

Potential Wildlife Conflicts with Transmission Lines and Turbines in Montana...



...emphasizing avian affects

NWF's Priorities

Global Warming is the single greatest threat to wildlife.

Goal 1: Transform America to a clean energy economy within the next 10 years while rapidly reducing global warming pollution in the U.S. by at least 2% per year.

- Promoting Climate-Smart Natural Resources Conservation
- Promoting Habitat-Friendly Energy Development



Promoting Habitat-Friendly Energy Development

- Promoting responsible siting of wind, solar and geothermal energy
- Protecting fresh water and other habitats from tar sands, oil shale, and coal-to-liquid (“dirty fuels”).



Specific NWF Resolutions...

The National Wildlife Federation urges:

Congress and appropriate federal agencies to adopt and enforce laws and policies associated with energy development that require “no net loss” in the quantity and quality of public lands with respect to wildlife, wildlife habitat and recreational values; and

to adopt and enforce laws and policies requiring all projects and programs for energy development on public lands to be reviewed in a manner that includes public input, a citizen suit provision, and assurance of complete mitigation as defined by the CEQ for any losses in wildlife, wildlife habitat, and recreation values; and

urges the application of this resolved policy in all energy development related to conventional, renewable and future as yet unidentified energy sources.

NWF Annual Meeting, March 2010



NWF is a member
of a coalition....



1. Give sportsmen a voice in decision making
2. Protect roadless backcountry, National Parks, National Wildlife Refuges and local and state public lands
3. Prioritize renewable energy development for disturbed or occupied land where energy infrastructure might already be in place.
4. Conserve important fish and wildlife habitat
5. Consult with state fish and wildlife officials first
6. Rely on the latest science
7. Strengthen the permitting and leasing process
8. Monitor impacts to fish, wildlife and water
9. Mitigate damage and reclaim affected land and water
10. Comply with all relevant environmental laws



What USFWS says about renewable energy and wildlife....



United States Department of the Interior

FISH AND WILDLIFE SERVICE
Washington, D.C. 20240

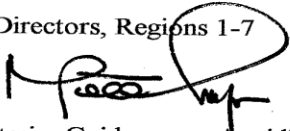
IN REPLY REFER TO:

MAY 13 2003

FWS/DFPA/BFA

Memorandum

To: Regional Directors, Regions 1-7

From: **Deputy**
Director 

Subject: Service Interim Guidance on Avoiding and Minimizing Wildlife Impacts from Wind Turbines

Wind-generated electrical energy is renewable, produces no emissions, and is considered to be generally environmentally friendly technology. Development of wind energy is strongly endorsed by the Secretary of the Interior, as expressed in the Secretary's Renewable Energy on Public Lands Initiative (May 2002). However, wind energy facilities can adversely impact wildlife, especially birds and bats, and their habitats. As more facilities with larger turbines are built, the cumulative effects of this rapidly growing industry may initiate or contribute to the decline of some wildlife populations. The potential harm to these populations from an additional source of mortality makes careful evaluation of proposed facilities essential. Due to local differences in wildlife concentration and movement patterns, habitats, area topography, facility design, and weather, each proposed development site is unique and requires detailed, individual evaluation.

USFWS also developing
new guidance per Wind
Advisory Committee
2010

Multiple Transmission Projects

Proposed power line projects

NorthWestern Energy, other utilities and TransCanada are proposing to build or expand several new power lines in Montana, intending to export electricity from new wind-power projects in the state. NorthWestern is proposing MSTI and the Collector System. NorthWestern and utilities from Washington and Oregon are proposing the Colstrip upgrade. TransCanada, a Canadian firm based in Calgary, is proposing the Chinook line.



Winners and losers... synanthropic species



Winners and losers... misanthropic species



Waterfowl



Gallinaceous birds



Hoofed Mammals



See Bergen WCS 2009; Sawyer 2007

Wire-antlered Moose (rare)



How Turbines and Transmission Affects Wildlife

- Direct habitat loss and degradation
 - immediate footprint, roads, vehicles, fire ignitions, weed invasions, predator shifts
- Collisions with structures
 - highly variable depending on design, location, and species
- Behavioral avoidance of modified habitat
 - selected species averse to tall structures



What species are sensitive or rare?

- Bighorn
- Grizzly
- Trumpeter swan
- Sage-grouse
- Pygmy rabbit



Conventional Energy Impacts... parallels?



Breeding densities declined by 36% within 100 m of roads in a natural gas field. Cumulative impacts show that indirect habitat losses much greater than direct losses suggest.



Breeding densities declined by 57% and the area of impact within the gas field was substantial.

