Volume XVII

Fauna & Flora Preservation Society





Fauna & Flora Preservation Society

Oryx

Founded 1903
Patron HER MAJESTY THE QUEEN

President

Sir Peter Scott CBE DSC

Vice Presidents

David Attenborough CBE (UK)
Professor A.G. Bannikov (USSR)
Dr David Bellamy (UK)
Dr Felipe Benavides OBE (Peru)
Lt Col C.L. Boyle OBE (UK)
Dr Harold J. Coolidge (USA)
Mervyn Cowie CBE ED (Kenya)
Dr Kai Curry-Lindahl (Sweden)
Major Ian R. Grimwood OBE
(Kenya)
Dr Lee M. Talbot (USA)

Chairman

Lord Craigton PC CBE

Vice Chairman Richard Fitter

Hon. Treasurer T.A.P. Walker

Hon. Secretary David M. Jones MRCVS

Hon. Editor Mrs Maisie Fitter

Membership

Oryx is free to members. Details, see tear sheet

Council

Dr Keith Banister R.E. Boote CVO Dr David Chivers J. Hancock Dr C. Humphries Brian Jackman Clive Jermy Stuart Johnstone Jonathan Kingdon J.M. Knowles G.LI. Lucas OBE Dr David

Macdonald Jeremy Mallinson Dr R.D. Martin Professor

N.W. Moore Fergus O'Gorman Dr R.E. Stebbings Sir Peter Watkin Williams The Hon. Vincent Weir

Exec. Secretary John A. Burton

Editor of Oryx Dr Jacqui Morris

Fauna and Flora Preservation Society Inc.

US Directors
Dr Gerard A. Bertrand
John Perry
John Walsh
Phoebe Wray

UK Directors
John A. Burton
Richard Fitter
Dr Alison Jolly

Hon Director Dr Harold J. Coolidge

Editorial Board

Dr Jacqui Morris (Chairman) Dr David Chivers Dr C. Humphries Professor P.A. Jewell J.M. Knowles Dr R.D. Martin Fergus O'Gorman

Design Advisor to *Oryx* Keith Whitehead

Manuscripts are invited for consideration for publication and should be sent to the Editor from whom guidelines for authors are also available.

The opinions expressed by authors do not necessarily reflect the policy of ffPS.

Address

c/o Zoological Society of London, Regent's Park London NW1 4RY Tel: 01-586 0872

Registered Charity No. 250358

Cover: Glasswing butterfly *Cithaeris* sp from rain forest in Costa Rica (*Michael Fogden/Bruce Coleman Ltd*).

Colour cover donated by Edward Wright Ltd.
We gratefully acknowledge the support received for the publication of *Oryx* from Consolidated Goldfields PLC.

Subscriptions

The journal is published quarterly (January, April, July, October) and is available to non-members at £18 (UK), £21.50 (overseas), and \$45 (USA and Canada) per annum, post free.

The journal is published for the Fauna & Flora Preservation Society by Blackwell Scientific Publications Ltd. All matters relating to subscriptions, back numbers and offprints should be sent to Blackwell Scientific Publications Ltd, PO Box 88, Oxford, England.

Advertising

Enquiries should be sent to the Advertisement Manager, Blackwell Scientific Publications Ltd, Osney Mead, Oxford OX2 0EL, England (telephone 0865 240201).

© 1983 Fauna & Flora Preservation Society. Authorization to photocopy items for internal or personal use, or the internal or personal use of specific clients, is granted by the Fauna & Flora Preservation Society for libraries and other users registered with the Copyright Clearance Center (CCC) Transactional Reporting Service, provided that the base fee of \$02.00 per copy is paid directly to CCC, 21 Congress Street, Salem, MA 01970, U.S.A. Special requests should be addressed to the Editor. 0030–6053/83 \$02.00.

Copies of the journal are despatched by air freight to New York for forwarding by surface mail throughout the Western Hemisphere, and by air freight to Singapore for forwarding by surface mail to subscribers in India, Australasia and the Far East.

