muscle tension and its development appears to be temperature independent, contraction velocity and fuel use show little thermal compensation. Consequently, sprint performance is comparable to that of temperate species over a 9°C range. More significant for the consequences of global warming is exciting new data showing that notothenioids are capable of distinct warm acclimation, rather than just tolerating higher temperatures, which calls into question the dogma that Antarctic fishes are extreme stenotherms. As with these other processes, the principles of adaptation to the cold, dark and relatively quiet world they inhabit should be common to both faunas with respect to neuro/sensory physiology where it is important to distinguish between resistance adaptations (change in tolerance of physiological processes outside of normal limits) and capacitance adaptations (compensatory changes to offset the effects of cold). It appears that nerve conduction velocities are higher than temperate species at a common temperature, but with the trade-off that they fail at relatively low temperature, providing interesting parallels between fishes of high latitudes and deep sea (see vol. 16).

This is an excellent summary of current knowledge written by the acknowledged experts in the field. It will be a valuable resource about the physiology of fishes living at high latitudes for many years, as well as providing a good overview of general topics in fish physiology. With its emphasis on the challenges and adaptations of fishes at high latitudes, it is also timely for those with an interest in the effects of global change in polar regions. The audience will include comparative physiologists, thermobiologists, ichthyologists, and fishery scientists. It is highly recommended.

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The Periglacial Environment

Hugh M. French
John Wiley and Sons, 2007
ISBN 13:978-0-470-86588-0, 458 pages, £80

The updated and larger Third Edition (458 pages compared to 341 of 2nd ed.) has 15 chapters grouped in four sections: I. the Periglacial Domain, II. Present-Day Periglacial Environments, III. Quaternary and Late-Pleistocene Periglacial Environments, and IV. Applied Periglacial Geomorphology; section II is by far the largest with seven chapters and 234 pages. With *c*. 1350 references to 2006 this an 'up-to-date' volume. It is reasonably easy to read, easy to find information, with many figures and photographs. Each chapter has "Advanced Reading" suggestions at the end together with "Discussion Topics" presumably aimed at helping focus thought and/or classroom discussion. It is an interesting reflection on advances (or the absence thereof) in periglacial research that several discussion topics remain the same as those in the 1996 (2nd) edition.

It is clear that there is more detail and confidence in the writing where the author is dealing with his own expertise (notably permafrost, permafrost-related topics and applied aspects), and less so in other areas (notably weathering and weathering-related landforms and sediments). Indeed, it is within weathering that I found some of the greatest weaknesses. The concept of "thermal *fatigue*" is not mentioned at all, only thermal *shock*, within the framework of thermal *stress* and "Insolation Weathering", but it is very encouraging indeed to see the start of some questioning of the ubiquitous application and assumption of the freeze-thaw concept. However, one is still told that (p. 61) "...an exposure of shattered fissile sandstone is almost certainly the result of frost action.." but there yet to be a single field instance of *proving* (rather than assuming/speculating) weathering was actually the result of freeze-thaw and, equally, that no other processes played a role. That said, the overall presentation does offer new insights and opens the way for new thinking on these topics and thus the volume does, especially for the undergraduate audience, do a good job; the criticisms reflect my personal frustrations regarding the present state of weathering research. Perhaps that would be my biggest concern for undergraduate use - it provides a good, solid, well-referenced text for the undergraduate but does not really (for a number of topics) "step outside of the box" and suggest either how little we really know or encourage us to question some of our long-cherished concepts. This is clearly the case with respect to "nivation/cryoplanation" - with (interestingly) the Index citation for 'Nivation benches' indicating "see cryoplanation terraces". Indeed, while there are a couple of pages on 'Cryoplanation' (p. 244–246) 'Nivation' *per se* does not even warrant a sub-section heading but rather is noted *within* the sections 9.2.2 Rectilinear Debris-Mantled Slopes, 9.2.5 Stepped Profiles, and 9.6 Slopewash. None of this reflects the recent questioning regarding these two concepts and the almost total absence of *any* data from 'cryoplanation' terraces or actual testing of the cryoplanation concept.

It is always easy to find fault but, at this time, there are no other up-to-date periglacial texts available and this one *does* do a good job. Graduate students would also find this a very valuable resource for a broad-based background on almost every periglacial topic (the biggest absence would be that of periglacial processes and landforms on other planets for which there is a growing body of literature) and offer sufficient literature resources to allow follow-up into more detailed studies. Thus I strongly recommend this volume,

even for those who already have the 2nd ed., and suggest it will continue to be *the* recommended text.