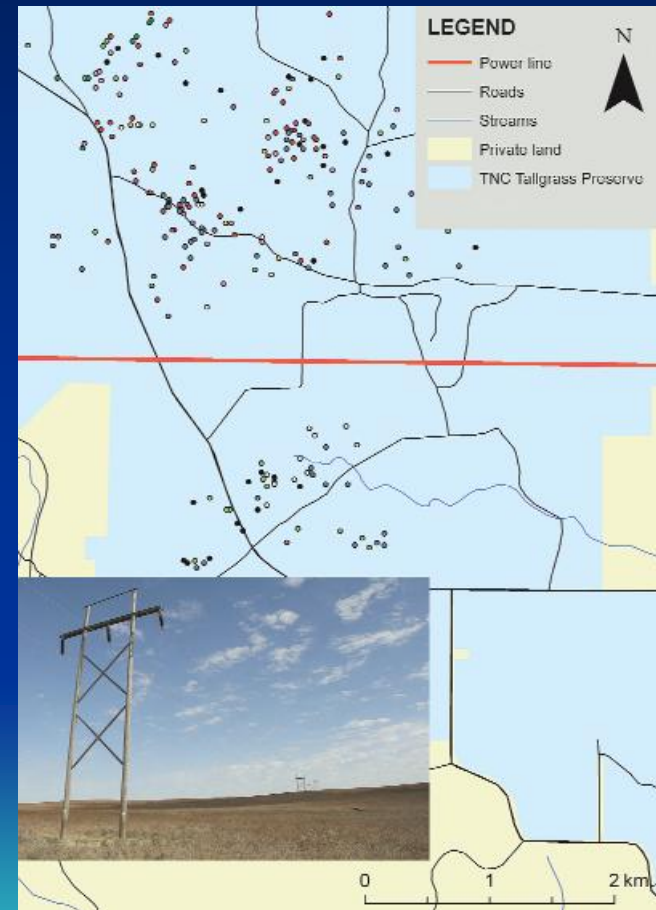
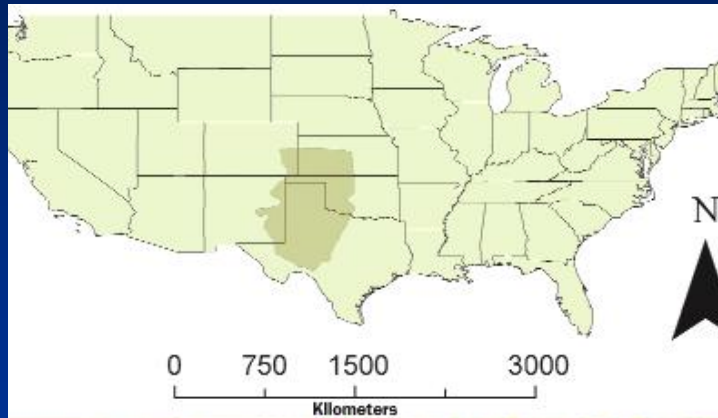
Ingelfinger and Anderson (2004)

Conventional Gas Infrastructure

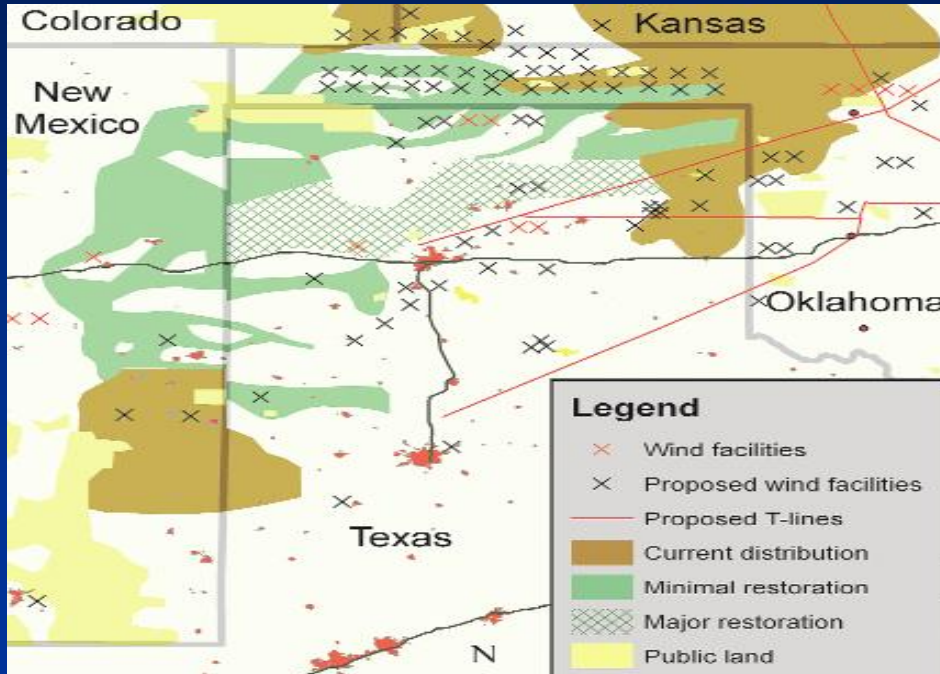


Every square km. bounded by a road and bisected by a power line

Power Line Avoidance by related species



Potential Population Level Affects of Turbines



Encourage lawmakers to adopt state and federal regulations on wind-farm placement. Without a concerted effort, lesser prairie-chickens and similar species are likely to disappear....

Pruett et al., Bioscience 2009

Why do some species benefit while others suffer?

To a sage-grouse this looks like a forest....



Judith Gap Wind Farm photos courtesy John Bacon/InVenergy, LLC.

When their habitat formerly looked like this....

