

**RURAL LANDSCAPE CHANGE:
SKETCHES OF TRANSFORMATION IN E. COLUMBIA COUNTY, WISCONSIN.**

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ABSTRACT: The rural landscape of America's heartland encountered tremendous change over the past century. The effects of industrialization and a rapidly shifting economy during the late 19th century, forced family farmers to contend with an entirely new set of processes. These processes continue into the 21st century, and the increased demand for alternative energy, conservation, and food security, calls for a focus on rural land use. Our paper seeks to examine the structural, socio-economic, and ecological changes in Eastern Columbia County, Wisconsin by 1) distributing surveys to residents of Eastern Columbia County to examine the effects of the Glacier Hills Wind Park, 2) by interviewing the owners of the Fountain Prairie Inn and Farms, and 3) by collecting observational ecological data from the disused Banetzke Farm to evaluate ecological land use change over time. Our survey results revealed that local attitudes toward recent landscape change correlate more with proximity to the site of landscape change than with length of residency. In addition, our interview with the owners of Fountain Prairie Inn and Farms illustrated that many of today's small farms must operate pro-actively, adopting environmentally friendly and financially viable methods to succeed. Conversely, on the Banetzke farm we observed an ecological transformation from cropland to forest due to financial difficulties and farm accidents. We concluded that rural landscape change happens on many different scales and for a variety of reasons. While a common cause may still bring communities together, the interplay between development, employment and personal advancement supersedes collective experience.

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Introduction

Rural landscapes and communities in America's heartland have encountered tremendous change over the past century. The residual effects of industrialization and a rapidly shifting economy during the late 19th century, forced family farmers to contend with an entirely new set of processes. The development in transportation technology and infrastructure compelled people to commute more readily for goods and services. Rail travel inevitably succumbed to roads in the same way that river travel once succumbed to rail, further shifting the spatial geography of progress. Mechanization and new farming technology altered the modes of production and consumption across society. Higher wages and a greater variety of opportunities also compelled people to move away from family farming and into the urban core. This resulted in economic decline, land-use change and cultural dissociation for many rural landscapes and communities throughout the 20th century.

The continued erosion of farm numbers coupled with a steady growth in the average size of farms, concentration of food production, and the development of industrialized agriculture resulted in a tendency toward a bimodal size distribution of remaining farms (Jackson-Smith 1999, 66). Moreover, a significant reduction in the proportion of farmland owned by operators and escalating levels of capital investment and debt, further intensified the fragmentation of rural communities. The consequences of change were amplified across the rural landscape as the economic hierarchy veered away from small-scale farming and craft production, towards a service-based, high-consumption economy. These dynamic processes intensified in the 20th century. With an increased demand for alternative energy, environmental conservation, and food security, land-use change has become more significant than ever.

This historically abrupt chain of events forced many small farmers across the country and especially in the Midwest to halt their operations, or adapt accordingly to a range of social and economic drivers. National agricultural statistics show that we have about 1.2 acres of quality farmland per person with a national population of just over 300 million (USDA ERS, 2005). We have a current rate of farmland loss of 2 million acres per year and a 1.1% increase in population per year (USDA ERS, 2005). Projecting these rates of change over the next fifty years, assuming the same rate of farmland loss and increase in population, there will be less than 0.6 acres per person of productive land in 2056 (Hanson et al. 2007, 4) (USDA ERS, 2005). Aside from the spatial limitations of landscape change on food production, only operators who were most “capable of utilizing modern technologies to maximize production” were able to compete in the market (Cross 2001, 703). This model is detrimental to a fair and balanced market as well as to owner-operated systems of farming that have been curtailed by large-scale operations.

Farming and rural living continued to become increasingly less popular during this period as the generational epistemology shifted away from subsistence-based activities, and towards a more convenience-based model. Many families gave up on farming for urban employment; started buying food from supermarkets, and all together abandoned the subsistence model that once delivered meaning and freedom. Modern patterns of land-conversion and consumption triggered a cascading effect on rural geography, expressing change in the structural, ecological and socioeconomic dimensions of non-urban space. New challenges in land and water conservation, alternative energy consumption, and food production methods have reinforced the need to investigate and understand these processes more thoroughly. In geography, much emphasis is given to the dynamics of the urban environment, and the goal of our research is to express how rural areas respectively contribute to the spatial and temporal outcomes in post-

modern America. The effects of landscape change are both uneven and driven by actors at various scales, which emphasizes the importance of addressing rural communities as a function of the interdependency between space and place, in the hope of maintaining equity across society.

Landscapes as Place

Landscapes are symbolic places founded by humans, and interpreted through social construction. The physical environment is acknowledged through culture to reflect meaning and confer the self-definitions of the people within a particular cultural context (Greider et al. 1994, 1). The nature of place, however, has the capacity to ascend the boundaries of physical space and establish a wide range of significances within various social groups. The awareness of place transcends the existential boundaries of *where* on the landscape we exist, but rather enhances the perception of *how* we exist. Moreover, how we choose to understand the environment, through multi-vocal symbols and social interaction, compels an even greater notion of locality through collective experience.

People create a sense of place where they live and interact through an awareness of their surroundings and community, and by recognizing and identifying with an area's natural environment (Francis et al. 2007, 13). Greider and Garkovich (1994) argue that, "[m]eanings are not inherent in the nature of things," "[T]he origins of natural resources are to be found in society, not in the Earth" (Greider et al. 1994, 5). It can also be logically reasoned that the inherent physical nature of a landscape also independently disseminates knowledge and utility, which helps shape cultural relativism and social epistemology. Moreover, the interaction

between humans and their environment is circular and delivers an essential feedback loop necessary for different truths to be ascertained and accepted within various groups. Place has both transcendental and pragmatic qualities, and humans are active in the process of place-making, just as place is active in the process of human and culture-making.

A sense of place and meaning is achieved when people start understanding the unique topography, water systems, soils and biodiversity of their natural environment and begin utilizing those resources in order to survive. This kind of awareness provides social groups with a collective set of experiences that work to reciprocate as local knowledge; enabling people to live within culturally understood ecological and social boundaries. It can be assumed that the inherent shared notion of the environment fosters egalitarianism and cooperation over competition and exclusionism, allowing shared knowledge to be established and applied. However, the makeup of place can also work to inhibit cooperation and foster obstruction by way of physical boundaries and resource scarcity. It is through this lens that we can reflexively observe and criticize the unique changes that are occurring on rural landscapes and determine how geographical analysis can better distill equity from place.

Study Areas

In rural Wisconsin, landscape and land-use change is occurring at various rates, and taking on many different forms. The unintended results of change are an unequal sharing of burden, but in contrast, change can also be beneficial for rural communities. The purpose of this paper is to determine key drivers and outcomes that result from this process and indicate who is affected by the change and in what ways are they affected. Our research study area is the Eastern

Third of Columbia County, Wisconsin. The goal is to address three specific sites: Glacier Hills Wind Park, Banetzke family farm, and Fountain Prairie Inn and Farms. Each represents distinctive change characteristics and will help to confirm aggregate estimates and inferences on rural land conversion. The forms of change that we are studying include: structural change (Glacier Hills), ecological change (Banetzke farm), and socio-economic change (Fountain Prairie Inn and Farms). These three sites stand to represent the discrete categories outlined above and provide for a cross-analysis in our conclusion.

In Columbia County, many of these processes are taking place simultaneously and have manifestations representative of the reviewed literature. We utilized the opinions, documented

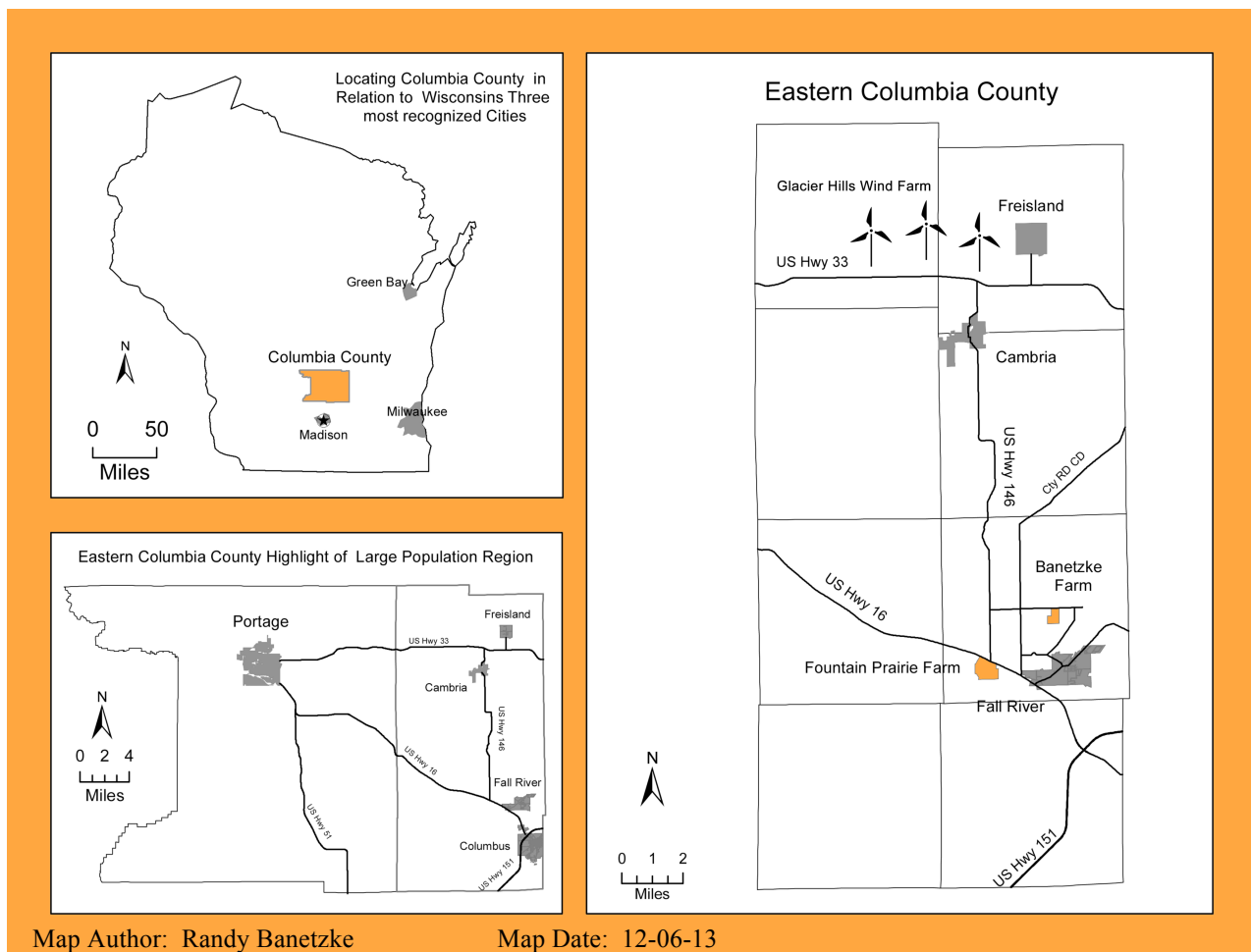


Figure 1A. Maps of Wisconsin, Columbia County, and Eastern Columbia County

results and drivers of rural landscape change in order to correlate the findings and local sentiments of our study areas to similar occurrences in Wisconsin and the upper Midwest. We used these findings to draw inferences regarding the acceptance of change and spatial allocation of respondents with regards to where change is taking place. The study areas selected were qualitatively chosen as representatives for our predetermined categories and the study areas are defined below. In these three locations, factors of change were determined based on the distillation of reviewed literature as representative examples of rural landscape change.

