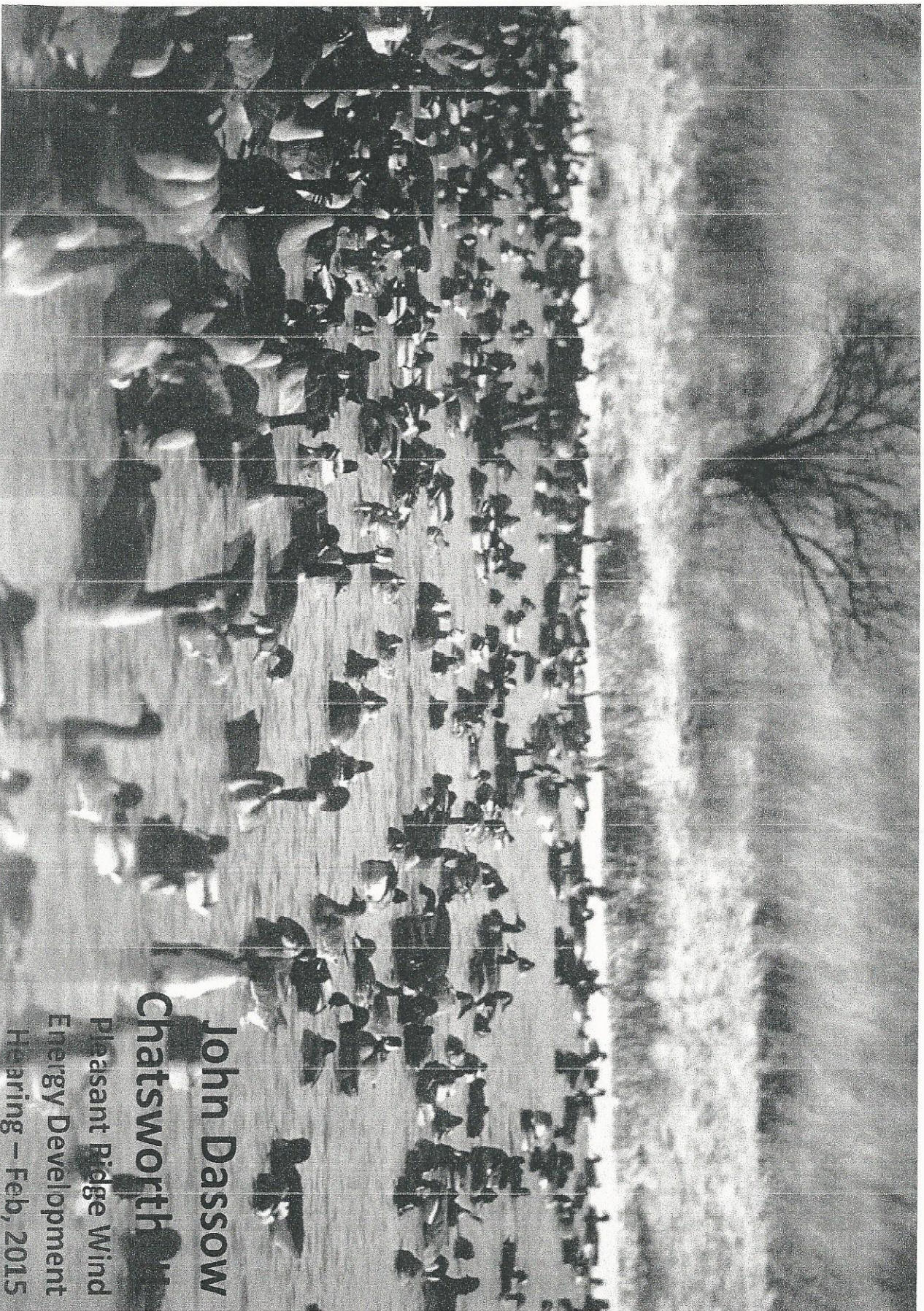


Wildlife Concerns and Land Use



John Dassow
Chatsworth

Pleasant Ridge Wind
Energy Development
Hearing – Feb, 2015

Dassow Exhibit # 1

Background

- Born and Raised on a farm in Southeastern Livingston County
- B.S. and M.S. in Zoology from Southern Illinois University

Dassow, J. A., Eichholz, M. W., Stafford, J. D., and Weatherhead, P. J. 2012. Increased nest defence of upland-nesting ducks in response to experimentally reduced risk of nest predation. *Journal of Avian Biology* 43(1), 61-67.

