**The Ecology of Invasions
by Animals and Plants**

Frontispiece. Female gipsy moths, *Lymantria dispar*, depositing their egg-clusters on the trunk of an oak-tree in Massachusetts, 1895. (From E. H. Forbush and C. H. Fernald, 1896.)

**THE
ECOLOGY OF INVASIONS
BY ANIMALS AND PLANTS**

CHARLES S. ELTON

**LONDON
CHAPMAN AND HALL**

*First published 1958
by Methuen & Co. Ltd.
Reprinted five times
Reprint 1972 published by
Chapman and Hall Ltd, 11 New Fetter Lane, London EC4P 4EE
Reprinted as a Science Paperback 1977*

© 1958 Charles C. Elton,

*Printed and bound in Great Britain by
Redwood Burn Limited
Trowbridge & Esher*

ISBN-13: 978-0-412-21460-8

e-ISBN-13: 978-94-009-5851-7

DOI: 10.1007/978-94-009-5851-7

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TO MY WIFE
E. J. SCOVELL

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Preface

In this book I have tried to bring together ideas from three different streams of thought with which I have been closely concerned during the last thirty years or so. The first is faunal history, usually regarded as a purely academic subject, but to some of whose events can be traced a number of the serious dislocations taking place in the world today. The second is ecology, particularly the structure and dynamics of populations. The third is conservation. I first published a few ideas about the significance of invasions in 1943, in a war-time review called *Polish Science and Learning*, under the title of 'The changing realms of animal life'. Since then I have had the opportunity to think pretty hard about conservation, while taking part in the planning and development of the Nature Conservancy. In March 1957 I gave three broadcasts in the B.B.C.'s Third Programme, under the title of 'Balance and Barrier'. These were subsequently printed in *The Listener* (1957, Vol. 57, pp. 514-15, 556-7, 596-7, and 600). The present book is essentially an expansion of these. I am extremely grateful to Mr James C. Thornton and Dr John Simons for advice and help in planning and giving these talks.

In preparing this book I have had invaluable assistance from the staff of the Bureau of Animal Population. Miss C. M. Gibbs typed the fair copy. Miss M. Nicholls has given me much advice on bibliographical matters. And Mr Denys Kempson has employed his superlative skill at photography in copying and printing the 101 illustrations. Without his help particularly I could not have made the book in its present form.

For permission to reproduce illustrations I am very grateful to a number of people and institutions, who are individually acknowledged in the legends under them. I want to thank Mrs M. J. Thornton and Mr J. S. Watson very much for allowing me the use of original photographs. The following have given invaluable help in getting me the use of other unpublished photographs: Dr Paul DeBach, Citrus Experiment

PREFACE

Station, University of California; Mr F. H. Jacob, Plant Pathology Laboratory, Ministry of Agriculture, Fisheries and Food; Dr R. F. Morris, Forest Biology Laboratory, Science Service, Canadian Department of Agriculture; Miss P. Sichel, National Maritime Museum, Greenwich; Dr Edward Graham and Dr William Van Dersal, U.S. Soil Conservation Service.

I am obliged to Dr W. E. Swinton, British Museum (Natural History), for some information about dinosaurs, and to Dr Erling Christophersen for information about plant species on Tristan da Cunha.

I have found useful references in a paper by Marston Bates (1956), 'Man as an agent in the spread of organisms' (in *Man's role in changing the face of the earth*, ed. by W. L. Thomas and others, Chicago, pp. 788-804). This is the only recent general review of the subject of invasions that I have seen.

The life-group pictures in Chapter 2, borrowed from Alfred Russel Wallace's great book *The Geographical Distribution of Animals*, are included not only for their own merit, but because I discovered that only two members of a large class of advanced zoology students had ever read the book. I have kept his Latin names without any attempt to bring them up to date, but have only used the genera and not the species.

I am grateful to my wife for reading the whole of this book before publication and for making most valuable suggestions.

*Bureau of Animal Population,
Department of Zoological Field Studies,
Botanic Garden, Oxford.*
24 July 1957