

ROUTLEDGE



ROUTLEDGE
HANDBOOKS



The Routledge Handbook of Bioarchaeology in Southeast Asia and the Pacific Islands

Edited by Marc Oxenham and Hallie Buckley

The Routledge Handbook of Bioarchaeology in Southeast Asia and the Pacific Islands

In recent years the bioarchaeology of Southeast Asia and the Pacific Islands has seen enormous progress. This new and exciting research is synthesised, contextualised and expanded upon in *The Routledge Handbook of Bioarchaeology in Southeast Asia and the Pacific Islands*.

The volume is divided into two broad sections, one dealing with mainland and island Southeast Asia, and a second section dealing with the Pacific Islands. A multi-scale approach is employed to the bio-social dimensions of Southeast Asia and the Pacific Islands with contributions varying between region and/or site-specific scales of operation to the individual or personal scale. The more personal level of osteobiographies enriches the understanding of the lived experience in past communities.

By including a number of contributions from sub-disciplinary approaches tangential to bioarchaeology, the book provides a broad theoretical and methodological approach. It provides new information on the globally relevant topics of farming, population mobility, subsistence and health; no other volume provides such a range of coverage on these important themes.

Marc Oxenham is Reader of Archaeology and Biological Anthropology at the School of Archaeology and Anthropology, Australian National University.

Hallie R. Buckley is Associate Professor at the Department of Anatomy of the Otago School of Medical Sciences, University of Otago, New Zealand.

The Routledge Handbook of Bioarchaeology in Southeast Asia and the Pacific Islands

Edited by Marc Oxenham and Hallie R. Buckley

 **Routledge**
Taylor & Francis Group
LONDON AND NEW YORK

First published 2016

by Routledge

2 Park Square, Milton Park, Abingdon, Oxon OX14 4RN

and by Routledge

711 Third Avenue, New York, NY 10017

Routledge is an imprint of the Taylor & Francis Group, an informa business

© 2016 selection and editorial matter Marc Oxenham and Hallie R. Buckley; individual chapters, the contributors

The right of the editors to be identified as the authors of the editorial material, and of the authors for their individual chapters, has been asserted in accordance with sections 77 and 78 of the Copyright, Designs and Patents Act 1988.

All rights reserved. No part of this book may be reprinted or reproduced or utilised in any form or by any electronic, mechanical, or other means, now known or hereafter invented, including photocopying and recording, or in any information storage or retrieval system, without permission in writing from the publishers.

Trademark notice: Product or corporate names may be trademarks or registered trademarks, and are used only for identification and explanation without intent to infringe.

British Library Cataloguing-in-Publication Data

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

Library of Congress Cataloging-in-Publication Data

The Routledge handbook of bioarchaeology in Southeast Asia and the Pacific Islands / edited by Marc Oxenham and Hallie Buckley
pages cm

Includes index.

1. Human remains (Archaeology)—Southeast Asia. 2. Human remains (Archaeology)—Pacific Ocean. I. Oxenham, Marc, editor, author. II. Buckley, Hallie, editor, author.

CC79.5.H85R68 2015

930.1—dc23

2015016135

ISBN: 978-1-138-77818-4 (hbk)

ISBN: 978-1-315-72544-4 (ebk)

Typeset in Bembo Std

by Swales & Willis Ltd, Exeter, Devon, UK

List of figures

List of tables

List of contributors

Foreword by Clark Spencer Larsen

A dedication

1 Bioarchaeology in Southeast Asia and the Pacific

Hallie R. Buckley and Marc Oxenham

PART I

Mainland and island Southeast Asia

2 The population history of mainland and island Southeast Asia

Marc Oxenham and Hallie R. Buckley

3 Human cultural, technological and adaptive changes from the end of the Pleistocene to the mid-Holocene in Southeast Asia

Philip J. Piper

4 Prehistoric mortuary traditions in Cambodia

Dougald O'Reilly and Louise Shewan

5 Frail, foreign or favoured? A contextualized case study from Bronze Age northeast Thailand

Kate Domett, Jennifer Newton, Alana Colbert, Nigel Chang and Siân E. Halcrow

6 Reflections on life and Times in Neolithic Vietnam: one person's story

Lorna Tilley and Marc Oxenham

7 Investigating activity and mobility patterns during the mid-Holocene in northern Vietnam

Damien Huffer and Marc Oxenham

8 Reconstructing diet at An Sơn and Hòa Diêm: implications for understanding Southeast Asian subsistence patterns

Anna Willis and Marc Oxenham

9 Infant and child health and disease with agricultural intensification in mainland Southeast Asia

Siân E. Halcrow, Nancy Tayles and Charlotte L. King

10 To follow in their footsteps: an examination of the burial identity of the elderly from Non Nok

- 11 Age-at-death estimation in a sample of Prehistoric Southeast Asian adolescents and adults
Nancy Tayles and Siân E. Halcrow
- 12 Cremation in mainland Southeast Asia: an overview
Stacey Ward and Nancy Tayles
- 13 Social affiliation, settlement pattern histories and subsistence change in Neolithic Borneo
Lindsay Lloyd-Smith, John Krigbaum and Benjamin Valentine
- 14 Field anthropology in Southeast Asia and the Pacific: initial steps toward a regional overview and the Pain Haka case study
Nathaniel J. Harris, Hallie R. Buckley, Siân E. Halcrow, Rebecca L. Kinaston, Aimee Foster, Truman Simanjantuk and Jean-Christophe Galipaud
- 15 Dealing with death in late Neolithic to Metal Period Nagsabaran, the Philippines
Marc Oxenham, Anna Willis, Hsiao-chun Hung, Ruth Page and Hirofumi Matsumura
- 16 Implications of pathological changes in cremated human remains from Palawan, Philippines, for island Southeast Asian archaeology
Myra Lara, Helen Lewis, Victor Paz and Wilfredo Ronquillo

PART II

The Pacific Islands

- 17 Bioarchaeology in the Pacific Islands: a temporal and geographical examination of nutritional and infectious disease
Hallie R. Buckley and Marc Oxenham
- 18 Human biology and population histories in the Pacific – is there such thing as a Lapita people?
Elizabeth A. Matisoo-Smith
- 19 Socio-environmental adaption to the montane rainforests of New Guinea
Tim Denham
- 20 Is there a ‘Lapita diet’? A comparison of Lapita and post-Lapita skeletal samples from four Pacific Island archaeological sites
Rebecca L. Kinaston, Stuart Bedford, Matthew Spriggs, Dimitri Anson and Hallie R. Buckley
- 21 Dogs and people in Southeast Asia and the Pacific
Karen Greig, Richard Walter and Elizabeth A. Matisoo-Smith
- 22 Scratching out a living: chickens in ancient Pacific economies