Eichholz, M. W., Dassow, J. A., Stafford, J. D., and Weatherhead, P. J. 2012. Experimental evidence that nesting ducks use mammalian urine to assess predator abundance. *The Auk* 129(4), 638-644.

Dassow, J. A. 2010. Upland-nesting ducks in the parklands of Saskatchewan: the effect of predator reduction on nest success and reproductive investment. M.S. Thesis. Cooperative Wildlife Research Laboratory, Southern Illinois University, Carbondale.

Dassow, J. A., Eichholz, M. W., Stafford, J. D., and Weatherhead, P. J. 2009. Risk-taking by prairie ducks: and hens detect reduced predator abundance and adaptively modify parental investment. Presentation, 5th North American Duck Symposium, Toronto, Ontario, Canada.

Dassow, J.A., Eichholz, M. W., Docken, N. A., Dieter, C. S. 2009. Predator reduction in the southern prairies and in the parklands of Saskatchewan: Is it a valuable management strategy? Presentation, 5th North American Duck Symposium, Toronto, Ontario, Canada.

- 6+ years of wildlife work

Background

- Came back to the farm several years ago, 6th generation
- Still continue to do wildlife work with private landowners
- Manage and/or consult over 1300 acres of wildlife habitat in and around proposed area
 - Extremely concerned about the effects on wildlife
 - Will affect the existing land use
 - After review of the evidence presented, literature cited, and additional literature, concerns are warranted

Overview

- Limitations of bird counts and surveys used
- Review of Literature Cited
- IDNR Recommendations
- Compliance with standards for special use

Why do we still have concerns??

- Not much scientific evidence presented to alleviate concerns
- Avian Report – Pleasant Ridge Exhibit 103
 - Methods
 - Species Richness
 - Bird Use
 - Raptor Nest Survey
 - Results/Lack of Analysis

Sampling Points and Data Collection

- Points not random
 - 35 points selected for relatively even coverage of PRWF and survey representative habitats
 - Non-random site selection creates bias
- Numerous variables collected with each observation
 - Habitat, current conditions, behavior

Seasonal Timing of Counts

- Stated “Spring, Fall, and Winter would be seasons of high bird use”
- Summer may be the most important season to sample, includes assemblage of birds that breed and nest here
- They state multiple times in the report that suitable nesting habitat exists outside of the tilled agricultural acres
- Significant flaw to leave out breeding/nesting birds when establishing a baseline

Nesting Birds

- “Surveys not conducted in the summer due to the preponderance of tilled agriculture” and Mr. VanDeWalle stated “birds just don’t nest in crop fields”
- Well accepted in the literature that many species of upland nesting birds nest in crop fields
- Landscape includes many acres of no-till acres which were not separated from tilled acres
 - 12sp. & 36nests/100ha in no-till,
3sp. & 4nests/100ha in tilled fields,
(Basore et al. 1986)



- Ever expanding use of cover crops will provide additional suitable habitat in agricultural fields

An Index as a measure of Species Richness and “Bird Use”

- What is an Index
 - Abundance estimator
- NOT a population estimate
- Indices used to track changes over time, not compare between sites

Species Richness

- Simply, the number of species present in a given area

Table 2. Summary of species richness (species/plot^a/20-min survey), and sample size by season and overall during the fixed-point bird use surveys at the Pleasant Ridge Wind Farm, March 5, 2009 – March 2, 2010.

Season	Number of Visits	# Surveys Conducted	# Unique Species	Species Richness	
				Large Birds	Small Birds
Spring	8	228	59	1.02	2.80
Fall	5	175	38	0.62	1.05
Winter	3	105	25	0.39	0.66
Overall	16	509	67	0.66	1.47

^a 800-m radius for large birds and 100-m radius for small birds.

- Possible that the number of species observed more dependent on number of visits than season

Species Richness

- Could have controlled for this variation by having similar number of visits and surveys per season
- Simple statistical tests can show which variables explain the variation in the dependent variable (species richness)

Species Richness

- Observed number of species is a downward-bias estimator for the complete species richness...hundreds of studies outline these concerns and some offer statistical corrections for this bias (Gotelli and Colwell 2011)
- Measures of equitabilities or relative diversity have characteristics that may invalidate their use for comparative purposes (Sheldon 1969)

Detection Probability & Indices

- The probability that you detect every individual within a population
 - Availability
 - Detection by observer
- Varies by species, habitat, observer, timing, and many other factors
- Without correction you have a negative bias or underestimation of the variable being measure (ie. Bird use or species richness)

