

on the number of grains in one centimeter cubed) and volcanic gases, to name a few.

Users can leave their thoughts on a comment feature, so the experts can share their knowledge about these rocks. Students and scholars will appreciate this website for the content, and those of us who simply want to revel in the beauty of rocks will appreciate it as well.

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Statistics from A to Z: Confusing Concepts Clarified

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Wiley

Hoboken, NJ

2016

xxvi + 419 pp.

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Everyone needs to know a bit about the interpretation of statistical data. I would go so far as to say that some understanding of statistics is an essential part of democracy. The average citizen, faced with statements like “kills 99 per cent of all known germs” or “contains 25 per cent less fat”, needs to know what they actually mean. This understanding is rendered difficult by the fact that many ordinary citizens have an aversion to numbers, and most especially to numbers accompanied by Greek squiggles. People who would be ashamed to admit to any degree of illiteracy will laughingly announce that their eyes glaze over when they see numbers on a page. There is therefore a need for general books and other guides to help. The classic of these is, of course *How to Lie with Statistics* (Huff, 1954) – still a useful tool sixty years on.

Producing and understanding statistical data is an important part of all scientific, and especially, social scientific research. Though qualitative approaches have made an edge in the social sciences in recent years, it is by and large true that “if you cannot count it, it does not count.” Research workers therefore need detailed guides to statistical methods. We have recommended numerous reference tools in this journal over the years, notably the American Psychological Association *APA Dictionary of Statistics and Research Methods* (Zedek, 2014) (RR 2014/163); *Dictionary of Statistics* (Upton and Cook, 2014) (RR 2014/264); and, my first

choice among such dictionaries, *The Cambridge Dictionary of Statistics* (Everitt and Skrondal, 2011) (RR 2011/224).

Many scientific researchers speedily get a grip on statistical methods. The two disciplines which most depend on statistics however, are psychology and sociology, and unfortunately these disciplines tend to attract students who have specialised in humanities-based subjects at school, and are more averse to numbers than most scientists. Students in these disciplines therefore need extra guidance.

This book seems to me to be aimed at scientific researchers rather than at the general public or at social science students. It consists of 75 articles, arranged in alphabetical order. Each has a first page of brief definitions, followed by three or four pages of detailed analytic discussion. These take statistical methods up to a very advanced level – the author claims that it is possible to pass Six Sigma Black Belt using it (I must admit that I had never heard of Six Sigma before, until I looked it up - www.bing.com/search?q=six+sigma+explained&form=PRGBEN&pc=EUPP_UP97&httpsmsn=1&refig=5125c51690b14906bee1dfdf3f22d9ba&pq=six+sigma&sc=8-9&sp=2&q=AS&sk=AS1 but, having done so, even the depth of statistical skills needed for the yellow belt level looked terrifying to me, so black belt must be pretty impressive).

The potential market for this book, lying somewhere between a specialised dictionary and an advanced textbook, is therefore more limited than its title might suggest. It would be too off-putting to be of use to general readers, so I would not recommend it for public library purposes. Mathematics undergraduates would find it a very useful tool for getting into the practical applications of their subject, but it would probably not suit undergraduates in non-mathematical subjects. Even among taught postgraduates, looking around my own institution I can see that many of the neuroscience students would be able to use this as a quick reference tool, though a lot of them probably already know enough about statistical methods for their own purposes. Many of the clinical psychologists would need something more basic to start with, though they might work up to this level. The social work masters students need some understanding of statistics but would find this completely beyond them.

All libraries should try to acquire as many basic texts on the interpretation of statistics as possible. Most libraries would benefit from acquiring reference tools such as *The Cambridge Dictionary of Statistics*. Academic libraries catering for mathematicians and for postgraduate scientific researchers would find this book a useful quick reference tool, supplementing the

alphabetic dictionaries on one hand and more organized textbooks of statistics on the other.

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Trees of Western North America

Richard Spellenberg, Christopher J. Earle and Gil Nelson

Princeton University Press

Princeton, NJ and Oxford

2014

560 pp.

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Princeton Field Guides

Keywords Guides and handbooks, North America, Trees

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The *Trees of Western North America* is the companion title to the eastern edition that was released in the same year and previously reviewed in these columns (RR 2016/130). This book is part of the renowned *Princeton Field Guide* series, which presents information on plants, animals, ecology and conservation in a format accessible to scientists and amateur naturalists while in the field. Focusing on the western half of North America, this region is defined as the area from the eastern base of the Rocky Mountains to the Pacific Ocean, or more specifically west of the 100th meridian line. Coverage includes 630 native and introduced species of trees, which is significantly more than the main competitors to this book, the *National Audubon Society Field Guide to North American Trees, Western Region* (Little, 1980) and *A Field Guide to Western Trees* (Petrides, 1998).

Organization of the book is by species, grouped into two sections: gymnosperm (e.g. conifers) and angiosperms (flowering plants). Gymnosperms come first, preceded by angiosperms. The angiosperms are further subdivided into monocots and dicots. Within

each group, trees are organized by family, genus and finally species. Family groupings are differentiated by coloured headers at the top of each page, allowing for quick browsing. Each family, genus and species has its own description, unless there is only one species representing a genus, in which case they are combined. The primary finding aid to individual species is a leaf and twig key at the beginning of the book. However, because the paintings of individual leaves and twigs are so small, it is difficult to assess details that are important for identification.

Species' descriptions vary in length based on their cultural or ecological significance, or the extent of their geographic range. However, most species are described within one page. All native species, and some non-native, are headed by a Quick ID statement to provide key identification characteristics. Following is a more detailed description of habitat, bark, twigs, foliage, flowers and fruit. Coloured paintings of the overall tree, leaves, fruit, flowers and bark provide important visual cues. Range maps are also included at the end of each entry. Other features include a nine-page section on tree biology and a brief description of forest structure. A five-page glossary helps define terms mentioned in the book, and there is a complete index of species names, including common names.

Compared to the *National Audubon Society Field Guide to North American Trees, Western Region* the *Princeton Field Guide* provides more detailed descriptions of identification features such as bark, twigs and flowers, often differentiating between young forms and more mature trees. Also, in the *Trees of Western North America*, coloured paintings are on the same page as the descriptions. Although the *National Audubon* guide has coloured photographs for leaves, flowers and fruit, they are located in a separate section of the book. One nice feature of the *National Audubon* guide is the brief cultural, historical or natural history tidbits provided in the species descriptions. This type of information is not as common in the *Trees of Western North America*.

In contrast to the previous books, *A Field Guide to Western Trees* uses a more sophisticated key to identify species. The key at the beginning of the book helps differentiate whether a species for identification has needle, scale-like or broadleaf leaves, and then further refines the search by categorizing the needles/leaves by length, number per cluster, opposite or alternative branching and simple or compound. From here, users are directed to plates that provide colour pictures of the leaves/needles, fruits and stems of like-appearing trees. Although the key is sophisticated, it is mainly