



United States Department of the Interior

FISH AND WILDLIFE SERVICE  
911 NE 11<sup>th</sup> Avenue  
Portland, Oregon 97232-4181



In Reply Refer to:  
FWS/IR9/12/MBHP

**FINDING OF NO SIGNIFICANT IMPACT**  
**Decision to Issue a Scientific Collecting Permit to**  
**The Oregon Department of Fish and Wildlife for**  
**Common Raven Removal in Baker County, Oregon,**  
**U.S. Fish and Wildlife Service**  
**Portland, OR**  
**March 2021**

Pursuant to the National Environmental Policy Act (NEPA) (42 U.S.C 4321 et seq.), the United States Fish and Wildlife Service (hereafter, Service) prepared an Environmental Assessment (EA). This EA was written because the U.S. Fish and Wildlife Service (Service) needs to make a decision on an application for a scientific collecting permit (pursuant to 50 CFR 21.23), submitted by the Oregon Department of Fish and Wildlife (ODFW), for the take of common ravens (*Corvus corax*) in Baker County, Oregon. The decision by the Service to issue a permit is a federal action.

In making this decision, we need to ensure that our decision is otherwise consistent with the Migratory Bird Treaty Act (MBTA; 16 U.S.C. §703-712), its underlying treaties, and implementing regulations, and that it complies with all other applicable Federal laws and regulations. The MBTA gives the Service broad authority to protect birds, but also to regulate their taking as long as their conservation is assured; the issuance of this permit must ensure that authorized take will not potentially threaten ravens or other wildlife or plant populations (50 CFR 13.21(b)(4)).

The EA considered four alternatives:

- Alternative 1 – Deny the permit (the No Action Alternative).
- Alternative 2 – Issue a permit for take of nests only (eggs only).
- Alternative 3 – Issue a permit for take of raven nests and adults as requested by ODFW (our Preferred Alternative).
- Alternative 4 – Issue a permit for adult take only.

## **PUBLIC SCOPING AND TRIBAL CONSULTATION**

The Draft EA (USFWS 2021) was posted January 8<sup>th</sup> for a 30-day comment period, allowing the public opportunity to provide comments on the content and scope of the document. We received 132 comments. A summary of the comments, and our responses, are in Appendix C of the Final EA.

Additionally, we notified all federally recognized Indian Tribes within Oregon, Washington, and Idaho on November 2, 2020 about the pending decision on the Scientific Collecting permit application, of the availability of the Draft EA in the ensuing weeks, and to provide them the opportunity to review the application and consult with the Service on the potential issuance of and this permit. We received a response from the Quileute Nation within the 30-day comment period that they are unopposed to the permit action. No tribes requested formal government-to-government consultation in regards to the proposed action.

## **BACKGROUND**

The Service received an application from ODFW for a scientific collecting permit on April 11, 2018. We evaluated that application in a Draft EA published February 19, 2020, and subsequently the applicant revised their application on November 9, 2020. Comments received on the initial draft resulted in substantial changes to the study proposal, consequential enough to require a second Draft EA which we posted on January 8, 2021.

Ravens across their range have been increasing at a rate of 2.9% per year for 50 years (Sauer et al. 2017). Their population in the Great Basin region of the United States is estimated at just over 400,000 birds (Coates et al. 2020). Above a density of 0.4 ravens/km<sup>2</sup>, ravens depredate sage-grouse nests and young to such an extent that they may negatively affect sage-grouse population growth (Bui et al. 2010, Coates and Delehanty 2010, Dinkins et al. 2016, Peebles et al. 2017, Coates et al. 2020). Ravens have exceeded that threshold in Baker County. Sage-grouse in Baker County have declined by approximately 75% since 2005. The 2020 population estimate for the Baker PAC is less than 400 individuals (ODFW, unpublished data). They are isolated from other sage-grouse populations, and are vulnerable to extirpation. ODFW proposes this 4-year study to examine the effects of raven nest removal, and possibly adult raven removal, on sage-grouse in Baker County.

## **PROJECT DESCRIPTION -- THE PREFERRED ALTERNATIVE**

ODFW proposes to use lethal and non-lethal techniques to reduce raven densities in the vicinity of nesting sage-grouse, and study the effect on sage-grouse nest success. The study is occurring in the context of a large, targeted restoration effort to enhance and restore sage-grouse habitat with the goal of reversing local sage-grouse declines.

The study will occur across three study areas that encompass four areas called Priority Areas of Conservation for sage-grouse (PACs). Lethal removal of ravens would occur only in Baker County (Baker PAC), and non-lethal raven reductions would occur in the Cow Lakes PAC

(Malheur County). The Bully Creek and Soldier Creek PACs (both located in Malheur County) are control areas in this study, where ravens would not be manipulated, and sage-grouse nesting outcomes will also be tracked. Sage-grouse have been tracked in these four PACS for four years, providing a baseline for understanding the effects of new raven control measures. This study therefore follows a BACI (before-after-control-impact) design where results can be compared across pre-treatment, treatment, and control sites.