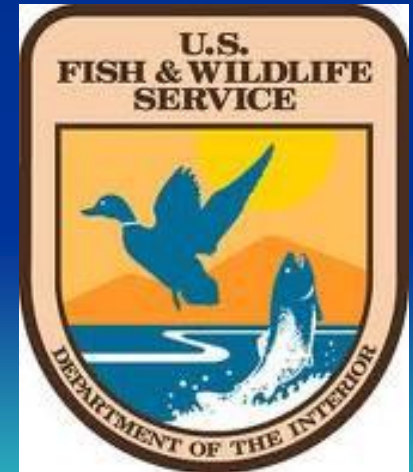


With turbines also have issues like noise and “shadow flicker”

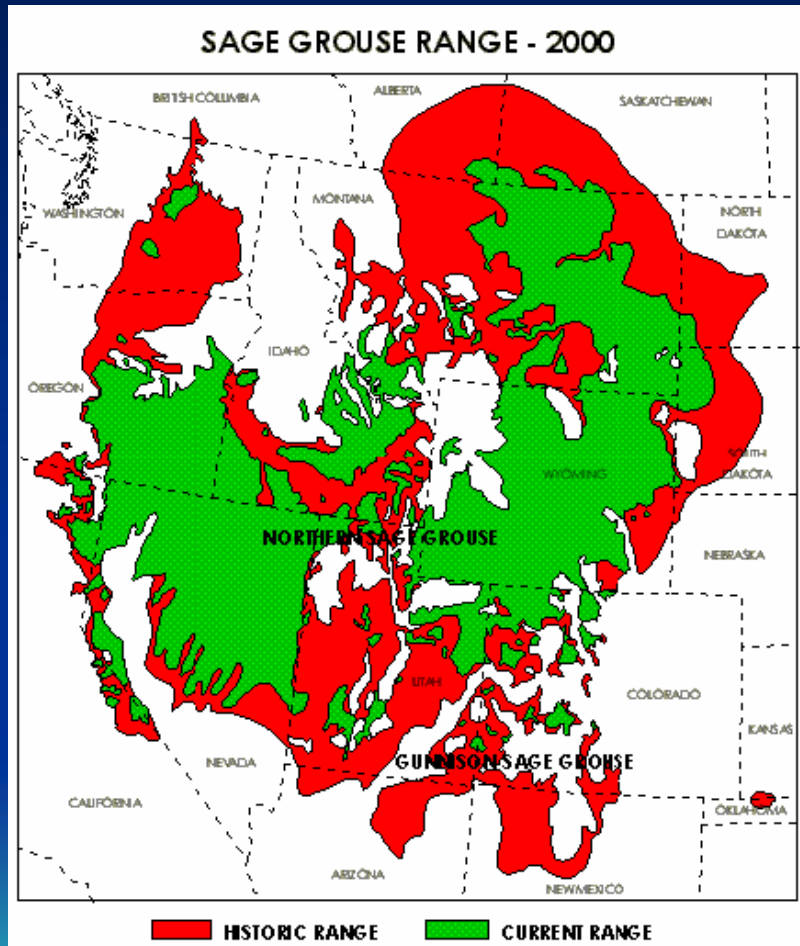


Sage-Grouse Conservation Status

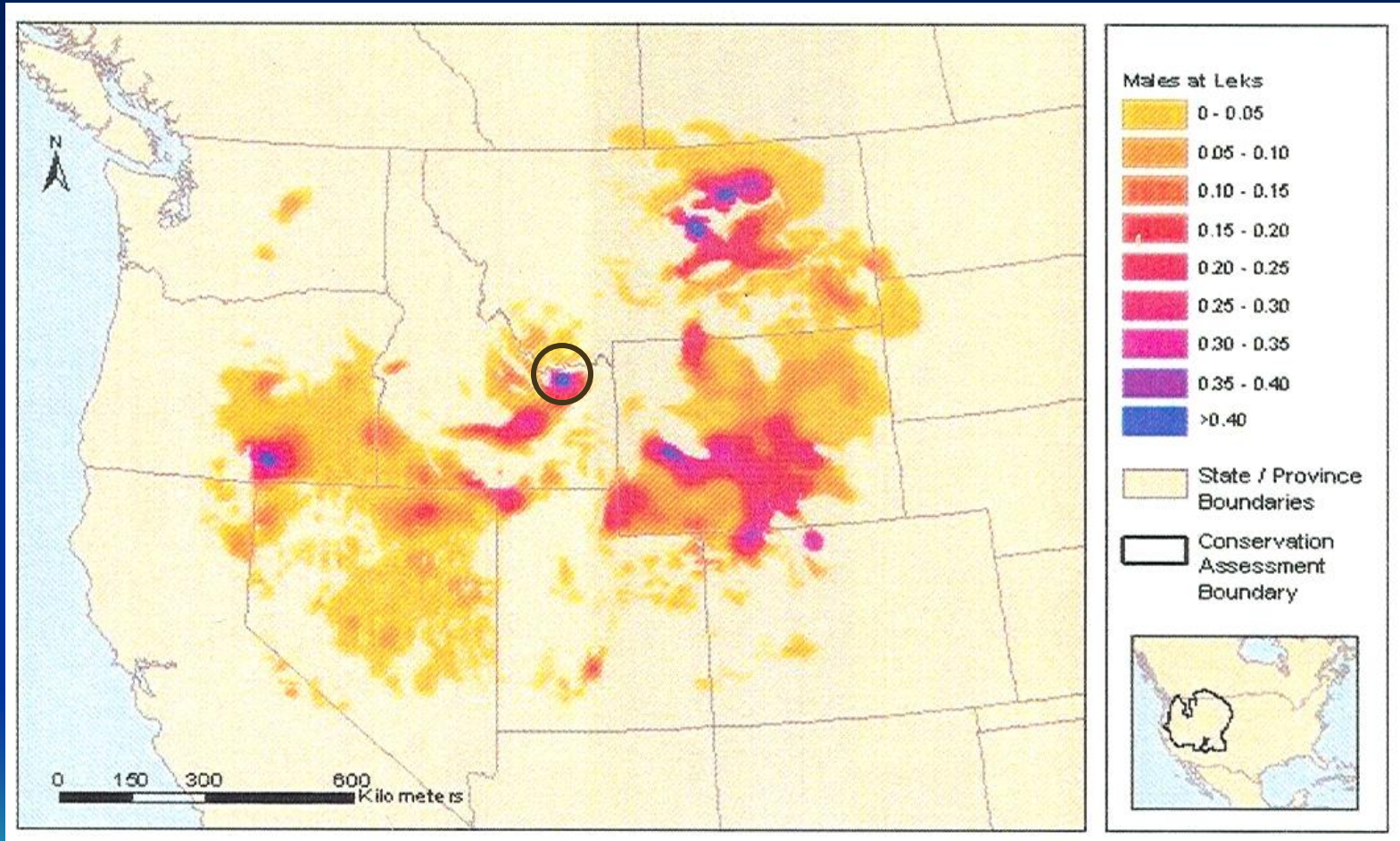
- USFWS determined in March 2010 that greater sage-grouse are “warranted” for listing as threatened, but listing is precluded by higher priorities... for now.



