

THE JOURNAL OF ANIMAL ECOLOGY

EDITORS: L. R. Taylor and J. M. Elliott

CONTENTS

Volume 47 Number 1 February 1978

A guide for contributors to the journals and symposia of the British Ecological Society

M. P. Harris. Supplementary feeding of young puffins, *Fratercula arctica*

V. Standen. The influence of soil fauna on decomposition by micro-organisms in blanket bog litter

R. W. Furness. Energy requirements of seabird communities: a bioenergetics model

J. A. Redfield, M. J. Taitt and C. J. Krebs. Experimental alterations of sex-ratios in populations of *Microtus oregoni*, the creeping vole

D. G. Raffaelli and R. N. Hughes. The effects of crevice size and availability on populations of *Littorina rudis* and *Littorina neritoides*

W. S. C. Gurney and R. M. Nisbet. Predator-prey fluctuations in patchy environments

R. W. Elner and R. N. Hughes. Energy maximization in the diet of the shore crab, *Carcinus maenas*

J. A. Wightman. The ecology of *Callosobruchus analis* (Coleoptera: Bruchidae): morphometrics and energetics of the immature stages

J. A. Wightman. The ecology of *Callosobruchus analis* (Coleoptera: Bruchidae): energetics and energy reserves of the adults

R. A. Avery. Activity patterns, thermoregulation and food consumption in two sympatric lizard species (*Podarcis muralis* and *P. sicula*) from Central Italy

M. Münster-Swendsen and G. Nachman. Asynchrony in insect host-parasite interaction and its effect on stability, studied by a simulation model

D. J. Stradling. The influence of size on foraging in the ant, *Atta cephalotes*, and the effect of some plant defence mechanisms

C. D. Todd. Changes in spatial pattern of an intertidal population of the nudibranch mollusc *Onchidoris muricata* in relation to life-cycle, mortality and environmental heterogeneity

W. A. Foster and J. E. Treherne. Dispersal mechanisms in an intertidal aphid

R. M. Anderson and R. M. May. Regulation and stability of host-parasite population interactions. I. Regulatory processes

R. M. May and R. M. Anderson. Regulation and stability of host-parasite population interactions. II. Destabilizing processes

C. J. Savory. Food consumption of red grouse in relation to age and productivity of heather

R. Seed and R. A. Brown. Growth as a strategy for survival in two marine bivalves, *Cerastoderma edule* and *Modiolus modiolus*

G. R. Miller and A. Watson. Territories and the food plant of individual red grouse. I. Territory size, number of mates, and brood size compared with the abundance, production and diversity of heather

A. N. Lance. Territories of the food plant of individual red grouse. II. Territory size compared with an index of nutrient supply in heather

D. Ludwig, D. D. Jones and C. S. Holling. Qualitative analysis of insect outbreak systems: the spruce budworm and forest

Reviews

The journal is published three times a year. The subscription price to non-members of the British Ecological Society is £32.50 (U.K.) £37.00 (overseas) (U.S.A. and Canada \$105.00) per volume. All back numbers are available. Enquiries and orders should be sent to the publishers

BLACKWELL SCIENTIFIC PUBLICATIONS LTD

OSNEY MEAD, OXFORD OX2 0EL

THE MARINE BIOLOGICAL ASSOCIATION OF THE UNITED KINGDOM

PATRON

H.R.H. THE PRINCE PHILIP DUKE OF EDINBURGH, F.R.S.

OFFICERS AND COUNCIL

President: Prof. J. Z. YOUNG, D.Sc., F.R.S.

Vice-Presidents

Sir EDWARD J. SALISBURY, Kt., C.B.E., D.Sc.,
LL.D., F.R.S.

Sir FREDERICK S. RUSSELL, Kt., C.B.E., D.S.C.,
D.F.C., D.Sc., LL.D., F.R.S.

Prof. Sir ALISTER C. HARDY, Kt., D.Sc., F.R.S.

Sir EDWARD R. CHADWYCK-HEALEY, Bt., M.C.

Sir C. MAURICE YONGE, Kt., C.B.E., D.Sc., F.R.S.

Sir J. ERIC SMITH, Kt., C.B.E., Sc.D., F.R.S.

Rear Admiral Sir EDMUND G. IRVING, K.B.E., C.B.

Sir ALAN L. HODGKIN, O.M., K.B.E., Sc.D., F.R.S.

Honorary Members

Sir GEORGE E. R. DEACON, Kt., C.B.E., D.Sc.,
F.R.S.