23 Adapting to Palau

Greg C. Nelson, Jessica H. Stone, Scott M. Fitzpatrick

24 Under the *Latte*: osteobiography and social context of a burial assemblage at Tumon Bay, Guam

Ann L. W. Stodder, Elisa Melanie Ryan, Rosalind L. Hunter-Anderson, Michele Toomay Douglas and Rona Ikehara-Quebral

25 Diet and subsistence in remote Oceania: an analysis using oral indicators of diet

Christina Stantis, Nancy Tayles, Rebecca L. Kinaston, Claire Cameron, Patrick D. Nunn, Michael P. Richards and Hallie R. Buckley

26 Dental calculus and plant diet in Oceania

Monica Tromp, John V. Dudgeon, Hallie R. Buckley and Elizabeth A. Matisoo-Smith

27 What archaeologists want human biologists to tell them, about Teouma for example

Matthew Spriggs

28 The ancestors speak: Ko-iwi Tangata, Mātauranga Māori and the development of biological anthropology in New Zealand

Katharina Ruckstuhl, Nancy Tayles, Hallie R. Buckley, Richard Bradley, Roger Fyfe and Matapura Ellison

29 Meta-themes in the bioarchaeology of the Asia-Pacific region

Marc Oxenham and Hallie R. Buckley

Index

- 2.1 Mainland Southeast Asia
- 2.2 Island Southeast Asia
- 3.1 The geographic distribution of archaeological sites referred to in the text that produced evidence of human subsistence strategies, bone implements and edge-ground stone technologies during the Late Pleistocene to mid-Holocene across Southeast Asia and Melanesia
- 3.2 A selection of early Holocene bone implement types from Golo Cave, Gebe Island, Moluccas
- 3.3 Edge-ground stone adzes dating to the early Holocene from Xom Trai Cave, northern Vietnam
- 3.4 The geographic distribution of archaeological sites referred to in the text that produced shell adzes and human burials from the terminal Pleistocene to mid-Holocene in Southeast Asia and Melanesia
- 3.5 Edge-ground shell adze directly dated to 5,550–5,250 cal BCE (S-ANU-35132) from Bubog I rock shelter on Ilin Island, Mindoro
- 3.6 Burial No. 27 from the West Mouth of Niah Caves showing a flexed inhumation with a rhinoceros radius, utilized as a ‘pillow’
- 3.7 An early Holocene flexed inhumation from Song Terus, Java, associated with a complete Javan lutung (*Trachypithecus auratus*) skull
- 4.1 Map of Phum Snay showing locations of various excavations
- 4.2 A selection of artifacts found at prehistoric sites in Cambodia
- 4.3 Burial 7 from Phum Sophy with associated artifacts found in the burial context
- 5.1 The range of characteristics of an interment that carry information on social identity
- 5.2 Ban Non Wat contour map showing the excavations relative to the current topography
- 5.3 Burial 676 *in situ*
- 5.4 Burial 676 and B677 and associated mortuary goods
- 5.5 Grave goods associated with B676
- 5.6 Stature (cm) estimates of each individual from the Series 2 excavations at Ban Non Wat
- 5.7 Pathology in B676
- 5.8 B676 left forearm, left radius and ulna
- 5.9 B676 left distal radius
- 5.10 Dentition of B676
- 5.11 Ban Non Wat Series 1 and 2 $^{87}\text{Sr}/^{86}\text{Sr}$ values per individual with non-local signatures circled
- 5.12 $^{87}\text{Sr}/^{86}\text{Sr}$ outliers by mortuary phase at Ban Non Wat (Series 1 and 2 data)
- 5.13 $\delta^{13}\text{C}$ and $\delta^{18}\text{O}$ values for Series 1 and 2 humans and pigs at Ban Non Wat (includes outliers)
- 5.14 Ban Non Wat Series 1 and 2 $\delta^{13}\text{C}$ values by mortuary phase (excludes Series 1 outliers)
- 6.1 The Man Bac cemetery excavation site and surrounds, looking southwest
- 6.2 MB07H1M09 (M9) *in situ* just prior to lifting (preserved grave goods have been removed)
- 6.3 The third and final level of burials at Man Bac cemetery, looking east
- 6.4 MB07H2M08, a subadult of ~18 months, was interred with bivalve shells in both hands and a

cluster of six shells (cowrie, clam and gastropod) at the level of the left hand

8.1 $\delta^{13}\text{C}_{\text{collagen}}$ and $\delta^{15}\text{N}_{\text{collagen}}$ values for An Sơn and Hoà Diêm

8.2 $\delta^{13}\text{C}_{\text{apatite}}$ and $\delta^{15}\text{N}_{\text{collagen}}$ values for An Sơn and Hoà Diêm

8.3 $\delta^{13}\text{C}_{\text{apatite}}$ and $\delta^{13}\text{C}_{\text{collagen}}$ values for An Sơn and Hoà Diêm

8.4 $\Delta^{13}\text{C}_{\text{apatite-collagen}}$ and $\delta^{15}\text{N}_{\text{collagen}}$ values for An Sơn and Hoà Diêm

8.5 $\delta^{13}\text{C}_{\text{collagen}}$ and $\delta^{13}\text{C}_{\text{apatite}}$ plotted by $\Delta^{13}\text{C}_{\text{apatite-collagen}}$ for An Sơn

8.6 $\delta^{13}\text{C}_{\text{collagen}}$ and $\delta^{15}\text{N}_{\text{collagen}}$ values for Southeast Asia and China

8.7 $\delta^{13}\text{C}_{\text{apatite}}$ and $\delta^{15}\text{N}_{\text{collagen}}$ values for Southeast Asia and China

8.8 Enamel $\delta^{13}\text{C}_{\text{apatite}}$ values for Southeast Asia

8.9 Multivariate model presenting diets of the sites with $\delta^{15}\text{N}_{\text{collagen}}$, $\delta^{13}\text{C}_{\text{collagen}}$ and $\delta^{13}\text{C}_{\text{apatite}}$ values

