


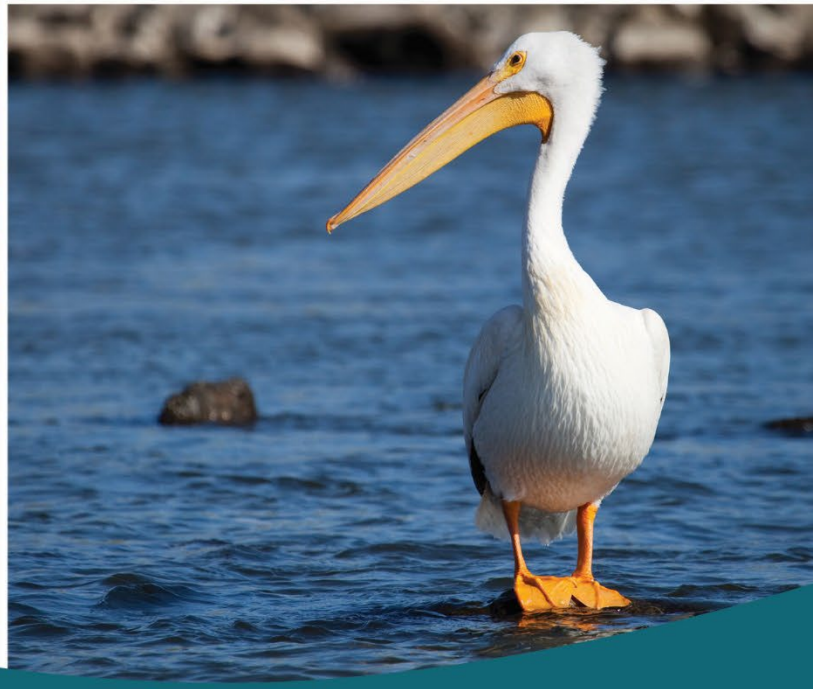

Predation Management Plan to Reduce Impacts to Fisheries Resources by American White Pelicans and other Piscivorous Birds in Idaho

Prepared by **IDAHO DEPARTMENT OF FISH AND GAME**

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Photo courtesy of NPS by Jay Fleming

EXECUTIVE SUMMARY

Fisheries management direction for the Idaho Department of Fish and Game (Department) is formalized in a document titled, Fisheries Management Plan 2025-2030: A Comprehensive Guide to Managing Idaho's Fisheries Resources (2025). Within, piscivorous bird-fish conflicts are identified as a limiting factor for native fish conservation or recreational fisheries management in several Department administrative regions. The fact that most piscivorous birds migrate across state lines seasonally or annually, their management falls under the jurisdiction of the US Fish and Wildlife Service (USFWS). Federal direction for piscivorous bird protection, conservation, and management is codified in the Migratory Bird Treaty Act. Due to the USFWS's actions, the protections offered by the Migratory Bird Treaty Act and other factors, recruitment and survival of piscivorous birds increased during the last several decades, which is viewed as a conservation success. However, it has now become apparent that locally abundant piscivorous bird populations, especially those of American White Pelican and Double-crested Cormorant, may detract from efforts to conserve native fish species or provide recreational fisheries. This document serves as a complement to the Fisheries Management Plan and describes with a greater level of detail the Department's current and near-term future efforts to work collaboratively with the USFWS and others to address and reduce bird-fish conflicts where necessary to meet fisheries objectives.

IDFG staff photo

Part I

Introduction

The Idaho Department of Fish and Game (Department) Policy for Avian and Mammalian Predation Management (IDFG 2000) describes how predation might be managed when prey populations are not meeting management objectives. Predation management is a complicated and sometimes contentious matter. On one hand, staff must act to conserve predators as a requirement of the Department's legislatively codified mission, due to federal mandates, and for the intrinsic value and ecological services predators provide. On the other hand, predators may have substantial impacts to prey species of conservation interest or high value; and therefore, reduced predation may be desirable to maintain societal benefits. The Department has developed its piscivorous (i.e. those that feed primarily or exclusively on fish) bird predation management philosophy and strategies from practical experience and scientific study. Avoidance and deterrence strategies are implemented where population-relevant predation is known to occur or where population-relevant predation is likely based on experience from similar waters and circumstances. After implementation, staff assess how important fish populations or fisheries respond. Subsequent monitoring allows for fine tuning of management strategies to better meet objectives.

Idaho provides seasonal habitat for at least 20 species of piscivorous birds. All piscivorous birds that inhabit Idaho are federally protected under the Migratory Bird Treaty Act (MBTA), which is administered by the US Fish and Wildlife Service (USFWS). Generally, abundance of many piscivorous bird species, including American White Pelicans (*Pelecanus erythorhynchos*), hereafter pelican(s) and Double-crested Cormorants (*Phalacrocorax auritus*), hereafter cormorant(s), declined to contemporary minimums during the 1950s &1960s. However, more strict regulation of pesticides and increased protection under the MBTA led to increased abundances. For instance, the abundance of pelicans in the western population increased from about 16,000 individuals in the 1980s to approximately 46,000 individuals in 2012 (Pacific Flyway Council 2012a). Similarly, the abundance of cormorants in the western population increased from about 19,000 breeding pairs in the 1980s to approximately 29,000 breeding pairs in 2009 (Pacific Flyway Council 2012b). Not surprisingly, concern and conflict over fisheries impacts increased concurrently with piscivorous bird abundance leading to greater scientific and management attention nationally, throughout the West, and including Idaho.

In Idaho, predation impacts by pelicans and cormorants have been determined to limit fish populations within several waters (Teuscher et al 2015, Meyer et al 2016, Chiaramonte et al 2019). In addition, predation by Caspian Terns (*Hydroprogne caspia*), hereafter tern(s) and cormorants is limiting survival of Idaho's anadromous fishes as they migrate through the lower Snake and Columbia rivers outside of Idaho's borders (Evans et al 2016). While pelicans and cormorants are the primary cause of conflict for Idaho's fish populations, other piscivorous birds, such as Great Blue Heron (*Ardea herodias*), hereafter heron(s), gulls (*Larus* spp), and Osprey (*Pandion haliaetus*), may cause local impacts.

The Department detailed its initial efforts to address piscivorous bird-fish conflicts in, *Management of American White Pelicans in Idaho: A five-year plan (2009-2013)*, which focused on balancing pelican and native cutthroat trout (*Oncorhynchus clarkii* spp.) conservation needs, while

minimizing impacts to recreational fisheries in southeast Idaho (IDFG 2009). This plan was subsequently updated and broadened to address additional pelican-fish conflicts across a greater proportion of southern Idaho (IDFG 2016). Since these plans were implemented, staff have continued to collect information that indicate bird-fish conflicts are more widespread and include additional piscivorous bird species, leading to the conclusion that single-species management is less ideal since monitoring and management is similar for most piscivorous bird-fish conflicts regardless of predator species. Furthermore, the conservation of migratory birds is the primary responsibility of the Service, and substantial piscivorous bird conservation planning occurs through other channels (Pacific Flyway Council 2013 and 2018), making additional conservation planning repetitive and inefficient. Therefore, it is more appropriate and efficient for the Department to prescribe its efforts to address piscivorous bird-fish conflicts in a single plan. This Predation Management Plan (plan) reviews evidence that piscivorous bird predation may be a primary limiting factor preventing local fisheries from reaching Department population management objectives and describes management direction for conflicts. The purpose of this plan is to address piscivorous bird predation impacts on Idaho's fisheries resources and develop appropriate strategies to reduce bird-fish conflicts.

This plan is structured in two parts. The first part provides a broad overview of the problem, risk assessment, and program from a statewide perspective. The second part is organized into individual chapters that follow the outline defined in the Policy for Avian and Mammalian Predation Management (IDFG 2000), with the first chapter describing conflicts associated with predation of Idaho's anadromous fish that occurs outside of Idaho (e.g., the lower Snake and Columbia rivers and reservoirs and the Columbia River estuary). The remaining chapters will describe known or suspected bird-fish conflicts in each Department administrative region[1]. Within each chapter, rationale, on-going management strategies, and future needs and direction will be presented. In some cases, a research or monitoring program may be the only course of action, while in other cases active management of the predator species or their habitat will be prescribed. This plan will be reviewed annually and updated as needed. Appendix A will be updated annually to document actions taken to reduce bird-fish conflicts across Idaho.

Definition Of Problem

Research efforts have documented that several of Idaho's high-profile fisheries have been negatively affected by piscivorous bird (mainly pelican and cormorant) predation. Predation rates on adult and juvenile Yellowstone cutthroat trout (*O. clarkii bouvieri;* hereafter, cutthroat trout) tagged in the Blackfoot River system between 2010 and 2023 averaged 33% and 39% respectively (data from IDFG annual reports to USFWS). Similarly, consumption of wild trout by pelicans at Silver Creek in 2018 and 2019 averaged 35% (Thiessen et al 2025), and avian predation rates on stocked fish in 15 Idaho waters averaged 35%, twice as high as angler use (Chiaramonte et al. 2019). Management actions are actively being implemented and will continue to be implemented in high-conflict areas within three Department administrative regions. These management actions and the associated response of fisheries will continue to be monitored, and the Department will use adaptive management strategies as needed to reduce bird-fish conflicts. Additional research or

[1] Currently, there are no known or suspected predation impacts by piscivorous birds in the Panhandle Region. Therefore, the Panhandle Region will not have a standalone chapter. Statewide surveillance efforts for piscivorous birds will continue to occur in all Department administrative regions, including the Panhandle.

monitoring will be conducted for other fish populations with perceived bird-fish conflicts to determine whether management efforts need to be implemented.

Risk Assessment

Predator Species

Although the overarching goal of this plan is to reduce predation impacts on fisheries by piscivorous birds in Idaho, the Department is also committed to maintaining healthy populations of piscivorous birds. Pelicans and cormorants are the primary species affected by actions outlined in this management plan. Other piscivorous birds may be included in the future if data indicates that predation effects are impacting local fisheries.

American White Pelican - Status

Pelicans in Idaho are part of the western population and are monitored at the Flyway level (Pacific Flyway Council 2012), which means management efforts at the local level will continue to consider implications across the Pacific Flyway. In Idaho, pelicans are identified as 1 of 132 species of greatest information need in the State Wildlife Action Plan (IDFG 2024a). The number of breeding pelicans in Idaho increased between 2000 and 2012, peaking at about 7,700 breeding pelicans in 2012. Between 2005 and 2014, the average number of breeding pelicans was 5,935. Since 2015, the average number of breeding pelicans stabilized at about 4,238 (Figure 1). However, this average only partially reflects the number of pelicans inhabiting Idaho. Surveys have indicated that breeding pelicans represent about 70% of the total number of pelicans inhabiting the state, with sub-adults representing the remainder. Therefore, the total number of pelicans in Idaho during the breeding season has averaged closer to 6,100, excluding chicks produced later in the year.