Greater Sage-Grouse



Relative Densities of Sage-grouse throughout the West (WAFWA Rangewide Assessment 2004)



The USFWS Opinion on Sage-Grouse and Renewables

Renewable energy facilities, including wind power, typically require many of the same features for construction and operation as do nonrenewable energy resources. Therefore, we anticipate that potential impacts [to greater sage-grouse] from direct habitat losses, habitat fragmentation through roads and powerlines, noise, and increased human presence will generally be similar to those already discussed for nonrenewable energy development.

USFWS 2010, 12-month finding for
Greater Sage-grouse, March 5, p 41



Future Turbines in Sage-grouse Range?



- It has been estimated that 37-78,000 more turbines will be needed, and 19,000+ square miles of land in sage-grouse range will be required to meet the predicted level of wind-generated electricity by 2030.

DOE, 2008; Copeland et al. 2009 *in* USFWS 12-month Finding for Greater Sage-grouse, 2010

Sage-Grouse Collisions



Many documented cases of grouse strikes with fences, lower power lines. Few with turbines.

Current opinion on impacts....

- Johnson (2009) conducted an extensive review of literature on powerline impacts to sage-grouse and found that although response of sage-grouse to power lines varies widely, population level impacts could occur out to three miles from powerlines, with one study showing lek decreases out to 5 miles.
- Wind energy facilities may present anthropogenic barriers to sage-grouse; therefore management planning should proceed from the need to provide sage-grouse populations with large, functional, connected habitat patches across landscapes (Johnson and Holloran, 2010).



Sage-grouse Avoid Vertical Structures

Golden eagles are the #1 predator of adult sage-grouse, and hunt them most effectively from elevated perches.



Ravens are one of the most effective predators of sage-grouse eggs, and populations expand into areas with new transmission towers.

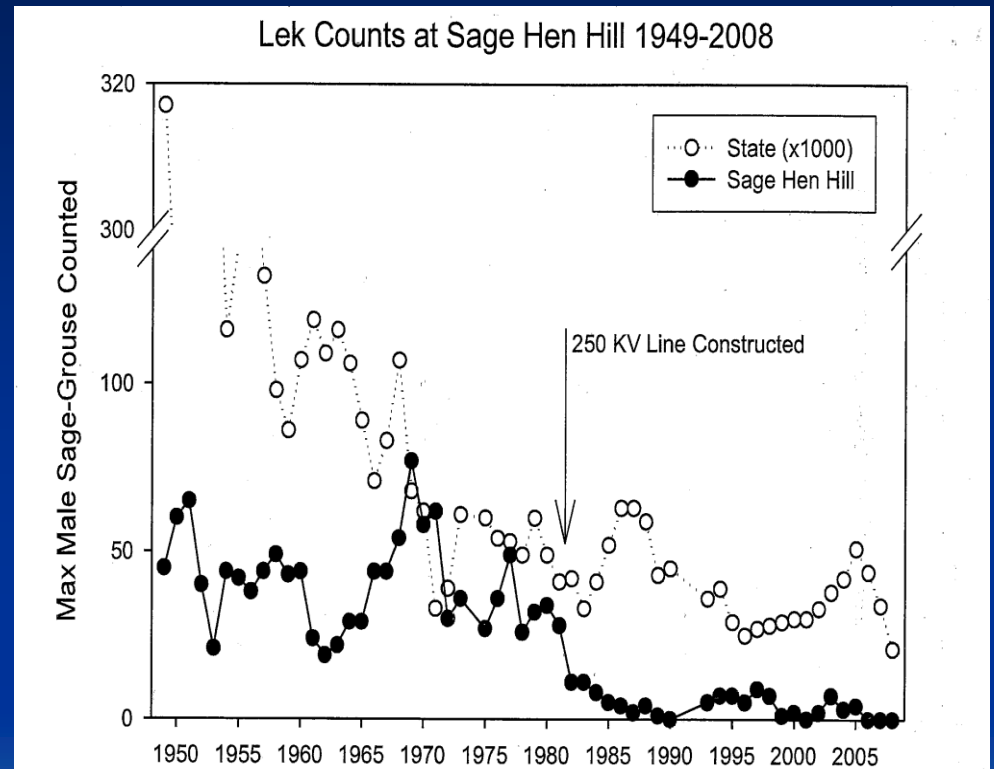
Sage-grouse strongly avoid vertical structure presumably as a defense mechanism against raptors (Connelly et al. 2004).



