

SPECIES REPORT:

- How do we produce a concise species report?
 - (ACTION – DD will work on consolidating threat chapters, emphasizing Tier 1 and 2 threats; revisions will be completed prior to SLT meeting 4/20)
 - All changes will be documented using TrackChanges
 - Eliminate/reduce introductions from threats chapters
 - Reduce the habitat threats section (e.g., Factor A analysis) and reference appendices
 - Remove compounding effects section from individual chapters and summarize in the synergistic impacts/threat interactions section; Are we still pursuing the synergy diagram?
 - Summarize cumulative threats by MZ using a series of tables and maps versus narrative
 - Remove lit cited from individual chapters and place at end of document or include as an appendix by chapter
- How do we get the CED information from chapter authors? Chapter authors will provide the SLT a summary of data pulled from the CED and review of state plans as separate documents that the SLT will incorporate into the species report.
 - (ACTION –SLT will need to coordinate this assignment with the chapter authors; JD will draft instructions for the authors; LW will continue to coordinate with the GIS team to pull spatial data associated with conservation actions, compile, and calculate statistics and associated metrics – we need a timeline of when the GIS team will be providing the information in tabular form to chapter authors; the SLT will need to coordinate with CH to determine the timeline for state plan review)
- Dawn will coordinate with Amy to ensure all additions/changes to the species report are made by Friday 4/10; Jesse spoke with Jeff Dillon and the Conifer chapter will be submitted on or before 4/10.

PAC LAYERS (IPA in NV):

- Which layer will we use to calculate "in-PAC" and "out-of-PAC", primarily for the analysis of BLM/FS plans and changes in land use decisions?
 - (ACTION – SA will track down info on when the maps for NV will be complete; SA will confirm what that State's definition of PAC will be)
 - (ACTION – LW is waiting to hear back from NDOW to see if the State's Core designations are the same as BLM's Core/PAC designations)

INDIRECT EFFECTS – AREA OF INFLUENCE:**General**

ALL BUFFER DISTANCE BELOW ARE RADIUS TO BE PLACED ON THE DISTURBANCE FEATURE ITSELF. IF WE DO NOT HAVE SPATIAL LAYERS FOR THE FOOTPRINT ITSELF, BUT RATHER A BUFFERED DIRECT DISTURBANCE FOOTPRINT, WE WILL ADJUST THE BUFFER DISTANCE AS SUCH TO ACCOUNT FOR THE DIRECT DISTURBANCE BUFFER DISTANCE AS TO NOT OVERCALCULATE INDIRECT AREAS OF INFLUENCE (AOI)

Habitat Conversion to Agriculture

- most literature focuses on predator dispersal

- Aldridge – brood occurrence relative to agricultural activities, but no cut off of distance between occur and no occur.
- spatial arrangements/edges may be the bigger issue – more sagebrush is better
- need to tease apart habitat quality and loss vs. impacts from the threat itself
- Need to parse out by season, as older broods will use areas of agriculture and center pivot (or irrigated) areas
- But if ag is not irrigated then probably is no benefit or return to the agricultural area.

Draft Recommendation:

- short-term buffer of 1000 m during nesting period only; likely an over-estimated because of brood use of irrigated agriculture.
- Maybe only apply to non-irrigated agriculture - need to ask GIS if they can even parse out the types of agriculture (irrigated vs non-irrigated).
 - ACTION – Steve will review the LEPC literature to assess if applicable to sagr, and reach out to P. Coates to see if he has any analyses that may inform.
 - ACTION – Lief will reach out to GIS team to see if the data can be separated between irrigated and non-irrigated.
- **DECISION:**
EXPLAIN IN TEXT – DO NOT APPLY BUFFER – GIVEN VARIABILITY OF DIFFERENT CROPS, DIFFICULTY IN DETERMINING IRRIGATED VS. NONIRRIGATED, AND GROUSE USING AGRICULTURE AREAS IN DIFFERENT WAYS IN DIFFERENT SEASONS, WE WILL NOT QUANTIFY THE INDIRECT AOI RELATED TO EXISTING AGRICULTURE ON THE LANDSCAPE.

Urbanization

- may be covered with roads, powerlines, predators and human activities.
- Need to make sure are consistent with the GUSG building 4(d) rule. How define urbanization?
- BER used city boundaries. Developed lands (Knick and Johnson) may be more than urban. (reference spatial layer under buildings)
- May lump buildings into this after checking buildings.
- may be buildings that are outside of urban/ex-urban areas – primarily associated with energy development.
 - ACTION – Circle back to this after examination of spatial layer.
- **DECISION:**
YES – SEPARATE URBAN/EXURBAN AREAS FROM ROADS, AND APPLY 3.0-KM BUFFER TO QUANTIFY INDIRECT AREA OF INFLUENCE RELATED TO INCREASED PREDATOR (CORVID) DENSITIES NEAR URBAN/SUBURBAN AREAS (BUI ET AL. 2010)

Buildings

- Human Activity – human presence – can't be quantified in itself but be captured with infrastructure to support humans (roads, powerlines, buildings)
- BLM discussion – human activity resulted in habitat degradation – used a spatial layer – need to verify what this covered. – need to look at the developed lands spatial layer and see if that is an appropriate surrogate for buildings
- Bui citation for urbanization – 3 km.
 - ACTION – Also need to examine Aldridge et al 2012.
- **DECISION:**

YES – HOWEVER, THIS WILL BE ENVELOPED AND CAPTURED WITH THE URBAN/EXURBAN BUFFER IDENTIFIED ABOVE.

