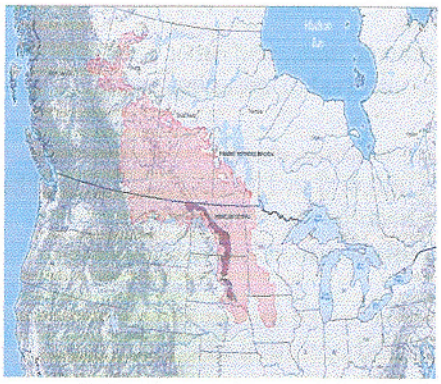
North Dakota Chapter of the Wildlife Society
White Paper on the Impacts of Wind Facilities on Wildlife, Short Version

The NDCTWS favors the development of green energy sources, that is, those developments that use renewable energy sources while maintaining ecological sustainability in the physical locations where the developments are situated. However, NDCTWS is concerned that the development of the wind industry in North Dakota may negatively impact the state's natural resources. Currently, North Dakota produces nearly 500 MW from over 300 turbines, with an additional proposed growth of about 3,400 MW from over 2,200 turbines. Over 30 developers are actively seeking easements along the Missouri Coteau. Currently, about 8,000 MW of wind-generated electricity (equivalent to 5,333 1.5-MW turbines) is being requested for interconnect status on the Midwest Independent System Operators electrical transmission queue. The amount of land in North Dakota under lease agreement with wind developers is unknown, although in South Dakota the figure is nearly 0.5 million acres. In light of these figures, the NDCTWS promotes a **balanced approach** to developing wind technology in the state, an approach that does not negatively impact native habitats and wildlife populations dependent on those habitats.

STATEMENT OF CONCERN AND REASONS FOR CONCERN

The NDCTWS is concerned about the placement and operation of wind facilities in native prairie and the limited degree of state regulation of the industry for the following reasons.

- North Dakota lies within the glaciated portion of the Northern Great Plains, known as the Prairie Pothole Region (PPR; *Figure 1: Pink area is PPR and red area is Missouri Coteau*). The PPR is a primary breeding area for many of the continent's ducks (the so-called "duck factory of North America"), as well as for grassland songbirds. The Missouri Coteau is a relatively intact sub-region of the PPR in which large expanses of native grassland and abundant wetlands remain. Grassland-dominated, wetland-rich landscapes within the PPR are vital to duck and songbird populations. The highest densities of ducks and grassland songbirds and the highest reproductive success occur in these landscapes.



- The Missouri Coteau also represents the best remaining vestiges of an intact ecosystem, mixed-grass prairie, that has been converted to other uses throughout much of the continent. Mixed-grass prairie has declined by 75% in North Dakota since the time of European settlement. The remaining 25% is imperiled by conversion to agricultural activities and fragmentation by infrastructure such as roads, and now wind facilities. Over 0.5 million acres have underwent conversion from 1982 to 1997. More recent estimates indicate losses of 125,000 acres in just five years, 2002-2006, an amount that is equivalent to a one-mile wide strip from Bismarck to Fargo.

- In summary, the Missouri Coteau landscape of intact grasslands and wetlands is under siege at scales unprecedented in the state's history. Globally, habitat conversion in grasslands is more than eight times greater than habitat protection.

- An intact and healthy native grassland ecosystem, in concert with the state's acreage enrolled in the USDA's Conservation Reserve Program (CRP), sustains:
  - the hunting industry to the tune of $365 million annually, not including license sales. One reason North Dakota is so popular for nonresident hunters is that the state still harbors large expanses of grasslands and wetlands; residents of other states have populated or converted their large areas of native habitats.
  - the second largest industry in North Dakota, the tourism industry, in part because of increasingly popular ecotourism activities. In 2006, $22 million was spent in North Dakota on wildlife viewing. Ecotourism depends on grasslands to draw birdwatchers who come for bird species whose highest densities occur in native grasslands and that are only found in the northern Great Plains. Furthermore, vast acreages of undisturbed native habitats are highly sought after by humans seeking to escape the pressures of an increasingly populated and technological world. Consider the fact that humans can get no further than 22 miles from a road in the conterminous United States, and the wide open spaces afforded by North Dakota should not be undervalued. Even so, 99% of North Dakota's land area is within two miles of a road; the maximum distance from a road is three miles. Those areas within the state that remain relatively