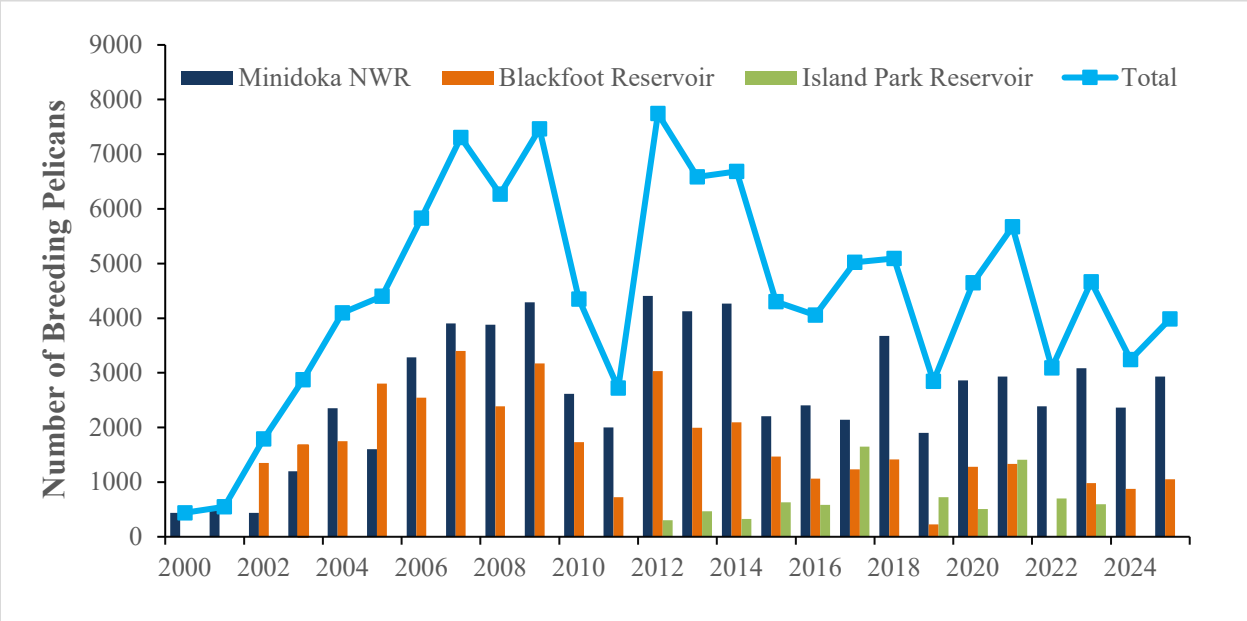

Figure 1. Estimated number of breeding pelicans at Idaho's three nesting colonies during annual nest counts, 2000-2025. Counts are conducted once per season during the peak nesting period.

Double Crested Cormorant - Status

Cormorants are also monitored at the Flyway level (Pacific Flyway Council 2018). Statewide surveys have not been conducted for cormorants in Idaho. However, large colonies in the lower Columbia River and other randomly selected colonies across the Flyway are surveyed. The number of breeding pairs has decreased since the 2010s (Figure 2), likely due to intensive management efforts (egg removal and nest destruction) in the lower Columbia River in response to cormorant impacts on threatened and endangered salmonids. In Idaho, there are no attempts to estimate the abundance of cormorants statewide; however, cormorants are counted incidentally during statewide pelican surveys, and a few specific cormorant rookeries have been monitored more regularly. For instance, from 2018 through 2024, the number of cormorant breeding pairs on American Falls Reservoir, which are monitored by the Shoshone Bannock Tribes, has increased slightly (Figure 3). Local management efforts (limited hazing near important fisheries) are not expected to have an impact on the overall status of cormorants in the Pacific Flyway.

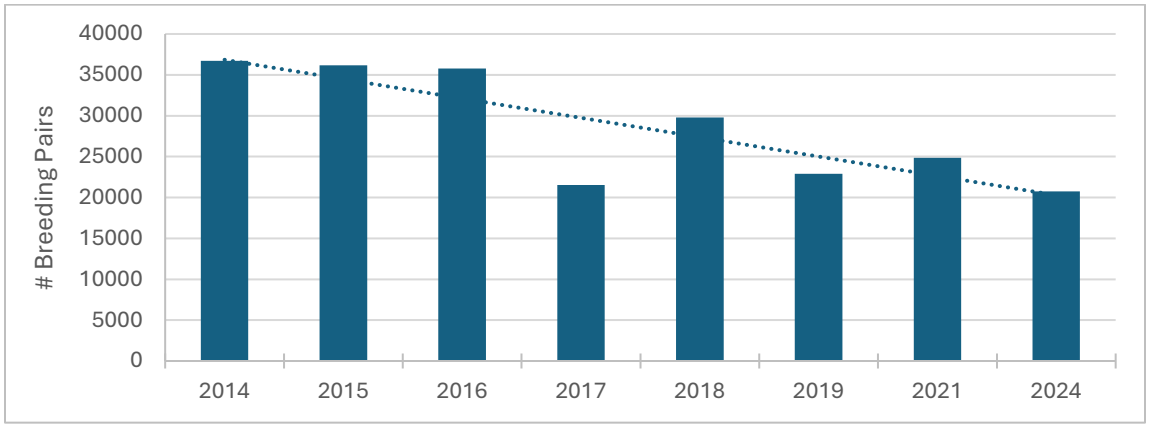

Figure 2. Estimated number of breeding pairs of cormorants in the Pacific Flyway, 2014-2024.

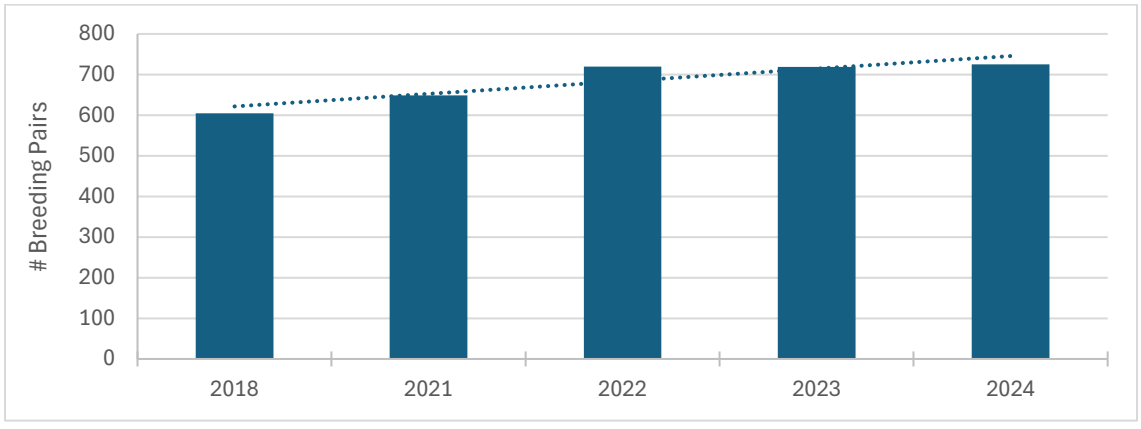

Figure 3. Estimated number of breeding pairs of cormorants at two colonies on American Falls Reservoir, Idaho.

Adjacent fisheries

While hazing pelicans and cormorants from known breeding colonies can help alleviate predation concerns on local fish populations, it must be weighed against how a particular action may affect distribution and thus impacts elsewhere. For example, there was not a documented pelican colony on Island Park Reservoir prior to hazing efforts on Blackfoot Reservoir (located 160 km south of Island Park Reservoir). Management actions will focus on the most appropriate strategies to implement in a particular area. Planned actions will be weighed against all possible outcomes, including the possibility that management actions in one area may shift the distribution of piscivorous birds to a different area.

Nontarget species

Based on efforts at Blackfoot Reservoir, hazing activities may affect other nesting birds such as gulls and terns that nest in the same area at the same time as the target species. However, staff will minimize disturbance of non-target species by utilizing best management practices and adapting as necessary. For example, when using fencing to dissuade pelicans from nesting on islands that are also used by gulls, only fencing greater than three feet in height and a four-inch gap left at the bottom will be used to decrease the possibility of incidental gull mortality (IDFG 2025).

Prey species

Thus far, evaluations of whether predation is impacting fish populations or fisheries have been limited in number and geographic scope due to limitations on staff and financial resources. Most evaluations have focused on game fish (primarily salmonids) in high-profile fisheries due to economic importance and voiced concerns from anglers. Evaluations have focused on predation of native and non-native fish species. Thus far, no evaluations in Idaho have focused on predation of native nongame species.

Angling associated recreational opportunity

The Department has taken numerous steps to protect fisheries including restricting angler harvest of native species such as cutthroat trout altering the timing of stocking from spring or summer to fall, stocking larger trout, and providing refugia to separate fish from piscivorous birds. The implementation of additional actions designed to reduce impacts of piscivorous bird predation on fisheries may result in a subsequent increase in opportunities for anglers.

Landowners in or near the impacted area

Some hazing occurs on private lands and staff need to consider the potential effects of various hazing activities before proceeding. For example, the use of pyrotechnics includes some level of fire risk depending on proximal vegetation condition. Also, noise-making projectiles may startle livestock if used carelessly. Exclusion fences and fladry/flagging have been used successfully on pelican colonies to inhibit the total area available for nesting. These deterrence methods may not be acceptable to certain landowners. Staff may have limited options on corporate-owned private land due to liability issues. Effective communication with landowners to determine optimal management strategies (habitat modification to dissuade offending birds, habitat improvement to improve fisheries resources, or hazing) is imperative to ensure the best possible outcomes.

Proposed actions on different groups

Anglers are generally supportive of efforts to reduce bird-fish conflicts using the most aggressive techniques available. It will be important for the Department to effectively communicate that the mere presence of piscivorous birds in a particular water body does not necessarily equate to a conflict. Monitoring will be necessary to determine the extent and magnitude of any perceived conflict. Further, hazing activities near popular bird watching areas may have a negative effect on bird watchers or photographers. Appropriate timing of hazing activities around popular public access areas will need to be considered when implementing proposed actions. Effective communication through news releases, face-to-face interactions, public meetings, and social media will be important to improve acceptance and understanding of the Department efforts to manage, or not, piscivorous birds in a particular area.

Statewide Program

Boundaries

Department efforts to reduce piscivorous bird predation of fish will be prioritized based on severity of conflicts. More specific descriptions of bird-fish conflicts, current management programs, monitoring efforts and maps of boundaries where monitoring and management occur will be presented in chapters within Part II.

Predator populations

In Idaho, pelican predation is the primary cause of bird-fish conflicts, secondarily by cormorants. Outside of Idaho, predation of anadromous fishes in the lower Snake and Columbia rivers has been documented from at least five species including California gulls (*L. californicus*), cormorants, pelicans, ring-billed gulls (*L. delawarensis*), and terns.

Prey populations

Cutthroat trout and other native salmonids including wild or hatchery stocks, depending on location, are the primary prey types that will benefit from the proposed actions in this plan.

Methods

The Department uses a scientific approach to assess whether bird predation is limiting fish populations. For wild or native populations, assessments are designed to estimate predation rates as a component of natural mortality. Natural mortality rates are then placed in context of total mortality rates. When possible or practical, angling mortality is also estimated. Comparing these estimates, often through mathematical models, allows managers to determine whether predation rates are likely to affect the population or detract from recreational fishing opportunities. Assessments of effects to hatchery-supported fisheries may be conducted similarly or include estimating the proportion of fish that are caught by anglers and whether this proportion has changed over time and in response to changes in piscivorous bird abundance.

The Department has evaluated piscivorous bird predation through a variety of tagging studies. Generally, tags (e.g., passive integrated transponder [PIT], radio, or t-bar anchor) are inserted or implanted into fish before fish are [re-]released into a water of interest. Staff then recover or redetect tags in locations where mortality can be assumed to originate from piscivorous birds (i.e.,

piscivorous bird nesting or loafing areas). Since not all predated tags are recovered, detection or deposition efficiency are determined and applied to unadjusted recovery rates to estimate total predation rate (Teuscher et al. 2015). Depending on the fishery, species, or year, total predation rate estimates have ranged from low to very high.

