

A proposed framework for identifying, documenting, and mapping concentrations, or “hotspots,” of potential threats to the Greater sage-grouse (*Centrocercus urophasianus*) during the 2015 status review

Drafted by the Potential Threats Concentration Team - July 1, 2014

Purpose

This document provides a framework to identify, document, and map concentrations of potential threats to the Greater sage-grouse during the 2015 status review. Our previous status review identified that potential threats may operate equally across the entire range of the Greater sage-grouse, or they may be concentrated within specific geographic areas. Due to this uncertainty, this framework will be used to identify, refine, and map geographic “areas of interest” where threats to the Greater sage-grouse may be concentrated. By identifying “hotspots” of threats to the Greater sage-grouse, the framework helps us organize the spatially explicit data and maps used by biologists and decision-makers during all stages of the status review.

Benefits to the Status Review

Documenting and considering the distribution of threats across a landscape or a species' range is an integral part of the status review process. The threats concentration framework does not duplicate this effort, but is an embedded process within the overall status review to capture and improve information regarding the concentration and spatial distribution of threats. Use of this framework will ensure that the Greater sage-grouse status review, species report will provide a full description of the threats in a manner that allows the biologists and decision-makers to evaluate the spatial distribution and concentration of these threats across the range of the species.

Collecting, cataloguing, and mapping the threats to the Greater sage-grouse during the status review in the manner described in this framework will facilitate analyses need to determine the listing status of the species, including an SPR analysis, if needed.

Disclaimer

Geographic areas of interest identified through this framework are not necessarily significant under the ESA or the Service's policies and regulations.

The Framework

Potential threats to the Greater sage-grouse may occur range-wide, or they may be localized, isolated, or concentrated within a particular area. This framework will be used to identify, document, and map concentrations of threats to the Greater sage-grouse for the status review. The framework is one component of the status review process, linking efforts from the multiple status review teams (e.g., Data Call, DPS, GIS, and Modeling) to ensure that differences in the magnitude, scope, and geographic

Comment [GMS1]: Is this a draft framework, or a proposed, draft farmewor?

Comment [GMS2]: I don't understand why we need a separate framework for identifying potential concentrations of threats. Why don't the PACs identifying spatially explicit data and maps.

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Comment [GMS3]: This is redundant with the previous sentence. If someone believes we need to mention SPR, then I suggest adding the following (or something like it) to the end of the previous sentence:

“, including an evaluation under the Service's Significant Portion of the Range (SPR) policy if we find Greater sage-grouse listing is not warranted throughout its range.”

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Comment [KNorman4]: May be “lightening” or other term

Comment [GMS5]: This paragraph describes the how, not the benefits.

Comment [GMS6]: This is redundant with the last sentence of the first paragraph in this section.

Deleted: During its initial phase, the framework compiles and maps available data regarding threat concentrations from the existing literature, status reviews, and reports, such as the Conservation Objectives Team (COT) final report (February 2013). These early maps of potential threat concentrations will inform and help direct the modeling efforts. The framework then works closely with the modeling and data call teams to further investigate, refine, and map the spatial distribution of potential threats. Through a feedback loop, the framework identifies data needs regarding threats concentrations, and works with the other teams to improve the resolution of both the spatial data and models at appropriate scales. Finally, by visually illustrating gradients of potential threats, the framework's final “hotspot” maps will provide valuable information to the status review.

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If needed, framework products would also be readily available to Service decision makers who may need to quickly evaluate the status of the Greater sage-grouse and who may need

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extent of threats are documented in manner that facilitates analyses under the ESA, implementing regulations, and applicable policies.

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The first step is to compile and maps available data regarding threat concentrations from the existing literature, status reviews, and reports, such as the Conservation Objectives Team (COT) final report (February 2013). These early maps of threat concentrations will inform and help direct the modeling efforts. The framework will then be used by the modeling and data call teams to further investigate, refine, and map the spatial distribution of threats. Through a feedback loop, the framework will be used to identify data needs regarding threats concentrations, and will be used by other teams to improve the resolution of both the spatial data and models at appropriate scales. Finally, by visually illustrating gradients of threats, the "hotspot" maps generated through this process will provide spatial threat information for use in the status review.

