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Iowa's Driftless Area

Symposium

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The 1983 Annual Meeting of the Iowa Academy of Science on Luther Campus in Decorah provided an excellent opportunity for considering the "Iowa Driftless Area," a region of scenic beauty and unusual scientific diversity.

This rugged landscape dominated by bedrock has undergone weathering and erosion longer than any other region of the state. The term "Driftless Area" originated from an early geologic interpretation that a portion of northeastern Iowa had been untouched by Pleistocene glaciers. Whitney (1862) was the first to indicate a Driftless Area in Wisconsin, Minnesota, Iowa, and Illinois (Figure 1). However, as indicated in the symposium paper by Hallberg, Bettis, and Prior, the so-called "Driftless Area" in Iowa had been glaciated repeatedly by Pre-Illinoian time, and should not be called "Driftless". Although ample evidence exists that the region was glaciated, use of the term "Driftless Area" has persisted with many natural scientists. Hallberg, Bettis, and Prior (1983) indicate that the original geologic designation of the "Driftless Area" refers to a much smaller area than the region of rugged topography and associated flora and fauna commonly referred to by natural scientists. Most natural scientists use the term to indicate the region of high relief, heavily dissected, bedrock-controlled landscape that extends west and south of the geologically designated area to the Iowan Surface and Southern Iowa Drift Plain (Figure 1). The name Paleozoic Plateau (Prior 1976), more accurately describes this physiographic region, and also, incorporates the much larger topographically and ecologically similar area referred to by biologists.

The Paleozoic Plateau contains abundant karst landforms due to carbonate bedrock that can be dissolved and carried away by infiltration and movement of underground water. The paper by Bounk and Bettis discusses this phenomenon and the distribution of typical examples of karst features including caves, blind valleys, and sinkholes. Steep northeast-facing slopes, backed by creviced limestones, are favorable for cold air drainage, development of ice caves, and appropriate habitat for relict populations of Ice Age plants and animals. The cool, moist, north-facing "algific talus slopes" contain boreal disjunct plant species that are rare in the state. This can result in an unusual plant community composed of rare, threatened, or endangered Iowa plants: northern monkshood, golden saxifrage, yellow birch, dwarf scouring rush, and Canada yew. Several snails, once thought to be extinct, now are known to persist in these locations in Iowa, but nowhere else in the world.

Glenn-Lewin, Laushman, and Whitson's paper indicates that the Paleozoic Plateau is geographically a region of transition between the eastern deciduous forest and the prairie, and therefore is both ecologically and phytogeographically dynamic. The high relief of the landscape combined with varying slope angles and aspects provide a number of microclimates resulting in a wide variety of plant communities ranging from dry hill prairies, oak-cedar glades, and upland oak forests to moist maple-basswood slopes, rare balsam fir stands, cool mossy talus slopes, springs, and seeps. Interfacing of communities occurs frequently in this region and generates biological diversity; the entire complex of communities may be unique or significant even when the separate components are not. A few of the rare plant communities have been preserved as a part of the State

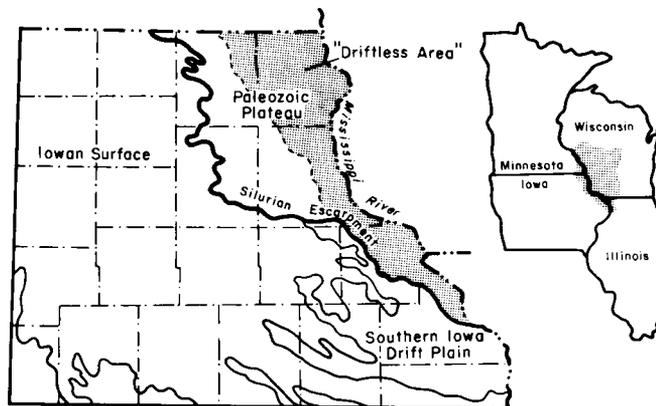


Fig. 1. The Paleozoic Plateau region of northeastern Iowa and its relationship to the "Driftless Area" of the Upper Midwest

Preserve System; they are the Bluffton Fir Stand, White Pine Hollow, Bixby State Preserve, and Mossy Glen State Preserve. Glenn-Lewin, Laushman, and Whitson suggest that remaining hill prairies may be among the best examples of Iowa's pre-settlement prairie vegetation because of their inaccessibility to agricultural activities; some of the best representatives should be placed in a preservation system.

