

Book Reviews

The oil on Auckland's wild plants — everything you need to know.

Esler, A.E. 2004. *Wild plants in Auckland*. Auckland University Press, Auckland, N.Z. vi + 208 pp. Paper, ISBN 1-86940-329-0, NZ\$69.99.

Alan Esler's long career in botany spanned both education and research, and his latest—and best—book reflects those twin pillars. He is one of the old school of naturalists, and his superb complementary skills of observation and interpretation are evident on every page of this distillation of years of discernment and reflection. Long based in Auckland, he has become something of an authority on the plants of the region, particularly weeds; the city has the dubious distinction of being one of the weediest in the world.

The book begins with a foreword by Jack Craw of the Auckland Regional Council (which sponsored its publication) and an introduction that sets the scene for the book and its subject. An historical ramble (with accompanying maps) then takes us across the isthmus and around the North Shore, drawing on many and varied early sources. Habitat-by-habitat descriptions of the full compass of wild plant communities in the region follow, in which the author's holistic space-and-time approach to plant ecology is evident; human and historical, environmental and biological dimensions are all woven into a seamless whole. As pointed out in the foreword, the inclusion of a range of plant communities of mostly unloved and largely ignored places—grazed, mown, and simply waste lands which are often important reservoirs of weeds in the landscape—is particularly valuable.

The second section deals comprehensively with our interactions with wild plants. Again, the historical dimension, so often overlooked in an era that has scant regard for the past and its lessons, is strong. The final section is a useful synopsis of the external morphology of plants, the sort of thing that was once *de rigueur* for students of botany, but has long since been swamped with the vast expansion of the subject, aided by new technologies, into new areas.

A feature of the text is the apparent lack of emphasis of any distinction between native and naturalised species; asterisks in the species index provide this information for anyone needing it. As well as the novel and intriguing mixtures of native and naturalised species covered by the work, this also

reflects the growing reality of the integral role that some adventive plants now play in many predominantly native plant communities in New Zealand. They are here, and in many cases here to stay.

The 322 line drawings of plants are first-rate, sufficiently good to enable many of them to be identified at a glance. The same cannot be said of the limited selection of colour plates. The subject matter is relevant enough, but the quality is the sort of photographic mediocrity we have come to expect in science, even from the most prestigious authors. There is a saying in the book trade that 'books sell by their covers' (as long-playing gramophone records used to) and here the book falls rather short in this reviewer's opinion; the front cover features a plant and a wild one at that, but it is drab and has little visual appeal, belying the treasure inside.

There seem to be two minor omissions. The species index is obviously useful, but a geographic one would have added considerably to the usefulness of the book. And a list of relevant literature/background reading would have taken very little space and also added to the value of the book. They should be considered in future editions.

The book will be useful to many with a professional concern with managing the natural and human landscapes of Auckland. And though specific to the Auckland isthmus, *Wild plants in Auckland* will, like Hugh Wilson's erstwhile field guides to Mount Cook National Park and Stewart Island, have much wider application in warmer parts of the North Island, both north and south of the city. It is a lovely book, one that should grace the coffee tables (if they ever come back into fashion) and bookshelves of any and all who have an interest in the wild plants and the wild places of this country.

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Searching for evidence

Taper, M. L. and Lele, S. R. (Editors) 2004. *The Nature of Scientific Evidence: Statistical, Philosophical, and Empirical Considerations*. University of Chicago Press,

Chicago, xviii + 567 pp. Paperback, ISBN: 0-226-78957-8, US\$30.00.

My dictionary defines evidence as something that provides ground for belief or disbelief, or as something produced before a court of law in an attempt to prove or disprove a point. But what about scientific evidence? What constitutes evidence in favour of one hypothesis over another? For most ecologists, acceptance of the 5% probability level in statistical testing has become synonymous with evidence in everyday research. There is much more to statistical inference, however. It represents the cornerstone of the modern scientific method and we need to understand fully what it tells us about ecological data. Taper and Lele's book addresses statistical inference and scientific evidence in great depth and from all angles. The editors brought together ecologists, philosophers and statisticians in an attempt to develop a new framework for scientific evidence; the end product is an interesting, though challenging read.

The book's sixteen chapters are grouped into five sections. The first section is an introduction to the scientific process from a statistical perspective. It summarises the procedures of statistical inference used to test hypotheses and measure the strength of evidence, from Fisherian *P*-values and Neyman-Pearson tests to Bayesian and likelihood ratio tests. This section also discusses the interplay between inductive and deductive science, observational and experimental evidence, and *a priori* and *post hoc* explanations. Overall, it serves as a solid platform for the rest of the book.

