Recent Advances in Human Biology – Volume 4

Series editor: Charles E. Oxnard

The Natural History of the Doucs and Snub-nosed Monkeys

edited by Nina G. Jablonski

World Scientific

Series editor: Charles E. Oxnard

Centre for Human Biology The University of Western Australia

The Natural History of the Doucs and Snub-nosed Monkeys

edited by

Nina G. Jablonski

California Academy of Sciences

Published by

World Scientific Publishing Co. Pte. Ltd.

P O Box 128, Farrer Road, Singapore 912805

USA office: Suite 1B, 1060 Main Street, River Edge, NJ 07661 UK office: 57 Shelton Street, Covent Garden, London WC2H 9HE

British Library Cataloguing-in-Publication Data

A catalogue record for this book is available from the British Library.

THE NATURAL HISTORY OF THE DOUCS AND SNUB-NOSED MONKEYS

Copyright © 1998 by World Scientific Publishing Co. Pte. Ltd.

All rights reserved. This book, or parts thereof, may not be reproduced in any form or by any means, electronic or mechanical, including photocopying, recording or any information storage and retrieval system now known or to be invented, without written permission from the Publisher.

For photocopying of material in this volume, please pay a copying fee through the Copyright Clearance Center, Inc., 222 Rosewood Drive, Danvers, MA 01923, USA. In this case permission to photocopy is not required from the publisher.

ISBN 981-02-3131-8

Printed in Singapore.

Contributors

William *Bleisch*, GEF Project Office, Division of Nature Reserve Management, Ministry of Forestry, No. 18 East Street, Hepingli, Beijing 100714, China.

Ramesh *Boonratana*, c/o Nantiya Aggimarangsee, Department of Biology, Faculty of Science, Chiang Mai University, Chiang Mai 50002, Thailand.

Judith M. Caton, Department of Archaeology and Anthropology, The Australian National University, Canberra, ACT 0200, Australia.

George *Chaplin*, Department of Anthropology, California Academy of Sciences, Golden Gate Park, San Francisco, CA 94118-4599.

Ellen S. Dierenfeld, Wildlife Conservation Society, The Bronx, NY 10460.

Hu Yunfeng, Shennongjia National Nature Reserve, Hubei, China.

Hu Zhenglin, Shennongjia National Nature Reserve, Hubei, China.

Nina G. *Jablonski*, Department of Anthropology, California Academy of Sciences, Golden Gate Park, San Francisco, CA 94118-4599.

Ji Weizhi, Kunming Institute of Zoology, Chinese Academy of Sciences, Kunming, Yunnan 650223, China.

Jiang Xuelong, Kunming Institute of Zoology, Chinese Academy of Sciences, Kunming, Yunnan 650223, China.

R. Craig *Kirkpatrick*, Ecology Graduate Group, Department of Anthropology, University of California, Davis, CA 95616-8522.

Le Xuan Canh, Department of Zoology, Institute of Ecology and Biological Resources, NCSR Vietnam, Nghia Do - Tu Liem, Socialist Republic of Vietnam.

Li Dewu, Department of Biology, Central China Normal University, Wuhan, Hubei, China.

Li Jinjun, Department of Psychology, Peking University, Beijing 100871, China.

Lois *Lippold*, Department of Anthropology, San Diego State University, San Diego, CA 92182-4443.

Liu Zhenmei, Guizhou Normal University, Guiyang, Guizhou 550001, China.

Long Yongcheng, Kunming Institute of Zoology, Chinese Academy of Sciences, Kunming, Yunnan 650223, China.

Pan Ruliang, Kunming Institute of Zoology, Chinese Academy of Sciences, Kunming, Yunnan 650223, China; and Department of Anatomy and Human Biology, The University of Western Australia, Nedlands, Western Australia 6907, Australia (current address).

Ren Renmei, Department of Psychology, Peking University, Beijing 100871, China.
Oliver A. Ryder, Zoological Society of San Diego, P.O. Box 551, San Diego, CA 92112.

Shang Enyuan, Kunming Institute of Zoology, Chinese Academy of Sciences, Kunming, Yunnan 650223, China.

Su Yanjie, Department of Psychology, Peking University, Beijing 100871, China.

Tian Baoping, Kunming Institute of Zoology, Chinese Academy of Sciences, Kunming, Yunnan 650223, China.

Vu Ngoc Thanh, Department of Biology, National University, Hanoi, Socialist Republic of Vietnam.

Wang Yingxiang, Kunming Institute of Zoology, Chinese Academy of Sciences, Kunming, Yunnan 650223, China.

Xiao Long, Administrative Bureau of Baimaixueshan Nature Reserve, Deqin, Yunnan 674500, China.

Xie Jiehua, Guizhou Normal University, Guiyang, Guizhou 550001, China.

Yan Kanghui, Department of Psychology, Peking University, Beijing 100871, China.

Yang Shangchuan, Kunming Institute of Zoology, Chinese Academy of Sciences, Kunming, Yunnan 650223, China.