The Glacier Hills Wind Park covers an area of 17,350 acres in North-Eastern Columbia County, and therefore affects a larger range of communities. For the purpose of our study, we are including primary data from the villages of Cambria and Friesland, Wisconsin. Cambria (Latitude 43.54 N Longitude -89.11 W) covers a total area of 1.04 square Miles and has a population of 767 people (Census 2010). Local to the village of Cambria are three agricultural businesses: the Didion Milling Ethanol Plant, the Del Monte Canning Factory, and the Seneca Foods Canning Factory. The village of Friesland, Wisconsin (Latitude 43.59 N Longitude -89.07 W) covers a total area of 1.03 square Miles with a population of 356 people (Census 2010). Local to the village of Friesland are three agricultural businesses: the United Wisconsin Grain Producer (UWGP) Ethanol Plant, the storage warehouse of tin cans for Cambria canning companies, and the Alysum produce warehouse and distribution center.

The other two sites, Fountain Prairie Inn and Farms and the Banetzke family farms, are found near the village of Fall River, Wisconsin. Fall River Wisconsin (Latitude 43.39 N Longitude -89.05 W) covers a total area of 1.92 square Miles with a population of 1,712 people (Census 2010). Local to the village of Fall River are five manufacturing factories, the central hub of a shipping/trucking company, three agricultural businesses, and a small printing company.

Literature Review

Structural Change: Glacier Hills Wind Park

Eastern Columbia County experienced a vast array of ecological, structural, and socio-economic changes throughout the past several decades. The most visibly obvious structural change is the relatively new expanse of windmills parading over the landscape, developed by WE Energies. The Glacier Hills Wind Park (see image 1.), located in the townships of Randolph and Scott in Columbia County, is aimed to generate 162 megawatts of electricity (<http://www.we-energies.com/environmental/glacierhills.htm> last accessed 08 October 2013). As of now, the site contains 90 wind turbines and is capable of powering about 45,000 average residential homes. The concept of wind farms is rather appealing to some residents of Columbia County, while quite a detriment to others. These sentiments are reverberated throughout much of the Midwest and across the globe. The incentives and disincentives for the instillation of wind farms in Wisconsin stem from both the ecological and economical side affects. In order to evaluate how this wind farm affects the landscape of Columbia County, it is important to understand why it was created and how these changes are analogous with the rest of the Midwest.

The economical benefits of wind farm development is a large incentive for the support of many residents. Munday et al. relay five types of financial benefits that local communities receive: “conventional economic benefits (rental income, contractors, etc.); flows of financial benefits to local communities (community ownership, community funds/sponsorships, cheaper electricity, etc.); contribution in kind to local assets and facilities (landscape enhancement,

tourism facilities); provision of other local services (educational visits); and investment in the development process” (Mulvaney, Woodson, & Prokopy 2013 Different shades of green: A case study of support for wind farms in the rural Midwest, 1014). According to a study of wind farms in Benton County, Indiana, the local community welcomed the development of several large wind farms, mainly due to monetary benefits. Many survey respondents mentioned that companies provide good financial support to the community, and that large landowners are pleased that one parcel of their land can now provide multiple incomes (Mulvaney, Woodson, & Prokopy 2013 Different shades of green: A case study of support for wind farms in the rural Midwest, 1020). Positive responses to wind farms can even reciprocate across county lines. Tippecanoe County, Indiana, influenced by Benton County’s success, is now creating wind farms of its own, which are in line with the support of its residents (Mulvaney, Woodson, & Prokopy 2013 A tale of three counties: Understanding wind development in rural Midwestern United States, 329). These findings directly correspond with Columbia County’s situation. Both counties are predominantly white, rural, and mid-lower class. Because of these similarities, the financial incentives for farmers, in both counties, to allow wind turbines on their land is predictably high. Columbia County and each of the affected townships receive shared revenue payments based on the number of wind turbines and residents in their jurisdiction. Under Wisconsin Statute 79.04(06), local municipalities are paid annually for generation that is located within their boundaries. In addition to the payment for generation, there is an additional, annual incentive payment for renewable generation (http://www.wisconsin.gov/energy/environmental/gh_final_eis.pdf last accessed 08 October 2013, 82). The total estimated annual payments to effected towns and counties in Columbia County are as follows: \$378,000 to Columbia County; \$108,000 to the town of Scott; and \$162,000 to the town of

Randolph. In addition, the local economy benefited from temporary project laborers staying in the area, and also because 15 permanent full-time employee positions were established to maintain the wind farm (http://www.we-energies.com/environmental/gh_final_eis.pdf last accessed 08 October 2013, 47).

During the initial discussions of Blue Sky Green Field Wind Energy Center in Dodge and Fond du Lac Counties, Wisconsin in 2005, one retired farmer, Donald Hill, noted that he would “live a notch better” if five turbines were built in his fields (Mertens 2005, 1). Farmers benefit monetarily when they lease out acreage for wind turbines (Munday, Bristow, & Cowell 2011, 4). However, on the converse side, rural residents who move to the country to escape the development projects in the city will be disturbed by wind turbine construction. A mile away from the retired farmer lives Brian Vincent, who worries that the turbines will ruin the area for his family. He initially moved to an old farmhouse 19 years ago for the “peacefulness” (Mertens 2005, 1). “Ninety-five percent of people aren’t going to get any benefits, just ill-effects,” states Mr. Vincent, who commutes to his job at a General Motors parts factory in Milwaukee (Mertens 2005, 1). These two opinions contrast the attitudes of farmers who benefit monetarily from wind farms and commuters who are dissatisfied with construction in their rural backyards. However, according to Mulvaney et al., (A tale of three counties: Understanding wind development in rural Midwestern United States 2013, 329) wind farms are often seen as ways to protect rural landscapes from urban sprawl. From this point of view, the wind farms would benefit both parties. In fact, this would directly benefit Columbia County. Both Columbia County and the town of Randolph have 2030 Comprehensive Plans. By 2030, Randolph expects to lose about 310 acres of agricultural land and gain about 291 acres of residential land, 6 acres of commercial land, and 13 acres of industrial land (<http://www.we->

energies.com/environmental/gh_final_eis.pdf last accessed 08 October 2013, 47). The easements required for wind turbine sites restrict other construction on property that would obstruct with operation of the wind facilities. This would help prevent the urbanization and invasion of suburban subdivisions on rural farmland in the Glacier Hills Wind Park area. Conclusively, the communities and large landowners of Columbia County, WI and Benton County, IN both benefit financially from the wind farms.

Those who oppose wind farms cite a number of concerns about health and safety, economic impacts, negative environmental impacts, noise, shadow flicker, and visual aesthetics (Mulvaney, Woodson, & Prokopy 2013 Different shades of green: A case study of support for wind farms in the rural Midwest, 1013). For example, wind turbines occasionally build up ice on their blades, which can be a potential hazard if the ice is thrown off. In addition, some residents in Benton County, Indiana complained about the depreciations of property value in areas around wind farms; the costs associated with removing turbines that are no longer functional; and differences in financial gain among community members from wind farm development. (Mulvaney, Woodson, & Prokopy 2013 Different shades of green: A case study of support for wind farms in the rural Midwest, 1014). Of course, Not-in-my-back-yard (NIMBY)-ism is also a hot topic with wind farm development. Wolsink (2007, 1188) notes, “Attitudes towards wind power are fundamentally different from attitudes towards wind farms.” Both Wisconsin, and other parts of the Midwest are struggling with balancing the economical pros and cons of wind farm development.

Just as wind farms aren’t always viewed in an economically positive light, so are they viewed in an ecological light. One of the main ecological disadvantages of wind turbines is the loss of wildlife—specifically bats and birds (Grodsky et al. 2012, 773). One study of

southeastern Wisconsin estimated that 4,454 bats were killed during two spring and two autumn study periods (2008-2010) in a wind energy facility. The researchers focused on 29 study plots, with each plot consisting of a 160-m × 160-m square (2.5 ha) (Grodsky et al. 2012, 774).

Columbia County now faces the same issues. How is the county to lessen the bat and bird mortalities, and are these deaths justifiable? Post-construction studies were conducted at three recently completed wind farms in Wisconsin, including the Wisconsin Electric Power Company's (WEPCO) Blue Sky Green Field (BSGF) project (http://www.we-energies.com/environmental/gh_final_eis.pdf last accessed 08 October 2013, 35). These projects have land cover that is quite similar to northeast Columbia County. The post-construction data from the BSGF project shows a high level of bat mortality. This may foreshadow future bat mortality rates in the Glacier Hills Wind Park. Furthermore, the newly constructed Blue Sky Green Field wind farm in Dodge and Fond du Lac Counties, Wisconsin received quite a bit of opposition with regard to ecological damage. Joe Breadan, head of a local opposition group, complained about wind turbine interference with migratory bird patterns: "I'm anti-location. You've got to be a little scrambled in the head to put 133,400-foot tall egg beaters next to a place where hundreds of thousands of birds come in" (Mertens, 2005, 1). The Glacier Hills Wind Park, like many other wind farms in Wisconsin, is a reason for trepidation among some ecologically concerned residents across the state. Yet, these concerned citizens and opposition groups have not had much luck with the prevention of wind farm development. WEPCO conducted a pre-construction avian study of the Glacier Hills project area between mid-June 2007 and mid-July 2008. Their avian study did not identify any heavily used local flight paths or any locations in the project area where bird activity was heavily concentrated (http://www.we-energies.com/environmental/gh_final_eis.pdf last accessed 08 October 2013, 37). Therefore,

unlike the Blue Sky Green Field wind farm, the Glacier Hills Wind Park will cause less harm to birds.

