From: Quamen, Frank
To: Wiechman, Lief
Subject: Re: Hello & Welcome to the GRSG Disturbance and Monitoring Sub-team
Date: Tuesday, October 22, 2013 3:50:30 PM
Attachments: Fed Fam - Monitoring and Disturbance Presentation 2013_10.pptx

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Good talking to you Lief,
Don't hesitate to call or e-mail if you have any questions.

Attached is our powerpoint from the federal family.

Thanks,
Frank

On Tue, Oct 22, 2013 at 2:02 PM, Wiechman, Lief <lief_wiechman@fws.gov> wrote:

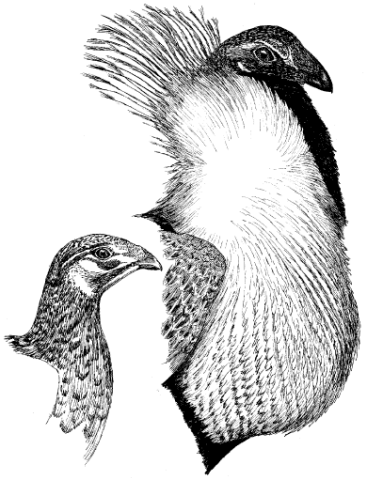
> Hi Frank,
>
> Glad to be aboard! Now I've just got to get re-caught up...
> I read the framework once... I'm available until 400p today, and most of tomorrow before 200p if you want to chat (307.772.2374 ext 236).
> I'll plan on making the Thursday(?) calls and I can be available in December as well.
>
> Talk with you soon,
>
> LW
>
> *Lief Wiechman*
> **Sage-Grouse Energy Biologist**
> **U.S. Fish & Wildlife Service**
> **Mountain-Prairie Region**
> **5353 Yellowstone Road**
> **Cheyenne, WY 82009**
> **307.772.2374**
> **lief_wiechman@fws.gov**
>
> On Tue, Oct 22, 2013 at 8:37 AM, Quamen, Frank <fquamen@blm.gov> wrote:
>
> > Hi Lief,
> > Hope you are doing well. Congratulations on your transition to the FWS!
> >
> > Pat Deibert mentioned that you will be representing the FWS on our GRSG Disturbance & Monitoring Sub-team. This is the BLM/USFS/FWS group that is developing how the BLM/USFS will be monitoring habitat (vegetation), habitat (disturbance), implementation, and effectiveness monitoring in conjunction with population monitoring information from the states. We are hoping that having a FWS rep on the team will ensure that we are getting your agency the information that it needs.

> I would like to brief on what this sub-team has developed thus far. Attached is our Final Draft Monitoring Framework that outlines our basic approach. The sub-team has been meeting weekly the past couple months to develop more firm methodology and we would like FWS input. Our weekly calls are on Thursdays at 10 Mountain. Additionally, we will be meeting in Denver the first week of December to finalize this framework.
>
> Please let me know if you can be available for the weekly calls as well as the December meeting. Also, please let me know your availability this week so I can brief you on where we are. It would be helpful if you could read through this draft framework before we meet.
>
> Thank you, and I look forward to working with you again!
>
> Frank
> --
> Frank Quamen, Wildlife Biologist
> BLM National Operations Center
> Denver Federal Center Building 50
> 303-236-6310

--
Frank Quamen, Wildlife Biologist
BLM National Operations Center
Denver Federal Center Building 50
303-236-6310

Greater Sage-grouse Monitoring and Disturbance

Gordon Toevs
Frank Quamen
Vicki Herren



What we will be discussing today…

- The Monitoring and Disturbance **Sub-team**
- Review of the **2 scales** of monitoring
  1. Broad and Mid
  2. Fine and Site
- Review of the **5 types** of monitoring
  1. Vegetation
  2. Disturbance
  3. Implementation
  4. Populations
  5. Effectiveness
- **Status and Path Forward**

Greater Sage-grouse Monitoring and Disturbance Sub-team

- Gordon Toevs (WO)
- Duane Dippon (WO)
- John Carlson (MT)
- Jenny Morton (WY)
- Robin Sell (CO)
- Tom Rinkes (ID)
- Renee Chi (UT)
- Joe Tague (NV)
- Glenn Frederick (OR)
- Mike Pellant (GBRI)
- Doug Havlina (NIFC)
- Vicki Herren (NOC)
- Frank Quamen (NOC)
- David Wood (NOC)
- Matt Bobo (NOC)
- Sherm Karl (NOC)
- Lara Juliusson (NOC)
- Emily Kachergis (NOC)
- Robert Skorkowsky (USFS)
- Dalinda Damm (USFS)
- Pam Bode (USFS)
- Lara Oles (USFS)
- Lief Wiechman (FWS)

