Peer Review Plan: Species Status Assessment Report (SSA) for the Southern White-Tailed Ptarmigan (*Lagopus leucura altipetens*)

Timeline of the Peer review (estimated):

Draft documents to be disseminated: March 2020

Peer review to be initiated: March 2020

Peer review to be completed by: April 2020

Determination regarding species' status expected: This SSA report help will inform a listing determination under the Endangered Species Act (ESA). This review is expected to be completed in Fiscal Year 2020.

About the Peer Review Process:

In accordance with our July 1, 1994, peer review policy (59 FR 34270), the U.S. Fish and Wildlife Service's August 22, 2016, Director's Memo on the Peer Review Process, and the Office of Management and Budget's December 16, 2004, Final Information Quality Bulletin for Peer Review, we will solicit independent scientific reviews of the information contained in our Species Status Assessment Report for the southern white-tailed ptarmigan.

The U.S. Fish and Wildlife Service (Service) will request peer review from three or more independent experts. We will consider the following criteria.

- Expertise: The reviewer should have knowledge of or experience with white-tailed ptarmigan or similar species biology.
- Independence: The reviewer should not be employed by the Service. Academic, consulting or government scientists should have sufficient independence from the Service if the government supports their work.
- Objectivity: The reviewer should be recognized by his or her peers as being objective, open-minded, and thoughtful. In addition, the reviewer should be comfortable sharing his or her knowledge and perspectives and openly identifying his or her knowledge gaps.
- Conflict of Interest: The reviewer should not have any financial or other interest that conflicts or that could impair his or her objectivity or create an unfair competitive advantage. If an otherwise qualified reviewer has an unavoidable conflict of interest, the Service may publicly disclose the conflict.

While expertise is the primary consideration, the Service will select peer reviewers (considering, but not limited to, these selections) that add to a diversity of scientific perspectives relevant to the Species Status Assessment Report for the southern white-tailed ptarmigan. We will not be providing financial compensation to peer reviewers. We will solicit reviews from at least three qualified experts. After completion of the peer review, we will make the peer reviewers' comments and conflict of interest forms available to the public.

The Service will provide each peer reviewer with information explaining their role and instructions for fulfilling that role, the Species Status Assessment Report, and a list of citations, as necessary. The purpose of seeking independent peer review is to ensure use of the best scientific and commercial information available and to ensure and to maximize the quality, objectivity, utility, and integrity of the information upon which the report is based, as well as to ensure that reviews by recognized experts are incorporated into the Species Status Assessment process. Peer reviewers will be advised that they are not to provide advice on policy. Rather, they should focus their review on identifying and characterizing scientific uncertainties. Peer reviewers will be asked to answer questions pertaining to the logic of our assumptions, arguments, and conclusions and to provide any other relevant comments, criticisms, or thoughts.

Specific questions put to the reviewers include the following:

1. Is our description and analysis of the species' needs, biology, habitat, population trends, and historic and current distribution of the species accurate?
2. Does the Species Status Assessment Report provide accurate and adequate review and analysis of the current and projected future condition of the species?
3. Are our assumptions and definitions of suitable habitat logical and adequate?
4. Are there any significant oversights, omissions, or inconsistencies in our Species Status Assessment Report?
5. Are the conclusions we reach logical and supported by the evidence we provide?
6. Did we include all the necessary and pertinent literature to support our assumptions/arguments/conclusions?

Peer reviewers will provide individual, written responses to the Service. Peer reviewers will be advised that their reviews, including their names and affiliations, will: (1) be included in the decisional record of our determinations regarding this species' status (i.e., final rules or withdrawals); and, (2) be available to the public once all reviews are completed. We will summarize and respond to the issues raised by the peer reviewers in the record supporting our determinations. A decision on whether to list the southern white-tailed ptarmigan under the ESA is expected in Fiscal Year 2020.

About Public Participation

The peer review process will be initiated shortly. We strongly encourage that public comments on the approach of this peer review be submitted by March 15, 2020, in order to allow enough time for processing and consideration. However, we will accept comments on the peer review plan throughout the Species Status Assessment process. This Species Status Assessment report will inform the Service's decision on whether to list the southern white-tailed ptarmigan under the Endangered Species Act in Fiscal Year 2020.

Contact

For more information, contact Alex Kasdin, at 303–236–4419 or alexandra_kasdin@fws.gov.

Ms. Kasden,

I appreciate the opportunity to review the Draft Southern White-tailed Ptarmigan SSA. I spent several weeks each summer from 2006 through 2017 surveying and researching White-tailed Ptarmigan in the New Mexico portion of the Sangre de Cristo Mountains, and have seen first-hand the decline of this iconic alpine species. Most recently (2017 and some effort in prior years), I attempted to map willow distribution in all the alpine areas, under a contract with New Mexico Department of Game and Fish. Although the final report was not referenced in this SSA, there were several references to "NMDGF pers. comm." which likely stem primarily from the mapping exercise and other earlier survey efforts. I am including the final report along with this review. Additionally, there is a reference in the text to an earlier publication by my colleagues and me (Wolfe et al. 2011), but that publication was not listed in the Literature Cited section. Here is the full citation:

Wolfe, D. H., L. C. Larsson, J. R. Oldenettel, H. A. Walker, and M. A. Patten. 2011. Status of populations of the White-tailed Ptarmigan at the southern edge of its range. IN: Watson, R. T., T. J. Cade, M. Fuller, G. Hunt, and E. Potopov (Eds.) Gyrfalcons and Ptarmigan in a Changing World – Conference Proceedings. Vol. 1:247-257.

