

life without oxygen on the planet, of a time when only bacteria lived here, in rich and unusual diversity.

The evidence of early microbial ecosystems found at the Gunflint Chert includes filamentous, spherical, and star-shaped bacteria, as well as the curious and graceful umbrella-shaped *Kakabekia* bacteria, with its spheroidal bulb, slender stipe, and umbrella-like crown. All the fossils in the book are depicted in a combination of photographs and drawings.

The fossils at Mistaken Point on Newfoundland's Avalon Peninsula were discovered in 1967 by Shiva Balak Misra, an Indian graduate student studying at Memorial University. They help fill a critical gap in the history of life on Earth: the span between the microbial ecosystems of the Precambrian era, and the animal ecosystems of the Phanerozoic.

Mistaken Point biota range from disc-like *Aspidella*, to frond-shaped *Charnia* and bush-shaped *Bradgatia*. One of the most unusual shapes is *Triforillonia*, with its three-lobed body and rounded lobes radiating from a central rosette, possibly a holdfast or polyp-like

organism. The particularly rich array of fossils preserved at Mistaken Point — a census population of thousands of individuals — offers valuable snapshots of living communities at the moment they were smothered by volcanic ash.

Fossil Ecosystems of North America is a fascinating book, easy-to-read, with highly comprehensible scientific explanations, extensive details, and helpful maps, photographs and drawings. It is, essentially, a riveting mystery story about life on this planet, filled with cataclysmic events, extinctions, takeovers, and human quests for clues and explanations, often involving conflict and heated debate. At another level, *Fossil Ecosystems of North America* is a science book for students and an interested lay readership. At yet another level, it is an unusual and informative "time travel" guide. Three books in one — a valuable addition to the bookshelves of any naturalist curious about deep time.

RENATE SANDER-REGIER

3, 11th Line, Bristol, Quebec J0X 1G0 Canada

Headless Males Make Great Lovers and Other Unusual Natural Histories

By Marty Crump. 2005. University of Chicago Press, Chicago, Illinois, USA. 199 pages. 25.00 USD Cloth, 14.00 USD Paper.

Marty [Martha] Crump, herpetologist, author of *In Search of the Golden Frog* (University of Chicago Press) and *Amphibians, Reptiles, and Their Conservation*, has compiled a remarkable collection of capsule glimpses of diverse natural history behaviour. Five section headings set the text style: Ain't Love Grand, The Mamas and the Papas, Eat to Live and Live to Eat, Don't Tread on Me, Ya Don't Say, but the serious reader should not be put off by this flippant approach — its aim is merely to grab the attention of readers who would not normally pick up a natural history book. The science is authoritative and reliable.

The detailed documentation of the scientific literature, on which the text is based, is contained in a 10-page concluding section arranged by topic with similarly innovative headings: Rampant Machismo, Come Up and See My Etchings, Sneakers and Deceivers, Survival of the Pampered, Nests Aren't Just for the Birds, Babies on Board, A Pouch Full of Miracles, Stomping for Worms, A Team Effort: How (Some) Ants Get Food, Chameleons of the Sea, Tears of Blood, Casting the Insides Outside, Spit 'n' Spray, Living

Flashlights, Rapturous and Rapacious Reptiles, Smelling is Understanding, Love Potion Number Nine, It Pays to be Neighborly. This is followed by a seven-page index of organisms in the text.

This is a book ideally suited for idle moments or bedtime reading, the entries are as short and punchy as the section headings. The multitude of observations are gleaned and summarized from an amazingly vast diversity of research by ethologists and naturalists around the world. The title comes from the generally well-known mating of certain spiders where the female decapitates the male while he is still in the process of copulation. But the text covers a vast array of other behaviours, such as the stomping of Wood Turtles to bring the earthworms cherished as food to the surface. It is a remarkable testament to the seemingly endless variety of life styles and unique behavioural innovations present in the animal world, and is highly recommended to all naturalists for both education and amusement. The text is enlivened by sketches by Alan Crump.

FRANCIS R. COOK

Emeritus Curator and Researcher, Canadian Museum of Nature, P.O. Box 3443, Station D, Ottawa, Ontario K1P 6P4 Canada

State of North America's Birds of Prey

By Keith L. Bildstein, Jeff P. Smith, Ernesto Ruelas Inzunza, and Richard R. Veit. Nuttall Ornithological Club and The American Ornithologists' Union, Series in Ornithology (3) 2008. Softcover. 466 pages, 98 figures, 42 tables, 6-page glossary.

This is the third volume in a promising and commendable new series of ornithological publications,

each appreciably larger than the AOU Monographs of long standing.

