

Methodology for Creating “May be Present” Maps for Grizzly Bears

December 17, 2020

Objective:

Standardize the methodology for creating “may be present” and “area of influence” maps for grizzly bears in Idaho, Montana, Washington, and Wyoming.

Developed by the USFWS Grizzly Bear Recovery Program with assistance from the USFWS Ecological Services Offices in Idaho, Montana, Washington and Wyoming.

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Background:

The Endangered Species Act (ESA) requires federal agencies, in consultation with and with the assistance of the U.S. Fish and Wildlife Service (USFWS), to ~~insure~~ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of listed species such as the grizzly bear (~~16~~ U.S.C. § 1536(a)(2)). To assist agencies and prospective applicants evaluate whether or not proposed actions may affect grizzly bear, the USFWS can provide information upon request about whether the species “may be present” in the action area. ~~(A~~ federal agency is required to request from the USFWS a list of species that “may be present” if the proposed federal action is a “major construction activity” requiring a biological assessment, see 50 C.F.R. 402. 12(b) and (c)).

The intent of the “may be present” map¹ is to identify locations where project proponents should consider whether grizzly bears “may be present” when evaluating the potential impacts of a project. Action agencies are also encouraged to work with the USFWS to develop best management practices that may be implemented as part of a proposed action to minimize or eliminate effects to grizzly bears, if present and the action is likely to adversely affect the species. Action agencies can request ‘species lists’ for specific projects, which are created by the USFWS using available information and professional judgement. Action agencies can also download species lists on some USFWS websites (i.e., IPaC program). In order to more closely view other topographical features, the “may be present” map should be viewed on the USFWS grizzly bear website: <https://www.fws.gov/mountain-prairie/es/grizzlybear.php>. Species lists are spatially inclusive of all areas that meet the “may be present” standard for grizzly bears and should not be confused with “current distributions”² which are areas in which grizzly bears have established home ranges and continuously reside. “May be present” encompasses both grizzly bear home ranges and the potential movement of transitory bears through a project area. The potential movement of transitory bears through a project area is based on verified sightings and the inclusion of associated subwatershed(s) as described in this methodology. Unless an individual bear is radio-collared, it is unlikely that we’ll know if an individual sighting represents a transitory bear.

¹ For the purpose of grizzly bears, the “may be present” map is the same as the species may occur list and the “area of influence” map in the Information for Planning and Consultation (IPaC) program. For the purposes of this methodology we ~~are going to~~ use the term “may be present.”

² Current distributions calculated for grizzly bear populations do not include low-density peripheral locations and represent a minimum known area of occupancy, not extent of occurrence (Bjornlie *et al.* 2014).

"May be present" does not, ~~however,~~ necessarily indicate a project is "likely to affect" the species. For example, outside of occupied range where the likelihood of grizzly bear presence is very low, the agencies may conclude that grizzly bears are not likely to occur in the project area during the time of a proposed action, or that it the action is not otherwise likely to affect the grizzly bear. Local data and expertise will be used in a collaborative fashion to make such decisions. See Appendix 1 for a flowchart and further details of the consultation process. This methodology is only one step in the process, as highlighted in yellow in Appendix 1.

While the "may be present" map is intended to identify areas where grizzly bears "may be present," grizzly bear transient movements are unpredictable and there is a ~~remote~~ possibility that a grizzly bear could occur outside the "may be present" map. If a grizzly bear is detected in an area that has not been identified in the "may be present" map, the USFWS will evaluate whether modifications to the "may be present" map are necessary. The USFWS will evaluate the need to update the "may be present" map for each state at least once a year, or more frequently if new information becomes available, using the best available scientific information.

Grizzly bears occur across several western states, are expanding on the landscape, and are not easily detectable. A consistent methodology is needed to determine where grizzly bears "may be present" and that action agencies can use when evaluating potential project impacts to grizzly bears. This methodology attempts to clarify that process.

