

Book Review

Observation, correlation or causation? Linking natural history and ecology

Wilcox MD ed. 2007. Natural history of Rangitoto Island, Hauraki Gulf, Auckland, New Zealand. Auckland Botanical Society Bulletin 27. 192 pp. Cloth, ISBN 978-0-9583447-3-9, NZ\$39.99.

Good, detailed observations about the natural world are becoming scarce as society focuses on computer-driven technology, fewer children play in natural settings, and ecology programmes shrink around the world. Yet ecology arose from a profound appreciation of natural history and its relevance to human welfare. Perhaps it is time to re-establish the links between observation and science in order to address our myriad ecological challenges. Wilcox and 15 other contributors give us a refreshing example of good natural history, combining fascination with facts, common names with Latin binomials, delightful photographs with informative text.

Rangitoto Island emerged from the sea about 600 years ago and has been an integral part of Auckland's geological and cultural scene ever since. Detailed examination of this volcanic island provides a worthwhile book that highlights themes of disturbance ecology, botanical history, invasive species, and human interactions with plants and animals. Human history on the island has been diverse, comprising Maori settlements, a gravel quarry, a jail, military uses and tourism, including the construction of 140 holiday baches between 1919 and 1935.

The editor, Mike Wilcox, is co-author or author of 9 of the 14 chapters, which provide an integrated view of vegetation dynamics and all plant groups from algae, fungi, lichens, mosses and ferns to herbs and woody plants. A series of detailed maps and a brief overview of geologic history and climate preface a summary of both invertebrate and vertebrate fauna. The rest of the chapters are devoted to plants and begin with one that covers vegetation patterns and disturbance effects. Many of the later chapters consist of lists of vascular and non-vascular plants that provide a useful resource for future naturalists or ecologists. Throughout the book there is a fairly consistent division of native versus introduced organisms that helps sort out the 'desirable' from the 'undesirable', for those so inclined. Fascinating anecdotes cover such topics as local fish behaviour, honey bee influences, and herbivory, while scientific studies mentioned include *Metrosideros* hybridisation, the discovery of vascularisation of *Psilotum* gametophytes, and fern physiology.

The book meets its goals of providing a comprehensive account of the island's natural history and highlighting its botanical diversity. The bibliography (carefully cited throughout the text) is a worthy compilation of all known sources of information about Rangitoto Island (almost entirely from New Zealand sources and including several unpublished theses and local newsletters). However, only a handful of studies represent peer-reviewed scientific literature. The challenge that the authors of this book faced was how to produce an up-to-date, authoritative account of a local flora without overreaching the available data. The strength of natural

history is pattern recognition and description. Therefore, personal observations of phenological details on fish or plants are adequate, as long as the patterns that are observed are not used to assume mechanistic causes for ecological processes or stated as general rules. This line is crossed only occasionally, but will trouble the scientist dedicated to experimentation and formal data-gathering. For example, crevices in the lava form an important niche for plant colonisation but the assumption that some plants take advantage of earlier colonists is unsupported. Similarly, plants along pathways may benefit from higher water content but also may benefit from higher nutrient availability or reduced root competition. Finally, *Psilotum* may benefit from fungal communities found in bark mulch gardens around abandoned baches or simply have minimal competition in such habitats. Research is lacking on these and many other topics so causal statements are unwarranted. The authors of the chapter on vegetation patterns (the most ecological in the book) are careful to note a diversity of colonisation patterns and the role of repeated disturbances, but sometimes confound highly appropriate observations and informal correlations with causation. Nevertheless, this book provides a solid background upon which to begin more formal ecological investigations.

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