



# *Wind & Wildlife:* *A Prairie State's Perspective*

ELISHA MUELLER

NORTH DAKOTA GAME AND FISH DEPARTMENT

# Timeline

- **2007 to 2017:** standard response to solicitations regarding wind projects: “work within native prairie be avoided to the extent possible”
- **2008 – 2011:** Northern Plains Wind Energy Forum, ND and SD
  - *Consensus not met, group disbanded*
- **August 2016:** PSC commissioner asks NDGF to provide information on impacts to wildlife resources following multiple 10+ hour hearings
- **September 2016:** ND Wind and Wildlife Collaborative (NDWWC) was formed
- **November 2016:** New governor
- **August 2017:** NDGF drafted an approach for guidelines using the State Wildlife Action Plan as the impetus.



# Timeline

- **October 18, 2017:** Notice of PSC hearing for Foxtail Wind Energy Center (November 20, 2017)
  - 45 of 75 turbines sited in native prairie
  - >15 miles of new roads in native prairie
- **November 20, 2017:** PSC did not approve Foxtail and told NextEra to work it out with NDGF
- **December 20, 2017:** NDGF sends supportive letter to PSC
- **February 2018:** NextEra Vice President travels to ND to meet with NDGF director
- **March - April 2018:** NDGF provides presentation on wind and wildlife impacts to:
  - PSC Commissioners
  - Natural Resource Interim Legislative Committee
  - Governor Doug B

Pause timeline

# Minimizing Impacts to Wildlife & Constituents

## ■ North Dakota Administrative Rule Chapter 69-06-08

*1. Exclusion areas. The following geographical areas must be excluded in the consideration of a site for an energy conversion facility.*

- a. Designated or registered national: parks; memorial parks; historic sites and landmarks; natural landmarks; historic districts; monuments; wilderness areas; wildlife areas; wild, scenic or recreational rivers; wildlife refuges; and grasslands
- b. Designated or registered state: parks; forests; forest management lands; historic sites; monuments; historical markers; archaeological sites; grasslands; wild, scenic or recreational rivers; game refuges; game management areas; management areas; nature preserves
- c. ...hardwood draws; and enrolled woodlands
- f. Areas critical to the life stages of threatened or endangered animal or plant species
- g. Areas where animal or plant species that are unique or rare to this state would be irreversibly damaged

*3. Avoidance areas.*

- e. Woodlands and wetlands
- f. Areas of recreational significance which are not designated as exclusion areas

# Minimizing Impacts to Wildlife & Constituents

## ■ North Dakota Administrative Rule Chapter 69-06-08

**1. Exclusion areas.** *The following geographical areas must be excluded in the consideration of a site for an energy conversion facility.*

- a. Designated or registered national: parks; memorial parks; historic sites and landmarks; natural landmarks; historic districts; monuments; wilderness areas; wildlife areas; wild, scenic or recreational rivers; wildlife refuges; and grasslands
- b. Designated or registered state: parks; forests; forest management lands; historic sites; monuments; historical markers; archaeological sites; grasslands; wild, scenic or recreational rivers; game refuges; game management areas; management areas; nature preserves
- c. ...hardwood draws; and enrolled woodlands
- **f. Areas critical to the life stages of threatened or endangered animal or plant species**
- **g. Areas where animal or plant species that are unique or rare to this state would be irreversibly damaged**

**3. Avoidance areas.**

- **e. Woodlands and wetlands**
- f. Areas of recreational significance which are not designated as exclusion areas

# North Dakota State Wildlife Action Plan

- The NDGF has implemented this program since 2002
- Goals:
  - *Keep common species common*
  - *Prevent further listings under the ESA*
  - *Preserve the state's fish and wildlife resources for the foreseeable future*