Science Based

- Habitat Assessment Framework
- WAFWA, FWS, BLM, USFS, USGS, NRCS, Academia
- A Multi-Scale Assessment Tool
  - Broad Scale
  - Mid-scale
  - Fine Scale
  - Site Scale

Sage-Grouse Habitat Assessment Framework

Multi-scale Habitat Assessment Tool

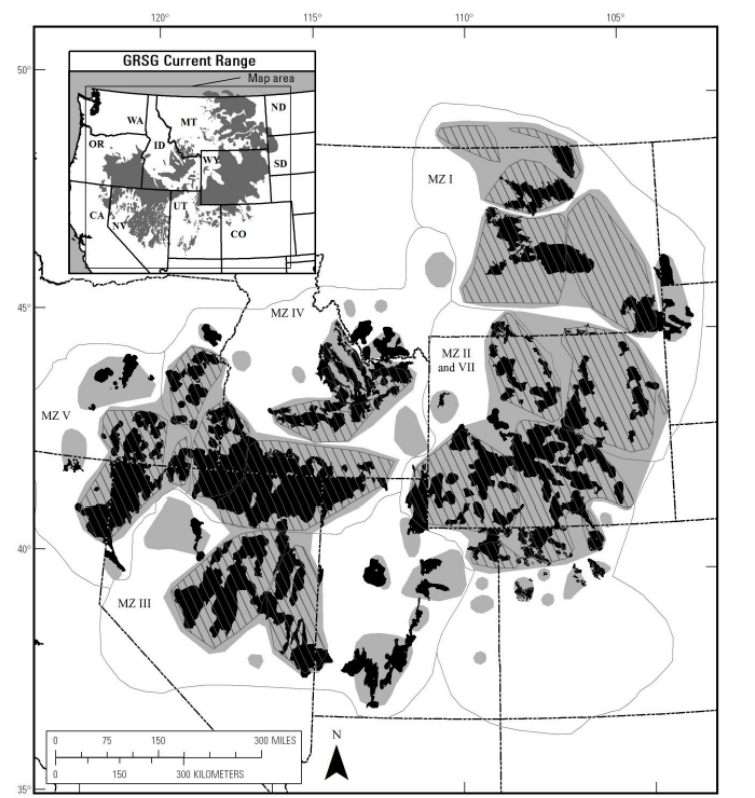
August 2010

Habitat Assessment Framework

Two Scales for Monitoring LUPs

1. Broad & Mid-Scales

- Range of the Species
- WAFWA Mgmt Zones (floristic provinces)
- Populations
- Subpopulations
- Priority Areas for Conservation (PACs)



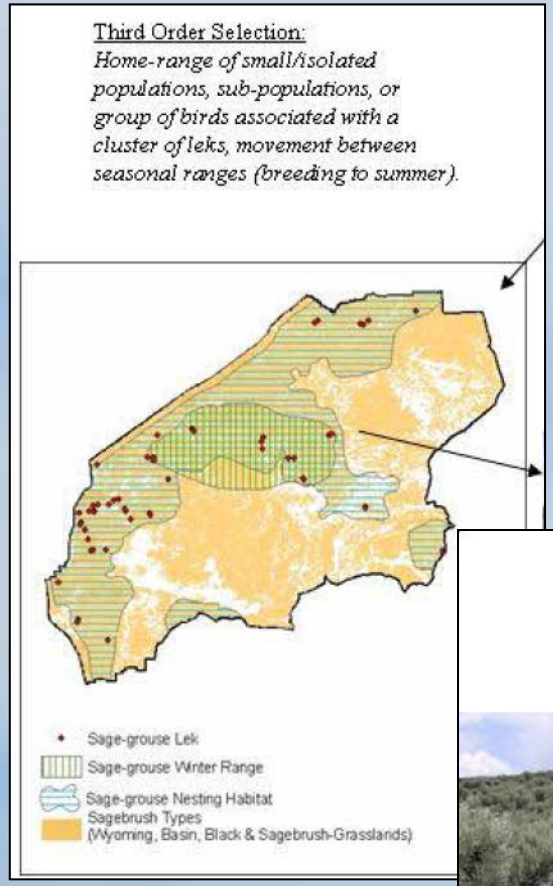
GRSG PACs, Subpopulations and Populations