Detection Probability & Indices

- Using just the count of birds detected (per unit effort) as an index of abundance is neither scientifically sound nor reliable...It is necessary to adjust study counts by the detection probability (Burnham 1981)
- The overwhelming reliance on index counts in recent avian studies is a matter of great concern...Index counts should not be expected to provide reliable info or a valid basis for inference (Rosenstock et al. 2002)

Analysis and Results

- Reported a simple proportion by use per 20min survey
- The way this data is reported is not in line with any peer-reviewed scientific literature
- No statistical tests used or adjustments made for detection probability
 - Other variables collected not used in analysis
 - Statistical tests and adjustments allow for stronger inference
- Indices SHOULD NOT be used to compare sites

Incidental Observations

- Large number of raptor observed outside of the 800m plots

- 91 grps/ 100 obs during surveys

- 70 grps/ 77 obs incidentals

- 48% of incidental bird observations

- underestimation of raptor use 16

Table 7. Incidental wildlife observed while conducting all surveys at the Pleasant Ridge Wind Farm, March 5, 2009 - March 2, 2010.

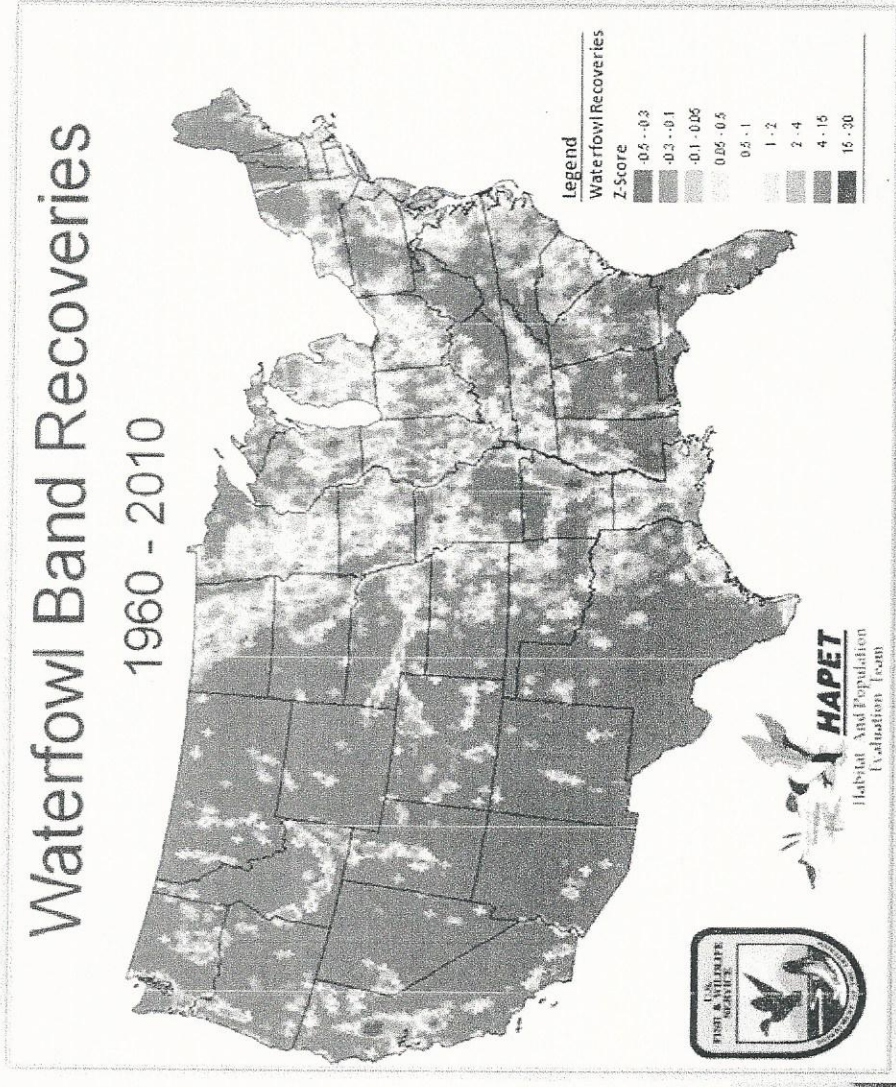
Species	Scientific Name	#grps	# obs
red-tailed hawk	<i>Buteo jamaicensis</i>	33	36
dunlin	<i>Calidris alpina</i>	1	30
American kestrel	<i>Falco sparverius</i>	23	26
turkey vulture	<i>Cathartes aura</i>	7	13
northern harrier	<i>Circus cyaneus</i>	9	10
blue-winged teal	<i>Anas discors</i>	1	9
ring-necked pheasant	<i>Phasianus colchicus</i>	2	8
greater yellowlegs	<i>Tringa melanoleuca</i>	1	6
American crow	<i>Corvus brachyrhynchos</i>	2	4
rough-legged hawk	<i>Buteo lagopus</i>	3	3
ring-necked duck	<i>Aythya collaris</i>	1	3
wild turkey	<i>Meleagris gallopavo</i>	1	3
mallard	<i>Anas platyrhynchos</i>	1	2
northern shoveler	<i>Anas clypeata</i>	1	2
wood duck	<i>Aix sponsa</i>	1	2
bufflehead	<i>Bucephala albeola</i>	1	1
Cooper's hawk	<i>Accipiter cooperi</i>	1	1
hooded merganser	<i>Lophodytes cucullatus</i>	1	1
northern mockingbird	<i>Mimus polyglottos</i>	1	1
sharp-shinned hawk	<i>Accipiter striatus</i>	1	1
Bird Subtotal	20 species	92	162
white-tailed deer	<i>Odocoileus virginianus</i>	4	24
thirteen-lined ground squirrel	<i>Spermophilus tridecemlineatus</i>	8	8
raccoon	<i>Procyon lotor</i>	1	1
striped skunk	<i>Mephitis mephitis</i>	1	1
Mammal Subtotal	4 species	14	34
green frog	<i>Rana clamitans</i>	1	1