On an ecologically positive note, the American Wind Energy Association estimates that if the U.S. meets its 20 percent wind energy goal by 2030, it would reduce greenhouse gas emissions by avoiding more than 7,000 tons of CO₂ (Mulvaney, Woodson, & Prokopy 2013, Different shades of green: A case study of support for wind farms in the rural Midwest, 1014). Wisconsin also has its own renewable energy goals. WE Energies' website explains its purpose for the Glacier Hills wind farm: "We are pursuing additional wind energy to meet increasing customer demand for renewable energy and to meet the state of Wisconsin's Renewable Portfolio Standard." This standard would require Wisconsin utilities to generate 10 percent of their energy from renewable sources by 2015. The state is striving to meet not only its own renewable energy goal, but also the country's goal, as a whole. These government mandated goals further press the development of wind farms across the nation and in Wisconsin.

The Glacier Hills Wind Park has suffered from almost all of the criticisms listed above. Nevertheless, construction of the project began on May 17, 2010, and by December 20, 2011, it began commercial operation. According to WE Energies, the project was constructed by a Wisconsin-based alliance that benefited the state's economy, while "achieving a low-cost approach to generating more energy from renewable resources" (<http://www.we-energies.com/environmental/glacierhills.htm> last accessed 08 October 2013). However, there are groups who strongly opposed this construction, such as the Coalition for Wisconsin Environmental Stewardship. In the group's 2009 study, they found "an average price decline of 30-40 percent in land values for property sales that were near turbines" (Content 2009, N/A). In response, WE Energies stated that the outcome may have resulted from a housing market

collapse and economic crash. The arguments for and against wind farms may never end; however, the structural landscape changes of wind farms are undeniable. Specifically, in Columbia County, the Glacier Hills Wind Park installed 90 wind turbines that negatively and positively affect the land. However, one must remember their main purpose: to generate a net total of 162 megawatts.

Ecological Change: Banetzke Family Farm

Throughout the past several decades the rural landscape has undergone both structural and economical change. From the sudden appearance of windmills on the landscape to the more gradual adaptive change one can see at the Fountain Prairie Farms, landscapes have melded and merged. While these changes possibly indicate the future of rural Wisconsin, one must also examine the transformation of the places that no longer dominate the landscape, primarily Wisconsin's small family farm. The changing ecology of retired small farms may have implications that need to be examined for the full understanding of the rural landscape.

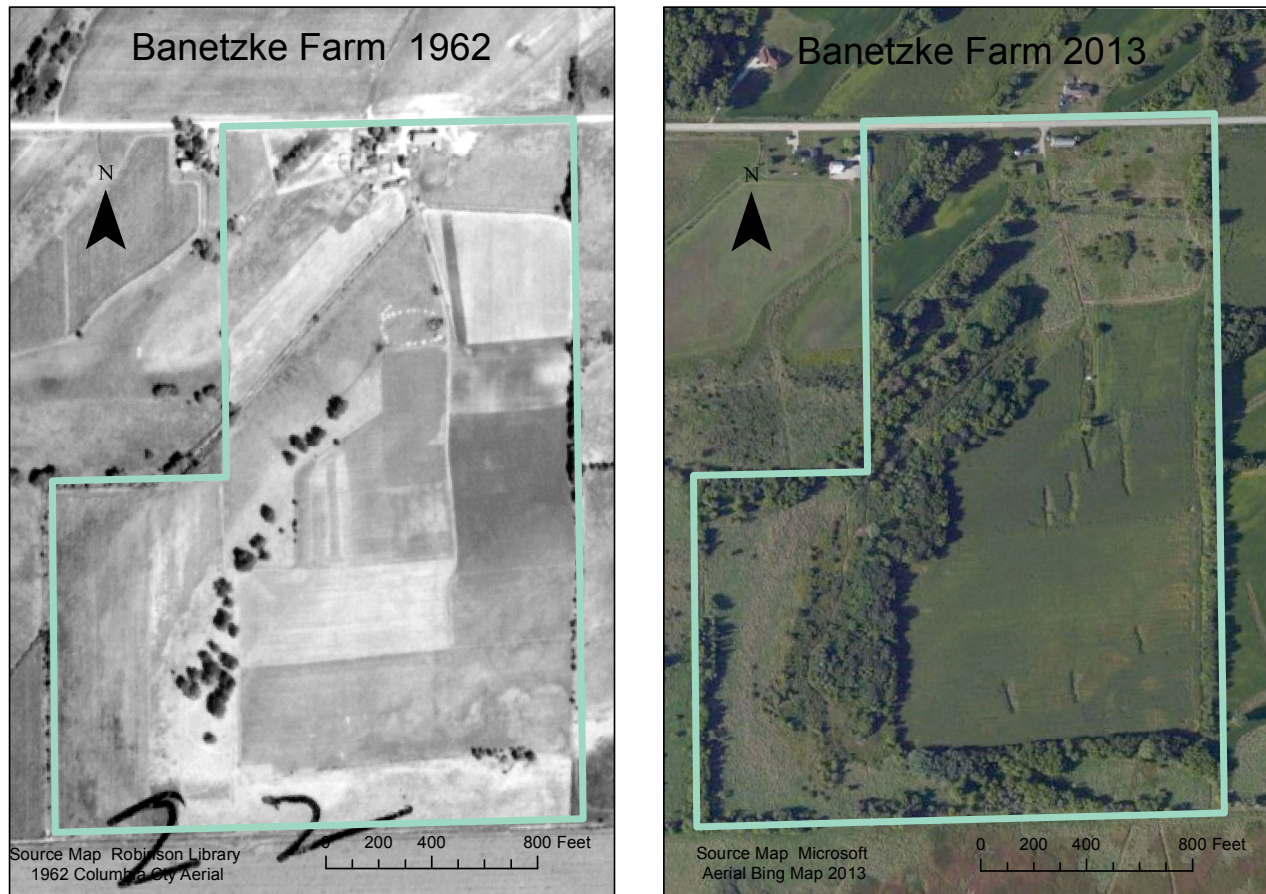
To examine the changes in ecology of the changing rural landscape, we will primarily study the Banetzke farm (see figure 2.), located in southeastern Columbia County. We also plan to acknowledge the ecological transition of the Fountain Prairie Inn and Farms. Both of these areas have specific sets of conditions leading to unique ecological changes, and to understand these changes it is helpful to examine changing farmland in Wisconsin as a whole, and compare these changes to both the Banetzke farm and the Fountain Prairie Farm.

Various researchers have examined land cover change, and many saw similar results amongst their studies. Freeman et al. discusses how in the 1930s agriculture dominated the land in Southern Wisconsin. However, the article continues to describe the land change over a span of

60 years, largely depicting an increase in forest cover, concluding that “agricultural conversion alone was responsible for the majority of forest increase” (Freeman et al. 2003, 420) in their central area of study. Similarly Bürgi and Turner describe the ecological changes resulting from land abandonment as including “a decline in agricultural land paralleled by an increase in forest cover” (Bürgi and Turner 2002, 190). Along with an increase in forest cover “wetland patches increased in both size and density” (Freeman et al. 2003, 421). Most research draws the conclusion that farmland abandonment leads to heavier forest cover, appearance of wetland, and in some cases, restoration of grassland.

Comparative with the previously stated studies, after examining the maps of the Banetzke farm and the land itself, one can see the shift from cropland to forest. As farmland falls out of use, species from the surrounding forests distribute and establish themselves in former agriculture fields, leading to natural, “highly stochastic” (Benayas et al. 2007, 7) environments that “integrate natural conditions with plant cover” (Benayas et al. 2007, 7). Such changes allow for a more natural environment that acts to “reduce soil erosion, improve air and water quality, enhance wildlife habitat” (Sullivan et al. 30). The first map of the Banetzke farm (see figure 2.) that we studied dates back to 1962, and shows large expanses of cropland. To further enforce our knowledge of the past land, we examined several pictures of the land pre-abandonment. By examining an aerial photo of the land in 1962, one can observe the scarcity of forest cover. In stark comparison, we can view an aerial photo of present day and observe large patches of forest. We can also observe the appearance of marshland from 1962 to 2002 in the southern part of the Banetzke farm.

Banetzke Farm Landcover Change



Map Author: Randy Banetzke Map Date:12-1-2013 Map Projections: NAD 1983 HARN

Figure 2B. Map of Banetzke Farm in 1962 (on left) and map of Banetzke Farm in 2013 (on right)

The benefits gained from the conversion of cropland into woodland motivated the government to introduce incentive-based conservation programs, often with the attempt to protect or enhance the land. One such program, the Conservation Reserve Program, provides incentives, usually financial, for farmers to retire land of low productivity for a certain period of time, usually ten to fifteen years (Sullivan et al. 2004, 30). Often farmers choose not to convert the land back into cropland and the land transforms into forest. This conversion “generates lower environmental damages” (Roberts & Lubowski 2007, 518) and “reduces soil erosion and

enhances wildlife habitat” (Plantinga 1996, 1082). Other benefits are not immediately visible, such as improvement of local water quality. (Foth & Von Dyke 2000; Farmer et al. 2011; Plantinga 1996, Sullivan et al. 2004; Roberts & Lubowski 2007)

Reversion to forest is the least labor intensive of ways to place land into conservation. However, there exists the argument that the most ecologically healthy method includes restoring farmland to the native landscape of Wisconsin prairie. Restoration to the original state will arguably allow for “recovery of natural biodiversity, resilience to invasion and self-sustaining ability in the longterm” (Brye et al. 2002, 218). Some go as far to argue that letting cropland grow to forestland is simply land retirement, and only when people restore the land to prairie can we call it conservation (Feng et al. 2006, 601). While some suggest prairie restoration to be the superior method of land conservation, we cannot argue in our paper one way or the other as the Banetzke farm has converted to forest, and we do not have a study area that portrays prairie restoration.

