

tional Insect Collection and through his efforts a branch unit in economic ornithology arose. This office became the Bureau of Biological Survey and later metamorphosed into today's U.S. Fish and Wildlife Service.

Locust has important Canadian content. Entomologist Norman Criddle of Manitoba devised a widely-used mixture of copper acetoarsenite, molasses and horse manure to combat later outbreaks of somewhat less harmful grasshoppers. Criddle also collected the world's last two specimens of *Melanoplus spretus* on 19 July 1902. Three Saskatchewan men, Paul Riegert, Bill Chapco, and Bob Randell, also helped solve problems discussed in later chapters.

Why did the Rocky Mountain grasshopper become extinct? Five different theories in turn held sway: the spread of alfalfa; the demise of the Bison; changes in weather; overgrazing of grasslands; widespread prairie fires – but each was discredited, though two were later revisited as contributing factors..

To allow DNA studies and do radiocarbon dating, Lockwood determined to find locust specimens entombed in glacial ice for a century or more. His first try, in 1987, yielded a quarter pound of dried grasshopper parts; when results were submitted to a leading entomological journal, the editor rejected the paper and informed Lockwood that “you have mistaken natural history for science.” In 1988, Lockwood and colleagues collected 134 specimens of twenty species of grasshopper, but no locust, on the glacier. In 1989, they obtained 4 mg of grasshopper parts, including mandibles that appeared to match those of extant preserved specimens of *Melanoplus spretus*. Finally, in

1990, at the melting edge of glaciers, they collected 250 locust bodies, including 14 males with well-preserved abdomens and genitalia, allowing unequivocal identification and DNA analysis. These insect bodies had taken about 150 years to travel 300 m as the ice moved from the crevasses where they had been entombed.

Why, indeed, had *Melanoplus spretus* become extinct? For once, the unplanned effects of human activity had an effect for the better. Lockwood explains that the “base locality” of the locust was, between outbreaks, restricted to a few relatively small areas in valleys within the Rocky mountains, where eggs could be deposited in sand and gravel. Following European settlement, floods occurred more often due to overgrazing on the slopes, irrigation periodically flooded the valleys, and the locust eggs lost their vitality. Ploughing and harrowing destroyed the eggs. The new alfalfa crops were inimical to development of the locust nymphs. The enigma has been solved.

Lockwood is a consummate writer. His eminently readable book is a detective story, keeping the reader in suspense to the final chapter. Admittedly this review has given away the ending and thus has spoiled some of that suspense, but the pleasure of this book lies more in its details and insights than it does in the suspense. I strongly recommend this book to everyone with an interest in a good story well told.

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Mammals of the World: A Checklist

By A. Duff and A. Lawson. 2004. Yale University Press, P.O. Box 209040 New Haven, Connecticut 06520-9040 USA. 312 pages, U.S.\$45.00.

Perhaps I should have bought this book some time ago, or at least its predecessor; *Mammal Species of the World* (Edited by D. E. Wilson, and D. M. Reeder, 1993, Smithsonian Institution Press), which contains the names of the recognized species of mammals documented at that date. So many times I have struggled to understand which species are present in a specific area. With birds this is fairly easy to resolve. English names are reasonably standard and scientific names are the ultimate guide. With birds I have rarely had to probe recent literature to catch up on the latest splits. With mammals this is much more difficult. It took some time to clarify the species and distribution of fur seals. The confusion of English names for wildebeest left me very perplexed. My latest book on African mammals was particularly mystifying. It is a translation from German to English and uses different English names for the plates and the text. The scientific names are not current. Starting with this book it took a lot of work to create a list of lemurs that showed the

currently known species and sub-species. With *Mammals of the World* this exercise is simple.

This current list contains 5069 species. From the Wilson and Reader list of 4629 the authors have subtracted 41 species that were extinct prior to 1800. These include such creatures as Steller's Sea Cow, hunted to extinction by 1768. More recently extinct species are left in, presumably as, in theory, there is a chance of still finding one alive. The Thylacine comes to mind. Duff and Lawson have added 522 “new” species. A large portion of these come from two sources. Juliette Clutton-Brock's work on domestic animals has elevated numerous creatures to species status (the Domestic Pig goes from *Sus scrofa* to *Sus domesticus* for example). The second source of change is the assignment of species status to numerous sub-species (Colin Groves of the Australian National University has been active in this exercise). Finally, 41 species have been demoted in synonymy. Sadly this loses us the Queen of Sheba's Gazelle (now a subspecies of the Arabian Gazelle), a romantic loss at least. The changes in all the above categories are fully explained in the appendices. Also included are the nomenclatural changes in scientific names.