If predation rates exceed thresholds deemed to be impactful, staff may initiate management efforts to reduce predation (See Appendix B). An initial step in this process is consultation with USDA Wildlife Services, who provide expertise to help resolve wildlife conflicts. Wildlife Services then provides appropriate documentation to the USFWS due to their congressionally designated authority detailed within the MBTA. Associated USFWS policy and permitting processes require an incremental approach to managing conflict, for which initial efforts are required to be passive and non-lethal. These passive efforts may include non-lethal hazing, alteration of fisheries management practices, or modification of breeding habitat prior to the initiation of nesting which may cause birds to move to other locations or reduce nest success. No federal authorization (i.e., permit) is required for these types of activities and can occur anytime with or without consultation with Wildlife Services. However, if passive efforts are insufficient to reduce predation sufficiently, more intense deterrence strategies become necessary. Implementation of more intense deterrence strategies requires more detailed scientific documentation and justification before "take" permits (e.g. Migratory Bird-Depredation, Special Double-crested Cormorant Permit) will be issued by the USFWS. With increasing intensity, more emphasis may be placed on more frequent or intense hazing, reducing bird recruitment through egg oiling/destruction, or lethal control of adult birds. These more intense strategies may be authorized through a variety of permitting processes including a scientific collection permit, a depredation permit, or under a depredation order.

In addition to studying localized effects of predation, the Department plays an active role in the conservation of piscivorous birds which includes participation in regional conservation forums (i.e., Pacific Flyway Council), conducting statewide monitoring surveys, collaborating on research, and reporting results for status assessments. For example, the Pacific Flyway Council recommends conducting colony counts every three years for pelicans and every five years for cormorants (PFC 2013 and PFC 2018). Due to challenges associated with pelican predation on fisheries across Idaho, the Department monitors pelican colonies (conducts nest and fledgling counts) and searches for new colonies in other waters frequented by pelicans annually. In addition, statewide aerial pelican counts are conducted triennially during nesting to monitor changes in pelican distribution and abundance.

Objectives and measures of success

The objective of this plan is to reduce piscivorous bird predation of fishes where predation is a limiting factor, resulting in increased abundance of affected fishes while still maintaining the conservation status of piscivorous birds. Relatedly, increased fish abundance should improve fishing opportunity or conservation status. Success will be measured by a combination of information such as catch rate and total harvest as well as by changes in population demographic data such as survival, age structure, size structure, or abundance.

Program effectiveness

To date, the Department's efforts to manage piscivorous bird-fish conflicts have been mixed with success in some programs and locations while a lack of success is notable for other programs or locations. Overall, the abundance of pelicans has decreased since the Department began

managing bird-fish conflicts. While reduced abundance may partially be attributed to Department actions, it is important to note that colonies without direct management also decreased. This overall decrease in pelican abundance has likely reduced the overall effects of pelicans statewide. Furthermore, localized efforts have resulted in positive outcomes. For example, persistent hazing at Blackfoot Reservoir altered pelican behavior and pelicans began nesting at Chesterfield Reservoir, located ~30 km west of Blackfoot Reservoir. Hazing must still occur on Blackfoot Reservoir, but not as intensive as in the past.

The Department's efforts to conduct research and publish manuscripts in scientific journals to describe bird-fish conflicts were critical first steps to establishing justification for addressing conflicts. This allowed staff to pursue authorization to implement more aggressive techniques over time when non-lethal means were deemed inadequate. The Department has also had some success with identifying funding to address conflicts, through legislatively authorized depredation management accounts, and utilizing partners to augment staff capacity. For example, partnerships with Wildlife Services have allowed for more efficient use of resources. However, staffing and funding are still insufficient to fully address conflicts, and often detract from other important responsibilities.

Future program effectiveness may be measured by decreased predation rates on local fisheries by piscivorous birds, increased abundance of prey populations, reduced bird-fish conflict, decreased localized abundance of pelicans, and the development and implementation of more efficient and effective tools to manage conflict.

Budget

Table 1.1. Estimated annual expenditures for statewide bird-fish conflicts, not including permanent staff salaries, in 2026.

Action	Cost Estimate
	Total
Monitoring/Surveillance – Regional Budgets	
Clearwater Region	$4,500
Management – Statewide Depredation Budget	
Magic Valley Region	$25,000
Southeast Region	$25,000
Upper Snake Region	$33,000
Management – Regional Budgets	
Southeast Region	$28,000
Triennial Statewide Aerial Pelican Survey (May 2026) – HQ PR/DJ Budgets	$40,000
TOTAL	**$155,500**

Part II

CHAPTER 1- Anadromous Fishes Outside of Idaho

Introduction

Idaho's anadromous salmon and steelhead (*Oncorhynchus* spp.) are culturally important species that support fisheries of high economic and recreational value. Unfortunately, abundances of these fishes have declined substantially, which resulted in 13 Endangered Species Act (ESA) listings in the Columbia River basin including multiple stocks of spring/summer Chinook salmon (*O. tshawytscha*), fall Chinook salmon, sockeye salmon (*O. nerka*), and steelhead. Causes for population declines are many and include predation by piscivorous birds. Mitigating population decline is crucial for species recovery and maintaining or improving opportunities for sport, tribal, and commercial harvest. Predation by piscivorous birds occurs throughout the life cycle of anadromous fishes both within and outside of Idaho. This section will focus on predation that occurs outside of Idaho (i.e., the lower Snake River [downstream of Lower Granite Dam], the lower Columbia River, and the Columbia River Estuary), whereas predation within Idaho (including border waters and the segment of river impounded by Lower Granite Dam) will be described in respective regional chapters. We include the river segment impounded by Lower Granite Dam within Washington in the Clearwater Region section because of key loafing areas that are near Idaho waters that regional staff have been monitoring since 2015 (see Chapter 2).

Background

Terns, cormorants, gulls, and pelicans are known to prey upon juvenile anadromous salmonids after they leave Idaho during their downstream migration to the ocean, which has resulted in high mortality (Collis et al. 2002; Evans et al. 2016; Payton et. al. 2023). For instance, predation investigations in 2023 estimated 23% of Snake River steelhead, 8% of Snake River sub-yearling Chinook salmon, 9% of Snake River yearling Chinook salmon, and 19% of Snake River sockeye salmon were consumed by piscivorous birds at monitored colonies during out-migration (Evans et al. 2024).

Studies examining predation by piscivorous birds throughout the mainstem Columbia River led to the development of three separate management plans by the USFWS (2005), the U.S. Army Corp of Engineers (USACE; 2014 and 2015), and other management partners to reduce predation associated with breeding colonies in the Columbia River basin. Management strategies in the Columbia River have focused on terns and cormorants and include attempts to relocate colonies, reduce colony size through passive and active nest dissuasion, egg collections, culling (lethal take), egg-oiling, and reducing available nesting habitats (Evans et al. 2024). Hazing techniques are also implemented at the lower Snake River hydro system dams through the USACE. Results from these strategies are generally mixed with unmanaged colonies moving into areas vacated from active management and colonization occurring in new areas in the Columbia River. Evidence also suggests that consumption by unmanaged gull species has been increasing to the level of currently managed species (Evans et al. 2024).

Despite the immense effort to monitor and manage predation of juvenile salmonids by piscivorous birds in the mainstem Columbia River, little is known about the effects of predation by piscivorous birds farther upstream in the Snake River and its major tributaries (Figure 1.1). Some studies looking at PIT-tag recoveries are documenting notable numbers of PIT tags at heron rookeries from a variety

of release locations including out-of-basin sites, indicating that herons can travel great distances from rookeries for food (Myrvold and Kennedy 2018). Piscivorous bird predation effects on emigrating wild- and hatchery-reared juvenile salmonids in upriver habitats compounds effects of piscivorous bird predation in the lower mainstem Columbia River, a major factor impacting juvenile salmonid survival.

Salmon and steelhead hatchery programs in the lower Snake River basin are managed by the Department, Oregon Department of Fish and Wildlife, Washington Department of Fish and Wildlife (WDFW), Confederated Tribes of the Umatilla Indian Reservation, Nez Perce Tribe (NPT), Shoshone-Bannock Tribes, and the USFWS. Combined, these programs release millions of spring/summer Chinook salmon, fall Chinook salmon, sockeye salmon, coho salmon (*O. kisutch*; not ESA-listed), and steelhead into the Snake River basin below Hells Canyon annually to support mitigation objectives. Additionally, wild salmon and steelhead using crucial upstream habitats can be vulnerable to local colonies of piscivorous birds. Currently, available data on abundance and movement of piscivorous birds as well as predation rates of juvenile salmonids in the Snake River basin are limited. Improving survival during outmigration is crucial for the long-term recovery of ESA-listed salmon and steelhead, which may require management of piscivorous birds when predation is impactful.

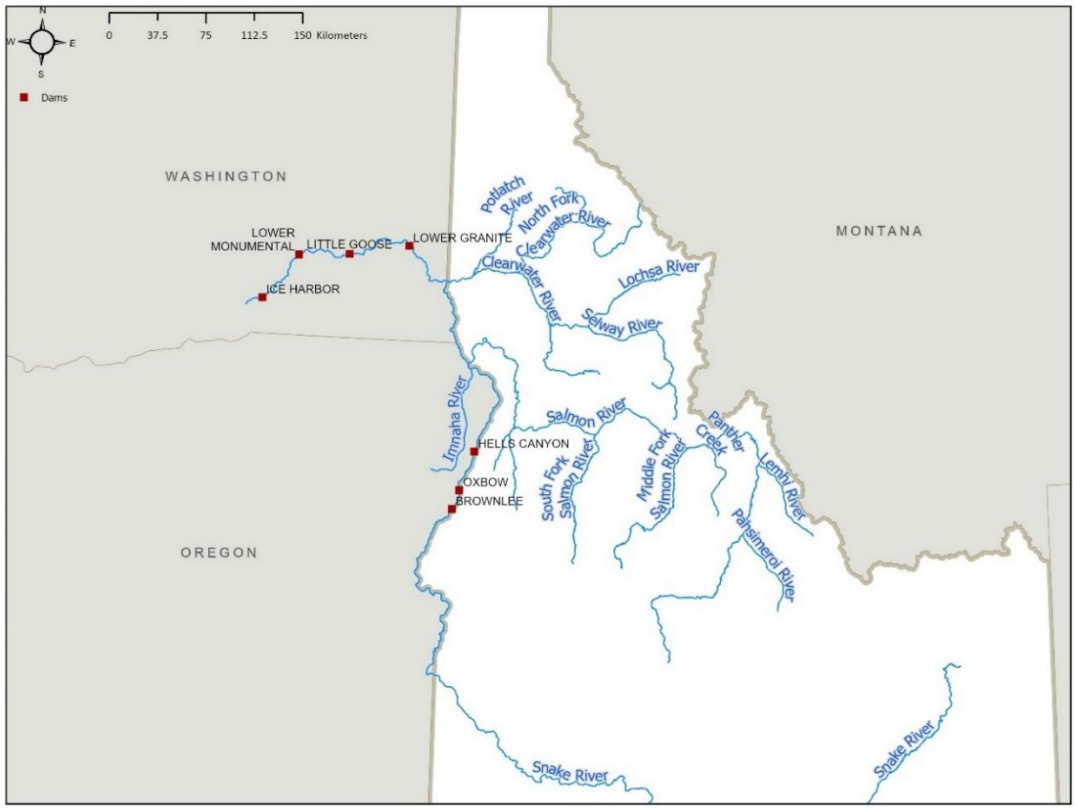

Figure 1.1. Map of the Lower Snake River basin. Anadromous fishes are limited to the Clearwater, Salmon, and Snake rivers (below Hells Canyon Dam), and accessible tributaries.

CHAPTER 2 – Clearwater Region

Introduction

There are six major population groups of steelhead, seven major population groups of spring/summer Chinook salmon, one extant population of fall Chinook salmon, and one extant population of sockeye salmon in the Snake River basin. Most of these populations occupy waters within the Clearwater Region during multiple life stages. The segment of the Snake River impounded by Lower Granite dam and upstream river habitats of the Snake River, the Clearwater River, the Salmon River, and their major tributaries are key areas for mitigation programs, population monitoring and evaluation, and recovery actions for these salmon and steelhead stocks. Additionally, these areas provide important sport and tribal fishing and harvest opportunities that are economic drivers for local communities and invaluable to tribal culture.