The second section explores the logics of evidence. Although more philosophical in nature, this part of the book provides a detailed examination of sophisticated statistical approaches to measure the strength of evidence. The comparative nature of evidence is made clear in this section: we cannot say that the evidence provides strong support for one hypothesis, only that it provides stronger support for this hypothesis than for alternative hypotheses. There are good discussions of methods to assess the relative strength of evidence, including the likelihood ratio test, the Akaike information criterion, evidence functions, and the severity of hypothesis testing, the latter being a concept related to but different from statistical power.

The next section tackles the problems of inferring causation in complex natural systems. For instance, how should one handle data from experiments conducted at scales that defy replication, such as whole-ecosystem experiments? When experiments are not possible and only observational data are available, how to interpret matrices of correlation coefficients? These issues are examined in separate chapters, while the other chapter in the section argues for the use of dynamical models incorporating explicitly causal

pathways, as a way of achieving a stronger inference of underlying processes.

The fourth section discusses the role of expert opinion in scientific inference. The different chapters present contrasting sides of the Bayesian approach and the potentially subjective element it introduces in statistical analysis. I particularly enjoyed this section, by far the most lively of the book. The polarized views of the contributors provided some entertainment, with the proponents of the Bayesian and the more traditional frequentist approaches firing shots at each other. In contrast, the fifth and final section of the book, on model adequacy and model selection, was a tame affair.

Throughout the book, each chapter is followed by two or three commentaries by authorities in the field, in turn followed by a rejoinder by the chapter's authors. These were meant to give the book the feel of an ongoing debate and a sense of balance among opinions. I found that some commentaries merely reiterated or endorsed the points made in the main chapter, adding little to the discussion. Others criticised details without posing serious challenges. For the most part, however, the commentaries presented alternative positions and contributed to a broader perspective.

The editors of the book, assisted by 46 other contributors, aimed at developing a new quantitative framework for scientific evidence. My feeling is that they are taking us in the right direction, but that there is still a long way to go before we can hope for some form of consensus and widespread changes to our current practices. The book itself is not for the statistically faint-hearted; in places, the discussion waxes a bit too statistical or philosophical for the average ecologist to feel at ease. Still, it makes the reader think about the practice of science, and reassess much that was taken for granted. I would recommend the book to anyone interested in the applications of statistics to ecological science, and possibly as a text for an advanced course in ecological statistics.

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New Zealand plants and their uses

Spellerberg, I. and Given, G. 2004. *Going Native*. Canterbury University Press, Christchurch. 256 pp. Paper, ISBN: 1-877257-13-3, NZ\$39.95.

Going Native is an expertly compiled guide to the

many and varied uses of native New Zealand plants. The purpose of the book is to raise the profile of New Zealand plants and their use, and to provide a source of inspiration for New Zealanders from all walks of life. A fine job has been done bringing together chapters from twenty native plant experts throughout New Zealand. Each of these contributors share their in-depth knowledge and an overview of their topic of expertise, with references provided at the end of each chapter for those seeking more information (although there is no index).

From a practitioner's perspective, the chapters provide a diverse range of practical information. Topics include traditional uses by Maori, chemicals from plants, native plants in art, as icons, native plants for containers, amenity use, restoration planting in schools, landscape design, shelter, 'herbs', lowland and coastal habitats, propagation (both by seed and vegetative methods), conservation and sustainable use, as well as an "A-Z" guide as a gardener's selection. Many inspirational photos accompany these chapters. The use of text boxes ensures that reading is interesting and varied.

As comprehensive as this book is, the topic missing for me was the maintenance of native plants within different ecosystems (coastal, hills, plains, waterways and wetlands, and diverse city gardens). Designing a site, considering its context and connection in the landscape, selecting the right plant for the right site (i.e., considering soils, moisture regime, rainfall, placement along a streambank) is the start of a restoration process. Without the right level of maintenance, and ongoing maintenance, all too often restoration goals may not be successful. While there are other useful guidebooks on maintaining native plants, *Going Native* would have benefited readers with a chapter on this.

I also look forward to further discussion on the sustainable use of native plants. The chapter on conservation and sustainable use introduces this topic. As the authors suggest, much more could be done to encourage active native planting on private land for a wide range of values (e.g. for shelter, amenity, improvements to water quality, plants for healing uses, trees for crafts and other uses). There are opportunities to establish plantations of indigenous trees for timber throughout this country.