Interestingly, a survey taken throughout the Midwest in regards to reasons for entering a conservation program showed that “the financial-incentive motivation category was the lowest ranked” (Farmer et al. 2011, 833). The survey found that “place attachment, which is a measure of personal connection to a location or property, was the greatest motivation for implementation of an easement” (Farmer et al. 2011, 827), suggesting that environmental protection concerns play a large role in decisions to retire land.

While farmland retirement and conservation often has positive ecological effects, farmland abandonment often leads to negative environmental impacts. As farmland decreases, urbanization has a tendency to increase. Urban sprawl leads to several environmental degradations, including the increase in invasive plant populations. A “trend toward strong

housing growth in rural areas started in the late 1960s” (Gonzalez-Abraham et al. 2007, 2012), which had effects such as habitat loss and land fragmentation. Researchers have also connected an increase in road infrastructure with the increase in the population of destructive invasive species. Many farmers responsibly retire farmland and practice good land stewardship; unfortunately other retired land becomes urbanized. Researchers have found that “human disturbances are common contributors to the occurrence of most, if not all, IP [invasive plant] species” (Fan et al. 2013, 43).

Socio-economic Adaptability: Fountain Prairie Inn and Farms

As the landscape of rural Wisconsin changes, small businesses are forced to adapt on an economic level in order to keep up with the transitioning rural setting. The continuation and success of small farms depends on a variety of impacts from “the economy, culture, and technology” (Bürge & Turner 2002, 199). We will examine Fountain Prairie Inn and Farms to see how one small business adopted methods that have allowed it to flourish in a world of large agriculture.

Fountain Prairie Inn and Farms (see image 5.), a bed and breakfast located on a small farm owned by John and Dorothy Priske, switched from conventional farming methods to sustainable farming in the late 1990s. The 280-acre farm once included over 900 pigs, a small-scale beef operation, and large corn and soybean fields (Gloss 2010, 34). However, after a trip to New Zealand where they stayed at a country bed and breakfast, the Priskes decided to adopt organic farming techniques and what they considered to be more sustainable methods of animal husbandry. Instead of raising pigs and cows, they switched to raising Highland cattle (see image 7.), a breed of cattle that endure far better in colder climates than the traditional Holstein dairy

cow. The case of the Priskes also demonstrates the importance of the community in the success of the small alternative farming. The couple credits some of their success to the support they have gained from the local community through farmers markets. Although the transition took three trying years, the changes “have resulted in a better quality of life” (Gloss 2010, 35), both for the livestock and for the Priskes.

Before the organic “boom” of the 1990s farm conditions could be seen as detrimental to both the land and livestock. Pollutants in the form of pesticide runoff were dominant, and the health of the livestock was questionable. Soil quality degraded due to destructive agricultural practices that led “to increasing needs for inputs like fertilizers and irrigation,” only resulting in a detrimental feedback loop (Brock & Barham 2008, 29). Similarly, use of antibiotics on livestock began to cause “antibiotic resistance problems in both animals and humans” (Brock & Barham 2008, 29).

However, only after the 1993 approval by the FDA to use rBST did the demand for organic milk grow rapidly. With this demand and the overall demand for organic products came the thought of “reflexive modernization”(Brock & Barham 2008, 29). This way of thinking takes into account not only the desire to adopt cost efficient technologies, but also concerns about the environment, genetic modification and health. In order to adhere to the idea of reflexive modernization the owners of Fountain Prairie Inn and Farm installed a windmill (see image 6.) in 2009. One of the co-owners, John Priske, stated that he wanted to “be socially just, financially smart, and environmentally friendly” (see Appendix A).

Fountain Prairie Farms does not stand alone in adopting new farming methods that adhere to the goals of reflexive modernization. Studies have found that “smaller-sized farms are more predisposed to adopt alternative production and marketing strategies” (Brock & Barham

2008, 25). The shift to organic farming techniques may also offer ecological benefits “such as increased biodiversity, erosion control, increased soil health and reduced usage of chemicals and antibiotics” (Brock & Barham 2008, 30).

Apart from the increased cultural demand for organic dairy, economic policy also plays a large role in the success of small alternative farms. It has been found that in certain aspects smaller farms are less vulnerable to government policies that alter the prices of milk or irrigation water (Cross 2001, 704). The Fountain Prairie farm suffers less from large price deviations than do large conventional farms.

Although organic farms are smaller than conventional farms and therefore produce less, these farmers “report relatively high levels of satisfaction with net farm income and over quality of life compared to other types of dairy farms” (Brock & Barham 2008, 32). By downsizing, most farmers need to interact with more local venues, gaining valuable and unique connections to the community, which in turn enhances the meaning of their work. The Priskes satisfaction with organic farming and pro-activity in practicing good land stewardship supports this research.

The ecology of the Fountain Prairie farm has also changed over the past several decades. However, the ecological change in this study region resulted from the shift to organic farming from conventional farming as opposed to the cessation of farming. In the 1970s large oak stands and wetland vegetation covered the area surrounding Fountain Prairie. According to the Town of Fountain Prairie Year 2020 Land Use Plan, by the 1990s 67 percent of the vegetative cover in the town was defined as cropland. However, there remains a presence of woodlands within the town that “help to maintain the environmental quality of the area by contributing to clean air and water and provide habitat for a diversity of plant and animal life” (Foth & Von Dyke 2000, N/A).

The Fountain Prairie Farm's newly implemented method of farming deviates from the standard practices. New forms of farming such as the organic methods adopted by the Priskes may offer "environmental benefits such as biodiversity, erosion control, increased soil health and reduced usage of chemical and antibiotics" (Brock & Barham 2008, 30). Adopting smaller scale farming and organic methods can achieve similar ecological benefits to those benefits achieved through land retirement. Brock and Barham find that at the organic level farmers often practice management techniques, such as responsible crop rotations and grazing practices, that have positive environmental impacts, including "improved water quality, wildlife habitat, and increased carbon sequestration" (Lambert et al. 2007, 73). Looking further in depth at the Fountain Prairie farm practices and resulting ecological change, we can compare the landscape with predicted outcomes stated by Brock and Barham.

Fountain Prairie Inn and Farm and the Banetzke farm contrast each other in regards to landscape and socioeconomic change. Before changing farming practices the Priskes found farm life very difficult. John "knew things weren't working" as they "weren't actually making a living farming" (see Appendix A). In order to continue farming for a living, John and Dorothy realized they needed to make some drastic changes. Thanks to the fact that Dorothy and John Priske both have finance degrees, they were able to successfully change farming practices and find a specific niche in which they can compete in today's market.

On the other hand, the Banetzke family decided to abandon the idea of farming for a living. The land fell into disuse in the 1970s after the owner of the farm suffered severe injuries from flipping a tractor. Thirty years later when the current owner expressed interest in farming the land again, financial obstacles stopped him. Randy Banetzke found it "hard to get financing" (see Appendix B). Unlike the Priskes, Randy Banetzke does not have a financing degree and

found the process of obtaining bank loans too much of a deterrent to pursue farming. Now, over a decade after obtaining the farmland, forest cover makes the land ecologically unviable for farm use.

The changes in the ecology of the land vary depending upon the actions taken by the owners of the land. The main differences between the Banetzke farm and the Fountain Prairie farm ecologies arose from the amount of time, money, and planning put into the changes of the land. The Priskes realize the importance of pro-activity in land management as well as the need to have other incentives to adapt other than strictly government aide. As John mentioned, “they [the government] pay you according to what you’ve done, not what you’re going to do,” (see Appendix A) clarifying that one cannot use government money as the only incentive to change land-management techniques. The Priskes discovered early that long-term sustainability linked economic value to the farm. Today the Fountain Prairie Inn & Farm serves as an example of proactive land-management that led to a thriving family farm.

In contrast, the Banetzke farm falls under the category of farmland abandonment and what some may view as a return to nature. While the ecological impacts of this abandonment have been overall positive in terms of recovery of biodiversity and decreased erosion, the value of the land for crop planting has fallen. The Banetzke farm also receives no government funding for land conservation, giving no incentive to practice proper conservation techniques. It can be argued that in order to successfully participate in the modern day agricultural market, small farms must diversify and embrace new sustainable technologies and farming methods.

Methodologies

We visited multiple sites in Cambria County to attain data by means of survey distribution and an interview. We then correlated this data to secondary sources in order to gain an aggregate understanding of rural landscape change. The townships mentioned above served different roles in developing our conclusion. The *Structural Change* review was devised through two different respondent questionnaires. The first respondent questionnaire (see Appendix D) was distributed in the Northern windmill region of Eastern Columbia County in the villages of Cambria, Friesland and in the townships of Scott and Randolph. The second respondent questionnaire (see Appendix C) was distributed in the villages of Doylestown and Fall River, and in the township of Fountain Prairie (approximately 6-10 miles south of the windmill region). In addition, literature regarding natural and community impacts was employed as observed data prior to and following the project. The *Ecological Change* inquiry was held at Banetzke family farm in the form of a field study. Observational evidence in association with archival aerial photo research served as investigative tools for our final assessment. In addition, we performed an interview with the current owner of the Banetzke farm, Randy Banetzke. Fountain Prairie farms satisfied our *Socio-economic Change* study, as an example of successful adaptability. This site provides it's own wind energy, functions as a bed and breakfast, and participates in a land conservation program. Therefore, the topical overlap of this site with our other sites delivered an extra dimension of analysis in the end result. We interviewed the owners of the farm, John and Dorothy Priske, to discuss specific managerial efforts and methods regarding their decision to specialize, and whether or not it has been effective.

In supplement, we created a cartographical aid to represent the spatial locations of our study areas and specific sites. Our research efforts also included photography and general landscape observations. Two aerial maps of the Banetzke farm, one from 1962 and another from

2013 were used to document land-use change with a temporal resolution of more than 50 years of data. All primary data collection methods were statistically quantified and discussed implicitly in regards to the overall topic of rural landscape change.

