United States Department of the Interior

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Reply To:
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Memorandum

To: Rollie White, Assistant Regional Director for Ecological Services, Region 9, Portland, Oregon.

Attention: Eric Hein

From: State Supervisor, Oregon Fish and Wildlife Office
Portland, Oregon Paul Henson

Subject: Transmittal of review of the Final Environmental Impact Statement, Record of Decision, and Biological Opinion for the continuation of removal of barred owls under the Barred Owl Removal Experiment.

Attached is the documentation of our review of the Final Environmental Impact Statement, Record of Decision, and Biological Opinion for the continuation of removal of barred owls under the Barred Owl Removal Experiment (Experiment) and the issuance of Scientific Collecting Permit under the MBTA as needed (USFWS 2013a, b, c). The Service concludes that the proposed continuation of removal barred owls through August 2021 does not represent a substantial change to the proposed action relevant to environmental concerns, there are no significant new circumstances or information relevant to environmental concerns with bearing on the proposed action or its impacts, and the Service does not need to reinitiate Section 7 consultation on the Experiment.

In the Final Environmental Impact Statement (FEIS) for the Experiment, we specifically stated: "The experiment will run until sufficient information is gathered to determine the effects of the removal of barred owls on spotted owl population trends. . . . We set a maximum duration of 10 years of barred owl removal for the experiment. If the experiment has not provided enough information to reach a conclusion within 10 years, it is likely that removal of barred owls is not achieving the desired goal, thus other avenues should be considered and the experiment ended." (USFWS 2013a, p. 7). The Service selected the Preferred Alternative as described in the FEIS. "The combination of up to 4 study areas and the available pre-treatment data provides for a timely result, with the study taking an estimated 4 years of removal to reach significant results (USFWS 2013a, p. 5)".

The results from the Experiment to date indicate a positive response in some aspects of the spotted owl population demographics to the removal effects of barred owls, though some areas of uncertainty remain. Continuation of barred owl removal through August 2021 will allow us to validate that the apparent initial indications of positive spotted owl response are not a result of the natural variation of these natural systems.

We reviewed the description of the action in the FEIS and determined that the only change we are implementing in the action is the continuation of the removal beyond four years. There is no change in the area covered or the experimental approach. The primary change in the Experiment resulting from the continuation is an extension of the time frame of barred owl removal through August 2021. Based on our analysis, we concluded that the proposed continuation does not represent a substantial change to the proposed action relevant to environmental concerns (Appendix A).

We reviewed the individual analyses of effects and cumulative effects in the FEIS (Appendix A). We concluded that the continuation of the Experiment would not change the environmental effects of the Experiment. The total number of barred owls removed with the continuation to August 2021 is estimated to remain the same as described in the FEIS. Though now extended over additional years, the potential for effects to marbled murrelets remains the same. The cost of the Experiment is greater than originally anticipated, but this does not represent new information or changed circumstances relevant to environmental concerns. The continuation would not change the Economic Effects, Social Effects, Ethical Considerations, Effects to Recreational and Visitor Use, or Effects to Cultural Resources. Based on our analysis, there is no new information or changed circumstances relevant to environmental concerns for the proposed continuation of barred owl removal.

We completed a review of all pertinent literature on barred and spotted owls available since the completion of the FEIS (Appendix A) to assess whether there is new information about barred and spotted owls that could impact our effects analyses in the FEIS. We concluded that none of the information in these documents change the analyses we conducted in the FEIS, but rather they support or strengthens the previous analyses.

We conducted a review of the Biological Opinion Regarding the Effects of the Barred Owl Removal Experiment on Northern Spotted Owl and Marbled Murrelet (USFWS 2013c) to determine if the continuation of barred owl removal through FY 20201 would require reinitiation of the consultation (Appendix B). The amount or extent of incidental take of spotted owls defined in the Biological Opinion has not been exceeded. There is no new information that indicate any increase in effects to listed species or critical habitat not considered in the Biological Opinion. The Experiment has not been modified in a manner that causes effects to listed species or critical habitat not considered in the Biological Opinion. Finally, no new species have been listed or critical habitat designated that may be affected by the continuation of the experiment. Therefore, no reinitiation of the Biological Opinion is required.

Based on our current analysis, the proposed continuation of the Experiment does not represent a substantial change to the proposed action relevant to environmental concerns and there are no significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts, and so we conclude that no supplementation of the FEIS is required. We recommend continuation of the Barred Owl Removal Experiment through August

2021 and issuance of scientific collecting permits under MBTA as needed. If approved, this document an supporting information will be posted on the Oregon Fish and Wildlife Office website. We are also considering amendments to the Enhancement of Survival Permits issued pursuant to Safe Harbor Agreements entered into to assist with implementation of the Experiment on non-federal lands, but will address that action in a subsequent memo.

Attachments:

I request that the Assistant Regional Director for Ecological Services, Region 9 concur with the above findings that continuation of the Experiment does not require supplementation of the FEIS or reinitiation of Section 7 Biological Opinion; and approve continuation of the Experiment through August 2021.

Concur: _____ Do not Concur: _____

Date: AUG 28 2019 Date: _____

Rollie White, Assistant Regional Director for Ecological Services, Region 9,
Portland, Oregon

Review of the Potential Effects of Continuation of the Barred Owl Removal Experiment through August, 2021. August 22, 2019. Robin Bown

The U.S. Fish and Wildlife Service (Service) is proposing to continue the Barred Owl Removal Experiment (Experiment)(USFWS 2013a) through August 2021. This includes extension of the Scientific Collecting Permit through August 2021, as needed.