As my experience has primarily been in the New Mexico portion of the Sangre de Cristo Range, I will focus my comments on that area. I also have spent a limited amount of time in the Colorado side of the Sangre de Cristo Range, mostly adjacent to New Mexico. I somewhat question the population regions as assigned in this SSA, as the Sangre de Cristo Range in Colorado is contiguous or nearly contiguous with New Mexico, more so than with the assigned "northern Colorado" populations. Likewise, the habitat and climate within the Sangre de Cristo Range is nearly identical. This becomes especially important when the possible future scenarios are compiled (Tables 12, 13, 14). The Sangre de Cristo Range is relatively narrow from West to East in most areas, and because the regions directly west are primarily semi-desert or dry plains, the western-most portion of the Sangre de Cristos are typically rather warm and dry in the summer, with occasionally monsoonal rains, regardless of whether in CO or NM. However, in the portions that are wider from West to East, there is a resultant increase in rainfall and resultant decrease in summer temperature further east. The scenario tables seem to indicate that the CO side of the Sangre de Cristo Range provides more and better habitat and may allow for longer or better persistence of the species, but I doubt that is truly the case. At least within the first 20-30 kilometers of New Mexico, the Sangre de Cristo Range is narrow, and thus expected to be warmer and drier than some of the wider parts of New Mexico

Overall, though, the New Mexico White-tailed Ptarmigan population is likely already functionally extinct. The only areas in New Mexico where the species could perhaps persist would be the very northeastern-most portion of the Pecos Wilderness Area and the northern-most portion of the Culebra Range (which extends slightly into CO). While White-tailed Ptarmigan were still present in the Wheeler Peak Wilderness Area as late as at least 2017, the limited extent of alpine habitat, along with the continual expansion of human activity, partly as a result of new ski lifts, trails, roads, etc., that have encroached from the Taos Ski Valley, and partly with the sheer number of hikers that hike Wheeler Peak (the high point in NM). I will add that many hikers ignore the rules of having dogs leashed in the Wilderness Area, and it is a common site to see dozens of dogs per day in the summer, some of which range 200 meters or more from the main trails. Taking all of that into consideration, I doubt that White-tailed Ptarmigan can persist in or around the Wheeler Peak Wilderness Area.

For all the alpine areas in New Mexico (and elsewhere), willow abundance is certainly critical. The vegetation mapping effort in the above referenced report shows that the occupied areas in News Mexico are of at least 1000 hectares of contiguous alpine, of which at least 130 hectares contain willows. For those peaks and alpine ridges that did not meet BOTH of the above criteria, White-tailed Ptarmigan are completely extirpated or only used by transient birds. An example would be Little Costilla Peak, (97 hectares, with ~1 hectare of willow), where I found one winter fecal pile on the summit, which I suspect was from dispersing ptarmigan from the

nearby Culebra Range. Having spent multiple summers in these mountains, and in some cases, visiting the same spots in subsequent years, I have seen willow thickets that have definitely died back or completely died out, which is likely due to either reduced snowpack in winter, or hot and dry weather conditions in summers. However, willow density at the lower portions of the alpine zone or just below the alpine zone has, at least in some areas, increased (assessed from photo points established in Wheeler Peak Wilderness Area in 2007 and repeated in 2012).

To summarize, I fully support that listing the Southern White-tailed Ptarmigan as Threatened under the ESA is warranted. As previously stated, the New Mexico population is already on the brink of extirpation, if not already gone. There has been discussion of transplanting birds to NM from CO, and although perhaps fresh genetic material from those transplants would bide some time, I not optimistic that the species will persist in NM. But, I would also state from my limited experience in the Sangre de Cristo Range in CO, White-tailed Ptarmigan on the CO side are likely on the same trajectory, regardless of the future climate model predictions in the SSA. Table 7, which lists the current condition evaluations show much more disparity between the Sangre de Cristo Range in CO and NM than I believe actually exists. For the NM line on that table, I suggest changing the "summer precipitation" column to medium, as the western-most portions can be rather dry in summer, but the eastern portions wetter and cooler. Also suggest changing the "willow" column to low or medium, but with the caveat that much of the alpine assessed WOULD be in the very low category; it is difficult to assess the entire region as consistently the same. I rather doubt that the Sangre de Cristo in CO has higher brood habitat while NM is listed as very low. Likely, both should be classified as low to medium.

On a minor note, I noticed the usage in the SSA of the word "historic" (at least twice on page 15, and a couple of other places in the document). The proper word should be "historical". These two words have completely different meanings, although often misused.