Tiffany and Knaphus indicate in their paper that 132 plant rust species have been collected in this area. Twenty eight species are known only from this region but this distribution limitation doesn't appear to correlate with the distribution of most of the host species.

The Paleozoic Plateau may be the most zoologically diverse region in Iowa. This diversity is influenced a great deal by the habitat availability of the largely forested landscape. There is a high diversity of vertebrate species, but Howe in his paper suggests that the invertebrate fauna particularly manifests the special character of the region. The unique invertebrates include a curious assemblage of land snails associated with the algific talus slopes, two uncommon species of cave-dwelling collembolids, and an aquatic amphipod known from only a few caves and seeps in Iowa.

Northeastern Iowa has long been known for its clear, coldwater streams with rocky bottoms and steep gradients. Eckblad and Coon discuss some of the unique biotic and abiotic features of these streams. Iowa's only native trout, two species of sculpins, and the longnose dace, are restricted to these streams.

Archaeological research in the Paleozoic Plateau suggests a cultural sequence that begins around 10,000 B.C. Mallum's paper indicates that beginning with the Archaic period (7000 B.C. to 1000 B.C.) the surface of the area begins to assume the form of a cultural landscape. Campsites, hunting and gathering stations, and habitation areas literally blanket the terraces of the river valleys, streams, and uplands. Probably the best known features are the so-called "effigy forms" built in the shapes of bears, birds, lizards, bison, turtles, and other animals. The Effigy Mound tradition existed approximately from A.D. 700 to A.D. 1200. The Oneota culture occupied the Paleozoic Plateau for

approximately the last 500 years prior to European contact. The origins of this culture, which left an indelible impression on the environment and in the archaeological record in the form of villages, cemeteries, earth enclosures, and petroglyphs, is uncertain and hotly debated.

A symposium of this type is exceedingly beneficial because it focuses on a specific area and provides an opportunity for interaction of various scientific disciplines. Much of the diversity and uniqueness of the Paleozoic Plateau derives from interrelationships of the bedrock, topography, flora, and fauna, and the manner in which human cultures developed in this environment. These interrelationships intensify the need for preservation and protection of the natural areas. As Dean Roosa (1983) indicates, the Paleozoic Plateau presents a challenge to conservationists and preservationists because of the rich archaeological history, the high diversity of vegetation, and the presence of rare animals. Much has been done to protect the diversity; much is left to be done. Some of the high priority archeological items for protection include prehistoric campsites, forage areas, hunting areas and winter habitation sites. From a natural history perspective the nationally significant "algific talus slopes" are of highest priority. Other areas in need of protection are outstanding examples of hill prairies, floodplain forests that provide habitat for the red-shouldered hawk, undisturbed forests, and streams like the Upper Iowa, Yellow, Volga, and Turkey. The first grist mill in Iowa was built on the Yellow River. Mill sites along streams should be preserved and restored as mementos of our recent history.

A number of individuals and groups deserve credit for the organization, presentation, and publication of this symposium. The joint sponsorship by the IAS Botany, Conservation, and Geology Sections and the Conservation and Preserves Committee was essential. Dean Roosa played a major role in arranging the session and securing participants. The participants and authors deserve special commenda-

tion for their contributions. Publication of this symposium would not have been possible without the efforts of Special Editor Cornelia F. Mutel and Proceedings Editors Marilyn and Roger Bachmann.

The Natural History Field Trip of the Upper Iowa Valley between Decorah and New Albin was a fitting follow-up to the Symposium. It provided an opportunity to observe some of the diversity and unique features of the Paleozoic Plateau. In addition, there was the added benefit of having these features interpreted and interrelated by Iowa's natural history authorities. This field trip involved members of the Iowa Natural History Association, Geologic Society of Iowa, and Association of Iowa Archaeologists. A committee of the Iowa Natural History Association composed of E. Arthur Bettis III, Dale Henning, Roger Knutson, Jean Prior, Dean Roosa, and Daryl Smith planned the field trip and prepared the accompanying Field Trip Guidebook. Jean Prior assumed a major role in coordinating the assembly of the guidebook.

The purpose of the Symposium and affiliated activities was to focus attention upon this unique natural resource. Increasing awareness of the significance of this region enhances opportunities for the area's protection and preservation.

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