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Book Reviews

Grassfires: Fuel, Weather and Fire Behaviour, 2nd edition

P. Cheney and A. Sullivan. CSIRO Publishing, Collingwood, 2008. x + 150 pp. Price AUD $40.00 (paperback). ISBN 978 0 643 09383 6.

With their book *Grassfires*, Cheney and Sullivan consolidate research findings and observations collected over the last 60 years that relate to the behaviour of fire in grasslands. The authors do not identify a specific target group for the book, but aim to inform anyone with an interest in grassland fire behaviour. While the book does not discuss the ecological impacts of fire, it does discuss differences in fire behaviour within six different grassland types, ranging from tropical grasslands to crop lands and grazed pastures.

In keeping with the book's emphasis on fire suppression, the sections clearly illustrate the practical implications of the factors that are discussed. This gives the reader an increased understanding of the complexity of the topic and its application.

The initial chapters introduce various topics related to grass fuel and the process of combustion before consolidating these in a general chapter on fire behaviour. This chapter might be considered the core of the book taking the reader through the implications of different shapes of fire, fuel arrangement and wind speed. Subsequent sections refine on the implications of the various factors and components in terms of fire spread and fire danger. Here the authors guide the reader through the *CSIRO Grassland fire spread* and *Grassland fire danger* meters. The book then reviews the environmental conditions associated with some prominent fires in Australia's history, followed by a number of practical guidelines for suppression in grasslands. The final chapter discusses a number of misunderstandings associated with grassfires and provides a few very practical guidelines towards survival in a fire situation.

Although the book focuses on grasslands, the authors frequently highlight differences in behaviour between grassland and woodland fires. The text is supported by numerous well chosen, high-quality photographs and diagrams, although a few of the maps provided may appear to contain a little too much detail, making them difficult to interpret.

When describing the complex of interactions of numerous factors, it is often difficult to deal with individual topics sequentially, without referring to concepts that had not been dealt with by that point. Generally, the authors dealt with this problem very well. However, it would benefit the reader if there was some additional cross-referencing of sections or if explanatory text boxes were included. In part, this is addressed by the comprehensive glossary provided at the end of the book.

Expression and language used by the authors is, for the most part, 'academic' although some of the later chapters project a more personal tone. The text is nevertheless quite easy to read.

The layout of the book seems to have been given careful consideration in some aspects, and neglected in others. The use of 'white spaces' projects a less cluttered and more informal image that improves the readability. Similarly, few double pages do not include at least one figure or table to break up the text. However, in quite a number of cases, discussions in the text relate to figures that are presented on subsequent double pages. This requires frequent paging, which is a little irritating.

In summary, *Grassfires* presents a solid review of the theoretical aspects of fire behaviour, which underpins the practical aspects of fire suppression in a grasslands environment.

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Noninvasive Survey Methods for Carnivores

R. A. Long, P. Mackay, W. J. Zielinski, J. C. Ray (eds). Island Press, Washington, 2008. xi + 385 pp. Price A$90.00 (paperback). ISBN 9781597261203.

There has recently been a substantial surge in studies concerned with predators, their interactions with other species within communities and their influence on ecosystem function. It is clear that apex predators play a significant role in maintaining biodiversity throughout the world, principally by controlling populations of herbivores and/or by suppressing populations of smaller-sized predators. Unfortunately, many of the world's predators have suffered drastic declines in both their distribution and abundance, and their survival, as well as their roles within the landscape, is now at serious risk. Studying these species with the aim of assisting in their conservation and management is typically difficult, because of their often shy and cryptic natures, the difficulty and danger associated with handling and their generally low and sparsely distributed

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populations. Therefore, traditional methods of biological survey are often inadequate or prohibitively costly and time-consuming. For this reason, a new book '*Noninvasive Survey Methods for Carnivores*' which reviews non-invasive approaches to the study of mammalian predators is timely. Although this book is largely focused on terrestrial North America and its mammalian carnivores, where indeed most of the work and advances have occurred, the information and specific methodologies contained within will no doubt be of great use to researchers studying other taxonomic groups and/or ecosystems.

The book consists of 12 chapters. Chapter 2 provides readers with a summary regarding which objectives can be satisfied and information acquired through non-invasive techniques. Chapters 3–7 provide summaries of specific methodologies, all with a relatively similar and very helpful framework: background, target species, strengths and weaknesses, treatment of objectives, the application of survey method, practical considerations, survey design issues, sample and data collection and management, future directions and concluding remarks and case studies. It is also very useful that the chapters provide extensive reviews of the pertinent literature with regard to each topic.

As a field biologist currently working on carnivores and their functional role(s) within the landscape, it is apparent to me that in many situations no one technique used in isolation will give me the quality and quantity of information required, particularly because I am interested in communities and not single species. For this reason, it is more common for researchers to employ a range of techniques in combination, and chapter 8 reports on how this synergy may often lead to more useful data on multiple species and aspects of their ecology and behaviour. Did you know that many predators can be attracted with something as simple as a spinning pie tin or compact disc? There are many examples throughout the text of the ingenious but not always obvious ways people have successfully attracted and surveyed predators.

Two recent and major technological advances that have had an important influence on the growth of study of carnivores are the refinement and availability of digital remote camera traps and the use of advanced molecular tools. These are covered in chapters 5 and 9, respectively. However, I was a little shocked at the impression given in the text that field ecologists are often hampered by molecular labs that are slow to process samples and provide results. This seems strange to me as it is routine in many cases to have samples processed and the data available within a matter of days or weeks, not the months or years stated in the text. I was also surprised not to see adequate space and consideration given to the collection and use of ancient DNA. I have no doubt that ancient DNA techniques will very shortly be a major part of many predator-related studies.

How to analyse and gain inference from many of the data that are collected about predators through non-invasive techniques is often a significant challenge to researchers. Chapter 11 seeks to address and overcome many of the potential problems, such as the estimation of detectability, occupancy and distribution, inferences about relative abundance or the estimation of abundance, and identifying individuals through photos and/or molecular data. While this and the discussions of which statistical programs are useful are informative enough, a section discussing GIS-based analyses (including the application of niche modelling) is a noticeable omission. The final chapter's (synthesis and future research needs) greatest quality is that it provides a table which compares the use of non-invasive survey techniques across a large range of species, which will be most valuable to anyone in the design phase of a carnivore-related project. It also touches on new advances likely to become more widely used and helpful in the future, including the application of detection dogs.

Despite the few concerns I have identified, *Noninvasive Survey Methods for Carnivores* stands as a valuable and impressively thorough repository of all the necessary information required to successfully conduct studies of carnivores, with the inclusion of the most recent and pertinent technological advances. I therefore have little doubt it will become somewhat of a bible to all field-based researchers who work on predators.

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