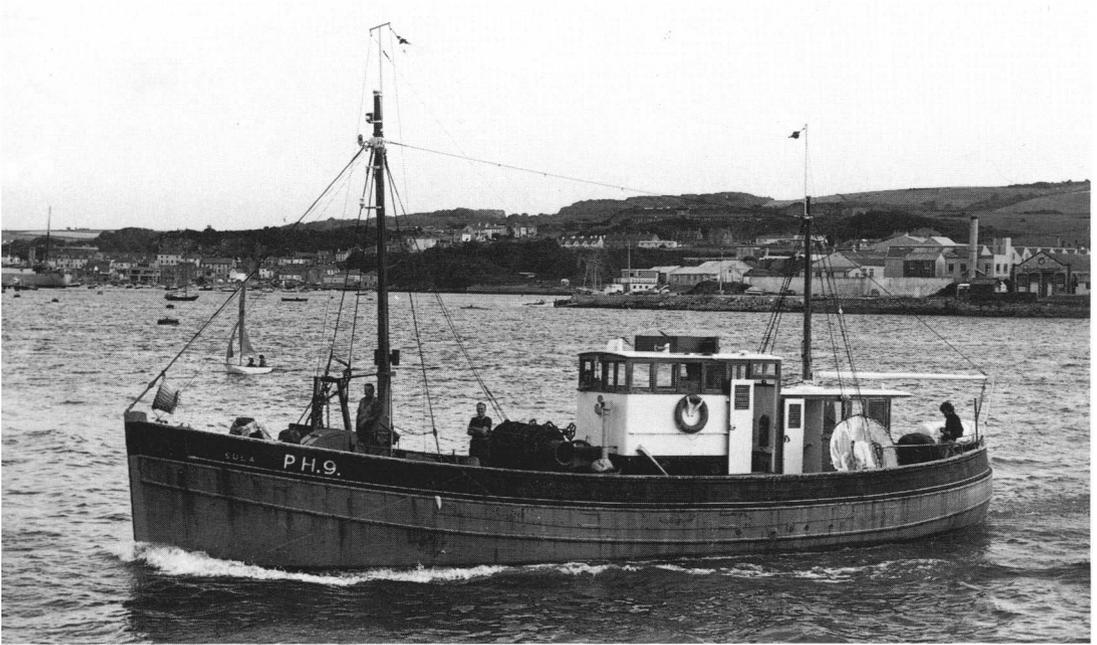


# JMBA

Member's copy for personal use only

VOLUME 72:4 NOVEMBER 1992



# JOURNAL OF THE MARINE BIOLOGICAL ASSOCIATION OF THE UNITED KINGDOM

*Editor:* Dr Michael Whitfield

*Executive editor:* Dr Linda Maddock

**Address all communications to:** The Executive Editor  
Journal of the Marine Biological Association  
The Laboratory  
Citadel Hill  
Plymouth, PL1 2PB, UK (Tel: 0752 222772)

## EDITORIAL BOARD

Prof. B.L. Bayne, Plymouth Marine Laboratory, UK  
Prof. J.D. Costlow, Duke University Marine Laboratory, USA  
Dr P.J. Herring, Institute of Oceanographic Sciences, Wormley, UK  
Prof. C.C.E. Hopkins, University of Tromsø, Norway  
Dr G.C. Kearns, University of East Anglia, UK  
Dr R.J. Lincoln, Natural History Museum, UK  
Dr K. Nagasawa, National Research Institute of Far Seas Fisheries, Japan  
Dr M.G. Pawson, Ministry of Agriculture, Fisheries and Food, Lowestoft, UK  
Dr D.A. Ritz, University of Tasmania, Australia  
Prof. J.R. Sargent, University of Stirling, UK  
Prof. K. Simkiss, University of Reading, UK  
Prof. M.A. Sleight, University of Southampton, UK  
Dr R. Strathmann, Friday Harbor Laboratories, USA  
Prof. H. Thiel, University of Hamburg, Germany  
Dr M.J. Wells, University of Cambridge, UK  
Prof. J.S. Wroblewski, Memorial University of Newfoundland, Canada

## EDITORIAL POLICY

The JMBA publishes papers on all aspects of marine biology and oceanography. If the material is of general interest or is relevant to a range of scientific problems it can refer to work carried out anywhere in the world. Studies of strictly local interest will be accepted only if they refer to the North Atlantic and the seas around Europe. Papers should report the results of original research and must not have been published, or be under consideration for publication, elsewhere. Short communications, which may also report on new methods or techniques, should not exceed four printed pages, including tables and illustrations. These papers will be published more rapidly than full-length papers and if there is a particular reason why rapid publication is desirable this should be stated with the submission. Papers will be accepted only after receiving a satisfactory report from at least two independent reviewers, drawn from an international panel of referees.