Oregon's Experience

In Oregon the Sage Hen Hill Lek in Harney County was first counted in 1949 and had an average of 41 males counted until 1980. Between 1980 and 1982, a 250kV transmission line was constructed within 0.5 miles of the lek site. An average of 5 males has been counted at the lek since 1981, with no males counted since 2006.

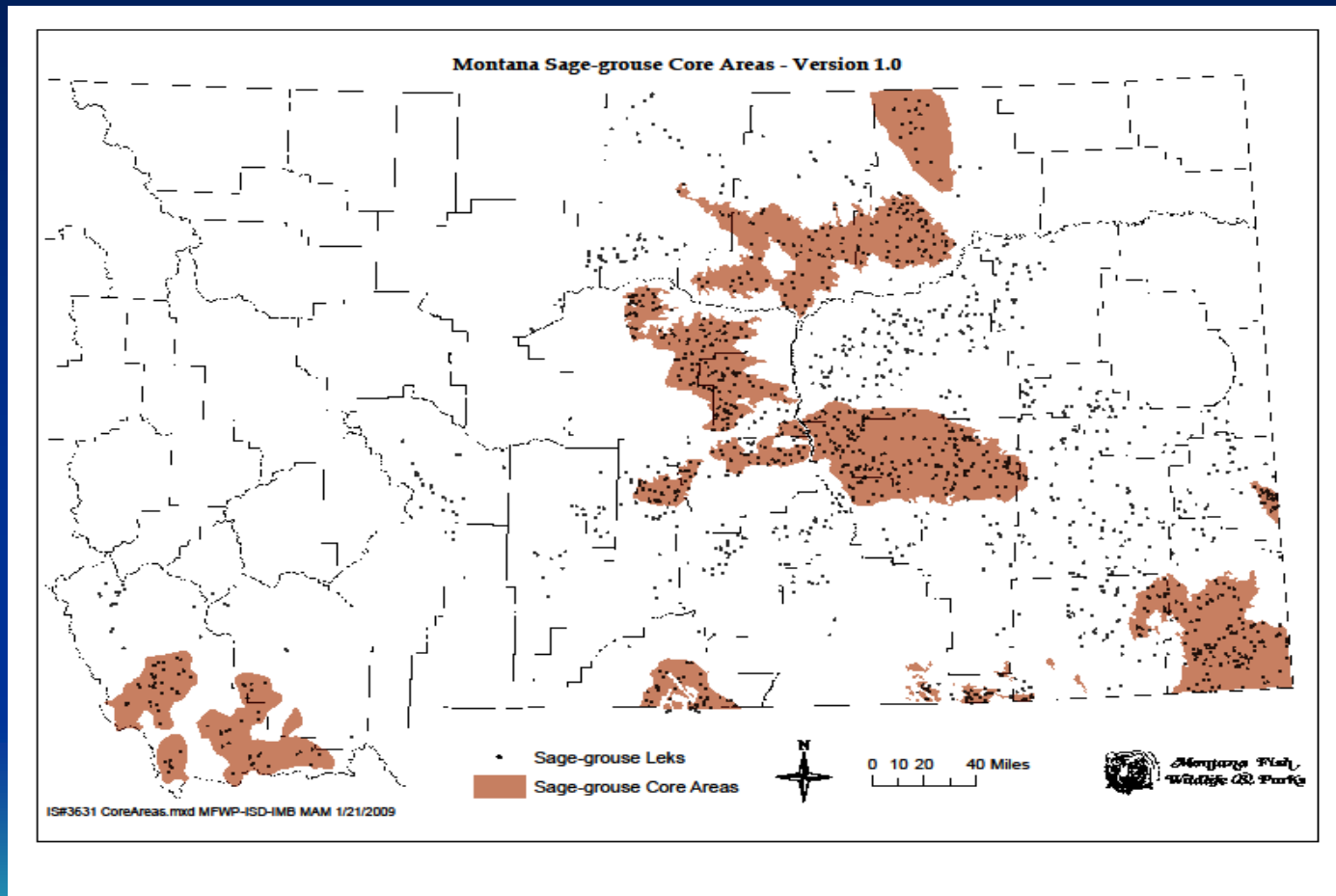
Recent data suggests the effectiveness of anti-perching devices is marginal (Lammers and Collopy 2007)... The available literature suggests that significant affects occur between 0.5 – 4.7 miles from these disturbances. ODFW's best assessment is that transmission lines and power poles should be sited at least 2 miles from leks.