If you desire any other input, please feel free to contact me.

Don Wolfe
Senior Wildlife Biologist
G. M. Sutton Avian Research Center
Bartlesville, OK
dwolfe@suttoncenter,org

Citation for the Final Report to NMDGF:

Wolfe, D. H., and L. C. Larsson. 2018. White-tailed Ptarmigan and alpine willow distribution in the Sangre de Cristo Mountains, New Mexico Final Report – 22 February 2018, Professional Services Contract # 17-516-0000-00026.

U.S. Fish and Wildlife Service
Participation in Peer Review of Southern White-Tailed Ptarmigan Species Status Assessment

CONFLICT OF INTEREST DISCLOSURE

NAME: Don Wolfe_____ TELEPHONE: 918-397-4885

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Bartlesville, OK 74005_____

EMAIL ADDRESS: dwolfe@suttoncenter.org_____

CURRENT EMPLOYER: G. M. Sutton Avian Research Center_____

It is essential that a peer reviewer used by the U.S. Fish and Wildlife Service as part of its peer review of proposed listing and proposed critical habitat rules under the ESA report any conflict of interest. For this purpose, **the term "conflict of interest" means any financial or other interest which conflicts with the service of the individual because it (1) could significantly impair the individual's objectivity or (2) could create an unfair competitive advantage for any person or organization.**[1] The term "conflict of interest" means something more than individual bias. There must be an *interest* that could be directly affected by your participation as a peer reviewer.

Conflict of interest requirements are objective standards designed to eliminate certain specific, potentially compromising situations from arising, and thereby to protect the individual (and his or her family members or business associates), the Service, and the public interest. The individual and the Service should not be placed in a situation where others could reasonably question, and perhaps discount or dismiss, the information produced through the peer review simply because of the existence of conflicting interests.

Please provide the information requested below regarding **relevant** organizational affiliations, government service, public statements and positions, research support, and additional information (if any) and complete the signature page following the questionnaire.

[1] This definition and the other information in these instructions are drawn from the National Academy of Sciences Policy on Committee Composition and Balance and Conflicts of Interest for Committees Used in the Development of Reports (May 12, 2003).

1. EMPLOYMENT AND INVESTMENT INTERESTS.

(a) If you are employed or self-employed, could your current employment or self-employment (or your spouse's current employment or self-employment) be directly affected?

(b) Do you have any current or continuing consulting relationships (including, for example, commercial and professional consulting and service arrangements, scientific and technical advisory board memberships, serving as an expert witness in litigation, or providing services in exchange for honorariums and travel expense reimbursements) that are directly related to the subject matter of the possible government regulatory action or inaction?

(c) To the best of your knowledge, could any financial interests of your (or your spouse's) employer or, if self-employed, your (or your spouse's) clients and/or business partners be directly affected?

(d) If you are or have ever been a U.S. Government employee (either civilian or military), to the best of your knowledge are there any federal conflict of interest restrictions that may be applicable to your service in connection with this peer review?

(e) Do you or your spouse or minor children own directly or indirectly (e.g., through a trust or an individual account in a pension or profit-sharing plan) stocks, bonds or other financial instruments or investments that could be affected, either indirectly or by a direct effect on the business enterprise or activities underlying the investments?

If the answer to all of the above questions under EMPLOYMENT AND INVESTMENTS INTERESTS is either "no" or "not applicable," check here X (NO).

If the answer to any of the above questions under EMPLOYMENT AND INVESTMENTS INTERESTS is "yes," check here ____ (YES), and briefly describe the circumstances below.

2. PROPERTY INTERESTS.

(a) Do you, your spouse or minor children own directly or indirectly any property (e.g. real estate, tangible properties or intellectual properties) interests that could be directly affected?

(b) To the best of your knowledge, do any others with whom you have substantial common financial interests (e.g., employer, business partners, etc.) own directly or indirectly any such property interests that could be directly affected?

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(a) Could research funding and support for you or your close research colleagues and collaborators be directly affected, or

(b) If you have any research agreements for current or continuing research funding or support from any party whose financial interests could be directly affected, and such funding or support is directly related to the subject matter of the regulatory process, do such agreements significantly limit your ability to independently conduct and publish the results of your research?

(c) Do you have any existing professional obligations (e.g., as an officer of a scientific or engineering society) that effectively require you to publicly defend a previously established position on an issue that is relevant to the proposed rule?

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Please **return the form to Alexandra Kasdin (alexandra_kasdin@fws.gov)**. **Please retain a copy for your records**.

During your period of service in connection with the activity for which this form is being completed, any changes in the information reported, or any new information, which needs to be reported, should be reported promptly by written or electronic communication to the responsible staff officer.