9.1 Chronological relationships among the sites

11.1 Auricular surface with a pseudo 'transverse organisation' in an old adult, female Burial 154

11.2 Auricular surface with nodules (examples indicated by arrows)

11.3 Thai rice farmers illustrating the full flexion at the hip joints readily adopted while transplanting rice

11.4 Thai villager happily adopting a full squatting posture while excavating at Ban Non Wat

12.1 (A) Heat fracturing indicative of 'dry' cremation on burial 2+700 - 2+702(L)A; (B) Heat fracturing of 'fresh' cremation on burial 2+376 - 2+378(R) BS09 - BP2; (C) Heat fracturing indicative of 'fresh' cremation on burial 6+776 - 6+774(L); (D) Heat fracturing indicative of 'fleshed' cremation on burial 5+918 - 5+920(L)

13.1 Niah River and Gunung Subis limestone massif, north Borneo

13.2 Examples of Niah Neolithic burial

13.3 The West Mouth of the Niah Great Cave Neolithic and post-Neolithic cemetery with proposed burial groups indicated

13.4 Burial chronologies in the West Mouth and Lobang Jeragan cemeteries

13.5 Lobang Jeragan Neolithic cemetery plan with descriptive Burial Group zones indicated

13.6 Isotopic boxplots of site/burial phase for all individuals (M3 and M2)

13.7 Strontium isotope values of all sampled individuals from the West Mouth and Lobang Jeragan Neolithic cemeteries

13.8 OPTICS clusters for all individuals sampled (M1, M2, and M3) from West Mouth and Lobang Jeragan Neolithic cemeteries

13.9 Bivariate scatterplots: Pb vs Pb (a), Sr vs Pb (b), and Sr vs $d^{13}\text{C}$ (c)

13.10 Burial chronologies, cemetery and settlement pattern histories, individual life-histories, and diet: a proposed schematic interpretation

14.1 Burial 15a and 15b, secondary adult bundle burials

14.2 Burial 28, a secondary mid-aged adult female jar burial

14.3 Burial 22, a secondary adolescent male jar burial with evidence of dismemberment before decomposition

- 14.4 Burial 29a, a young adult female inhumation with missing skull
- 14.5 Burial 12, a young adult male inhumation burial in a loose durable wrapping
- 14.6 Burial 21. Remains from four individuals
- 15.1 Burial NAG 2000 B2. Note extreme flexure of all limbs into a form of body bundle
- 15.2 Burial NAG 2009 T14 B4. Note retention of cranium and ankylosis of left hip, causing flexure of the left knee
- 15.3 Neighbour-joining tree generated from Q-mode correlation coefficients, based on 28 dental measurements
- 15.4 Neighbour-joining tree generated from Q-mode correlation coefficients, based on 28 dental measurements, including the Aeta Negrito sample for comparison
- 15.5 NAG 2009 T14 B4 left ankylosed hip. (a) antero-lateral aspect; (b) medio-posterior aspect
- 15.6 NAG 2009 T14 B4 left ankylosed hip. Radiograph of antero-posterior aspect
- 16.1 Map showing location of the Ille site in the Dewil Valley, El Nido, northern Palawan
- 16.2 Map of Ille showing opened trenches and the locations of the three cremation burials discussed in Chapter 16, Contexts 758, 1324, and 2228
- 16.3 Refitted fragments in Context 758
- 16.4 Abnormal bone modification on the greater tubercle of the right humerus compared to the left humerus of the same individual in Context 758
- 16.5 Abnormal bone modification on the popliteal surface of the left femur in Context 758
- 16.6 Abnormal bone deposition on the antero-lateral surface of the left femur at about the fourth proximal level in Context 758
- 16.7 Abnormal bone deposition on the inferior surface of the sphenoid in Context 1324
- 16.8 Abnormal bone deposition on the external surface of a rib fragment in Context 1324
- 16.9 Lamellar bone deposit on the lateral surface of a metacarpal or metatarsal shaft fragment of a juvenile in Context 1324
- 17.1 The geography of the Pacific Islands, indicating island and site locations referred to in subsequent chapters and key biogeographical landmarks
- 19.1 Map of Sahul and Near Oceania showing sites and regions discussed in the text 410–11
- 19.2 Degrees of human selective pressure associated with different types of practice
- 19.3 The archaeology of early agriculture in the highlands of New Guinea
- 20.1 Human carbon and nitrogen stable isotope ratios from each site
- 20.2 Pig carbon and nitrogen stable isotope ratios from each site
- 20.3 Human stable isotope results compared with the Pacific Island dietary baseline
- 21.1 Map showing natural distribution of wolves, the proposed centre of dog domestication based on DNA analysis south of the Yangtze River and selected Neolithic sites with dog remains in mainland and island Southeast Asia mentioned in the text
- 21.2 Map showing early distribution of dogs in the Pacific, from archaeological contexts and reported by eighteenth and nineteenth century European voyages in the region
- 22.1 Oldest confirmed ages for Pacific chicken remains, either directly or by contextual association
- 23.1 Location of Chelechol ra Orrak (“beach of Orrak”) on the western, lagoon side of Orrak Island just off the southeastern tip of Babeldaob, the main island in the Palauan archipelago
- 23.2 Site plan of the Chelechol ra Orrak cemetery

23.3 Burials 11 and 16 *in situ*

23.4 Examples of pathology found at Orrak

24.1 Artist's reconstruction of a small *latte* house in which three pairs of pillars and capstones hold the foundation for a wood and thatch superstructure

24.2 Location of Guam and the Mariana Islands, the distribution and density of *latte* sets on Guam, and the location of Tumon Bay

24.3 Mortuary practices recorded in Hyatt Site burials

24.4 Distribution of burial types: all burials, males, females, and subadults

24.5 Tumon Bay Hyatt site map and demographic composition of burial groups

24.6 MMD, burial Groups 4, 6, and 8

24.7 Burial sequence C in burial Group 4

25.1 $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ bone collagen isotope results for the Bourewa and 'Atele remains

25.2 $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ plotted against individual caries frequency by site with linear regression lines

25.3 $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ plotted against individual AMTL frequency by site with linear regression lines

25.4 $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ plotted against individual periodontitis frequency by site with linear regression lines

25.5 $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ plotted against individual occlusal edge chipping frequency by site with linear regression lines

25.6 $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ plotted against individual dentin exposure frequency by site with linear regression lines