One thing is for sure: there are still "tensions" in New Zealand about the use of native plants both on private and public lands. Scan the Christchurch Press and every few months there are letters that erupt, which either support or denigrate the use of native plants. For example, a recent letter entitled "Botanical Racism" said "... deciduous trees are more suitable in cities. I do not care where plants come from nor people either. The world is one place and any plants or animals that

make it to New Zealand are admirable. To get snippy about whether they are native or exotic is being small minded. Only the Xenophobe Greens and the racist Maori party represent these views. Get over it!" The writer of this letter presents one point of view (with which I disagree), and highlights the depth of this debate.

I have no doubt that *Going Native* will indeed make a contribution to raising the profile of New Zealand plants and their use in this country. *Going Native* has inspired me, and makes an excellent companion to Isobel Gabites and Rob Lucas' book, *The Native Garden* (with its beautiful images and ideas on design themes). *Going Native* provides further cause to celebrate our unique New Zealand plants. Native plants are integral to our rural and urban landscapes and throughout the country, images of native plants are expressed in so many forms of art. This confirms for me how much they are part of our heritage, and part of being a New Zealander.

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The insects — globalizing entomological teaching

Gullan, P.J. & P.S. Cranston. 2004. *The insects: an outline of entomology*. 3rd edition. Blackwell Publishing, Oxford, U.K. xvii + 505 pp. Cloth, ISBN: 1-4051-1113-5, US\$77.95.

This is the third edition of Gullan & Cranston's *The insects: an outline of entomology*. First published in 1994 when the authors were based at the Australian National University and CSIRO Entomology in Canberra (Australia), this comprehensive and stimulating textbook is establishing itself as an indispensable entomological reference for students as well as professional entomologists. The authors have now relocated to Davis, California where they enjoy a different teaching experience and, as a spin-off, a slightly different third edition of this book has emerged. It is organised around major biological themes, with more international case studies than before, and further focus on current and rapidly evolving issues such as biosecurity and molecular entomology. Boldly facing the challenges of globalization in academic terms, the comprehensiveness and international scope of this book provide anyone, irrespective of their geographical location or academic background, with the opportunity to acquire a shared thorough understanding of the most important entomological concepts and issues.

Furthermore, it provides established scientists with a single comprehensive source from which to brush-up on many subjects.

The book commences with an overview of the importance, diversity and conservation of insects. This is followed by chapters on anatomy, sensory systems and behaviour, and reproduction. In addition to the chapter on insect development and life histories, ecologists will be particularly pleased to find chapter sections dedicated to environmental monitoring using both terrestrial and aquatic insects, functional feeding groups, as well as entire chapters on insects and plants, predation and parasitism, and defense mechanisms.

A systematic synopsis of insect orders is also provided, which offers a nice change from the taxon-by-taxon presentation found in many other books. This is followed by a chapter on biogeography and evolution. These are two well-written chapters but their brevity is somewhat surprising, given the authors' well-known expertise on these subjects, and it might be regarded as an important shortcoming of this book, especially by systematists.

Other sections of the book deal with ground-dwelling insects, aquatic insects, insect societies, medical and veterinary entomology, pest management and methods used in entomology (e.g., collecting, preservation, curation, and identification).

This is a very well-written and well-illustrated book. Its presentation and style make entomological information accessible to a wide readership, especially because the book emphasises the biological aspects of entomology, which makes it more interesting to read than many other textbooks. I highly recommend it to anyone with an interest in entomology, as a hobby or a vocation.

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Birds, bats and other beasts in New Zealand.

Wilson, K.-J. 2004. *Flight of the Huia: ecology and conservation of New Zealand's frogs, reptiles, birds and mammals*. Canterbury University Press, Christchurch, NZ. xii + 411 pp. Paperback, ISBN 0-908812-52-3, \$49.95.

This engaging and useful book by Kerry-Jayne Wilson is a readable account of the ecology and conservation of the land-breeding vertebrates of New Zealand, reflecting the long-standing interests of the author. The book is structured into ten chapters, starting with

the origins and nature of the land vertebrate fauna, traversing the sorry history of extinctions and introductions, and finishing with descriptions of current vertebrate communities and conservation issues. Throughout, the writing style is very accessible, helped by the subdivision of chapters into short sections with informative and sometimes quirky titles (e.g. 'rats, humans and other aliens', 'insectivores and their ilk', 'conservation of introduced vertebrates: should we bother?'). The text is well illustrated, including several useful graphs and tables, some colour photos (several by the author) and a series of four plates by Pauline Morse, showing how vertebrate communities have changed over time. The collation of data on bird communities is especially comprehensive: presented in an exhaustive (and sometimes exhausting) set of tables that sometimes extend to two or more pages in length; for example four consecutive pages of tabulated 'ticks' on the foraging and foods of seabirds in eastern Cook Strait! A checklist of amphibians, reptiles, birds and mammals of New Zealand extends to a whopping 21 pages of appendix. The book has clearly been written over a number of years, so it is not surprising that, although published in 2004, its reference list is dominated by papers from the 1990s and before and contains none published after 2002.