In the Final Environmental Impact Statement (FEIS) for the Experiment, we specifically stated: "The experiment will run until sufficient information is gathered to determine the effects of the removal of barred owls on spotted owl population trends. . . . We set a maximum duration of 10 years of barred owl removal for the experiment. If the experiment has not provided enough information to reach a conclusion within 10 years, it is likely that removal of barred owls is not achieving the desired goal, thus other avenues should be considered and the experiment ended." (USFWS 2013b, p. 7)

In the Record of Decision (ROD), we described the Preferred Alternative as follows: "Under the Preferred Alternative, the Service would conduct a demographic study on four study areas with current pre-treatment spotted owl demography data, spread across the range of the spotted owl, using a combination of lethal and nonlethal removal methods. Given the size of the study areas and the number of spotted owl sites in the combined study areas, we estimate this alternative would require an estimated duration of 4 years of barred owl removal to detect significant results." (USFWS 2013a, p. 2) [emphasis added].

The Service selected the Preferred Alternative as described in the FEIS. "The combination of up to 4 study areas and the available pre-treatment data provides for a timely result, with the study taking an estimated 4 years of removal to reach significant results (USFWS 2013a, p. 5)". The results from the Experiment to date indicate a positive response in some aspects of the spotted owl population demographics to the removal of barred owls, though some areas of uncertainty remain. Continuation of barred owl removal through August 2021 will allow us to validate whether the apparent initial indications of positive spotted owl response are the result of the natural variation of these natural systems or the removal of barred owls. Therefore, we intend to continue removal for up to two additional years, or until we reach significant results.

We reviewed the description of the action in the FEIS and determined that the only change we are implementing in the action is the continuation of the removal beyond four years. The Experiment will still occur on the same four study areas, though on a smaller portion of the total area than original described in the FEIS based on modifications to the proposed study areas during early implementation of the Experiment. The same experimental and removal approach will be used. The primary change in the Experiment resulting from the continuation is an extension of the time frame of barred owl removal through August 2021, representing an additional one and four years depending on the study area. Therefore, we concluded that the proposed continuation does not represent a substantial change to the proposed action relevant to environmental concerns (Appendix A).

We also reviewed the individual analyses of effects and cumulative effects (Appendix A). We concluded that the continuation of the Experiment would not change the environmental effects of the Experiment. The total number of barred owls removed is estimated to remain the same as described in the FEIS. The number of spotted owl sites within the study areas remains the same, and adequate for the Experiment. We previously concluded that there was a low likelihood of a measurable impact to marbled murrelet populations due noise from removal. The total amount of noise is related to the number of barred owls removed, and this will not increase under the continuation of removal because the number of barred owls removed does not increase.

The continuation would not change the Social Effects, Ethical Considerations, Effects to Recreational and Visitor Use, or Effects to Cultural Resources. The cost of the Experiment is greater than originally anticipated, but this does not represent new information or changed circumstances relevant to environmental concerns. The FEIS addressed Economic Effects in terms of the estimated acreage of non-federal lands that could be potentially encumbered if the removal experiment resulted in the return of spotted owl to sites that were currently unoccupied, and assumed the "worst case", that all these areas were re-occupied. This has not been the case. Because we assumed a maximum effect in the original analysis, and thus analyzed all potential effects, the Economic Effects do not change with the continuation of the experiment.

We have completed four Safe Harbor Agreements (SHA) for the study areas in Oregon. The potential for SHAs and associated permits were contemplated in the FEIS [USFWS 2013b, p. 218]. The environmental effect of issuance of these permits on spotted owls and other resources were evaluated in subsequent NEPA analyses tiered to the FEIS. With the continuation of the experiment, we will consider extensions of the SHA permits, as needed, and we will evaluate the effects in association with those individual NEPA analyses.

We reviewed completed a review of all pertinent literature on barred and spotted owls available since the completion of after we completed the FEIS (See Appendix B) to assess whether there is new information about barred and spotted owls that could impact our effects analyses in the FEIS. We concluded that none of these studies documents change the analyses we conducted in the FEIS, but rather they support or strengthens the previous analyses.

We conducted a review of the Biological Opinion Regarding the Effects of the Barred Owl Removal Experiment on Northern Spotted Owl and Marbled Murrelet (USFWS 2013c) to determine if the continuation of barred owl removal through FY 20201 would require reinitiation of the consultation (Appendix B). The amount or extent of incidental take of spotted owls defined in the Biological Opinion has not been exceeded. There is no new information that indicate any increase in effects to listed species or critical habitat not considered in the Biological Opinion. The Experiment has not been modified in a manner that causes effects to listed species or critical habitat not considered in the Biological Opinion. Finally, no new species have been listed or critical habitat designated that may be affected by the continuation of the experiment. Therefore, no reinitiation of the Biological Opinion is required.

Based on our current analysis, the proposed continuation of the Experiment does not represent a substantial change to the proposed action relevant to environmental concerns and there are no significant new circumstances or information relevant to environmental concerns and bearing on

the proposed action or its impacts, and so we conclude that no supplementation of the FEIS is required.

Literature Cited

USFWS (U.S. Fish and Wildlife Service). 2013a. Record of Decision for the Experimental Removal of Barred Owls to Benefit Threatened Spotted Owls. U.S. Fish and Wildlife Service, Portland, Oregon.

USFWS (U.S. Fish and Wildlife Service). 2013b. Final Environmental Impact Statement for the Experimental Removal of Barred Owls to Benefit Threatened Spotted Owls. U.S. Fish and Wildlife Service, Portland, Oregon.

Appendix A: Evaluation of the 2013 Preferred Alternative and Comparison with Proposed Continuation of the Barred Owl Removal Experiment through August, 2021. August 22, 2019. Reviewer: Robin Bown.