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Methodology:

1. The USFWS Ecological Services offices in each state will work with the Grizzly Bear Recovery Program (GBRP) to evaluate the "may be present" map, current distributions, and verified outlier data at least once per year, or more frequently if new information becomes available, and will update the map if necessary. The GBRP will gather current distributions, as updated biennially, from our partner agencies (USGS, MFWP, USFS, IDFG, WFGD, WDFW, etc.) and will maintain an outlier database for the most recent 10 years³. These data will include verified sightings, mortalities, conflicts, and radio-collared individuals whose locations occur outside of current known distributions.
2. All grizzly bear sighting data will be reviewed for credibility by the GBRP, and other Federal, State, and/or Tribal biologists. Only those sighting ~~data records~~ that are verified will be included in the mapping process. Credibility will be judged by the rating system set forth in Appendix 2 (Kasworm *et al.* 2018). The scoring system rates sightings higher if they have with supportive evidence (track measurements with photos, photos of a grizzly bear, mortality, or other physical evidence and a credible location) ~~higher than observations without this type of substantive supporting evidence~~. The database will also include "possible"

³ We chose to use a 10 year moving window of data because grizzly bears are a long-lived species ~~and due to small sample size~~, annual data from observations and radio-collaring efforts cannot accurately represent the extent of distribution or occurrence due to their small sample size. This aligns with the 10 to 15 year window used to calculate current distributions in the ecosystems with known populations. In addition, this timeframe represents the average generation interval for grizzly bears in the lower-48 States. In the GYE demographic monitoring area, the generation interval is longer (14 years) because of density dependent effects (e.g., lower cub survival and decreased probability of reproductive transition from no offspring to cubs) associated with the population approaching carrying capacity (Kamath *et al.* 2015; van Manen *et al.* 2016).

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sightings, which may include photos that are not definitive; however, these “possible” sightings will be considered anecdotal evidence until such later time they are verified. Anecdotal evidence will not be used to determine where grizzly bears “may be present.”