### **Adaptive Framework**

The study would occur for up to four years, and incorporates nest removal and potentially also adult take in the Baker PAC using an adaptive decision framework conforming to 2 potential scenarios, described in the Final EA.

Under both scenarios, ODFW proposes to remove up to 100 raven nests per year the first two years. ODFW could continue nest take for a third year, or implement take of adult ravens for the following two years, depending on the responses of ravens and whether or not sage-grouse nest success and survival improve after the initial two years of raven nest take. If ravens adopt a more dispersed foraging strategy upon loss of their nest, and sage-grouse in turn have higher nest survival, then raven nest take would continue in subsequent years of the study. If not, adult raven take would be considered in years three and four. Depending on the scenario trajectory, the maximum nest take would be 300 (100 nests per year during years 1, 2 and 3) and the maximum adult take would be 800 (400 ravens per year during years 3 and 4).

During the study time period, non-lethal techniques to reduce raven densities will be used in the Cow Lakes PAC. These techniques include removal of raven food subsidies like road-kill from highways and livestock carcasses and strategies to deter raven nesting and perching.

### **Raven Management Methods**

ODFW proposes to take most nests by manually destroying them. Nest removal will occur from 1 January until 10 April, annually, for up to three years, and prior to hatching to avoid killing nestlings. ODFW may also apply a food-grade corn oil to eggs to prevent their hatching as a last resort if a particular raven pair attempts a third nest following two prior nest removal efforts.

If ODFW employs adult take to reduce raven densities, then they would use the avicide, DRC-1339. The method uses chicken eggs injected with DRC-1339 placed in bait stations; these eggs in turn are consumed by ravens. This method was used successfully by the USDA, Animal and Plant Health Inspection Service's Wildlife Services program, in Nevada and Wyoming to reduce raven densities and improve nest success of sage-grouse (Coates and Delehanty 2004, Dinkins et al. 2016). This avicide has a higher toxicity to ravens and other members of the Corvidae Family than to most other species of birds, and bait stations are also monitored to reduce the likelihood that non-target species will come into contact with the egg baits.

### **Monitoring**

ODFW proposes various methods to monitor the efficacy of nest and adult removal methods on sage-grouse. They will continue to monitor sage-grouse in all four PACs throughout the course of this study. In addition, they will monitor raven occupancy in the Baker PAC over the course

of the study to determine their responses to nest take, and adult take if that technique is used. These data will determine the trajectory of the study scenarios over the course of the 4-year study.

## **EFFECTS AND FINDINGS**

The four alternatives considered in the EA provide a reasonable range to assess differing potential environmental effects associated with issuance of a Scientific Collecting Permit.

### **Ravens**

In order to determine the effects of these alternatives on ravens, we built a population model with inputs that corresponded to the take scenarios under the alternatives. The model examines the effect of issuing the permit on the raven population within the Baker PAC and at the larger scale of the Great Basin, for the duration of the permit and for 15 years following permit issuance. The model results vary by each take scenario, as expected. Take scenarios within the three action alternatives that include nest take all result in large, short-term reductions in the number of raven nests in the Baker PAC; these recover to pre-permit levels within the following 11 years. Scenarios involving adult raven take show large, short-term reductions in the number of ravens in the Baker PAC followed by a return to pre-permit levels within 11 years. The model outputs vary modestly across the 3 action alternatives in terms of the duration of the reduction in nest or raven numbers, and in the timing of that reduction relative to the start of the study; however those reductions and subsequent recoveries logically correspond to each take scenario. None of the alternatives affects the long-term population viability of ravens in the Baker PAC. In addition, none of the take scenarios affects the continued growth of the raven population in the Great Basin, a model which also accounts for take authorized by permit in other states in the Great Basin; the population of ravens in the Great Basin is so large that its growth is expected to continue unabated by the take proposed and authorized.

### **Greater Sage-Grouse**

The greater sage-grouse population in the Baker PAC would likely benefit under any of the action alternatives. Reducing predation pressure by ravens is likely to increase sage-grouse survival and productivity.

### **Non-target Migratory Birds**

We considered potential short- and long-term effects of the alternatives on other species of birds. Other members of the Corvidae (ravens, crows, jays, and magpies) are sensitive to DRC-1339. However, the risk of exposure to non-target birds is low because bait sites will be monitored. Any incidental takes of corvids (or other scavengers) are likely to be very few or non-existent and therefore not have any significant effect on local populations. In contrast, there could be beneficial effects to some species if raven densities were reduced, through reduced competition for resources, and through fewer predation events by ravens on nests of other species.