The U.S. Fish and Wildlife Service's (Service) is proposing to continue the Experiment, and barred owl removal, through August 2021. This continuation will allow us to validate whether the apparent initial indications of positive spotted owl response are the result of the natural variation of these natural systems or the removal of barred owls. The following documents our analysis of the proposed change and whether this change represents a substantial change to the proposed action relevant to environmental concerns or there are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts.

The preferred alternative of the Service Final Environmental Impact Statement (FEIS) for the Barred Owl Removal Experiment (Experiment) was selected for implementation. The Experiment is implemented on four study areas – the Hoopa (Willow Creek)(HUP) in California, the Union/Myrtle (Klamath) (UMK) and Oregon Coast Ranges (OCR) in Oregon, and the Cle Elum (CLE) in Washington. The Service implemented the preferred alternative, starting in September 2013. The proposed continuation occurs on these same four study areas. Therefore, there is no change in the study areas between the 2013 EIS preferred alternative and the proposed continuation of the Experiment.

The area from which barred owls would be removed (the treatment portion of the study areas) was estimated to be 796,800 acres in the FEIS. In early implementation of the Experiment, we reduced the boundaries of the proposed study areas based on updated spotted owl habitat and location information, as well as issues of access. The reduction in study area size (and thus sample sizes) was within the range of values reported in the FEIS as sufficient to detect the effects of removal on populations of spotted owls.

The treatment areas now encompass 584,300 acres, a 27% percent decrease from the original proposal. While this is decrease in the area from which barred owls would be removed, this reduces the area of potential environmental impact as compared with that analyzed and selected in the FEIS.

The Experiment was set up to utilize demographic analysis to determine the response of spotted owl populations to barred owl removal. Each study area is divided into comparable treatment and control areas. Barred owls are removed from the treatment area only, leaving barred owls on the control area. Barred and spotted owls are surveyed annually on the entire study area (both treatment and control). Comparing barred and spotted owl population data and trends from the treatment and control area allows us to determine the effect of the removal on both species.

Under the proposed continuation, this experimental approach will continue, with one modification. We will no longer be surveying the control area for barred owls. The results from the first four years of the Experiment is sufficient to answer the experimental questions concerning our ability to reduce barred owl populations, and maintain those populations at low levels, making continuing barred owl surveys unnecessary on the control area. Therefore, the

proposed continuation includes a reduction in the effort and personnel in the control portion of the study area. This does not represent a substantial change relevant to environmental concerns between the 2013 EIS preferred alternative and the proposed modification of the Experiment.

The Experiment employs a combined removal method, which as noted in the EIS, *"necessarily relies primarily on lethal removal (USFWS 2013, p. 29)."* This removal method was designed to reduce the 1) number of territorial barred owls on the treatment area to a minimum; 2) Be as humane and quick as possible; 3) pose little to no risk of mortality or injury to non-target species; and avoid removing breeding barred owls with dependent young (USFWS 2013, p. 20)." Initially the approach to avoiding barred owls with dependent young was focused on removing barred owls outside the breeding season, but as we described in the EIS, "If protocols are developed that would allow researchers to determine if barred owls are nesting or have young, removal could occur during the nesting season USFWS 2013, p. 20)." We have developed a protocol that allows us to remove territorial barred owls throughout the year while reasonably avoiding removing adults with dependent young. This approach was implemented on the HUP in 2016, on the UMK and OCR in 2017, and on the CLE in 2019. Under the proposed continuation, this Experimental approach will continue through August 2021. Therefore, there is no substantial change in the removal approach between the 2013 EIS preferred alternative and the proposed modification of the Experiment.

In the FEIS, we used a power analysis to estimate the duration that would likely be needed to reach significant results. *"Given the number of spotted owl sites in the combined study areas, this alternative would require an estimated duration of 4 years of barred owl removal to secure scientifically credible results (USFWS 2013, p 29)."* USFWS noted that this was an estimate, based on assumptions from other studies. *"The duration of the experiment is driven by the circumstances and methods of each action alternative. For each action alternative, we provide an estimate of the duration of barred owl removal needed to reach a scientifically supported conclusion based primarily on the type of study, level of existing spotted owl data, size of the study area(s), and potential spotted owl population. This is only an estimate; the experiment may be completed earlier or continue longer, if needed, to detect statistically significant results for the effects of removal on spotted owl populations, to a maximum of 10 years of barred owl removal" USFWS 2013, p. 23).*

As noted on page 23 of the EIS, the four year duration was described as an estimate, and the FEIS noted that Experiment may be continued past this date if needed to detect statistically significant results. Given the limited response by spotted owl populations to date, additional data is important to determine the effect of barred owl removal on spotted owl populations and trends. The proposed continuation of removal through August 2021 represents the application of this option. Several of the analyzed alternatives include removal for five to seven years, and Alternative 7 included removal for 10 years on five study areas. While the duration will run one to four years beyond the original estimate, this by itself does not represent a substantial change in the Experiment relevant to environmental concerns. The effects of the change in duration will be evaluated in the effects section below.

Summary: The proposed continuation of the Experiment would occur on the same four study areas in the preferred alternative, though on a smaller portion of the total area based on

modifications to the proposed study areas during early implementation of the Experiment. The continuation would include the same experimental approach and removal approach, but will no longer include surveys for barred owls in the control area. The experimental questions associated with the barred owl surveys have been answered and these surveys are no longer needed. The primary change in the Experiment resulting from the continuation is an extension of the time frame of barred owl removal through 2021, representing an extension of between 1 and 4 years on the various study areas. The possible need to extend the Experiment to get scientifically credible results was anticipated in the FEIS, to a maximum of 10 years. Therefore, we conclude that the proposed continuation does not represent a substantial change to the proposed action relevant to environmental concerns.

Summary of the Affected Environment and Environmental Consequences of the 2013 Preferred Alternative and Comparison with Proposed Continuation.