Comment [KNorman8]: May be "lightening" or other term

The threats concentration framework has three (3) phases:

- **Phase 1 – First Product:** In the first stage, we identify and compile areas where threat concentrations are well-documented, and then map these as "areas of interest." This first product will be used to inform modeling efforts.
- **Phase 2 - Refine:** During the early phases of the status review (e.g., data call and collection), the framework will assist the status review teams collect and document information regarding potential concentrations and the spatial distribution of threats. Phase 2 uses the maps generated in Phase 1 to prioritize data collection, develop and improve models, and refine our understanding of threats.
- **Phase 3 – Final Product:** After collecting data and refining models we will synthesize the information and produce revised maps of any "areas of interest" or "hotspots" where threats may be concentrated.

FRAMEWORK QUESTION:
 Where are the potential threats?
 Are any potential threats worse, or more concentrated, in any one area?

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FIRST PRODUCTS:
Draft Maps of Potential Threats
 Using data from 2010, these early maps will identify well-documented "areas of interest" and roughly map any concentrations of potential threats.

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STATUS REVIEW:

- Collects and reviews new information,
- Uses the First Product maps to prioritize data collection, develop models, and refine our understanding of potential threats.

REFINE

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FINAL PRODUCT:
Final Threat Concentration Maps
 Maps of "areas of interest" with high concentrations of potential threats.

DECISION MAKERS

Phase 1: First Product

The threats concentration team reviewed the existing literature, the March 23, 2010, finding, the COT Report (2013), and other sources of information to compile already available, well-documented information regarding concentrations of threats.

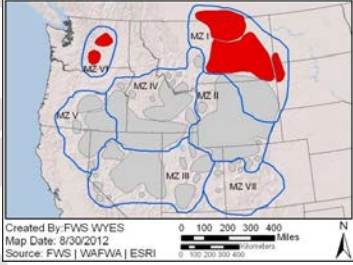
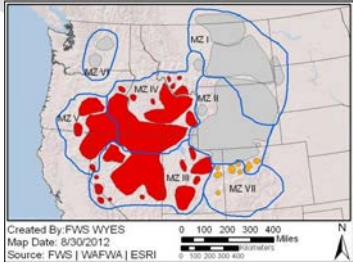
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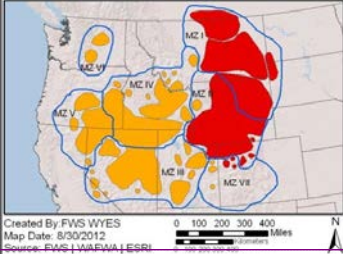
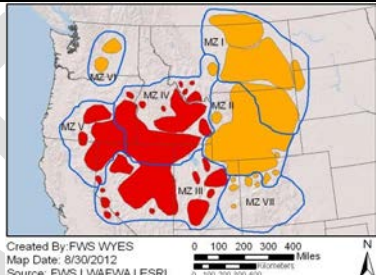
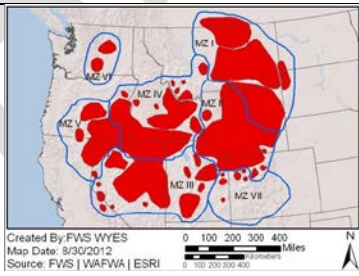
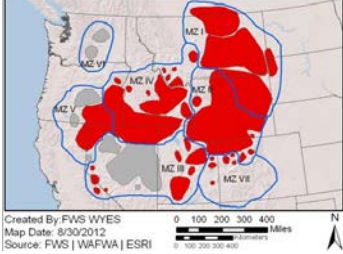
Table 1 summarizes information and available maps regarding the concentration of threats to the Greater sage-grouse from the COT Report (2013) and the Near-Term Greater-Sage Grouse Conservation Action Plan (COT Team 2012). The USGS' *Summary of Science* open-file report (Manier *et al.* 2013) provides additional detail and resolution regarding the spatial distribution and concentration of potential threats.

