



# POLAR RECORD

**A Journal of Arctic and Antarctic Research**

VOLUME 52 NUMBER 265 JULY 2016

**CAMBRIDGE**  
UNIVERSITY PRESS

# POLAR RECORD

A Journal of Arctic and Antarctic Research

Journal of the Scott Polar Research Institute, University of Cambridge

Editor: IAN R. STONE

Deputy Editor: Nikolas Sellheim

Book Reviews Editor: Hanna Lempinen

## Editorial Advisors:

Dr Patrick Arnaud, *Vachères, France*

Dr Susan Barr, *Oslo, Norway*

Prof Robert Barletta, *University of Southern Alabama, USA.*

Prof William Barr, *Calgary, Alberta, Canada*

Dr Peter Carey, *Christchurch, New Zealand*

Dr Janice Cavell, *Ottawa, Canada*

Prof Klaus J. Dodds, *London, UK*

Prof Julian Dowdeswell, *Cambridge, UK*

Dr Damian Gore, *Sydney, Australia*

Dr Anna Stammler-Gossman, *University of Lapland, Finland*

Dr Liisa Holmberg, *Sámi Education Institute, Finland*

Dr Julia Jabour, *University of Tasmania, Australia*

Priv. Doz. Dr Cornelia Lüdecke, *Munich, Germany*

Dr R.I.G. Morrison, *Ottawa, Ontario, Canada*

Dr Maria Nakhshina, *University of Aberdeen*

Prof Mark Nuttall, *Edmonton, Alberta, Canada*

Dr Beau Riffenburgh, *Llanarthne, Carmarthen, UK*

Dr Shiv M. Singh, *National Centre for Antarctic and Ocean Research, India*

Prof Valdon Smith, *Matieland, South Africa*

Dr Erki Tammiksaar, *Tartu, Estonia*

Prof David W.H. Walton, *Cambridge, UK*

Prof Oran R. Young, *Santa Barbara, CA, USA*

© Cambridge University Press 2016.

*Polar Record* (ISSN 0032-2474) is published six times yearly — in January, March, May, July, September, November — the six issues making a volume. First published in January 1931, *Polar Record* appeared twice yearly until July 1954, three times yearly until September 1987 and four times yearly until 2014. Scholarly contributions are invited on virtually all subjects of polar interest.

## Contributions

All authors who would like to submit contributions for publication in *Polar Record* must send the Editor an electronic copy of the manuscript together with a covering letter. The submission must be saved in .doc or .rtf format, and should be sent via email to: polarrecord@cambridge.org

## Subscriptions

Orders, which must be accompanied by payment, should be sent to any bookseller or subscription agent, or direct to the publisher:

Cambridge University Press, Journals Fulfillment Department, UPH, Shaftesbury Road, Cambridge CB2 8BS, UK

or

Cambridge University Press, Journals Fulfillment Department, 100 Brook Hill Drive, West Nyack, New York 10994–2133, USA.

The subscription price of volume 52, 2016, for electronic access, is: for individuals, £117.00 (US\$224.00 in USA, Canada, and Mexico), for institutions £336.00 (US\$620.00 in USA, Canada, and Mexico). EU subscribers (outside the UK) who are not registered for VAT should add VAT at their country's rate. VAT registered subscribers should provide their VAT registration number. Japanese prices for institutions are available from Kinokuniya Company Ltd, PO Box 55, Chitose, Tokyo 156, Japan.

Information about *Polar Record* and all other Cambridge journals can be accessed via <http://www.cambridge.org/>.

## Copying

*Polar Record* is registered with the Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923, USA. Organizations in the USA that are also registered with the CCC may copy material (beyond limits permitted by sections 107 and 108 of US copyright law) subject to payment to CCC of the per copy fee of \$16. This consent does not extend to multiple copies for promotional or commercial purposes. Code 0032-2474/2016. Organizations authorized by the Copyright Licensing Agency may also copy material subject to the usual conditions. For all other use, permission should be sought from the Cambridge or the American Branch of Cambridge University Press (addresses below).

## Advertising

Details of advertising in *Polar Record* may be obtained from the publisher.

## CAMBRIDGE UNIVERSITY PRESS

Published by the Press Syndicate of the University of Cambridge

University Printing House, Cambridge CB2 8BS, United Kingdom

32 Avenue of the Americas, New York, NY 10013-2473, USA

477 Williamstown Road, Port Melbourne, Victoria 3207, Australia

C/Orense, 4, Planta 13, 28020 Madrid, Spain

Lower Ground Floor, Nautica Building, The Water Club, Beach Road, Granger Bay, 8005 Cape Town, South Africa