WY and MT's Actions and Strategies

- Wyoming's Gov. Freudenthal set up grouse core areas via executive order in 2008 to discourage listing as a threatened species. Then the USFWS determined wind energy development is not compatible with intent of WY's sage-grouse core area strategy. In August 2009 WY Land Commission voted to withdraw from wind energy development about 1 mil. acres of state land within core sage-grouse areas.
- Montana's interagency guidance states:
 - “Avoid locating roads and power lines in crucial sage-grouse breeding, nesting and wintering areas;”
 - “Site new lines in existing [utility] corridors wherever practicable;” and
 - “Develop offsite mitigation strategies in situations in which fragmentation or degradation of sage-grouse habitat is unavoidable”

Montana Grouse Core Areas



Habitat Buffers

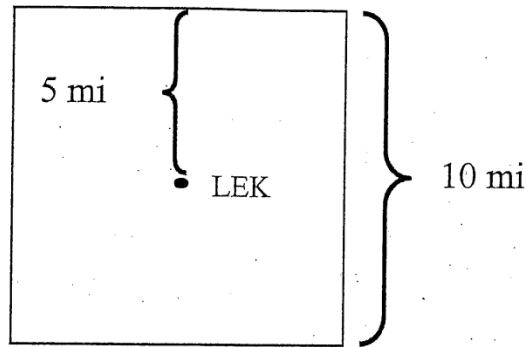


Fig 7. 100 mi²

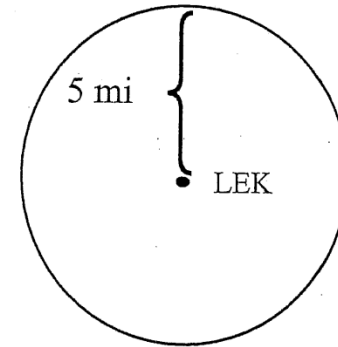
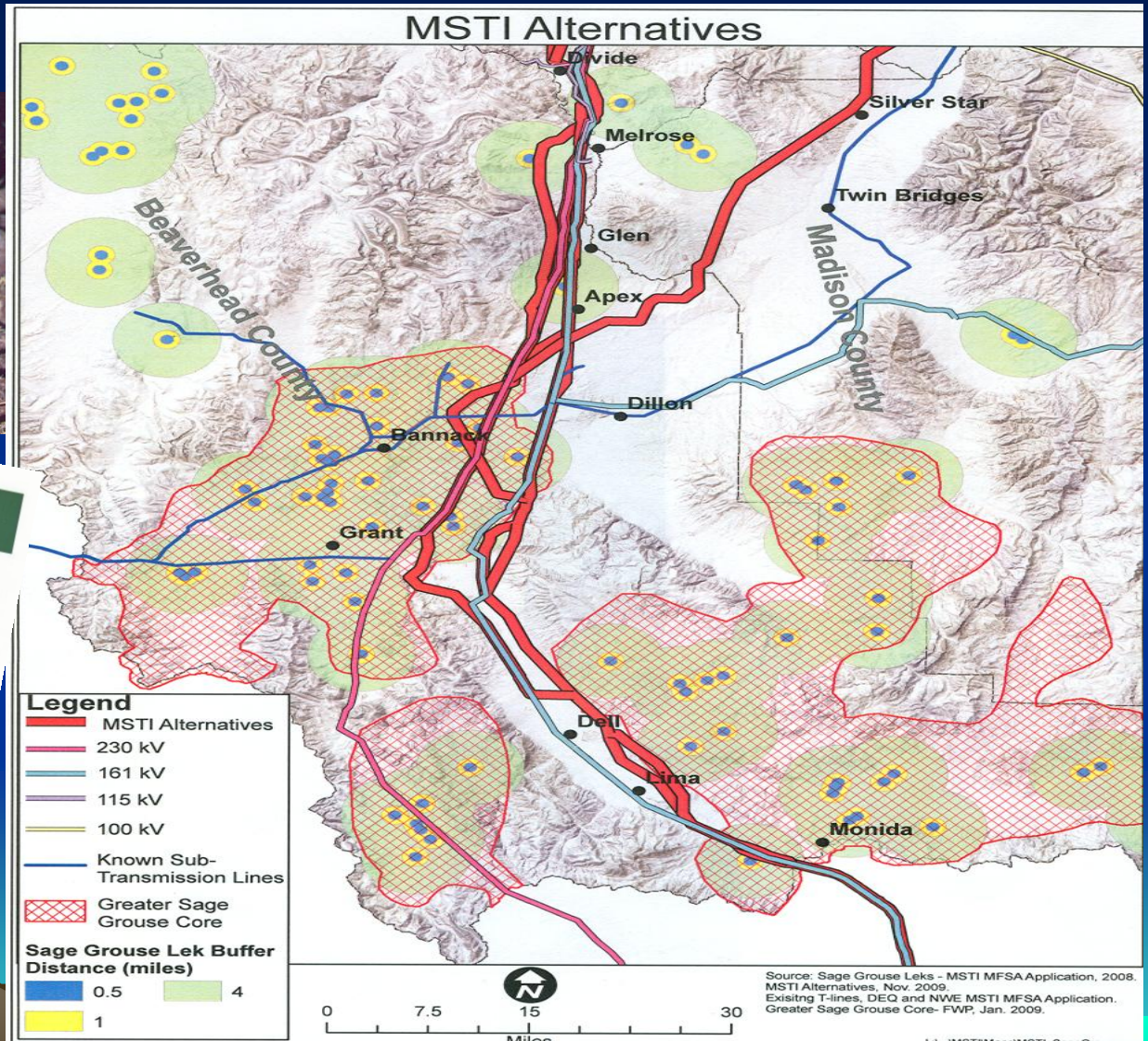
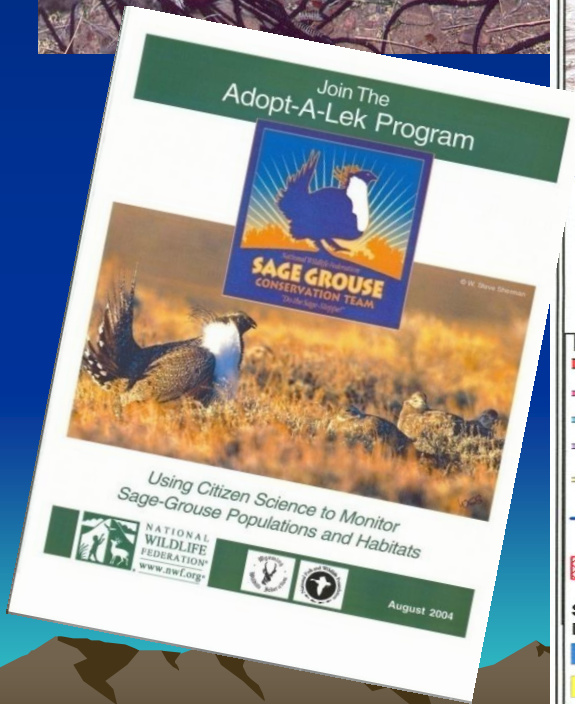