Any book is likely to reflect the particular interests and expertise of the author, and this one is no exception. Although it covers the ecology and conservation of New Zealand's frogs, reptiles, birds and mammals, it focuses most strongly on birds. Whales and dolphins are covered in only a few pages, whereas birds, bird behaviour and bird communities are repeatedly returned to. A particular South Island ornithological focus is also evident, with sections on 'birds of South Island braided rivers', birds of North Westland compared with Canterbury and Otago, and 'lost birds of Banks Peninsula'. Despite this slight bias, the book nevertheless paints a full and fascinating picture of the special character of New Zealand vertebrates and their communities. I have already found it to be a useful source of information. I recommend it to students of vertebrate ecology and to practicing ecologists and conservation biologists who are interested in the birds, bats and other beasts of New Zealand. Go out and buy a copy.

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A Turn-Of-The-Century Limnological Progress Report.

O'Sullivan, P.E. and Reynolds, C.S. 2004. *The Lakes Handbook: Volume 1: Limnology and Limnetic Ecology*. Blackwell Publishers, Carlton, Australia, 699 pp. Hardbound, ISBN: 0-632-04797-6, £125.00.

The new Lakes Handbook Volume 1 is a hefty tome which sets out to "provide a sort of turn-of-the-century progress report", assembling a variety of recent limnological perspectives from "recognised and respected authorit[ies] within specialist sub-division[s] of limnetic science." Consisting of 18 independent chapters penned by 19 authors, The Lakes Handbook succeeds nicely in its stated aim of balancing both theoretical and applied subject matter, though this overall balance is unfortunately not reflected in all the individual chapters. As the title suggests, this book is focused solely on lakes, so lotic limnologists will have to stick with books like Calow and Potts' (1992) Rivers Handbook, which inspired the editors to bring this lakes handbook to fruition.

One of the things I like about this book is its rather audacious attempt to provide a point of reference for both students of limnology and professional limnologists. That is no easy task, but I found the book to occupy a pleasing sort of middle-ground between basic textbook and limnological "tool kit". The sort of middle-ground that Hutchinson's masterful Treatise on Limnology (1957; 1967; 1975; 1993) covered so well, and which, arguably, has not been successfully covered since. As both a researcher and a teacher of limnology, I expect this book will be regularly plucked off my bookshelf.

Part I consists of 7 chapters covering physical and chemical aspects of lakes including the origins of lake basins, hydrology, chemical processes, and hydrodynamics — a pretty standard approach to lake texts. However, two of the strongest chapters in the book close out Part 1. These deal with impacts of humic substances in lakes and lake sedimentation and sediment formation. Part 2 is introduced by a typically thought-provoking, conceptually-rich chapter by co-editor Reynolds, called "Organisation and Energetic Partitioning of Lake Communities", which attempts to set the scene for the final chapters on biotic components and interactions. Unfortunately, the promise of wholism suggested by Reynolds' chapter isn't realised in the end and this is probably due to the challenge of continuity, which tends to plague books comprised of independently-authored chapters. Continuity and the ability to provide incisive overview, as well as detail, are what make sole-authored books like Hutchinson's Treatise and Kalff's (2002) recent text so valuable. Another disadvantage of the specialist, multi-author

approach is the tendency for the writing to be more formal and technical, as is the case with The Lake Handbook in contrast to the highly accessible Kalff (2002) text.

Some antipodean readers might be frustrated by the Euro-centric perspectives of this book (all but one of the authors are from Europe and all are from the Northern Hemisphere), but for me, that is a rather minor gripe. Perhaps more frustrating is the relative paucity of citations of recently published work in many of the chapters.

No single text can lead us to limnological Nirvana — nor should it have to. There are numerous limnology books out there, many of which occupy useful knowledge niches for limnologists. *The Lake Handbook* is an excellent book which will be useful to both students and practitioners alike, and should reside amongst other good limnology books on your library's, if not your own, bookshelf. Look out for Volume 2: Lake Restoration and Rehabilitation, by the same editors, due out soon.

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Ecosystem services provided by biota in soils and sediments

Wall, Diana H. (Editor) 2004. *Sustaining biodiversity and ecosystem services in soils and sediments*. The Scientific Committee on Problems of the Environment; SCOPE report 64. Island Press, Washington. xix + 275 pp. Cloth, ISBN: 1-55963-759-5, US\$60.00; paper, ISBN: 1-55963-760-9, US\$30.00.