Donald H. Wolfe

_____ 3 April 2020_____

YOUR SIGNATURE DATE

Reviewed by: _____ April 3, 2020

Alexandra Kasdin DATE

U.S. Fish and Wildlife Service

Mountain-Prairie Regional Office

Natural Resources Specialist

Peer Review Plan: Species Status Assessment Report (SSA) for the Southern White-Tailed Ptarmigan (*Lagopus leucura altipetens*)

Reviewer: Dr. Kathy Martin,

Submitted to: U.S. Fish and Wildlife Service

Date: April 9, 2020

Specific questions addressed by the reviewer:

1. Is our description and analysis of the species' needs, biology, habitat, population trends, and historic and current distribution of the species accurate?

   KM: Yes, but see notes below.

2. Does the Species Status Assessment Report provide accurate and adequate review and analysis of the current and projected future condition of the species?

   KM: Yes, but see notes below.

3. Are our assumptions and definitions of suitable habitat logical and adequate?

   KM: Yes, but see notes below.

4. Are there any significant oversights, omissions, or inconsistencies in our Species Status Assessment Report?

   KM: No, but see notes below.

5. Are the conclusions we reach logical and supported by the evidence we provide?

   KM: Yes, but the report places very heavy reliance on unpublished data and analyses in unpublished reports or reports that are not available to the public. See notes below.

6. Did we include all the necessary and pertinent literature to support our assumptions/arguments/conclusions?

   KM: Mostly, see additional suggestions and notes below.

Detailed comments and assessment:

Overall, I found this SSA to be a thorough and comprehensive review of the ecology, habitat use and population trends of the Southern population of the White-tailed Ptarmigan. Most the major research products were reviewed and included, and addressed appropriately with respect to Resiliency, Redundancy and Representation of the southern White-tailed ptarmigan in as much as they have been studied in those areas. There are probably several more papers written by Don Wolf and his colleagues on the WTPT surveys and trends (occupancy) for the New Mexico population. Some of this work has been published in Grouse News and other more minor journals or reports. Also, one could check with Don Wolf or others involved in conducting the field surveys in New Mexico to see what unpublished work they might have for surveys done on various mountains.

One issue that was problematic in my review of this document is that much of the literature available in scientific journals was for the Northern populations (Mount Evans, RMNP, Guanella Pass, etc). In this review there was heavy reliance on reports for the Colorado Parks and Wildlife (Unpublished or published but not available) by Seglund and Zimmerman and co-authors. Key conclusions and recommendations were based on those reports. It was unclear whether the Seglund reports were a re-analysis of existing published data or actual field studies of some of the southern populations. Later in the report, the text implied that the Seglund reports contained new and current field data (e.g., Pg 31, Table 3). With respect to question 2 about current conditions, some reports relied on published data that were collected 30 years or more ago. Thus, there was little discrimination between recent studies and ones collected in 45-50 years ago, (e.g., Crown Point, 1966-1977). This makes a bit of a difference when the projected models are only going out 30 years hence (2050, or 10 generations). So, if the data that are populating the models are from more than 10 generations earlier, will the models take this time frame in to account?

The population models used to measure population persistence and resiliency used the Wann et al. 2014 rather than other more detailed demographic models that included more detailed age-dependancy (Sandercock et al. 2005a). That can be justified as the Wann et al study had a much longer time line. The Wann et al. study only included two age classes of females (adults, yearlings), thus lumping the less productive 2 yr old females with the more productive 3, 4 and 5 year old adults. Sandercock et al. showed that 2 yr old females were less successful than 3+ yr old females in renesting and fledging chicks. Thus, depending on the variation in age structure of populations, the Wann et al. study would slightly slightly underestimate productivity when basing it on only 2 age classes (fine to err on the side of caution). Another consideration is that females that do not produce broods often disperse to other mountain areas after failure. Since the Wann et al study did not include females that had radio-tags for most of the years of their study, they would not have included these females in their surveys and thus they would have over-estimated female production. With these above caveats, I agree that the Wann et al (2014) study should be used for population modelling given its lengthy tenure of 43 years of 2 key populations that were studied.

The impacts of Environmental Stochasticity was included as a separate paragraph (4.3, pg 50) after the detailed projections of the three future scenarios. It would be important to include the stochastic elements into the future population projections as those issues are likely to be important in accurate predictions of ptarmigan population resiliency. For example, in a population of alpine songbirds in British Columbia, the impact of storms and extreme weather events depend on whether the storms are warm storms (above 8 deg C) or cold storms (~5 deg C, Martin et al. 2017, reference below). This is likely to be similar for ptarmigan as late years with delayed snow melt tend to have low nesting success and less renesting (replacement clutches). Thus, for ptarmigan, it is likely that years with cold late storms will be less successful than years with warm and wet conditions. The more recent years of study on Mount Evans might be instructive for making predictions about the impacts of warm and wet spring breeding conditions (maybe check certain recent years of the Wann study). I recommend closer consideration of the impacts of environmental stochasticity and incorporating stochastic storms into the 3 scenarios of Very Hot Dry, Hot and Very Wet.

Another consideration is the impact of recreational communities on populations of generalist predators (canids and corvids). Recreational communities and ski resorts, etc can subsidize predator populations over the winter conditions, and thus enable larger populations that can prey on alpine birds and mammals in the summer. This effect is pronounced for some populations of grouse in European countries, and can be demonstrated near ski resort communities in North America. Is this an aspect that can impact some Southern White-tailed Ptarmigan populations?