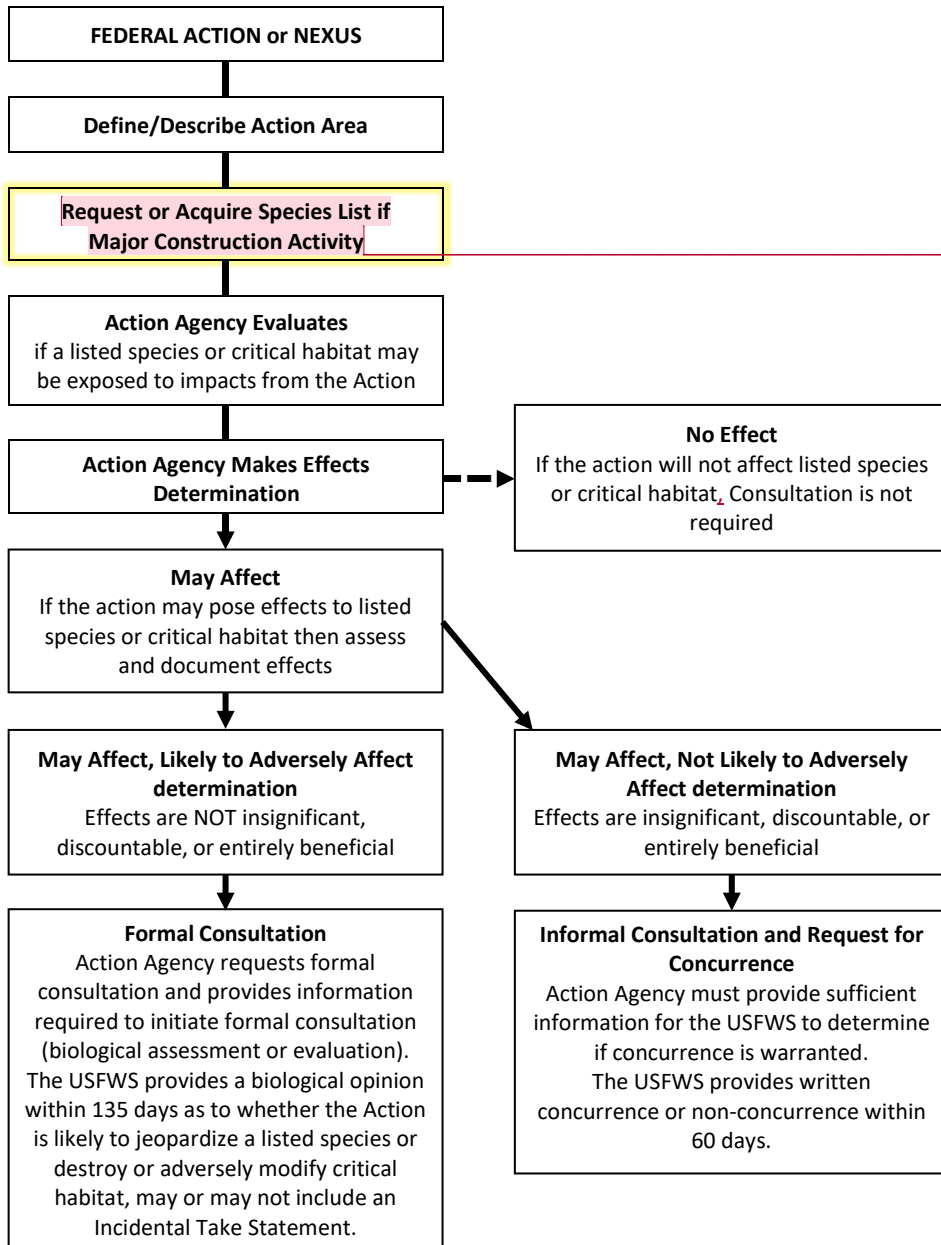
3. Boundaries for areas included in the “may be present” map are based on 12 digit⁴ hydrologic unit code (HUC) “subwatersheds”. Twelve digit HUCs are on average 40–162 km² (15–63 mi²) and approximate the annual home range size of an adult female grizzly bears (27–242 km² (10–93 mi²)), depending on the ecosystem wherein the grizzly bear resides. This size HUCs provide ~~us~~ a boundary that approximates species biological requirements and are already mapped across land management agencies. Grizzly bear home range size is affected by resource availability, sex, age, and reproductive status, and encompass all of an individual’s habitat needs. Within an ecosystem, resource availability is influenced by the density of the grizzly bear population and habitat productivity.
4. One or more verified sightings within the past 10-year window ~~will be~~ sufficient to add an area (see #3 above) to the “may be present” map. For a verified sighting, the 12 digit HUC in which the verified sighting occurred and all adjacent 12 digit HUCs will be included in the “may be present” map. Adjacent HUCs will be included because it approximates the home range of an adult male grizzly bear (78–2,115 km² (30–816 mi²)).
5. For radio-collared individual grizzlies, all locations outside of current distributions will be used⁵. All 12 digit HUCs in which locations occur will be added to the “may be present” map. Because the radio collar provides us with movement information, there is no need to account for potential or unknown movements as with sighting data, and adjacent HUCs will not be included in the “may be present” map, unless a location occurs on the border of a HUC.

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⁴ 12 digit HUCs equate to the older sixth-level or sixth-field HUC terminology.

⁵ All radio-collared ~~individuals~~ grizzly bears regardless of management status will be included because protections of the ESA follow the individual grizzly bear.

Appendix 1. Consultation Conceptual Diagram: Steps in the Consultation Process



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Appendix 2. Grizzly Bear Sighting Rating System (Kasworm *et al.* 2018)

Sightings of grizzly bears are rated 1–5 with 5 being the best quality and 1 being the poorest. General definitions of categories are present below, but it is difficult to describe all circumstances under which sightings are reported. Only sightings receiving ratings of 4 or 5 are judged as credible (thus verified) and will be used in the “may be present” mapping methodology. Sightings receiving a rating of 3 may be recorded in the database as “possible” and sightings that rate 1 or 2 will not be recorded in the database. This system is implemented by an interagency group of State, Federal, and Tribal bear biologists.

