

Topics in Biodiversity and Conservation

Indraneil Das
Andrew Alek Tuen *Editors*

Naturalists, Explorers and Field Scientists in South-East Asia and Australasia

 Springer

Topics in Biodiversity and Conservation

Volume 15

More information about this series at <http://www.springer.com/series/7488>

Indraneil Das • Andrew Alek Tuen
Editors

Naturalists, Explorers and Field Scientists in South-East Asia and Australasia

 Springer

Editors

Indraneil Das
Institute of Biodiversity and Environmental
Conservation
Universiti Malaysia Sarawak
Kota Samarahan, Sarawak, Malaysia

Andrew Alek Tuen
Institute of Biodiversity and Environmental
Conservation
Universiti Malaysia Sarawak
Kota Samarahan, Sarawak, Malaysia

ISSN 1875-1288

ISSN 1875-1296 (electronic)

Topics in Biodiversity and Conservation

ISBN 978-3-319-26159-1

ISBN 978-3-319-26161-4 (eBook)

DOI 10.1007/978-3-319-26161-4

Library of Congress Control Number: 2016938690

Springer Cham Heidelberg New York Dordrecht London

© Springer International Publishing Switzerland 2016

This work is subject to copyright. All rights are reserved by the Publisher, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilms or in any other physical way, and transmission or information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed.

The use of general descriptive names, registered names, trademarks, service marks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

The publisher, the authors and the editors are safe to assume that the advice and information in this book are believed to be true and accurate at the date of publication. Neither the publisher nor the authors or the editors give a warranty, express or implied, with respect to the material contained herein or for any errors or omissions that may have been made.

Printed on acid-free paper

Springer International Publishing AG Switzerland is part of Springer Science+Business Media
(www.springer.com)

Preface

A century after the death of the naturalist and co-founder of the theory of evolution through natural selection, Alfred Russel Wallace continues to inspire. Indeed the relevance of Wallace for fields of study as disparate as ecology, systematics, evolution, ethnobiology, biodiversity, and conservation, has never been greater.

The Institute of Biodiversity and Environmental Conservation, within Universiti Malaysia Sarawak (UNIMAS), has been in the forefront of Wallace studies in Southeast Asia, through research and its application, in addition to the organisation of meetings of minds in the field of biodiversity. We organised, between 13 and 15 July 2005, an international conference entitled “Wallace in Sarawak – 150 years later” here in Kuching, Sarawak, which was attended by natural historians, biologists, and other scholars of Wallace studies. The proceedings of the same were published by the Institute in 2005. A second conference on the same broad theme, “Wallace 2013. 2nd International Conference on Alfred Russel Wallace – His Predecessors and Successors. Naturalists, Explorers and Field Scientists in Southeast Asia and Australasia” was also organised by our Institute on 7–8 November 2013. The present volume comprises selected papers presented at this most recent effort to honour Wallace and to remember his legacy, a century after his passing.

We have organised the papers into three broad themes: *Wallace and His Period* presents papers on the life and contributions of Wallace, and those of some of his contemporaries, from museum builders to evolutionary theorists. *Natural History and Systematics* gathers together papers as diverse as the contribution of systematics to understanding the zoological sciences, as well as autecological and community level studies. Finally, *Biodiversity and Conservation* brings together studies on biodiversity and conservation of the Wallace area, from trees to butterflies, frogs to birds and dolphins. It concludes with the all important paper that challenges the conventional views on economic growth, and how sustainable development and conservation need to be incorporated into the rapid economic development now taking place in the region where Alfred Russel Wallace spent his defining years.

We are grateful to a number of individuals and agencies for supporting the conference on which this volume is based: to the State Government of Sarawak for sponsoring the Conference, and to Tan Sri Datuk Patinggi Haji Adenan Satem, then

Minister of Special Functions, Sarawak, and currently, Chief Minister of Sarawak, for delivering the inaugural speech. Our partners, the Sarawak Forestry Corporation and the Sarawak Museum, including Oswald Braken Tisen and Charles Leh, formed the backbone of the organising committee. Within UNIMAS, we are grateful to the staff of the Institute of Biodiversity and Environmental Conservation, and our graduate students helped with all stages of organising the meeting and presenting papers. Individual manuscripts were reviewed by Aaron M. Bauer, C. Kenneth Dodd, Michael Flannery, Gathorne, Earl of Cranbrook, Ulmar Grafe, Stefan Hertwig, Robert F. Inger, Elena M. Panova, and Mustafa Abdul Rahman. Finally, we are thankful to David L. Hawksworth, for initiating the idea of this volume, and Nel van der Werf of Springer for seeing the volume through press.

