoming difficult to maintain at a reasonable level of comfort and safety" and current planning is to replace them over a 10 year period at an estimated cost of \$20 million. (The Macquarie Island Station, oldest of the currently manned bases, was established in 1948.)

In order to facilitate the commencement of this project a specially strengthened cargo ship is being chartered for the 1979-80 summer Antarctic programme, in addition to the normally employed Danish passenger-and-cargo vessels.

This development is one of the results of advice from

the Antarctic Research Policy Advisory Committee which is expected to report, during 1980, on the future of long term Antarctic research projects.

Senator Webster added that he hoped Australia would have its own research ship in the near future. The design study had reached the point where a detailed specification was being prepared, based on information received from over 40 ship builders who had expressed interest in the design and construction of an Antarctic ship.

Late in September it was announced that the Commonwealth Government had allocated grants totalling \$350,000 to 26 voluntary conservation organisations throughout Australia. Senator Webster stated that the grants would be made on a dollar for dollar basis and commented, "Voluntary organisations are particularly active in promoting public education and awareness; they contribute significantly to reasoned public debate, and they provide scientific and other special knowledge to government inquiries."

He added, "In my view the programme should be directed, primarily, towards organisations which perform a national or broad geographic role in regard to matters of environmental importance. I would also appreciate the advice of non-government environment and conservation groups as to basic criteria for making grants."

In general terms the 26 organisations which received grants may be considered as conservation organisations in a broad sense (covering a variety of attitudes and environments) and none could be described as distinctly or specifically marine.

#### **United Nations (UNESCO) Development Programme Appointment**

In November, UNESCO sought applicants for the position of Chief Technical Adviser, to be appointed for a period of one year (with possible extension), to the Marine Biology Department, Moulmein College, Socialist Republic of the Union of Burma. The appointee will be expected to serve as leader of an international team of research experts and consultants and, in co-operation with the Head of the Marine Biology Department of the College, will be responsible for the co-ordination of projects involving curriculum re-organisation, aquarium development, research vessel design, etc. He/she will also be expected to lecture (within the limitations set by other duties) in oceanography and marine biology.

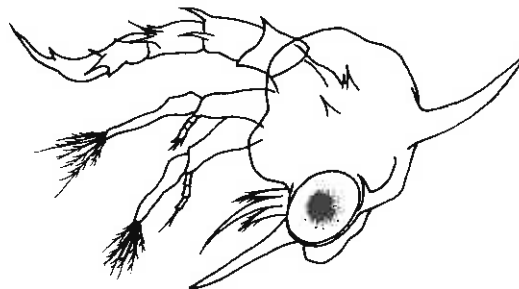
It is suggested that applicants should have a "full command" of English and perhaps another language; a PhD in biological oceanography or fisheries oceanography, with wide experience; background knowledge of research management and aquaculture; and desirably,

familiarity with developing countries in the Indo-Pacific region.

The suggested base net (after tax) salary is approximately \$29,000 and various allowances are possible.

Enquiries and applications should be sent prior to 28 February 1980 and be addressed to

Recruitment and Field Staff Division,  
Bureau of Personnel,  
UNESCO,  
7 Place de Fontenoy,  
75700, Paris, FRANCE.



## **PUBLICATIONS**

We have been asked by the CSIRO Editorial and Publications Service to correct an error which occurred in BULLETIN No.64 and 65 in relation to a publication.

The *Index to Australian Journal of Marine and Freshwater Research*, volumes 1 to 25 (1950-1974) is not available from CSIRO. The Index has been prepared by Dr A.A. Day and may be obtained from

The Secretary,  
Department of Geology and Geophysics,  
University of Sydney,  
Sydney, NSW, 2006.

We apologise to Dr Day, the University of Sydney, Geology Department, and CSIRO for any inconvenience that may have accrued as a result of the erroneous BULLETIN Statement.

#### **A Coral Reef Handbook**

*Edited by Patricia Mather and Isobel Bennett*

G.B.R.C. Handbook series No.1.

Published by the Great Barrier Reef Committee and printed by the Queensland Museum, Brisbane, 1978. National Library of Australia and ISBN number, 0 909377 03 0.