Pelicans are often observed loafing at several locations in the vicinity of the confluence of the Clearwater River where it meets the Snake River at Lewiston, Idaho and Clarkston, Washington. The lower Clearwater River and the upper portion of the Snake River segment impounded by Lower Granite Dam starting from Asotin Creek and continuing downstream to Alpowa Creek are critical areas in which hatchery-released salmon and steelhead smolts start to navigate the impounded segment of the Snake River making them more vulnerable to predation.

The occurrence of some piscivorous birds in these areas, particularly pelicans, appears to be increasing in the Clearwater Region. Coarse counts of piscivorous birds along specific river reaches within this area were first conducted in 2015 by regional staff. Current monitoring methods involve opportunistic counts of key species of piscivorous birds conducted during drives to project sites (i.e., Lower Granite Dam and the Potlatch River). The Snake River subreach was 11.5 river kilometers (rkm) long starting at Red Wolf Bridge in Clarkston, Washington and continuing downriver to where Highway 12 diverges from the river at the confluence of Alpowa Creek. The Clearwater River reach is 20.9 rkm long starting at the Memorial Bridge in north Lewiston and continuing upriver to the Clearwater's confluence with the Potlatch River. Typically, coarse daily counts were recorded as low, moderate, or high abundance. However, in recent years, such as 2022 and 2024, more accurate counts were recorded. These surveys were conducted daily from early March through May or June.

Peak daily counts of 30-50 pelicans were observed in the Snake River subreach in the first few survey years with only a few pelicans being observed at the confluence of Alpowa Creek. In 2024, 200 pelicans were counted at the peak (April 17) in the same subreach with 20-40 pelicans often observed at the confluence of Alpowa Creek (Figure 2.1). Gulls were often the dominate species observed in the Clearwater River reach with counts that peaked in late-March and early-April (Figure 2.2). Cormorants were not typically observed in high numbers (<50); however, they tended to congregate at the confluence of Lapwai Creek where NPT releases anadromous smolts. Great Blue Herons were only observed in low numbers across years, and pelicans were not observed in the Clearwater River during surveys until 2018. In 2022, pelican counts in the Clearwater River Reach peaked on May 2 with 60 observed birds while the number of gulls decreased (Figure 2.2).

Starting in 2023, a single annual extensive index count for pelicans was conducted by boat or truck along the mainstem Snake River and Clearwater River during peak juvenile fish migration in April. Survey reaches include the Lower Snake River Reach from Wawawai Landing which is 4.8 rkms upstream of Lower Granite Dam in Washington up to the confluence of the Clearwater River (44.5 rkm in length), the Upper Snake River Reach from the Highway 12 bridge to Lime Point (48.3 rkm in

length) just upstream of Heller Bar, and the Clearwater River Reach from the confluence with the Snake River to the Spaulding railroad bridge (19 rkm in length). No other piscivorous bird species were monitored during index surveys. Although few data points are available, index surveys show an overall increasing trend in total pelican counts. Total pelican counts across all reaches during index surveys were 524 in 2023, 465 in 2024, and 734 in 2025 (Figure 2.3).

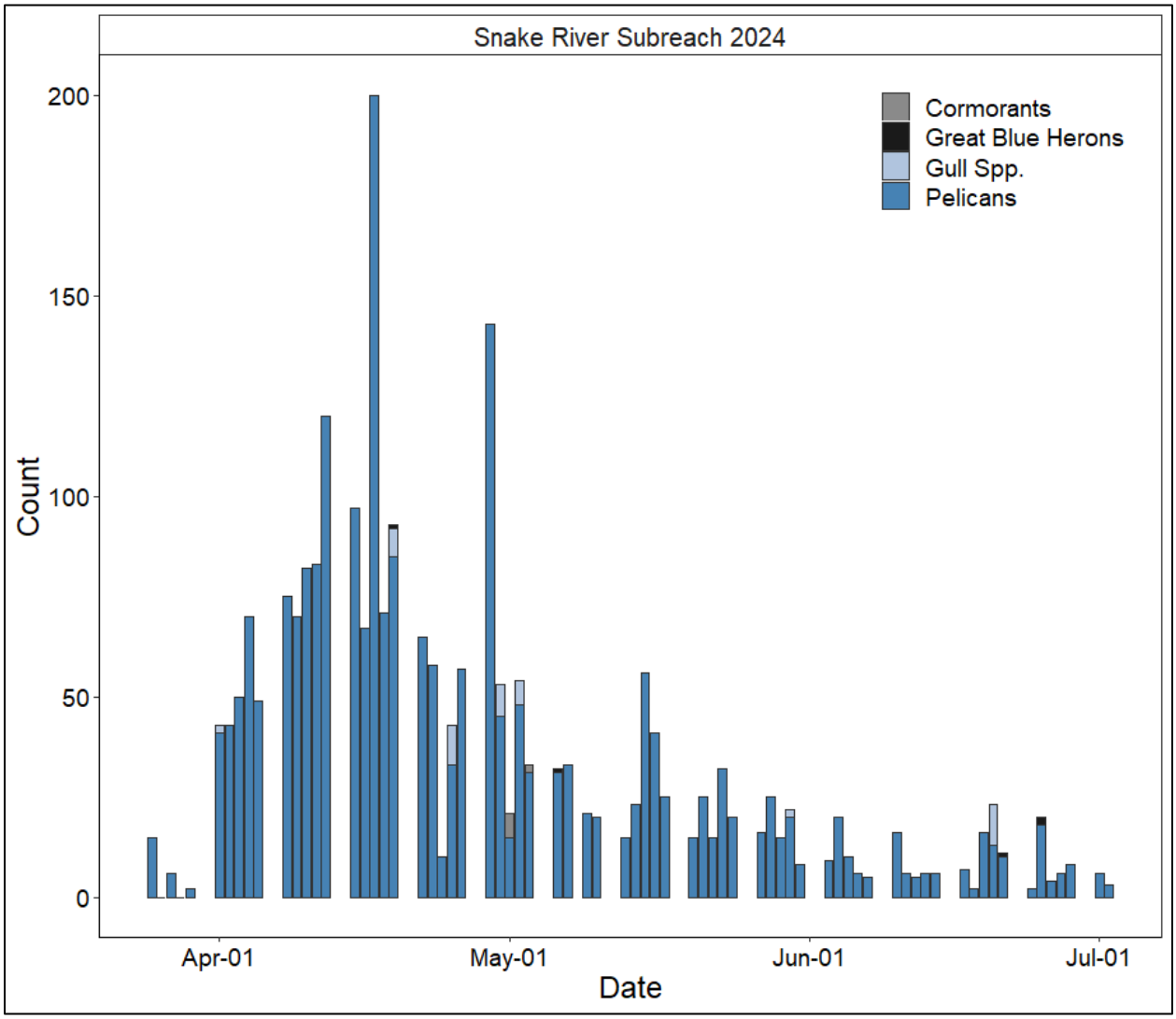

Figure 2.1. Daily estimated counts of cormorants, great blue herons, gulls, and pelicans along the Snake River from the Red Wolf bridge to the confluence of Alpowa Creek from March 25 through July 2, 2024.

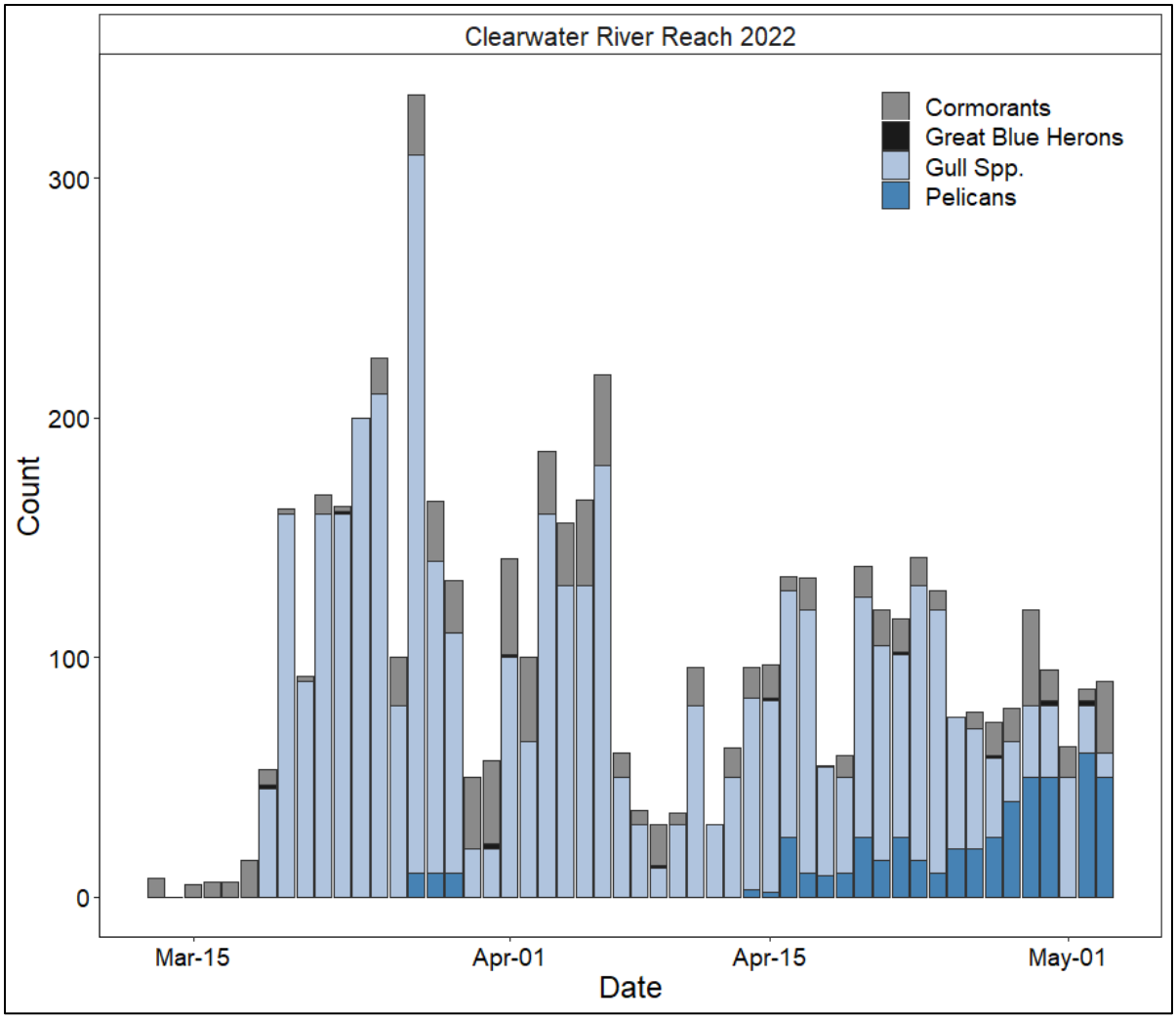

Figure 2.2. Daily estimated counts of cormorants, great blue herons, gulls, and pelicans along the Clearwater River from Memorial Bridge to the confluence of the Potlatch River from March 13 through May 3, 2022.

