1990

Bibliography of the Natural and Cultural History of the Loess Hills of Iowa

Dean M. Roosa
Department of Natural Resources

Darwin D. Koenig
Department of Natural Resources

Recommended Citation
Available at: https://scholarworks.uni.edu/jias/vol97/iss1/6

This Research is brought to you for free and open access by UNI ScholarWorks. It has been accepted for inclusion in Journal of the Iowa Academy of Science: JIAS by an authorized editor of UNI ScholarWorks. For more information, please contact scholarworks@uni.edu.
Bibliography of the Natural and Cultural History of the Loess Hills of Iowa

DEAN M. ROOSA
and
DARWIN D. KOENIG

State Preserves Advisory Board, Department of Natural Resources, Des Moines, Iowa 50319 and Poweshiek County Conservation Board, Courthouse, Montezuma, Iowa 50171

A bibliography of literature on Iowa's Loess Hills includes references containing information on the cultural or natural history of this western Iowa landform region. The bibliography is divided into six parts: general, archaeological, botanical, geological, historical, and zoological. Annotations are included only where necessary to clarify contents. Because of their rugged topography, the Loess Hills of western Iowa have resisted large-scale conversion to agriculture. This has permitted noteworthy persistence of native prairies and woodlands, along with their associated species. This bibliography complements two special issues of the Proceedings of the Iowa Academy of Science devoted to Iowa's Loess Hills.

INDEX DESCRIPTORS: Iowa Loess Hills, Iowa archaeology, Iowa botany, Iowa geology, Iowa history, Iowa zoology.

This bibliography pertains to archaeological, botanical, geological, historical and zoological literature referable to the Loess Hills landform region in western Iowa. It was compiled as part of a study of the Loess Hills undertaken by the State Preserves Advisory Board and is the final paper in a series designed to document the special nature of this region (See Vol. 92, No. 5 and Vol. 93, No. 3, PIAS). This bibliography is by no means exhaustive, although an attempt was made to include all of the major references dealing with the Iowa Loess Hills. Annotations, included only on a limited basis to clarify content, are set off by brackets.

BRIEF DESCRIPTION OF THE LOESS HILLS

The Loess Hills are a distinctive landform region in western Iowa and northwest Missouri adjacent to the broad Missouri River floodplain. The steep, sharply ridged hills are composed of thick, windblown deposits of coarse silt that originated as glacial outwash in the contrast to the adjacent hills. All of these streams have been channelized.

The soils of the bluffs and hills are included in the Hamburg-Ida Monona soil association, with the Hamburg series found on the steepest slopes (>40 percent), the Ida series on 5-40 percent slopes, and the Monona series on 0-40 percent slopes. These well drained to excessively drained, somewhat droughty, silty soils formed in loess under prairie vegetation and are very susceptible to erosion. The soils of the stream valleys are characterized by the Kennebec, McPaul, Nodaway, and Napier soil series. These are moderately well-drained soils formed in silty alluvium.

The Loess Hills vegetation can be divided into grassland, woodland, and cropland communities. Originally, the grassland occupied most of the Loess Hills, but it has been diminished since settlement. Morrill (1953) divided the grassland into the following communities:

1. 


3. Andropogon scoparius-Yucca glauca community: Found on the steep, unsheletered slopes exposed to the arid west and southwest winds.


5. Verbena stricta community: Found where the grass cover had been disturbed by overgrazing on the lower west and upper east slopes and summits.
Woodlands were originally restricted to the stream valleys and the protected ravines. They have increased since settlement and, benefiting from the suppression of natural prairie fires, now cover much of the uncropped hills. Invasion by red cedar (*Juniperus virginiana*) has become widespread and is a threat to the continued existence of the prairies. The woodland is of the oak-hickory association, dominated by bur oak (*Quercus macrocarpa* Michx.), ash (*Fraxinus pennsylvanica* Marsh), basswood (*Tilia americana*) and cottonwood (*Populus deltoides* Bartram). The amount of woodland decreases from south to north (Novacek, 1985).

The greatest acreage in the area is devoted to various agricultural crops (corn, soybeans, hay) and pasture. The crops on the lower slopes and along streams. A substantial portion of pastured acreage is native prairie.

Common animal species dependant on the vegetation of the above communities include white-tailed deer (*Odocoileus virginianus*), gray and fox squirrels (*Sciurus carolinensis*, *S. niger*), Franklin’s and thirteen-lined ground squirrels (*Spermophilus franklinii*, *S. tridecemlineatus*), white-tailed jackrabbit (*Lepus townsendii*), eastern cottontail (*Sylvilagus floridanus*), and numerous small rodents. Predatory animals include coyotes (*Canis latrans*), red and gray foxes (*Vulpes vulpes*, *Urechyn cinereoargenteus*), raccoons (*Procyon lotor*), mink (*Mustela vison*), and weasels (*Mustela sp.*). Lampe and Bowles, 1985.