## NORTH DAKOTA STATE WILDLIFE ACTION PLAN 2015

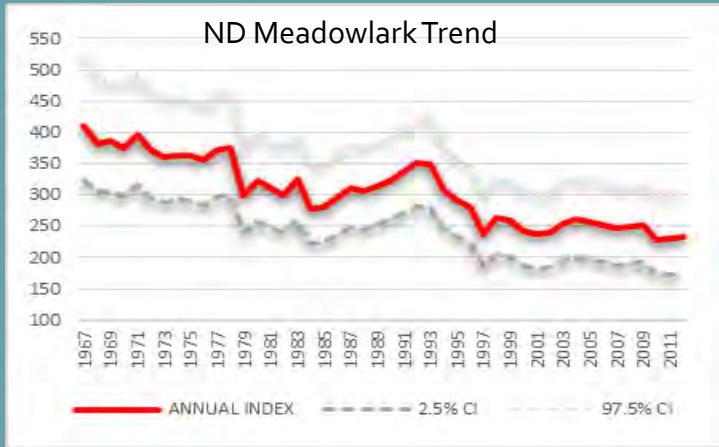




# Species of Conservation Priority

- Rare, declining, or at-risk species
- 115 species
  - 47 birds
  - 2 amphibians
  - 9 reptiles
  - 21 mammals
  - 22 fish
  - 10 mussels
  - 4 insects
    - Monarch, Regal Fritillary, Dakota Skipper, Poweshiek Skipperling
- Mostly nongame species, but a few game species

# Species of Conservation Priority



- The State Bird is now rare in eastern 1/3 of the state.
- The population is steadily declining.
- Probably won't see an ESA petition, but meadowlarks are disappearing from ND.

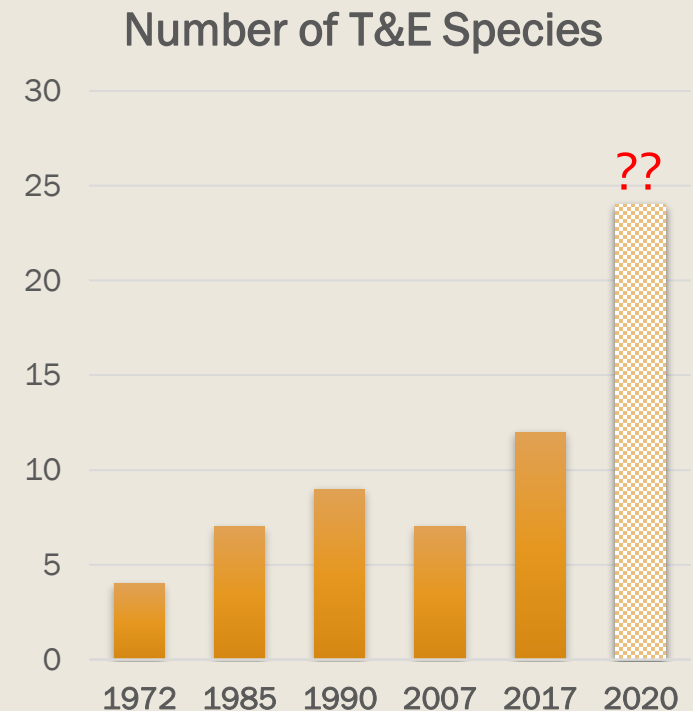


# Endangered Species

- U.S. Fish and Wildlife Service is the principal federal entity for administering the Endangered Species Act (ESA)
- 12 species currently listed as threatened or endangered in North Dakota
- 11 petitions/species that include ND are under review
- Anticipate more petitions and listings



As managing for listed species is far more restrictive, difficult, and expensive for everyone making a living on the landscape than preventing listings (developers, industry, landowners, and producers), it is vital that we ensure there are the essential habitat resources to sustain healthy populations.



# UNBROKEN GRASSLANDS: NATIVE PRAIRIE

## GRASSLAND (48)

American Kestrel  
Baird's Sparrow  
Bobolink  
Brewer's Sparrow  
Burrowing Owl  
Chestnut-collared Longspur  
Dickcissel  
Ferruginous Hawk  
Golden Eagle  
Grasshopper Sparrow  
Greater Prairie Chicken  
Greater Sage-grouse  
Lark Bunting  
Le Conte's Sparrow  
Loggerhead Shrike  
Long-billed Curlew  
Marbled Godwit  
McCown's Longspur  
Nelson's Sparrow  
Northern Harrier  
Peregrine Falcon  
Prairie Falcon  
Sharp-tailed Grouse  
Short-eared Owl  
Sprague's Pipit  
Swainson's Hawk  
Upland Sandpiper  
Western Meadowlark  
Willet  
Wilson's Phalarope