LEGEND

- Subpopulations
- COT PACs
- Populations

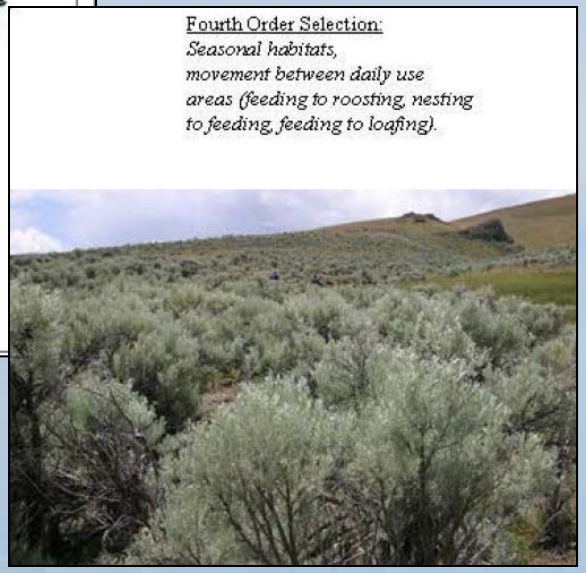
Sources:
Current Range: Schroeder et al., 2004
Populations: Connelly et al., 2004
Subpopulations: Connelly et al., 2004
PACs: USFWS COT Report, 2013

Two Scales for Monitoring LUPs



2. **Fine & Site Scales**

- Home Range
- Seasonal Habitat
- Daily Use Areas
- Site Characteristics



BLM Assessment, Inventory, and Monitoring Strategy (AIM)

- BLM Monitoring Framework
- Monitor Land Health
- Effectiveness of RMP
- Integration with Remote Imagery
  - Vegetation mapping
  - Early detection
  - Leverage site data
- Effectiveness of Management Actions (Mitigation Measures)
- Adaptive Management

I. Habitat (Vegetation) Monitoring

- Tracking and documenting the current geographic extent of sagebrush vegetation
- Mid-scale (population and sub-population)
- Fine Scale (seasonal attributes and condition)
- Site Scale (use specific attributes, e.g., nest
- Imagery trained and validated with:
  - Landscape Monitoring Data
  - Grass-shrub mapping data
  - State and field office core indicator data

Vegetation Monitoring

- Indicators at the Mid-scale
  - Patch size
    - How large are the sage brush areas within the area of interest?
  - Abundance
    - How many patches are there?
  - Edge effects
    - Are there physical conditions (e.g., perches. roads) that reduce the effective area of the patches?
  - Connectivity
    - Are there physical (e.g., roads, powerlines) or biological barriers (e.g. pinyon/ juniper, agriculture) barriers between the patches?
  - Data
    - Landscape Monitoring Framework
    - Grass-shrub Stewardship

Vegetation Monitoring

- Indicators at the Fine and Site Scale
  - Sagebrush community condition and trend, e.g., cover, composition, invasive species)
  - Site specific, seasonal attributes , e.g. nesting, winter
  - Data
    - State and field office core indicator data
    - Site specific, seasonal attribute inventory

II. Habitat (Disturbance) Monitoring

- Process of tracking and documenting the relative extent of threats to sagebrush (identified in Factor A of the listing decision)