In this section, we evaluate the potential changes the proposed continuation would have on the various environmental effects analyzed in the EIS to evaluate whether there is new information or changed circumstances relevant to environmental concerns and bearing on the proposed action or its impacts.

Effects to Barred Owls: In the FEIS, the Service estimated the number of barred owls that would be removed from the study areas for each alternative. For the preferred alternative, we calculated that *"[A]n estimated 634 barred owls would be removed from the Cle Elum Study Area; 1,263 barred owls would be removed from the Oregon Coast Ranges/Veneta (half) Study Area; 1,430 barred owls would be removed from the Union/Myrtle (Klamath) Study Area; and 276 barred owls would be removed from the Hoopa (Willow Creek) Study Area over the 4 years of barred owl removal. We estimate a total of approximately 3,603 barred owls would be removed during the full complement of four study areas in 4 years of barred owl removal (USFWS 2013, p. 124)."* The total number of barred owls removed during the first 4 years of removal are substantially below these estimates in total, though there were some differences in individual study area totals. As of July 12, 2019, we have removed a total of 2,435 barred owls from all study areas. Individually, we have removed 472 from CLE, 1,018 from OCR, 536 from UMK and 409 from HUP. The estimated number of barred owls removed under all alternatives ranged from a low of 321 for single small study area in Alternative 1 to a high of 8,892 for Alternative 7.

Based on the barred owl surveys completed on the control areas as part of the Experiment (where no barred owl removal occurs), the regional barred owl population has continued to increase outside of the treatment areas. Therefore, the removal of barred owls estimated in the FEIS (USFWS 2013, pp. 124-5) represents an impact that is a smaller portion of the regional population.

Under the proposed continuation, we estimate that the total number of barred owls removed on all study areas will remain under the estimated 3,603 from the FEIS (USFWS 2013 p. 124).

Therefore, there is no new information or changed circumstances relative to the effects to barred owls.

Effects to Northern Spotted Owls: in the FEIS, the Service estimated that we would remove barred owls from approximately 1.72% of the suitable habitat within the range of the northern spotted owl and cover approximately 273 spotted owl sites (USFWS 2013, p 151).

Due to the reduced size of the treatment areas in the implemented Experiment, the percentage of spotted owl habitat on which barred owls are removed is slightly lower. The total number of historic spotted owl sites within the treatment area is also lower, at 234. The refinement of the study area boundaries, resulting in the reduction of the area and number of spotted owl sites included, was the result of updated spotted owl location and habitat information. The reduction in study area size (and thus sample sizes) was within the range of values reported in the FEIS that was sufficient to detect the effects of removal on populations of spotted owls.

The proposed continuation would include all these same areas. While this represents a reduction in the number of spotted owl sites in the Experiment, it does not represent new information or changed circumstances relative to environmental effects on the NSO. The number of spotted owl sites included in the study area remains adequate for the Experiment.

Future Demographic Analysis in Long-term, Ongoing Spotted Owl Demography Study Areas: In the initial development of the Experiment, there were concerns that the removal of barred owls on the long-term demographic study areas for spotted owl monitoring would affect the use of data from the treatment areas for the monitoring from approximately 179 sites. We were able to alleviate these concerns. The effect of the Experiment would have been to remove approximately 150 sites from the monitoring program. Since the ability to use specific sites in the monitoring analysis is affected by the removal and not specific to the duration of the removal, the proposed continuation will not change the effect of the Experiment on future demographic analyses.

Effects to Other Wildlife Species: In the FEIS, the Service stated: *"[t]he Preferred Alternative would reduce the potential predation of other wildlife species by barred owls in the treatment areas of the four study areas for the duration of the experiment. Species for which predation is the most serious, and therefore removal has the most positive effect, include endangered, threatened, and candidate species (USFWS 2013, p. 117)"* The Service noted that, as generalize predators, barred owls had the potential to affect 15 such species on one or more of the study areas. The proposed continuation of removal would extend these benefits for an additional 2 years.

The only potential concern was for possible disturbance to nesting marbled murrelets that would result in nest abandonment or reduced reproduction. The potential effects of disturbance or disruption of marbled murrelets result from removal of barred owls, and are therefore dependent on the number of shots taken to remove barred owls, which itself is dependent on the number of barred owls removed. Given the short duration, timing, and limited noise of removal, the Service determined that there was a low likelihood of effects from removal. *"There is a low likelihood of a measurable impact to marbled murrelet populations due to the limited potential*

for exposure and short duration of exposure. Most removal occurs in the fall and winter, after the marbled murrelet breeding season, and the disturbance is of short duration with limited repetition (two shots at most in any 1 day and a maximum of two to three visits during the nesting season at any particular spot). We have not identified any threats from disturbance to any other endangered, threatened, candidate, or sensitive species. Page 175."

While a protocol was developed that allows for some barred owl removal during breeding season, removal is still limited in duration (two shots at most removal sites in one day, with an occasional third shot in any 1 day, and a maximum of two to three visits during the nesting season at any particular spot). Shotgun noise, while potentially loud at the muzzle, attenuates quickly in the forest. In addition, the majority of removal will continue to be conducted with subsonic shotguns and loads, which greatly reduces the initial noise level. The continuation of removal will not result in an increase in the total number of barred owls removed, but would distribute the noise over additional time. Thus, the likelihood of disruption of murrelets remains very low (i.e. discountable).

The total number of barred owls removed is not expected to change as a result of the proposed continuation of removal, but rather be spread over additional years. The total amount of noise is related to the number of barred owls removed, and this will not increase under the continuation of removal. Thus, there remains a low likelihood of effect on marbled murrelets. With the reduction in the size of the study areas, the number of marbled murrelets that may be affected by any disturbance is likewise reduced. There is no new information of changed circumstances relative to other wildlife species between the 2013 EIS preferred alternative and the proposed modification of the Experiment.