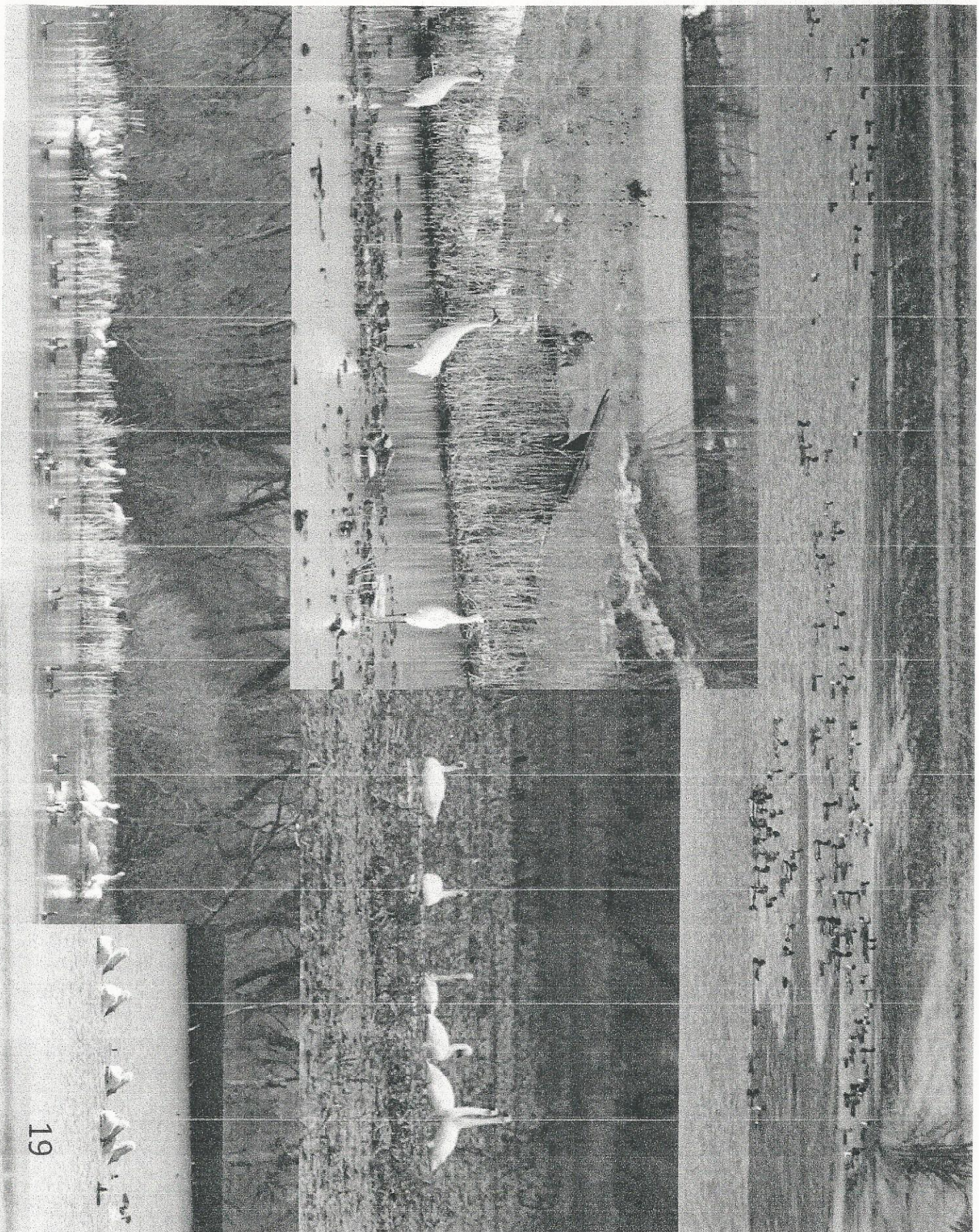
Owls

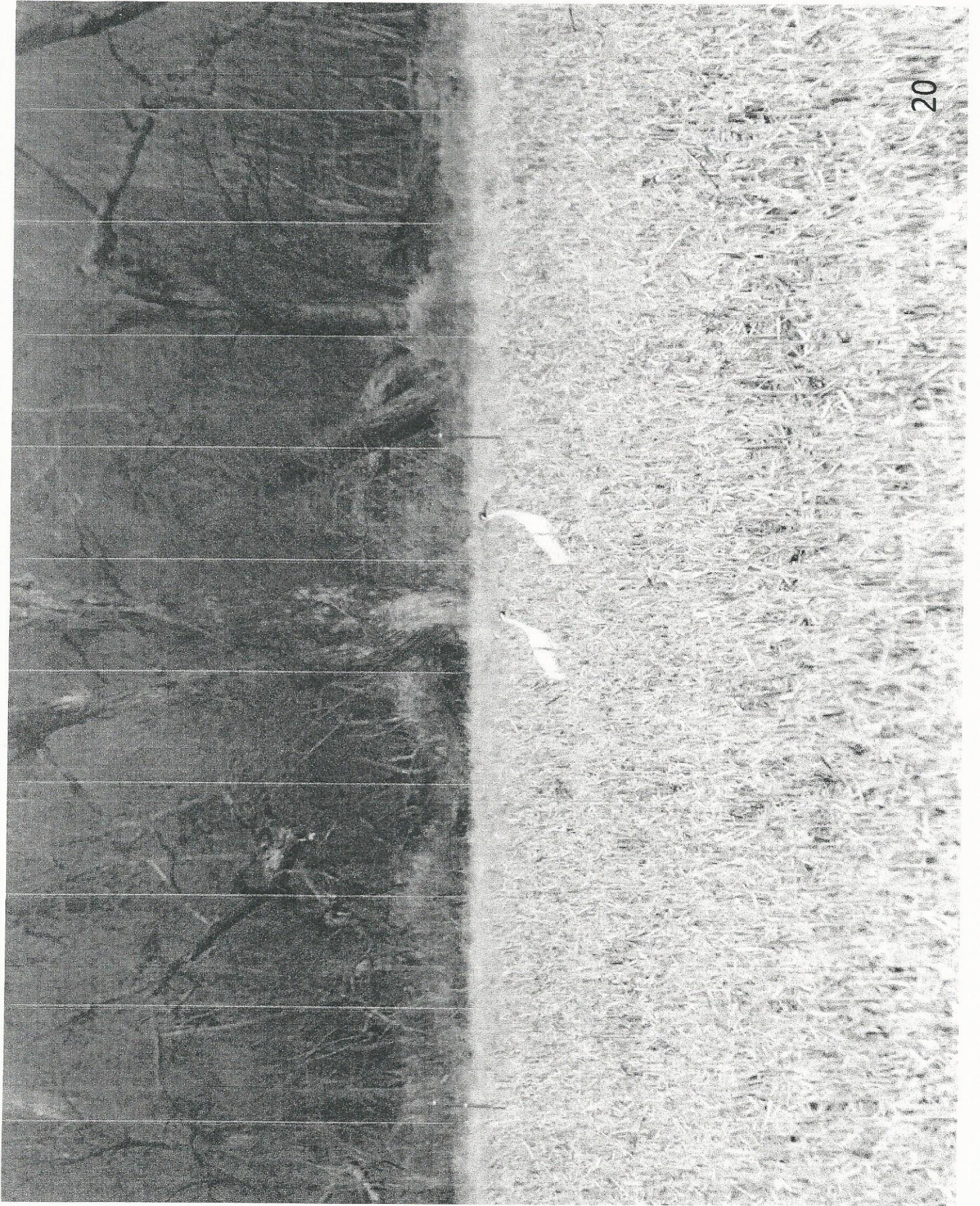
- Important raptors in the area
- No attempt to survey
- Most owl species in IL are nocturnal or crepuscular
- Cannot include species in your analysis that are not appropriate for the survey methods use