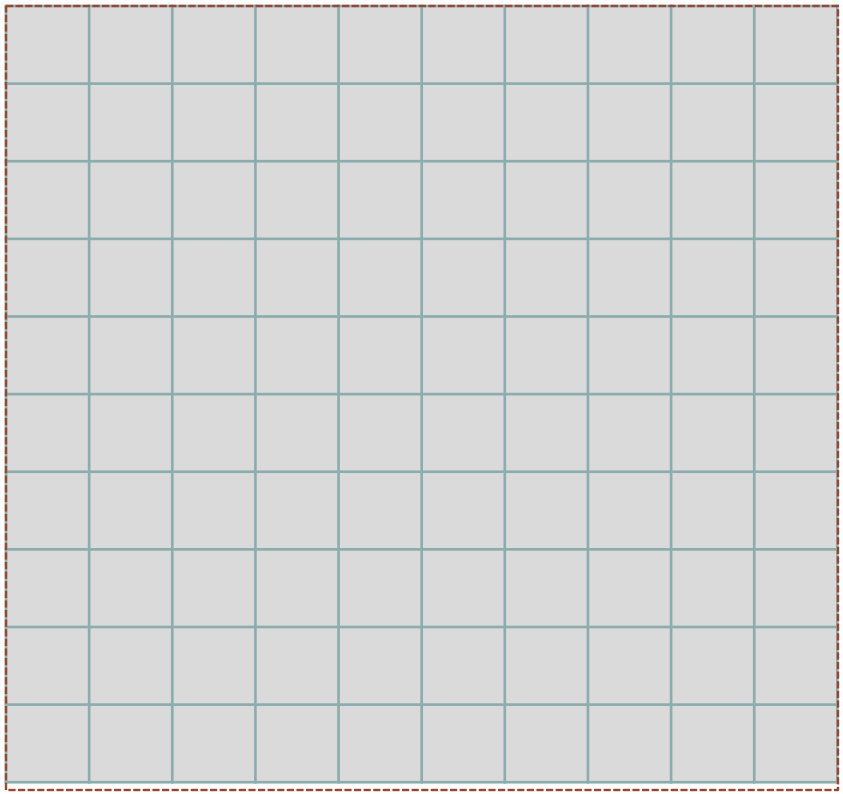
- WAFWA management zone, Mid-Scale (population and sub-population), Priority Areas for Conservation (PACs)

Habitat (Disturbance) Monitoring

Three Measures for Assessing Disturbance:

1. Percent of sagebrush per unit area
2. Percent of non-habitat (human footprint) per unit area
3. Number of energy facilities and mining locations per unit area (density)

When measuring disturbance or setting thresholds, you need some unit to measure these *against*.



Example of a unit

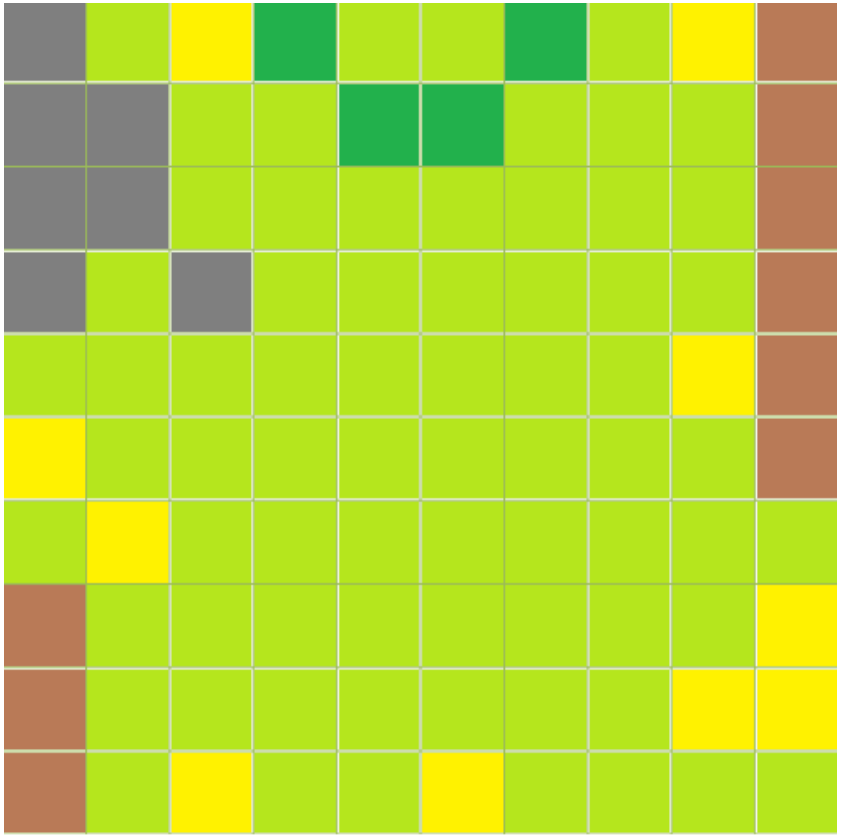
- Our “Landscape” or “Focal Area” could be Priority Habitat/Priority Management Area, Priority Area for Conservation (PAC), a GRSG sub-population, etc.