Kota Samarahan, Malaysia

Indraneil Das
Andrew Alek Tuen

Contents

Part I Wallace and His Period

Wallace and Incipient Structures: A World of ‘More Recondite’ Influences	3
Charles H. Smith	

Alfred Russel Wallace and His Collections in the Malay Archipelago, with a Proposal for International Cooperation to Produce a Digital Catalogue	15
Earl of Cranbrook and Darren J. Mann	

Alfred Russel Wallace, Nature’s Prophet: From Natural Selection to Natural Theology	51
Michael A. Flannery	

An Inordinate Fondness for Beetles. The Hero’s Journey of Alfred Russel Wallace	71
Paul Spencer Sochaczewski	

Final Years and Death of Alfred Russel Wallace. 100 Years Later	79
John G. Wilson	

Southeast Asian and Australasian Herpetological Collections from the Eighteenth and Nineteenth Centuries in the Zoological Museum of Berlin	89
Aaron M. Bauer	

Part II Natural History and Systematics

Phylogenetics and Systematics of Animal Life	111
Hoi Sen Yong, Praphathip Eamsobhana, and Phaik Eem Lim	

Ecological Characteristics of the Freshwater Crab, <i>Isolapotamon bauense</i> in One of Wallace’s Collecting Sites	127
Jongkar Grinang, Indraneil Das, and Peter Ng	

Streams in Forested Headwaters as Reservoirs of Endemicity in Bornean Amphibians	143
Yong Min Pui and Indraneil Das	
Effect of Temperature on Development: The Case of the Malayan Snail-Eating Turtle <i>Malayemys macrocephala</i>	157
Rangsima Pewphong, Noppadon Kitana, and Jirarach Kitana	
Bird Diets in Urban Environments: The Case of the Asian Glossy Starling, <i>Aplonis panayensis</i>	171
Nursyafiqah Shazali, J. Mohd-Azlan, and Andrew Alek Tuen	
 Part III Biodiversity and Conservation	
Diversity of Trees at Gunung Serambu, Bau District, Sarawak, Malaysia	185
Ik Wadell Ik Pahon, Alexander Kiew Sayok, and Jugah Tagi	
Diversity of Butterflies on Gunung Serambu, Sarawak, Malaysia	197
Sing Tyan Pang, Alexander Kiew Sayok, and Mathew Jenang	
The Distribution of <i>Buceros rhinoceros</i> and Awareness of Its Conservation Status	215
J. Mohd-Azlan, Abas Said, Sim Lee Kheng, and Oswald Braken Tisen	
Identifying Habitat Characteristics and Critical Areas for Irrawaddy Dolphin, <i>Orcaella brevirostris</i>: Implications for Conservation	225
Cindy Peter, Anna Norliza Zulkifli Poh, Jenny Ngeian, Andrew Alek Tuen, and Gianna Minton	
Economic Growth, Sustainable Development and Ecological Conservation in the Asian Developing Countries: The Way Forward	239
Choy Yee Keong	

Contributors

Aaron M. Bauer Department of Biology, Villanova University, Villanova, PA, USA

Indraneil Das Institute of Biodiversity and Environmental Conservation, Universiti Malaysia Sarawak, Kota Samarahan, Sarawak, Malaysia

Praphathip Eamsobhana Department of Parasitology, Faculty of Medicine Siriraj Hospital, Mahidol University, Bangkok, Thailand

Earl of Cranbrook Great Glemham House, Saxmundham, UK

Michael A. Flannery University of Alabama at Birmingham, Birmingham, AL, USA

Jongkar Grinang Institute of Biodiversity and Environmental Conservation, Universiti Malaysia Sarawak, Kota Samarahan, Sarawak, Malaysia

Mathew Jenang Faculty of Resource Science and Technology, Universiti Malaysia Sarawak, Kota Samarahan, Sarawak, Malaysia

Department of Zoology, Faculty of Resource Science and Technology, Universiti Malaysia Sarawak, Kota Samarahan, Sarawak, Malaysia

Choy Yee Keong Graduate School of Economics, Kyoto University Asian Studies Unit, Kyoto University, Kyoto, Japan