No Large Flocks of Birds

- Spurious claim
- Millions of birds migrate through IL
- Recorded flocks of AMGP during surveys







Raptor Nest Surveys

- 2 raptor nests found in 2009, 2 in 2014
- Know of 2 additional nests in 2014
- Detection probability and just because they are not observed does not mean they are not present
- 2 species of state-endangered raptors nest on the ground
 - Northern Harrier & Short-Eared Owl
 - Not accounted for during nest surveys

Literature Cited in Avian Report

- Foundation for this report, 87 pieces of literature cited
- 25 are considered peer-reviewed
 - 8 studies relating to general biology and ecology of birds or detail methods used
 - 7 are presentations or theses related to wind energy and birds
 - Only 10 studies are related to wind energy and published in peer-reviewed scientific journals (11%)

Literature Cited in Avian Report

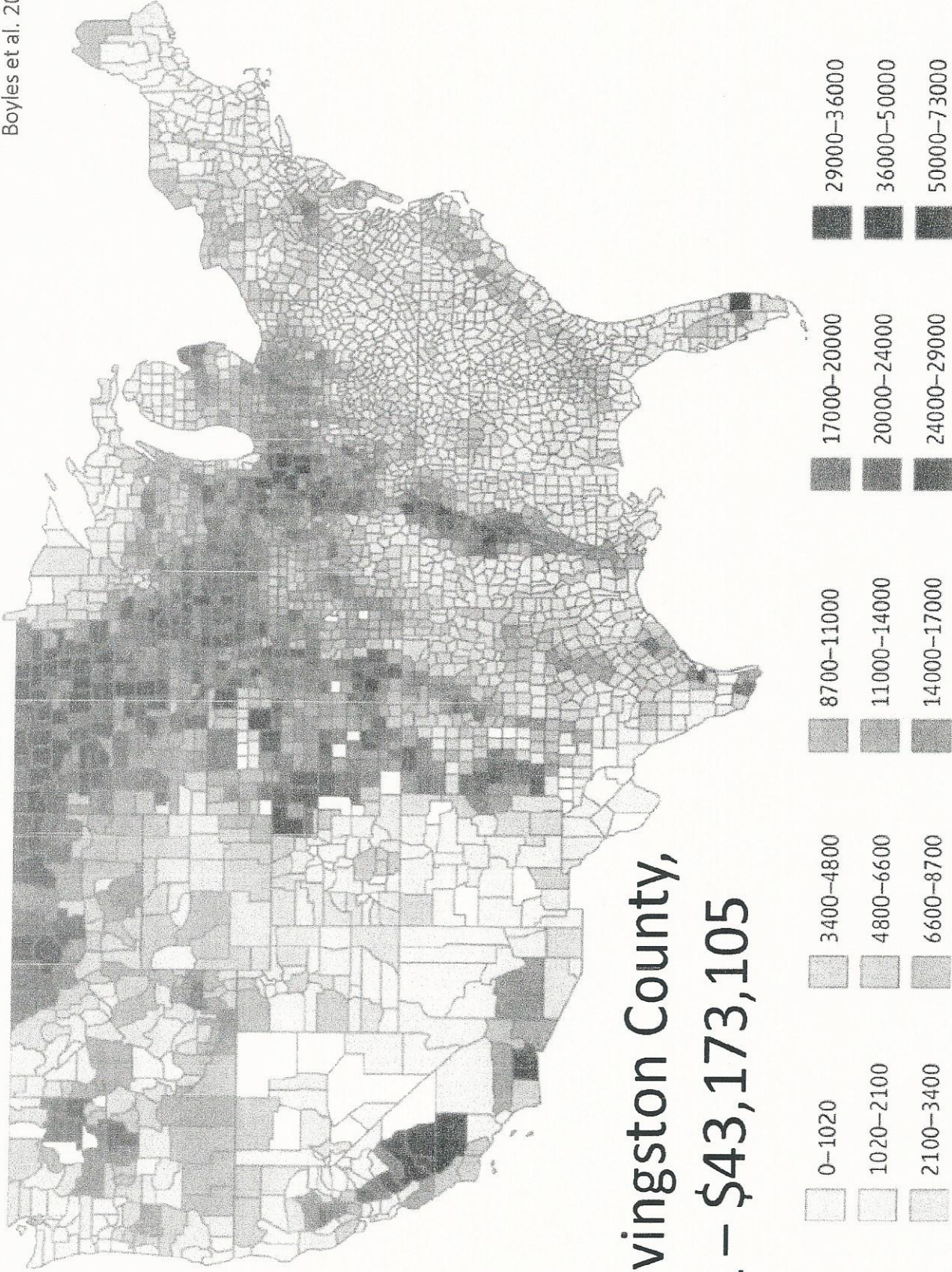
- 11 websites or documents that they pull general information from
- 52 are similar reports by private companies mostly for the use of the wind industry and a few governmental agencies
 - Not peer-reviewed or published, not released to the public
 - Mr. VanDeWalle even stated he was not given all the information and data available