Papers describing work involving experimental procedures on living animals will be published only if they comply with the legal requirements of the UK Home Office. In the case of species not covered by the current law, papers will be published only if it is judged that the experiments have been conducted in a humane manner and adequate precautions taken to minimize stress.

# JOURNAL OF THE MARINE BIOLOGICAL ASSOCIATION OF THE UNITED KINGDOM

## SUBSCRIPTIONS

The *Journal of the Marine Biological Association* (ISSN: 0025-3154) is published four times a year in February, May, August and November. The subscription price of Volume 72 to non-members of the Association is £156 in the UK and all other parts of the world except North America. Subscription price in the USA and Canada is US \$315. The above prices are payable in advance and include postage. Copies for the USA and Canada are air-freighted to New York to arrive with minimum delay. Single parts cost £42 (US \$81 in USA and Canada) plus postage. Subscriptions may be sent to any bookseller or to the publisher: Cambridge University Press, The Edinburgh Building, Shaftesbury Road, Cambridge CB2 2RU, or in USA and Canada, to Cambridge University Press, 40 West 20th Street, New York, NY 10011-4211. Second class postage paid at New York, NY and at additional mailing offices. POSTMASTER: send address changes in the USA, Canada and Mexico to *Journal of the Marine Biological Association*, Cambridge University Press, 110 Midland Avenue, Port Chester, NY 10573-9864. All orders must be accompanied by payment.

© 1992 *The Marine Biological Association of the United Kingdom* (Charity no. 226063)

## PERMISSIONS

### *Copying*

This journal is registered with the Copyright Clearance Center, New York. Organisations in the USA who are also registered with CCC may therefore copy material (beyond the limits permitted by sections 107 and 108 of the US © law) subject to payment to CCC of the per copy fee of \$05.00. This consent does not extend to multiple copying for promotional or commercial purposes. Code 0025-3154/92 \$5.00 + .00

*The Genuine Article*®, ISI, 3501 Market Street, Philadelphia, Pennsylvania 19104, USA, is authorized to supply single copies of separate articles for private use only.

*Microfilm copies* of back numbers are available from University Microfilms International, 300 North Zeeb Road, MI 48106-1346, USA.

*For all other use*, permission should be sought from Cambridge or the American Branch of Cambridge University Press.

## CAMBRIDGE UNIVERSITY PRESS

THE PITT BUILDING, TRUMPINGTON STREET, CAMBRIDGE CB2 1RP

40 WEST 20TH STREET, NEW YORK, NY 10011-4211, USA

10 STAMFORD ROAD, OAKLEIGH, VICTORIA 3166, AUSTRALIA

(b)

## INSTRUCTIONS FOR THE PREPARATION OF MANUSCRIPTS

### Editorial Policy

The JMBA publishes papers on all aspects of marine biology and oceanography. If the material is of general interest or is relevant to a range of scientific problems it can refer to work carried out anywhere in the world. Studies of strictly local interest will be accepted only if they refer to the North Atlantic and the seas around Europe. Papers should report the results of original research and must not have been published, or be under consideration for publication, elsewhere.

### General

Papers should be written in English and should be as clear and succinct as possible. If acronyms are used they must be specified in full on their first occurrence. SI units should be used. Sentences must not start with an abbreviation. Only the scientific names of species should be italicized, and their first mention should be followed by the authority except where reference is made to a work in which the authority appears. Footnotes must not be used.

A total of three copies of the typescript should be provided, double-spaced throughout, on one side of A4 paper. Tables and legends for illustrations should be typed separately at the end of the manuscript. All pages should be numbered serially (title, main text, acknowledgements, references, figure legends, tables). The originals and two copies of the illustrations should be provided. Whenever possible a copy of the text, once the paper has been accepted, should also be provided on a floppy disc (see below).

Short communications, which may also report on new methods or techniques, should not exceed four printed pages, including tables and illustrations. These papers will be published more rapidly than full-length papers and if there is a particular reason why rapid publication is desirable this should be stated with the submission.

