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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

See attached.

Attachments (1)

Audubon cormorant comments 2020_07_20

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Dear Sir/Madam:

This letter is submitted in response to the call for comments on the Draft Environmental Impact Statement (DEIS), Management of Conflicts Associated with Double-Crested Cormorants. Thank you for this opportunity to comment on behalf of the National Audubon Society (Audubon) and its 1.7 million members, 22 state offices, 462 affiliated chapters, and 41 nature centers across the United States.

The National Audubon Society does not categorically oppose limited, site-specific, science-based lethal control measures directed at Double-crested Cormorants (*Phalacrocorax auritus*)[1]. However, based on the information and alternatives presented in this DEIS, we can only support Alternative E – No Action (Current Process). We have the following overarching concerns with the U.S. Fish and Wildlife Service's (Service) approach and alternatives as presented in this DEIS:

- The entire approach hinges on identifying the *maximum* number of cormorants that can be killed to respond to complaints about cormorants—whether those complaints are well founded or not— while sustaining cormorant populations at reduced levels.
- The Service should instead focus on how best to identify the mostly local situations where there may be genuine, scientifically documented conflicts and on how to kill or otherwise manage as few cormorants as possible in trying to address those conflicts.
- The Potential Take Level (PTL) analysis on which the entire management program rests may be deeply flawed, and it is unclear whether it received external peer review.

[1] Hereafter, "cormorants," unless referring to other species or in sentences where other species are mentioned.

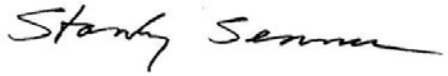
- The Preferred Alternative A has a vaguely defined goal of reducing conflicts associated with cormorants, but there is no guidance defining a conflict nor how such conflicts should be documented, how nonlethal controls should be tested before lethal controls are considered, or how to know that conflicts have effectively been reduced.
- Preferred Alternative A shifts responsibility from the Service to states and tribes, which do not have the funding or political will to document the need for management, test non-lethal options, and conduct the necessary long-term monitoring and evaluation programs.
- The DEIS fails to describe and evaluate the many case studies where cormorants have been managed with nonlethal approaches.
- The DEIS fails to consider a reasonable range of alternatives, such as a combination of Alternative E with increased support for development and implementation of nonlethal measures as well as public education to dispel the many myths and deep-seated prejudices about cormorants.
- The DEIS fails to discuss what responsibility aquaculture operations must shoulder for offering "free" fish to fish-eating birds and best management practices for non-lethal control.
- The DEIS fails to discuss long-term cormorant conservation or mitigation of the large number of cormorants proposed for annual lethal control. Where are the places where cormorants and their habitats are secure, especially when some states and constituencies are hostile to the presence of virtually any cormorants?
- The science presented here is incomplete and outdated. Even so, this DEIS, as well as the 2017 EA, acknowledge that cormorant impacts on wild and stocked fish and fisheries are variable, site-specific, and often only anecdotal, and that the benefits (if any) of lethal control are likely to be hard to detect given all the other influences on fish populations and fisheries.
- The DEIS offers a vague promise that a monitoring program will be developed within one year after adoption of the proposed rule, but there is no description of that program, how it will be funded, and how it will be sustained over the long-term. Nor is there discussion of support for and ability to implement such a program by states and tribes.
- In regard to cumulative impacts, the Service does not address how the effects of climate change have been incorporated into its management objectives and PTL, nor is there consideration of how the Service's new policy and rule in regard to incidental taking under the MBTA will affect cormorant populations.
- Finally, there is no indication of consultations with the government of Canada in regard to the status and management of cormorants in, for example, Ontario, where a hunting season is now proposed, or in British Columbia, where the cormorant is classified as a Species of Concern.

Audubon recognizes that in some localities cormorants present enormous challenges for natural resource managers who must be accountable and responsive to multiple constituencies, and we further recognize the need for management approaches that are feasible, affordable, and sustainable (for cormorants and agencies). Nonetheless, Audubon looks to the Service for

leadership in the conservation and management of migratory birds. We look for that leadership to be grounded in science, not perception, with long-term perspective informed by awareness of changing environmental conditions and the full range of often conflicting, changing human needs, perceptions and values. The choices the Service makes with respect to cormorants are critical for the cormorants themselves, but also will set precedents for management of other migratory birds in an increasingly stressed and resource-limited environment.

Given these considerations, as well as those outlined in more detail below, we are deeply disappointed in the Service and its proposed approach to cormorant management. We encourage the Service to pause this process and start over with a stronger scientific foundation and a focus on how to identify and address genuine conflict in ways that are sustainable for cormorants and natural resource agencies. What you have proposed in this DEIS falls well short of that mark.

Thank you,



Stanley Senner
Vice President for Bird Conservation

National Audubon Society

Detailed Comments on the
Draft Environmental Impact Statement (DEIS),
Management of Conflicts Associated with Double-Crested Cormorants

The following are organized by headings and page numbers in the DEIS.

BACKGROUND

p. 3: "In addition, the Service is authorizing take of cormorants in the Pacific Flyway using guidelines and frameworks associated with a 2015 FEIS evaluating a cormorant management plan to reduce predation on fish resources in the Pacific Flyway (this 2015 FEIS is also available at https://www.regulations.gov/ for this rulemaking)."

