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## Yellowstone Wildlife: Ecology and Natural History of the Greater Yellowstone Ecosystem

By Paul A. Johnsgard. 2013. University Press of Colorado, 5589 Arapahoe Avenue, Suite 206C, Boulder, Colorado 80303 USA. 248 pages, 31.29 USD, Paper.

The beautiful portrait of a coyote on the cover of Yellowstone Wildlife immediately captured my attention since it directly relates to my two books: Suburban Howls (on eastern coyotes) and My Yellowstone Experience. With my background as a wildlife biologist and an avid traveler to Yellowstone, I was a prime candidate to read this book, which is described in the inset as "a detailed natural history of the wildlife species that call Yellowstone National Park (YNP) and the Greater Yellowstone Ecosystem their home. Illustrated with stunning images by renowned wildlife photographer Thomas Mangelsen, Yellowstone Wildlife describes the lives of species in the park, exploring their habitats from the Grand Tetons to Jackson Hole." Herein, I find one of the major confusions of the book: while it initially seems like a book about YNP, in actuality only three of the 14 chapters actually concentrate on Yellowstone with most of the remaining focusing on Grand Teton National Park (GTNP). A slight modification to the title, Greater Yellowstone Wildlife, would have more accurately characterized this book which has a more

regional approach, as indicated in the "Preface and Acknowledgments" section. There, Johnsgard defines the Greater Yellowstone Ecosystem as 18 million acres of national parks, national forests, national wildlife refuges, Bureau of land Management lands, plus state and private landholdings.

The cover inset additionally summarizes the book, noting "From charismatic megafauna like elk, bison, wolves, bighorn sheep, and grizzly bears, to smaller mammals like bats, pikas, beavers, and otters, to some of the 279 species of birds, Johnsgard describes the behavior of animals throughout the seasons, with sections on what summer and autumn mean to the wildlife of the park. Enhanced by Mangelsen's wildlife photography, *Yellowstone Wildlife* reveals the beauty and complexity of these species' intertwined lives and that of Yellowstone's greater ecosystem." I counted 73 images from cover to cover including 27 illustrations by Johnsgard and 46 photographs by Mangelsen. While these images clearly add to the text, I would have preferred the pictures to have been more closely aligned with the text along with many additional photos that directly related to the stories (locations and animals) that unfolded in each chapter. Further, the existing images (some being two page spreads) could have been smaller so more could have been squeezed within the existing length of the book. For example, in the discussion of the *Sagebrush Sea* of GTNP, there are two 2page spreads of coyotes, both from YNP, yet there is not one picture of the scenery from that area of the Tetons.

Each of the 14 chapters focused on specific areas of YNP and GTNP and a natural history story was woven around the lives of notable animals inhabiting those regions, such as: coyotes and pronghorn in sagebrush habitats, gray wolves in Lamar Valley YNP, ravens and other birds (including golden eagles) by the Grand Canyon of the Yellowstone, woodpeckers within recently burned areas, bison around geyser basins, sandhill cranes near willow flats, trumpeter swans and waterfowl in and around ponds, bald eagles and ospreys by oxbows, beavers and elk near aspen stands, grouse and martens in spruce forests, dippers in mountain streams, and picas and bighorn sheep in high elevation areas. The stories in each chapter are very detailed and accurate, for the most part, and Johnsgard has a lengthy section of notes and references at the end of the book to support the behaviours he describes. There were only a few things I questioned, such as the claims that whitetailed deer are bigger than mule deer (I always thought it was the opposite) and male martens help raise the young (I thought that only female Mustelids raised offspring). The notes and references section is impressive with many sources reviewed; the only odd thing was the number of very old literature sources, like a 1934 reference being the main one used for bald eagle natural history, and 1950 and 1959 sources for dippers. However, this did not affect the content of each chapter, so maybe I am being a tad nitpicky here.

Because each chapter was so in depth, I found myself repeatedly trying to find the ultimate meaning of each section other than gaining a glimpse of the daily activities of some of the prominent animal residents in each region. Each chapter usually came to an abrupt end, with a new and unrelated chapter following it, making it difficult for the book to maintain a proper flow. While the descriptions were impressive, there was so much detail in each chapter I felt bogged down with information on landmarks (e.g., streams, rivers, mountain ranges) and animals in each region. A small map of YNP and GTNP at the beginning of the book gave a general location for each chapter, but I believe that each individual chapter needed its own map so the reader could appreciate all of those names and places mentioned and described in detail throughout the book. For instance, I have to admit that I have spent much more time in YNP than GTNP so I found myself getting lost in all of the unfamiliar descriptions of GTNP because I had no diagram to refer to for each section.

This was especially evident in Chapter 1, *History of the Greater Yellowstone Ecoregion*, which would more accurately be called *Geologic History of the region* since it is a very heavy read about how the area was created and has changed over millions of years. I found it very difficult to focus on all of the text in that section without seeing some image(s) of the landscape features that "resembles the imprint of a raccoon's right forefoot" (page 2). I was also disappointed that only two paragraphs at the end of that chapter dealt with human use of the area over the past 10,000 years, since there was no other mention of it.

The book has only minor grammatical errors, and most descriptions seem accurate and realistic for the location discussed. The appendices provide necessary information on the wildlife of the region including checklists of mammals, birds, amphibians, reptiles, and even invertebrates such as dragonflies and butterflies. However, and sort of like the majority of the paperback, I felt that a lot of appropriate information was provided but the organization could have been better. For example, birds are mentioned in Appendices 1-3 including a checklist, short descriptions for many birds, and longer descriptions for fewer, more recognizable birds. Thus, the common birds were mentioned in all three appendices. While each list in and of itself was fine, it seems that there could have been a more concise summary of the information presented. Also, while all species were grouped taxonomically to related species, the lists were not made in alphabetical order and it seems that an easier scheme would have aided the reader, like maybe having a sub-column for different groups (e.g., waterfowl, raptors, songbirds). Finally, and to my point above about the need for more coherent structure, some of the appendices include Red Rock Lakes and Grays Lake National Wildlife Refuges, yet I fail to understand the reason for their inclusion since they do not appear in the text up to that point, even if they may technically be located within the Greater Yellowstone Ecoregion (GYE). I had to resort to learning about these refuges by conducting internet searches. I surmise that these places were added because the author compiled all available information on the GYE and included everything even if it was random or repetitive.

Overall, this is a fine natural history book of the GYE and is worthy of putting on your bookshelf, especially for travelers to that region. It provides lots of detailed information on many different resident wildlife species ranging from large mammals to inconspicuous birds, even if a better focus to the book would make it easier and more enjoyable to read. As it appears now, the paperback can certainly be read in sections and used as a reference. I suggest focusing on specific chapters when visiting the GYE to add to your experience of those ecosystems.

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