The report concludes that the impacts of hunting are local, and do not impose a substantial impact on populations in stronghold conditions, and that for most of the range, hunting poses no immediate threats to population resiliency. I would agree with that overall conclusion given that hunting is mostly an issue where there is road access to the high alpine. It would be useful to indicate what proportion of the habitat for the Southern WTPT has road access that allows hunting. I have observed two conditions that had very negative impacts on the Mt Evans ptarmigan population. First, most hunters do not respect the 0.5 mile limit from the road to hunt, either because they can not measure the distance or they do not realize that after they walk 0.5 miles up, they are still very close to the road. In several cases, some hunters harvested a large proportion of a late summer flock on Mt Epaulet and Rosalie (easy walking). This resulted in the birds that survived moving to another more remote late summer area the next year. Another issue was the unwillingness of the CDOW to delay the opening of the hunting season in years when breeding was very delayed. This resulted in the harvest of hens with very young chicks. These tended to be older hens that had higher renesting abilities. Thus, the hunt in that year involved a high loss of hens in prime age, and all of their chicks as they were too young to survive on their own. The population remained low for the next two years, but recovered again. So, I agree with the overall conclusions in this report that impacts of hunting are local and not substantial to ptarmigan populations. However, the regulations could certainly be improved to reduce the negative impacts on resiliency of ptarmigan populations by placing more restrictions on hunting access and adding more flexibility to the dates of the hunting season to allow for late and very late breeding seasons.

Pg 41. Table 10. The values or the units for the Scenarios should be provided. How do these relate to the Historic values?

References: I recommend the authors consult some of the literature on population ecology, conservation status and trends of the Alpine Rock Ptarmigan in Europe. These alpine ptarmigan are the ecological equivalents of White-tailed ptarmigan in North America and thus may provide insights into the impacts of climate change on the Southern White-tailed Ptarmigan as well as some of the negative effects of recreation and habitat change in the mountain matrix.

References can be found in: Scridel, D., M. Brambilla, **K. Martin,** A. Lehikoinen, A. Iemma, M. Anderle, S. Jahnig, E. Caprio, G. Bogliani, P. Pedrini, A. Rolando, R. Arlettaez, and D. E. Chamberlain. 2018. A review and meta-analysis of the effects of climate change on Holarctic mountain and upland bird populations. Ibis (invited). 160: 489-515. doi: 10.1111/ibi.12585.

Martin, K., S. D. Wilson, E.C. MacDonald, A. F. Camfield, M. Martin, and S. A. Trefrey. 2017. Effects of severe weather on reproduction for sympatric songbirds in an alpine environment: Interactions of climate extremes influence nesting success The Auk, Vol 134: 696-709. DOI: 10.1642/AUK-16-271.1.

U.S. Fish and Wildlife Service
Participation in Peer Review of Southern White-Tailed Ptarmigan Species Status Assessment

CONFLICT OF INTEREST DISCLOSURE

NAME: _Kathy Martin_____TELEPHONE: 604-862-8660

ADDRESS: Wildlife Research Division, Science and Technology Branch
Environment and Climate Change Canada, 5421 Robertson Rd, RR#1, Delta BC, Canada V4K 3N2

EMAIL ADDRESS: _____Kathy.martin@ubc.ca_____

CURRENT EMPLOYER: Environment and Climate Change Canada

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Kathy Martin

YOUR SIGNATURE

9 April 2020

DATE

Reviewed by: _____

Alexandra Kasdin
U.S. Fish and Wildlife Service
Mountain-Prairie Regional Office
Natural Resources Specialist

April 13, 2020

DATE

Peer Review Plan:
Species Status Assessment Report (SSA) for the Southern White-Tailed Ptarmigan
(*Lagopus leucura altipetens*)

Submitted by:
Dr. J.A. Clarke, Ph.D.
Professor of Wildlife Biology and Management,
School of Biodiversity Conservation, Unity College, Unity, Maine 04988

General Summary: I commend the excellent work put into this draft of the SSA Report for the Southern White-Tailed Ptarmigan (*Lagopus leucura altipetens*) but, as yet, it is not complete or entirely accurate. **Table 2 is erroneous regarding the condition scores for "Future Scenario 2" and "Future Scenario 3." The predictions in this table are misleading, inaccurate and incorrect because they are not based on complete information. These tables are dangerously misleading.**

The most vulnerable period in the life of a Southern White-tailed Ptarmigan is the first month as a chick and this period of the species' life history is inadequately described/analyzed in this report. Hence leading to the inaccurate predictions in Table 2.