The book begins with a succinct history of raptor conservation by senior author Keith Bildstein. He tells the history of bounties as a method of raptor control. Between 1917 and 1952, Alaska paid bounties ranging from 50 cents to two dollars on over 128 000 Bald

Eagles, in spite of the bird being the American national emblem. Bounties were an expensive method of controlling predators; for example, farmers in Pennsylvania may have saved only one dollar's worth of chickens for each \$1205 in bounties paid by the state.

Most members of the public viewed hawks and owls as enemies to be shot on sight. "The only good hawk is a dead hawk," people would rationalize. In Pennsylvania, so-called sportsmen thronged to specific sites along the margin of Hawk Mountain to engage in wholesale killing of most species of raptor that flew by.

Those who believe that a single person can do little to change conservation practices will be impressed by the story of Rosalie Edge, who purchased a portion of Hawk Mountain that included the shooting sites. She then hired a warden to police the land. Against intense local opposition, the land was posted and hunters were deprived of the best place in all Pennsylvania to shoot the state-bountied Northern Goshawk. Because of Rosalie's vision and determination, Hawk Mountain has become a major educational and conservation center, increasing in importance each year.

This book lists each of the growing number of raptor monitoring sites, more than one hundred, where keen volunteers flock to help. The greatest effort is given to the fall migration. The "Veracruz River of Raptors" has posted numbers as high as 5.26 million in a single fall migration. There, the top four species are the Turkey Vulture, just shy of 2 million, Broad-winged Hawk at 1.92 million, Swainson's Hawks up to 915 000 and Mississippi Kites an impressive 155 000. A million Turkey Vultures have also been counted at Kekoldi in Costa Rica.

This book is replete with maps, graphs and tables. Seven excellent maps, for example, together demonstrate the impressive band recoveries for Sharp-shinned Hawks. Movements of many other raptors, however, are less well known and knowledge of their population levels is limited.

Raptor monitoring in Canada receives appropriate attention. Since hawks only come together in increasing numbers as they move south, they do not coalesce into large flocks in some parts of Canada. An exception are the 107 000 Broad-winged Hawks counted during the 1996 fall migration at Holiday Beach near Windsor, Ontario. There are three sites in Quebec where over 1 000 of one raptor species may be

counted in a single day. Ontario has ten sites, including Hawk Cliff, and there are two each in Manitoba and British Columbia. In Alberta, at Windy Point, manned since 1967, over one thousand each of Sharp-shinned Hawks and Golden Eagles may be counted passing by. At nearby Mount Lorette, the Golden Eagle count can reach the neighbourhood of 4700. Canadian contributors to the book include David Hussell, a pioneer in developing the Raptor Population Index, a new counting method that aims for more consistency in raptor counting. Erica Dunn is the lead author for the Watchsite Methods chapter.

While insect-eating and ground-nesting birds continue to decline across North America, there is more good news than bad from the raptor front. While Northern Harrier and American Kestrel are diminishing at many sites, Swainson's Hawks, Bald Eagles, Peregrine Falcons and Turkey Vultures are generally increasing. The ground-nesting harrier is at risk from many predators, but it makes less sense that the kestrel, with relatively safer nest sites in boxes and cavities, should also be in decline. The impact of habitat changes, weather and food availability is being studied for many species.

There are minor defects in this compendium. There is a misleading absence of "Diurnal" before "Birds of Prey" in the title. Owls are not included, although the four-year cyclical eruptions of the Great Gray Owl and Northern Hawk-Owl can be dramatic. We are told in one sentence that irruptive migrations of the Northern Goshawk "occur periodically in years of low prey availability" but we are not told that this is part of a general 10-year cycle involving hare, lynx and Great Horned Owls. In the section on types of migration, "irruptive migration" should have been added to "loop," "altitudinal" and "leap-frog" migrations. The book lacks a detailed index.

Despite these minor flaws, this book belongs in the library of every raptor enthusiast and in every university and college library. Some chapters warrant reading in their entirety and others are excellent reference material. Anyone with the slightest interest in the rapidly growing field of hawk monitoring should read the salient chapters, and become aware of the contents of the others.

C. STUART HOUSTON

863 University Drive, Saskatoon, Saskatchewan S7N 0J8
Canada

Owls of the United States and Canada: A Complete Guide to Their Biology and Behavior

By Wayne Lynch. 2008. University of British Columbia Press, 6344 Memorial Road, Vancouver, British Columbia V6T 1Z2. 242 pages 39.95 CAD Cloth.

Wayne Lynch is an accomplished photographer and writer, I had no expectations that his newest book would represent anything less than the standard for which he is known.

The list of "things I would do differently" is quite small, but worth mentioning. The title, *A complete guide...* strikes me as being somewhat pompous... we know so much about owls that offering up a single tome as being somehow *complete* is a bit much. Then there's the tank of information yet to be discovered! Secondly, I'd be willing to bet that the vast