Comment: The 2015 Final EIS is outdated and does not take into account the collapse and redistribution of the large cormorant colony at East Sand Island, which formerly supported 40% of the breeding pairs in the Pacific Flyway. Moreover, that Final EIS addressed cormorant management only in the Columbia River estuary, and it was not intended as a cormorant management plan on the scale of the Pacific Flyway. To the extent that any of the alternatives presented here or future decisions concerning cormorant management in the West rely on the 2015 FEIS, reference to that document must be fully updated (e.g., U.S. Fish and Wildlife Service 2020).

p. 3: "Therefore, the Service is responsible for determining the maximum amount of lethal take that can occur in order to minimize damage and conflicts, while maintaining a sustainable cormorant population."

Comment: The Service has chosen to focus on the maximum amount of lethal take that can occur, but that is its choice, not its responsibility. Audubon believes that under the four migratory bird treaties and the Migratory Bird Treaty Act, it is the Service's first responsibility to protect and conserve migratory birds. Accordingly, the Service should look closely at situations where there may be conflicts and decide what mix of actions, if any, can reduce such conflicts—including killing the minimum, not maximum, number of cormorants--to achieve specific, socially acceptable goals.

p. 4: "The Service needs to ensure that this approach is ecologically sound and sustainable in light of physical and biological change, practical, viable, or economically realistic, and responsive to the following areas of concern, which were identified in the August 2018 workshops:"

Comment: The list of "areas of concern" identified in the August 2018 workshop is cherry-picked to only mention those that relate to reducing cormorant populations (Seng 2018). The following are examples of issues raised in those workshops but which are not reflected here:

- Is there a process in mind to assess how palatable different management actions would be to the public? For example, is there a public research or input component on oiling eggs vs. other actions? (p. 6)
- Is there a conflict? (p. 7)
- At what point in the framework are decisions made as to who is the responsible entity for providing the resources for implementation? Management actions often push the problem off our plate and onto someone else's. (p. 7)
- Is anyone addressing Canada, what they're doing, and how that impacts us? How does this fit into the Flyway model and long-term, cumulative management?
- Are there BMPs for stocking efforts, but also dealing with the social components/PR plan and strategy to help manage this? Need a solid science approach, but also a way to manage public perceptions so we don't end up back in court. (p. 8)

Elements Common to All Alternatives

p. 10: "Upon publication of a record of decision, the Service will formally convene with each flyway and relevant stakeholders to develop a specific cormorant-population-monitoring regime. This regime will be made public within one year of a record of decision."

Comment: The details of, as well as commitments to and funding for, implementation of the cormorant-population-monitoring regime must be part of the Final EIS. A vague assurance that the regime will be made public within one year of a record of decision is wholly inadequate. If a description of the regime and commitments to fund and implement are not part of the FEIS, issuance of any new permits or depredation orders *must be suspended* until such time as the regime is in place and baseline data are actually being gathered.

p. 10: "This report would include, but not be limited to: …(4) the state of the conflict and need for continued management, as reported by requests for depredation permits (both individually and programmatically by participating states and tribes);…"

Comment: The Service must do more than simply tally the number of requests for depredation permits without evaluating the degree of actual conflict and the effectiveness of lethal and nonlethal controls in reducing past conflict. Some constituencies believe that any live cormorant is a threat to fish and should be eliminated, so the number of requests for depredation permits is like asking for a show of hands among those who have complaints and not thinking critically about what is actually necessary to reduce genuine conflict.

Comment: The Service should consider and describe an alternative that combines increased research and development and implementation of BMPs for nonlethal means in combination with increased public education about the natural history and ecology of cormorants. Audubon

raised the need for consideration of nonlethal means in its scoping comments (dated 2020-03-08):

> When issuing individual depredation permits, it is standard practice for the Service to ask applicants whether non-lethal means have been tried before consideration of lethal means (Division of Migratory Bird Management 2017). Shooting cormorants seems like an easy and even popular option when faced with perceived fishery conflicts, but the easy path may not be effective, sustainable, or socially acceptable over the longer term. What resources will the Service provide in the way of best management practices for commercial aquaculture operations or situations where hatchery-reared fish are released/stocked? How will the Service ensure that non-lethal measures are employed and demonstrated to be inadequate before lethal controls are used? What will the Service require of those who use lethal control in order to evaluate the efficacy of those actions and facilitate adaptive management?
>
> Europeans have dealt with conflicts involving cormorants (primarily Great Cormorants) for much longer than we have in the United States, and they have tended to be less reliant on lethal control. The Service should review and consider alternative approaches, such as those described in "The INTERCAFE Cormorant Management Toolbox: Methods for reducing Cormorant problems at European fisheries" (http://www.intercafeproject.net/pdf/Cormorant_Toolbox_web_version.pdf).
>
> Efforts to reduce cormorant impacts on nesting Common Terns on Popasquash Island in Lake Champlain, Vermont, provide a fine example of creative, successful use of non-lethal techniques. See LaBarr (2006) and subsequent project reports for more information.