Social Effects and Ethical Considerations: In the FEIS, the Service noted *"[n]o significant social effects were identified other than economic effects described below (USFWS 2013, p. 243)."*
Some individuals will find continuing to kill barred owls objectionable, as they did with the experiment from the start. The number of barred owls removal is estimated to remain the same as in the FEIS, only the timeframe of the removal will change. Therefore, there is no change in the social effects and ethical considerations between the 2013 EIS preferred alternative and the proposed modification of the Experiment.

Effects to Recreational and Visitor Use: In the FEIS, the Service concluded "[w]e anticipate no effect on recreational or visitor use for this alternative because barred owl *removal would take place on Federal lands or Tribal lands where hunting and some target shooting already occur. (USFWS 2913, p.204)."* The location of removal remains the same under the continuation. Therefore, there is no change in the effect on recreation and visitor use between the 2013 EIS preferred alternative and the proposed modification of the Experiment.

Economic Effects: The FEIS addressed economic effects in terms of the estimated acreage of non-federal lands that could be potentially encumbered if the removal experiment resulted in the return of spotted owl to sites that were currently unoccupied. We assumed that all sites would be reoccupied, a "worst case" assumption (relative to non-federal lands) that has not been realized (i.e., not all sites have been reoccupied as assumed). *"The potential economic effect of the*

Preferred Alternative is up to the value of the timber on the 2,400 acres for 4 years of barred owl removal and 3 years for recovery of the barred owl population, depending on habitat condition, flexibility of the landowner, and interest in a Safe Harbor Agreement. This effect would be temporary and the acres would likely be available for harvest within 3 years after cessation of barred owl removal even if affected during the experiment (USFWS 2013, p. 218." We have signed four Safe Harbor Agreements (SHA) in Oregon. In return for access to the properties and permission to remove barred owls there, the SHAs support permits for incidental take of spotted owls as a result of the removal of habitat on the landowner's lands within non-baseline Thiessen polygon. These non-baseline spotted owl sites were unoccupied by resident spotted owls for three years prior to the initiation of the experiment. These permits are only necessary if resident spotted owls reoccupy these sites. Due to the SHAs, some of these acres are no longer affected by the removal experiment. In addition, we reduced the treatment portions in the Study Areas, reducing the potential impact. The primary change in the economic effects would be to extend any effects for 1 to 2 years in total. Given the reduction in area, even with the 1 to 2 year extension, this does not represent new information or changed circumstances relevant to environmental concerns.

Estimated Costs of Barred Owl Removal: In the FEIS, the Service estimated that removal of barred owls under the preferred alternative for four years would cost approximately 2.9 million dollars (USFWS 2013, p. 229). We underestimated the cost of barred owl surveys and removal. The actual cost for the 4 years of removal on 4 study areas is approximately $6 million. While this is an increase from the original estimates, the Service and its partners have been able to provide the funds needed. The estimated costs for the proposed continuation of removal for 2 years is $2,550,000. While this is an increase from the original estimate, this does not represent new information of changed circumstances relevant to environmental concerns.

Effects to Cultural Resources: In the EIS, the Service concluded *"[t]he No Action Alternative and all action alternatives would have no direct or indirect effects on cultural resources given that no ground disturbance or potential impacts to section 106 resources would occur (USFWS 2013, p 238)."* Nothing in the proposed continuation would change this, i.e., there would be no ground disturbance or potential impacts to section 106 resources.

Cumulative Impacts: In the FEIS, the Service noted that *"[t]here are currently no new barred owl removal efforts proposed in the action areas (USFWS 2013, p 239)."* This remains true, there are no new barred owl removal efforts in the action area. There are removal experiments underway on Green Diamond Resources lands to the west of the Hoopa treatment area, and on Sierra Pacific Lands to the east of the Hoopa treatment area, though no activity immediately adjacent to the Hoopa treatment area at this time. No other removal efforts have been initiated within the range of the northern spotted owl at this time. These experiments are limited to northern California, occur in a small portion of the barred owl's range, do not overlap the study areas of the Experiment, and are not likely to have a substantial effect on the regional barred owl populations.

We also noted that *"[t]he experiment proposed in this Final EIS is temporary, with a maximum duration of 10 years. . . we estimate barred owl populations and their effects would recover to pre-removal levels within 3 to 5 years of the cessation of removal (USFWS 2013, p. 239.)"*

Based on observed recolonization rates of barred owls on the four study areas, this estimate is accurate.

The Service continues to gather information on options to manage barred owl populations for the survival and recovery of the northern spotted owl through the Experiment and all other sources. No decision has been reached on future management. Thus, the statement in the FEIS *"[a]ny future decision could range from no active management of barred owls to a mix of strategies, including barred owl removal, other methods to reduce barred owl populations, or methods to change the competitive advantage of barred owls. Thus, future barred owl removal efforts are not reasonably foreseeable (USFWS 2013, p. 239)"* remains true.

In 2013, the Service noted that *"[a]ny other additional actions that may affect barred owls are not reasonably foreseeable. Actions detrimental to barred owls are not likely to occur without a permit, given that barred owls are protected under the Migratory Bird Treaty Act, and any such actions would require a permit under this law. It is possible that other research or management projects will be initiated and will apply for a permit during the implementation of this action. However, no such proposals have been advanced at this time (USFWS 2013, p. 239)."* There are currently two additional research permits for the removal of barred owls in the range of the northern spotted owl, both in California. These permits are limited in scope, and do not represent a substantial impact to barred owl populations.

