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The is a Comment on the **Fish and Wildlife Service** (FWS) Proposed Rule: **Migratory Bird Permits: Management of Conflicts Associated with Double-Crested Cormorants (Phalacrocorax auritus) Throughout the United States**

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Comment

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Attachments (1)

Comments on Cormorant DEIS.2020.Roby

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Dear Madam/Sir:

This letter responds to the request from the U.S. Fish and Wildlife Service (USFWS) for comments on the Draft Environmental Impact Statement (DEIS) "Management of Conflicts Associated with Double-crested Cormorants" (USFWS 2020a). I appreciate the opportunity to review and comment on the DEIS. I am a retired federal scientist and Professor of Wildlife Ecology at Oregon State University with over 23 years of experience conducting research on predation on juvenile salmonids in the Columbia River basin by Double-crested Cormorants (DCCOs) and other piscivorous colonial waterbirds. I am also a co-author of the peer-reviewed scientific publication that conducted the most recent range-wide status assessment of the Western Population of Double-crested Cormorants (Adkins et al. 2014). The comments, concerns, and opinions expressed in this letter are my own, however, and do not represent those of the U.S. Geological Survey (my former employer) or Oregon State University.

My particular concerns regarding the management plan described as the preferred alternative in the DEIS (Alternative A) are with regard to the potential impact on the Western Population of Double-crested Cormorants. If the preferred alternative (New Permit for States and Tribes) is adopted by the USFWS as the new management plan for DCCOs in that portion of the 48 contiguous states that is west of the Continental Divide, there is a strong likelihood that cormorant take will increase so dramatically that the Western Population of DCCOs will collapse. At about 45,778 breeding individuals (95% c.i. = 31,850-59,710; USFWS 2020b), the Western Population of DCCOs is at least an order of magnitude smaller than the DCCO population east of the Continental Divide, with numbers approaching 900,000 individuals (USFWS 2020a, Appendix E). The DCCOs in the Western Population are nesting over an enormous area from the U.S.-Mexico border to southern British Columbia and from the Continental Divide to the Pacific Coast. Satellite telemetry (Courtot et al. 2012), band resightings, and analyses of genetic structure (Mercer et al. 2013) all indicate that adults of breeding age move among breeding colonies in this large area, and thus constitute one breeding population or management unit (Adkins et al. 2014).

DCCOs have been identified as a factor limiting survival of ESA-listed salmon and steelhead in one locality within the range of the Western Population: the Columbia River estuary (Lyons 2010), where formerly over 40% of the Western Population nested on East Sand Island (Roby et al. 2014). That colony has now been abandoned due to disturbance from Bald Eagles and management activities intended to cull 11,000 DCCO individuals, oil the eggs within 26,000

cormorant nests, and limit colony size to about 5,600 breeding pairs (USACE 2015). Now the largest colony of DCCOs in the Western Population is on the Astoria-Megler Bridge, just 5 miles further up-river from East Sand Island, which currently supports a colony of over 5,000 breeding pairs (J. Lawonn, Oregon Department of Fish and Wildlife, pers. comm.). While this increasing colony of DCCOs on the Astoria-Megler Bridge clearly presents a serious issue to those responsible for both restoring ESA-listed stocks of Columbia Basin salmonids and for the maintenance of the Bridge, it remains a local management issue that does not warrant transfer of management authority to the States and Tribes, nor an effort at cormorant population control throughout the range of the Western Population. The current management approach of the USFWS issuing depredation permits to cover lethal take of DCCOs or their nest contents (Alternative E: Current Process in the DEIS), should that be warranted, seems the most appropriate procedure for meeting management objectives for cormorants in the Columbia River estuary.