5 – Highest quality reports typically from study-research personnel or highly qualified observers. Sightings not obtained by highly qualified observers must have physical evidence such as pictures, track measurements, DNA verification (e.g., from hair or scats), or sightings of marked grizzly bears where markings are accurately described. Photos are distributed to an expert panel of bear biologists and are reconsidered a verified sighting only if there is consensus amongst the panel.

4 – Good quality reports that provide credible, convincing descriptions of grizzly bears or their sign. Typically, these reports include a physical description of the animal mentioning several characteristics such as a notched ear or an unusual color patch. Observer had sufficient time and was close enough or had binoculars to aid in identification. Observer demonstrates sufficient knowledge of characteristics to be regarded as a credible observer. Background or experience of observer may influence credibility. The State, Federal, or Tribal bear biologist who receives the report conducts a follow-up interview/investigation to ascertain the credibility of the report and upon their findings determine that the report is verified.

3 – Moderate quality reports that do not provide convincing descriptions of grizzly bears. Reports may mention 1 or 2 characteristics, but the observer does not demonstrate sufficient knowledge of characteristics to make a reliable identification. Observers may have gotten a quick glimpse of the bear or been too far away for a good quality observation.

2 – Lower quality observations that provide little description of the bear other than the observer’s judgement that it was a grizzly bear.

1 – Lowest quality observations of animals that may not have been grizzly bears. This category may also involve second hand reports from someone other than the observer.

Appendix 3. Background to the Methodology for Creating “May be Present” Maps for Grizzly Bears

Background:

In 2019, the US Fish and Wildlife Service (USFWS) identified a need to develop a more consistent and reproducible methodology to determine where grizzly bears “may be present” because grizzly bears occur across four states (Idaho, Montana, Washington, and Wyoming), are expanding across the landscape, and are usually not easily detectable. Over the course of a year, the methodology was developed by the USFWS Grizzly Bear Recovery Program in collaboration with USFWS Ecological Services Offices in Idaho, Montana, Washington, and Wyoming. In addition, the methodology was shared with State, Federal, and Tribal partners for their review.

Legal History:

For Federal actions that are major construction activities, the Federal agency or the designated non-Federal representative is required to either request a list of any listed or proposed species or designated or proposed critical habitat that may be present in the action area, or provide a notice of the species and critical habitat that are being included in the biological assessment. In addition, action agencies frequently request species list for projects that are not major construction activities. The USFWS is required to either concur or revise the list presented, or if no list has been provided, advise the Federal agency or the designated non-Federal representative in writing whether, based on the best scientific and commercial data available, any listed or proposed species or designated or proposed critical habitat may be present in the action area. 50 C.F.R. § 402.12.

In *Native Ecosystems Council et al. v. Krueger et al.*, the court remanded the decision back to the Federal agencies, because the court determined the USFWS used a narrow interpretation of “may be present” resulting in species that may have been present in the area of a proposed action not being evaluated under section 7 of the ESA. The USFWS “did not include lynx on the ‘may be present’ list for a project on the grounds that the Forest is not ‘occupied’ by lynx” (CV 9:12-cv-00027-DLC, Dist. of Mont. 2013). The court however, opined that “the ‘may be present’ standard is...much broader than the Wildlife Service’s [sic] requirement that a forest ‘be occupied’ by the species.” Further, “both agencies recognize that lynx may ‘occur,’ travel through, or forage in ‘unoccupied’ areas, and that management actions in unoccupied areas may affect those transient lynx as well as any lynx attempting to establish new home areas.” The court also opined that “As with the lynx, it is not necessary that grizzly bears occupy an area to satisfy the ‘low threshold’ for consultation.” Grizzly bears “may be present” if “transitory bears might move through the project area.”