Northern Prairie Skink  
Plains Hog-nosed Snake  
Sagebrush Lizard  
Short-horned Lizard  
Smooth Green Snake

Black-footed Ferret  
Black-tailed Prairie Dog  
Hispid Pocket Mouse  
Merriam's Shrew  
Plains Pocket Mouse  
Pygmy Shrew  
Richardson's Ground Squirrel  
Sagebrush Vole  
Swift Fox

Dakota Skipper  
Poweshiek Skipperling  
Monarch Butterfly  
Regal Fritillary



Support 48 Species of Conservation Priority

# WETLANDS

## WETLAND (54)

American Avocet  
American Bittern  
American White Pelican  
Black Tern  
Canvasback  
Franklin's Gull  
Horned Grebe  
Least Tern (Interior)  
Lesser Scaup  
Northern Pintail  
Piping Plover  
Red Knot (Rufa)  
Whooping Crane  
Yellow Rail

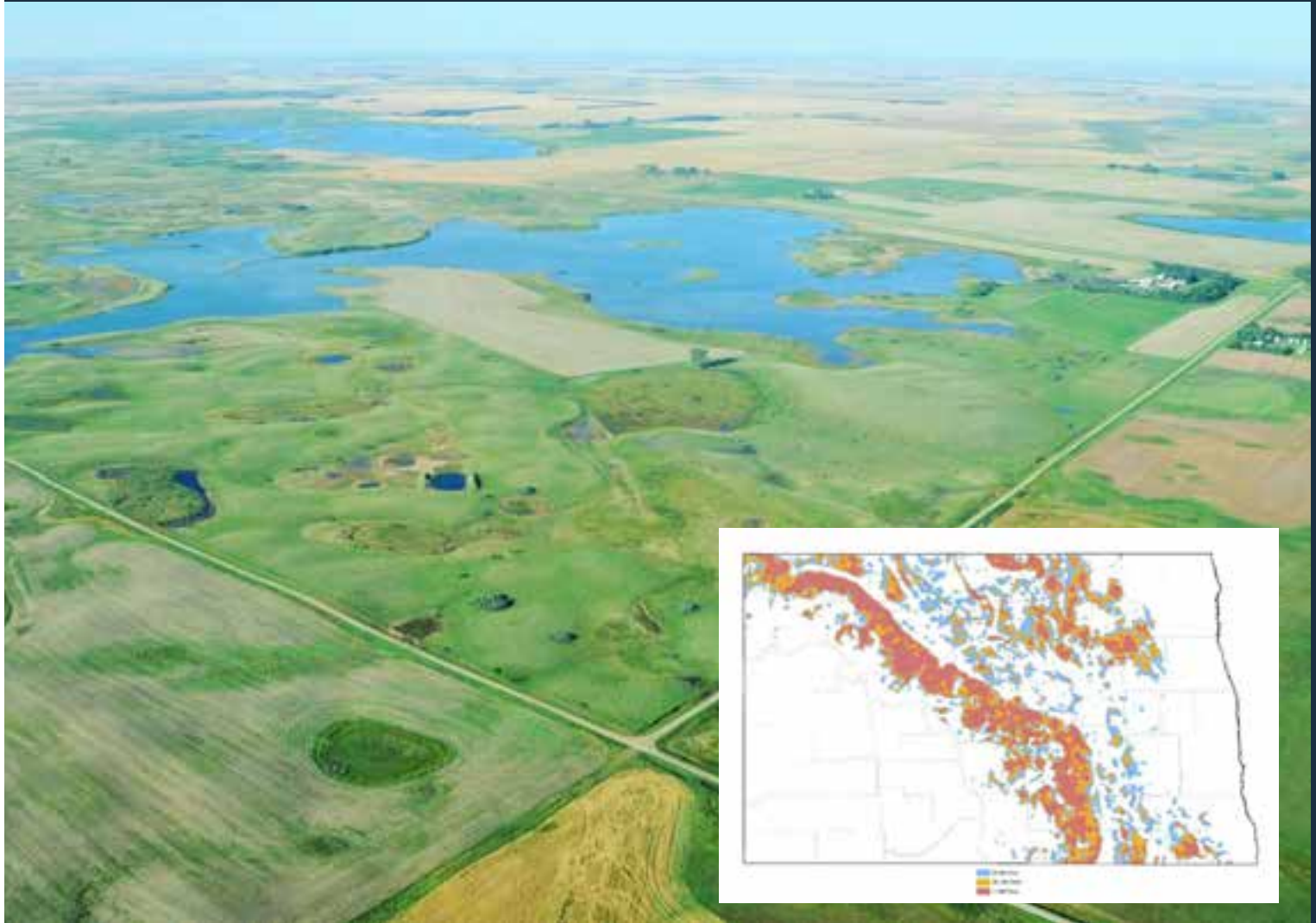
Canadian Toad  
Plains Spadefoot

False Map Turtle  
Smooth Softshell  
Snapping Turtle  
Spiny Softshell

Arctic Shrew  
River Otter

Blacknose Shiner  
Blue Sucker  
Burbot  
Carmine Shiner  
Chestnut Lamprey  
Finescale Dace  
Flathead Chub  
Hornyhead Chub  
Largescale Stoneroller  
Logperch  
Northern Pearl Dace  
Northern Redbelly Dace  
Paddlefish  
Pallid Sturgeon  
Pugnose Shiner  
River Darter  
Sicklefin Chub  
Silver Chub  
Silver Lamprey  
Sturgeon Chub  
Trout-perch  
Yellow Bullhead

Black Sandshell  
Creek Heelsplitter  
Creper  
Deertoe  
Fragile Papershell  
Mapleleaf  
Pink Heelsplitter  
Pink Papershell  
Threeridge  
Wabash Pigtoe