The Western Population of DCCOs is currently in decline. The U.S. Fish and Wildlife Service Monitoring Strategy for DCCOs in the Pacific Flyway (Western) population (PFNMBTC 2013) has documented a significant decline in breeding individuals within the Western Population since 2014 (USFWS 2020b). That decline is largely a result of the repeated abandonment during the breeding season of the former East Sand Island cormorant colony site and the associated loss of colony productivity (young raised; Anchor QEA 2017). But DCCO colonies in other areas within the breeding range of the Western Population are also in decline, including along the Oregon Coast (J. Lawonn, ODFW, pers. comm.), coastal British Columbia (Adkins et al. 2014), the San Francisco Bay area (Rauzon et al. 2019), and the Salton Sea in southeastern California (K. Molina, UCLA, pers. comm.). In the portions of the Columbia River basin upstream of the estuary (Columbia Plateau region), the numbers of nesting DCCOs are also in decline (Collis et al. 2020). Without the large breeding colony of DCCOs on East Sand Island in the Columbia River estuary, which formerly produced thousands of young cormorants annually, widespread shooting of DCCOs by the States and Tribes without close supervision by the USFWS would rapidly drive the Western Population below the sustainable level, which the USFWS has estimated at about 41,000 breeding individuals (USACE 2015).

There is reason for concern that the numbers of breeding individuals in the Western Population of DCCOs may have already dipped below the sustainable level set by the USFWS (ca. 41,000 breeding individuals). In 2013, the USFWS and the Pacific Flyway Council developed "A Monitoring Strategy for the Western Population of Double-crested Cormorants within the Pacific Flyway" (PFNMBTC 2013). That strategy relies on a dual frame sampling approach whereby a sample of the known and potentially active breeding colonies for DCCOs within the breeding range of the Western Population are selected for counting to determine colony size. As the strategy is currently implemented on an annual basis, it apparently produces an estimate of population size that is biased high due to extrapolation of colony counts from a weighted sample of colony sites in the area frame to all sites in the area frame. Plus the Monitoring Strategy is only intended to detect as much as a 50% decline over 10 years. The Monitoring Strategy for DCCOs in the Western Population has been conducted annually since 2014, but after implementation in 2020 the frequency of monitoring will be reduced to once every three

years. Hence, if widespread lethal take of DCCOs in the Western Population, as described in the DEIS, caused a severe population decline it would take many years before the decline was detected, and the population could be driven well below the sustainable level. Thus, the design of an accurate and efficient monitoring strategy for DCCOs in the Western Population needs to be developed and tested before any increase in lethal take can be safely implemented under the proposed rule. The DEIS includes no plans for range-wide monitoring of DCCO populations, evaluation of the population-level impacts of the realized take, or where the resources would come from to implement such critical management effectiveness monitoring.

Based on my review of Appendix E of the Draft EIS (USFWS 2020a), I have serious concerns that the Potential Take Level (PTL) for the Western Population of Double-crested Cormorants (DCCO) is not sustainable and will cause a rapid decline in the Western Population to levels not seen since DDT was banned and DCCOs were protected under the Migratory Bird Treaty Act (both in 1972). The PTL modeling approach described in Appendix E was used to derive a "conservative" PTL for the Western Population of 8,881 individuals/year. This level of potential annual take represents 15% to 28% (median = 19%) of the estimated total number of breeding individuals in the population as of 2019 (45,778 individuals; 95% c.i. = 31,850 – 59,710 individuals), based on the USFWS's Double-crested Cormorant Western Population Status Evaluation (USFWS 2020b). I believe that the very high PTL for the Western Population that is presented in the DEIS is a result of faulty assumptions, erroneous input parameters, and carelessness over the potential impact to the Western Population when designing and populating the PTL projection model. There was clearly no peer-review of the PTL model or its output; otherwise, the many problems with the approach and the erroneous predictions that it produced would have been caught and corrected. The PTL model, which is the foundation for claims in the DEIS that proposed take of cormorants would result in sustainable populations, needs to be completely re-evaluated before it can produce reliable and defensible estimates of maximum allowable potential take levels.

First, the minimum known population size (N_{min}) that was input to the PTL model for the Western Population was 69,817 individuals (range = 49,966 – 89,668; USFWS 2020a, Table E-2). By the FWS's own estimate, the Western Population consisted of about 45,778 breeding individuals (USFWS 2020b, Table 3), below the lower end of the range of minimum population sizes listed in the DEIS. In order for the population size to be as much as 69,817 individuals, about 34% of the population would have to be non-breeders (immatures or adults skipping breeding). Thirty-four percent non-breeders is much greater than the 16%-22% non-breeders that is assumed by the developers of the PTL model (Appendix E, DEIS), based on data on breeding propensity collected in the Great Lakes region. Thus, the model starts by assuming a minimum population size that is about 28% greater than the survey data collected by the USFWS says it currently is. Appendix E of the DEIS also lists the current (2019) size of the Western Population as 21,537 pairs to 36,719 pairs (USFWS 2020a, Table E-1), or a median of 29,128 pairs. But the FWS's 2019 DCCO status evaluation for the Western Population estimates that population size was 22,889 breeding pairs (USFWS 2020b, Table 3). This estimate of the size of the Western Population in Appendix E of the DEIS is about 27% greater than USFWS