26.1 Supragingival and subgingival dental calculus deposits

26.2 Examples of sugarcane stem and banana leaf reference phytoliths

26.3 Examples of archaeological diatoms recovered from Rapa Nui dental calculus

26.4 Sweet potato starch grains shown in cross-polarized and standard light microscopy

26.5 Map of Rapa Nui showing sites that were sampled in this case study

26.6 Examples of phytolith morphotypes recovered from Rapa Nui dental calculus

26.7 Sweet potato-type starch grains recovered from Rapa Nui dental calculus

26.8 Globular echinate (palm) phytoliths embedded in sweet potato skin

- 4.1 Dates for the mortuary contexts of sites mentioned in the text
- 4.2 Summary of burial assemblages
- 5.1 Female stature estimates for prehistoric Southeast Asia
- 5.2 Enamel hypoplasia among the permanent incisors and canines in the Series 2 sample at Ban Non Wat (individual count)
- 5.3 Enamel hypoplasia among the permanent incisors and canines in the Series 2 sample at Ban Non Wat (tooth count)
- 5.4 Caries among the permanent dentition in the Series 2 sample at Ban Non Wat
- 5.5 Caries among the permanent dentition in the Series 2 sample at Ban Non Wat (tooth count)
- 5.6 Periapical cavities among the permanent adult dentition in the Series 2 sample at Ban Non Wat
- 5.7 Periapical cavities among the permanent adult dentition in the Series 2 sample at Ban Non Wat (tooth count)
- 5.8 Antemortem tooth loss among the permanent dentition in the Series 2 sample at Ban Non Wat
- 5.9 Antemortem tooth loss among the permanent dentition in the Series 2 sample at Ban Non Wat (tooth count)
- 7.1 Entheses requiring rescoring after intra-observer error assessment
- 7.2 Sex-based, side-averaged, lower body entheses variation: Man Bac
- 7.3 Sex-based, side-averaged, upper body entheses variation: Man Bac
- 7.4 Sex-based, side-averaged, lower body entheses variation: Con Co Ngua
- 7.5 Sex-based, side-averaged, upper body entheses variation: Con Co Ngua
- 7.6 Pooled population-level enthesial variation
- 7.7 Full-body male and female PCA analysis: Man Bac
- 7.8 Full-body male and female PCA analysis: Con Co Ngua
- 7.9 Man Bac cross-sectional property means and variation
- 7.10 Humeral median % bilateral asymmetry and sexual dimorphism
- 7.11 Man Bac cross-sectional properties compared to select global populations
- 8.1 Stable isotope data for An Sơn
- 8.2 Stable isotope summary data for An Sơn by sex
- 8.3 Stable isotope data for Hòa Diêm
- 8.4 Stable isotope summary data for Hòa Diêm by sex
- 9.1 The region, cemetery dates and percentage of infants and children in the samples
- 9.2 Comparative age-at-death distributions of the infants and children from the sites
- 9.3 Sex distribution of adults at the sites
- 9.4 Comparative prevalences of linear enamel hypoplasia in the permanent teeth
- 9.5 Comparative prevalences of localised hypoplasia of the primary canine
- 9.6 Prevalence of cribra orbitalia in the samples by age group
- 9.7 Prevalence of periostitis in the samples by age group

- 9.8 Prevalence of endocranial new bone growth in the infant and child samples
- 9.9 Caries prevalence in the deciduous and permanent teeth for the infant and child sample
- 9.10 Relative prevalences of indicators of health of the infants and children among the sites
- 9.11 Factors relating to the prevalence of parasites
- 9.1–8A Supplementary tables
- 9.2.1A Infant mortality age distribution at the sites
- 10.1 Demographic structure at Non Nok Tha
- 10.2 Burial variables and variable outcomes used in this study
- 10.3 Summary of material culture burial variables used in this study
- 10.4 Summary of burial characteristics used in this study
- 10.5 Statistical comparisons of material culture by age-at-death and sex
- 10.6 Statistical comparisons of burial characteristics by age-at-death and sex
- 10.7 Statistical comparison of potentially significant variables by age-at-death and sex
- 10.8 Tests of GLM model effects – interaction by age-at-death, sex and mortuary phase
- 11.1 Definition of adolescent age groups
- 11.2 Age composition of the Ban Non Wat sample
- 11.3 Adult mortality for each sex by age groups
- 11.4 Availability of age estimators for each sex
- 11.5 Age estimators used for those with sex estimates
- 11.6 Age estimators used by age group
- 11.7 Revised adult mortality rates by sex
- 12.1 Estimated age and sex, bone counts and bone colour information for each cremation burial in the Lax Xang sample
- 12.2 Heat fracturing information for each cremation burial in the Lan Xang sample
- 13.1 Classification of burial types in the West Mouth, Niah Cave
- 13.2 Burial types, numbers investigated, and their proposed main phases in the West Mouth and Lobang Jeragan, Niah Caves, Sarawak
- 13.3 Proposed spatial burial groups in the Neolithic and post-Neolithic cemetery in the West Mouth of Niah Great Cave
- 13.4 Isotope data for all samples from the Niah Cave West Mouth and Lobang Jeragan Neolithic cemeteries
- 13.5 Descriptive statistics for human $\delta^{13}\text{C}$ and $\delta^{18}\text{O}$ results from Niah Cave West Mouth and Lobang Jeragan Neolithic burials
- 14.1 Burial context descriptions and criteria for their identification at Pain Haka
- 14.2 Age, sex, and provenance data for individuals buried at Pain Haka
- 14.3 Age and sex composition of the complete Pain Haka skeletal assemblage
- 14.4 Burial positions and frequencies identified at Pain Haka
- 15.1 Burial summary for Nagsabaran: 2000–2009 seasons
- 15.2 Skull and dental crown measurements and non-metric dental traits for NAG 2009 T14 B4
- 15.3 Comparative archeological dental samples from East/Southeast Asia
- 16.1 Preservation of three cremations

