## Supplement - Avian Predation in Deadwater Slough

Although not formally assessed in this study, avian predators are another potential source of mortality for juvenile Chinook Salmon and other ESA-listed salmonids in the Deadwater Slough. The Deadwater Slough is recognized as an important bird watching and nesting area due to the associated upstream braided channels and riparian and backwater habitats [(Deadwater Slough - Audubon Important Bird Areas)](https://www.audubon.org/important-bird-areas/deadwater-slough). Several piscivorous bird species have been documented using Deadwater Slough including the Common *Mergus merganser* and Hooded *Lophodytes cucullatus* mergansers, the Great Blue Heron *Ardea herodias*, the Double-crested Cormorant *Phalacrocorax auritus*, and the Belted Kingfisher *Megaceryle alcyon* (eBird 2021). During the initial sampling effort in fall 2019, a two-person crew walked the entire reach including surrounding and upstream areas scanning for passive integrated transponder (PIT) tags that are implanted into thousands of natural- and hatchery-origin salmonids in the Upper Salmon River, annually. During that informal survey, 10 PIT tags were recovered near active bird nests and in an upstream anastomizing reach where herons and eagles are prevalent, suggesting that mortality may have been a result of avian predation. The PIT tag histories in [PTAGIS](https://www.ptagis.org/) indicate these tags were implanted into a combination of juvenile Chinook Salmon (3), Sockeye Salmon (4), and steelhead (3). Two of the Chinook Salmon and one steelhead were natural-origin, the remaining were of hatchery-origin. Avian predation contributes a major component of the total mortality for yearling Chinook Salmon in some locations in the lower Snake and Columbia rivers, particularly at hydroelectric dams and within reservoirs (Evans et al. 2012; 2016); however, we did not observe large colonies of piscivorous birds within the study area. Although we did observe Belted Kingfishers, mergansers, and Great Blue Herons at Deadwater Slough; Great Blue Herons were especially prevalent in the anastomizing reach immediately upriver of the slack water reach. Additionally, there is documentation of individual Double-crested Cormorants (eBird 2021) at the Deadwater Slough; however, the site is not within their breeding range, rather, it is part of a migration corridor. Given the current avian species known to occupy Deadwater Slough, it is unlikely that avian predation on juvenile salmonids is comparable to elsewhere in the Columbia River basin with large piscivorous bird colonies. Nevertheless, we hypothesize that the reservoir-like conditions and associated habitat features at the Deadwater Slough may increase the probability of avian predation on juvenile Chinook Salmon and other ESA-listed salmonids from the many piscivorous birds known to use the site. Future studies of predation would benefit from estimates from piscivorous avian predators.

## Literature Cited to Supplement

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