survey data indicate it was in 2019. Thus, the input data used in Appendix E of the DEIS are not the most recent data that the USFWS itself has obtained for the Western Population of DCCOs.

Second, the maximum population growth rate (r_{max}) for the Western Population was based on the growth rate of the Great Lakes population of DCCOs during 1979-2009. As is indicated in Appendix E, this period was one of very rapid growth in the Great Lakes DCCO population, when the population went "from near zero breeding birds to over 200,000." The estimate of r_{max} from modeling the Great Lakes population was 0.3577, which is a very high r_{max} for any bird species the size of DCCOs and about twice the empirically-derived r_{max} for the Western Population (USACE 2015). Plus, the 95% c.i. for the estimate is also very large: 0.1666 to 0.5487, suggesting that using the mid-point of 0.3577 could easily result in an large overestimate of r_{max} and a PTL that exceeds sustainable. Nevertheless, the r_{max} value used in the model to estimate PTL for the Western Population was 0.3577. The Western Population is currently in decline, according to USFWS survey data, with the number of breeding pairs declining by about 38% in the last five years (36,719 pairs in 2014 to 22,889 pairs in 2019; USFWS 2020b, Table 3). Because the PTL model assumes that following the removal of up to 8,881 individuals from the population in a single year that the population will grow back at an exponential rate of 0.3577, it is not surprising that the PTL model projects that this level of annual take is sustainable, when clearly the Western Population cannot sustain that level of harvest for even a few years.

The third parameter that must be estimated for the PTL model is the "management factor" (F_0). This parameter is subjective, rather than objective or biological, because it depends on management goals. The F_0 that the modelers selected for the Western Population was 1.0, the same management factor as they selected for the DCCO populations east of the Continental Divide. This choice of management factor is based on the assumption that the Western Population will respond to intensive harvest in a similar manner to the DCCO population in the Central and Mississippi flyways, which is an order of magnitude larger and currently increasing. The choice of management factor also assumes that, following a large cull of individuals from the Western Population, the population will respond in a density-dependent fashion with high fecundity and recruitment, a response that is far from certain given the current decline of the Western Population. Therefore, the PTL model is based on the assumption that the Western Population will respond robustly to harvest at or near 8,881 individuals/year and reproduce at a very high rate so that the population can recover quickly from an annual take of roughly 19% of the breeding population. But the current status of the Western Population suggests that this level of take would constitute severe over-harvest, drive the population to such low levels that it would require many years for population recovery, and thus be unsustainable.

In summary, for reasons described in detail above, I am deeply concerned over the Potential Take Level for DCCOs in the Western Population that is described in the DEIS, Appendix E. The model used to generate Potential Take Levels is flawed and the input parameters used for the Western Population are inappropriate or out-of-date. Consequently, the projected PTL for the Western Population in the DEIS is nearly four times the take that this population could sustain without collapsing, based on the Service's own population analyses in the lead up to the Final EIS for management of Double-crested Cormorants in the Columbia River estuary (USACE

2015). Fisheries-cormorant conflicts in the West are decidedly a local problem, and should be resolved using local management actions, preferably non-lethal ones (Suzuki et al. 2015), with the USFWS closely monitoring and overseeing any lethal take of DCCOs, as stipulated in the MBTA. The No Action alternative described in the DEIS remains the appropriate response to perceived conflicts between fisheries and cormorants in the West. To do otherwise is not only an abdication of the Service's management responsibilities, it is inviting a throwback to the type of widespread cormorant persecution that was prevalent in the late 19th and early 20th centuries, and another collapse of the Western Population of Double-crested Cormorants.

Thank you for your consideration of these comments.

Sincerely,

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