First, foods will be unavailable to chicks. Climate change in the form of increased ambient temperature at high elevations will advance plant phenology, specifically the growth and flowering of the perennial alpine plants upon which ptarmigan chicks forage. White-tailed Ptarmigan chicks in their first month of life are incapable of ingesting mature plant material due to the fiber content in the leaves. Also, the flowers will have senesed (faded) while the chicks are still relying upon them as food - and perhaps before some clutches have hatched. This will negatively impact chick survivorship and recruitment, resulting in severe population decline. The statement "...if birds mistime breeding" is an alarming misstatement. Birds do not "time" their breeding. Photoperiod (= day length) controls the breeding behavior

Second, increased predation with increased ambient temperatures is not addressed. Using crypsis, White-tailed Ptarmigan are uniquely adapted to evading aerial predators (i.e. falcons, hawks) that rely on visual cues. They are less adapted to evading mammalian predators who rely primarily on scent. With increasing temperatures, rodent species will move higher in elevation, as will their mammalian predators. Again, hens with chicks are especially vulnerable to this threat, as the chicks cannot fly and hens with chicks are reluctant to abandon their brood.

Third, White-tailed Ptarmigan do not possess (as stated) a "high level of plasticity" regarding extremes in temperature. On the contrary, while they can and do tolerate extremely low temperatures, they pant and engage in gular flutter in ambient temperatures above 21 C (70 degrees F), indicating they are in thermal stress.

QUESTIONS:

1. Is our description and analysis of the species' needs, biology, habitat, population trends, and historic and current distribution of the species accurate?

NOT ENTIRELY.

2. Does the Species Status Assessment Report provide accurate and adequate review and analysis of the current and projected future condition of the species?

NOT ENTIRELY.

3. Are our assumptions and definitions of suitable habitat logical and adequate?

NOT ENTIRELY.

4. Are there any significant oversights, omissions, or inconsistencies in our Species Status Assessment Report?

YES.

5. Are the conclusions we reach logical and supported by the evidence we provide?

THE EVIDENCE IS INCOMPLETE.

6. Did we include all the necessary and pertinent literature to support our assumptions/arguments/conclusions?

NO.

a) The draft is not entirely accurate regarding tolerance to high ambient temperatures.

On page iii, 3rd paragraph: "high level of plasticity" to extremes in temperature is untrue according to Johnson (1968) who clearly stated that this species is intolerant of warm temperatures and pants at 21 C (70 F). I too have observed that this species engages in gular flutter at temperatures >21C (70 F).

On page 13, this fact is noted and Johnson (1968) is cited but contradicted on page iii.

> Johnson, R. E. (1968). Temperature regulation in the White-tailed Ptarmigan. *Lagopus leucurus*. Masters Thesis, University of Montana, Missoula, MT.

b) The draft is not entirely accurate regarding foraging requirements of hens and chicks.

"In Colorado, female ptarmigan feed selectively on alpine bistort bulbils, ..." (pg 13) Actually, female ptarmigan feed just as selectively on *Salix reticulata* as they do on *Bistorta vivipara*. Female ptarmigan seek out forage areas with high abundance of *Salix* and *Bistorta*, compared to random (control) sites (see Figs 1 and 2 below). Chicks rely heavily on *Salix reticulata.* Chicks are capable of consuming only the newest, softest and least fibrous growth of the forage plants. They gag, choke, struggle and ultimately reject more mature leaves of *Salix reticulata*, which is the major food in the diet due to its high protein content and hen food calls. Only tiny, soft leaves, high in protein and low in fiber are ingestible.

> Allen, T. F. and Clarke, J. A. 2005. Social learning of food preferences by white-tailed ptarmigan chicks. Animal Behavior 70 (2): 305-310.
>
> Clarke, J.A. 2010. White-tailed ptarmigan food calls enhance chick diet choice: learning nutritional wisdom? Animal Behaviour 79 (1), 25-30)

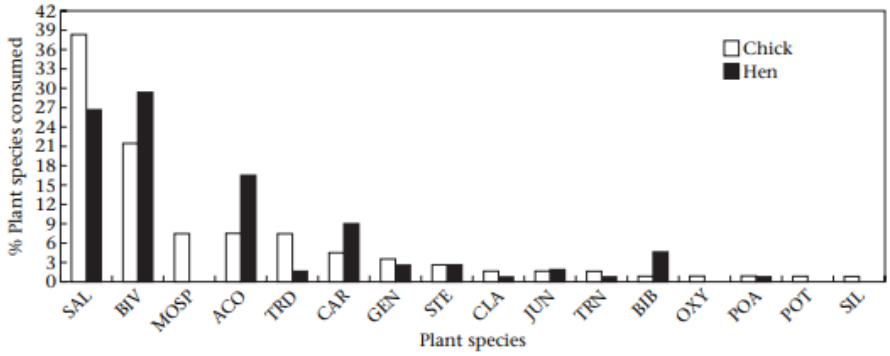

Figure 1. Plant species consumed by white-tailed ptarmigan hens and their chicks in Rocky Mountain National Park in 2002 and 2003. ACO = *Acomastylis rossii*, BIB = *Bistorta bistortoides*, BIV = *Bistorta vivipara*, CAR = *Carex jonesii*, CLA = *Claytonia lanceolata*, GEN = *Gentianodes algida*, JUN = *Juncus* spp., MOSP = moss spores, OXY = *Oxyria digyna*, POA = *Poa* spp., POT = *Potentilla nivea*, SAL = *Salix reticulata*, SIL = *Silene acaulis*, STE = *Stellaria umbellata*, TRD = *Trifolium dasyphyllum* and TRN = *Trifolium nanum*.