Numerous streams are found in the area, but except for the Little Sioux River, their fauna has been little studied. The major species of game fish present are channel catfish (*Ictalurus melas*). Most of the streams have been channelized, destroying much of their beauty and productivity and most are heavily silt-laden due to excessive erosion from the surrounding croplands.

The Loess Hills are an important nesting area for raptors, particularly the Great horned Owl (*Bubo virginianus*), Red-tailed Hawk (*Buteo jamaicensis*), and American Kestrel (*Falco sparverius*). The area is also important as a wintering ground for these species as well as for Rough-legged hawks (*Buteo lagopus*) and occasionally Golden Eagles (*Aquila chrysaetos*) and Prairie Falcons (*Falco mexicanus*) (Roosa and Barlett, 1979).

The Loess Hills region is a unique geologic occurrence of materials and processes. These wind-deposited silts are unusually thick accumulations, and they have been carved into rarely seen topographic forms. The Loess Hills area contains some unique components of Iowa’s flora and fauna. The ranges of such plants in Iowa as *Yucca glauca L.*, *Gaunla occinea Pursh.*, *Mentzelia decapetala* (Pursh) Urban & Gilg, *Asclepias engelmanniana* Woodson, and *Dolus candida Willd.* var. *oligophylla* (Torr.) Shin. are confined to the Loess Hills area. Animals such as the plains spadefoot (*Scaphiopus bombifrons*), great plains skink (*Eumeces obsoletus*), and prairie rattlesnake (*Crotalus viridis viridis*) are found in Iowa mainly in the Loess Hills.

The steep, west and southwest facing slopes of the bluffs (basically the areas of Hamburg soil) and their summits are considered fragile areas. Most of the plants listed above are found in this restricted part of the Loess Hills. These slopes and summits are easily eroded and intolerant of much disturbance. However, certain species exist because of the prevalence of natural disturbances on the steepest slopes producing extremely dry and barren west-facing exposures.

Much of the Loess Hills area is degraded in ecological quality as a result of excessive human or domestic-animal disturbance. Land is often intensively cultivated with attendant loss and disruption of the native biota. A devastating practice is the mechanized alteration of the topography, smoothing the land surface to make it more accessible to farm machinery. Because of the steep slopes, uniformity and grain size of the loess particles, and its inherent erodibility, such practices only accentuate already serious erosion problems. The amount of soil lost to erosion on the cultivated land in the Loess Hills area is the highest in the state. Urban sprawl, especially near Council Bluffs and Sioux City, is also having a detrimental effect on the ecological quality of the area. County zoning laws would help protect the ecological integrity of this landform region.

Although considerable modification of this landform region has occurred, it does yet harbor much of the state’s remnant prairie and provides habitat for a considerable number of the state’s rare species.

ACKNOWLEDGEMENTS

We wish to thank the following people who reviewed the manuscript and who made suggestions which resulted in its improvement: E. Arthur Bettis III, Department of Natural Resources; Jim Dinsmore, Iowa State University; Don Farrar, Iowa State University; Loren Horton, State Historical Society; Jim Peck, University of Arkansas; Jean Prior, Department of Natural Resources; and Deb Ziegowski, Office of State Archaeologist. Their help is genuinely appreciated.

REFERENCES


ANNOTATED BIBLIOGRAPHY

GENERAL


ARCHAEOLOGY


FISHER, A. K. 1981. Human skeletal remains...


HENNING, D. R. 1980. A prehistoric cultural resource in the proposed Perry Creek reservoir. Dept. of Anthropology, Division of Archeological Research, Tech. Rept. No. 80-10, Univ. of Nebraska, Lincoln.


LINDSAY, R. D. 1970. An appraisal of archaeological resources in the Canton reservoir, northwest Iowa. Department of Anthropology, University of Nebraska, Lincoln.


CRATFY, R. I. 1924. The genus Rumex in Iowa. Proc. Iowa Acad. Sci. 31:213-216. [Includes some Fremont County records.]


FITZPATRICK, T. J. 1905a. Plants new or little known to the flora of Iowa. Iowa Nat. 1:22-24. [Mentions specimens from Fremont and Porttawattamie Counties.]


thesis, Univ. of Iowa, Iowa City. [Includes distribution maps.]


SHIMEK, B. 1915. Early Iowa locality records. Proc. Iowa Acad. Sci. 22:105-119. [Geographical locations where early records of plants and animals were recorded.]

