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Iowa's Loess Hills — A National Treasure

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A narrow band of unusual hills skirts the Missouri River valley along Iowa's western border. The steep, sharply ridged topography and the predominance of native grass and woodland cover stand in marked contrast to the orderly rolling farm fields to the east and the broad cultivated floodplain of the Missouri River to the west. These high, narrow-spurred ridges, steep slopes, and deep ravines constitute the Iowa landform region known as the Loess Hills (Figs. 1 and 2).

The Loess Hills are composed of silt-sized particles initially deposited by Pleistocene glacial meltwaters onto the floodplain of the Missouri River. These exposed sediments were scoured by strong winds; the silt was carried aloft and redeposited across the leeward landscapes to the east. This eolian silt, called loess, is not unusual in itself. Loess deposits mantle most of Iowa and are common elsewhere in the Midwest where major river systems drained the massive late-Pleistocene glaciers. What distinguishes these deposits is their unusual thickness and the distinctive landforms that have been carved by erosion from this uniform, fine-textured material.

The unique topographic and ecological characteristics of this landform region are products of both the thickness of the deposits and the special physical properties of loess. Its high permeability as well as its ability to stand at a very steep slope angles promote development of exceptionally well-drained, high-relief landscapes. Consequently, the dry ridgetops and exposed south and west-facing slopes support a rich, native, short-grass prairie community containing many species typically found farther west. Though stable when dry, loess is subject to collapse when water-saturated and is easily eroded when not protected by a vegetative cover. This extreme erodibility is responsible for the steeply and finely dissected appearance of the terrain, and also for repeated episodes of gully cutting and filling in the geologic record of this region. Recognition and interpretation of these reworked deposits are especially significant to the search for fossil remains and occupation debris left by Native Americans. In addition, these physical characteristics present a number of engineering and land-use problems within the region.

Because of the ruggedness of the Loess Hills, natural features and habitats have endured better than in much of Iowa. But even here, encroachments by agriculture and urbanization have reduced sharply the number of areas where the physical and biological systems of this landform region can be observed and studied in their undisturbed state. In recognition of the rapid loss of these natural areas within the Loess Hills and of their scientific and educational importance, a concerted effort has been made over the past decade to accelerate

scientific investigations, and to inventory and protect the specialized ecological habitats which are supported by this unusual terrain.

In 1981 the Iowa State Preserves Advisory Board initiated a biological survey of the Loess Hills which greatly aided the effort for a comprehensive documentation of the occurrence and distribution of the Loess Hills biota. In 1984, the Iowa Conservation Commission published a special Loess Hills Issue of the *Iowa Conservationist*, thus assisting the effort to focus public attention on the special character of the region.

On April 27, 1984, the Iowa Natural History Association, along with the Conservation and Preserves Committee of the Iowa Academy of Science, and the Botany, Conservation, Geology, and Zoology sections of the Academy, sponsored a symposium on "Iowa's Loess Hills" in conjunction with the 96th Annual Meeting of the Iowa Academy of Science in Iowa City. Participants in this symposium presented overviews of current knowledge regarding the geology, archaeology, paleontology, vegetation, fauna, and conservation of the Loess Hills. Additional papers on other specific aspects of the Loess Hills were given in the sectional meetings. These presentations and several additional papers stimulated by them are published in this issue of the *Proceedings of the Iowa Academy of Science* and in the

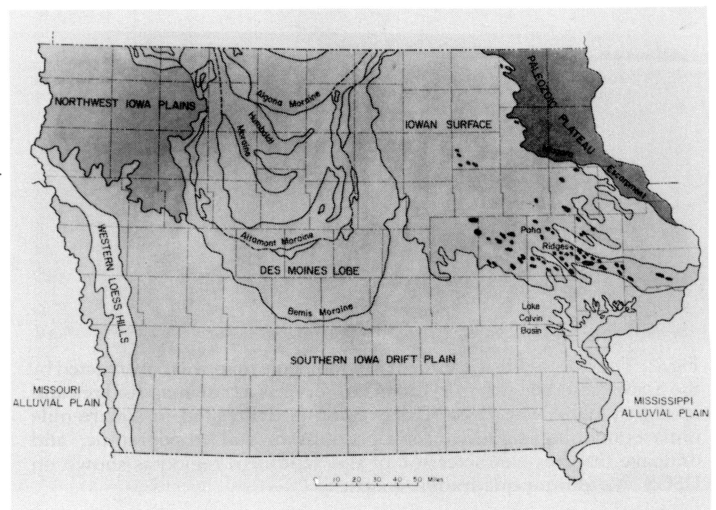


Fig. 1. Landform Regions of Iowa. (From a Regional Guide to Iowa Landforms by Jean C. Prior, Iowa Geological Survey Educational Series 3, 1976.)