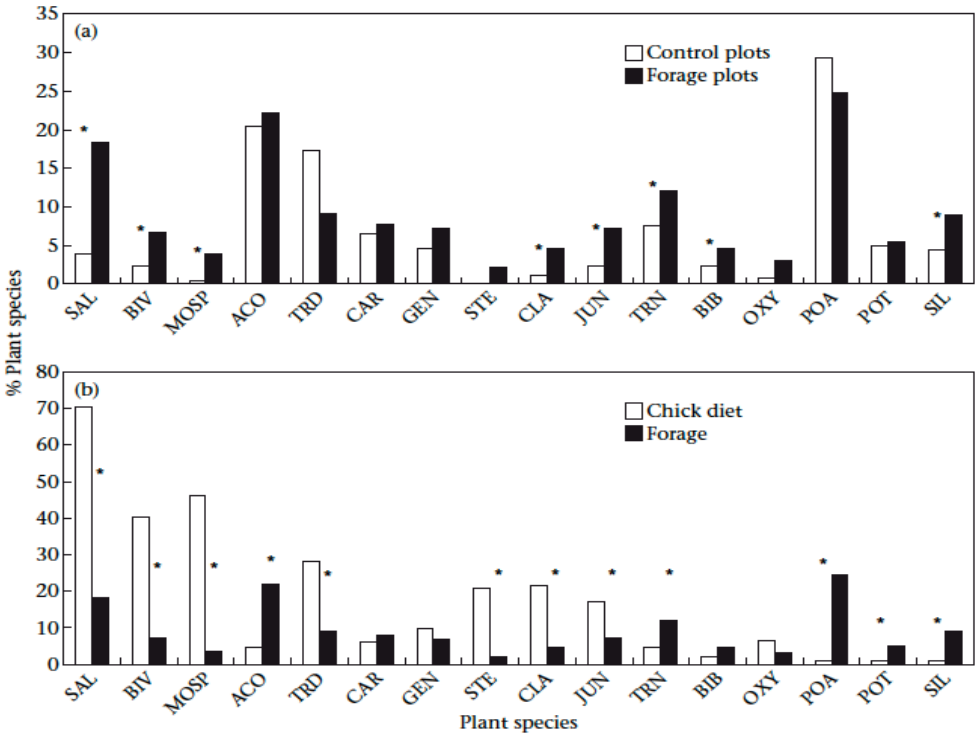

Figure 2. Percentage of plant species (a) in forage and in paired-control plots and (b) in the chicks' diet and in forage. *Significant difference in average amount detected through a paired *t* test. ACO = *Acomastylis rossii*, BIB = *Bistorta bistortoides*, BIV = *Bistorta vivipara*, CAR = *Carex jonesii*, CLA = *Claytonia lanceolata*, GEN = *Gentianodes algida*, JUN = *Juncus* spp., MOSP = moss spores, OXY = *Oxyria digyna*, POA = *Poa* spp., POT = *Potentilla nivea*, SAL = *Salix reticulata*, SIL = *Silene acaulis*, STE = *Stellaria umbellata*, TRD = Trifolium dasyplyllum and TRN = *Trifolium nanum*.

c) Page 30: **The statement "...if birds mistime breeding" is an alarming misstatement.** Birds do not "time" their breeding. Photoperiod (= day length) controls the breeding behavior of the vast majority of North American bird species. Photoperiod will not change regardless of climate change. Thus the timing of breeding will not change. However, climate change will affect temperature, which ***does*** affect plant phenology, resulting in no appropriate food for the chicks.

d) **The negative impacts of hunting are not fully considered.** I have had entire flocks shot out – all together – in protected areas. I collected their (my) plastic bands scattered in a small areas of tundra where they had apparently been found as a flock. The metal bands had been taken away with the dead birds, approximately 11 birds at one site. If hunting was illegal, poaching would decline (i.e. no bragging rights: "Why shoot them if you can't brag about it?"). Poaching does have a strong negative impact on the remaining small populations, especially with increased access due to snowmobiles ("sleds").

e) **No consideration has been given to increased predation with increased temperatures.** Using crypsis, White-tailed Ptarmigan are uniquely adapted to evading aerial predators (i.e. falcons, hawks) that rely on visual cues. They are less adapted to evading mammalian predators who rely primarily on scent. With increasing temperatures, rodent species will move higher in elevation, as will their mammalian predators. Again, hens with chicks are especially vulnerable to this threat, as the chicks cannot fly and hens with chicks are reluctant to abandon their brood.

To conclude, the draft has much excellent information but critical information is lacking, especially regarding the high chick mortality that WILL result due to plant growth occurring in advancement of chick hatching. Table 2 is misleading regarding the "high" condition scores for Future Scenario 2 and Future Scenario 3. The condition scores will not be "high" for the chicks, they will be "low" and result in poor chick survivorship and recruitment and population declines.