Fig 8. 78.5 mi²

Figures 7 and 8. FWS summary of recommended 5-mile protection zone from active leks for populations of prairie grouse based on hypothetical square and circular home ranges with centrally-located leks, after S. Harmon (2004 pers. comm.), Connelly *et al.* (2000:978), Pitman (2003), Hagen (2003), C. Hagen (2004 pers. comm.), Wolfe *et al.* (2003a and 2003b), Patten *et al.* (2004a and 2004b), C. Braun (2004 pers. comm.), C. Aldridge (2004 pers. comm.), F. Hall (2004 pers. comm.), and B. Obermeyer (2004 pers. comm.).

Rationale for 5-mile buffer per Manville, USFWS 2005

Sage-grouse core areas and MSTI... lek impacts and fragmentation likely



MSTI Powerline Impact Mitigation Estimate for Sage-Grouse

The highest impact MSTI line routing alternative crosses 259 miles of sagebrush habitat in Montana and Idaho. There are currently 53 active sage-grouse leks within 2 miles of that route. Plus an additional 166 miles of new access roads.

Estimated costs assuming mitigation of a mile wide swath of habitat lost along the MSTI line route through MT-ID:

-Habitat enhancements	\$5.4- 11.4 mil.
-Conservation easements	\$47-90 mil.



West Inc. 2009 report to North Western Energy

Avian Species Vulnerable to Collisions...