Support 54 Species of Conservation Priority

# NATIVE WOODLANDS

## **WOODLAND (13)**

Bald Eagle  
Black-billed Cuckoo  
Red-headed Woodpecker

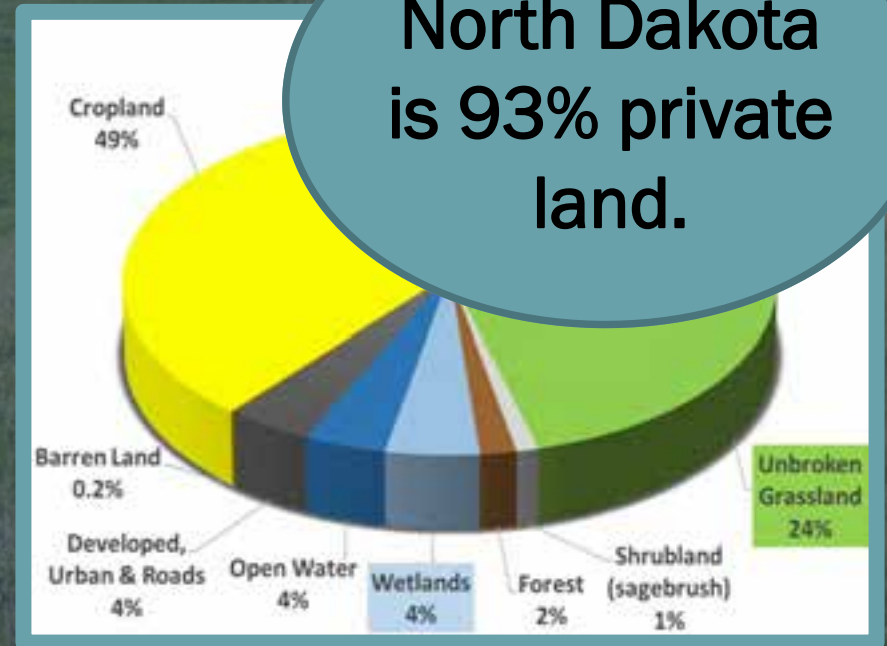
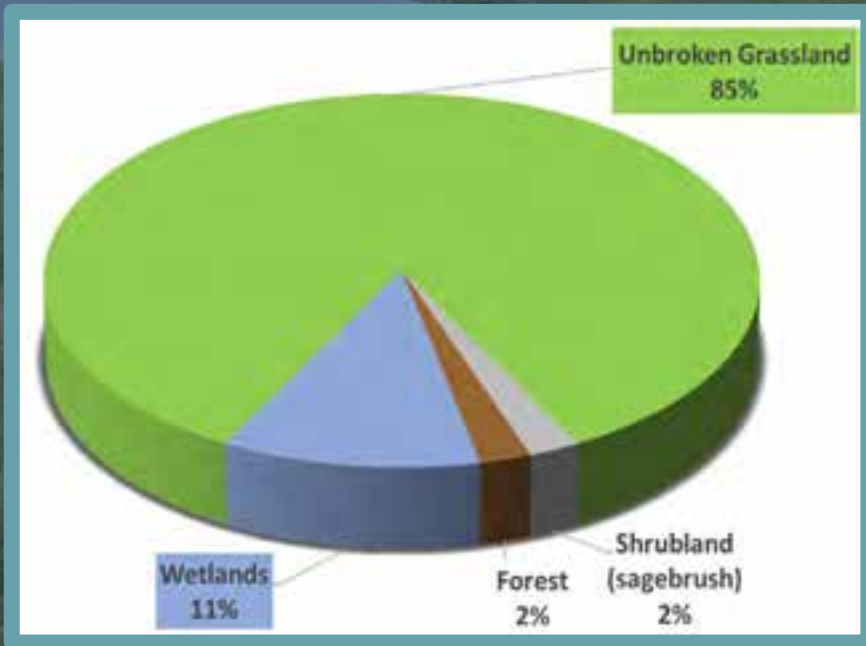
American Marten  
Big Brown Bat  
Eastern Spotted Skunk  
Gray Fox  
Little Brown Bat  
Long-eared Bat  
Long-legged Bat  
Northern Long-eared Bat  
Townsend's Big-eared Bat  
Western Small-footed Bat



Support 15 Species of Conservation Priority

# The North Dakota Landscape

200 years ago



North Dakota is 93% private land.

Wetlands: Loss of approx. 60%  
Native Prairie: Loss of nearly 75%



# Direct Impacts - Collisions

- Cumulative impact to wildlife populations is not certain.
- North America Fatality Estimates:
  - *Birds*
    - 3 to 6 birds per MW per year
  - *Bats*
    - 1 to 30 bats per MW per year
- ND study: **30** species of birds killed in grasslands versus **9** species in agricultural lands

SONGBIRDS	
American Tree Sparrow	1
Black-and-White Warbler	1
Black-billed Cuckoo	1
Brewer's Blackbird	1
Chimney Swift	1
Common Grackle	3