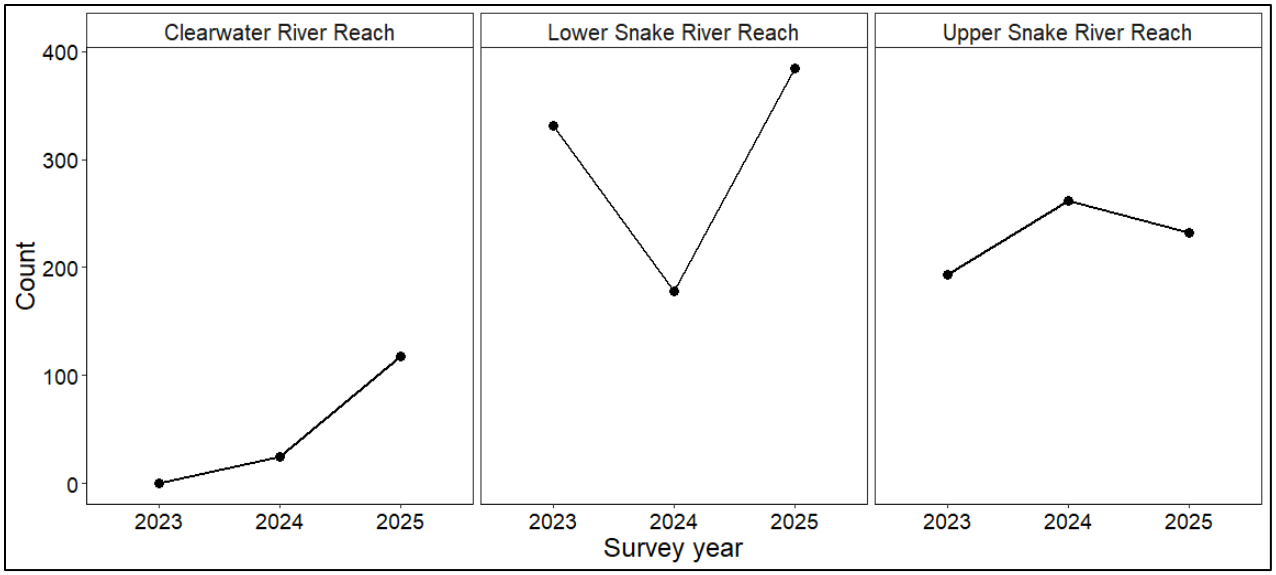

Figure 2.3. Trend index counts of pelicans in the three mainstem river reaches from 2023—2025. Index surveys were conducted on May 4, 2023, April 24, 2024, and April 24, 2025.

Definition of Problem

Predation of juvenile anadromous salmonids by piscivorous birds in the Clearwater Region has not been rigorously examined; however, piscivorous bird predation can result in significant mortality in downriver mainstem Columbia River habitats as they migrate to the ocean (Evans et al, 2024). Increasing abundance and prevalence of pelicans, cormorants, and gulls pose added risk to key hatchery programs and to wild fish populations in upriver habitats and during outmigration. Juvenile fish are released either directly or after some acclimation period in the mainstem Snake and Clearwater rivers and major tributaries. Hatchery fish are extremely vulnerable to predation as they adjust to new conditions. Piscivorous birds congregate near release locations and prey on recently released smolts. These areas are also important winter rearing habitat for wild anadromous salmonids which also become vulnerable to predation once piscivorous birds arrive and before smolts are ready to migrate.

Because anadromous salmon and steelhead in the lower Snake River basin are managed by multiple state, federal, and tribal entities, larger collaborations regarding management actions of piscivorous birds are necessary. The mainstem of the lower Snake River borders the states of Idaho, Washington, and Oregon. Despite this large geographical area, nesting of piscivorous birds here is limited. However, the Department hypothesizes that piscivorous birds migrate seasonally to prey upon juvenile salmonids during their outmigration period. Counts seem to support this hypothesis as the number of pelicans increase before and during the outmigration period of juvenile salmonids and hatchery fish releases (March—May; Figures 2.1 and 2.2). Numbers of pelicans then appear to decrease after juvenile salmonids leave the system for the ocean.

Risk Assessment

Not applicable. For now, efforts will focus on improved monitoring of piscivorous birds and document predation impacts by piscivorous birds.

Program

Project Area

The mainstem Snake River from the Idaho boundary in Lewiston to Lime Point where Hells Canyon starts to become confined (shared waters with Washington). The mainstem Clearwater River from the confluence with the Snake River to the mouth of the North Fork Clearwater River where Dworshak Fish Hatchery and Clearwater Fish Hatchery are located. Also, lowland lakes, including Mann Lake and Winchester Lake, and levee ponds along the Snake and Clearwater rivers (Figure 2.4).

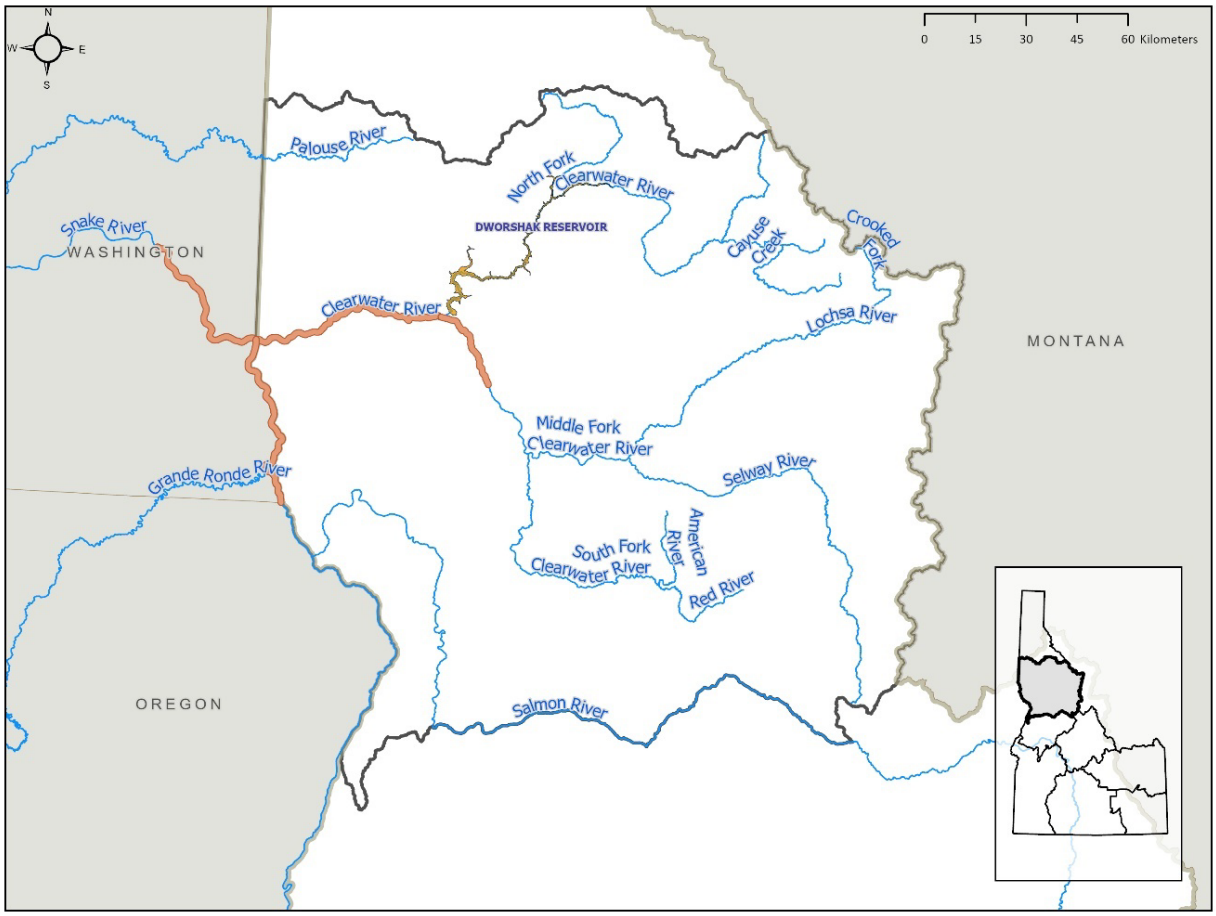

Figure 2.4. Map of major watersheds in the lower Snake River basin with anadromous fish species potentially impacted by piscivorous bird predation. Primary areas of concern for the Clearwater Region include the mainstem Snake River from Lower Granite Dam in Washington to Lime Point in Hells Canyon and the Clearwater River from its confluence with the Snake River up to the mouth of Lolo Creek

Predator populations

Pelicans, gulls, and cormorants are the three predator taxa that are being monitored. No bird species will be affected at this time.

Prey populations

If it is determined that piscivorous birds are having population-level effects on fish, actions taken to reduce piscivorous bird abundance could benefit wild/natural and hatchery-origin ESA-listed spring/summer/fall Chinook salmon, sockeye salmon, steelhead, and fluvial bull trout. Additionally, resident fish species stocked in lowland lakes and ponds and native game fish species that reside in mainstem river habitat such as white sturgeon (*Acipenser transmontanus*) and mountain whitefish (*Prosopium williamsoni*) could also benefit.

Strategy

Before determining appropriate management direction in the Clearwater Region, better understanding of abundances of piscivorous birds and their distribution as well as fish survival rates are needed. Therefore, our initial strategies will focus on developing and implementing a monitoring strategy for piscivorous birds, identify potential locations to implement hazing actions, and assess opportunities to examine fish survival during critical migration periods.

Piscivorous Bird Monitoring:

1. Assess current monitoring methods and develop an improved sampling design to monitor piscivorous bird abundance during peak hatchery release and outmigration periods. Opportunistic surveys show that peak timing of piscivorous birds varies across years depending on flow, visibility, and fish migration timing.
    a. Determine whether cameras, drones, or additional boat surveys can improve accuracy of piscivorous bird counts and reduce risks of conducting surveys while driving.
    b. Identify waters to be surveyed during the triennial aerial pelican survey scheduled for late May or early June 2026.

Anadromous Fish:

1. Identify key locations (e.g., hatchery fish releases, confluence of key tributaries) for hazing and possible removal actions to reduce predation risk to juvenile salmonids.
    a. Coordinate and collaborate with the WDFW and NPT to implement effective monitoring strategies and potential hazing efforts along the Clearwater and Snake rivers. Currently, NPT is the sole entity conducting limited hazing techniques along the Clearwater River for pelicans and cormorants.
2. Assess opportunities to examine piscivorous bird predation rates on wild- and hatchery-reared juvenile salmonids through PIT-tag detections.
3. Evaluate the effectiveness of hazing on predation rates and survival of anadromous fish in these large river habitats.
4. Continue to examine juvenile hatchery smolt survival and linkage to predation by pelicans.

Resident Fish:

Important recreational fisheries exist in several regional lakes and reservoirs which are located near congregations of piscivorous birds. Recently, survey results have indicated low abundance of pelicans at Mann Lake and absence of pelicans at Winchester Lake. At this time, it is unlikely that these fisheries are being impacted by bird predation, but the Department will continue to monitor pelican abundance at these lakes and reservoirs during the triennial statewide pelican survey.

Measure of Success

Success will be measured by the development and implementation of effective techniques to monitor piscivorous birds in the Clearwater Region, including identifying and mapping pelican high-use sites (feeding and loafing areas) and cormorant rookeries. Success will also be measured by collaborating with NPT and WDFW to determine the most effective tools to reduce the number of piscivorous birds at high-use areas during the spring outmigration of hatchery- and wild-origin salmon and steelhead.

Date of Initiation of Actions

1. Current methods of monitoring of piscivorous birds will continue during the spring (March–May). These methods include daily opportunistic counts along routes to project sites at Lower Granite Dam and the Potlatch River. Index counts in the Snake River and Clearwater River will also continue on or near the established index date (April 24). Modifications to improve monitoring efforts will be implemented in 2026.
2. The NPT will be implementing non-lethal hazing during the spring of 2026 and plans to seek opportunities for lethal take of pelicans and cormorants within the duration of this Plan.
    a. If non-lethal hazing methods provide benefit to salmon and steelhead smolts, the Department, in coordination with NPT and WDFW, will likely implement non-lethal hazing activities where the target river areas share state boundaries.