Within the study areas, the Service has entered into four Safe Harbor Agreements (SHA) with non-federal landowners in Oregon. In return for access to the properties and permission to remove barred owls there, the SHAs support permits for incidental take of spotted owls through the removal of habitat on the landowner's lands within non-baseline Thiessen polygon. These non-baseline spotted owl sites were unoccupied by resident spotted owls for three years prior to the initiation of the experiment. These permits are only necessary if resident spotted owls reoccupy these sites. The potential for SHAs and associated permits were contemplated in the FEIS [USFWS 2013, p. 218]. The environmental effect of issuance of these permits on spotted owls and other resources were evaluated in subsequent NEPA analyses tiered to the FEIS. If we determine to extend the experiment as proposed, and if extensions of the SHA permits are needed, we will evaluate the effects in association with those individual NEPA analyses.

Summary

The proposed continuation of the Experiment would not change the environmental effects of the Experiment. The total number of barred owls removed will not increase. The removal will simply be distributed across additional years. The number of spotted owl sites within the study areas is lower than originally described in the FEIS due to modifications to the study areas during the initiation of the Experiment due to updated spotted owl location and habitat information. The number of spotted owl sites remains adequate for the Experiment. The only other ESA listed species that might be affected was the marbled murrelet. We concluded that there was a low likelihood of a measurable impact to marbled murrelet populations due to the limited potential for exposure and short duration of exposure from the sound of the removal. The total amount of noise is related to the number of barred owls removed, and this will not increase under the continuation of removal, but rather been spread over additional years. The

continuation would not change the Social Effects, Ethical Considerations, effects to Recreational and Visitor Use, or effects to Cultural Resources.

The cost of the Experiment is greater than originally anticipated, but this does not represent new information of changed circumstances relevant to environmental concerns. The FEIS addressed economic effects in terms of the estimated acreage of non-federal lands that could be potentially encumbered if the removal experiment resulted in the return of spotted owl to sites that were currently unoccupied, and assumed the "worst case", that all these areas were occupied. This had not been the case, and the potential effect included all potential effects which do not change with the continuation of the experiment.

We have completed four Safe Harbor Agreements for the study areas in Oregon. The potential for SHAs and associated permits were contemplated in the FEIS [USFWS 2013, p. 218]. The environmental effect of issuance of these permits on spotted owls and other resources were evaluated in subsequent NEPA analyses tiered to the FEIS. With the continuation of the experiment, we will consider extensions of the SHA permits, as needed, and we will evaluate the effects in association with those individual NEPA analyses.

Based on the analysis, there are no significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts.

Summary of the Scientific Collecting Permits under the Migratory Bird Treaty Act.

The initial Scientific Collecting Permits under the Migratory Bird Treaty Act was issued for the Experiment on September 23, 2013. Scientific Collecting Permits are issued for a maximum of three years, and must be renewed every three years for longer projects. The permit was renewed on April 1, 2016 and again on April 1, 2019. These permits have been amended to include changes in personnel several times. The final permit expires on March 31, 2022 and will cover the removal if the continuation of the experiment is authorized.

Literature Cited:

USFWS (U.S. Fish and Wildlife Service). 2013b. Final Environmental Impact Statement for the Experimental Removal of Barred Owls to Benefit Threatened Spotted Owls. U.S. Fish and Wildlife Service, Portland, Oregon.

Summary of New Information Available since the FEIS was Issued.

We completed a review of pertinent literature on barred and spotted owls that were published after we completed the FEIS. We concluded that none of these documents change the analyses we conducted in the FEIS, but rather they support or strengthens the previous analyses.

Summary of the pertinent literature on spotted and barred owls published since the completion of the Record of Decision for the Barred Owl Removal Experiment.

Reviewer: Robin Bown
Date: August 22, 2019

We made use of the recent review paper by Long and Wolfe (2019), as well as individual literature search, to identify publications that may contain information specific to effects analysis in the FEIS and ROD.

Barred Owl Population estimates and densities:

Comparison to FEIS: Dugger et al. (2016), Wiens et al. (2018), and Zipkin et al. (2017) provide some new information on barred owl population densities, dynamics, and expansion which is consistent with the analysis and conclusions in the FEIS. They confirmed an increase in density of barred owl populations over time, which we have also documented in the control areas of our Experiment. Thus, this new information does not represent significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts.

Barred Owl Effects on Spotted Owl Populations:

Comparison to FEIS: Many authors have published recent information on the effects of barred owls on spotted owl demography and populations. They documented negative effects of barred owls on spotted owl survival, recruitment, and colonization. They also documented an increased site-level extinction rate for spotted owls. Several authors predicted that extinction of northern spotted owls as a result of the increasing barred owl populations. Long and Wolfe (2019) after summarizing the results of these studies, noted that the preponderance of suggests that without mitigative efforts, barred owls will eventually drive northern spotted owls to extinction throughout most of their range.

Several authors noted that while barred owls appear to have a negative effect on the spotted owl's ability to use high-quality habitats, the presence of high-quality habitat may decrease the effect of barred owls on spotted owl site-level extinction rate, at least in the short term. However, they note this may simply prolong the inevitable local extinction of spotted owl populations.

This information is consistent with the analysis and conclusions in the FEIS, and in some cases strengthens the analysis in the FEIS. Thus, this new information does not represent significant new circumstances or information relevant to environmental concerns and bearing on the

proposed action or its impacts. Literature reviewed include Davis et al. (2016), Diller et al. (2016), Dugger et al. (2016), Hollenbeck et al. (2018), Long and Wolfe (2019), Mangan (2018), Sovern et al. (2014), Wiens et al. (2014), and Yackulic et al. (2014).

Barred Owl Removal Effects and Strategies:

Comparison to FEIS: Several authors have published recent information on the effects of barred owls on spotted owl populations in terms of management options and extinction, based on removal experiments and modeling exercises. They note that there is evidence that removals can reduce barred owl populations and increase population growth of spotted owls in at least some areas.