To satisfy NEPA, the Service must consider a full range of alternatives. Only considering alternatives focused on lethal measures is not sufficient.

ALTERNATIVE A (PREFERRED ALTERNATIVE): SPECIAL PERMIT FOR STATES AND TRIBES

p. 11: "A new permit would allow these agencies to manage conflicts associated with double-crested cormorants specifically on state or tribal-managed lands. Under this permit, the Service would authorize states and tribal wildlife agencies to conduct lethal take of double-crested cormorants on lands within their respective jurisdictions."

Comment: The Final EIS needs to be clear about this: Will permits issued to states and tribes only apply on state- or tribal-managed lands? Would that mean no lethal control under state or tribal permits on federal or private lands? What about waters, navigable or otherwise?

p. 12: "Under this alternative, the Service would maintain primary authority for the management of cormorant populations, but would authorize the individual states and tribes to implement the provisions of this alternative within the guidelines established by the Service."

Comment: What are those "guidelines"? They need to be spelled out in the Final EIS, beyond those described in Appendix D. What criteria, level of scientific documentation of need, funding

and commitment to monitoring, etc. will the Service use to determine whether to issue a permit to a state or tribe?

p. 12: "We would expect states and tribes issued this new special permit to prioritize their allotted take to entities/instances most in need of conflict resolution, and we would encourage them to conduct monitoring to assess the efficacy of control activities".

Comment: It is not sufficient to just "expect" that states and tribes will prioritize take to situations most in need of conflict, nor is it enough to just "encourage" states and tribes to conduct monitoring to assess the efficacy of control activities. Evaluation is critical to this effort. As part of the permit process, the Service must require specific management goals and desired outcomes, standard measures needed to assess the efficacy of both nonlethal and lethal means, and commitments to implement and evaluate such measures as permit conditions. This information must be part of annual reporting requirements to the Service. Without these evaluations, all that will come from reports by the states and tribes will be the number of birds taken without any sense of whether the desired results are being achieved.

p. 12: "The Service would use this data to better track accidental take of these species when take of cormorants occurs, and recommend appropriate actions such as additional training of personnel, or avoiding areas where there is a high concentration of non-target species in the area."

Comment: In regard to avoiding concentrations of non-target species, what comprises a high concentration and where are those areas? Have PTLs been prepared in key places for similar-looking species, such as Brandt's and Pelagic cormorants in the Columbia River estuary? Even experienced and highly trained gunners occasionally mistake Brandt's or Pelagic cormorants for Double-crested Cormorants, so some incidental take of these non-target species is a certainty. Casual efforts by the Service to limit take of non-target species are unlikely to be ineffective.

ALTERNATIVE B: NEW AQUACULTURE DEPREDATION ORDER

p. 12: "Under this alternative, we would authorize these entities, without a federal permit, to take cormorants when found committing or about to commit depredations to aquaculture stocks on or in close proximity to the premises used for the production of such stocks (e.g., nearby roost sites)."

Comment: Define "close proximity to the premises." A quarter mile? What permissions are required for off-premise control activities? Cormorants can commute considerable distances to aquaculture facilities. Under this alternative, would an aquaculture facility have *carte blanche* to cull cormorants wherever they so choose? How would the link between a particular roosting or nesting site and a particular aquaculture facility be documented, and whose responsibility is that?

p. 13: "Additional conditions would include restrictions on when lethal take can occur during the day, a requirement to use lethal removal only in conjunction with an established non-lethal harassment program as certified by WS officials, a requirement that control occurring at roost sites must reasonably protect fish at nearby facilities, and recording expenditures associated with control efforts and any increases of revenue after control efforts are implemented."

Comment: Many factors influence revenue accruing to an aquaculture facility. In addition to documenting increased revenue (if any) following control efforts, the facility should be required to document actual changes in fish production (e.g., number, size, and weight) per unit (e.g., a pond). Further, what level of loss of fish or revenue is simply the cost of doing business for an aquaculture facility? Aquaculture operations naturally attract fish-eating birds, and the operators must accept a certain amount of loss as their responsibility. The aquaculture facility should be required to document the costs of long-lasting, non-lethal means of excluding fish-eating birds, such as netting and wires, for comparison with the annual costs of lethal controls.

ALTERNATIVE D: GENERAL DEPREDATION ORDER

p. 15: "To accomplish this, the Service would likely develop a new comprehensive monitoring and reporting database intended to track such information and provide a mechanism for agencies to register lethal take authorized under the depredation order. Population surveys would be conducted at regular intervals collaboratively by the Service, state fish and wildlife agencies, and federally recognized tribes to ensure long-term sustainability of the cormorant populations."

Comment: It is not sufficient to say the Service would "likely" develop a new monitoring and reporting database, and that populations surveys would be conducted at "regular intervals" without spelling out the details, including funding and commitments for implementation by the relevant states.

Comment: Under Alternative D (or any of the other alternatives), how will the efficacy of control efforts be evaluated? It is not sufficient simply to ensure that the body count of cormorants is under a maximum PTL.