Sim Lee Kheng Biodiversity Conservation Department, Protected Areas & Biodiversity Conservation, Sarawak Forestry Corporation, Kuching, Sarawak, Malaysia

Jirarach Kitana Department of Biology, Faculty of Science, Chulalongkorn University, Bangkok, Thailand

Center of Excellence in Biodiversity, Faculty of Science, Chulalongkorn University, Bangkok 10330, Thailand

Noppadon Kitana Department of Biology, Faculty of Science, Chulalongkorn University, Bangkok, Thailand

Center of Excellence in Biodiversity, Faculty of Science, Chulalongkorn University, Bangkok 10330, Thailand

Phaik Eem Lim Institute of Ocean and Earth Sciences, University of Malaya, Kuala Lumpur, Malaysia

Darren J. Mann Oxford University Museum of Natural History, Oxford, UK

Gianna Minton Institute of Biodiversity and Environmental Conservation, Universiti Malaysia Sarawak, Kota Samarahan, Sarawak, Malaysia

World Wide Fund for Nature-Gabon, Libreville, Gabon

J. Mohd-Azlan Department of Zoology, Faculty of Resource Science and Technology, Universiti Malaysia Sarawak, Kota Samarahan, Sarawak, Malaysia

Peter Ng Lee Kong Chian Natural History, Faculty of Science, National University of Singapore, Singapore, Singapore

Jenny Ngeian Institute of Biodiversity and Environmental Conservation, Universiti Malaysia Sarawak, Kota Samarahan, Sarawak, Malaysia

Cindy Peter Institute of Biodiversity and Environmental Conservation, Universiti Malaysia Sarawak, Kota Samarahan, Sarawak, Malaysia

Rangsima Pewphong Department of Biology, Faculty of Science, Chulalongkorn University, Bangkok, Thailand

Yong Min Pui Institute of Biodiversity and Environmental Conservation, Universiti Malaysia Sarawak, Kota Samarahan, Sarawak, Malaysia

Anna Norliza Zulkifli Poh Institute of Biodiversity and Environmental Conservation, Universiti Malaysia Sarawak, Kota Samarahan, Sarawak, Malaysia

Abas Said Department of Plant Science and Environmental Ecology, Faculty of Resource Science and Technology, Universiti Malaysia Sarawak, Kota Samarahan, Sarawak, Malaysia

Alexander Kiew Sayok Institute of Biodiversity and Environmental Conservation, Universiti Malaysia Sarawak, Kota Samarahan, Sarawak, Malaysia

Faculty of Resource Science and Technology, Universiti Malaysia Sarawak, Kota Samarahan, Sarawak, Malaysia

Nursyafiqah Shazali Department of Zoology, Faculty of Resource Science and Technology, Universiti Malaysia Sarawak, Kota Samarahan, Sarawak, Malaysia

Charles H. Smith University Libraries, Western Kentucky University, Bowling Green, KY, USA

Paul Spencer Sochaczewski Le Grand Saconnex, Switzerland

Oswald Braken Tisen Biodiversity Conservation Department, Protected Areas & Biodiversity Conservation, Sarawak Forestry Corporation, Kuching, Sarawak, Malaysia

Jugah Tagi Institute of Biodiversity and Environmental Conservation, Universiti Malaysia Sarawak, Sarawak, Malaysia

Andrew Alek Tuen Institute of Biodiversity and Environmental Conservation, Universiti Malaysia Sarawak, Kota Samarahan, Sarawak, Malaysia

Sing Tyan Pang Institute of Biodiversity and Environmental Conservation, Universiti Malaysia Sarawak, Kota Samarahan, Sarawak, Malaysia

Ik Wadell Ik Pahon Institute of Biodiversity and Environmental Conservation, Universiti Malaysia Sarawak, Kota Samarahan, Sarawak, Malaysia

John G. Wilson North Adelaide, South Australia, Australia

Hoi Sen Yong Institute of Biological Sciences, University of Malaya, Kuala Lumpur, Malaysia

Part I
Wallace and His Period

Wallace and Incipient Structures: A World of ‘More Recondite’ Influences

Charles H. Smith

Abstract Alfred Russel Wallace is well-known for his co-discovery of the principle of natural selection. Natural selection is usually considered a process, but it is not clear that Wallace regarded it in exactly these terms. In fact he more likely thought of the relationships involved as representing what we would now term a “state space,” a negative feedback loop wherein populations are maintained at healthy levels through elimination of the unfit. Both before and after the advent of natural selection, Wallace clung to the idea that “more recondite forces” were shaping the nature and direction of evolution; this is especially evident in his treatment of incipient structures, and continuing allusions to the probable existence of extenuating local influences on process. In this work, the history of these leanings is detailed, in the hope that Wallace’s overall position on evolution may be better understood.