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Methodology Development:

Throughout the process, adjustments were made to the following aspects of the methodology based on review provided by USFWS and partner biologists.

6. **Revision of the ~~moving~~ window timeframe for the outlier database to inform the methodology from the most recent 15 years to the most recent 10 years.** The goal was to choose a ~~moving~~ window of data that encompassed an adequate sample size. Grizzly bears are a long-lived species and annual sample sizes are small. Annual data from observations and radio-collaring efforts represent a snapshot of information and cannot accurately represent the extent of distribution or occurrence over a grizzly bear lifetime. Although the 15-year interval aligns with the 10- to 15-year

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window used to calculate current distributions in the ecosystems with known populations, the 10-year ~~moving~~ window was considered sufficient to inform the “may be present” map because this timeframe represents the average generation interval for grizzly bears in the lower-48 States.

7. **Revision of the number and/or types of sightings required to add an area to the “may be present” map.** The original proposal was to consider the number (recurrent use of an area) and type of sightings (i.e., female with young) to add an area to the map. However, these criteria suggested occupancy of an area by a bear rather than being “may be present.” Therefore, the methodology was updated such that a single verified sighting is sufficient to add an area to the “may be present” map.

8. **Unknown travel corridors.** Some verified occurrences are significantly removed in distance from other verified occurrences and/or estimated distributions. Typically, it is unknown what population a grizzly bear originated from and not enough habitat information is currently available to map unknown travel corridors between estimated distributions and verified occurrences. Two research projects are ongoing that should help inform potential travel corridors in the future. The USFWS initiated one study in the summer of 2021 that included the placement of hair corrals with cameras throughout areas in southwest Montana to document location information and gather DNA from grizzly bears travelling from the Northern Continental Divide (NCDE) and Greater Yellowstone Ecosystems (GYE) towards the Bitterroot Ecosystem (BE). This project is planned to continue in the future, dependent on funding availability. A second study through the University of Montana and Montana Fish, Wildlife and Parks is simulating movement paths into the Bitterroot from the NCDE using female and male collar data. It will also model range expansion and connectivity from the NCDE to the Cabinet-Yaak Ecosystem (CYE) and GYE. Although it will not model range expansion and connectivity between the CYE and Selkirk Ecosystem (SE) and between those two ecosystems and the BE, it could be the basis of future efforts in these areas. Currently, potential travel corridors are addressed through Level 1 Streamlining Teams (see #5 for further discussions).

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9. **Revision of buffering of verified sightings.**

- a. Draft language was proposed to include single or multiple ~~Hydrologic Unit-Code~~subwatersheds (12 digit HUCs) if surrounded ~~by-on~~ all or most sides by included (‘mapped’) HUCs; the purpose being to provide a buffer given the uncertainty in exact grizzly bear movements using verified sightings. The final methodology did not include these areas because verified sightings already account for a buffer (i.e., the HUC in which the verified sighting occurred and all adjacent HUCs are included to approximate the home range of an adult male grizzly bear).
- b. Draft language included the use of a single location per day for each radio-collared individual. Because grizzly bears can travel long distances in a single day, the final methodology includes all radio-collared data for each bear.

Letter to Partners (Appendix 4). In conjunction with the methodology, the USFWS sent a letter to our State and Federal partners discussing the role of Level 1 Streamlining Teams in determinations as a result of the “may be present” map for grizzly bears. Specifically it states, “When utilizing the grizzly bear mapping methodology, considerations the Level 1 Team may discuss include if available, but are not limited to: last known locations of verified bears (if telemetry collar data exists); sex and age class of

bears, which may inform potential home range size; whether the bear is transitory or localized to a specific area; the suitability of the habitat within the action area; and whether HUCs adjacent to those within the action area should also be considered where grizzly bears 'may be present'."