Zhang Yaping, Kunming Institute of Zoology, Chinese Academy of Sciences, Kunming, Yunnan 650223, China.

Zhong Tai, Administrative Bureau of Baimaixueshan Nature Reserve, Deqin, Yunnan 674500, China.

Zhou Hongwu, Kunming Institute of Zoology, Chinese Academy of Sciences, Kunming, Yunnan 650223, China.

Zhou Yin, Department of Psychology, Peking University, Beijing 100871, China.

Zhu Zhaoquan, Shennongjia National Nature Reserve, Hubei, China.

Zou Rujin, Kunming Institute of Zoology, Chinese Academy of Sciences, Kunming, Yunnan 650223, China.

Contents

Contribute Preface	ors	xv xii
Chapter 1	Introduction Nina G. Jablonski	1
PART I	Evolution and Systematics	
Chapter 2	The Evolution of the Doucs and Snub-nosed Monkeys and the Question of the Phyletic Unity of the Odd-nosed Colobines Nina G. Jablonski	13
Chapter 3	Classification and Distribution of the Extant Subspecies of Golden Snub-nosed Monkey (Rhinopithecus [Rhinopithecus] roxellana) Wang Yingxiang, Jiang Xuelong and Li Dewu	53
Chapter 4	Mitochondrial Cytochrome b Gene Sequences of Langurs: Evolutionary Inference and Conservation Relevance Zhang Yaping and Oliver A. Ryder	65
PART II	Anatomy	
Chapter 5	The Integument of the "Odd-nosed" Colobines George Chaplin and Nina G. Jablonski	79
Chapter 6	Mandibular Morphology of the Doucs and Snub-nosed Monkeys in Relation to Diet Nina G. Jablonski, Pan Ruliang and George Chaplin	105
Chapter 7	The Morphology of the Gastrointestinal Tract of Pygathrix nemaeus (Linneaus, 1771)	129

PART III	Ecology and Behavior	
Chapter 8	Ecology and Behavior in Snub-nosed and Douc Langurs R. Craig Kirkpatrick	155
Chapter 9	Natural History of Douc Langurs Lois K. Lippold	191
	Preliminary Observations of the Ecology and Behavior of the Tonkin Snub-nosed Monkey (Rhinopithecus [Presbytiscus] avunculus) in Northern Vietnam Ramesh Boonratana and Le Xuan Canh	207
Chapter 11	Ecology and Behavior of the Guizhou Snub-nosed Langur (Rhinopithecus [Rhinopithecus] brelichi), with a Discussion of Socioecology in the Genus William V. Bleisch and Xie Jiahua	217
Chapter 12	Selected Nutrient Analysis of Plants in the Diet of the Guizhou Snub-nosed Monkey (Rhinopithecus [Rhinopithecus] brelichi) William V. Bleisch, Liu Zhenmei, Ellen S. Dierenfeld and Xie Jiahua	241
	Preliminary Survey of the Home Range and Ranging Behavior of Golden Monkeys (Rhinopithecus [Rhinopithecus] roxellana) in Shennongjia National Natural Reserve, Hubei, China Su Yanjie, Ren Renmei, Yan Kanghui, Li Jinjun, Yin Zhou, Zhu Zhaoquan, Hu Zhenlin and Hu Yunfeng	255
Chapter 14	Preliminary Survey of the Social Organization of <i>Rhinopithecus</i> [Rhinopithecus] roxellana in Shennongjia National Natural Reserve, Hubei, China Ren Renmei, Su Yanjie, Yan Kanghui, Li Jinjun, Yin Zhou, Zhu Zhaoquan, Hu Zhenlin and Hu Yunfeng	269
Chapter 15	Time Budgets of the Yunnan Snub-Nosed Monkey (Rhinopithecus [Rhinopithecus] bieti) Long Yongcheng, R. Craig Kirkpatrick, Xiao Lin and Zhong Tai	279
PART IV	Conservation	
Chapter 16	Primate Conservation in Vietnam Lois K. Lippold and Vu Ngoc Thanh	293
Chapter 17	Conservation Status and Prospects of the Snub-nosed Langurs (Colobinae: Rhinopithecus) Ren Renmei, R. Craig Kirkpatrick, Nina G. Jablonski, William V. Bleisch and Le Xuan Canh	301

CONTENTS	xiii
Chapter 18 Conservation of Tonkin Snub-nosed Monkey (Rhinopithecus [Presbytiscus] avunculus) in Vietnam Ramesh Boonratana and Le Xuan Canh	315
Chapter 19 Maintenance and Breeding of Yunnan Snub-nosed Monkeys (Rhinopithecus [Rhinopithecus] bieti) in Captivity Ji Weizhi, Zou Rujin, Shang Enyuan, Zhou Hongwu, Yang Shangchuan and Tian Baoping	323
APPENDIX Toward a Gazetteer of the Snub-nosed and Douc Langurs R. Craig Kirkpatrick	337
INDEX	373