This volume of more than 90 pages is derived from the field guides which were prepared for the Second International Symposium on Coral Reefs by specialist workers in the subjects annotated. These field guides and notes have been modified and expanded in this

publication to provide basic information for the interested layman as well as for the scientist. In general terms the information presented is based on Heron Island (and associated islands and reefs in the Capricorn Group), islands and reefs of the Bunker Group and other adjacent areas at the southern end of the Great Barrier Reef. As these are the areas that have been most extensively studied, and are perhaps the most frequently visited by tourists, the value and potential usage of this handbook are greatly enhanced.

There are sections of the book devoted to history, geomorphology, algae, terrestrial flora and fauna, plus major chapters on the significant marine invertebrate and vertebrate fauna. These latter chapters include a quite comprehensive account of the systematics and identification of the majority of the obvious reef organisms. Very useful line drawings and photographs of the more commonly occurring species are included.

The catalogue of contributors, compilers, illustrators and advising assistants reads as though it is a *who's who* of Australian biology and the knowledge and experience of the editors in the marine biological field is widely known and needs no further recommendation.

At a retail price of less than \$4 (my retail purchased copy) it is an extremely worthwhile book with considerable application to a wide range of locations on the north-eastern Australian seaboard and reefs — not at all restricted to the Capricorn Group.

An essential volume if visiting the Reef.

*Ron Kenny*

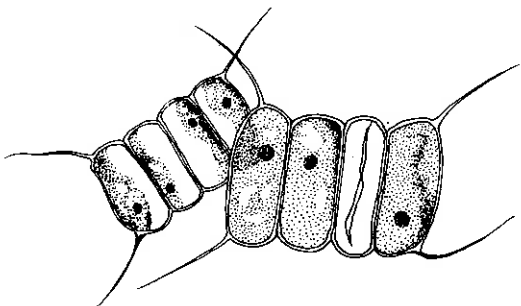
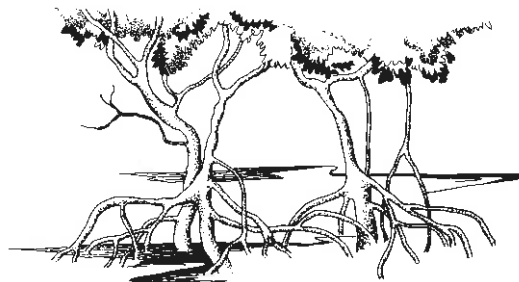
**Heron Island Research Station Board Annual Report for the year 1978** published by the University of Queensland and the Great Barrier Reef Committee.

**Proceedings of the Scientific Committee on Oceanic Research** volume 15, April 1979.  
London (England), International Council of Scientific Unions.

## DIRECTORY OF MARINE SCIENTISTS IN AUSTRALIA.

The following alteration should be made to the standard listings,

Dr Angela Ivanovici  
Department of Biochemistry  
John Curtin School of Medical Research  
Australian National University  
P.O. Box 334, Canberra, ACT, 2601.



## AMSA PUBLICATIONS AVAILABLE

### DIRECTORY OF MARINE SCIENTISTS IN AUSTRALIA 1977

#### Contents

- I. List of scientists engaged in marine research in Australia.
- II. Institution addresses, and lists of scientists by institution.
- III. List of marine scientists according to research interests.

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### AMSA HANDBOOK No. 2

'Ion Selective Electrodes for the Analysis of Natural Waters',  
by M. Whitfield, Ph.D. (The Laboratory, Citadel Hill,  
Plymouth, U.K.) formerly of the CSIRO Division of Fisheries  
and Oceanography, Cronulla, N.S.W.

The text includes sections on:

- The theory of solution analysis
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To: Mrs R.M. Allen (Hon. Treasurer, AMSA),  
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**AMSA Handbook No.3.**  
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*A.D. Albani,*  
School of Applied Geology,  
University of New South Wales,  
Kensington.

This is a drastically revised edition of Handbook No.1. A total of more than 220 species, including eighty additional species which are not included in the previous edition, are illustrated and described. A section on the statistical analysis of the data has been added, making this an invaluable textbook for geology and biology students at all stages.

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