I received this SCOPE report on the day that the Millennium Ecosystem Assessment was issued. At least the subset of *Homo sapiens* that prepared this report is expressing concerns about the ability of earth's ecosystems to sustain future human generations that Assessment publicised. In contributing to this report scientists from 20 countries have improved understanding of soil and sediment biodiversity and biogeochemical cycling, and of the consequences of biodiversity loss on ecosystem services.

The 10, almost encyclopaedic, chapters in this synthesis have 33 contributing authors. SCOPE 64 has successfully used a uniform terminology across ecosystems and services, giving the report greater value than each of its constituent chapters. Each section has a well-reasoned conclusion, often with needs for further quantitative research – especially on the impacts of loss of biodiversity. The report is not the SCOPE group's only output. In particular, note several more general articles in *BioScience* (1999, 2000). A consensus of knowledge of the effects of biodiversity on ecosystem functioning has subsequently appeared (*Ecological Monographs* 75: 3–35, 2005).

For practical reasons ecologists are often restricted to one stratum or group in a biome, but this synthesis specifically embraces soils, freshwater benthos, marine sedimentary biota and the primary production that provides their food resource. Figure 4.1 dramatically depicts the cascade of losses in biological filtration of water associated with C, N and P release from disturbed soils, with excessive particulate organic carbon in freshwater sediments, with siltation degrading wetlands, and the consequent algal blooms above the continental shelf. Such biological filtration, which links all domains, is but one ecosystem service discussed.

What the report brings home is how similar, and critical to biosphere functioning, are the biological processes in soils, freshwater sediments and marine deposits. We are dependent on biological interactions at the thin microbial:faunal:sediment interface. The farmer who recognises earthworms as an essential part of his productive soil can appreciate such interactions and services. The pelagic fisher and supermarket shopper need to be educated. This volume has the potential to stimulate education and research.

What of New Zealand? In terrestrial terms, protection of high-class agricultural soils and their services enshrined in the Town & County Planning Act was rescinded by the Resource Management Act. Native forests appear required to offer pleasant canopies and to support populations of iconic birds, reptiles and a few invertebrates. Concern about marine environments focuses on marine mammals and regulating fisheries for on-going fish yield while reducing avian by-catch. Aesthetics, recreation and food production are anthropocentric ecosystem goods and services. It is largely unseen services such as decomposition, bioturbation, organic matter transformation, nutrient cycling, carbon sequestration, physical stabilisation, water purification, moisture retention, maintenance of atmospheric C and N balances, and sediment control by aquatic plants that transcend ecosystem boundaries which support the biosphere as we know it. Predicting the effects of global change (including climate change) on ecosystem goods and services requires explicit acknowledgement of the vulnerability of ecosystems, and therefore of the organisms that drive those ecosystems, to global change. This volume provides acknowledgement, but highlights scarcity of quantitative knowledge.

New Zealand has a unique combination of soils, sediments, climate and marine conditions with endemic, Gondwanian and global biotic components. Region-specific research is required. As in the Rio and Kyoto processes, our participation in such research is a moral obligation and our parochial findings will contribute to the global solution.

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Current thinking in city design: seeking sustainability

Freeman, C. and Thompson-Fawcett, M. (Editors) *Living space: towards sustainable settlement in New Zealand*. University of Otago Press, Dunedin, N.Z. 240 pp. Softback, ISBN 1-877276-45-6.

There is a growing awareness of the exciting opportunities in urban ecology, design and planning. To be more effective it is imperative we understand how planners, geographers, policy specialists and architects each approach city design. This book's four main themes help clarify these different viewpoints.

Part I addresses the question of what sustainability means for New Zealand. Chapter 1 looks at planners'

different perceptions of sustainability and the competing interests that influence urban development. A conclusion that “*settlement case-studies should be about who makes decisions, their understanding of sustainability, and the importance accorded sustainability in their deliberations*” may surprise ecologists, but as part of the broader ecological evaluation it makes sense. The ability to define social as economic sustainability alongside physical environmental values is highlighted. Chapter 2 traces the history of development in New Zealand. Not surprisingly the author highlights that “colonial” landscape designs have encouraged a dismissive attitude towards indigenous flora and fauna which continues to hinder innovation.

Part 2 looks at influences and challenges, emphasising the social dimensions of sustainability. Chapters 3–5 examine social and environmental sustainability, Māori identity, and some of the special challenges faced by Auckland, concluding that while the “compact city” promises to save Auckland from the sprawling form of Los Angeles, there is no guarantee of our willingness to adapt. Chapter 6 illustrates the hurdles involved in public participation.