Disturbance Data - % Sagebrush

1. Sagebrush
2. Areas with biotic potential for sagebrush
3. Agriculture
4. Urbanization
5. Habitat Treatments
6. Wildfire
7. Invasive Plants
8. Conifer expansion

Geospatial Data Layer	Percent of Sagebrush	Percent of Non-habitat (Human Footprint)	Number of Energy Facilities
Sagebrush	X		
Areas with biotic potential for sagebrush	X		
Agriculture	X		
Urbanization	X		
Habitat treatments	X		
Wildfire	X		
Invasive plants	X		
Conifer encroachment	X		
Energy (oil and gas wells and development facilities)		X	X
Energy (coal mines)		X	X
Energy (wind towers)		X	X
Energy (solar fields)		X	X
Energy (geothermal)		X	X
Mining (Non-energy active locatable, leasable, and salable developments)		X	
Infrastructure (roads)		X	
Infrastructure (railroads)		X	
Infrastructure (power lines)		X	
Infrastructure (communication towers)		X	
Infrastructure (other vertical structures)		X	
Other developed rights-of-way		X	

Disturbance Measure #1: % of sagebrush per unit area



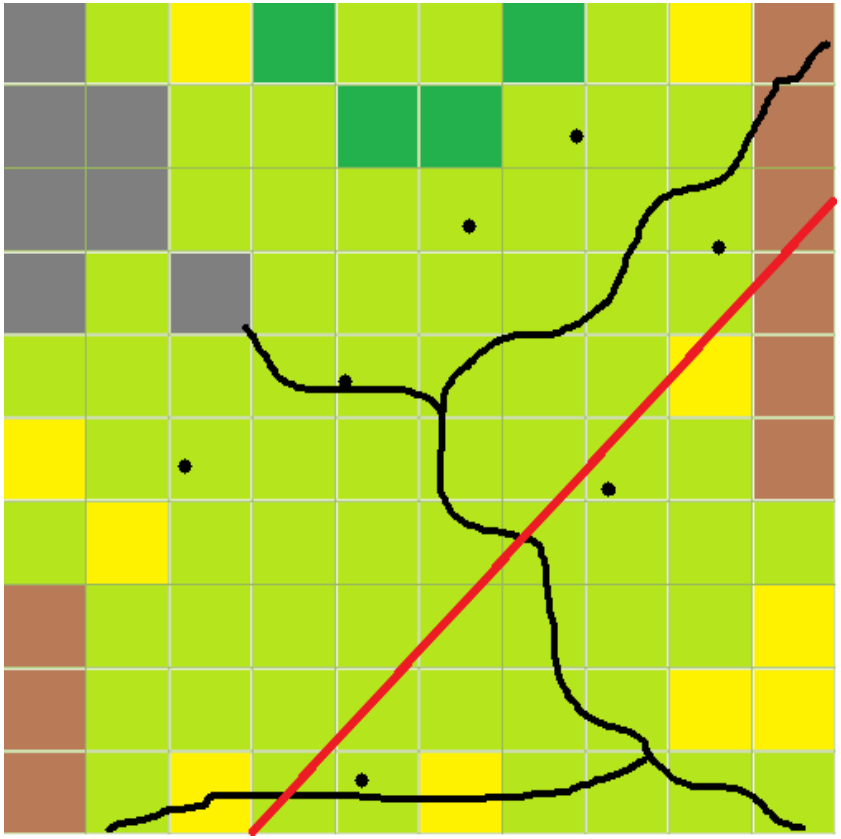
- Here is the land cover in the Landscape.
- In the Landscape there is a certain percentage of sagebrush. (In this case it is 70%).

Disturbance Data - % Human Footprint

1. Energy (oil and gas wells and development facilities)
2. Energy (coal mines)
3. Energy (wind towers)
4. Energy (solar fields)
5. Energy (geothermal)
6. Mining (non-energy active locatables, leasables, salables)
7. Infrastructure (railroads)
8. Infrastructure (power lines)
9. Infrastructure (communication towers)
10. Infrastructure (other vertical structures)
11. Other developed rights-of-way

Geospatial Data Layer	Percent of Sagebrush	Percent of Non-habitat (Human Footprint)	Number of Energy Facilities
Sagebrush	X		
Areas with biotic potential for sagebrush	X		
Agriculture	X		
Urbanization	X		
Habitat treatments	X		
Wildfire	X		
Invasive plants	X		
Conifer encroachment	X		
Energy (oil and gas wells and development facilities)		X	X
Energy (coal mines)		X	X
Energy (wind towers)		X	X
Energy (solar fields)		X	X
Energy (geothermal)		X	X
Mining (Non-energy active locatable, leasable, and salable developments)		X	
Infrastructure (roads)		X	
Infrastructure (railroads)		X	
Infrastructure (power lines)		X	
Infrastructure (communication towers)		X	
Infrastructure (other vertical structures)		X	
Other developed rights-of-way		X	