The authors say they have followed Wilson and Coles (*Common Names of Mammals of the World*. 2000. Smithsonian Press) version of the English names with corrections and conversion to "well-established names." Generally they do not list alternative names so an animal like the Cougar, or Mountain Lion, or Catamount only gets listed as Puma. When I used the index, being uncertain of the author's choice, I looked up Lion (*Panthera leo*) knowing that Cougar would be nearby. The most odd name I found was Sewelle, the Chinook Indian name for the Mountain Beaver. This was the first time I had seen this name although Audubon used it on his painting of *Aplodontia rufa*.

Naturally I compared the list of lemurs that I had created to that of Duff and Lawson. I was not surprised to find many that I had as sub-species had been elevated to full species. Otherwise the lists were the same except for Grey-brown Mouse Lemur (*Microcebus griseorufus*). R. M. Rasoloarison, S. M. Goodman, and J. U. Ganzhorn first described this cute, hamster-like lemur in 2000. I have since been fortunate to see this little beast in South-western Madagascar. This omis-

sion is surprising as the author's references go up to 2002, but to be fair this is a family undergoing constant change.

I was also surprised that Canada was not mentioned in the range of the Red Wolf (*Canis rufus*). John Therberge's work has shown that Algonquin wolves are closer to Red Wolves than the more common Timber Wolf (*Canis lupus*). This information is far more widely known.

For those of us that like to travel and see mammals in their native habitat this book is a good and useful guide. However, it is only a list and, although it will not resolve all taxonomic questions, it will bring clarity and order to your research and therefore it is a valuable reference book. As it is based on Wilson and Reeder's out-of-date book it is more up-to-date, but I understand a revised edition of Wilson and Reeder will be published soon – should we wait?

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Parental Behavior in Lepidosaurian and Testudinian Reptiles: A Literature Survey

Louis A. Somma, 2003. Krieger Publishing Company, Malabar, Florida. x + 184 pages, U.S.\$33.50 Cloth.

This book is exactly what it purports to be. It is a summary and exhaustive bibliography of literature on parental behaviour in lizards, snakes, amphisbaenians, tuatara and turtles. Passing reference is also made to literature on other vertebrates including dinosaurs. This book focuses exclusively on behaviour as opposed to physiological adaptations and so, while parental behaviour in some species of snakes and lizards is well known, many readers will be astonished to find turtles included. Yet Somma cites references that provide some evidence of parental behaviour for seven species of turtles.

Fifteen categories of parental behaviour are discussed including defence, thermo- and hydro-regulation, assistance during hatching and facilitated feeding. For those unfamiliar with research in this fascinating field the range and diversity of parental behaviours in these reptiles will intrigue and astonish you. Unfortunately, description and discussion of these behaviours is limited to the first 11 pages of the book. This is followed by 46 pages of tables summarizing the results and guiding the reader to literature on various topics and taxa. The remainder of the book consists of 100 pages of refer-

ences and an index to subjects and taxa. Readers should be aware that the index is inconsistent as to whether it includes references to taxa within the tables (for example, it does for *Trachemys stejnegeri malonei* but not for *Eumeces fasciatus*).

The primary purpose of the book seems to be to raise the profile of parental behaviour in non-avian reptiles and encourage further research on this understudied phenomenon. It is unfortunate that having read such an enormous amount of information on this topic, Somma does not provide more insights into its evolution and ecological ramifications but perhaps the field is too young for such a synthesis. Certainly for anyone interested in embarking on research into this topic it is an invaluable and relatively inexpensive reference. For those who are most keen on this topic, Somma has also published an addendum to the book (Somma, 2003).

Reference

Somma, L. A. 2003. Parental Behaviour in Lepidosaurs and Turtles: Source Addendum. Bulletin of the Chicago Herpetological Society 38(4): 65-76.

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Prairie Ghost: Pronghorn and Human Interaction in Early America

By Richard E. McCabe, Bart W. O'Gara, and Henry M. Reeves. 2004. 176 pages, U.S.\$29.95 Cloth.

The Pronghorn, *Antilocapra americana*, formerly called "antelope," is the "most American" of the continent's terrestrial wildlife, since it is found nowhere else. It is the world's second fastest land animal, and

perhaps the most inquisitive. Protuberant eyes allow it a nearly 360-degree field of vision. Large lungs, heart and trachea permit it to achieve great speed.

This historical look at the Pronghorn is thoroughly researched, with informative tables, extensive references, and well-chosen, sumptuous illustrations. It