Predators

- Literature reported distances for ravens vs. transmission lines and ravens vs. roads. Rest of literature says sagr avoid areas of high predator density but we lack the information to quantify that (brood locations, amount of edge).
- most mammal literature was related to WUI discussions, or presented home ranges
- Raven literature (Boarman and Heinrich) – small sample sizes and used known roost locations.
- Bui – said that increase in predators out to 3 km from urban areas.
- review of predator literature indicates that corvids contribute to approx. 50% of the nest mortality so us the corvid literature to estimate buffer.
- 2 to 3 km buffer in literatures are averages. May be larger in areas that are highly fragmented, less in areas with uninterrupted sagebrush. So if use average will conservatively capture the potential impact in areas most likely to support grouse.
- 2 to 3 km buffer based on the raven literature. Not using Boarman and Heinrich due to small sample sizes, different habitat type, and based on roost sites (and we don't want to assume that all structures are roost sites).
- Use BBS data – ask GIS to overlay data over sagr range (maybe look at the data from 20 years ago and then now to look at shift over time); also concentration of threat.
- Falcon – Gondor report – measured survival parameters for sagr and habitat selection.
 - **ACTION – Steve will check on the information and feed back to the SLT for consideration (re: Falcon to Gondor)**

Tentative recommendation

- 2.13km (from roads)
- 2.2 km (from power lines)
- 3 km (from urban)
- **DECISION:**
EXPLAIN IN TEXT – DO NOT APPLY BUFFER – GIVEN THE LACK OF SPATIAL INFORMATION RELATED TO ROOST SITES AND DEN SITES, ETC. WE WILL NOT APPLY A BUFFER SPECIFIC TO PREDATOR LOCATION. HOWEVER, WE WILL USE DISTANCE FROM PREDATOR LITERATURE (LISTED ABOVE) TO HELP INFORM BUFFER DISTANCE FOR CERTAIN ANTHROPOGENIC FEATURES THAT ACT AS PREDATOR SUBSIDIES IN SAGE-GROUSE RANGE.

Roads

- Break into 3 categories of use
- Need to consider noise – roads with consistent traffic – be above 10 Dba out to 3 km of road
- Holloran/Lyon/Anderson papers used 3 km as a breaking point for study design – effects could have extended out further.
- Mechanism of impacts from roads unclear (could be the road itself, or associated noise, predators, habitat change from invasive species)
- Need to look at Forman and Alexander for potential impacts of invasives (but not likely to help with buffers).
- Federal and State highways – if use 3 km, should capture the raven/predator distance

- pick the largest buffer but state what other buffers that may capture (like the noise buffer captures the raven distance)
- Seasonal only since the recommendations are based on breeding data (but so is our abundance and distribution layer). But noise will be impacting the reproductive season so impacts will affect all birds.
- Need to understand how GIS is looking at roads – Interstate, major roads, surface streets (BER report definitions) – should include crown and ditch roads regardless of the surface.
 - **ACTION – Lief – will check with our GIS folks to see what they are using.**
- not including two –tracks – low use, low volume and not likely to impact to grouse beyond initial disturbance (likely minimal effect on nesting success, etc).

Tentative Recommendation:

- **DECISION:**
 - YES – APPLY 7.5-KM BUFFER AROUND INTERSTATES (CONNELLY ET AL. 2004)**
- **YES – APPLY 3.3-KM BUFFER AROUND FEDERAL AND STATE HIGHWAY BASED ON PATRICELLI ET AL. 2013 (NOISE DISPERSAL).**
- TBD – Secondary Roads–Holloran/Lyon/Anderson may suggest 3.0-km impact, however the literature is complex. Secondary roads will include all surface types for our purposes. Also, the spatial information we have related to secondary roads may not capture all of the roads associated with higher traffic volumes in rural settings (major haul roads) vs. those with less traffic volume. In the interim, we will **EXPLAIN IN TEXT, describe the potential impacts near secondary roads. Furthermore, we will investigate literature related to invasives which may help inform a indirect distance of impact.**
- **ACTION – DAWN/JESSE - Going to look at invasive literature.**

Transmission

- Messmer – 1.2 km for transmission, 600 m for distribution lines (unpublished)
- Roads associated with transmission had a bigger impact according to Messmer
- Where overlap with other linear features the buffers are not additive but inclusive using the larger relevant buffer.

