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Article Summary: In the central valley of the Niobrara River plant and animal species of all climatic zones overlap and hybridize.

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Photographs / Images: Smith Falls east of Valentine (Jon Farrar)

THE NIOBRARA VALLEY: A BIOLOGICAL CROSSROADS



Smith Falls east of Valentine. Jon Farrar, NEBRASKAland Magazine/Nebraska Game and Parks Commission

By 2004 it has become commonplace to hear the central Niobrara River valley in north-central Nebraska called a “biological crossroads.”

The phrase may have originated with The Nature Conservancy, a private, non-profit organization whose mission is the preservation of unique natural areas. Whether or not it was their coinage, the Conservancy used the phrase “biological crossroads of America” in 1980 to describe fifty-four thousand acres along the Niobrara east of Valentine purchased when the proposed Norden Dam and reservoir still threatened to flood much of that reach of the valley.

Commonplace or not, “biological crossroads” is an accurate characterization of the deep valley and its unique microclimates that allow plant and animal species of eastern, western, northern, and southern climatic zones to overlap and hybridize in what University of Nebraska-

Lincoln grassland ecologist Ty Harrison once called “an undescribed natural experiment where native organisms interact, hybridize, and evolve on the edges of their respective ranges.” It is an experiment that, had the dam been built, would have been “totally and forever eliminated for the sake of growing a few more acres of irrigated corn.”¹

The “crossroads,” concentrated in about thirty miles of the valley between Valentine and Plum Creek, came into being as the most recent Ice Age drew to a close some eight to twelve thousand years ago. As the climate of the central Great Plains grew warmer and drier, prairies and plains replaced boreal woodlands. But the desiccating sun and dry prairie winds had less effect on the Niobrara’s north-facing canyon walls and almost none in the deep spring-branch canyons that extend southward from the river. There, remnants of the cooler Pleistocene environment survived, and those shady, cool, moist areas are, in Harrison’s words, a “Pleistocene and Holocene refugium” where species that inhabited the area at the end of the Ice Age still grow. Best known of the plants are the paper birch trees, a boreal forest species some two to four hundred miles south of its main range.

The only significant east-west river corridor without a major reservoir, the Niobrara is also a crossroads for eastern and western species and environments. The valley is the distributional limit for about 160 plant species, and five distinctive major vegetation

types—and many animals that depend on them—have been identified on the Conservancy preserve, all occurring within a mile or two of each other: Eastern deciduous forest, Rocky Mountain pine forest, northern boreal plant associations, a distinctive mixed prairie grassland type, and typical sandhills prairie sort themselves according to variations in soil type, moisture, and exposure to the sun. Linden, ironwood, black walnut, cottonwood, and willow occur within a mile or two of ponderosa pines, Oak-elm-ash forests, rich bluestem prairies on moist terraces, mixed prairies on the hardlands north of the river and rolling sandhills prairie on the dry dunes to the south.

Although the well used phrase “biological crossroads” may seem to be in danger of becoming a cliché, the unique natural resource it describes is now in much less danger of being significantly altered or destroyed. The Niobrara River’s most delicate, vulnerable, and biologically important section is a part of the seventy-six-mile segment designated a National Scenic River in 1991. It is now protected by the regulations that govern the scenic river system and it is managed by the National Park Service and an advisory council made up of area residents, state resource agencies, and the Park Service.

Donald B. Cunningham

¹ Jon Farrar, “River Portraits: The Niobrara,” *NEBRASKAland Magazine* 61:1 (Jan.-Feb. 1983), 108. The Farrar article was the major source of information for this sidebar.