Comment: It is evident from responses to this DEIS, some states have significant concerns about the necessity and cost of monitoring cormorants and would oppose cormorant-specific monitoring requirements (e.g., letter dated 2020-07-20 from the Central Flyway Council commenting on this DEIS). If the Service moves ahead with any of the new permits or depredation orders described in this DEIS and the states are not willing or able to participate fully in monitoring efforts at the appropriate scale and intensity to yield meaningful, timely results, the Service will be abrogating its responsibilities to migratory birds and would have no choice but to not issue a new permit or withdraw an existing one. These issues simply must be addressed and resolved prior to any decisions on the cormorant management alternatives proposed here or in a Final EIS.

ALTERNATIVE E: NO ACTION (CURRENT PROCESS)

p. 16: "After receiving multiple amendments [applications?] to increase the authorized take of cormorants in 2018 and 2019, the Service in December 2019 announced that it would be adopting the higher annual take threshold (84 FR 69762)."

Comment: It would appear that the Service is treating decisions about cormorant control as a popularity contest for cormorants. As the Service gets more requests for permits (i.e., complaints), it continues to increase the numbers that can be taken, presumably until some sort of ceiling is hit. This is backwards: Rather than just determining how many cormorants can be taken while sustaining populations at reduced levels, the Service should first address the question of where and how many cormorants need to be taken (if any) in order to reduce conflicts and achieve specific management objectives and outcomes.

ALTERNATIVES CONSIDERED BUT DISMISSED FROM FURTHER CONSIDERATION

p. 19: "Because killing large numbers of birds that are not causing harm would be both ineffective at reducing site-specific conflict issues and also would be contrary to the Service's mandate to conserve migratory birds, a conservation order for cormorants would be an inappropriate tool to address the conflicts causing concern."

Comment: We appreciate that the Service rejected this alternative, but we are concerned nonetheless that under the Preferred Alternative A, the states and tribes will not in fact control cormorants to reduce "site-specific" conflicts. Indeed, given the Service's emphasis on how many, rather than how few, cormorants can be taken to satisfy specific, socially acceptable management objectives, there will be enormous pressure to cull the maximum number of cormorants allowable wherever they occur. The Service should consider the alternative of specifying discrete zones in which states and tribes can apply—with documented justification, monitoring and evaluation—for special permits to manage cormorants for specific reasons at specific places. After all, there are several states (e.g., Arkansas and Michigan) that have already made it clear that cormorants are simply unwelcome, and it is not apparent that there are any places where cormorants can find safe haven.

DOUBLE-CRESTED CORMORANTS (POPULATION, HABITAT, LIFE HISTORY)

p. 22: "Cormorants along the Pacific coast are only slightly migratory, those breeding in interior states west of the Continental Divide with harsh climates likely migrate to the Pacific Coast for the winter, but precise migration routes have not been documented (Hatch 1995; Mercer 2008)."

Comment: Your description of cormorant movements within the Pacific coast population is incomplete. In the Final EIS, please describe interchanges within the coastal Pacific population, specifically including what is known about movements of coastal cormorants between British

Columbia and Washington/Oregon to the south and more broadly throughout the West. For example, Courtot et al. (2012) document extensive post-breeding dispersal, including prospecting for future breeding sites, from cormorants at East Sand Island to sites from British Columbia to northern Mexico. This information is key to understanding the impacts of cormorant control in the Western population. Failure to cite Courtot et al. (2012) calls into question the thoroughness of this DEIS.

Please note: NEPA's hard look at environmental consequences must be based on "accurate scientific information" of "high quality." 40 C.F.R. § 1500.1(b). Essentially, NEPA "ensures that the agency, in reaching its decision, will have available and will carefully consider detailed information concerning significant environmental impacts." *Robertson v. Methow Valley Citizens Council*, 490 U.S. at 349. The Data Quality Act requires that influential scientific information use "best available science and supporting studies conducted in accordance with sound and objective scientific practices." Treasury and General Government Appropriations Act for Fiscal Year 2001, Pub.L. No. 106-554, § 515. By not using the correct supporting studies, the Service is also violating NEPA.

p. 24: "From approximately 1987 to 2009, the number of cormorant breeding pairs estimated within British Columbia, Washington, Oregon, and California increased by approximately 72 percent (i.e., 3 percent per year), or 12,000 breeding pairs, and large-scale distributional changes occurred (Adkins et al. 2014; Pacific Flyway Council 2012). The coastal states and provinces account for greater than 90 percent of the western population (Adkins et al. 2014). Growth of the western population of cormorants is largely attributed to the increase in size of the cormorant breeding colony at East Sand Island…"

Comment: Adkins et al. (2014) point out that, concurrent with the large increase in number of cormorants nesting on East Sand Island during the 1990s and early 2000s, the numbers of cormorants nesting in coastal British Columbia and Washington were in decline, suggesting that much of the increase at East Sand Island was due to immigration. If the British Columbia population experienced a decrease attributable at least in part to the growth of the East Sand Island colony, there must be significant interchange across the U.S./Canada border. See Courtot et al. (2012) and the comment above.