European Starling	2
Golden-crowned Kinglet	1
Horned Lark	1
House Wren	1
Lapland Longspur	2
Le Conte's Sparrow	1
Lincoln's Sparrow	
Mourning Dove	
Nelson's Sharp-tailed Sparrow	
Northern Flicker	
Philadelphia Vireo	
Red-eyed Vireo	
Red-winged Blackbird	
Ruby-crowned Kinglet	
Song Sparrow	
Unidentified blackbird	2
Unidentified small bird/passerine	16
Unidentified large bird	5
Warbling Vireo	2
Yellow-headed Blackbird	1
Yellow-rumped Warbler	1

WATERFOWL, WATERBIRDS	
American Coot	6
American White Pelican	8
Blue-winged Teal	3
Canada Goose	6
Canvasback	1
Cinnamon Teal	2
Double-crested Cormorant	1
Franklin's Gull	2
Gadwall	5
Killdeer	3
Unidentified duck	
Unidentified waterfowl	
Virginia Rail	
Western Grebe	1

BATS	
Eastern Red Bat	25
Hoary Bat	50
Little Brown Bat	2
Silver-haired Bat	18
Unidentified bat	6
RAPTORS	
Bald Eagle	1
Northern Harrier	1
Red-tailed Hawk	2
UPLAND GAME BIRDS	
Wild Pheasant	1

$$\hat{p} = \frac{f \left( s \frac{1-s^d}{1-s} \right) \left( \sum_{i=0}^{n-1} (n-i) ((1-f)s^d)^i \right)}{nd}$$

...ality searches conducted at  
...ines from April 2017 thru  
... October 2017.