Results

Wind Park Survey Results

Questionnaire survey research is used for gathering information about “characteristics, behaviors and/or attitudes of a population” (Clifford, French, and Valentine 2010, 77). We conducted two surveys in Eastern Columbia County. One survey was distributed to the Northern windmill region (Cambria, Friesland, Randolph, and Scott). The other survey was distributed to the region about 6-10 miles south of the windmill region (Doylestown, Fountain Prairie, and Fall River). We assumed that those with longer residencies in the area would strongly oppose the wind park due to a desire to preserve the natural landscape they resided on for decades. Based on research from our literature review we also assumed that those with longer commutes would oppose the wind park, because they would want to escape budding infrastructure and construction that they had to deal with in the larger towns and cities they work in. Despite our assumptions that more years of residency or longer commute distances would produce strong opposition toward the Glacier Hills Wind Farm, we discovered that there was little correlation between either of these assumptions.

However, we did find a correlation between opposition of the wind park and proximity to it (see Appendices E and F). The residents further away from the Glacier Hills Wind Park were more favored toward a proposed wind park. According to Figure 3., those who were opposed and

very opposed (26.09% of respondents) in the North windmill survey region were almost equal to those who were favored and very favored (28.27% of respondents). In contrast, those who were opposed and very opposed (27.27% of respondents) in the south survey region were small in number compared to those who were favored and very favored (47.72% of respondents).

Cross Tabulation (Frequency & Percent)		What is your opinion of a proposed wind park project?					
		Very Opposed	Opposed	Neutral	Favored	Very Favored	Row Totals
Region Tested	North Windmill Survey Region	3	9	21	8	5	46
	Row percent	6.52%	19.57%	45.65%	17.39%	10.87%	51.11%
	South Survey Region	7	5	11	12	9	44
	Row percent	15.91%	11.36%	25.00%	27.27%	20.45%	48.89%
	Column Total	10	14	32	20	14	90
	Column Percent	11.11%	15.56%	35.56%	22.22%	15.56%	100.00%

Table 1. Chi Square Distribution Table of the two survey regions in response to the question: What is your opinion of a proposed wind park project?

In addition, we found little correlation between concern for wildlife and opposition of the Glacier Hills Wind Park before construction in the North windmill survey region. While approximately 36.96% of respondents said the wind park has negative affects on wildlife, a whopping 59.70% said the windmill has no affect on the wildlife in the region. This led us to believe that concern for wildlife was not the main worry in the region. However, we did receive two anonymous survey comments about concerns for the increased loss of birds sightings since the construction of the wind park (see Appendix G).

Fountain Prairie Inn and Farms Interview Results

Our interview (see Appendix A) with John and Dorothy Priske, owners of Fountain Prairie Inn and Farms, was semi-structured to allow for open responses rather than a ‘yes or no’ type answer (Clifford, French, and Valentine 2010, 105). John and Dorothy Priske revealed that small farms must remain pro-active in order to stay in business. John stated that he always thrives to be “socially just , financially smart, and environmentally friendly.” He reinforced that he and Dorothy are always pro-active when searching for government programs and potential grants. Their motivation behind diversification came through a life-long notion of self-subsistence and pro-activity in land management. Long-term sustainability and subsistence practices were inherently linked to farm economics such as, rotational harvesting and preservation. “Common sense tells you what to do, and economics allows it to happen,” said John. “If you’re waiting for someone to tell you to do something, you’re already too late,” he continued. Modern agriculture is extremely capital intensive and the Priske’s diversified in order to compete with factory farms from the “sub-belt.” John was very direct about the importance of pro-activity in land management.

In addition, a philosophy of self-subsistence inclined them to produce their own energy. Their windmill currently produces more energy then they use at the farm, rendering them a monthly kick-back check for the energy that they send back to the grid. The Priskes’ desire to stay up-to-date on new government programs and agricultural grants and their aspiration to stay environmentally friendly steers the way they run their farm.

Banetzke Farm Observational Data and Interview Results

After examining the 1962 and 2013 maps (see figure 2.) of the Banetzke farm and the land itself, one can see the shift from cropland to forest. Our interview (see Appendix B) with the

current owner of the farm, Randy Banetzke, revealed that previous family farm accidents, coupled with little knowledge of finance deterred him from reestablishing the farm. We practiced participant observation to obtain the bulk of our data (Clifford, French, and Valentine 2010, 116). We spent time roaming the grounds of the Banetzke farm in order to analyze how the landscape changed from our 1962 map of the farm. The abandoned milking stalls (see image 3.), coupled with the deterioration of the barn and the new forest growth reveal a humanized landscape reverting to nature.

An old sign (see image 4.) we found in the Banetzke farm uncovered a glimpse into the past of the farm, as the property once operated as a fully functional dairy farm. The sign portrays a fairly high-tech emergence of a vehicle, presenting a progressive interpretation of the dairy industry. During the time that this sign was in use, Banetzke farms was a modern, fully functional farm with a bright future. We concluded that sometimes unpredictable factors, such as a farming accident, can change the rural landscape quite dramatically.

Conclusions

By using a variety of methodologies to inductively compare and contrast our findings against spatiality and the kinds of change that we discussed in our results section, we were able to draw few correlations. Through these various approaches we were able to make some inductive logic regarding individual sentiments towards change in general as well as the benefits of change. Although a sense of community seemed to be established through the agreement that this county is in-fact rural, no specific communal resource was experienced as being in danger of change. In much of the literature, a collective sense of the environment and its resources drew a

more negative response than the individual nature of specific change. From our assessment of Columbia County, this seemed to contradict the notion that communities are un-accepting of change except in terms of proximity. The more near that change was occurring the more negative stance about that particular kind of change people had. Hence, there was no documented collective experience that could be tied to an impression of powerlessness or that changes were occurring unexpectedly. This could be due to the proximity of Columbia County to Madison as the primary urban area and driver of rural change.

Rural landscapes represent an under-studied branch of geography and is often considered to be less dynamic than urban environments. However, as our research concludes, rural communities and relationships have proven to be far more diverse and multi-dimensional than could be expected. The complexities of post-modern livelihoods and a general acceptance of alternative energy seem to supersede communal disassociation or negative outcomes in Columbia County. The necessity for structural advancement in the form of internet and telecommunications service far outweighed the distaste for landscape disruption. By broadly comparing our study area to similar proxies that have experienced similar versions of landscape change, the discrepancy can be ascertained by considering spatial relativity to communal alliance over specific resources. A more collective experience surrounding an environmental resource or physical interest, the less accepting of change communities seem to be. This can be concluded to signify that change is an uneven process, which occurs at various scales, relative to interdependency. Therefore, the acceptance of change in rural areas can be attributed to the proximity to urban areas, as well as the collective interest of rural communities. If rural communities have something to protect, they will, but the interplay between development, employment and personal advancement supersedes collective experience.

Future Research

Limited to a single, unfunded semester, our research project leaves unanswered questions that compel further research. Rural landscapes continue to transition, requiring research for future generations. We accumulated a lot of statistical data, but the majority of the data arrived at the end of the semester, not leaving sufficient time to thoroughly analyze the data. If time allowed, we could use our data to compare opinions of individual landscape components by sub-region as opposed to only by region. Analysis between these sub-regions to the entire region has the ability to show individual discrepancies and allow for further geographic sorting of opinions.

Eastern Columbia County is also home to two ethanol plants and a grain storage facility. While we briefly surveyed on the ethanol plant and grain storage facility, our allotment of time did not allow us to draw any firm conclusions in regards to these two structures. Interviews with residents that live near these structures is required in order to gain a more in-depth idea of how these facilities are affecting the nearby rural communities. One anonymous survey respondent explained various opinions of one of the ethanol plants: “The ethanol plant doesn’t bother us much, but some are affected by the noise and odor.” Interviews would allow us to expand on these opinions.

In regards to our study of the ecological change, a wider selection of site areas would greatly enhance our research. We examined the changes of the ecological landscape over time, but largely only on the basis of one farm. Our research could benefit from the study of areas that practice tall-grass prairie restoration and compare and contrast the benefits of prairie restoration with that of forest growth. Another area that we did not succeed in covering sufficiently is the

role of shifting markets on farmland. Questions such as how market trends affect the intensity of agriculture and therefore the ecology of farmland addresses an important component of our study area that we did not thoroughly study.

A different group that is thriving on the Eastern Columbia County landscape is the Amish. Old Order Amish have been migrating to the Town of Scott for about 30 years, and the Amish community has become a significant portion of the town. The neighboring town of Marcellon reported 283 Amish residents as of October 2010. Though the Township of Scott lacks data regarding its Amish population, it is thought to be similar to that of Marcellon (The Town of Scott 2012). Amish farm numbers are not only increasing in Scott, but also in Wisconsin as a whole.

The Old Order Amish are defined by their Anabaptist Christian religious and cultural identity. For the Amish, living in a redemptive community, separated from the world, is necessary for salvation. Many Amish, who desire to farm as a way to sustain religious and family values, have migrated from the urbanization of the east coast to Wisconsin. These Amish also contribute quite heavily to Wisconsin's dairy sector. In 2007, they were estimated to be about 10 percent of the state's dairy numbers. This was quite a jump from 5 percent in 2004. The Amish farmers occupy many of the old traditional dairy barns that would have otherwise been torn down due to the declining dairy industry—essentially adapting to the landscape. However, when it comes to technology, the Amish adopt 'modern' technologies at rates that are about 25 percent or less than other dairy operations across the state (Brock & Barham 2009). Plus, due to the fact that the Amish milk by hand, they produce about 25 percent less milk than the conventional dairy farmer. Nevertheless, the population of Amish in Columbia County continues to grow, and their farms are witnessing much success.

While we did have a few opportunities to visit local Amish produce, cheese, and pastry vendors, time constraints did not allow us to interview anyone in the Amish community. These interviews could lead to further information on land use change in Eastern Columbia County.

Finally, a comparative survey of the Blue Sky Green Field Wind Park in Dodge and Fond du Lac Counties would be beneficial for future analysis of landscape change. This wind park borders Dodge County's Horicon Marsh, which is a prime stop for many migrating birds. This survey may reveal alternative residential perspectives on landscape change in Southern Wisconsin.

Images



Image 1. Stum, *Brian*. *Glacier Hills Wind Park*. Photograph, 24, September, 2013. Scott, WI. In this photograph, the Glacier Hills wind farm dominates the landscape near an existing farm. The size of these structures is extraordinary, shrinking all other objects on the countryside.



Image 2. Stum, *Brian*. *Abandoned Banetzke Barn*. Photograph, 24 September, 2013, Fountain Prairie, WI. The barn at the Banetzke farm was in disrepair. Just as with the land, this structure is no longer used for farming and lacks attention, and upkeep. Used only for storage, it's sad condition represents a change in purpose as the land around it also returns to nature.