US Mailing Agent: Expediters of the Printed Word Ltd, 527 Madison Avenue, Suite 1217, New York, NY 10022, second class postage paid at New York, NY.

Postmaster: send address corrections to *Oryx*, c/o Expediters of the Printed Word Ltd., 527 Madison Avenue, New York, NY 10022 (US Mailing Agent).



Application for Membership

The Fauna and Flora Preservation Society

	enrol me as a member of the society from(date). (BLOCK LETTERS) Please state Mr/Mrs/Miss or title
Addres	SS .
l enclo being i	se £ ny subscription as a Life/Benefactor/Ordinary Member/Student/Family.
Ordina \$14. (P UK Me	um subscriptions. ry member £15, US \$30; family £20, US \$40; benefactor £35, US \$70; student £7, US lease add £1 for other convertible currency) mbers: It greatly benefits the society if you sign a deed of covenant (UK taxpayers
only) US Me	mbers: ffPS Inc is registered as a tax-deductible charity.
Life me	embership: £1000, US \$2000
	·
 Baı	e of a Banker's order saves time, expense and reminders. Ner's Order The Fauna and Flora Preservation Society)
Bai	
Bai (to be s	nker's Order eent to the Fauna and Flora Preservation Society)
Bai (to be s	nker's Order sent to the Fauna and Flora Preservation Society) Block Letters)
Bai (to be s Name	nker's Order sent to the Fauna and Flora Preservation Society) Block Letters)
Bal (to be s Name) Bank *Please Barclay	nker's Order sent to the Fauna and Flora Preservation Society) Block Letters) s of Bank a pay for the credit of: Fauna and Flora Preservation Society, Account No. 30899143 as Bank Ltd, Camden Town Branch (20-17-53), London NW1 my subscription of
Bai (to be s Name Name Bank *Pleas Barclay f	nker's Order sent to the Fauna and Flora Preservation Society) Block Letters) Block Letters B
Ball (to be s	nker's Order sent to the Fauna and Flora Preservation Society) Block Letters) Block Letters)



QUESTERSThe world through nature tours.

Travel with a purpose.

Search out plants and animals, birds and flowers. Explore rain forests, mountains and tundra, seashores, lakes and swamps. With Questers you have ample time to photograph, absorb, reflect. Your guide is a naturalist, tour parties are small, accommodations first-class.

Our current Directory of Worldwide Nature Tours describes tours to: *In the Americas*—Okefenokee, Alaska, Hawaii, Pacific Northwest, Churchill, Newfoundland, Amazon, Patagonia, Galapagos, Peru. *In Asia*—Nepal, Bhutan, Sri Lanka, Japan. *In Australasia*—New Zealand, Australia, Papua New Guinea. *In Africa*—Zimbabwe, Botswana, Kenya. *In Europe*—Iceland, Greece, Spain, Switzerland, Scotland.

Learn and discover with Questers. Write or call today for your free copy of the Directory of Worldwide Nature Tours.



QUESTERS

Questers Tours & Travel, Inc. Dept. ORX, 257 Park Avenue South New York, NY 10010 • (212) 673-3120

CATALOGUE

Over 250 new books in medicine and the natural sciences are described in our latest catalogues. Copies are available free on request from:

Publicity Department, Blackwell Scientific Publications Ltd, Osney Mead, Oxford OX2 0EL, England

Please send me copies of your new

Medical Catalogue

Natural Sciences Catalogue

(delete as applicable)

Na																																					
	٠.																												•						•		
Ad	dı	e	SS	;													•																				
• • • •	• •	•	• •	•	•	•	•	•	•	•	•	•	•	•	٠	•	•	•	٠	•	•	•	•	•	•	•	•	٠	•	•	•	•	•	•	•	•	•

Blackwell Scientific Publications

Oxford London Edinburgh Boston Melbourne