Disturbance Measure #2: % of human footprint per unit area



Transmission Line

Road

Oil Well

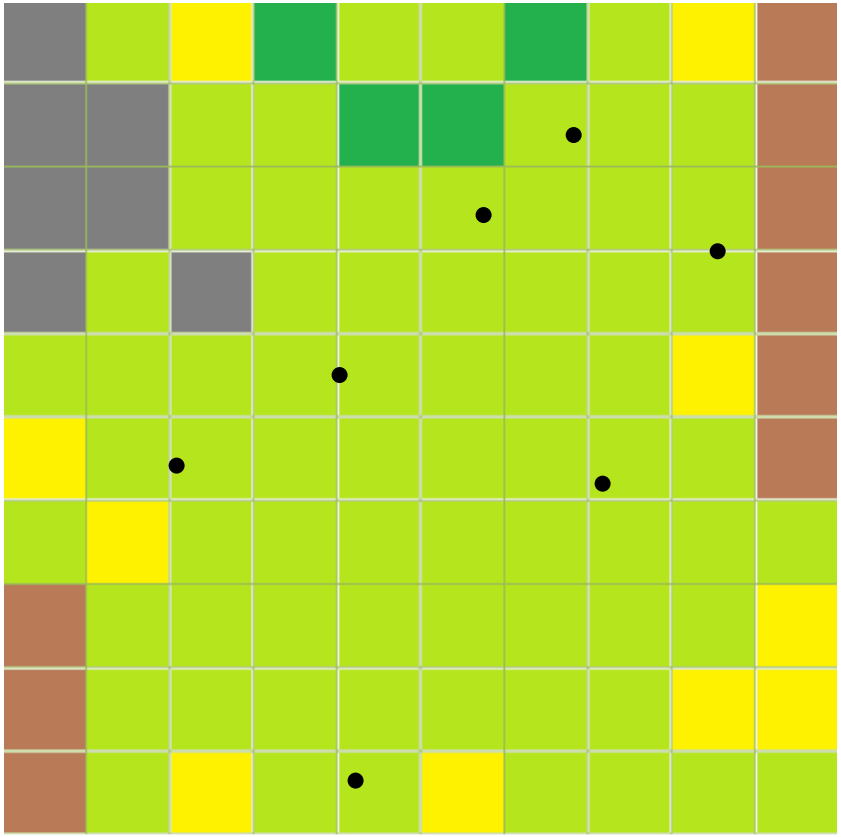
- Within the Landscape there are discrete anthropogenic disturbances (human footprints).
- The percentage in this example is 3% of the Landscape.
- The density in this example is .07 wells per square mile.

Disturbance Data - # Energy Facilities

1. Energy (oil and gas wells and development facilities)
2. Energy (coal mines)
3. Energy (wind towers)
4. Energy (solar fields)
5. Energy (geothermal)

Geospatial Data Layer	Percent of Sagebrush	Percent of Non-habitat (Human Footprint)	Number of Energy Facilities
Sagebrush	X		
Areas with biotic potential for sagebrush	X		
Agriculture	X		
Urbanization	X		
Habitat treatments	X		
Wildfire	X		
Invasive plants	X		
Conifer encroachment	X		
Energy (oil and gas wells and development facilities)		X	X
Energy (coal mines)		X	X
Energy (wind towers)		X	X
Energy (solar fields)		X	X
Energy (geothermal)		X	X
Mining (Non-energy active locatable, leasable, and salable developments)		X	
Infrastructure (roads)		X	
Infrastructure (railroads)		X	
Infrastructure (power lines)		X	
Infrastructure (communication towers)		X	
Infrastructure (other vertical structures)		X	
Other developed rights-of-way		X	

Disturbance Measure #3: Number of energy facilities and mining locations per unit area (density)