¹Special Editor, Loess Hills Symposium.

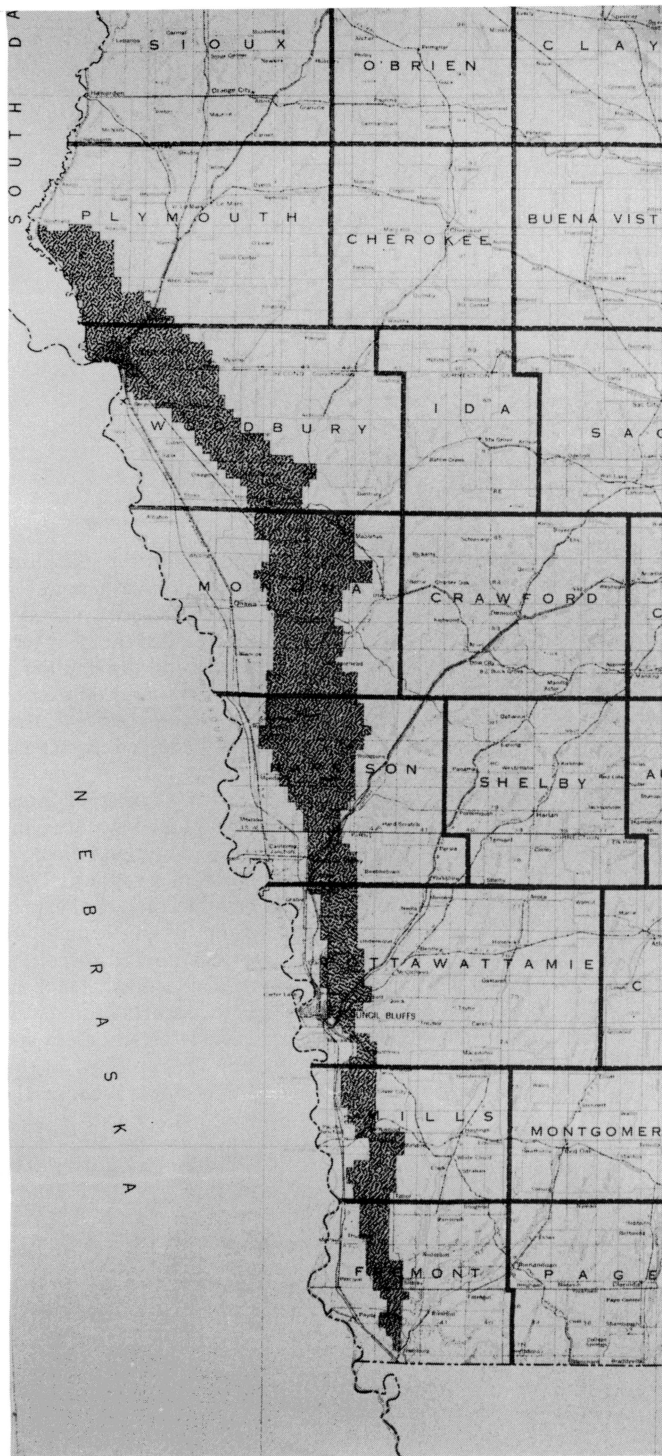


Fig. 2. The Loess Hills Landform Region. This map was constructed by the State Preserves Advisory Board to serve as a base map for area and inventory data. The Loess Hills region is delineated in square-mile units containing significant proportions of soil, topographic, and drainage features characteristic of this landform region as shown on USGS 7½ minute quadrangle maps.

forthcoming June, 1986 companion issue.

Together these papers present a summary of our current understanding of the physical, biological, and cultural aspects of a landform region of national significance. It is the hope of the sponsors of the symposium and the authors of the individual papers that these publications will serve as a basis and an incentive for future studies of Iowa's Loess Hills, and that they will draw attention to the scientific and cultural value of continued study and preservation of this landform region that is uniquely Iowan.