LOESS HILLS BIBLIOGRAPHY


WEAVER, J. E. and F. W. ALBERTSON. 1936. Effects of the great drought on the prairies of Iowa, Nebraska, and Kansas. Ecology 17:567-639. [Some sample stations were in the Loess Hills.]

WEAVER, J. E. and F. W. ALBERTSON. 1943. Resurvey of grasses, forbs, and under­

ground plant parts at the end of the great drought. Ecol. Monogr. 13:63-117. [Some sample stations were in the Loess Hills.]

WITTROCK, G. L. 1923. Polygonum in the state of Iowa. Proc. Iowa Acad. Sci. 30:345-349. [Includes some records from the Loess Hills area.]

GEOL OGY


DAVIS, L. C., R. E. ESHELMAN, and J. C. PRIOR. 1972. A primary mammoth site


LOESS HILLS BIBLIOGRAPHY


SHIMIEK, B. 1910a. Evidence that the fossiliferous gravel and sand beds of Iowa and Nebraska are Aftonian. Bull. Geol. Soc. Amer. 21:119-140.



HISTORY


ANONYMOUS. 1881. History of Mills County, Iowa. State Historical Co., Des Moines, Iowa.

ANONYMOUS. 1881. History of Fremont County, Iowa, containing a history of the county, its cities, towns, etc. Iowa Historical Co., Des Moines, Iowa.


ANONYMOUS. 1942. Woodbury County History. The Iowa Writers' Program of the Work Projects Administration in the State of Iowa.


JAMES, E. 1823. Account of an expedition from Pittsburgh to the Rocky Mountains, performed in the years 1819, 1820. By order of the Hon. J. C. Calhoun, Secretary of War, under the command of Maj. S. H. Long, of the U. S. Top Engineers. 3 vols. Longman, Hurst, Rees, Orme, and Brown, London.


ROBBINS, W. No date. Recollections of Monona County pioneers. Private publ. 82 pgs.


BUREN, W. F. 1944. A list of Iowa ants. Iowa State Coll. J. Sci. 18:277-312. [Lists some Iowa species found only in the Loess Hills area.]

CHRISTIANSEN, J. L. and R. R. BURKEN. 1978. The endangered and uncommon reptiles and amphibians of Iowa. Iowa Sci. Teachers Jour. Special issue. [Has distribution maps; some species found in Loess Hills area.]


CRABB, W. D. 1938. Late fall and winter bird records, 1930 to 1938, in the upper Missouri Valley. Proc. Iowa Acad. Sci. 45:289-297. [Includes some observations from the Loess Hills area.]


HENDRICKSON, G. 1930. Studies on the insect fauna of Iowa prairies. Iowa State Coll. J. Sci. 4:49-179. [Some collecting stations were in the Loess Hills area.]


LINDSEY, A. W. 1920. Some Iowa records of Lepidoptera. Proc. Iowa Acad. Sci. 27:319-335. [Many records are from the Sioux City area.]


PETERSEN, W. J. 1971. Birds along the Missouri. Palimpsest. 52:550-557. [Excerpts from Audubon's journal on the birds he found along the Missouri River bordering Iowa.]


ROOSA, D. M. 1977e. The first Iowa foray. Iowa Bird Life. 47:119-123. [Introduction to the 1977 Fremont County foray.]

ROOSA, D. M. 1977f. Singing male counts. Iowa Bird Life. 47:133-137. [Lists numbers and species of birds found on plots in Waubonsee State Park in Fremont County.]


SCHMIDT, D. P. 1971. Vertical distribution of Xiphinema americanum in minimal and medial
developed loess soil in southwest Iowa. Ph. D. dissertation, Iowa State Univ., Ames. [One study station was near Hamburg, Fremont County.]


SHIMEK, B. 1930. Land snails as indicators of ecological conditions. Ecology 11:673-686. [Mentions some distribution records of snails (modern and fossil) from the Loess Hills area.]


SPIKER, C. J. 1926. Winter bird records 1922-1926, in northwestern Iowa. Iowa Acad. Sci. 33:307-313. [Annotated list of birds, some of which were observed in the Loess Hills area.]

STEPHENS, T. C. 1917. Bird records during the past winter, 1916-1917, in northwestern Iowa. Proc. Iowa Acad. Sci. 24:245-258. [Annotated list of birds, some of which were observed in the Loess Hills area.]


tion dates from the Sioux City region. Iowa Bird Life 22:40-42.

YOUNGWORTH, W. 1953. Summer notes from western Iowa. Iowa Bird Life 23:74-75. [Results of a trip to Waubonsie Park, Fremont County.]