Budget

No additional budget requests are currently planned. However, we anticipate that it will cost approximately $4,500, excluding permanent staff salary, to develop and implement a piscivorous bird monitoring program in 2026.

CHAPTER 3 – Southwest Region

Introduction

Most piscivorous bird monitoring in the Southwest Region historically focused on pelicans at CJ Strike Reservoir and Lake Lowell, and pelicans and grebes at Lake Cascade. Nest surveys have been conducted at CJ Strike Reservoir to document potential breeding activity. Although pelican eggs have occasionally been cast on islands within the Reservoir, no nest structures have been built, and no incubation has been observed. Aerial counts of pelicans have been conducted triennially to document distribution and abundance. The average number of pelicans observed across the Southwest Region was 502 between 2012 and 2023. Predation impacts by pelicans on hatchery trout were studied at CJ Strike Reservoir and ranged from 4 to 48% (Meyer et al. 2016) prior to shifting the timing of trout stocking from spring to fall.

At Lake Cascade, pelican surveys focus on documenting adult abundance, while grebe surveys include counts of chicks to assess nesting success. The average number of pelicans observed was 389 from 2004 to 2014, compared to 286 from 2015 to 2025. The average number of post-nesting adult grebes was 2,746 from 2004 to 2014, and 3,746 from 2015 to 2025. Although the number of adult grebes observed increased between the two time periods, recent surveys indicate a substantial decline in grebe nesting success, likely influenced by changes in reservoir operations. Department staff are actively working to better understand the relationship between reservoir operations and grebe nesting success, with the goal of identifying strategies to improve reproductive outcomes for this species. Lake Cascade supports one of Idaho's premier sport fisheries, particularly for yellow perch. Young-of-year perch are believed to be a key prey item for all piscivorous predators on the reservoir, including birds.

Five known cormorant rookeries are located in the Treasure Valley within the Boise, Payette, and Snake rivers, including a new cormorant rookery on the Snake River above Brownlee Reservoir that may exceed 800-1,000 individuals. No long-term monitoring efforts have occurred to better understand changes in cormorant abundance over time. There are also several small waterbodies managed by associated city parks departments and stocked regularly by the Department that are often described as community fishing waters. Recent evidence suggests that cormorants may be impacting hatchery trout at some community fishing waters (ponds) in the Treasure Valley. Over the last several years cormorant activity has increased at some of these ponds. At the same time, catch rates of hatchery rainbow trout at Department-led fishing education events have declined substantially. Furthermore, Chiaramonte et al. (2019) documented exponential declines in angler catch as piscivorous bird predation increased across 15 southern Idaho waters. In the five ponds that were included in the study, piscivorous bird predation on hatchery trout ranged from 10% to 100%, with a mean of 65%.

This chapter primarily focuses on increased cormorant presence at community fishing waters, suggests potential monitoring strategies to better understand impacts by cormorants, and provides possible management strategies to alleviate predation concerns by cormorants on local public ponds.

Definition of Problem

The Department annually stocks approximately 15,000 rainbow trout at community fishing waters across the Treasure Valley at a cost of over $39,000. Besides offering convenient and local recreational opportunities, these ponds are important to the Department's angler retention and

recruitment efforts. Ponds are stocked seasonally with catchable-size hatchery-raised rainbow trout but also have self-sustaining largemouth bass and bluegill populations. Cormorants can eat fish up to 42 cm in size (Campo et al. 1993) but may take smaller fish (<10 cm) with greater frequency (Harding and Mesler 2022), which are well within the size of fish stocked at these ponds. Cormorant activity tends to follow a seasonal pattern, with reduced bird attendance at ponds during winter months (and when trout stocking is not occurring), although there is some cormorant presence in the Treasure Valley year-round.

Wilson Springs Pond in Nampa and Kleiner Pond in Meridian (Figure 3.1) appear to have the highest and most persistent cormorant presence. Over the past several years, a small colony of cormorants have become established and are roosting at Wilson Springs Pond. The Department stocks this pond year-round with over 10,000 catchable-sized rainbow trout. Increased cormorant presence at Kleiner Pond resulted in the City of Meridian and the Department developing a plan to haze cormorants using dogs trained to haze urban geese. These efforts proved to be ineffective as cormorants flew to other locations on the pond. Altering stocking practices would also not be effective as the predation is focused near fountain features in the middle of the pond where trout congregate. Cormorant predation is persistent days following stocking events. The best available information suggests that the cormorant rookeries located along the Lower Boise River corridor may be contributing to these issues. Therefore, reduction of cormorant-fish conflicts at select locations where predation is in direct conflict with community fishing waters objectives is needed.

Risk Assessment

Any potential non-lethal dissuasion activities implemented to reduce cormorant predation should not impact the local cormorant population. Additionally, reduced cormorant presence should improve trout survival and benefit anglers. The Department will work with the City of Meridian and other municipalities as needed to implement management actions. Further, regional staff will inform the public about all planned actions the Department may take to reduce bird-fish conflicts.

Program

Project Area

The primary focus will be monitoring and possibly hazing cormorants on specific community fishing ponds in the Treasure Valley. There are about 50 community fishing ponds totaling 110 acres scattered between Caldwell and Boise. They range in size from less than an acre to about 3 acres. Currently, conflicts with cormorants occur at Kleiner, McDevitt, and Settlers ponds in Meridian, Riverside Pond in Garden City, and Wilson Springs Pond in Nampa which has a small cormorant colony on site. Pelicans will continue to be monitored annually for breeding activity on CJ Strike Reservoir on the Snake River, and pelicans and grebes will continue to be monitored annually at Lake Cascade to help inform management decisions related to both bird conservation and fishery sustainability (Figure 3.1).

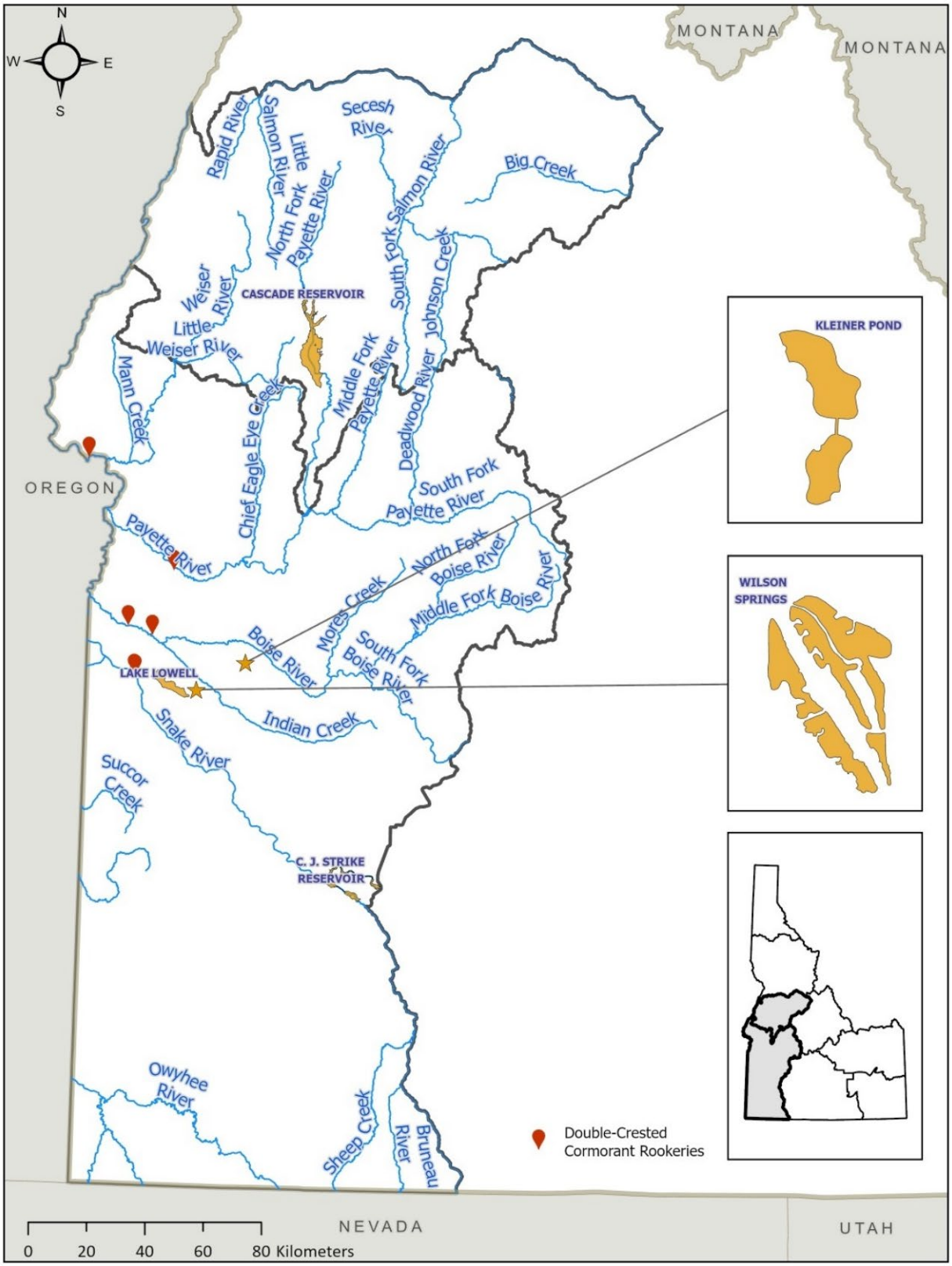

Figure 3.1. Map of Southwest Idaho and including locations of piscivorous bird-fish conflicts and known cormorant rookeries.

Predator populations

Cormorants are the only piscivorous bird consistently affecting community fishing waters in the Southwest Region and are the primary focus of potential actions. Any actions taken to reduce cormorant presence at community fishing waters should not have an impact on the overall cormorant population. Pelicans and grebes are present in the region, but there are no actions proposed to reduce their abundance or presence.

Prey populations

If hazing activities occur and cormorant presence is reduced, hatchery–produced rainbow trout and other game fish will benefit from these actions.

Strategy

Explore methods to determine extent of cormorant conflicts at select ponds. If warranted, pursue a scientific collection permit to assess whether lethal take of [habituated] cormorants reduces conflict or reinforces non-lethal hazing. Work with Wildlife Services to address conflicts.

1. Assess cormorant presence, abundance, timing, and seasonality of use at select ponds using game cameras.
2. Engage with Meridian, Boise, and Garden City Parks and Recreation Departments to discuss options to reduce conflict including habitat modifications, non-lethal hazing, and possible future lethal take at ponds.
    a. Determine whether additional hazing techniques such as lasers, inflatable tube men, and other bird deterrents (pinwheels, foil strips, Mega Bird Spikes | Steel Bird Spikes | Bird B Gone), or creating fish refugia in the middle of ponds are feasible methods to decrease conflicts.

Measure of Success

Success will be measured by the implementation of a monitoring program that adequately characterizes the extent of cormorant conflicts and exploring and implementing different hazing techniques that reduce cormorant presence at community fishing waters.

Date of Initiation of Actions

Monitoring cormorants will occur during spring and summer. Cameras will be placed as soon as stocking starts in spring. Hazing will primarily occur during and after fish stocking events.

Budget

No current budget planned. Assessment of cormorant use of community fishing waters and municipality coordination efforts will be funded by regional license budgets. This expenditure will be minimal, and no additional funding is required.