18.1 Distribution of mtDNA haplogroups in Near and Remote Oceania

20.1 Summary statistics for human stable isotope ratios for each site

20.2 Summary statistics for pig stable isotope ratios for each site

20.3 Teouma Lapita dental sample summary

20.4 Teouma post-Lapita dental sample summary

20.5 Uripiv Lapita dental sample summary

20.6 Uripiv post-Lapita dental sample summary

20.7 Vao Lapita dental sample summary

20.8 Vao post-Lapita dental sample summary

20.9 Watom Lapita dental sample summary

20.10 Teouma Lapita caries profile

20.11 Teouma post-Lapita caries profile

20.12 Uripiv Lapita caries profile

20.13 Uripiv post-Lapita caries profile

20.14 Vao Lapita caries profile

20.15 Vao post-Lapita caries profile

20.16 Watom Lapita caries profile

20.17 Teouma Lapita oral conditions

20.18 Teouma post-Lapita oral conditions

20.19 Uripiv Lapita oral conditions

20.20 Uripiv post-Lapita oral conditions

20.21 Vao Lapita oral conditions

20.22 Vao post-Lapita oral conditions

20.23 Watom Lapita oral conditions

21.1 Archaeological evidence for dogs in East Asia, MSEA and ISEA

21.2 Archaeological evidence for dogs in Remote Oceania

22.1 Earliest appearance of chickens in locales with securely prehistoric remains

22.2 Data for radiocarbon dates and isotope data

23.1 Radiocarbon dates from human bone and other sample types in burial deposits at the Chelechol ra Orrak cemetery

23.2 Age, sex, and presence/absence data for selected pathologies for the numbered complete or partial burials from Chelechol ra Orrak

23.3 Stable isotope data used for the analysis of prehistoric diet at Chelechol ra Orrak

23.4 Linear enamel hypoplasia occurrence rates for Chelechol ra Orrak and a comparative sample

23.5 Porotic hyperostosis, cribra orbitalia, and dental caries frequencies for Chelechol ra Orrak and a comparative sample

24.1 Guam archaeological stages and Tumon Bay Hyatt temporal groups

24.2 Life table and subadult/adult ratios, Tumon Bay Hyatt assemblage

24.3 Selected skull nonmetric traits with dichotomized variation

24.4 Skull nonmetric variation in three burial groups used for MMD analysis

24.5 MMD matrix for three burial groups and eight traits

24.6 Individuals in burial Sequence C

24.1A Explanation of abbreviations and codes in Appendix 24.2

24.2A Skull nonmetric data, Tumon Bay Hyatt burials

25.1 Site and sample summary for 'Atele, Bourewa and Rima Rau

25.2 Age and sex distribution of 'Atele and Bourewa with non-commingled remains

25.3 Raw pathology prevalences of the 'Atele population

25.4 Raw pathology prevalences of the Bourewa population

25.5 Raw pathology prevalences of the Rima Rau population

25.6 Raw pathology prevalences of all sites, combined

25.7 Model 1 of multi-level logistic regression

25.8 Model 2 of multi-level logistic regression

25.9 Model 3a of multi-level logistic regression

25.10 Model 3b of multi-level logistic regression

25.11 Descriptive summary of $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ results by site and sex

25.12 Results of Pearson's correlation coefficients

Dimitri Anson Department of Anthropology and Archaeology, University of Otago

Stuart Bedford School of Culture, History and Language, Australian National University

Richard Bradley Te Runanga a Rangitane o Wairau

Hallie R. Buckley Department of Anatomy, University of Otago

Claire Cameron Dunedin School of Medicine, University of Otago

Alana Colbert College of Arts, Society and Education, James Cook University

Nigel Chang College of Arts, Society and Education, James Cook University

Tim Denham School of Archaeology and Anthropology, The Australian National University

Kate Domett College of Medicine and Dentistry, James Cook University

Michele Toomay Douglas Department of Anthropology, University of Hawaii

John V. Dudgeon Department of Anthropology, Idaho State University

Matapura Ellison Kāti Huirapa Rūnaka ki Puketeraki

Scott M. Fitzpatrick Department of Anthropology, University of Oregon

Aimee Foster Department of Anatomy, University of Otago

Roger Fyfe Canterbury Museum

Jean-Christophe Galipaud Institut de Recherche pour le Développement

Karen Greig Department of Anatomy, University of Otago

Siân E. Halcrow Department of Anatomy, University of Otago

Nathaniel J. Harris Department of Anatomy, University of Otago

Damien Huffer Smithsonian Museum Conservation Institute

Hsiao-chun Hung School of Archaeology and Anthropology, The Australian National University

Rosalind L. Hunter-Anderson Anthropology Department, University of New Mexico

Rona Ikehara-Quebral International Archaeological Research Institute

Rebecca L. Kinaston Department of Anatomy, University of Otago

Charlotte L. King Department of Anatomy, University of Otago

John Krigbaum Department of Anthropology, University of Florida

Myra Lara Archaeology Studies Program, University of the Philippines

Helen Lewis School of Archaeology, University College Dublin

Lindsay Lloyd-Smith Institute of East Asian Studies, Sogang University

Elizabeth A. Matisoo-Smith Department of Anatomy and Allan Wilson Centre for Molecular Ecology and Evolution, University of Otago

Hirofumi Matsumura Department of Anatomy, Sapporo Medical University

Greg C. Nelson Department of Anthropology, University of Oregon

Jennifer Newton College of Medicine and Dentistry, James Cook University

Patrick D. Nunn Sustainability Research Centre, University of the Sunshine Coast

Dougald O'Reilly School of Archaeology and Anthropology, The Australian National University

Marc Oxenham School of Archaeology and Anthropology, The Australian National University

Ruth Page School of Archaeology and Anthropology, The Australian National University

Victor Paz Archaeology Studies Program, University of the Philippines

Philip J. Piper School of Archaeology and Anthropology, The Australian National University

Michael P. Richards Department of Human Evolution, Max Planck Institute for Evolutionary Anthropology

Wilfredo Ronquillo National Museum of the Philippines

Ken W. Ross School of Archaeology and Anthropology, The Australian National University

Katharina Ruckstuhl University of Otago

Elisa Melanie Ryan United States Bureau of Reclamation

Truman Simanjantuk Indonesian National Center for Archaeology

Louise Shewan Monash Warwick Alliance, Monash University

Matthew Spriggs School of Archaeology and Anthropology, The Australian National University

Christina Stantis Department of Anatomy, University of Otago

Ann L. W. Stodder Office of Archaeological Studies, Museum of New Mexico

Jessica H. Stone Department of Anthropology, University of Oregon

Alice Storey Archer CRM Partnership

Nancy Tayles Department of Anatomy, University of Otago

Lorna Tilley School of Archaeology and Anthropology, The Australian National University

Monica Tromp Department of Anatomy, University of Otago

Benjamin Valentine Department of Anthropology, Dartmouth College

Richard Walter Department of Anthropology and Archaeology, University of Otago

Stacey Ward Department of Anatomy, University of Otago

Anna Willis School of Archaeology and Anthropology, The Australian National University