Part 3 explores opportunities in planning for sustainability. Chapters 7–9 suggest there are no easy or single solutions but a diversity of ways to move towards more liveable settlements. Chapter 7 explores methodology for understanding distinct social and physical characteristics of communities while chapter 8 focuses on nature and green space in urban planning. It provides a planning perspective and a good history of green-space, parks and reserves in our cities. The author highlights failures to use prominent natural features in city design.

To many ecologists or ecological engineers there will be insufficient detail in this chapter. Ecosystem services offered by green space, swales, rain-gardens, green-roofs, retention ponds and wetlands (e.g., Christchurch City Council’s Water and Wetlands Natural Asset Management Strategy 2000) are not covered. Although the New Zealand Biodiversity Strategy and exotic vs native city-design paradigms are discussed, the huge array of native vegetation restoration programmes in New Zealand cities and the potential for green space and future biodiversity-friendly urban development to do more (e.g. ecosystem services or urban design practices for biodiversity) deserve more attention. Chapter 9 is a useful summary of sustainable-design theories and principles, which are linked in Chapter 10 to a range of innovative regional planning strategies being adopted in New Zealand.

In the final chapters the authors emphasise the need to pull together the characteristics important for sustainable settlements. The book is a rich source of

ideas and information, and areas for future research are fleshed out. It also attempts to present visions for how we might do better. Clearly innovative ideas and finding the means to implement them are a major challenge. It would be good to see a chapter from an urban ecologist in similar publications in the future, particularly one who is empathetic with planning and design thinking articulated in this useful publication.

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Challenges for New Zealand’s sustainable development brought into sharp perspective

van Roon, M. & Knight, S. 2004. *Ecological Context of Development : New Zealand perspectives*. Oxford University Press, Auckland, N.Z. ix + 339 pp. Paper, ISBN 0 19 558435 X, \$69.95.

Marjorie van Roon and Stephen Knight’s recent text on ecological consequences and challenges for New Zealand development is a welcome teaching resource that will empower future planners and ecologists for more integrated environmental management. It is a pleasure to see New Zealand texts like this one emerging to give an in-depth local context to the global environmental crisis and professional responses to it. The material is superbly up-to-date and detailed case studies add the depth that will make the text relevant and exciting for students and policy makers. There is a wonderful synthesis of environmental and social perspectives, though less treatment of economic sustainability. Best of all is the book’s accent on conservation through sustainable use rather than preservation for intrinsic value: the former represents the real challenge for New Zealand’s environmental management and conservation in the coming century.

The book’s chapters are well linked by extensive introductions and conclusion sections to allow a quick dip to specialized areas, but I found the division between chapters and order of material to be somewhat fractionated and repetitive. A text with fewer chapters and more streamlined flow in the last half would have helped the reader’s integration of the wide-ranging material covered.

It is inevitable that any synthesis of New Zealand environmental management would have to be supported by citation of several personal communications, websites and government reports rather than just peer reviewed scientific papers. Indeed use of such sources offers the immediacy and broad coverage that gives

the book much of its appeal. The text's bibliography underscores the authors' sound scholarship. However, sometimes the use of newspaper articles and references to notes from lectures or conference oral presentations appeared to be lazy alternatives to citations of more accessible and therefore traceable material.

Case studies were mainly chosen from the northern part of New Zealand, but this represents more of a lost opportunity than a serious weakness in the book. This text was refreshing and unusual in its strong coverage of urban and peri-urban problems and solutions. My only substantive disappointment about van Roon and Knight's book concerns an apparent concentration on wet habitats and a corresponding weaker consideration of terrestrial ones. Coverage of air management issues is also scant. If prospective readers are primarily interested in management of waterways and coastal areas or land/water interactions, this uneven coverage will be of no concern. However land degradation in New Zealand managed landscapes is acute and ongoing – we need another text like this one to concentrate on the farming and forestry issues and their ecological interaction with the nation's preservation estate.

I expect this book to be useful for teachers and students of geography, planning, ecology and environmental management. It should also provide a valuable overview for policy makers and environmental managers in the district, regional and city councils. I believe the local governments to be the sleeping giants of environmental management in New Zealand. This text is likely to hasten their awakening to become equal partners alongside the Department of Conservation to work together for economic, social and environmental sustainability in New Zealand.

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Sampling insects in forests

Leather, S. R. (Editor) 2005. *Insect Sampling in Forest Ecosystems*. Blackwell Publishing Ltd, Oxford, U.K. xii + 303 pp. paper, ISBN 0632053887, £34.99.