CHAPTER 4 - Magic Valley Region

Introduction

Pelicans are found seasonally across the Magic Valley Region and have resulted in conflicts at local fisheries. The presence of suitable breeding, feeding, and loafing habitat combined with abundant fish resources make this region suitable for pelican persistence. The greatest concentration of pelicans is associated with the nesting colony at Lake Walcott on the Minidoka National Wildlife Refuge (NWR). Minidoka NWR was established in 1909 as a "preserve and breeding ground for native birds." The colony grew from less than 500 breeding pairs in the 1990s to over 2,000 breeding pairs in the 2000s. Since 2014, the colony has stabilized to about 1,400 breeding pairs. Additional large groups (50-200+) of pelicans have been observed along the Snake River, as far north as Anderson Ranch Reservoir and as far south as Salmon Falls Creek and Oakley reservoirs near the Nevada border.

During the last decade, bird-fish conflicts have been documented at several important fisheries. Based on tag detections from islands within Lake Walcott, most conflict appears to be associated with birds from the Minidoka colony, the largest in the state. The Magic Valley Region fisheries program includes approximately 60 waters stocked with hatchery trout. At six of these fisheries, pelican predation rates ranged from 7% to 34% of all stocked trout (Meyer et al. 2016). In some waters (Lake Walcott, Freedom Park Pond, Magic Reservoir), pelicans were estimated to consume more stocked trout than anglers caught. In general, peak stocking and angling effort occur in spring and early summer which coincides with peak pelican foraging. To reduce predation by pelicans in some fisheries, the region shifted stocking from spring to fall. However, due to hatchery logistical constraints, this is not feasible regionwide. In addition, some of the most severe conflicts involve naturally produced trout. For example, substantial impacts on wild trout have been documented at Silver Creek (Thiessen et al. 2025). Further, pelican presence has increased at Anderson Ranch Reservoir during the kokanee (*O. nerka*) spawning run and impacts are suspected on this popular fishery.

This chapter describes evidence that pelicans are impacting trout at Silver Creek and may be impacting kokanee at Anderson Ranch Reservoir and includes ongoing and planned actions to alleviate predation concerns.

Definition of Problem

Silver Creek

Silver Creek, near the town of Picabo, provides a premier blue-ribbon trout fishing opportunity (Figure 4.1). The fishery is comprised of wild rainbow trout and brown trout (*Salmo trutta*). Reduced flow and increased water temperatures may impact habitat quality within Silver Creek. The Department is working with public and private partners to evaluate existing flow and habitat conditions and to seek improvements throughout Silver Creek and its tributaries. A predation study conducted in 2018 and 2019 at Silver Creek indicated that pelicans consumed 29%-39% of sub-adult and adult trout (Thiessen et al. 2025). Notably, the Department worked with Wildlife Services to haze pelicans on Silver Creek during the study, suggesting that without hazing, predation may have been higher. A recent estimate of total annual mortality for rainbow trout was 66% (Brauer et al. in review), indicating that pelican predation likely accounts for more mortality than all other forms combined, such as spawning, angler harvest, or other natural factors. For additional context,

angling regulations are restrictive here and have remained mostly unchanged for several decades, and contemporary estimates of angler use and exploitation are low compared to similar fisheries.

Anderson Ranch Reservoir

Anderson Ranch Reservoir (Figure 4.1) is one of the more popular kokanee fisheries in southern Idaho, and anglers harvested about 40,000, 34,000, and 29,000 kokanee in 1979, 1985, and 1997, respectively. While the reservoir environment is conducive to producing high yields of kokanee, drawdown through the summer causes the upper third of the reservoir to become shallow. By early to mid-August, kokanee begin staging in the upper reservoir and become susceptible to pelican predation while migrating to their primary spawning habitats in upper South Fork Boise River and its tributaries. Pelicans are rarely observed on the reservoir during other seasons. Pelican predation is thought to be especially impactful when reservoir levels are very low or when kokanee populations are depressed. Hazing efforts have been implemented sporadically over the past ten years. Managing pelican predation near the confluence of the South Fork Boise River and the reservoir was identified as a management priority in the Statewide Fisheries Management Plan (IDFG 2024b) due to the high recreational value of this fishery.

Risk Assessment

Reduction of pelican predation is unlikely unless the Department and its partners maintain positive landowner relationships and access for hazing and implementation of other deterrence strategies. Since most hazing activities occur during arid summer conditions, the use of pyrotechnics will be approached cautiously. Use of noise-making deterrents will consider potential impacts to livestock. Therefore, hazing techniques will be determined by local conditions and appropriate permissions from the potentially affected parties.

Program

Project Area

The project areas include Silver Creek and Anderson Ranch Reservoir at the upstream confluence of the South Fork Boise River with the reservoir (Figures 4.1).

The Silver Creek project area is east of the town of Carey, in the Little Wood River drainage. It includes approximately 24 km of Silver Creek, starting at the confluence of Grove and Stalker creeks and ending at the Highway 20 bridge east of Picabo. Hazing activities mainly occur between the north Picabo Road and Kilpatrick bridges.

The Anderson Ranch Reservoir project area includes the northernmost portion of the reservoir, from Curlew Creek boat ramp upstream to the South Fork Boise River inlet near the town of Pine. Hazing primarily occurs near where the South Fork Boise River enters the reservoir.

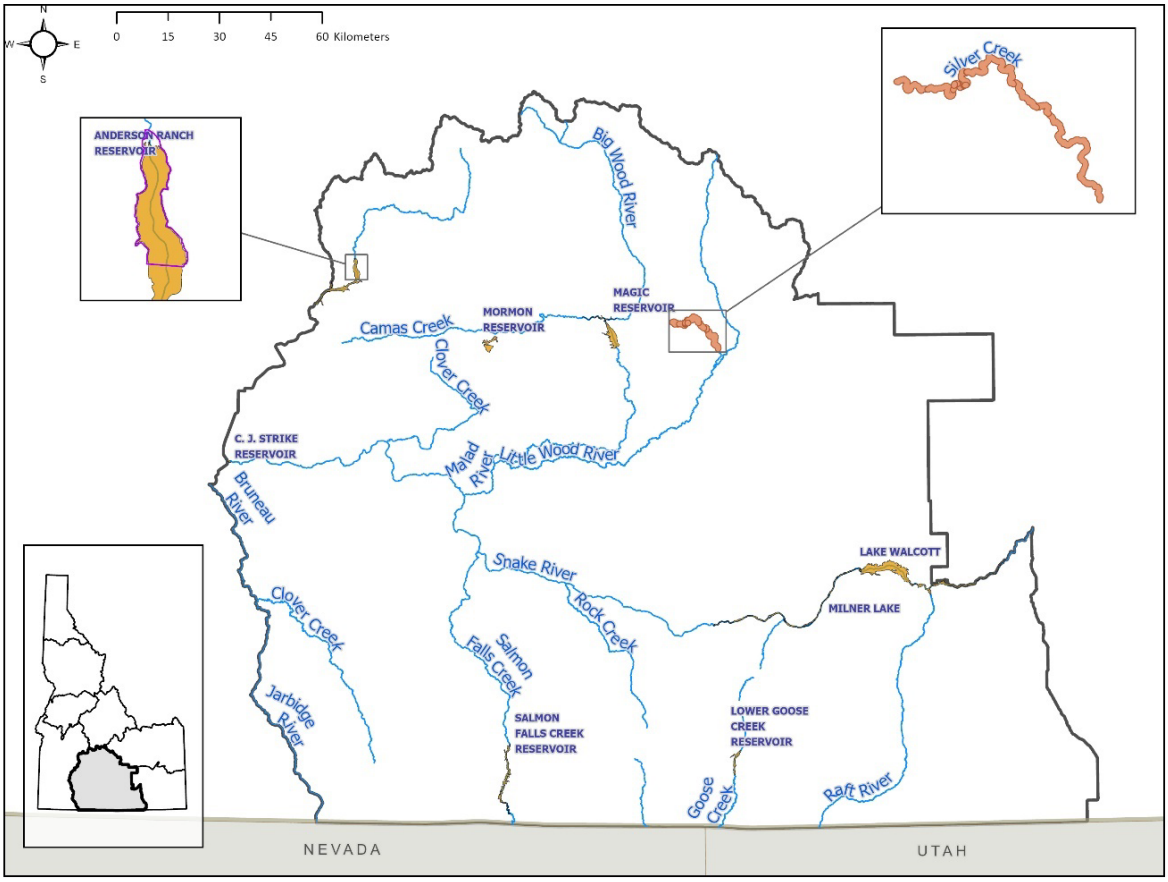

Figure 4.1. Project areas where pelicans are currently being managed to reduce conflicts with salmonids in the Magic Valley Region.

Predator populations

Pelicans are the only piscivorous bird species being managed to reduce conflicts in the Magic Valley Region. Management activities (hazing) at Silver Creek and Anderson Ranch Reservoir will not affect the pelican population.

Prey populations

Rainbow trout and brown trout in Silver Creek and kokanee near the confluence of the South Fork Boise River and Anderson Ranch Reservoir will be the primary species benefiting from the proposed actions in this plan. Adfluvial bull trout leaving Anderson Ranch Reservoir could also potentially benefit from the proposed actions.

Strategy

The Department will continue to focus on non-lethal pelican hazing at Silver Creek and Anderson Ranch. Types of non-lethal hazing techniques that have been utilized include pyrotechnics (cracker shells), shotgun blasts (shot near but not at birds, in areas where pyrotechnics cannot be deployed), green lasers at night, drones, and human presence. The objectives of these actions are

to reduce pelican predation on wild trout and kokanee. For Silver Creek, trout density will be estimated every three years following the regional fisheries program survey rotation. The number of pelican encounters will also be recorded by hazers to document relative abundance. For Anderson Ranch, the number of pelican encounters will be recorded by staff weekly from the fourth week of July through the first week of September to document relative abundance.

Measure of Success

For Silver Creek, trends in relative abundance can be used to determine whether non-lethal hazing is benefiting the population. If trends in the population continue to decrease, additional strategies will be developed to reduce predation effects by pelicans. For Anderson Ranch Reservoir, relatively low presence and abundance of pelicans and use of the upper reservoir as a feeding area will be considered a success. Levels of presence, abundance, and use will be compared to historical information and compared to adult kokanee relative abundance.

Date of Initiation of Actions

For Silver Creek, non-lethal hazing of pelicans will occur annually beginning in early May and continuing through mid-July. For Anderson Ranch Reservoir, non-lethal hazing of pelicans will occur annually around the second week of August and continue through early September.

Budget

Costs associated with non-lethal hazing at Silver Creek, contracted through Wildlife Services using the statewide depredation budget, have been $25,000 annually. Non-lethal hazing at Anderson Ranch Reservoir has only occurred twice using the contract with Wildlife Services. Additional funds would be needed to provide consistent non-lethal hazing activities at Anderson Ranch Reservoir.

CHAPTER 5 - Southeast Region

Introduction

The Blackfoot River and Reservoir contain a genetically distinct population of Yellowstone cutthroat trout that has not recovered after a population collapse documented in 1988 (LaBolle and Schill 1988). This initial collapse is thought to be due to overexploitation by anglers in the 1970s and 1980s. In 1988, the Department developed an Upper Blackfoot River Fishery Management Plan to recover the population, largely by addressing overharvest. The cutthroat trout population is typically monitored with an adult (spawning run) trap in the Blackfoot River just above the reservoir, and established electrofishing transects upstream. After reduction and eventual cessation of cutthroat trout harvest, a brief period of population growth was observed before a second collapse occurred in the mid-2000s that coincided with an increasing pelican population.

Pelicans began successfully nesting on islands in Blackfoot Reservoir in the 1990s. A pelican monitoring program was established in 2002 to monitor breeding bird abundance and productivity on the colony. An increasing pelican population and lower water levels in the Blackfoot Reservoir were associated with a large decline in numbers of adult cutthroat trout spawners detected at the trap. Subsequent evaluations of direct predation rates indicated that under some conditions pelicans consumed nearly 25% of the spawning adfluvial adults, over 60% of in-river adults (fluvial and adfluvial), and up to 90% of in-river juveniles (migratory and resident; IDFG unpublished data 2014, Teuscher et al. 2015).