unfragmented will take on higher value by humans because they are rare and becoming rarer, especially as the nation's population increases to an estimated 400 million people by 2050. Total urban area has more than doubled over the last 40 years from 25.5 million acres in 1960 to 55.9 million acres in 1990.
  - the growing industry of carbon sequestration; in 2007, North Dakota producers earned more than $2 million for participation in the Farmers' Union Carbon Credit Program.
  - the ranching industry, and the state's natural heritage and culture.

However, 820,000 acres of CRP in North Dakota, South Dakota, and Montana expired in 2007; most is expected to revert to cropland. The U.S. Geological Survey and U.S. Fish and Wildlife Service estimate that the loss of the CRP program will reduce duck production in North Dakota by 2.1 million individual ducks annually.

- The Northern Great Plains (including the PPR) has the highest wind energy potential of all inland regions, according to the American Wind Energy Association. Consequently, wind energy development is underway across a large portion of the PPR. The Missouri Coteau region has been identified as having outstanding potential for wind energy development. The NDCTWS is concerned about this because of the rareness of the habitat contained within the Missouri Coteau, but also for the following reasons.
  - Poorly sited wind facilities placed in high-quality habitats (i.e., contiguous tracts of native habitat with high animal and plant species diversity and few to little invasive species) or in sensitive and rare habitats have indirect negative impacts by altering habitat structure and integrity and displacing wildlife into less favorable areas.
  - Development of wind facilities results in destruction of habitat from support roads, turbine pads, and associated infrastructure, including construction of new transmission miles.
  - Impacts of wind facilities extend well beyond the footprint of the roads, power lines, and other structures. Human and vehicular disturbance may displace animals and lower annual survival or breeding productivity. They may also introduce invasive, non-native plant species.
  - Poorly sited wind facilities have proven to have direct negative impacts on wildlife, mainly birds and bats, through strike mortality. The American Bird Conservancy estimates that 900,000 to 1.8 million birds will be killed annually by wind facilities. This estimate will increase as turbines become more ubiquitous.
  - Large wind facilities may interfere with the ability of birds and other wildlife to travel between feeding, wintering, and nesting sites.
  - Upon the request of the U.S. Congress, the National Academy of Sciences reviewed the environmental impacts of wind-energy development and recognized that the construction and operation of wind-energy facilities directly influence ecosystem structure. These influences include removal of vegetation, disturbance, compaction of soil, soil erosion, and changes in hydrologic features. These influences are likely cumulative, interact in complex ways, and interact with other anthropogenic disturbances.
  - Many states have cutoffs for project size or turbine size, below which regulatory scrutiny either is not required or is much reduced. If several small projects are installed in a small area, their effects could accumulate without the benefit of regulatory review.
  - Many states have enacted or are developing Renewable Portfolio Standards (RPS), which set numerical targets requiring utilities to increase reliance on wind. These standards create powerful mandates for utilities to develop renewable energy sources. However, RPS pay little attention to the negative environmental impacts that may accrue from a burgeoning wind industry in a particular state or region.

The NDCTWS promotes regulations and programs that support wind energy while maintaining the integrity of native prairie and wetlands. To address these concerns, the NDCTWS advocates increased communication between wind developers, government regulators, and natural resource professionals at all stages of development, but especially in the planning stages. To that end, the NDCTWS is working with state and federal agencies, non-governmental organizations, the wind industry, and electric utilities in drafting voluntary wind-siting guidelines.

NDCTWS is an affiliate of The Wildlife Society, which is an international, nonprofit, scientific and educational organization comprised of professionals, students, and laypersons active and interested in wildlife research, management, education, and administration. This white paper was prepared by the Alternative Energy Committee of NDCTWS. For more information on the topic or to provide comments, please contact Mike McEnroe at 701-224-8335 or memcenroe@btinet.net. A more detailed version of this white paper that includes literature sources is available at http://ndctws.org/docs/AECmte-Wind-071201.pdf.