Further, in the Final EIS you must describe the conservation status of cormorants in Canada, including specific reference to British Columbia. Although in 1978 the Committee on the Status of Endangered Wildlife in Canada concluded that Double-crested Cormorants were widespread and abundant in Canada and therefore "not at risk," that assessment did not concern subspecies or regional populations. For cormorants in British Columbia, the government's Conservation Data Centre listed this species as "threatened" in 2001 (Moul and Gebauer 2002). In 2015, the Conservation Data Centre placed cormorants in British Columbia on the special concern "blue list." Formally, this species is given a S3S4 rating, which means that there is a 95 percent probability that it is a species of "Special Concern, Vulnerable to Extirpation" or "Apparently Secure, With Some Cause for Concern" (http://a100.gov.bc.ca/pub/eswp/search.do).

WILD AND PUBLICLY STOCKED FISHERIES, INCLUDING FEDERALLY LISTED FISH SPECIES

p. 30: "In general, cormorant diet varies highly among locations and tends to reflect the fish species composition for each location…The majority of these studies continue to conclude that economically important sport or commercial fish species are an insignificant portion of the cormorant diet (Table 4)..."

Comment: These findings are of fundamental importance and do not point toward the need for lethal control of cormorants on national or statewide bases. Although the Service believes that issuing special permits to individual states and tribes will result in more targeted management actions, many or even most states and tribes do not have the resources to properly document the need for management, test non-lethal options, and conduct the necessary baseline and on-going monitoring, plus conduct and evaluate control programs. Moreover, the states are highly susceptible to political pressure from influential sport and commercial fisheries constituencies and legislatures that are all too willing to meddle in wildlife management decisions. The Service is hardly immune to these same pressures, but it is in a much better position to withstand them. As proposed in Preferred Alternative A, the Service is simply shifting its responsibility for science-based management of migratory birds to state and tribal authorities which don't have the funding, perspective, or political insulation to effectively manage cormorants and other migratory birds perceived as "problematic."

p. 33: "Public comments and input from stakeholders unsupportive of lethal removal of cormorants argue that without this information, it is impossible to show that the "need" to manage cormorant populations still exists. However, it is important to note that assessing the influence of predation on a fishery is a complex endeavor that requires vast amounts of data."

Comment: Perceived conflicts between cormorants and fisheries are hardly new. Has the Service worked with the U.S. Geological Survey and the states to design a comprehensive research program for specific hotspots and then sought funding to carry out such a program? The Service—and the cormorants—are now paying the price for the failure of past leadership to anticipate and address these problems.

Comment: The Columbia River estuary is one such place where significant, multiyear research has taken place and impacts on some stocks of threatened and endangered salmonids have been documented. Even in that environment, however, the Service, U.S. Army Corps of Engineers, NOAA Fisheries, and others have been unable to document that lethal control of cormorants has increased numbers of returning adults to spawn (Haeseker et al. 2020). In fact, a recent analysis conducted by the Oregon Department of Fish and Wildlife suggests that implementation of the primarily lethal management approach described in the 2015 FEIS for management of cormorants in the Columbia River estuary has resulted in a large increase in predation on ESA-listed salmonids, instead of the intended decrease

(https://www.wweek.com/news/2019/02/06/a-federal-bird-kill-in-the-columbia-river-did-nothing-to-save-salmon/).

RECREATIONAL FISHERIES AND CORMORANTS

p. 39: "Recreational, consumptive use of wildlife associated with cormorants and associated conflicts addressed in this DEIS center on fish stocking for angling. For example, many states throughout the west stock multiple fish species for recreational consumptive use (e.g., rainbow and cutthroat trout, catfish, largemouth bass, walleye, bluegill and Arctic grayling). Western states often manage rainbow trout as a recreational fishery through stocking catchable-sized fish annually into lakes and rivers. In addition, rainbow trout are now wild breeding in many areas throughout the west."

Comment: It is important to be clear about which of these fish species are not native to the locations where they are being stocked. This will help readers understand that the tradeoff is between a native fish-eating bird species within its normal range that is attracted to artificial concentrations of mostly nonnative fish species.

p. 39: "Cormorants are believed to have an impact on recreational freshwater anglers because of the amount of freshwater fish they consume, which can put them into direct competition with anglers regarding catch rates and subsequent angler enjoyment."

Comment: Cormorants are "believed" to have impact, but your previous finding (p. 30) is that "cormorant diet varies highly among locations and tends to reflect the fish species composition for each location" and that the "majority of these studies continue to conclude that economically important sport or commercial fish species are an insignificant portion of the cormorant diet." How much of the "impacts" on recreational fisheries are a matter of perception and not reality? In the Service's preliminary workshop in 2018 (Seng 2018), there is this comment (page 9): "Is this more of an education issue to get anglers to realize that double-crested cormorants don't impact as much as they think the birds are?" This issue must be addressed.

p. 40: "Their estimate assumes that an observed decline in nonresident license sales is correlated with a growing cormorant population. However, the authors were not able to control for other influences, such as an overall decline in angling numbers, as reported in NSFHWAR, or on primary sampling methods on recreational anglers and they recognize the desirability to do so in future work."