1 Introduction

In February of 1858, Alfred Russel Wallace, weak with fever, had a now-famous epiphany. Recalling his field experiences of the past several years and adding to them the logic of Malthus, he came up with a principle, natural selection, which seemed to explain how populations might indefinitely move away from “original types.” Pleased with his thinking, he decided to write up the idea as an essay and send it to Charles Darwin, who he knew through earlier correspondence, was interested in the subject. But his real target was Charles Lyell, whose theories on biogeography he had just challenged in a paper published in late 1857 (Wallace 1857), and to whom Wallace was asking Darwin to relay the manuscript if he thought it worthy. Wallace now had a theory that backed his criticisms, and he must have been very eager to receive some feedback. Fate intervened, however, and Lyell never

C.H. Smith (✉)
University Libraries, Western Kentucky University,
1906 College Heights Boulevard, Bowling Green, KY 42101, USA
e-mail: charles.smith@wku.edu

responded: instead the essay was read before the Linnean Society 2 weeks later and published immediately, without Wallace's permission.

Although initially Wallace was overjoyed to receive this attention from two of the world's top naturalists, as time wore on he seems to have become less pleased about this treatment. Although too polite to be outwardly derogatory, he nevertheless drew attention no fewer than five times over the next 40-odd years, in print, to how he had never been given the option of going over proofs before the essay was published. Was there something more – or less – that he had wanted to say? Had he been prematurely cut off, and then unfairly cast as a “Darwinist,” as opposed to just an “evolutionist”?

The ramifications of this question will never be thoughtfully explored if we continue to pay most of our attention to the Ternate essay in terms of sensationalist accusations of intellectual theft on the part of Darwin. Frankly, of what importance is this matter to Wallace studies? Does it help us better understand Wallace's intellectual path to that point? I think not.

In this paper, I will examine some threads of that journey that I feel go a long way toward explaining Wallace's words in the Ternate essay, and many of his subsequent directions. Let us begin by noting that Wallace himself regarded his principle not as a theory, but as a law (see Wallace 1870a: 302, and many other such referrals); accordingly, in Wallace's eyes natural selection was not so much the “survival of the fittest” as it was the “elimination of the unfit.” Lest there be any doubt on this score, note the following Wallace words, three from published articles of his:

Natural selection . . . does not so much select special variations as exterminate the most unfavourable ones (from an 1866 letter to Darwin printed in Marchant 1916).

The survival of the fittest is really the extinction of the unfit. In nature this occurs perpetually on an enormous scale, because, owing to the rapid increase of most organisms, the unfit which are yearly destroyed form a large proportion of those that are born (Wallace 1890: 337)

The survival of the fittest is really the extinction of the unfit . . . (Anonymous 1893: 3)

It is undoubtedly this survival, by extermination of the unfit, combined with universally present variation, which brings about that marvellous *adaptation to the ever-varying environment* . . . (Wallace 1908a: 424)

The survival of the fittest is really the extinction of the unfit . . . (Wallace 1913: 152)

Wallace's view of the matter is also evident in famous words he included in the Ternate essay itself:

. . . The action of this principle is exactly like that of the centrifugal governor of the steam engine, which checks and corrects any irregularities almost before they become evident; and in like manner no unbalanced deficiency in the animal kingdom can ever reach any conspicuous magnitude, because it would make itself felt at the very first step, by rendering existence difficult and extinction almost sure soon to follow (Wallace 1858: 62).

In 1972 the anthropologist Gregory Bateson made a related observation:

. . . The steam engine with a governor is simply a circular train of causal events, with somewhere a link in that chain such that the more of something, the less of the next thing in the circuit . . . If causal chains with that general characteristic are provided with energy, the result will be . . . a self-corrective system. Wallace, in fact, proposed the first cybernetic model . . . Basically these systems are always *conservative* . . . in such systems changes occur to conserve the truth of some descriptive statement, some component of the *status quo*. Wallace saw the matter correctly, and natural selection acts primarily to keep the species unvarying . . . (Bateson 1972: 435)