...al fatalities = 278

Total birds = 177 (48 species)

Total bats = 101 (4 species)

# NORTH DAKOTA MORTALITY REPORT

2003



# DIRECT IMPACTS: LOSS OF HABITAT

2017





2003

# DIRECT IMPACTS: LOSS OF HABITAT

2017

So far in ND, turbines and associated roads sited in native, unbroken grassland have resulted in the cumulative loss of approximately 2,400 acres of habitat for rare, unique and declining species.

Project Name	Owner	Total Turbines	# Turbines in Native Prairie ≥ 160 Acres	# Turbines in Native Prairie < 160 Acres	Total in Native Prairie	% of Turbines in Native Prairie	Direct Loss of Native Prairie Acres (4.5 acres per turbine)	Total Miles New Roads	Total Miles New Roads in Native Prairie	% of Roads in Native Prairie	Direct Loss of Native Prairie Acres (50 feet wide per linear
Ashtabula Wind I, II & III	NextEra Energy	282	15	5	20	7.09%	90.0	61.58	3.37	5.47%	20.42
Baldwin/Wilton I & II	NextEra Energy	130	18	5	23	17.69%	103.5	27.66	5.04	18.22%	30.55
Bison 1, 2, 3 & 4	Minnesota Power	165	51	19	70	42.42%	315.0	58.25	16.4	28.15%	99.39
Border Winds	Xcel Energy	75	0	0	0	0.00%	0.0	22.82	0	0.00%	0.00
Brady I & II	NextEra Energy	158	22	5	27	17.09%	121.5	65.99	11.89	18.02%	72.06
Cedar Hills Wind Project	Montana-Dakota Utilities	13	7	0	7	53.85%	31.5	1.78	1.05	58.99%	6.36
Courtenay Wind Farm	Xcel Energy	100	0	1	1	1.00%	4.5	22.01	0.14	0.64%	0.85
Langdon Wind I & II	NextEra Energy	133	2	0	2	1.50%	9.0	34.75	0.26	0.75%	1.58
Lindahl Wind Project	Enel Green Power North America	75	16	3	19	25.33%	85.5	21.7	4.82	22.21%	29.21
North Dakota Wind	NextEra Energy	41	0	1	1	2.44%	4.5	9.41	0.09	0.96%	0.55
Oliver Wind I & II	NextEra Energy	54	48	3	51	94.44%	229.5	14.87	13.01	87.49%	78.85
Oliver Wind III	NextEra Energy	47	15	2	17	36.17%	76.5	15.56	4.5	28.92%	27.27
PrairieWinds ND1	Basin Electric	82	15	1	16	19.51%	72.0	29.12	4.19	14.39%	25.39
Rugby Wind Farm	Avangrid Renewables	71	31	5	36	50.70%	162.0	17.77	7.13	40.12%	43.21
Sunflower Wind Project	Novatus Energy	52	14	4	18	34.62%	81.0	17.01	3.4	19.99%	20.61
Tatanka Wind Farm	Acciona Energy	61	54	0	54	88.52%	243.0	14.02	12.98	92.58%	78.67
Thunder Spirit	Montana-Dakota Utilities	43	28	2	30	69.77%	135.0	14.74	9.25	62.75%	56.06
Velva Wind Farm	Acciona Energy	18	0	6	6	33.33%	27.0	2.33	0.71	30.47%	4.30
<b>TOTAL</b>		<b>1600</b>	<b>336</b>	<b>62</b>	<b>398</b>	<b>24.88%</b>	<b>1791.0</b>	<b>451.37</b>	<b>98.23</b>	<b>21.76%</b>	<b>595.33</b>

# WIND PROJECT IMPACTS - HISTORICAL