Comment: Given the assumption in the first sentence and the caveats in the second sentence, it is not clear that this study is worth citing. Further, the Oneida Lake Region in New York is heavily used by birdwatchers, and absent any other data, one might just as well assert that the increased presence of cormorants attracts birdwatchers who spend money, thus bringing jobs and revenue to the area. Indeed, in this DEIS there is very little (or no?) mention of the economic

benefits of birdwatching and watching the fascinating behavior of cormorants is part of birdwatching.

p. 40: "In 2010 Caudill and Charbonneau assessed the economic contributions from fisheries and aquatic resource conservation associated with the Service's programs…."

Comment: What is the point of this paragraph other than to show that recreational fishing is big business? The implication seems to be that cormorants place all this economic activity at risk, but you are not able to point to credible studies documenting that problem at scale.

EFFECTS OF CORMORANT PRESENCE ON VEGETATION

p. 42: "Degradation of vegetation due to the presence of cormorants can also reduce nesting habitat for other birds…"

Comment: Cormorants typically nest in association with other species (e.g., Wires and Cuthbert 2010), and there is no question that vegetation degraded by large numbers of cormorants may reduce nesting habitat for some other species, depending on the species and setting. From the examples cited, however, it is not apparent that loss of nesting habitat due to the presence of cormorants has, in fact, affected other bird species at the population level. Further, your descriptions of these examples are deficient without also citing critiques of these same examples by other experts (e.g., Wires 2014). Colonial waterbirds are highly mobile and nesting sites often are abandoned and new ones established (Wires 2014). Hence, the fundamental question to be addressed is whether increased numbers of cormorants have resulted in fewer colonial waterbirds at scales larger than individual sites or islands (e.g., at the scale of one or more of the Great Lakes)?

p. 42: "Although loss of vegetation can have an adverse effect on many species, some colonial waterbirds, such as pelicans and terns, prefer sparsely vegetated substrates for nesting."

Comment: For the sake of objectivity, this point should be amplified. What are those species and are there examples where the presence of cormorants has increased nesting opportunities for and numbers of other species, such as American White Pelicans, Common and Caspian terns, and a variety of gull species? The large cormorant colony in Tommy Thompson Park on the Toronto, Ontario waterfront is a prime example (Toronto and Region Conservation Authority 2017). Equal time is needed!

EFFECTS OF CORMORANT PRESENCE ON HUMAN HEALTH AND SAFETY

p. 42: "The primary risk to human health and safety from cormorants is the risk of a cormorant collision with aircraft."

Comment: There is legitimate concern about aircraft colliding with cormorants, but what is missing here is information about the existing programs, technologies, and airport-specific control measures in place to address potential bird strikes by aircraft. By mentioning the

concern and not describing existing measures, the implication is that additional lethal control of cormorants is needed to avoid airstrikes.

LETHAL REMOVAL OF CORMORANTS AND THE HUMAN ENVIRONMENT

p. 44: "Cormorant-related activities that occur within a colony of nesting cormorants could disturb other co-nesting colonial waterbirds."

Comment: See Seefelt and Farrel (2018) for another example of cormorant management activities having a negative impact on a co-nesting species. In this case, Caspian Terns at Hat Island, Michigan, experienced lower reproductive success and abandoned their colony earlier than usual due to cormorant control measures. Also, the Brandt's Cormorant colony on East Sand Island in the Columbia River estuary, the largest for the species in Oregon, was abandoned during implementation of management to reduce the size of the Double-crested Cormorant colony on East Sand Island (D. Roby, Oregon State University, pers. comm.).

p. 46: "The misidentification of a bird species that appears similar to a cormorant can occur especially when those species mix with cormorants in flight and low-light conditions. However, the Service anticipates the unintentional take of nontarget species to occur infrequently and involve very few individuals of a particular species."

Comment: This issue requires more detailed discussions, especially on the Pacific coast where Brandt's Cormorant and Pelagic Cormorant co-occur with Double-crested Cormorants. Since nesting locations for Double-crested Cormorants are well known, as are the distributions of the other two species, where are the hotspots and what are the relative numbers? What was the experience at East Sand Island with accidental taking of Brandt's Cormorants by trained and experienced gunners who were targeting Double-crested Cormorants, and what were the impacts of cormorant control activities on nesting by co-nesting species? As presented in the DEIS, there is insufficient information for evaluation of these concerns.

DIRECT AND INDIRECT EFFECTS OF THE ALTERNATIVES ON CORMORANTS

p. 54: "It was assumed that the Western cormorant population was at equilibrium with the average annual take during 2013–2018, and the other populations were at equilibrium with the average annual take during 2013–2016. Annual take data was incomplete prior to 2013. The different time periods between the Western versus the other populations for estimating take was because 2019 was the last population-size estimate for the Western while 2017 was the last estimate for the other populations."