high wing loads, short tails, flying in flocks or low visibility

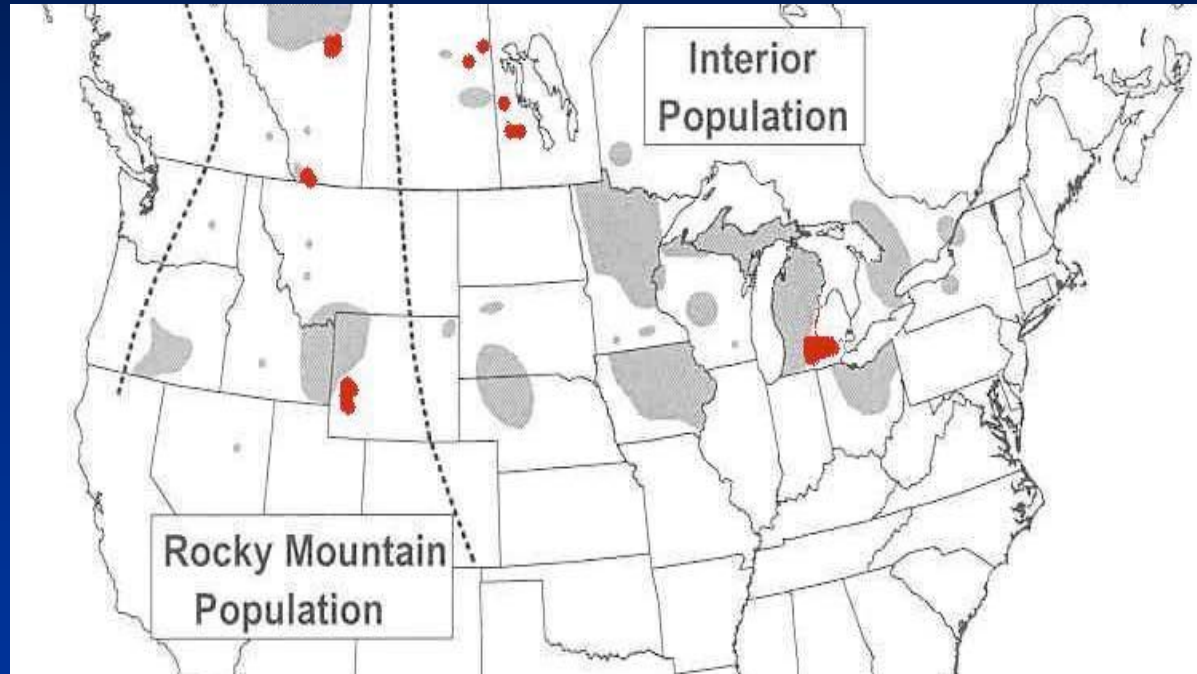


Tri-state Population of Trumpeter Swan



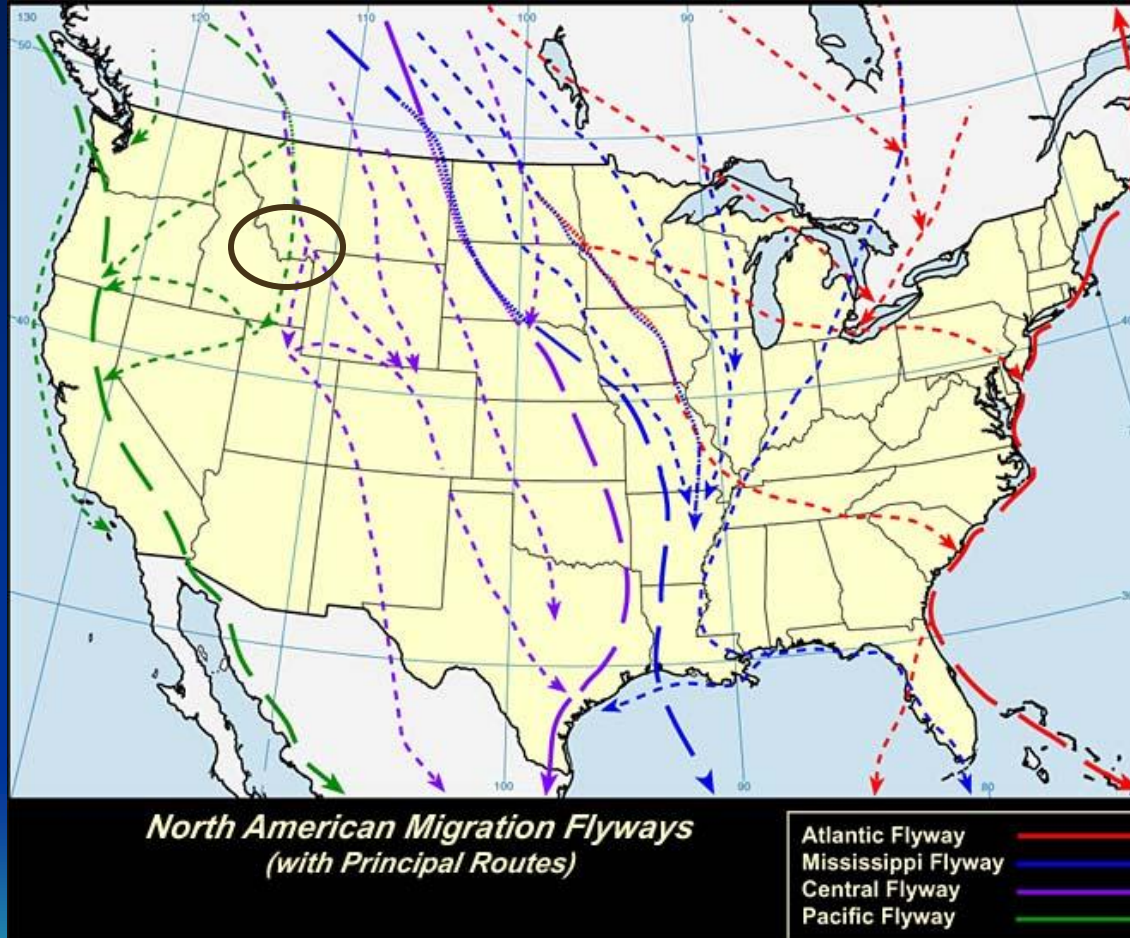
- Only approximately ~350 breeding birds remain in Montana, Idaho, Wyoming
- Centennial Valley's Red Rocks NWR founded to conserve this species.

Trumpeter Swan Distribution



Wire collisions are one of the top three human-caused swan mortality sources

Waterfowl Migratory Flyways



The Dilemma for Sage-grouse (and many other species)....

The effects of renewable energy development are likely similar to those of nonrenewable energy as similar types of infrastructure are required. Based on our review of the literature, we anticipate the impacts of these developments will negatively affect the ability of greater sage-grouse to persist in those areas in the foreseeable future (USFWS 2010, p 44).

VS

Projected climate change and its associated consequences have the potential to affect greater sage-grouse and may increase its risk of extinction, as the impacts of climate change interact with other stressors such as disease, and habitat degradation and loss that are already affecting the species (USFWS 2010,p 45).

**From:12-Month Findings for Petitions to List the Greater Sage-Grouse
as Threatened or Endangered (Fed. Reg. March 2010)**



Unknowns of Montana's new transmission lines...

Will they help reduce North America's carbon footprint?

- Will MSTI and Chinook transmission lines carry
wind power (a small carbon footprint)?
coal power (a large carbon footprint)?
or tar sands power (a vast carbon footprint) ?

Probably all three....



Additional Research Underway and Proposed



- Sage-grouse and MSTI line (BLM)
- Waterfowl study Red Rock River (?)
- Sage-grouse and wind farms in Idaho (James Sedinger)
- Greater Prairie Chickens and wind farms (Kansas State University)
- Grizzly occurrence west of I-15 (USFS)
- MSTI draft EIS to be released ~June 4, 2010 with a 90-day comment period

New Tools and Next Steps?

- Crucial Area Planning System (CAPS), a new FWP mapping service aimed at future planning for a variety of development and conservation purposes so fish, wildlife, and recreational resources can be considered earlier. See <http://fwp.mt.gov/gis/maps/caps/>
- A starting point for the turbine discussions can be the new report of the Wind Turbine Guidelines Advisory Committee of the Department of Interior (2010). Recommends a five-tiered approach for evaluating proposed wind development projects and whether sufficient information exists to make informed and appropriate decisions about affects to natural resources.



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