FLORISTIC SURVEY AND VEGETATION ANALYSIS OF LANDS ADJACENT TO THE MISSOURI RIVER ON THE LOWER BRULE SIOUX RESERVATION

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ABSTRACT

We conducted a floristic survey and vegetation analysis of lands adjacent to the Missouri River on the Lower Brule Sioux Reservation. Selected areas were explored and inventoried multiple times during the growing seasons of 2011 through 2013. Efforts focused on land recently returned to the Lower Brule Sioux Tribe by the U.S. Army Corp of Engineers. An annotated checklist of native and naturalized vascular flora includes 442 species in 78 families, including 182 species previously unrecorded for Lyman County. Approximately 17% of the flora is naturalized species. Floristic Quality Analysis was used to evaluate the ecological condition of four survey areas of particular interest, including (1) Medicine Creek (= 2.63, FQI = 21.00), (2) Cedar Creek (= 2.79, FQI = 20.85), (3) a series of short loamy drainages adjacent to the Missouri River near Fort Hale (= 3.43, FQI = 25.66), and (4) a remnant sandy prairie (= 4.60, FQI = 48.66) on the Little Bend of the Missouri River. A comparison of woodland communities in the Ft. Hale drainages and Medicine Creek riparian corridor was made using Non-metric Multidimensional Scaling (NMS). Community data were acquired using 12, 50-m transects, including four along the Medicine Creek drainage and eight from individual Ft. Hale drainages. Modified Daubenmire cover classes were used to estimate cover of understory species based 1-m² quadrats placed at 3.3-m intervals along each transect. Cover values per species were averaged for each transect. Trees were sampled in variable width belt transects. DBH values of individual trees 5 cm or larger in diameter were converted to basal area and summed by species for each transect and divided by the total area to give a measure of relative dominance. Density was recorded for individuals smaller than 5 cm DBH. NMS analysis of understory and tree data together produced a 2-axes solution with a minimum stress of 0.071. Incremental $r^2$ values for axes 1 and 2 were 0.722 and 0.133, respectively (cumulative $r^2 = 0.854$). Differences in community composition appear to be driven mainly by flooding regimes and geomorphological factors.