It is a great pleasure for me to write the foreword to this remarkable Routledge Handbook, a volume dedicated to the research advances and accomplishments in the bioarchaeology of Southeast Asia and the Pacific Islands, a vast region of the globe occupied by people having complex histories, variable social contexts, and remarkable diversity of circumstances of life and living. The book's focus is on bioarchaeology, the study of human and faunal remains from archaeological contexts, which is a relatively new science. Two decades ago, I took on the task of presenting a synthesis of the field as it relates to humans (Larsen, 1997). Since then, I have watched with considerable interest the remarkable expansion in bioarchaeological research, its increasingly global coverage and its population and regional perspectives, including for Southeast Asia (Oxenham and Tayles, 2006). So expansive has bioarchaeology become that I prepared a new synthesis (Larsen, 2015), giving me a chance to present theoretical and methodological advances made in regard to a range of issues. But no synthesis can be truly comprehensive. Rather, a comprehensive synthesis of bioarchaeology in Southeast Asia and the Pacific Islands is presented in this Routledge Handbook, providing broad coverage of the region, giving the reader a go-to source written by leading experts in the field, and presenting new meanings and understanding of population history. This Handbook gives us a fundamental source that presents a new vision and broad scope, informing our growing understanding of how humans adapt.

While the focus of the book is on the study of human remains, new analyses of animal and plant remains and other key contextual data for interpreting transformative adaptive systems are also provided by the contributors to the book. Past dietary transitions and related adaptations are certainly revealed in the book, but the implications relating to climate change, nutritional deprivation, and negative health outcomes in these settings collectively give us new meaning for understanding the world we live in today. Simply, the biological and social changes and transformations put into place hundreds and thousands of years ago set the stage for the world we live in today.

The biocultural framework of the book illustrates the diverse array of adaptive systems and the richness of the human record when viewed in its wide context. In this regard, the diversity of adaptive systems applies to the foraging-to-farming transition, arguably the leading economic change having the most profound impact on human societies, population history, health and wellbeing, and lifestyle. The results presented by a number of contributors to the Handbook emphasize the region's role in the global Neolithic revolution. This work underscores the important point that the manner and scope of the revolution was neither monocausal nor did it result in universal changes in health and wellbeing (Armelagos and Cohen, 2013). The bioarchaeological record from Southeast Asia and the Pacific Islands emphasizes the diversity of life experiences and social change during the Neolithic and after, including for those settings where farming and reliance on plant carbohydrates was not a dominant part of the adaptive transition. The results presented for a range of research programs so nicely documented in the following pages highlight the various approaches to understanding the adaptive frameworks in the ancient past, providing the essential context for understanding the complex biological, social, and cultural world we live in today.

References

- Armstrong, G. J. and Cohen, M. N. 2013. Preface to the 2013 edition. In G. J. Armstrong and M. N. Cohen, editors. *Paleopathology at the Origins of Agriculture*. Gainesville: University Press of Florida: xvii–xxxvi.
- Larsen, C. S. 1997. *Bioarchaeology: Interpreting Behavior from the Human Skeleton*. Cambridge: Cambridge University Press.
- Larsen, C. S. 2015. *Bioarchaeology: Interpreting Behavior from the Human Skeleton, Second Edition*. Cambridge: Cambridge University Press.
- Oxenham, M. F. and Tayles, N. 2006. *Bioarchaeology of Southeast Asia*. Cambridge: Cambridge University Press.

Hallie R. Buckley, Kate Domett, Siân E. Halcrow and Marc Oxenham

This volume is dedicated to the recently retired, but still most active, Associate Professor Nancy Tayles. The legacy of Professor Tayles' influence on bioarchaeological research in Southeast Asia and the Pacific is abundantly clear from her contributions to many of the chapters in this volume as first author and contributing author. For over 30 years, Nancy has engaged in field-based bioarchaeology in Thailand, Myanmar and Laos, Vanuatu, Micronesia, Polynesia and New Zealand. Throughout her career, she has directly trained and mentored a substantial number of the contributing authors in this volume (Buckley, Domett, Halcrow, Harris, King, Ward and Willis), many of whom have gone on to establish their own independent field-based research programmes and extended the influence of her research into wider parts of Southeast Asia, the Pacific and beyond. Nancy has also established training programmes in the countries she worked in, encouraging and mentoring her Southeast Asian colleagues in building local knowledge and skills for heritage management. Nancy's pedagogy has always been firmly embedded in a biocultural or biosocial approach to understanding the past and through her fieldwork she has extensive experience with grassroots-level community engagement. These are the reasons for the dedication of this current volume.

Appended to this Dedication is a bibliography of Associate Professor Tayles' published work. Because of space restrictions, this does not include the numerous contributions to reports on fieldwork findings for official Thailand institutions or the many reports compiled as a community service to various government bodies and *iwi* (tribal groups) in New Zealand. Nancy's work has contributed to the field of bioarchaeology on an international scale and has been instrumental in setting Southeast Asia on the world stage. Among her most important contributions to scholarly work in Southeast Asia are the studies addressing the significance of this region during the so-called Agricultural Revolution. Through Nancy's work and that in collaboration with colleagues, these publications (e.g., Tayles et al., 2000; Tayles et al., 2009; Domett and Tayles, 2007) have questioned the almost universal assumption that the intensification of agriculture had consequent negative impacts on human health. Her work questioning long-held methodological assumptions (e.g., Dias and Tayles, 1997) has had an impact on interpretive bioarchaeology outside of the region. Recently, the field of research that uses isotopic evidence of childhood residence for assessing mobility has become a standard part of the bioarchaeologist's repertoire throughout the world. With Alex Bentley, Nancy introduced this method for adding to biocultural investigations of the quality of life of people in Southeast Asia (Bentley et al., 2007). While Nancy has now retired from the daily grind of academic life, her career and outstanding achievements have been recognised by an invitation for her to act as a Visiting Professor at Khon Kaen University, Thailand, where she will be mentoring and advising Thai bioarchaeologists on research design and teaching the fundamentals of bioarchaeology in practice. We are sure that she will continue to inspire and nurture generations of Thai and *farang* bioarchaeologists well into the future.

