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The western San Juan Mountains: their geology, ecology, and human history Rob Blair, editor

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BOOK REVIEW

The Western San Juan Mountains: Their Geology, Ecology, and Human History. Rob Blair, managing editor. University Press of Colorado, Niwot, CO. 1996. 406 pp. \$39.95, cloth; \$22.95, paper.

The Western San Juan Mountains: Their Geology, Ecology, and Human History is a multi-authored book that explores 4 aspects of the western San Juan region: the physical environment, biological communities, human history, and interesting points along the San Juan Skyway. The San Juan Skyway, a national scenic byway, forms a loop through the western San Juan Mountains of southwestern Colorado from Ridgeway through Dolores, Durango, and Silverton, and then back to its origin. The skyway straddles 2 major physiographic provinces, the Colorado Plateau and the southern Rocky Mountains. It contains a diverse geologic background and encompasses 6 major vegetation zones, from the desertlike shrub-steppe region of the Colorado Plateau to alpine areas on the highest peaks of the San Juan Mountains.

Part I, "Physical Environment along the San Juan Skyway," which is well written and detailed, is divided into several chapters. Chapter 2, "Paleotectonic History," explores plate tectonics and has a detailed map of recent earthquake epicenters in the vicinity. The subsequent chapter analyzes Precambrian strata, which form the highest peaks in the area. In Chapter 4, "Paleozoic History," the author shows that by careful study of the composition of rocks, physical features, and fossils in the region, geologists can (1) determine the environments under which they were formed and (2) build a geologic history of the area. The author contends that many of the strata in this region formed over millions of years from deposits of various shallow seas and adjacent mountain ranges. Chapters 5 and 6 consider Mesozoic and early Cenozoic history and volcanic rocks. The next 2 chapters give a concise overview of the ore deposits, minerals, and energy resources

that have drawn people to this area since the discovery of mineral sites by the Spanish in the early 1700s. The last chapter in Part I describes the always variable and sometimes severe weather across the region.

The book's editor, Rob Blair, points out that this book is targeted for the amateur naturalist and historian and maintains that if the authors wrote about complex topics in simple terms, much of what they said would be incomplete. In other words, this book, especially Part I, was not written for the casual reader. I found myself referring to the glossary (which is very comprehensive) many times in the course of reading. Although the text in Part I is concise, many maps and diagrams are difficult to decipher.

Part II, "Biological Communities along the San Juan Skyway," is divided into chapters based on broad ecological plant communities. Although easier to read than Part I, this section is not as detailed. Chapter 10, "Ecological Patterns," discusses physical and biological factors that limit species survival to specific habitats. It also has interesting anecdotes about the area's flora and fauna. Although well written, the book is sometimes inaccurate. In Chapter 10, for example, the authors assert that pika and White-tailed Ptarmigan are the only remaining faunal inhabitants in the area from the ice ages. In fact, many invertebrates have survived as well, including the endangered butterfly, Uncompahgre fritillary (*Boloria acroc-nema*), which is thought to have inhabited vast areas during glacial periods and is now relegated to high mountain glacial habitats. Chapter 11 explores the semiarid foothills and valleys of the region, which include the low-elevation shrub-steppe community, piñon-juniper woodlands, mountain shrub community, and ponderosa pine-oak-Douglas-fir woodlands. Chapter 12 discusses the higher elevation mountain communities from mixed conifer and spruce-fir forests to aspen forests, mountain meadows, and alpine areas. The preceding chapters in Part II are quite short and lack the depth

needed to cover these topics in detail. Chapter 13 discusses wetlands and riparian areas as well as threats to these areas from stream channelization and acid mine drainage. A considerable portion of this chapter concerns the Animas, the major river in the area. The authors point out that although many upstream portions of the Animas River have been polluted by acid mine drainage, the stretch near Durango is considered an excellent trout fishery because of dilution from other nonpolluted streams in the area. An important omission here is that the trout in this section of the river are all nonnative varieties introduced into these waters. Also lacking in this book (except in Chapter 13) is a discussion on the effects of past human disturbance, present threats to the biotic system, or conservation measures being initiated in the western San Juans. As an example, wolves and grizzly bears once roamed the area and were forced out by European settlers in the late 1800s and early 1900s. Knowing the impacts people have had and are still having on the ecology of an area is essential to understanding the biotic communities that exist in the region today.

Part III, "Human History along the San Juan Skyway," is engaging and thorough. It begins with a chapter on the Anasazi, who had a long-lasting impact on the area. The author of the chapter, Gary Matlock, maintains that the Anasazi did not mysteriously disappear but migrated south into what is now Arizona and New Mexico. He contends the Pueblo Indians along the Rio Grande and the Hopi in north-

western Arizona are descendants of these ancient people (although Hopi creation myth might dispute this fact). The subsequent chapters describe the arrival and expeditions of the Spanish in the 1700s and a history of the Ute Indians, who mainly used the region for hunting and gathering. The last chapter details the life of the miners who settled this area, drove the Utes out, and then were forced to move on as silver, gold, and other minerals were depleted.

Part IV describes 175 points of interest along the San Juan Skyway, the Durango-to-Silverton Railroad, and the Alpine Loop between Lake City and Silverton. Most sites characterized in this section have geological or mining history significance, but other sites such as hot springs, lakes, and some plant communities are also described. Although the maps in Part I are difficult to interpret, those in Part IV are clear and site locations are easy to find.

Even though I have visited the western San Juans countless times for pleasure and research, I learned much about the area from reading this book. This reference would be a fine addition to any library, but it would be particularly valuable for the reader who has an interest in this region (notably in geology or human history).

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