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The Invertebrates of Macquarie Island

P. Greenslade
Australian Antarctic Division, Kingston, 2006
ISBN: 1 876934 107, xvi + 326 pp. (incorporating van Klinken, R.D Greenslade P. (2006). Insecta, pp. 19–74).
AU$70 + postage

This is the second in a series of books recently published by the Australian Antarctic Division, the first being R.D. Seppelt's (2004) *The Moss Flora of Macquarie Island*. Greenslade's volume provides something that is currently unavailable for any other sub-Antarctic island and, indeed, for the Antarctic continent itself - a readable synthesis of the state of biodiversity and ecological knowledge across all of the major terrestrial invertebrate groups. Taken together, these two volumes provide a benchmark that should be the envy and aim of the various national authorities administering the other sub-Antarctic islands. In most instances (with the admirable exceptions of Marion Island vegetation and South Georgia lichens) these have no accessible recent treatments even of the individual major elements of their flora or invertebrate fauna, let alone syntheses across groups. This volume is particularly timely in the context of the continuing damage to Macquarie Island's terrestrial habitats through the currently uncontrolled rapid expansion of the island's introduced rabbits. The threat to the unique ecosystems of this island, themselves a major factor underlying its current World Heritage Site status, is acute and immediate. It is only with access to fundamental baseline information such as in this volume that any objective assessment of current trends, or of the effectiveness of any mitigation measures that may eventually be introduced by the island's managers in the future, can be made.

The volume is organized in three main sections - the first, a relatively short Introduction to Macquarie Island (16 pages), is followed by the 'Systematics and Biology of the Terrestrial Invertebrates' (174 pages), and finally a short concluding Discussion (12 pages). In addition there is an extended series of three Appendices incorporating 13 Tables (55 pages), a thorough Glossary, extended citation list and indexes, giving the volume a total of xvi + 326 pages. This book is not one that can be simply picked up and read. The somewhat unusual form of citation required for the 'Insecta' element of the Systematics section is a little frustrating, as this element appears little different to any other element of this section in the actual text, while its lead author is also acknowledged in the volume as the author of the first draft of several other systematic elements.

The Introduction provides a nice brief background for the reader unfamiliar to the island - covering its geology, climate, soils and vegetation. The concluding Discussion unfortunately reads in places as something of an afterthought. It is difficult to balance the need for a short, clear summary, and to lead the reader towards the most authoritative current literature in the fields covered. In this task I feel an opportunity has been missed, with several of the subsections being overly superficial and failing to identify important literature sources.

The majority of the book is given over to as thorough a taxonomic and biological examination of the terrestrial invertebrate fauna as is possible at present. Working through the various taxonomic groups covered, it very quickly becomes apparent that, even on an island such as Macquarie (which, as the authors state, has probably received more expert invertebrate systematic attention than most comparably-sized areas of Australia), there is a vast amount more to be learned. For many of the groups covered, taxonomic uncertainty remains the norm, while there is also a continued lack of long term directed survey and monitoring data. On the one hand the authors of the volume, applying their considerable expertise, have assembled the best possible baseline information on invertebrate diversity and distribution for Macquarie Island. Such authoritative baseline information is a prerequisite for anybody seeking to document and understand patterns in biodiversity and assess the impacts (if any) of climate change and other human activity. On the other hand, the volume contains an implicit and stark warning: survey and taxonomy may not be seen as 'sexy' science, but are fundamental to advancing the state of knowledge and our ability to identify change. This is a message that authorities responsible for scientific funding and environmental management ignore at their peril.

The systematic section of the book provides a thorough taxonomic and literature resource relating primarily to Macquarie Island, but extending outwards to distributions across the sub-Antarctic. This section will be of great value to students of terrestrial invertebrates across the region - while the specific taxonomy relating to each sub-Antarctic island will be slightly different, in no other place that I am aware of is information brought together in such an accessible fashion allowing one to approach the taxonomy of these generally unfamiliar groups. In this sense, the volume provides a literature and practical taxonomic source that, in practice, will be 'dipped into' by specialists and students requiring specific information. In combination with the extended Appendix Tables, the book does indeed contain a vital new resource 'for invertebrate biologists with an interest in high latitude environments', as it is described on the flysheet.

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