Publications of Associate Professor Nancy Tayles to date

Journal articles

- Clark, A. L., Tayles, N. and Halcrow, S. E. (2014) Aspects of health in prehistoric mainland Southeast Asia: indicators of stress in response to the intensification of rice agriculture. *American Journal of Physical Anthropology*, 153, 484–495.
- Foster, A., Buckley, H. and Tayles, N. (2014) Using entheses robusticity to infer activity in the past: a review. *Journal of Archaeological Method and Theory*, 21, 511–533.
- Halcrow, S. E., Rooney, J., Beavan, N., Gordon, K. C., Tayles, N. and Gray, A. (2014) Assessing Raman spectroscopy as a prescreening tool for the selection of archaeological bone for stable isotope analysis. *Plos One*, 9 (7), e98462.
- King, C. L., Bentley, R. A., Higham, C., Tayles, N., Viðarsdóttir, U. S., Layton, R., Macpherson, C. G. and Nowell, G. (2014) Economic change after the agricultural revolution in Southeast Asia. *Antiquity*, 88, 112–125.
- Domett, K. M., Newton, J., O'Reilly, D. J. W., Tayles, N., Shewan, L. and Beavan, N. (2013) Cultural modification of the dentition in prehistoric Cambodia. *International Journal of Osteoarchaeology*, 23, 274–286. DOI: 10.1002/oa.1245.
- Halcrow, S. E., Harris, N. J., Tayles, N., Ikehara-Quebral, R. and Pietrusewsky, M. (2013) From the mouths of babes: dental caries in infants and children and the intensification of agriculture in mainland Southeast Asia. *American Journal of Physical Anthropology*, 150, 409–420.
- Kinaston, R. L., Walter, R. K., Jacomb, C., Brooks, E., Tayles, N., Halcrow, S. E., Stirling, C., Reid, M., Gray, A. R., Spinks, J., Shaw, B., Fyfe, R. and Buckley, H. R. (2013) The first New Zealanders: patterns of diet and mobility revealed through isotope analysis. *Plos One*, 8 (5), e64580.
- King, C. L., Bentley, R. A., Tayles, N., Viðarsdóttir, U. S., Nowell, G. and Macpherson, C. G. (2013) Moving peoples, changing diets: isotopic differences highlight migration and subsistence change in the Upper Mum River Valley, Thailand. *Journal of Archaeological Science*, 40, 1681–1688.
- McKay, S., Farah, R., Broadbent, J. M., Tayles, N. and Halcrow, S. E. (2013) Is it health or the burial environment: differentiating between hypomineralised and post-mortem stained enamel in an archaeological context. *Plos One*, 8 (5), e64573.
- Clark, A., Tayles, N. and Halcrow, S. (2012) Sexual dimorphism in adult skeletal remains at Ban Non Wat, Thailand, during the intensification of agriculture in early prehistoric Southeast Asia. *Proceedings of the Twelfth Annual Conference of the British Association for Biological Anthropology and Osteoarchaeology*, 17–28.
- Halcrow, S., Tayles, N., Inglis, R. and Higham, C. (2012) Newborn twins from prehistoric mainland Southeast Asia: birth, death and personhood. *Antiquity*, 86, 838–852.
- Harris, N. J. and Tayles, N. (2012) Burial containers – a hidden aspect of mortuary practice in prehistoric archaeoanthatology at Ban Non Wat, Thailand. *Journal of Anthropological Archaeology*, 31, 227–239.
- Bedford, S., Buckley, H. R., Valentin, F., Tayles, N. and Longga, N. F. (2011) Lapita burials, a new Lapita cemetery and post-Lapita burials from Malakula, Northern Vanuatu, Southwest Pacific. *Journal of Pacific Archaeology*, 2 (2), 26–48.
- Cox, K. J., Bentley, R. A., Tayles, N., Buckley, H. R., Macpherson, C. G. and Cooper, M. J. (2011) Intrinsic or extrinsic population growth in Iron Age northeast Thailand? The evidence from isotope analysis. *Journal of Archaeological Science*, 38, 665–671.
- Halcrow, S., Tayles, N., Pureepatpong, N. and Boonlop, K. (2011) Human remains from prehistoric archaeological sites in Thailand: legislative and ethical issues (in Thai). *Muang Boran Journal*, 3 (3), 143–148.

- King, C. L., Tayles, N. and Gordon, K. C. (2011) Re-examining the chemical evaluation of diagenesis in human bone apatite. *Journal of Archaeological Science*, 38, 2222–2230.
- Buckley, H. R., Tayles, N., Halcrow, S. E., Robb, K. and Fyfe, R. (2010) The people of Wairau Bar: re-examination. *Journal of Pacific Archaeology*, 1 (1), 1–20.
- Halcrow, S. E. and Tayles, N. (2010) Talon cusp in a deciduous lateral incisor from prehistoric Southeast Asia. *International Journal of Osteoarchaeology*, 20, 240–247.
- Halcrow, S. E. and Tayles, N. (2010) The archaeological infant in biological and social context: response to Mike Lally and Traci Ardren 2008. Little artefacts: rethinking the constitution of the archaeological infant. *Childhood in the Past* 1, 62–77. *Childhood in the Past* 3, 123–130.
- Halcrow, S. E., Tayles, N., Stanton, J-A. L., Robins, J. and Matisoo-Smith, E. (2010) An application of ancient DNA methods for understanding health and social changes with agricultural intensification in prehistoric Southeast Asia. *The 9th International Conference on Ancient DNA and Associated Biomolecules*, 293–305.
- Bentley, R. A., Cox, K., Tayles, N., Higham, C., Macpherson, C., Nowell, G., Cooper, M. and Haye, T. E. F. (2009) Community diversity at Ban Lum Khao, Thailand: isotopic evidence from the skeletons. *Asian Perspectives*, 48 (1), 79–97.
- Willis, A. and Tayles, N. (2009) Field anthropology application to burial contexts in prehistoric Southeast Asia. *Journal of Archaeological Science*, 36, 547–554.
- Buckley, H. R., Tayles, N. G., Spriggs, M. J. T. and Bedford, S. (2008) A preliminary report on health and disease in early Lapita Skeletons, Vanuatu: possible biological costs of island colonization. *Journal of Island and Coastal Archaeology*, 3, 87–114.
- Halcrow, S., Tayles, N. and Livingstone, V. (2008) Infant death in late prehistoric Southeast Asia. *Asian Perspectives*, 47 (2), 371–404.
- Halcrow, S. E. and Tayles, N. (2008) Stress near the start of life? Localised enamel hypoplasia of the primary canine in late prehistoric mainland Southeast Asia. *Journal of Archaeological Science*, 35, 2215–2222.
- Halcrow, S. E. and Tayles, N. (2008) The bioarchaeological investigation of childhood and social agency: problems and prospects. *Journal of Archaeological Method and Theory*, 15, 190–215.
- Bentley, R. A., Tayles, N., Higham, C., MacPherson, C. and Atkinson, T. C. (2007) Shifting gender relations at Khok Phanom Di, Thailand. *Current Anthropology*, 48 (2), 301–314.
- Halcrow, S. E., Tayles, N. and Buckley, H. R. (2007) Age estimation of children from prehistoric Southeast Asia: are the dental formation methods used appropriate? *Journal of Archaeological Science*, 34, 1158–1168.
- Cox, K., Tayles, N. G. and Buckley, H. R. (2006) Forensic identification of ‘race’: the issues in New Zealand. *Current Anthropology*, 47 (5), 869–874.
- Domett, K. M. and Tayles, N. (2006) Adult fracture patterns in prehistoric Thailand: a biocultural interpretation. *International Journal of Osteoarchaeology*, 16, 185–199.
- McGrath, M. C. and Tayles, N. (2004) Anatomical observations related to radiological findings in spina bifida occulta of the lumbosacral spine. *Journal of Osteopathic Medicine*, 7 (2), 70–78.
- Tayles, N. and Buckley, H. R. (2004) Leprosy and tuberculosis in Iron Age Southeast Asia? *American Journal of Physical Anthropology*, 125 (3), 239–256.
- Buckley, H. R. and Tayles, N. (2003) Skeletal pathology in a prehistoric Pacific Island sample: issues in lesion recording, quantification, and interpretation. *American Journal of Physical Anthropology*, 122 (4), 303–324.