Dr A. C. REDFIELD

Prof. Sir ALISTER C. HARDY, Kt., D.Sc., F.R.S.

Sir C. MAURICE YONGE, Kt., C.B.E., D.Sc., F.R.S.

COUNCIL

Elected Members

J. H. S. BLAXTER, D.Sc.

Prof. K. F. BOWDEN, D.Sc.

Prof. H. CHARNOCK, F.R.S.

Prof. R. B. CLARK, D.Sc.

Prof. J. M. DODD, D.Sc., F.R.S.

Sir JOHN A. B. GRAY, Kt., M.B., Sc.D., F.R.S.

Sir ALAN L. HODGKIN, O.M., K.B.E., Sc.D., F.R.S.

R. H. HEDLEY, D.Sc.

Prof. G. J. HILLS, D.Sc.

Sir PETER KENT, Kt., D.Sc., F.G.S., F.R.S.

A. D. MCINTYRE, D.Sc.

Prof. E. NAYLOR, Ph.D.

Prof. D. NICHOLS, D.Phil.

Prof. C. G. PHILLIPS, D.M., F.R.C.P., F.R.S.

Prof. W. D. P. STEWART, D.Sc., F.R.S.

Governors

J. G. KELSEY (Ministry of Agriculture, Fisheries
and Food)

The Worshipful Company of Fishmongers:

Sir EDWARD R. CHADWYCK-HEALEY, Bt., M.C.

Col. Sir JOHN G. CAREW POLE, Bt., D.S.O., T.D.

The Hon. HUGH WALDORF ASTOR, J.P.

H. C. BENNET-CLARK, Ph.D.
(Oxford University)

M. J. WELLS, Sc.D. (Cambridge University)

Prof. G. P. WELLS, Sc.D., F.R.S. (Zoological Society)

Prof. SIR BERNARD KATZ, Kt., M.D., D.Sc., F.R.S.
(Royal Society)

Prof. G. E. FOGG, Sc.D., F.R.S.

(British Association)

Prof. R. D. KEYNES, Sc.D., F.R.S.
(Physiological Society)

Hon. Treasurer: B. M. TILL, West House, Piddletrenthide, Dorchester, Dorset, DT2 7QX

Secretary: E. J. DENTON, C.B.E., Sc.D., F.R.S., The Laboratory, Citadel Hill, Plymouth, PL1 2PB

SCIENTIFIC STAFF

Director: E. J. DENTON, C.B.E., Sc.D., F.R.S.