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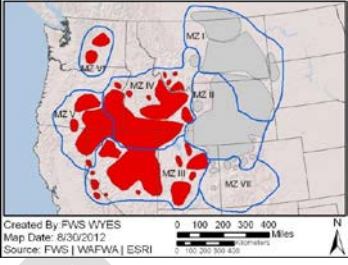
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Table 1. Potential threats and potential concentrations as documented in COT Report (2013) and the Conservation Action Plan (COT Team 2012).

| Potential Threat | Rangewide or Select Concentrations? | Potential Areas of Interest | | | Available Maps | Citations |
|-------------------------|---|-----------------------------|-----------------|------|--|--------------------------------|
| | | States | MZs | PACs | | |
| Agricultural Conversion | Select | MT, ND, SD, WA | I, VI | |  | COT Report 2013; COT Team 2012 |
| Conifer Encroachment | Primarily in the west, but localized elsewhere. | CA, CO, ID, NV, OR, UT | III, IV, V, VII | |  | COT Report 2013; COT Team 2012 |

| Potential Threat | Rangewide or Select Concentrations? | Potential Areas of Interest | | | Available Maps | Citations |
|---|---|-----------------------------|-----------------------------------|--|--|--------------------------------|
| Energy Development | Rangewide (however, different types of energy development are occurring regionally and threats will be assessed according to available data) | All* | All* | |  | COT Report 2013; COT Team 2012 |
| Invasive Plants (Exotic annual grasses) | West | CA, ID, NV, OR, UT, WA | III, IV, V, VI | |  | COT Report 2013; COT Team 2012 |
| Infrastructure | Rangewide | All | All | |  | COT Report 2013; COT Team 2012 |
| Urbanization | Rangewide, but localized | All | I, II, III, IV, VII, and Bi-State | |  | COT Report 2013; COT Team 2012 |

Comment [KNorman9]: Kevin Doherty mentioned that it might be good to caveat this that although energy development is occurring rangewide, different energy development threats may be present in different areas (e.g. oil vs gas vs solar vs transmission) – Red is more oil and gas ;orange might be potential wind development. 2013 assessment (USGS)

| Potential Threat | Rangewide or Select Concentrations? | Potential Areas of Interest | | | Available Maps | Citations |
|------------------------|---|-----------------------------|---------------------------------|--|--|--------------------------------|
| Wildfire | West | CA, ID, NV, OR, UT, WA | III, IV, V, VI | |  | COT Report 2013; COT Team 2012 |
| Small population sizes | Rangewide, with potential local areas of interest | All | I, II, III, IV, V, VI, VII | | Maps unavailable at this time. | COT Report 2013; COT Team 2012 |
| Sagebrush Removal | Select Concentrations | Low: ND, SD, WY, OR, ID | Low: I, II, III, IV, VI, VII | | Maps unavailable at this time. | COT Report 2013; COT Team 2012 |
| Mining | Select Concentrations | All | I, II, III, IV, V | | Maps unavailable at this time. | COT Report 2013; COT Team 2012 |
| Grazing | Select Concentrations | All | I, II, Some III, IV, V, VI, VII | | Maps unavailable at this time. | COT Report 2013; COT Team 2012 |

| Potential Threat | Range-wide or Select Concentrations? | Potential Areas of Interest | | | Available Maps | Citations |
|---------------------|--------------------------------------|-----------------------------|--|--|--------------------------------|--------------------------------|
| Free-Roaming Equids | Select Concentrations | All | Some II, III, IV, V, and VI. All VII | | Maps unavailable at this time. | COT Report 2013; COT Team 2012 |
| Recreation | Select Concentrations | All | I, II, III, Low IV, Some V, VI, No VII | | Maps unavailable at this time. | COT Report 2013; COT Team 2012 |

References Cited:

COT Report. U.S. Fish and Wildlife Service. 2013. Greater Sage-grouse (*Centrocercus urophasianus*) Conservation Objectives: Final Report. U.S. Fish and Wildlife Service, Denver, CO. February 2013.

COT Team. Range-wide Interagency Sage-Grouse Conservation Team. 2012. Near-term Greater sage-grouse conservation action plan. Presented to the Greater sage-grouse Executive Oversight Committee and the Sage-grouse Task Force. Dated September 11, 2012. 27 pp.

Manier, D.J., Wood, D.J.A., Bowen, Z.H., Donovan, R.M., Holloran, M.J., Juliusson, L.M., Mayne, K.S., Oyler-McCance, S.J., Quamen, F.R., Saher, D.J., and Titolo, A.J., 2013, Summary of science, activities, programs, and policies that influence the rangewide conservation of Greater Sage-Grouse (*Centrocercus urophasianus*): U.S. Geological Survey Open-File Report 2013–1098, 170 p., <http://pubs.usgs.gov/of/2013/1098/>.