Image 3. Stum, Brian. *Abandoned Milking Stalls*. Photograph, 24 September, 2013. Fountain Prairie, WI. The abandoned milking stalls at the Banetzke farm represent the perils of a forgone industry.



Image 4. Brian, Stum. *Abandoned Sign*. Photograph, 24 September, 2013. Fountain Prairie, WI. This sign represents a glimpse into the past of Banetzke farms, as the property once operated as a fully functional dairy farm. The sign portrays a fairly high-tech emergence of a vehicle, presenting a progressive interpretation of the dairy industry. During the time that this sign was in use, Banetzke farms was a modern, fully functional farm with a bright future.



Image 5. Stum, Brian. *Fountain Prairie Inn and Farms*. Photograph, September 24, 2013. Fountain Prairie, WI. The Fountain Prairie Inn and Farms is noticeably well maintained and charming.



Image 6. Stum, Brian. *Fountain Prairie Farm*. Photograph, 24 September, 2013. Fountain Prairie, WI. The grounds at Fountain Prairie farms are well maintained and picturesque. The windmill gives the property a modern touch and adds to their mantra of self-subsistence and conservation.



Image 7. Stum, Brian. *Highland Cattle on Fall Day*. Photograph, 24 September, 2013. Fountain Prairie, WI. The highland cows at Fountain Prairie farms enjoying a nice fall day.

Appendix A:

Interview with John and Dorothy Priske of Fountain Prairie Inn and Farms
(03 November, 2013)

1) Q) Can we start with a chronology? Example: inn, highland cows, wind energy, conservation. In what order did this occur? What came first?

A) The farm was bought by Dorothy and John in 1986. From 1986-1998 they farmed Holstein beef, pigs, asparagus, broccoli and cauliflower, using rotational harvesting and crop diversity in order to earn money throughout the growing season. In 1998, they had an “epiphany,” when two family dogs died of cancer. John attributed this to agricultural inputs (pesticides, rodenticides, fungicides) and consequently decided to change their business model. John added, “Personally, I know I am responsible for killing 1000s of birds.” He continued, “I knew things weren’t working. We weren’t actually making a living farming.” In 1998, they began to take part in conservation programs including: tall grass prairie and wetlands restoration and intensive water management. Following a trip to New Zealand in 1999, the Priskes were inspired to reinvent their farm practices. They were impressed with the grass based farm system there. In 2002, they began raising highland cows and also established their Inn. The windmill was installed in 2009. John stated that he wants to be “socially just , financially smart, and environmentally friendly.”

2) Q) What did you do before developing Fountain Inn and Farms? Did you have prior experience in the farming industry before Fountain Prairie Farms?

A) Dorothy grew up on a dairy farm in Juneau, WI and John’s parents were sharecroppers in Lodi. The land that John’s family had farmed was abruptly sold, forcing them to urbanize for employment reasons. Dorothy and John met while John was working in town and Dorothy was going to school at UW. John took a short-course in agriculture during this time and also worked in Chicago. In 19**, the Priske’s moved to the Pacific Northwest, where John worked as a railroader. He commented, “We lived in an outfit car, and they would move us where the work was.” They lived cheaply and off the land by focusing on local food—deer, elk, mushrooms, etc. John laughed, “It gave me a sense of adventure.” One of John’s brothers passed away and both their parents were getting older. They decided to move back to Wisconsin when John finished his college degree in finance in 1983. Dorothy said, “It seemed like the time to move back to Wisconsin.” John mused, “Coming home felt good. We had a project. I had just finished my degree.” When asked if his degree benefits him, John responded, “Everyday.” He continued, “You need to be proactive before government programs come out. So when it comes out, you’re prepared.”

3) Q) How was the property used before you bought and revitalized it?

A) Prior to the Priske's buying their farm, the land had been used for intensive corn production with no rotation. The farm size was 290 acres. Now, 60 acres are used for conservation and 11 acres were sold 11 years ago for quarry rights. The conservation programs were 10 and 15-year programs. The tall-grass prairie is technically out of CRP, but still protected, and the wetlands CRP was renewed for 10 more years. They began all of these programs in the late 90's.

4) Q) How did you decide to diversify your business? Moods/Motivations?

A) The motivation behind diversification came through a life-long notion of self-subsistence and pro-activity in land management. Long-term sustainability and subsistence practices were inherently linked to farm economics such as, rotational harvesting and preservation. "Common sense tell you what to do, and economics allows it to happen," said John. "If you're waiting for someone to tell you to do something, you're already too late," he continued. Modern Agriculture is extremely capital intensive and the Priske's diversified in order to compete in order to compete with factory farms from the "sub-belt." John was very direct about the importance of proactivity in land management.

5) Q) Why Highland beef? Where did you acquire them? Do they require more or less "maintenance" than regular beef cattle?

A) More hearty. Acquired through the WI Beef Association. No extra maintenance, just clean water. John stated, "All cows can't survive outside. The highland cow doesn't require housing." Plus they have tougher tongues and throats than that of the Holstein, and their long horns help them roam through long grass. They started selling Highland beef in 2003.

6) Q) Why did you decide to construct the windmill? Have you seen it as a cost effective investment?

A) A philosophy of self-subsistence inclined them to produce their own energy. The windmill was purchased in 2009 for 292k. [Grants] 70k in USDA, 100k in focus on energy, and a 80k investment tax credit brought their "out-of-pocket" costs down to 37k. The windmill currently produces more energy then they use at the farm, rendering them a monthly kick-back check for the energy that they send back to the grid. The windmill came with a 5 year maintenance contract, but requires annual maintenance and residual improvements in design. John mused, "It's not very cost effective without grants."

7) Q) How do you feel about windmill criticism?

A) They seemed very much against NIMBY-ism. Why not use what is available, rather than hauling coal up and down the state.

8) Q) Why did you establish the Inn? What kind of clientele do you see? What are your busy seasons?

A) Clientele for the Inn was predominantly people from Madison who were interested in their farming practices. They gave farm tours and their busy season was Jul-Oct. “We always offer tours to patrons,” commented Dorothy. They even had 5 Japanese dairy farmers come to stay at the Inn and tour the farm. “Usually people who came always come back,” said John.

9) Q) Did you choose to partake in wetland conservation on your own, or through a conservation program?

A) BOTH. Long-term sustainability was a concurrent theme for John, as well as pro-activity and proper land-management techniques. Conservation programs and subsidies made these efforts economically viable and more effective. John mentioned, “they (gov) pay you according to ‘what you’ve done,’ not ‘what you’re going to do’.” It costs just as much to feed a bad dog as it does a good dog, so why not have a good dog” (John)? The Priske’s were very specific about sustainability and the importance of input verses output, as well as carbon-neutrality.

Fountain Prairie Inn and Farms Interview Summary:

The Priskes consider themselves “food people.” The motivation of their equitable practices was derived from a life-long commitment to self-subsistence and quality. John repeatedly mentioned pro-activity as the driver of proper practice, and sustainability for the purpose of economic viability. His philosophical notion of connectivity within the natural environment, and the role of the individual to make preemptive choices, is what drove their diversity. In a market that has been ruled by convenience and cost-based mentalities, the Priske’s were ahead of their time in considering sustainability and equity in their products.

The focus on subsistence can be related to John’s experience as a sharecropper. He grew up in a self-subsistence environment, but his family was displaced due to lack of ownership. That caused them to move to the city, and obtain jobs that were less meaningful than farming. This is a theme for many small farmers. The 20th century advancements in technology and structure forced farmers to “go big or go home,” and this process drove early urbanization. Prior to the Priskes buying their farm in Fountain Prairie, the land was being used in exactly that manner. Pre-industrial contour farming replaced by large-scale lots, for the purpose of efficiency and maximizing area, which caused erosion and soil deprivation. This forced farmers to use more and more inorganic inputs, further depriving the land of nutrients, biodiversity and diversity. By purchasing this land and reinventing it, the Priskes have been able to successfully participate in a market that would’ve otherwise shut them out. The acceptance of modern sustainability practices and an increased focus on organics have helped to assure their place in the market. It was their early acceptance of organics, participation in conservation programs, and preemptive approach to farming that allowed them to succeed where other small farmers haven’t.

Appendix B:

Interview with Randy Banetzke (December 10th, 2013)

1) Q) Why did your family stop farming?

A) The Banetzke family stopped farming largely as a result of farming accidents. The grandfather of the current owner suffered from a heart attack, and the father flipped a tractor, causing himself extensive injuries.

2) Q) Was the farm during its use operated strictly for various crops?

A) No, there were also dairy, hogs, and genetic sales as the grandfather maintained an extensive garden.

3) Q) Were there any financial obstacles for the farm?

A) When Randy Banetzke took over in 2000 he expressed interest in farming, but he found it “hard to get financing.” When he went to the bank for money they asked him to write a proposal for the loan. As Randy Banetzke does not have a finance degree like the Priskes, this request deterred him from pursuing farming. Now, over a decade later, forest cover transformed the farmland into ecologically unviable land to plant crops.

Appendix C:

Rural Landscape Change: Sketches of Transformation in Eastern Columbia County, Wisconsin.

Banetzke, R., Duffy, K., Krawczyk, P., Stum, B. (2013)

The following questionnaire is part of our Geography 565 senior research project. The focus of our project is on the effects of rural landscape conversion, and your participation would be greatly appreciated. **Please do not write your name on the questionnaire, as all responses are confidential and anonymous.** Thank you for your cooperation.

Please circle the name of Village /Township: Fall River Fountain Prairie Doylestown

1) How would **you** define the area that you live in? (Circle One)

City Town Rural Village

2) How long have you been a resident of your Village or Township? _____ Years

3) Are you employed? (Yes) or (no)

If (yes), approximately how far is your round-trip commute to work? _____

4) What is your opinion if an ethanol plant was proposed for construction in or near Fountain Prairie? (Circle One)

very opposed opposed neutral favorable very favorable

5) What is your opinion if a wind farm was proposed for construction in or near Fountain Prairie? (Circle One)

very opposed opposed neutral favorable very favorable

6) What is your opinion of the Landmark Grain Storage project now under construction in Fountain Prairie? (Circle One)

very opposed opposed neutral favorable very favorable

Appendix D:

Rural Landscape Change: Sketches of Transformation in Eastern Columbia County, Wisconsin.