Some modeling efforts conclude that removal of barred owls would have to be intense over long periods to eliminate barred owls. Others reached conclusions concerning the size and placement of removal areas (e.g. condition of habitat, current spotted owl populations). While these exercises are interesting, the Experiment is designed to gather actual information to determine whether removal may be an effective tool for the survival and recovery of the northern spotted owl. Therefore, the modeling and conclusions are not pertinent to the Experiment.

Thus, this new information does not represent significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts. Literature reviewed include Baumbusch (2016), Bodine and Capaldi (2017), Diller et al. (2014, 2016), Holm et al. (2016), Jenkins et al. (2019), Long and Wolfe (2019), Perlman (2017), and Yackulic et al. (2014).

Habitat use of barred and spotted owls:

Comparison to FEIS: Several authors have published recent information on barred and spotted owl habitat use and relationships. In the FEIS, we discussed habitat use and potential niche separation of barred and spotted owls, though this is only peripheral to the Experiment.

While some studies found minor differences between current habitat selected by both species, they did not show that barred owls will not use all the areas preferred by spotted owls or that the spotted owls has any competitive advantage in these areas. However, most authors also note that habitat use and selection overlaps broadly between the species to a level where habitat differentiation and specialization is unlikely. This difference in preference was described in the FEIS, Appendix A.

Long and Wolfe (2019) noted that "[t]hough these data would appear to imply that the 2 species are independently selecting slightly different habitats, particularly when considering elevation, slope, and proximity to streams, it may rather suggest that barred owls are precluding spotted owls from selecting high-quality habitat." This was supported by Davis et al. (2016) who noted that spotted owls were using lower-quality habitat more often since the increase in barred owl populations in one study area. The loss of spotted owls across the range of the invading barred owl indicates that this difference in habitat selection is not sufficient to allow for niche separation at this time.

Thus, this new information does not represent significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts. Literature reviewed include Davis et al. (2016), Irwin et al. (2018), Jenkins et al. (2019), Keane (2017), Long and Wolfe (2019), Singleton (2015), Weisel (2015), and Wiens et al. (2014).

Weather and climate effects:

Comparison to FEIS: Some authors published recent information on the effects of weather, climate, and related fire issues on spotted owl demography and populations. Some authors note the potential for increasing wild fire prevalence or intensity with climate change, and the potential negative effects of this on spotted owl habitat. We discussed these effects in Appendix A of the FEIS, though this is only of peripheral interest relative to the Experiment. This information does not represent significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts. Literature reviewed include Dugger et al. (2016), Ganey et al. (2017), Jones et al. (2016), and Wan et al. (2019).

Other Biological Information:

Comparison to FEIS: Lewicki et al. (2015) published new information on parasites. Holms et al (2016) described the potential effects of the barred owl as a novel predator on the entire ecosystem. While this information is interesting, it is not pertinent to the Experiment. Thus, this information does not represent significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts.

Social and ethical issues:

Comparison to FEIS: There have been some interesting new publications on the social and ethical issues surrounding removal, such as in our Experiment. Authors note the potential difficulty in developing public acceptance of removal as a management tool for barred owls. We addressed this specifically in the FEIS, including taking specific actions during the development of the FEIS and experiment to address public concerns, understanding, and acceptance. None of these presented new information that would have altered our analysis of the effects. Thus, this information does not represent significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts. Literature reviewed include Cornwall (2014), Bodine and Capaldi (2017), and Lute and Attari 2017.

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Appendix B: Review of the Biological Opinion Regarding the Effects of the Barred Owl Removal Experiment on Northern Spotted Owl and Marbled Murrelet.

The Service is proposing to continue removal of barred owls on the Barred Owl Removal Experiment (Experiment) through FY 2021. We reviewed the Biological Opinion Regarding the Effects of the Barred Owl Removal Experiment on Northern Spotted Owl and Marbled Murrelet (Biological Opinion) to determine if continuation would trigger the need to reinitiate the consultation. (FWS Reference Number 01EOFW00-2013-F-0184).

The activities conducted as part of the Experiment are being conducted on four study areas located within the range of the spotted owl: Cle Elum (Washington), Oregon Coast Ranges (west central Oregon), Union/Myrtle(Klamath) (southern Oregon), and Hoopa(Willow Creek) (California). The four study areas of the Experiment as described in the Biological Opinion were refined with implementation such that they are slightly smaller than, but fully within, the areas described in the Biological Opinion.

Capture and banding of spotted owls under the Experiment occurs only on the Union/Myrtle portion of the Union/Myrtle (Klamath) study area. All other spotted owl surveys and banding are conducted for the Northwest Forest Plan monitoring and are not part of this Experiment. The techniques for capturing and banding northern spotted owls are well-established, and the safety record for biologists conducting this type of work is excellent. However, capturing and banding spotted owls may cause short-term increased stress levels for individual owls, and very occasional injury or death during capture has been recorded. This potential effect was fully evaluated in the Biological Opinion, and the continuation of removal does not change these effects.

In the Biological Opinion, we analyzed the potential for accidental shooting of a spotted owl during lethal barred owl removal or injury during accidental capture when barred owls are non-lethally removed. We determined that there was a small risk that a spotted owl could be accidentally shot. No spotted owls have been injured or killed as part of the Experiment to date. Although the probability of an accidental capture or shooting of a spotted owl during barred owl removal efforts is greatly reduced by the standards of the removal protocol, there is small potential for accidental capture or shooting of a northern spotted owl. We fully analyzed the effects of potential injury or death of spotted owls during removal activities for spotted owl in the Biological Opinion and the continuation of removal does not change these effects.

The Experiment includes capturing, banding or an accidental capture or shooting of spotted owls. We determined that the Experiment may affect, and was likely to adversely affect spotted owls due to a small potential of injury or death from banding or accidental shooting and completed a formal Biological Opinion in 2013.