### **Endangered and Threatened Species**

There are no listed species or designated critical habitats in either the Baker or Cow Lakes PACs, so there will be no effects to species under the Endangered Species Act.

### **Other Effects**

The proposed action does not conflict with proposed or adopted local, regional, State, or Federal land use plans or policies. The project overlays private and Bureau of Land Management land. On private land, ODFW will continue to work with individual landowners for access and permissions to conduct the proposed activities. ODFW, BLM, and our office have determined that the proposed activities comply with BLM land use plans that overlay the Baker and Cow Lakes PACs.

The issuance of the proposed permit does not have the potential to cause effects on cultural or historic properties, assuming such properties were present.

While some members of the public remain opposed to the Service's authorization of management actions directed at ravens, even for an experiment such as proposed here, precedent already exists for permits of this nature, so this action does not represent a new precedent or decision in principle.

Alternative 3 is our Preferred Alternative. This alternative is the proposed study by ODFW, and it meets our permit issuance criteria under 50 CFR 13.21 "Issuance of Permits" and the issuance criteria under 50 CFR 21.23. Issuance of this scientific collecting permit will not potentially threaten any wildlife population.

### **DETERMINATION**

The Service has selected the Preferred Alternative (Alternative 3) as described in the EA and will issue a Scientific Collecting permit (50 CFR 21.23) for the take of common ravens as requested by the Oregon Department of Fish and Wildlife. We have found the application submitted for the permit under 50 CFR 21.23 meet the issuance criteria.

We considered impacts to common ravens, greater sage-grouse, other corvids potentially affected by this permit, and to other resources from the issuance of this permit within the Baker and Cow Lakes PACs, and within the Great Basin. Issuing this permit could result in the decline of the number of nesting ravens, of ravens themselves, or both, in the Baker PAC, for the duration of the four-year study. The population analysis we conducted demonstrates that those numbers would return to pre-permit levels within a few years following the study due to intrinsic rates of population growth. Greater sage-grouse will likely benefit from the permitted actions, and non-target effects, if any, will be negligible. Raven numbers within the Great Basin will be unaffected by permit issuance.

The Service has determined that issuance of a permit under 50 CFR 21.23 for the take of up to 300 common raven nests and up to 800 adult common ravens over the 4 years of study does not constitute a major Federal action significantly affecting the quality of the human environment under the meaning of section 102(2)(c) of the National Environmental Policy Act of 1969 (as amended). As such, an EIS is not required.

## **PUBLIC NOTICE**

An electronic copy of this FONSI has been posted on the Service's website:  
<https://www.fws.gov/pacific/migratorybirds/Library/raven.html>.

## **REFERENCES**

- Bui, T.-V. D., J. M. Marzluff, and B. Bedrosian. 2010. Common raven activity in relation to land use in western Wyoming: implications for greater sage-grouse reproductive success. *The Condor* 112:65-78.
- Coates, P. S., and D. J. Delehanty. 2004. The effects of raven removal on sage grouse nest success. *Proceedings of the 21st Vertebrate Pest Conference* (R. M. Timm and W. P. Gorenzel, eds.). Published at Univ. of Calif., Davis. Pp. 17-20.
- Coates, P. S., S. T. O'Neil, B. E. Brussee, M. A. Ricca, P. J. Jackson, J. B. Dinkins, K. B. Howe, A. M. Moser, L. J. Foster, and D. J. Delehanty. 2020. Broad-scale impacts of an invasive native predator on a sensitive native prey species within the shifting avian community of the North American Great Basin. *Biological Conservation* 243:108409.
- Dinkins, J., M. R. Conover, C. P. Kirol, J. L. Beck, and S. N. Frey. 2016. Effects of common raven and coyote removal and temporal variation in climate on greater sage-grouse nesting success. *Biological Conservation* 202:50-58.
- Peebles, L. W., M. R. Conover, and J. B. Dinkins. 2017. Adult sage-grouse numbers rise following raven removal or an increase in precipitation. *Wildlife Society Bulletin* 43:471-478.
- Sauer, J. R., D. K. Niven, J. E. Hines, J. D. J. Ziolkowski, K. L. Pardieck, J. E. Fallon, and W. A. Link. 2017. The North American Breeding Bird Survey, Analysis Results 1966 - 2015. Version 2.07.2017. Available online here. Accessed on 30 November 2017. in U. G. Survey, editor., USGS Patuxent Wildlife Research Center, Laurel, Maryland, USA.
- U.S. Fish and Wildlife Service. 2021. Draft Environmental Assessment Scientific Collecting Permit for Common Raven Removal. USFWS, Migratory Birds and Habitat Program, Portland, OR. Copies available upon request.

---

(Acting) Chief  
Migratory Birds and Habitat Program