Banetzke, R., Duffy, K., Krawczyk, P., Stum, B. (2013)

The following questionnaire is part of a study being conducted for a Geography 565 senior research project. The focus of our project is on the effects of rural landscape conversion, and your participation would be greatly appreciated. **Please do not write your name on the questionnaire, as all responses are confidential and anonymous.** Thank you for your cooperation.

1. Please circle the name of the village or township in which you live:

Cambria Friesland Randolph Scott

2. How would you define the area that you live in? (circle one)

City Town Rural Village

3. How long have you been a resident of you village or township? _____ years

4. Are you currently employed? (Yes) or (no)

If (yes), approximately how far is your round-trip commute to work? _____

5. What was your opinion of the Glacier Hills wind farm project before construction?

Very opposed Opposed Neutral Favored Very favored

6. In your opinion, how has the wind farm changed the rural landscape?

Negatively somewhat negatively No change somewhat positively positively

7. Has the Glacier Hills Wind farm had an effect on you personally (yes) or (no)?

If you answered **Yes** how where you affected?

Negatively somewhat negatively Not at all somewhat positively positively

8. What is your opinion of the ethanol plant before it construction? (Circle One)

very opposed opposed neutral favored very favored

9. What is your opinion of the effect of the ethanol plant today? (Circle One)

very noticeable noticeable neutral unnoticeable very unnoticeable

10. In regard to the Wind Farm have you been affected by any:

Seasonal or daily windmill shadows? (Yes) (No)

Turbine noise level? (Yes) (No)

Change in real estate value? (Increase) (Decrease) (No change)

Effects on wildlife patterns? (Positive) (Negative) (No affect)

Any additional brief comments on renewable energy like windmills or ethanol or the changes you noticed in your local rural landscape (optional):

Appendix E:

Raw Survey Data of Windmill Region (Cambria, Friesland, Scott, and Randolph)

◇	A	B	C	D	E	F
1	Survey Number	User_define_Locale_Q2	Length_resident_years_Q3	Employed_Q4A	Commute_miles_Q4B	pre-Windmill_Q5
2	1	Village	12	No	0	Favored
3	2	rural	11	No	0	Favored
4	1	Village	48	No	0	Neutral
5	2	Village	45	No	0	opposed
6	4	Village	10	No	0	neutral
7	5	Village	13	No	0	Neutral
8	6	Village	50	No	0	Neutral
9	8	Village	39	No	0	opposed
10	11	Village	48	No	0	opposed
11	14	Village	12	No	0	Neutral
12	15	Village	12	No	0	opposed
13	17	Village	50	No	0	favored
14	1	rural	5	y	36	neutral
15	2	rural	28	y	100	neutral
16	3	rural	27	y	86	very opposed
17	4	rural	28	y	0	favored
18	5	rural	12	y	67	opposed
19	6	rural	5	y	40	neutral
20	1	rural	28	Yes	40	Very opposed
21	2	rural	7	Yes	30	Very Favored
22	3	rural	6	Yes	18	Favored
23	4	rural	25	Yes	40	neutral
24	5	NA	38	Yes	140	neutral
25	6	rural	7	Yes	70	opposed
26	7	rural	45	Yes	0	very favored
27	8	rural	18	Yes	28	neutral
28	9	rural	11	Yes	30	Very Favored
29	3	Village	24	Yes	74	Very Favorable
30	4	Village	10	Yes	40	opposed
31	5	Village	11	Yes	90	neutral
32	6	Village	25	Yes	90	Favored
33	7	Village	40	Yes	50	neutral
34	8	Village	12	Yes	30	neutral
35	9	Village	5	Yes	10	neutral
36	10	Village	17	Yes	68	Favored
37	11	Village	2	Yes	30	neutral
38	12	Village	17	Yes	90	neutral
39	3	Village	8	Yes	1	opposed
40	7	Village	13	Yes	0	very opposed
41	9	Village	35	Yes	22	Neutral
42	10	Village	23	Yes	15	very favorable
43	12	Village	21	Yes	100	very opposed
44	13	Village	8	Yes	110	Neutral
45	16	Village	25	Yes	100	favored
46	18	Village	23	Yes	60	Neutral
47	19	Village	25	Yes	50	opposed

	G	H	I	J	K
1	Wind_FarmEffectlandscape_Q6	Personal effect Windmill _Q7A	Windmill affectedOpinion_Q7B	Preconstruction_opinion_Ethanol_Q8	Current_Ethanol_opinion_Q9
2	Somewhat negatively	No	NA	neutral	Noticeable
3	somewhat Positively	No	NA	neutral	neutral
4	Somewhat Negatively	No	NA	neutral	Unnoticeable
5	Negatively	Yes	Somewhat negatively	Favored	Unnoticeable
6	No Change	Yes	somewhat negatively	neutral	neutral
7	Somewhat positively	Yes	Not at All	neutral	neutral
8	Somewhat positively	No	NA	opposed	noticeable
9	Somewhat Negatively	No	NA	opposed	noticeable
10	Somewhat Negatively	No	NA	neutral	Unnoticeable
11	Somewhat positively	Yes	Somewhat negatively	favored	neutral
12	Negatively	Yes	Somewhat negatively	very favorable	neutral
13	Somewhat positively	No	NA	neutral	Unnoticeable
14	somewhat negatively	no	NA	opposed	unnoticeable
15	Positively	no	NA	opposed	Very unnoticeable
16	somewhat negatively	yes	Not at all	neutral	Very unnoticeable
17	somewhat Positively	no	NA	favored	unnoticeable
18	somewhat negatively	yes	Negatively	neutral	neutral
19	somewhat negatively	no	NA	favored	unnoticeable
20	somewhat negatively	yes	somewhat negatively	neutral	neutral
21	somewhat negatively	No	NA	Very oppsed	Noticeable
22	No Change	No	NA	favored	neutral
23	somewhat negatively	No	NA	neutral	Unnoticeable
24	somewhat negatively	yes	Somewhat negatively	neutral	neutral
25	somewhat negatively	yes	Negatively	neutral	Noticeable
26	No Change	yes	somewhat Positively	neutral	Unnoticeable
27	No Change	No	NA	favored	Unnoticeable
28	somewhat positively	No	NA	favored	Unnoticeable
29	No Change	No	NA	Very opposed	unnoticeable
30	somewhat positively	No	NA	opposed	noticeable
31	Somewhat negatively	No	NA	Favored	unnoticeable
32	No Change	Yes	Somewhat Positively	neutral	neutral
33	Somewhat negatively	No	NA	opposed	Noticeable
34	Negatively	Yes	somewhat Negatively	neutral	Noticeable
35	No Change	No	NA	neutral	Noticeable
36	No Change	No	NA	opposed	Noticeable
37	somewhat Positively	No	NA	neutral	neutral
38	Somewhat negatively	No	NA	neutral	unnoticeable
39	Negatively	Yes	negatively	Favored	noticeable
40	Negatively	Yes	Somewhat negatively	neutral	noticeable
41	Somewhat Negatively	Yes	negatively	neutral	neutral
42	positively	No	NA	very favorable	very unnoticeable
43	Negatively	No	NA	neutral	neutral
44	No Change	No	NA	neutral	neutral
45	somewhat positively	No	NA	opposed	Unnoticeable
46	Somewhat Negatively	No	NA	neutral	Unnoticeable
47	Somewhat Negatively	No	Somewhat negatively	Favored	Unnoticeable

◇	L	M	N	O	P
1	Windmill_Seasonal_effectQ10A	Windmill_Noise_effectQ10b	Windmill_House value_effectQ10c	Windmill_Wildlife_effectQ10d	Optional comments
2	No	No	No Change	No Affect	n
3	No	No	No Change	No Affect	n
4	No	No	No Change	No affect	Yes
5	No	No	Decreased	Negative	Yes
6	yes	No	No Change	No affect	Yes
7	No	No	No Change	Negative	Yes
8	No	No	No Change	Negative	Yes
9	No	No	Decreased	Negative	No
10	No	No	No Change	No affect	No
11	No	No	Decreased	Negative	No
12	No	yes	Decreased	Positive	No
13	No	yes	No Change	Negative	No
14	no	no	Decrease	Negative	n
15	no	no	Increase	No Affect	n
16	yes	yes	no change	No Affect	n
17	no	no	no change	Negative	n
18	yes	yes	Decrease	Negative	n
19	no	no	no change	No Affect	n
20	No	No	No Change	No affect	No
21	Yes	Yes	No Change	Negative	Yes
22	Yes	No	Decrease	No affect	No
23	No	No	No Change	No affect	No
24	No	Yes	Decrease	No affect	No
25	No	No	Decrease	Negative	No
26	Yes	Yes	No Change	No affect	No
27	No	No	No Change	No affect	No
28	No	No	No Change	No affect	No
29	No	No	No Change	No Affect	n
30	No	No	No Change	No Affect	n
31	Yes	No	Increase	Negative	n
32	No	No	Decrease	Negative	n
33	No	No	No Change	No Affect	n
34	No	Yes	No Change	Negative	n
35	No	No	No Change	No Affect	n
36	No	No	No Change	No Affect	n
37	No	No	No Change	No Affect	n
38	No	No	No Change	No Affect	n
39	No	No	Decreased	Negative	Yes
40	yes	No	No Change	No affect	Yes
41	No	No	Decreased	NA	No
42	No	No	No Change	No affect	No
43	yes	No	No Change	No affect	No
44	No	No	NA	No affect	No
45	yes	No	Decreased	No affect	No
46	No	No	Decreased	Negative	No
47	No	No	No Change	Negative	No

Appendix F:

Raw Survey Data of Southern Region (Fountain Prairie, Fall River, and Doylestown)