Reinitiation Criteria

50 CFR Section 402.16 states, "Reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new

information reveals effects of the action agency that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action."

Results of our analysis of the effect of the continuation of barred owl removal under the Experiment relative to the four conditions for reinitiation of formal consultation, are as follows.

Reinitiation Criterion 1: The amount of incidental take for the original proposed action in the 2013 Biological Opinion was one northern spotted owl (spotted owl) over the duration of the Experiment. To date, with the removal of over 2,400 barred owls, no incidental take of spotted owl has occurred. The staff conducting the Experiment are highly skilled at spotted and barred owl identification and extremely careful as described in the removal protocol. We do not anticipate that there is any additional risk of accidental harm of spotted owls with the continuation of removal through 2021.

Reinitiation Criterion 2: There are no effects to critical habitat in the proposed action nor authorized. The total number of barred owls estimated for removal under the Experiment with the continuation of barred owl removal through FY 2021 remains the same as that described in the Biological Assessment (USFWS 2013b). While a protocol was developed that allows for some barred owl removal during breeding season, removal is still limited to more than 300 yards of a known, active spotted owl nest between March 1 and July 31. At a distance of greater than 300 yards, shotgun noise is reduced to a level that would be unlikely to adversely affect spotted owls due to the attenuation of noise across the landscape. In addition, the majority of the removal will continue to be conducted with subsonic shotguns and loads, which greatly reduces the initial noise level. Comprehensive spotted owl surveys continue in the treatment areas allowing the location of breeding spotted owls to be known and avoided.

Given that the number of barred owl removed is not anticipated to increase as a result of the continuation, the level of activity initially analyzed under the Biological Opinion under the Experiment has not changed significantly, but will be distributed across additional time. This lower level of overall intensity will reduce any potential disturbance effects to spotted owls on an annual basis and maintain the anticipated level of disturbance in the Biological Opinion.

Reinitiation Criterion 3: The continuation of the Experiment through FY 2021 is the only change from the original Biological Opinion and fits within its scope of the analysis. Therefore, the agency action has not been modified in a manner that causes an effect to the listed species or critical habitat not considered in Biological Opinion.

Reinitiation Criterion 4: No new species have been listed or critical habitat designated that could be affected by the proposed action.

Review of the Latest information on the Status of Spotted Owls.

A review of the 2013 and current Status of the Species for the spotted owl shows that the threats to the spotted owl, the range wide environmental baseline and population numbers of spotted owls are similar. The most recent demography analysis covered population trends through 2013.

A new demography analysis will be conducted in early 2020. Based on annual reports, we anticipate that spotted owl populations have continued to decline since the last demography analysis. We do not anticipate that the continuation of removal under the Experiment will negatively affect the status of the spotted owls and may, in fact, temporarily improve population numbers due to lack of presence of barred owls such that spotted owls are more detectable and able to nest and reproduce in their historic territories.

Review of Potential Effects to Other Listed Species

The Experiment's Biological Assessment concluded that the Project's proposed action may affect, but is not likely to adversely affect (NLAA) marbled murrelet (*Brachyramphus marmoratus*) due to disturbance. The Service concurred with the NLAA conclusions in the 2013 BO and those reasons are outlined below.

From the 2013 BO: "No adverse effects to marbled murrelet due to disturbance are expected. The survey activities for spotted owls and barred owls will be short in duration and will largely mimic the natural calls of these two species, which are common in the forested environment in which murrelets nest. The potential adverse effects from noise and/or human presence (disruption) to marbled murrelets would be associated with nesting individuals, either by disrupting the adults incubating an egg or feeding a young, or the young being unable to escape the potential noise disruption and fledging before they are physiologically prepared to do so. However, the likelihood of adversely affecting a nest site in unsurveyed habitat is very low (i.e. discountable) given the short disruption periods (maximum of 3 shots in any one day). Therefore, because there will be no impact to occupied habitat and because there is a low likelihood of adversely affecting a nest site in surveyed or unsurveyed habitat due to noise-generating activities, implementation of the activities described during the entire breeding period may affect, but are not likely to adversely affect the marbled murrelet."

This reasoning remains valid, particularly considering that the area where removal occurs (treatment area) was reduced from that analyzed in the 2013 Biological Opinion at the early stages of implementation of the Experiment, resulting in a lower potential for activity in the vicinity of murrelet nesting. While a protocol was developed that allows for some barred owl removal during breeding season, removal is still limited in duration (two shots at most removal sites in one day, with an occasional third shot in any 1 day, and a maximum of two to three visits during the nesting season at any particular spot). Shotgun noise, while potentially loud at the muzzle, attenuates quickly in the forest. In addition, the majority of removal will continue to be conducted with subsonic shotguns and loads, which greatly reduces the initial noise level. The potential effects of disturbance or disruption of marbled murrelets result from removal of barred owls, and are therefore dependent on the number of shots taken to remove barred owls, which itself is dependent on the number of barred owls removed. The continuation of removal will not result in an increase in the total number of barred owls removed, but would distribute the noise over additional time. Thus, the likelihood of disruption of murrelets remains very low (i.e. discountable).

Therefore, because there will be no impact to occupied habitat and because there is a low likelihood of adversely affecting a nest site in surveyed or unsurveyed habitat due to noise-generating activities, implementation of the activities described during the entire breeding period *may affect, but are not likely to adversely affect* the marbled murrelet.

Conclusion.

Based on the preceding analysis of the reinitiation criteria, the status of the species, and the potential effect on other species, the Service determines that reinitiation of the BO is not necessary for the continuation of removal under the Experiment through FY 2021 and the issuance of a Scientific Collecting Permit, as needed.