Comment: What does it mean to say that the Western cormorant population was at equilibrium with the average annual take during 2013-2018 and how is this conclusion justified? This is during the same time as intensive lethal control, disruption, and ultimately abandonment of the East Side Island colony, as well as abandonment of the once-very-large colony at Mullet Island

in the Salton Sea (ca. 2013). Here you indicate that 2019 data are available for the Western population, but those data don't seem to be incorporated here. Why? Indeed, those data indicate that there has been a significant decline in the Western cormorant population since 2014, 2015, and 2016 (U.S. Fish and Wildlife Service 2020), suggesting that the Western Population was not at equilibrium with average annual take.

p. 55: Table 9

Comment: The Western population in 2019 was estimated at 45,778 (31,849-59,708; ±95% confidence limit) breeding individuals (U.S. Fish and Wildlife Service 2020), which is lower than the current and projected population sizes in Table 9. The 2019 estimate is 23 percent lower than the 2018 estimate, but the difference is not deemed statistically significant. If the monitoring regime for the Western population detected a decrease of nearly 25 percent but there is little evidence of a statistical difference (U.S. Fish and Wildlife Service 2020), it suggests that the survey regime is inadequate for timely detection of meaningful change, which is critical for adaptive management and the sustainability of the Western population (see scoping letter from the Oregon Department of Fish and Wildlife 2020-03-06). That the Western population estimate for 2019 is significantly lower than the 2016, 2015, and 2014 estimates is especially troubling (U.S. Fish and Wildlife Service 2020), and suggests a population in decline instead of an expanding population in need of control.

p. 55: "The Western population, however, it is expected to stabilize at or just above the current low population estimate (Table 9). In order to ensure sustainability of each of the cormorant populations, the Service would allocate authorized take in all populations according to population levels in the PTL model. Allocation for the Western population would be managed at 8,881 per year (see Appendix E)."

Comment: According to the 2019 numbers, which you don't show, the Western population is already at or below the current low population estimate. A take of 8,881 cormorants per year, with an evaluation only after 5 years, could result in a drastically reduced Western population, and this assumes that the monitoring is carried out with sufficient statistical power to detect change in a timely manner. This does not meet the Service's standards for sound science or sustainable management of a native migratory bird. Further, it is not clear that there is justification for any additional lethal control of cormorants in the Western population.

p. 56: "If the breeding colony at East Sand Island were to experience high mortality (in this case from authorized take), negative impacts to the Western population as a whole would likely occur."

Comment: This statement suggests that the DEIS authors are unaware that the colony of Double-crested Cormorants on East Sand Island, formerly the largest in North America, has been abandoned due to human and eagle disturbance, and many of the cormorants that formerly nested on East Sand Island (>5,000 breeding pairs) are now nesting on the Astoria-Megler

Bridge. Given the large proportion of the Western population that still nests in the Columbia River estuary, we don't know where else someone is going to kill 8,881 cormorants per year, unless they do it around San Francisco Bay (Rauzon et al. 2019), which would be challenging for several reasons. Please analyze and discuss in depth the potential for heavy impacts on the Western population of such a large PTL.

p. 56: "Monitoring of each cormorant population is an important component of all the alternatives so that the Service can compare projected population sizes to actual population sizes. However, population monitoring has not occurred consistently or comprehensively across multiple federal, state, tribal, commercial, or private partners in the past."

Comment: The 1988 amendments to the Fish and Wildlife Conservation Act require the Service to monitor populations of migratory nongame birds at the species, subspecies, and population levels. That requirement has been on the books for more than 30 years. Has the Service sought the resources necessary to do its job with respect to cormorants?

p. 57: "While the Service has not yet developed population-monitoring programs for the alternatives presented in this DEIS, one developed under Alternative A would likely result in less burden."

Comment: It will not be possible to fully evaluate any of the alternatives until the Service outlines what is planned in the way of robust population monitoring and demonstrates that the Service, states, and tribes have the necessary resources to carry out a monitoring program on a sustained basis. A vague promise to develop the monitoring regime within one year of a decision is not sufficient. Further, we strongly encourage the Service to allow ample time for external peer review of any monitoring plans by, for example, convening a panel of experts without conflicts of interest.

p. 58: "The history of reporting take accurately under the previous depredation orders from private and commercial entities, however, has been inconsistent; some commercial aquaculture facilities may underreport or over-report in an effort to manipulate how many cormorants they may be authorized to take in future years."

Comment: With respect to take reporting under any of the alternatives, what steps will the Service undertake to ensure compliance? Violation of the terms of a permit could place cormorant populations at risk but also would be a violation of the MBTA. Will the Service initiate enforcement actions? Suspend current or withhold future permits? Just developing "comprehensive take tracking systems" is not enough. Audubon raised this issue in its scoping comments, and we see no attempt to address it in this DEIS.

p. 59: "Under this alternative, the Service currently tracks the effects of take on the cormorant population accurately through annual reporting required under the individual depredation

permit program. Additionally, existing take-monitoring programs allow for adjustments of authorized take in a timely manner if individual populations unexpectedly decline."

Comment: The presently undescribed monitoring regime will have to produce statistically robust results to detect unexpected declines. The commitment to analyze and report on results every 5 years is insufficient for sensitive populations, such as in the West and the South.

IMPACTS FROM TAKE OF CORMORANTS ON CO-NESTING MIGRATORY BIRD SPECIES AND EAGLES

p. 63: "Cormorants are known to have negative impacts on co-nesting species, through habitat destruction, nest take-over, or reduction of available nesting space."

Comments: Are cormorants known to have negative impacts on co-nesting species at a population level? And what about the positive impacts on co-nesting species (e.g., Brandt's Cormorants, American White Pelicans, various gull and tern species)?