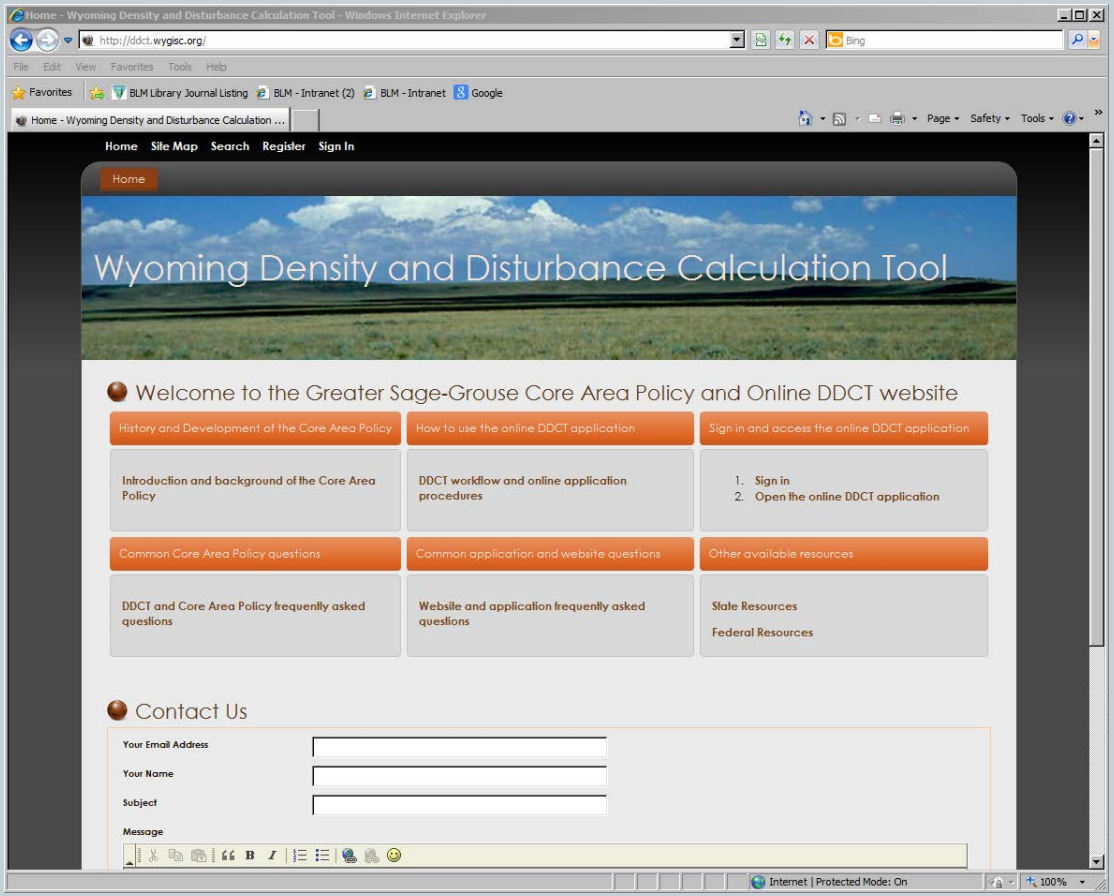


Oil Well

- Within the Landscape there energy facilities and mining locations.
- The density in this example is X wells per square mile.

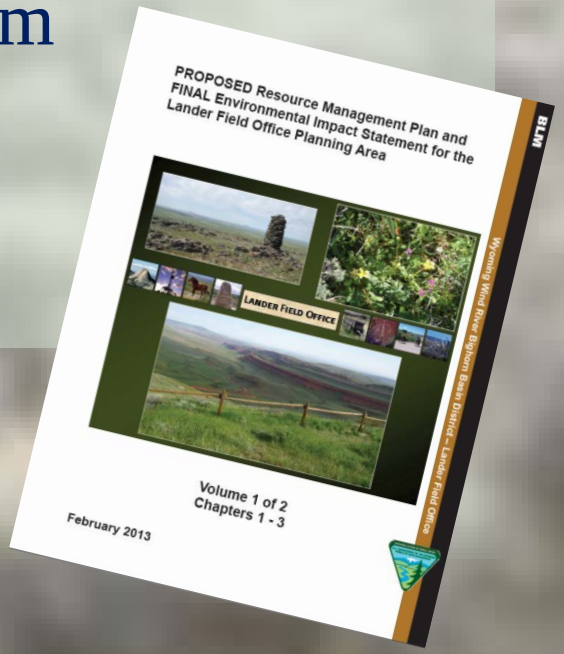
Project (Fine & Site Scale Disturbance)

- The Monitoring Framework allows for flexibility of using tools that you may have for calculating project-level disturbance
- (e.g. WY DDCT)