Insect species in forest ecosystems comprise by far the largest proportion of New Zealand's indigenous biodiversity. Of course, entomologists have known this for some time, and have endeavoured to collect and describe the full taxonomic diversity of insect species. Ecologists, on the other hand, are rarely interested in systematic inventories, and focus instead

on explaining the distribution and abundance of organisms using standard sampling and experimental protocols. Unfortunately, while there may be a general awareness among ecologists of the importance of insects in forests, the huge diversity of species and inherent difficulties associated with sampling and identifying insects have greatly detracted from their widespread use in ecological studies. At face value, then, *Insect Sampling in Forest Ecosystems* would seem to be tailor-made for promoting a greater understanding of the theory and practice of sampling forest insects. Unfortunately, although there is a wealth of useful information within individual chapters, the book as a whole is not well structured and is difficult to use effectively from the standpoint of a researcher or student interested in evaluating the relative merits of particular sampling techniques or sampling protocols.

Insect Sampling in Forest Ecosystems is an edited volume in Blackwell's *Methods in Ecology* series, with 11 chapter contributions from 15 well-known forest ecologists. Unfortunately, the book very much falls into the trap of many edited volumes in the general lack of cohesion and limited cross-citation between chapters, and in a weak framework with which to hold the book together. The introductory Chapter 1 'Sampling theory and practice' by Simon Leather and Allan Watt, makes a cursory attempt to live up to its title, but there is no compelling case for why quantitative sampling is important, nor any in-depth coverage of the principles of sampling or the relative merits of different sampling techniques. Certainly, this type of information is scattered throughout various chapters in the book (notably in Chapter 9 'Sampling devices and sampling design for aquatic insects', by Leon Blaustein and Matthew Spencer, where a strong framework for categorising sampling techniques is given along with a detailed discussion of the issues surrounding sampling precision), but I would have expected to at least see reference to this in Chapter 1. Instead, the authors seem to have been purposefully generic in their description of how to choose an appropriate sampling approach, instead resorting to deflective tautologies, such as "before a sampling scheme can be devised, one needs to do some preliminary sampling", which are less than helpful. One may wonder, then, how best to devise the sampling scheme for the preliminary sampling programme?

There are so many different ways that greater structure and utility could have been imposed on the book, that it is hard to fathom why this was not done; for example, by discriminating among sampling techniques and protocols on the basis of measurement versus monitoring techniques, observational versus experimental approaches, qualitative versus quantitative sampling, activity-based methods versus direct density estimates, or a host of other alternatives.

Without this, the reader cannot use the book effectively for its stated purpose as a “comprehensive guide to running experiments within and beneath the forest canopy”. Surprisingly, many of the chapters are also curiously sparse in the use of empirical examples from forest habitats, and instead the majority of examples are from non-forest (predominantly agricultural) systems. This does not necessarily affect the evaluation of the trapping techniques themselves, but it is at odds with the objective of describing and “overcoming the special problems faced by entomologists working in forest ecosystems”. In many cases it was not always clear to me, even as a forest ecologist and entomologist, what these ‘special problems’ were.

One upshot of a lack of structure at the start of the book, is that subsequent chapters are arranged in a decidedly more eclectic, rather than logical fashion, with a curious mix of individual contributions that are variously habitat-based (e.g., Chapter 8 ‘Sampling methods for water-filled tree holes and their artificial analogues’ by Stephen Yanoviak and Ola Fincke), technique-based (e.g., Chapter 3 ‘Pitfall trapping in ecological studies’, by Ben Woodcock), taxon-based (e.g., Chapter 10 ‘Methods for sampling termites’, by David Jones, Robert Verkerk and Paul Eggleton), or guild-based (e.g., Chapter 11 ‘Parasitoids and predators’, by Nick Mills). There is no clear reason for this, and so many omissions that could usefully have been included, that the book rapidly loses its general appeal and becomes useful only to those researchers who already know that there is a specific chapter of relevance to them in the book. For example, one might question why there is a chapter on insect parasitoids and not a chapter on methods for sampling insect pollinators in forests? Or, equally, why there is no general coverage of recent advances in sampling techniques for soil insects (beyond the more specific information in Chapter 2 ‘Sampling insects from roots’, by Alan Gange, which is in itself a goldmine of information)?

At the conclusion of the book I was perplexed, though not particularly surprised by this point, to find that there was no summary or synthesis chapter whatsoever. The book simply ends with the final chapter on ‘Parasitoids and predators’. The one attempt to carry a thread of continuity through the book is a tabulated ‘Index of methods and approaches’ at the end of each chapter. This is a great idea and very useful within the context of a single chapter, but even here the index subheadings differ widely between chapters, and it would have been more useful if a complete index had been compiled for the book as a whole. In Chapter 10, David Jones and coauthors provide a very useful decision-tree approach to selecting the most appropriate termite sampling methodology, and this type of approach could have been well utilised throughout the

book.