	A	B	C	D	E	F
1	Survey Number	User_defined_locale_Q1	Length_resident_years_Q2	Employed_Q3A	Cummute_miles_Q3B	Ethanol_Q4
2	9	Rural	10	n	0	neutral
3	14	Rural	6	n	0	opposed
4	1	village	14	n	0	opposed
5	10	town	54	n	0	opposed
6	2	Village	21	n	0	very favorable
7	12	town	13	N	0	very favorable
8	13	village	60	n	0	very opposed
9	14	village	65	n	0	opposed
10	1	Rural	6	y	70	opposed
11	2	Village	8	y	25	neutral
12	3	rural	13	y	70	favorable
13	4	Rural	8	y	60	very Favorable
14	5	Rural	18	y	60	favorable
15	6	Rural	8	y	70	favorable
16	7	Rural	2	y	14	neutral
17	8	Rural	2	y	14	favorable
18	10	Rural	2	y	14	favorable
19	11	Rural	10	y	20	favorable
20	12	Rural	31	y	90	very Favorable
21	13	Rural	2	y	0	very Opposed
22	15	rural	56	y	0	very favorable
23	16	rural	50	y	90	opposed
24	17	rural	71	y	0	favorable
25	18	Rural	27	y	0	very Opposed
26	19	Rural	27	Y	0	very Opposed
27	2	town	12	y	10	neutral
28	3	rural	5	y	70	neutral
29	4	village	2	y	40	opposed
30	5	village	7	y	5	favorable
31	6	town	26	y	17	neutral
32	7	village	3	y	56	very Favorable
33	8	town	40	y	12	neutral
34	9	village	33	y	18	very Favorable
35	1	Village	14	y	12	neutral
36	3	rural	30	y	10	favorable
37	4	Village	1	y	78	neutral
38	5	Village	40	y	17	neutral
39	6	rural	15	y	92	very opposed
40	7	Village	5	y	70	very opposed
41	8	Village	9	y	30	favorable
42	13	rural	20	y	60	neutral
43	14	rural	20	y	60	neutral
44	11	village	10	y	5	opposed
45	12	village	25	y	16	neutral

◇	G	H	I	J	K
1	Wind_Farm_Q5	Landmark_Grain_Q6	Ethanol_Q4	Wind_Farm_Q5	Landmark_Grain_Q6
2	favorable	opposed	3	4	2
3	Very opposed	very favorable	2	1	5
4	very favorable	neutral	2	5	3
5	neutral	favorable	2	3	4
6	very favorable	very favorable	5	5	5
7	very favorable	very favorable	5	5	5
8	neutral	neutral	1	3	3
9	opposed	neutral	2	2	3
10	Very opposed	neutral	2	1	3
11	neutral	neutral	3	3	3
12	favorable	favorable	4	4	4
13	very favorable	favorable	5	5	4
14	favorable	favorable	4	4	4
15	favorable	neutral	4	4	3
16	neutral	favorable	3	3	4
17	neutral	favorable	4	3	4
18	favorable	favorable	4	4	4
19	very favorable	opposed	4	5	2
20	very favorable	favorable	5	5	4
21	Very opposed	opposed	1	1	2
22	very opposed	neutral	5	1	3
23	neutral	opposed	2	3	2
24	very opposed	very favorable	4	1	5
25	favorable	neutral	1	4	3
26	very favorable	neutral	1	5	3
27	opposed	favorable	3	2	4
28	neutral	neutral	3	3	3
29	favoable	neutral	2	4	3
30	very favorable	favorable	4	5	4
31	favoable	neutral	3	4	3
32	neutral	neutral	5	3	3
33	opposed	favorable	3	2	4
34	very favorable	favorable	5	5	4
35	opposed	favable	3	2	4
36	favorable	favable	4	4	4
37	favorable	neutral	3	4	3
38	neutral	favable	3	3	4
39	favorable	neutral	1	4	3
40	opposed	opposed	1	2	2
41	neutral	favable	4	3	4
42	favorable	neutral	3	4	3
43	neutral	favable	3	3	4
44	very opposed	neutral	2	1	3
45	very opposed	neutral	3	1	3

Appendix G:

Survey optional comment responses from windmill region

1. “No more migrating ducks and geese after windmills. Ethanol plant is far enough out of town that we aren’t bothered by it. Almost all traffic to plant uses Hwy 35 so doesn’t affect us.”
2. “With the windmills there is a loss of cell phone reception.”
3. “We tried giving input before the wind farm was built but did not feel we were taken seriously. The ‘green’ energy isn’t so green for the people living close by. The ethanol plant doesn’t bother us much, but some are affected by the noise and odor.”
4. “I actually think that the wind towers create a kind of surreal, beautiful landscape. I am personally not affected by anything negative and therefore see them as pretty!”
5. “Some friends that live close complain of the noise and affecting their health.”
6. “Less geese in the last few years.”
7. “TV problems.”

Bibliography

- Benayas, J., A. Martins, J. Nicolaus, J. Schulz. 2007. Abandonment of agricultural land: an overview of drivers and consequences. *CAB Reviews: Perspective in Agriculture, Veterinary Science, Nutrition and Natural Resources* 2 (57): 1-14.
- Brock, C. and B. Barham. 2009. Farm Structural Change of a Different Kind: Alternative Dairy Farms in Wisconsin—Grazers, Organic and Amish. *Renewable Agriculture and Food Systems* 24 (1): 25-37.
- Brush, R., R. E. Chenoweth, and T. Barman. 2000. Group Differences in the Enjoyability of Driving Through Rural Landscapes. *Landscape and Urban Planning* 47 (1-2): 39-45.
- Brye, K., J. Norman, and S. Gower. 2002. Assessing the Progress of a Tallgrass Prairie Restoration in Southern Wisconsin. *The American Midland Naturalist* 148(2): 218-235.
- Bürgi, M. and M. G. Turner. 2002. Factors and Processes Shaping Land Cover and Land Cover Changes Along the Wisconsin River. *Ecosystems* 5 (2):184-201.
- Clifford, N., S. French, and G. Valentine. 2010. *Key Methods in Geography*. London, England: SAGE Publications Ltd.
- Cross, J. A. 2001. Change in America's Dairy land. *Geographical Review* 91 (4): 702-714.
- Content, T. 2009. Critics say wind turbines hurt land values. *Milwaukee Journal Sentinel*. Milwaukee. <http://www.jsonline.com/business/59088607.html> (last accessed 08 October 2013).
- Fan, Z, W. Moser, M. Hansen, and M. Nelson. 2013. Regional Patterns of Major Nonnative Invasive Plants and Associated Factors in Upper Midwest Forests. *Forest Science* 59: 38-49.

- Farmer, J., D. Knapp, V. Meretsky, C. Chancellor, and B. Fischer. 2011. Motivations Influencing the Adoption of Conservation Easements. *Conservation Biology* 25: 827-834.
- Feng, H., L. Kurkalova, C. Kling, and P. Gassman. 2006. Environmental conservation in agriculture: Land retirement vs. changing practices on working land. *Journal of Environmental Economics and Management* 52(2): 600-614.
- Freeman, R., E. Stanley, and M. Turner. 2003. Analysis and Conservation Implications of Landscape Change in the Wisconsin River Floodplain, USA. *Ecological Applications* 13: 416-431.
- Foth & Van Dyke. 2000. Town of Fountain Prairie Year 2020 Land Use Plan. <http://www.co.columbia.wi.us/columbiacounty/Portals/26/LandUsePlan/ch5.pdf> (last accessed 08 October 2013).
- Gloss, Susan. 2010. A Marriage of Friendship and Flavor at Fountain Prairie Inn and Farms. *Edible Madison* 4: 34-36.
- Greider, T., and L. Garkovich. 1994. Landscapes: The Social Construction of Nature and the Environment. *Rural Sociology* 59 (1): 1-24.
- Gonzalez-Abraham, C., V. Radeloff, T. Hawbaker, R. Hammer, S. Stewart, and M. Clayton. 2007. Patterns of Houses and Habitat Loss from 1937 to 1999 in Northern Wisconsin, USA. *Ecological Applications* 17: 2011-2023.
- Grodsky, S. M., C. S. Jennelle, D. Drake, and T. Virzi. 2012. Bat mortality at a wind-energy facility in southeastern Wisconsin. *Wildlife Society Bulletin* 36 (4): 773–783.
- Hanson, T. M. and C. Francis. 2007. Multifunctional Rural Landscapes: Economic,

- Environmental, Policy and Social Impacts of Land Use Changes in Nebraska. *University of Nebraska, Lincoln. Institute of Agriculture and Natural Resources*: 3-47.
- Jackson-Smith, D. 1999. Understanding the Microdynamics of Farm Structural Change: Entry, Exit, and Restructuring among Wisconsin Family Farmers in the 1980s. *Rural Sociology* 64(1): 66-91.
- Lambert, D., P. Sullivan, R. Claassen, and L. Foreman. 2007. Profiles of US farm households adopting conservation-compatible practices. *Land Use Policy* 24: 72-88.
- Mertens, R. 2005. In Wisconsin, tilting at windmills is a serious matter. *The Christian Science Monitor* 25 April: 1.
- Mulvaney, K. K., P. Woodson, and L. S. Prokopy. 2013. A tale of three counties: Understanding wind development in rural Midwestern United States. *Energy Policy* 56: 322-330.
- Mulvaney, K. K., P. Woodson, and L. S. Prokopy. 2013. Different shades of green: A case study of support for wind farms in the rural Midwest. *Environmental Management* 51(5): 1012-1024.
- Munday, M., G. Bristow, and R. Cowell. 2011. Wind farms in rural areas: How far do community benefits from wind farms represent a local economic development opportunity? *Journal of Rural Studies* 27(1): 1-12.
- Plantinga, A. 1996. The Effect of Agricultural Policies on Land Use and Environmental Quality. *American Journal of Agricultural Economics* 78: 1082-1091.
- Public Service Commission. 2009. Glacier Hills Wind Park Project. *Final Environmental Impact Statement* 1. http://www.we-energies.com/environmental/gh_final_eis.pdf (last accessed 08 October 2013).

- Roberts, M. and R. Lubowski. 2007. Enduring Impacts of Land Retirement Policies: Evidence from the Conservation Reserve Program. *Land Economics* 83: 516-538.
- Sullivan, P. D. Hellerstien, D. McGranahan, and S. Vogel. 2004. Farmland Retirement's Impact on Rural Growth. *Amber Waves* 2(5): 29-35.
- The Town of Scott. 2012. *Town of Scott Comprehensive Plan*. <http://www.scottwi.com/> (last accessed 08 October 2013).
- WE Energies. 2013. *Glacier Hills Wind Park*. <http://www.we-energies.com/environmental/glacierhills.htm> (last accessed 08 October 2013).
- Wolsink, M. 2007. Wind power implementation: The nature of public attitudes: Equity and fairness instead of 'backyard motives.' *Science Direct* 11: 1188–1207.