P. G. CORBIN, B.A. (*Zoologist*)

N. A. HOLME, Sc.D., M.A. (*Zoologist*)

G. R. FORSTER, B.Sc. (*Zoologist*)

E. D. S. CORNER, M.Sc., Ph.D. (*Biochemist*)

A. J. SOUTHWARD, D.Sc., Ph.D. (*Zoologist*)

E. I. BUTLER, C.Chem., F.R.I.C. (*Chemist*)

J. V. HOWARTH, B.Sc., Ph.D. (*Physiologist*)

Q. BONE, M.A., D.Phil. (*Zoologist*)

G. T. BOALCH, B.Sc., Ph.D. (*Phycologist*)

G. W. BRYAN, B.Sc., Ph.D. (*Zoologist*)

A. G. DAVIES, B.Sc., Ph.D. (*Physical Chemist*)

P. R. DANDO, B.Sc., Ph.D. (*Biochemist*)

P. E. GIBBS, B.Sc., M.A., Ph.D. (*Zoologist*)

B. L. ROBERTS, M.A., Ph.D. (*Physiologist*)

J. C. GREEN, B.Sc., Ph.D. (*Phycologist*)

D. K. GRIFFITHS, M.Sc. (*Physical Oceanographer*)

G. W. POTTS, B.Sc., Ph.D. (*Zoologist*)

J. B. GILPIN-BROWN, B.Sc., Ph.D. (*Bursar and
Zoologist*)

H. MEVES, M.D. (*Physiologist*)

M. WHITFIELD, B.Sc., Ph.D. (*Physical Chemist*)

M. R. CLARKE, B.Sc., Ph.D. (*Zoologist*)

R. P. HARRIS, B.Sc., Ph.D. (*Zoologist*)

P. M. HOLLIGAN, M.A., Ph.D. (*Biochemist*)

L. MADDOCK, B.Sc., Ph.D. (*Zoologist*)

J. H. WICKSTEAD, D.Sc., Ph.D., F.I.Biol., Ministry of Overseas Development (*Zoologist*)

R. D. PINGREE, B.Sc., Dip.Ed., Ph.D., Institute of Oceanographic Sciences (*Oceanographer*)

August 1978

CONTENTS

	PAGE
HILL, PROF. A. V. Obituary	545
REID, P. C. and JOHN, A. W. G. Tintinnid cysts	551
MADIN, L. P. and HARBISON, G. R. <i>Bathocyroe fosteri</i> gen.nov., sp.nov.: a mesopelagic ctenophore observed and collected from a submersible	559
BONE, Q. and PULSFORD, A. The arrangement of ciliated sensory cells in <i>Spadella</i> (Chaetognatha)	565
PILKINGTON, J. B. and MACFARLANE, D. W. Numbers and central projections of crab second maxilla motor neurones	571
SHEADER, M. Distribution and reproductive biology of <i>Corophium insidiosum</i> (Amphipoda) on the north-east coast of England	585
O'HARA, S. C. M., CORNER, E. D. S. and KILVINGTON, C. C. On the nutrition and metabolism of zooplankton. XII. Measurements by radioimmunoassay of the levels of a steroid in <i>Calanus</i>	597
ANDERSON, D. T. Cirral activity and feeding in the coral-inhabiting barnacle <i>Boscia anglicum</i> (Cirripedia)	607
HISCOCK, K., HISCOCK, S. and BAKER, J. M. The occurrence of the barnacle <i>Elminius modestus</i> in Shetland	627
HOPKINS, C. C. E., MAUCLINE, J. and MCLUSKY, D. S. Structure and function of the fifth pair of pleopods of male <i>Euchaeta norvegica</i> (Copepoda: Calanoida)	631
BRANFORD, J. R. The influence of daylength, temperature and season on the hatching rhythm of <i>Homarus gammarus</i>	639
CRISP, M. Effects of feeding on the behaviour of <i>Nassarius</i> species (Gastropoda: Prosobranchia)	659
DAVENPORT, J. and FLETCHER, J. S. The effects of simulated estuarine mantle cavity conditions upon the activity of the frontal gill cilia of <i>Mytilus edulis</i> (L.)	671
GIBBS, P. E. <i>Menestho diaphana</i> (Gastropoda) and <i>Montacuta phascolionis</i> (Lamellibranchia) in association with the sipunculan <i>Phascolion strombi</i> in British waters	683
TAYLOR, A. C. and VENN, T. J. Growth of the queen scallop, <i>Chlamys opercularis</i> , from the Clyde Sea area	687
CLARKE, M. R. The cephalopod statolith – an introduction to its form	701
SOUTHWARD, E. C. A new species of <i>Lamellisabella</i> (Pogonophora) from the North Atlantic	713
CRAIK, J. C. A. An annual cycle of vitellogenesis in the elasmobranch <i>Scyliorhinus canicula</i>	719
FÄNGE, R. Acid and alkaline phosphatases in the lymphomyeloid tissues of elasmobranch fish	727
WILSON, D. P. Territorial behaviour of male dragonets (<i>Callionymus lyra</i>)	731
BEST, A. C. G. and NICOL, J. A. C. Notes on the retina and tapetum lucidum of <i>Howella</i> (Teleostei: Cheilodipteridae)	735
DEMPSEY, C. H. Chemical stimuli as a factor in feeding and intraspecific behaviour of herring larvae	739
DROOP, M. R. and SCOTT, J. M. Steady-state energetics of a planktonic herbivore	749
THOMSEN, H. A. and OATES, K. <i>Balaniger balticus</i> gen. et sp.nov. (Prymnesiophyceae) from Danish coastal waters	773
WHITFIELD, M. The hydrolysis of ammonium ions in sea water – experimental confirmation of predicted constants at one atmosphere pressure	781
SHORT NOTE	787
ABSTRACTS OF MEMOIRS	789
BOOK NOTICE	791

© Copyright by the Marine Biological Association of the U.K. 1978

The subscription price of volume 58, 1978 of the Journal to non-members of the Association is £52.00 net a volume of four parts, post free, or US \$115.00 in U.S.A. and Canada, payable in advance. Single parts cost £15.00 (US \$35.00 in U.S.A. and Canada) plus postage. Subscriptions may be sent to any bookseller or to the London or New York office of Cambridge University Press.

CAMBRIDGE UNIVERSITY PRESS

THE PITT BUILDING, TRUMPINGTON STREET, CAMBRIDGE CB2 1RP

BENTLEY HOUSE, 200 EUSTON ROAD, LONDON NW1 2DB

32 EAST 57TH STREET, NEW YORK, N.Y. 10022

Printed in Great Britain at the University Press, Cambridge