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## Book Review: Fragile Giants: A Natural History of the Loess Hills

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### Book Review

**FRAGILE GIANTS. A NATURAL HISTORY OF THE LOESS HILLS.** — by Cornelia F. Mutel. University of Iowa Press, Iowa City, A Bur Oak Original, 284 pp. \$16.95 (paper).

The Loess Hills, which are a special feature of the eastern bank of the Missouri River in Iowa and northern Missouri, have been cited by Dean Roosa, Iowa's State Ecologist, as a "world treasure and . . . our best-kept secret." These Hills are mounds of finely ground soil, "glacial flour," deposited by dust storms after the glaciers receded 31 to 12 thousand years ago. Loess is rather widely distributed in Iowa, but the extensive deposits (often over 200 feet deep) on and against the eastern wall of the valley left a rolling, wave-like, terrain which on erosion leaves vertical banks of compacted soil.

Cornelia Mutel of the University of Iowa has compiled a comprehensive introduction to this unique Iowa treasure. The characteristic features of the Hills and their flora and fauna are illustrated with drawings and photographs (5 maps, 77 figures, and 8 colored photographs). The early explorers commented on the unique topography and articles in the 1895, 1914, 1934, and 1944 Proceedings of the Iowa Academy referred to special features but a more general interest was stimulated in the last decade by a special issue of the Iowa Conservationist (April 1984) and by a symposium published in the Proceedings of the Iowa Academy (Vol. 92, no. 5 and 96 no. 3, 1985-86).

After a brief introduction describing the area, defined as a narrow strip from central Plymouth County, Iowa to central Holt County, Missouri, Chapter 2 outlines the geological history from deposition of the bedrock in the Precambrian Period, through the Paleozoic and Mesozoic Eras with their fossils, to the post-glacial formation of the hills and the arrival of humans to the area.

Chapter 3 describes the various human cultures of the Hills from the Paleo-Indians, nomadic big-game hunters, 12,000 to 8,500 years ago; the Archaic Indians, 8,500 to 2,500 years ago, leaving campsites and burial grounds which have been examined in the Loess Hills; the Woodland Indians, 2,500 to 1,000 years ago, with pottery, burial grounds, and beginnings of horticulture; the Village horticulturists; the Euro-American Settlement in the 1800's and their effects on the natural landscape.

Chapter 4 describes the physical characteristics of today's Loess Hills, the vertical-walled gullies, the catsteps (natural terracing of the hills), the soils, concretions, and climate.

Chapter 5 deals with the flora and fauna with particular reference to the natural communities of the Loess Hills today, primarily the prairie and the woodland. The prairie communities were once much more extensive but now are mostly on the south-facing slopes. Prairie grasses are mostly warm-season species, greening later in the spring than the exotic grasses, and they turn a rich russet color in fall in contrast to the tan of most other grasses. Many of the species are

illustrated with diagnostic sketches. Typical grasses and forbs are tabulated, indicating several not found farther east. Another table lists the major trees and larger shrubs of the woodland communities. The checklist of birds includes 98 species and does not include the variety of waterfowl and shore birds which migrate up the valley. Checklists are also given for the mammals and the reptiles and amphibians, noting the species characteristic of the Great Plains and seldom extending east of the Hills. The final two tables of this chapter list the rare and endangered plants and animals (including butterflies) in the Iowa, and in the Missouri, Loess Hills.

Chapter 6 discusses the future of the Loess Hills and some of the things that are being done and could be done in preserving natural areas and in management of the natural features, including prescribed burning, controlled grazing, forest management, and erosion control. The importance of continued research, education, and interpretation is stressed. The Hills are both extremely fragile and rugged.

The 7th chapter, an Epilogue, lists the addresses of agencies and organizations interested in the preservation of natural areas and species in the Loess Hills which can provide information and can use your assistance.

Part 2 has a wealth of information to aid persons to tour the Loess Hills region, to more thoroughly understand them and not only read about them. Public use areas and associated educational resources are listed and described, in Missouri and Nebraska as well as Iowa. A northern tour in the Sioux City area is described (a 33-mile loop) with many hiking trails. A central tour, the DeSoto National Wildlife Refuge area (57 miles or 81 with the DeSoto auto tour and a couple of detours). The southern tour from Omaha into Nebraska, Missouri and southern Iowa exceeds 300 miles with the suggested detours and suggestions are made as to how it can provide many outings.

Twelve pages of references lead one to more information on the Loess Hills. A 7-page index helps locate items of reference.

One unusual feature of this book is the use of "Sidebars" to provide greater discussion of topics which do not fit directly into the narrative. These half-page to two-page digressions have titles such as 1 Debating the deposition of loess, 2 New approaches to ancient burials, 3 Where can the past be found?, 4 Plant communities of early historic times, 5 Plant community changes: Searching the historical record, 6 Woody invasion: When did it commence and why?, 7 Migration from the west, 8 Community associations of Loess Hills woodlands, and 9 Terminology for categorizing rare species.

The variety of specialties covered — geology, archaeology, history, ecology, conservation — are such that almost anyone will learn something new from this book and will probably want to refer to it many times. It provides an opportunity to develop an expertise on a hobby basis which may be satisfying and also contribute to the preservation of these fragile, but rugged, resources. — Kenneth D. Carlander, Professor Emeritus, Dept. of Animal Ecology, Iowa State University, Ames, IA 50011.