CUMULATIVE IMPACT ANALYSIS

p. 71: "Many factors can influence changes in the cormorant population, such as changes in breeding habitat, changes in aquatic prey bases, contaminants, and predation. In addition, mortality to cormorants can occur from external sources, such as collisions and electrocutions from power lines, predation, impacts from oil spills, and through effects from climate change. Climate change may affect breeding habitat and may shift the range of cormorant populations. Extreme flooding or droughts associated with climate change could cause a loss in breeding habitat, which could have adverse effects on the cormorant population."

Comment: The significant impact on cormorants of recovering bald eagle populations, already observed across the northern U.S. (e.g., Adkins et al. 2014), is likely to increase with further expansion of that population and either the reduction in size of large colonies due to culling, or the redistribution of cormorants from large, managed colonies to smaller, dispersed colonies (the objective in the Columbia River Estuary Final EIS [2015] and observed in U.S. Fish and Wildlife Service [2020]). Synergistic effects of culling and bald eagle predation were observed to cause complete or nearly complete colony failure at the East Sand Island colony during 2017-2019 (U.S. Fish and Wildlife Service 2020); this cumulative impact on cormorant populations is not adequately acknowledged or addressed in the DEIS.

Comment: How is anticipated climate change integrated into the PTL? This seems especially critical to take into account in the arid, interior West, which is experiencing increased evaporation, reduced snowpacks, and other climate-related changes affecting bird populations (Donnelly et al. 2019, Haig et al. 2019). The loss of the once-very-large colony at the Salton Sea (Adkins et al. 2014, U.S. Fish and Wildlife Service 2020) is a direct result of drought, reduced snowpacks in the Colorado River basin, and greater allocation of available fresh water to

human uses. Additional losses of suitable nesting habitat are predictable and need to be addressed in the EIS. The PTL has a mysterious management factor, F_0, which should be set very low—i.e., conservatively, to account for declining availability of water bodies and wetlands in the West.

Comment: You cite mortality to cormorants from external sources, such as collisions, oil spills, and the like. Yet, at the same time as the Service proposes a nationwide cormorant management program you also have proposed a regulation which limits application of the MBTA to intentional-but-unauthorized taking of birds. In the DEIS on the MBTA regulation, you acknowledge harmful effects to birds. What is the cumulative impact of increased cormorant culling in combination with reduced law enforcement by the Service and reduced effort on the part of industry to eliminate or reduce incidental mortality?

APPENDIX D. Standard Authorization Conditions for Take

p. 88: "Take of cormorants could be conducted only after applicable nonlethal alternative means of reducing or eliminating the conflict have been attempted. States and Tribes must use nonlethal methods, and determine that those methods are ineffective, before lethally taking double-crested cormorants. States and Tribes and their subpermittees must make efforts to avoid disturbance to co-nesting species. Existing research findings and publications detailing appropriate methods and/or models for reducing conflicts should be used to justify activities."

Comment: What guidance will the Service provide to states and tribes regarding use of and best management practices for nonlethal control measures and evaluating the effectiveness of those measures, and what criteria will be used by the Service in evaluating permit applications? Absent guidelines from the Service and evaluation criteria used by the Service, the application process may largely be a paper exercise that involves little more than checking the nonlethal box.

p. 89: "The State or Tribe must require the property owner or occupant on whose premises the permittee is conducting activities to allow, at all reasonable times, including during actual operations, free and unrestricted access to any Service special agent or refuge officer, State or Tribal wildlife or deputy wildlife agent, warden, protector, or other wildlife law enforcement officer on the premises where they are, or were, conducting activities."

Comment: This is confusing, because on p. 11 of the DEIS you indicate that a new permit would allow agencies to manage conflicts specifically on "state or tribal-managed lands." This permit stipulation, however, refers to the property owner or occupant, which may imply private land, since otherwise the property owner is a state, tribe, or federal entity.

p. 89: "States and Tribes may designate subpermittees who must operate under the conditions of the permit."

Comment: Can a state or tribe just name anyone as a subpermittee and send them to kill cormorants? What training, identification skills, and people skills will be required? Will the Service provide guidance or requirements about the qualifications of subpermittees? How will they be identified by members of the public who they may encounter in the field?

APPENDIX E. Assessment of Double-crested Cormorant Take

p. 90: "The PTL framework has previously been used as a tool to manage take of double-crested cormorants (USFWS 2009), and other nongame species (Runge et al. 2009, Johnson et al. 2012).

Comment: Although the PTL has some history in the scientific literature (your citations above), has this particular application of the PTL concept to cormorant management been externally peer reviewed by nonconflicted experts with appropriate statistical expertise as well as familiarity with regional cormorant populations? If not, we strongly encourage the Service to pause and consult with experts outside the Service and state management agencies. This is part of sound science, and the stakes are too high for cormorants to take a chance on inappropriate assumptions, mathematical mistakes, and the like. For example, it appears that 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, a period of very rapid growth in the Great Lakes population. That seems like a questionable assumption, and it is the kind of thing that external peer reviewers can flag. See other PTL-related issues raised by the Pacific Seabird Group in comments submitted today (2020-07-20) by Peter Hodum.

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