III. Implementation Monitoring

- A process of tracking and documenting the implementation of land use plan decisions
- Tracks the number and type of actions for each decision for each resource program
- Commitment to annual reporting to full implementation of LUP



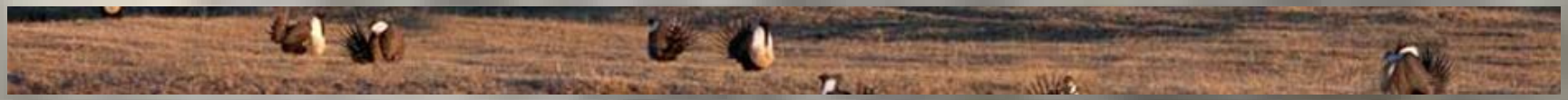
Implementation Monitoring

- Tracking and reporting will require:
  - Field Office and State Office level data input,
  - National data standardization, and
  - Data stewardship

- Initial efforts to determine options :
  - Add into the Implementation Workbook
  - Develop an implementation tracking geospatial database
  - Directly link to the FWS Conservation Effects Database

IV. Population Monitoring

- Process of tracking and documenting the demographics of greater sage-grouse
- Data collected by state wildlife agencies
- Population data will supplement Effectiveness Monitoring



Population Monitoring

- An amendment to the MOU is being developed to standardize delivery of population data between partners
- Draft due this fall, then review by RISCT and each state agency
- Will be signed by WAFWA and several federal agencies

V. Effectiveness Monitoring

- Process of tracking and documenting the relationship among the disturbance, implementation actions, and habitat condition.
  - Use population data when applicable
- Meeting objectives in the LUP?
- Are management decisions effective in reducing threats?
- Are vegetation projects meeting habitat objectives?

Effectiveness Monitoring

Vegetation

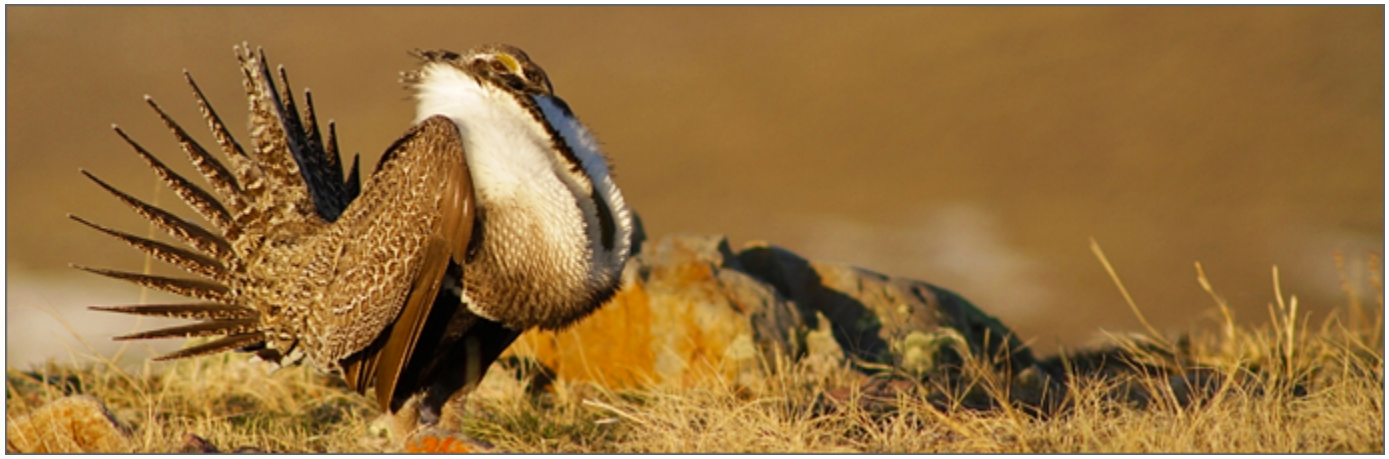
Disturbance

Implementation

Population

Effectiveness

Recommended Path Forward

1. Develop the disturbance and monitoring work flows and methods in order to create the <u>Final GRSG Monitoring Framework</u>
2. Confirm Monitoring & Disturbance Sub-team representation from each BLM state and FS to attend the monitoring framework workshop in Denver in December
3. Management support for the completion of this framework
4. Work with WAFWA to define a standardized process for population monitoring and firm definitions of PAC boundaries

Questions & Discussion