Page proofs only will be sent. One hundred reprints will be provided free of charge and up to 200 extra copies may be purchased if ordered when the proofs are returned.

### Title

Each paper must have a unique title and not be one of a numbered series. The title should be kept as short as possible (maximum 18 words), and if specific names are included the authority should be omitted. A running head of not more than 43 characters should be suggested.

### Abstract

Each paper (including short communications) must start with a brief abstract summarizing the main results and conclusions of the work, and such other information as make it suitable for publication without change in abstracting journals. No references should be given in the abstract. If the title includes specific names, the abstract must include the taxonomic group to which the species belongs (e.g. *Pholoe minuta* (Annelida: Polychaeta)). The abstract must be intelligible to a reader who is not a specialist in the subject of the paper.

### References

References should be kept to an essential minimum and must be listed alphabetically at the end of the paper. Care should be taken to ensure that all those quoted in the text are included, but no others. The full title of the paper and all the authors must be given. Where a volume appears in parts the part need be specified only where each has separate pagination. Titles of Journals are given in full and references to books should include the publisher and place of publication. Citations in the text to be given as 'Smith & Jones (1964)', or '(Smith & Jones, 1964)', or 'Smith *et al.* (1964)' if there are more than two authors, except where this is ambiguous.

#### Examples:

Goldberg, E.D., 1965. Minor elements in sea water. In *Chemical oceanography*, vol. 1 (ed. J.P. Riley and G. Skirrow), pp. 163-196. New York: Academic Press.

# JOURNAL OF THE MARINE BIOLOGICAL ASSOCIATION

Marshall, S.M., Nicholls, A.G. & Orr A.P., 1939. On the growth and feeding of young herring in the Clyde. *Journal of the Marine Biological Association of the United Kingdom*, **23**, 427-455.  
Russell, F.S. & Yonge, C.M., 1928. *The seas*. London: Frederick Warne.

## Figures

Figures should be in black ink and be suitable for reproduction. They should be submitted on A4 pages whenever possible. Figures will normally be reduced as much as possible to save space. All figures, including photographs, should be designed so that they can be reduced to fit on a page (total 13.4 x 20 cm, including legend). Lettering, numerals etc. should be of good quality or should be marked on the copies only, or on a tracing paper overlay on the originals. Symbols should be kept to a minimum and clearly explained in the legend.

Half-tone photographs will normally be reproduced in the text pages and should be supplied as glossy prints with suitable labelling on the originals. Sizes should be indicated by a scale line on the print and not by a magnification factor in the legend. Three sets of glossy prints are required.

Legends for figures must be typed all together on a separate sheet. All illustrations, including photographs, are numbered in Arabic numerals and referred to in the text as 'Figure 1', etc. Where a figure comprises two or more distinct components they must be given a single Figure number and be distinguished by CAPITAL letters.

Coloured illustrations can be included but only at the author's expense (about £1000 per page).

## Tables

Tables should be numbered in Arabic numerals, and given a concise heading.

## Word-processor discs

All manuscripts should be provided on a floppy disc after the paper has been accepted. It is not necessary to send the disc when submitting the paper initially, as it will almost certainly need revision after refereeing.

It will speed the publication of your paper if you can send a copy of the text on one of the following types of disc: IBM PC or PS/2 or compatible, Macintosh, or Amstrad PCW. The disc will be returned to you.

If you are unable to provide an appropriate disc please ensure that the typescript is clearly printed.

### **Please follow these instructions exactly:**

1. Ensure that the disc you send contains only the final version of the paper and is identical to the typescript.
2. Label the disc with author's name, title of paper, machine and word-processor programme used.
3. If you have used a common PC or Macintosh word-processing programme (*e.g.* Wordstar, Wordperfect, Microsoft Word, Microsoft Works, Macwrite) send the file as a fully-formatted document, but make sure you include details of which package and which version has been used. Otherwise send the file as ASCII or 'text only'.
4. Use italics not underlining for specific names etc. Make sure you distinguish numerals from letters, *e.g.* zero (0) from O; one (1) from I and l.
5. Type names of authors in the reference list in lower case, except for the initial letter.
6. If the diagrams have been prepared on a Macintosh it may be advantageous to send copies of these on disc as well.

**Authors are requested to see that their manuscripts are in finished form and completely ready for publication so that corrections may be reduced to a minimum. Alterations to the text at the proof stage will be charged to the author.**