- Buckley, H. R. and Tayles, N. G. (2003) The functional cost of tertiary Yaws (*Treponema pertense*) a prehistoric Pacific Island skeletal sample. *Journal of Archaeological Science*, 30, 1301–1314.
- Tayles, N. (2003) Murder or mortuary behaviour? An Iron Age enigma from northeast Thailand. *International Journal of Osteoarchaeology*, 13, 197–206.
- Kieser, J. A., Dennison, K. J., Kaidonis, J. A., Huang, D., Herbison, P. G. P. and Tayles, N. G. (2001) Patterns of dental wear in the early Maori dentition. *International Journal of Osteoarchaeology*, 11 (3), 206–217.
- Nelsen, K., Tayles, N. G. and Domett, K. (2001) Missing lateral incisors in Iron Age South-East Asians as possible indicators of dental agenesis. *Archives of Oral Biology*, 46, 963–971.
- Tayles, N. G., Domett, K. and Pauk, U. (2001) Bronze age Myanmar (Burma): a report on the people from the cemetery of Nyaunggan, Upper Myanmar. *Antiquity*, 75 (288), 273–278.
- Tayles, N. G., Domett, K. and Nelsen, K. (2000) Agriculture and dental caries? The case of rice in prehistoric Southeast Asia. *World Archaeology*, 32 (1), 68–83.
- Dias, G. and Tayles, N. (1997) Abscess cavity – a misnomer. *International Journal of Osteoarchaeology*, 7, 548–554.
- Tayles, N. (1996) Anemia, genetic diseases, and malaria in prehistoric mainland Southeast Asia. *American Journal of Physical Anthropology*, 101 (1), 11–27.
- Tayles, N. (1996) Tooth ablation in prehistoric Southeast Asia. *International Journal of Osteoarchaeology*, 6, 333–345.
- Higham, C., Bannanurag, R., Mason, G. and Tayles, N. (1992) Human biology, environment and ritual at Khok Phanom Di. *World Archaeology*, 24 (1), 35–54.

Books

- Oxenham, M. and Tayles, N. (eds) (2006) *Bioarchaeology of Southeast Asia*. Cambridge: Cambridge University Press.
- Tayles, N. G. (1999) *The Excavation of Khok Phanom Di, a Prehistoric Site in Central Thailand*. London: Society of Antiquaries.

Book chapters

- Foster, A., Buckley, H., Tayles, N., Spriggs, M. and Bedford, S. (2013) Gender, labour division and the skeleton: a case study from the Teouma Lapita cemetery. In: G. R. Summerhayes and H. Buckley (eds) *Pacific Archaeology: Documenting the Past 50,000 Years*. Dunedin, New Zealand: University of Otago Press. pp. 76–90.
- Tayles, N., Halcrow, S. and Pureepatpong, N. (2012) Regional developments: Southeast Asia. In: J. M. Buikstra and C. A. Roberts (eds) *The Global History of Paleopathology*. Oxford University Press. pp. 528–540.
- Halcrow, S., Tayles, N., Pureepatpong, N. and Boonlop, K. (2011) Thailand. In: N. Márquez-Grant and L. Fibiger (eds) *The Routledge Handbook of Archaeological Human Remains and Legislation*. London, UK: Routledge. pp. 623–631.
- Halcrow, S. E. and Tayles, N. (2011) The bioarchaeological investigation of children and childhood. In: S. C. Agarwal and B. A. Glencross (eds) *Social Bioarchaeology*. Wiley-Blackwell. pp. 333–360.
- Halcrow, S. E. and Tayles, N. (2011) Human diversity in mainland Southeast Asia: the contribution of

sample content of The Routledge Handbook of Bioarchaeology in Southeast Asia and the Pacific Islands (Routledge Handbooks)

- [British Tanks: The Second World War: Rare Photographs from Wartime Archives here](#)
- [read **The Night of the Swarm The Night of the Swarm \(The Chathrand Voyage, Book 4\)**](#)
- [San Francisco in the 1930s: The WPA Guide to the City by the Bay book](#)
- [download online **Great Animal Drawings and Prints \(Dover Fine Art, History of Art\)**](#)

- <http://fortune-touko.com/library/Tutti-i-trattati-peripatetici--Testo-latino-a-fronte.pdf>
- <http://wind-in-herleshausen.de/?freebooks/Professional-Xen-Virtualization.pdf>
- <http://www.netc-bd.com/ebooks/San-Francisco-in-the-1930s--The-WPA-Guide-to-the-City-by-the-Bay.pdf>
- <http://aseasonedman.com/ebooks/Agnes-Mary-Clerke-and-the-Rise-of-Astrophysics.pdf>