Tentative Recommendation:

- Use the larger buffer of 2.2 km (reference ravens) and not be concerned with the information presented in the rest of the literature (which is less than 2.2). (Need to explain why varied from BER and buffer report – 6.9 km).
- still need to circle back to Falcon-Gondor line recommendations.
- Schroeder examined connectivity in the Columbia Basin
 - **ACTION – Pat will check with Mike to see if there was a distance component – 7.5 km in the Columbia Basin**
- **DECISION:**
 - YES – APPLY 10.5-KM BUFFER ON HIGH VOLTAGE (>115 KV) REPRESENTING TRANSMISSION LINES (GIBSON, UNPUBLISHED – DISSERTATION EXPECTED IN MAY)**
 - YES – APPLY 2.2-KM BUFFER ON LOW VOLTAGE (<115 KV) REPRESENTING DISTRIBUTION LINES, BASED ON PREDATOR (CORVID) USE IN RELATION TO POWER LINES (COATES ET AL. 2014)**

Pipelines

- assumption is underground
- Not covered by Wisdom 2011, BER report; Johnson et al was inconclusive
- All depends on how the pipeline is reclaimed and its success
- in some cases birds may use the reclamation due to presence of desirable forbs
- is a fragmentation issue probably more so than anything else

Tentative Recommendation:

- 30 m based on Durtsche et al.
- **WE NEED TO REVISIT**
- **GIS TEAM CURRENTLY USING A 100-M BUFFER FOR DIRECT (DERIVED FROM TRANSMISSION LINE S)**

Railroads

- BER referenced Knick of 3 km –
- the Durtsche may be an underestimate due to the permanency of the structure, crown and ditch nature of the feature and high volume traffic of loud noise vehicles.
- Cross-reference with Patricelli et al. roads. But she measured constant noise and vehicle traffic – is that comparable to trains? Trains may be louder.
 - **ACTION – Dawn will check what Knick based the 3 km on.**
 - **ACTION – Dawn will look at Bradley and Muster(?)**
 - **ACTION – Pat will reach out to Knick**

Fences

- may provide more perching opportunities for predators
- do we have a spatial layer for fences? not all fences are mapped so this may be moot
- may not have the comprehensive information on fences and literature support to make a recommendation.
- **Request from Nicole to look at BLM language related to buffers. They're not going to worry about fences**
- **DECISION:**
EXPLAIN IMPACTS IN TEXT – DO NOT APPLY BUFFER – USE STEVENS ANALYSIS OR BLM ON FENCES (AVAILABLE EVERYWHERE BUT COLORADO, REQUEST FROM BLM)

Communication Towers

- need to re-visit Johnson et al. 2011 for recommendation
- Wisdom 2011 – mean was 21 km for occupied , 12 km for extirpated
- BER used the raven predation reference
- Need to check Leu 2008
- should we lump this with other tall structures, such as transmission lines

Tentative recommendation:

- Lump with transmission unless Johnson et al. 2011 or Leu 2008 provide specific information to suggest communication towers need to a separate entity.
- **ACTION – Dawn will review**
- **ACTION – DAWN/JESSE - Going to look at invasive literature, see if it applies here...**

Mining - Coal

- Subsurface mines – probably lump into building/urban buffer because only activity above ground is support structures
- Surface mines
 - BER used Taylor et al. 2012 and Johnson 2011 – buffer of 19 – why would be we be different (not specific information).
 - **ACTION – Pat will check**
 - Maybe use noise? constant traffic associated with coal retrieval. Patricelli et al. 2012 reference for roads may be applicable and extend to 3.0 km vs. the 2 km in older literature on coal impacts from the North Park
- **DECISION**
USE DIRECT ONLY (lease boundary will likely cover direct and indirect)

Mining - Other

- If use noise – maybe also use for mining?
- type of mine is relevant – commercial mines only – don't include small claims for personal use.
- Use a plan of operation as the break point?
 - **ACTION – Steve - Cross-check w/ mining chapter**
- Frequency of use may also be influential – if only used occasional (like county gravel pit) different level of impact – need to check GIS data
- How to deal with drilling of locatables? maybe place with non-renewable energy? particularly uranium

Tentative recommendation:

- **ACTION – LIEF – Can we determine surface vs. subsurface AND commercial vs. other**
- **DECISION**
USE DIRECT ONLY (Commercial only)

Wind

- LeBeau
 - **ACTION –Pat will check thesis to see if there is an outer distance where there was no or minimal effect**
- hard to lump in with other tall structures due to structural differences and movement.
- may have to reference to other species literature
- Manville recommendations (2004) was lek based – Pat
 - **ACTION –Pat will reach out to Chad – Whats the rationale behind 5.0km**

Oil and Gas

- need to consider individual wells vs. fields
- density vs. individual wells.
- if have all the well locations spatial – calculate a raster that identifies a density. For cells above threshold apply AOI. – we should ask GIS folks if possible –
- difference in response based on seasonal habitat – use the most conservative? but abundance and distribution is lek based so better to stick with consistent seasons.
- **ACTION – LIEF – Talk with Kevin**