

Price \$21.00

ISSN-0067-1967

Papers from the Conference
on the **Biology and Evolution**
of Crustacea

**HELD AT THE AUSTRALIAN MUSEUM
SYDNEY, 1980**

Edited by
JAMES K. LOWRY

The Australian Museum

Memoir 18

1983

ORGANISERS

D.J.G. GRIFFIN, J.K. LOWRY, H.A. TRANTER

The Australian Museum, Sydney, Australia

CHAIRMEN OF SESSIONS

L.G. ABELE	Florida State University, Tallahassee, Fla., U.S.A.
D.T. ANDERSON	University of Sydney, Sydney, N.S.W., Australia.
E.E. BALL	Australian National University, Canberra, A.C.T., Australia.
A.C. COHEN	Smithsonian Institution, Washington, D.C., U.S.A.
E. DAHL	Lund University, Lund, Sweden
W. DALL	CSIRO Division of Fisheries of Oceanography, Cleveland, Qld, Australia.
J.A. DAY	University of Cape Town, Cape Town, South Africa.
R.W. GEORGE	Western Australian Museum, Perth, W.A., Australia.
J. GLAISTER	New South Wales State Fisheries, Sydney, N.S.W., Australia.
D.J.G. GRIFFIN	Australian Museum, Sydney, N.S.W., Australia.
F.B. GRIFFITHS	CSIRO Division of Fisheries and Oceanography, Cronulla, N.S.W., Australia.
R.G. HARTNOLL	University of Liverpool, Port Erin, Isle of Man, U.K.
R.R. HESSLER	SCRIPPS Institute of Oceanography, La Jolla, Ca., U.S.A.
M.B. JONES	University of Canterbury, Christchurch, New Zealand.
J.K. LOWRY	Australian Museum, Sydney, N.S.W., Australia.
J.S. LUCAS	James Cook University of North Queensland, Townsville, Qld, Australia.
K.G. MCKENZIE	Riverina College of Advanced Education, Wagga Wagga, N.S.W., Australia.
G.C.B. POORE	National Museum of Victoria, Melbourne, Vic., Australia.
M. SALMON	University of Illinois, Champaign, Ill., U.S.A.
W.D. WILLIAMS	Adelaide University, Adelaide, S.A., Australia.
T. WOLFF	Zoological Museum, Copenhagen, Denmark.

CONTRIBUTORS

- ANDERSON, D.T. University of Sydney, N.S.W., Australia.
- BARNARD, J.L., Smithsonian Institution, Washington, D.C., U.S.A.
- BRUCE, A.J., Heron Island Research Station, Qld, Australia.
- DAHL, E., University of Lund, Lund, Sweden.
- DE DECKKER, P., Australian National University, Canberra, A.C.T., Australia.
- FOSTER, B.A., University of Auckland, Auckland, New Zealand.
- GEDDES, M., University of Adelaide, Adelaide, S.A., Australia.
- HARTNOLL, R.G., University of Liverpool, Port Erin, Isle of Man, U.K.
- KARAMAN, G.S., Biological Institute, Titograd, Yugoslavia.
- KENSLEY, B., Smithsonian Institution, Washington, D.C., U.S.A.
- LAUBITZ, D.R., National Museum of Natural Sciences, Ottawa, Canada.
- McKENZIE, K.G., Riverina College of Advanced Education, Wagga Wagga, N.S.W.,
Australia.
- SALMON, M., University of Illinois, Champaign, Ill., U.S.A.
- SMITH, M.J., University of Adelaide, Adelaide, S.A., Australia.
- STEELE, D.H., Memorial University of Newfoundland, St. John's, Canada.
- ŠTEVČIĆ, Z., Rudjer Bošković Institute, Rovinj, Yugoslavia.
- TÜRKAY, M., Forschungsinstitut Senckenberg, Frankfurt, West Germany.
- VADER, W., Tromsø Museum, Tromsø, Norway.
- WILLIAMS, W.D., University of Adelaide, Adelaide, S.A., Australia.

FOREWORD

The first international conference on Crustacea to be held in Australia took place at the Australian Museum, Sydney in May 1980. More than 160 carcinologists from 15 countries attended. Ninety papers and posters were presented. In general the conference was concerned with the biology and evolution of Crustacea and papers were presented on evolution, physiology, community ecology, behaviour, biogeography, reproductive biology and taxonomy. The twenty contributions presented in this volume represent a cross-section of the papers presented at the conference.

The conference organisers were excited by its success and appreciate the efforts made by all who attended. We are particularly grateful to the Australian Museum Trust for financial support, to the Australian Museum Society for organising teas and lunches and to the New South Wales Department of State Fisheries for allowing us to use the FRV Kapala for a conference field trip to collect crustaceans.

J.K. Lowry
Editor

CONTENTS

1.	Alternatives in malacostracan evolution. Erik Dahl	1
2.	<i>Catomerus polymerus</i> and the evolution of the balanomorph form in barnacles (Cirripedia). D.T. Anderson	7
3.	On the origin of Crustacea K.G. McKenzie	21
4.	Australia as a major evolutionary centre for Amphipoda (Crustacea). J. Laurens Barnard and Gordan S. Karaman	45
5.	Acoustic 'calling' by fiddler and ghost crabs Michael Salmon	63
6.	A revision of the family Podoceridae (Amphipoda, Gammaridea). Diana R. Laubitz	77
7.	Terrestrial ostracods in Australia Patrick De Deckker	87
8.	<i>Georgeoplax</i> , new genus for <i>Litocheira glabra</i> Baker, 1906 (Decapoda, Brachyura). Michael Türkay	101
9.	On the systematic position of <i>Heloecius cordiformis</i> . Michael Türkay	107
10.	Size composition of lysianassid amphipods in cold and warm water habitats. D.H. Steele	113
11.	Strategies of crustacean growth. R.G. Hartnoll	121
12.	Complemental males in the barnacle <i>Bathylasma alearum</i> (Cirripedia, Pachylasmidae). Brian A. Foster	133
13.	Associations between amphipods (Crustacea, amphipoda) and sea anemones (Anthozoa, Actinaria). Wim Vader	141

14. Biogeography and ecology of Australian Anostraca (Crustacea, Branchiopoda).	
Michael Geddes	155
15. Revision of the Calappidae (Decapoda, Brachyura).	
Zdravko Števcíć	165
16. Biogeographical relationships of some southern African benthic Crustacea.	
Brian Kensley	173
17. Reproductive cycles in some freshwater amphipods in southern Australia.	
Meredith J. Smith and W.D. Williams	183
18. The pontoniine shrimp fauna of Australia.	
A.J. Bruce	195

AUSTRALIAN MUSEUM MEMOIR 18

Papers from the Conference
on the Biology and Evolution
of Crustacea

HELD AT THE AUSTRALIAN MUSEUM
SYDNEY, 1980

Edited by

JAMES K. LOWRY

The Australian Museum, Sydney

Published by order of the
Trustees of the Australian Museum

Sydney, New South Wales, Australia
1983

Manuscripts accepted for publication 1 April, 1982