U.S. Fish and Wildlife Service
Participation in Peer Review of Southern White-Tailed Ptarmigan Species Status Assessment

CONFLICT OF INTEREST DISCLOSURE

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It is essential that a peer reviewer used by the U.S. Fish and Wildlife Service as part of its peer review of proposed listing and proposed critical habitat rules under the ESA report any conflict of interest. For this purpose, **the term "conflict of interest" means any financial or other interest which conflicts with the service of the individual because it (1) could significantly impair the individual's objectivity or (2) could create an unfair competitive advantage for any person or organization.**[1] The term "conflict of interest" means something more than individual bias. There must be an *interest* that could be directly affected by your participation as a peer reviewer.

Conflict of interest requirements are objective standards designed to eliminate certain specific, potentially compromising situations from arising, and thereby to protect the individual (and his or her family members or business associates), the Service, and the public interest. The individual and the Service should not be placed in a situation where others could reasonably question, and perhaps discount or dismiss, the information produced through the peer review simply because of the existence of conflicting interests.

Please provide the information requested below regarding **relevant** organizational affiliations, government service, public statements and positions, research support, and additional information (if any) and complete the signature page following the questionnaire.

[1] This definition and the other information in these instructions are drawn from the National Academy of Sciences Policy on Committee Composition and Balance and Conflicts of Interest for Committees Used in the Development of Reports (May 12, 2003).

1. EMPLOYMENT AND INVESTMENT INTERESTS.

(a) If you are employed or self-employed, could your current employment or self-employment (or your spouse's current employment or self-employment) be directly affected?
NO

(b) Do you have any current or continuing consulting relationships (including, for example, commercial and professional consulting and service arrangements, scientific and technical advisory board memberships, serving as an expert witness in litigation, or providing services in exchange for honorariums and travel expense reimbursements) that are directly related to the subject matter of the possible government regulatory action or inaction?
NO

(c) To the best of your knowledge, could any financial interests of your (or your spouse's) employer or, if self-employed, your (or your spouse's) clients and/or business partners be directly affected?
NO

(d) If you are or have ever been a U.S. Government employee (either civilian or military), to the best of your knowledge are there any federal conflict of interest restrictions that may be applicable to your service in connection with this peer review?
NO

(e) Do you or your spouse or minor children own directly or indirectly (e.g., through a trust or an individual account in a pension or profit-sharing plan) stocks, bonds or other financial instruments or investments that could be affected, either indirectly or by a direct effect on the business enterprise or activities underlying the investments?
NO

If the answer to all of the above questions under EMPLOYMENT AND INVESTMENTS INTERESTS is either "no" or "not applicable," check here __X___ (NO).

If the answer to any of the above questions under EMPLOYMENT AND INVESTMENTS INTERESTS is "yes," check here ____ (YES), and briefly describe the circumstances below.

2. PROPERTY INTERESTS.

(a) Do you, your spouse or minor children own directly or indirectly any property (e.g. real estate, tangible properties or intellectual properties) interests that could be directly affected?
NO

(b) To the best of your knowledge, do any others with whom you have substantial common financial interests (e.g., employer, business partners, etc.) own directly or indirectly any such property interests that could be directly affected?
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If the answer to any of the above questions under PROPERTY INTERESTS is "yes," check here ____ (YES), and briefly describe the circumstances below.

3. RESEARCH FUNDING AND OTHER INTERESTS.

(a) Could research funding and support for you or your close research colleagues and collaborators be directly affected, or

(b) If you have any research agreements for current or continuing research funding or support from any party whose financial interests could be directly affected, and such funding or support is directly related to the subject matter of the regulatory process, do such agreements significantly limit your ability to independently conduct and publish the results of your research?
NO

(c) Do you have any existing professional obligations (e.g., as an officer of a scientific or engineering society) that effectively require you to publicly defend a previously established position on an issue that is relevant to the proposed rule?
NO

(d) Could your service as a peer reviewer create a specific financial or commercial competitive advantage for you or others with whom you have substantial common financial interests?
NO

If the answer to all of the above questions under RESEARCH FUNDING AND OTHER INTERESTS is either "no" or "not applicable," check here ___X__ (NO).

If the answer to any of the above questions under RESEARCH FUNDING AND OTHER INTERESTS is "yes," check here ____ (YES), and briefly describe the circumstances below.

Please **return the form to Alexandra Kasdin (alexandra_kasdin@fws.gov). Please retain a copy for your records**.

During your period of service in connection with the activity for which this form is being completed, any changes in the information reported, or any new information, which needs to be reported, should be reported promptly by written or electronic communication to the responsible staff officer.

__10 April 2020_____

YOUR SIGNATURE DATE

Reviewed by: _____ April 10, 2020

Alexandra Kasdin DATE
U.S. Fish and Wildlife Service
Mountain-Prairie Regional Office
Natural Resources Specialist