Despite all of these criticisms, I would unquestionably recommend specific chapters in this book for further reading, and indeed I have already done so with my own postgraduate students; such as for Woodcock’s wonderfully balanced and comprehensive account of pitfall sampling, and Yanoviak and Fincke’s characteristically thorough description of the problems and limitations of tree-hole sampling. However, readers interested in a good overview of the theory and practice of insect sampling will find Southwood and Henderson’s *Ecological Methods*, Third Edition (Blackwell Publishing, 2000), or one of its earlier incarnations, to be much more useful, for approximately the same money.

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A comprehensive account of southern New Zealand’s natural history

Darby, J., Fordyce, R.E., Mark, A., Probert, K. & Townsend, C. (Editors) 2003. *The natural history of southern New Zealand*. University of Otago Press, Dunedin, New Zealand. x + 387pp. Hardcover, ISBN 877133 51 5, \$NZ 120.00.

All New Zealand ecologists should welcome this multi-authored contribution. It is the first of its kind since the publication of *The Natural History of Canterbury* (Knox 1969) and, like that book, will be the key reference for some time to come. This large-format book also sets a standard of production, lavishly illustrated with hundreds of colour photographs, clear and legible figures and diagrams that future publications will be bound to emulate. Its breadth of coverage is commendable, from geology and climate to most terrestrial and aquatic ecosystems. It is a book of record. Some chapter authors have taken the approach of describing community composition and pattern. Others have emphasised process or life histories of representative species, which is usually more exciting prose (e.g., Alison Cree’s “Imagine being pregnant for 14 months – with twins” describing the life history of central Otago geckos).

The book is written in a largely popular style, again in the tradition of Knox (1969). References are not interspersed in the text; instead there is a “Further Reading” section pertinent to each chapter, ranging from scant to exhaustive, before the index. A drawback

is that sometimes the book can appear authoritative when only opinion is ventured. Some paleontologists may beg to differ with Lloyd Davis's statement that introduced mammals "have done more damage to the country's fragile ecology than anything else in the last 65 million years". As in any multi-authored book, inconsistencies between chapters are inevitable. Editors might have made some attempt to reconcile some contentious statements. For example, Jeff Connell's assertion that "pollen analysis shows that the rainshadow high country of southern New Zealand has been extensively covered with grasslands and shrublands throughout post-glacial times" finds little support in the chapter by Matt McGlone and others that reviews the fossil evidence.

The authors write with enthusiasm on their subjects, much of it gleaned over a working life. For example, a chapter by Alan Mark and others on tussock grasslands has the hallmark of the authors having trod nearly all the large landscape they describe, camera in hand. Key messages, with superb illustrations, emerge about what an important repository of biodiversity and endemism is to be found in southern New Zealand. This is counter to the norm of decreasing diversity with increasing latitude and is because southern New Zealand, especially the ancient peniplain, contains some of the country's least altered Gondwanan landscapes. The interrelationships between landforms and reasons for local endemism are clearly explained, especially in relation to galaxiid fish in a section by Graham Wallis and John Waters.

The book's coffee-table appearance suggests it should appeal to any lay reader. Sometimes the book is successful, especially in the reduction of large subject areas to chapter length – geology (Tony Reay) and climate (Blair Fitzharris). Elsewhere it is less successful. For example, I asked two lay people for their impressions of the brief section on biogeography by Michael Heads and Brian Patrick – they were completely bamboozled. Other aspects, more subtle, work against popular success. While the book is a perfect introduction to remote places where most readers will never go, I looked in vain for natural histories of areas close to where most people in southern New Zealand live, such as the Town Belt in Dunedin or Thomson's Bush in Invercargill. A widespread ecosystem (ryegrass and clover) is scarcely mentioned in the text other than the history of its development. Other ecosystems such as lawns merit no attention despite intensive research conducted on them in southern New Zealand (e.g. Watkins & Wilson 1992). Not only do these omissions overlook the ecosystems most familiar to lay readers but it also suggests they have no "natural history". These ecosystems represent an end of a continuum from the alien to the indigenous in composition that is here to stay as long as people

dominate the landscape and decide on its use. Attitudes about alien biota vary in the book too, from the admonition that "we should hate [alien mammals] with a passion" (Lloyd Davis) to a more prosaic treatment of continued introduction of aquatic alien predatory fish (Tony Brett). Attitudes are likely to be equally various among lay readers.

"Southern New Zealand" might have been defined a little better (it can creep as far north as Haast) and maps that attend some chapters showing localities would have benefited others. Typographic errors are almost absent (I found one) and two figures seem to have been transposed (p68). Buy this book so that ecologists and natural scientists elsewhere in New Zealand will be encouraged to produce similar books.

References

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