General Overview of the 10 Studies

- Johnson et al. 2002b. wind-power development will likely contribute to cumulative collision mortality of birds in the US.
- Johnson et al. 2003a. suggests most mortality involves migrant rather than resident breeding bats
- Larsen and Madsen 2000. foraging behaviour and use of geese affected by fragmentation and loss of habitat due partially to wind turbines, affected more by large clusters than turbines in lines or small clusters
- Lawrence et al. 2007. ???
- Leddy et al. 1999. affected bird distribution by decreasing area of habitat used
- Madders and Whitfield 2006. displacement appears to be negligible, although some notable exceptions occur and more research is needed
- Pedersen and Poulsen 1991. ???
- Smallwood and Karas 2009. repowering turbines did not reduce bird mortality, but mortality could be reduced if generation was restricted to meet current energy needs
- Smallwood et al. 2009. Red-Tailed Hawk and American Kestrel had high mortality rates and mortality related to utilization rates at the Altamont Pass Wind Resource Area in California
- Walker et al. 2005. limited inference but eagles shifted ranging patterns away from windfarms

IDNR Recommendations

- Group of well-educated, trained, and experienced professionals
- Applicant disregarded many recommendations
- Fall curtailment period (Rec. #5)
 - IDNR proposed the months of Aug, Sept, and Oct, while the wind energy developer plans to only curtail through Oct 7th.



The worth of insectivorous bats. Estimated annual value of insectivorous bats in the agricultural industry at the county level. Values ($\times \$1000$ per county) assume bats have an avoided-cost value of $\sim \$74/\text{acre}$ of cropland (12). (See SOM for details.)

IDNR Recommendations

- Incidental take permit (Rec #7)
 - STATE agency requested they obtain STATE permit
- Aquatic Studies (Rec #12-15)
 - Concerns legitimate
 - No existing research doesn't mean no effect
 - Beginning research often based on anecdotal findings
 - As the entity exploiting the resource they should be the leader in research, ensuring that the industry is not harmful in any way

Compliance with Standards for

Special Use

- #1, Comprehensive Plan – sections 1.2.6 & 1.2.7
- #5, injurious to the use and enjoyment, or reduces the value of neighboring property
 - This project will be injurious to the use and enjoyment
 - Some properties may become worthless to the owners

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1.2.5 UTILITY GOALS

The county will promote the availability of utilities that are compatible with existing and future usage, as well as economically feasible and environmentally sound, by:

- Encouraging the most efficient use practicable for all utilities
- Encouraging the coordinated planning and development of water supply, wastewater, and other utility systems, which are appropriate for existing, and future development needs of the County
- Encouraging the location and development of utility structures and lines where they are most compatible with the surrounding land uses and the rural character of the County

1.2.6 OPEN SPACE AND RECREATIONAL GOALS

We characterize an open space as “ An area of land that is valued for natural processes and wildlife, for agricultural and woodland production, for active and passive recreation and for providing other public benefits ”

Livingston County will promote the retention of open space for a variety of uses such as recreation, wildlife habitat, historical and archeological preservation by:

- Encouraging the preservation of a sufficient quantity and variety of open space to meet both the recreational, aesthetic and ecological needs of the County
- Encouraging the preservation of historical sites and landscapes, the study of archeological sites, and the expansion of conservation areas
- Encouraging the use of creative techniques to preserve permanent open spaces such as conservation easements, which maintain private property values (Outside Rev)
- Promoting the development of a county-scale recreation open space facility utilizing the county landfill and surrounding private recreation facilities, and developing a plan to do so

1.2.7 ENVIRONMENTAL AND NATURAL RESOURCE GOALS

Preserve the ecological integrity and foster the wise and beneficial use of the land, air and water resources in Livingston County, thereby providing every resident a healthful, clean and attractive environment in which to live, work and enjoy, by:

Water Resources

- Recognizing that water and land resources are interconnected and interactive systems

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- Protecting the quality of groundwater and surface waters in Livingston County as sources of potable drinking water, industrial and commercial processes and cooling water supply, and recreational resources.
- Supporting the USDA and State of IL Conservation Reserve Enhancement Programs users with the need for public health and environmental quality
- Promote the development of quarry sites as recreational and open space areas, in agreement with owners of the property of these quarries

Floodplain and Stormwater Management

- Managing stormwater beneficially as a resource on the site where it falls
- Mitigating the hazards of flooding, loss of life, damage to property, interruption to businesses
- Maximizing the wise use of flood-prone lands and wetlands
- Adding value to open space as well developed land
- Abating non-point pollution sources.

Wastewater Management

- Abating nonpoint sources of pollution by filtering and storing storm runoff from impervious surfaces such as buildings, roads and parking lots, and using prairie grasses on farms to filter runoff and control soil erosion

Rural Landscapes

- Preventing uncontrolled linear sprawl from population centers into productive agricultural areas

Natural Resources

- Preserving and adding value to open space in Livingston County as the cornerstone of agricultural and natural resource wealth and employment
- Integrating open space and outdoor recreation into community and economic development plans
- Utilizing open space for multiple purposes by promoting the development and/or preservation of greenways, nature and forest preserves, historic, cultural and archeological sites, public and private outdoor recreation areas, and ecologically sensitive habitats in addition to agriculturally productive areas in Livingston County
- Promoting the identity and character of communities by enhancing natural and rural landscape settings and scenic vistas
- Recognizing stone is a valuable natural resource to Livingston County, quarrying activities deplete out natural resource of stone. Some considerations should be made as to if a fee can be assessed to partially justify the loss of the natural resource of stone. Though stone is a valuable asset to Livingston County as a soil nutrient, and for road and construction activities, the loss of stone to out of county users may justify a need to consider assessing a fee to those users

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Comprehensive
Plan

Environmental Incentives

- Using incentives to encourage private owners to make wise land use and environmental management decisions by rewarding desired performance. Land owners benefit by increasing the value of development sites while the preserved open space attains societal goals beneficial to the public-reducing flood losses, preserving farmland, conserving wildlife habitat, and/or expanding recreation areas

1.2.1 IMPLEMENTATION OF ENVIRONMENTAL GOALS

Managing Water Resources Comprehensively

- Mitigating flood hazards by maximizing natural floodplain storage and securing flood-free land for home and handling sites
- Using non-structural measures to manage stormwater, including
- Vegetating swales to convey stormwater
- Slowing the velocity of urban and agricultural runoff

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A Foreword to the Livingston County Comprehensive Plan

A reason that comprehensive planning is so important is that it is carried out by local government, the level of government that is closest to the people. It is frequently, if not always, the local government that regulates zoning and land use.

Most of the land in Livingston County is privately owned. Although we have a strong tradition of private property rights in this country, we also recognize that there must be limits to the use of an individual piece of property. Locating a heavy industry, a race track or a slaughter house in a residential area, could damage the quality of life of those living there.

As a result, local governments are called upon to make decisions about the regulating of activities on its property, largely through techniques called zoning and subdivision regulations. Local planning is important to provide a context for decisions of local government for regulating activities on land located within the county boundaries.

Why do Comprehensive Planning?

Comprehensive planning is a process to layout future land use instead of just letting decisions happen without a direction. Comprehensive planning is a land use tool that allows the county to look at what has happened with county development in the past and to visualize us to where we want to be as a county in the future.

What is a Comprehensive Plan?

A comprehensive plan is a general document that helps guide the type, location and appearance of county growth and development, generally over the following 20 years. A comprehensive plan reflects the goals, policies, and intentions for land development in the county. An adopted comprehensive plan provides the foundation for future development related decisions, not limited to but including rezoning, special use permits, subdivisions, and zoning and subdivision text amendment changes.

What is the Difference Between Planning and Zoning?

A land use plan or comprehensive plan attempts to define county goals based on a combination of data, the desires of the public, and wishes of private property owners. Included in a comprehensive plan is a land use map. This advisory map acknowledges desired existing land use and expresses desires for future land uses for properties in the county. One means to implement comprehensive plans is through zoning. The zoning ordinance and different zoning districts may be made to realize the county land use desires, previously expressed in the comprehensive plan and planned use map.

Literature Cited in PowerPoint

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