Pelicans are observed seasonally along the Blackfoot River and within several reservoir systems. The number of breeding pelicans has ranged from 300 to 3,400 birds annually. The highest concentrations of pelicans are observed on Blackfoot and Chesterfield reservoirs. Abundant nesting habitat and food sources allow for pelicans to continually breed and nest on islands within one or both reservoirs.

From 2009 to 2020, management actions were implemented to reduce predation by pelicans at the Blackfoot Reservoir colony and along stretches of the Blackfoot River above the reservoir (IDFG 2025). A combination of non-lethal hazing and lethal removal (egg destruction/egg oiling) with a Migratory Bird Depredation Permit issued by the USFWS were used to dissuade nesting at the colony on Blackfoot Reservoir. In addition, lethal removal of adults occurred at the mouth of the Blackfoot River to protect migrating cutthroats. In 2020, pelicans began nesting at Chesterfield Reservoir, about 30 km west of Blackfoot Reservoir. Intensive pelican hazing efforts that occurred on Blackfoot Reservoir likely displaced pelicans to Chesterfield Reservoir.

Following the 2020 breeding season, staff surveyed the colony on Chesterfield Reservoir and detected 99 PIT tags from cutthroat trout that were PIT-tagged in 2020 in the Blackfoot system. In fall 2024, 32 PIT tags originally inserted into cutthroat trout in summer 2024 were recovered from this new nesting location. An additional 15 PIT tags were recovered from Gull Island on Blackfoot Reservoir that were deployed in cutthroat trout in 2024. These occurrences offer evidence that pelicans nesting at Chesterfield Reservoir were associated with the predation conflicts at Blackfoot.

Fish predation by cormorants has also been documented at several fisheries in southeast Idaho (Meyer et al. 2016; Chiaramonte et al. 2019). Estimated cormorant predation averaged 21% and ranged as high as 69%. When combined with pelicans, predation rates could be much higher. When

bird predation exceeded 25%, angler catch rates were significantly reduced. Although cormorant predation has impacted some fisheries in the Southeast Region, no hazing or dissuasion techniques have occurred specifically targeting cormorants. Instead, the Department used other tools to alleviate predation impacts on local fisheries such as shifting from spring to fall stocking (e.g., American Falls Reservoir).

Definition of Problem

Pelicans foraging along the upper Blackfoot River segment and at Chesterfield Reservoir are impacting cutthroat trout recovery. Pelicans prey on adult cutthroat trout as they move upstream to spawn. Predation has also been documented on juvenile cutthroat trout in upstream rearing areas, and during downstream migration to Blackfoot Reservoir. Other threats include variable reservoir water levels, variable water flows, lack of complexity in riverine habitats, impaired water quality from surrounding land use, harvest (bycatch and illegal) and predation by an assemblage of species. The Department has documented that pelican predation continues to impact cutthroat trout reproduction and recruitment, thus impacting the local cutthroat trout population. Reducing predation by pelicans is expected to have a direct positive impact on productivity, survival, and growth which is expected to increase abundance and size structure of cutthroat trout in the Blackfoot River system.

Due to continued challenges related to pelican predation on cutthroat trout in the Blackfoot system, the Department plans to continue to pursue a depredation permit from the USFWS that includes egg oiling/nest destruction and lethal take of adults at Blackfoot and Chesterfield reservoirs. Non-lethal hazing will be rigorously utilized to decrease the need for lethal take.

Cormorant predation to gamefish populations in the Southeast Region continue to limit opportunities for anglers. Some of the predation to hatchery-origin fish populations was alleviated by shifting stocking from the spring to the fall, after cormorants have emigrated from the region. However, this shift to fall stocking is not the most preferable solution to cormorant predation because fall releases result in higher mortality to fingerling-sized trout as they enter the winter. Similarly, catchable-sized trout released in the fall limit their availability to anglers due to high winter mortality and reduced angling effort over the subsequent months. These are costs to fisheries management that are not detailed in budgets.

Currently, the continued challenges related to pelican predation on cutthroat trout in the Blackfoot system utilize all the regional bird predation management resources. No actions or strategies are currently being developed to reduce cormorant populations due to limited resources.

Risk Assessment

Several constraints exist which may limit implementation or effectiveness of management actions. These include legal and permitting requirements, water rights, land ownership issues, seasonal timing of management actions, and public perception of management. Key uncertainties influencing the effectiveness of various strategies include water level and flow (fluctuations based on irrigation needs and weather patterns) and origins of the pelican population foraging in the Blackfoot River system.

Program

Project Area

The project areas in the Southeast Region include the Blackfoot River as well as Blackfoot and Chesterfield reservoirs. Gull Island on Blackfoot Reservoir is the preferred nesting location for pelicans. Hazing activities often occur on Gull Island and several other islands and along the inlet area. Hazing activities occur on all stretches of the river between the reservoir and the confluence of Lane and Diamond Creeks on the Blackfoot River, but the focal area is the lower-most 10 km upstream from the reservoir (Figure 5.1).

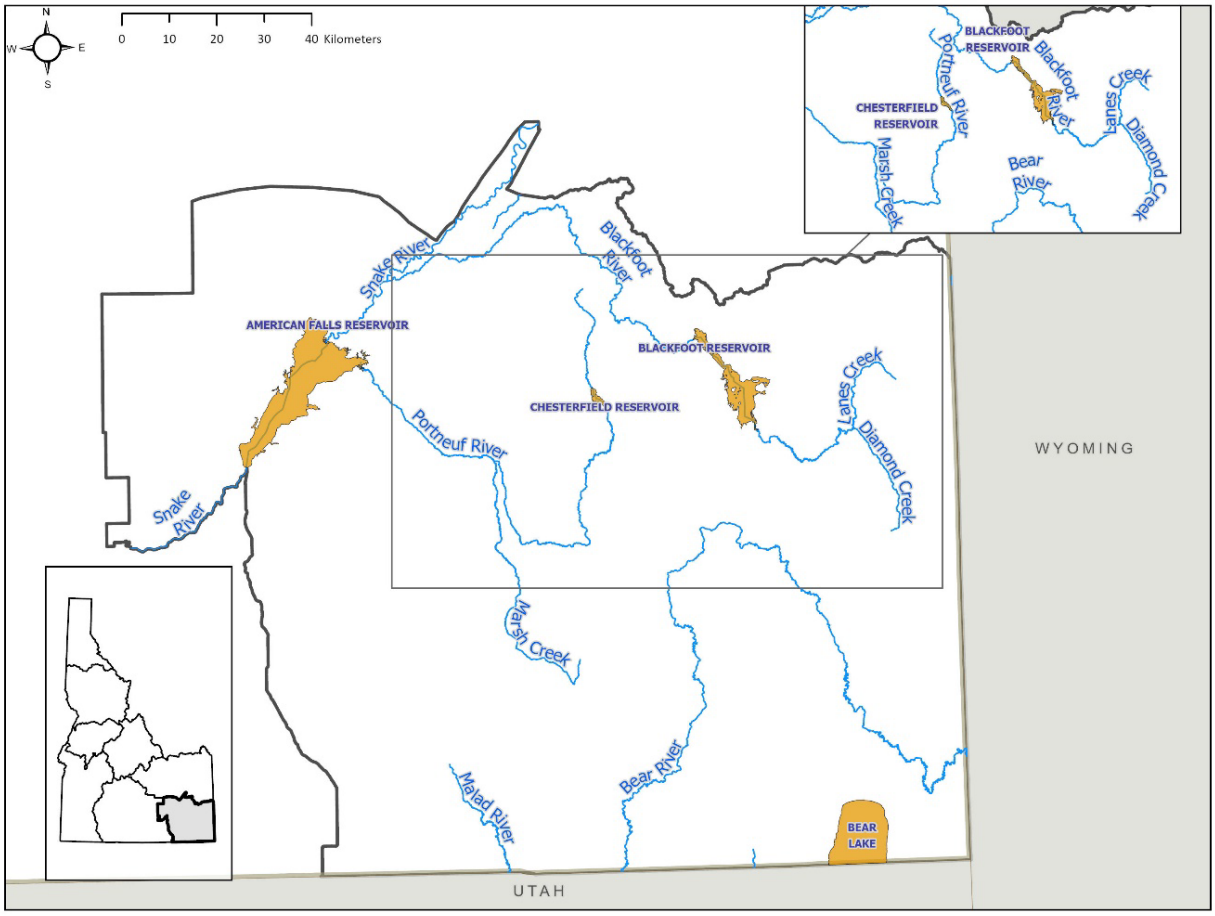

Figure 5.1. Project area where pelicans are currently being managed to reduce conflicts with cutthroat trout (inset) and other water bodies where piscivorus birds may be impacting hatchery-reared and wild trout survival in the Southeast Region.

Predator populations

Pelicans are the primary predator species affected by proposed actions in this area. Cormorants have been shown to be problematic, but resources are focused on more substantial predation from pelicans. Pelicans continue to have measurable effects on cutthroat trout in southeast Idaho.

Prey populations

Yellowstone cutthroat trout are the primary species that will benefit from actions implemented in this plan. Other native, wild, or hatchery-reared trout and other game fish may also benefit from reduced numbers of breeding pelicans.

Strategy

The overarching strategy to reduce conflicts between pelicans and cutthroat trout is to dissuade all nesting at the Blackfoot and Chesterfield colonies. Actions associated with lethal take will follow the guidelines the Department developed in the Bird Conservation Strategy (IDFG 2025) as part of the requirements to obtain a depredation permit from the USFWS. The Department has received a permit annually since 2012 and will continue to renew the permit as long as necessary to reduce pelican-cutthroat trout conflicts. Specific strategies include the following:

Non-lethal Techniques

1. Haze pelicans at colonies using non-lethal methods prior to nest initiation
    a. Utilize cracker shells, lasers, and destruction of nest bowls prior to egg laying. Wildlife Services will supplement efforts at Blackfoot and Chesterfield reservoirs, and staff will complement Wildlife Services' efforts at these reservoirs and other locations as needed.
        i. Deter all nesting on Blackfoot and Chesterfield reservoirs.
2. Reduce pelican predation of cutthroat trout during the spawning run and during out-migration
    a. Use kayaks/canoes and pyrotechnics to haze pelicans away from the mouth of the Blackfoot River/Blackfoot Reservoir and upstream along the Blackfoot River approximately two miles to the fish trap at Caribou County Sportsman Park 2-3 times daily, and at least once daily upstream to the Blackfoot River Wildlife Management Area (WMA)
    b. Work with the ITAFOS company to improve fish habitat by deepening the channel and adding in-water complexity to the Blackfoot River for approximately 6.4 rkm upstream of the reservoir.
    c. Utilize PIT tag reader data and cameras to determine where pelicans are foraging upriver on the Blackfoot to focus hazing efforts in areas where pelicans are having the highest impact on cutthroat trout
    d. Evaluate whether discontinuing trap operation increases survival of migratory adult cutthroat trout.

Lethal Techniques

1. IDFG will take up to 75 adult pelicans, as permitted by the USFWS, to reinforce non-lethal hazing efforts along the Blackfoot River from the mouth of the Reservoir upriver to the confluence of Lane and Diamond Creeks. A shotgun or rifle will be used to take adult birds. If using a rifle, an auditory reinforcement (e.g., pyrotechnics) will be added. Lethal control of adult birds is expected to provide a direct reduction in predation.
2. IDFG will take up to 450 nests (remove eggs for destruction or egg oiling) at the Blackfoot and/or Chesterfield Reservoir breeding colonies in support of non-lethal dissuasion techniques (e.g., hazing with lasers) as needed to improve YCT productivity and as permitted by the USFWS. Every effort will be made to avoid the need for nest take at Blackfoot and Chesterfield reservoirs through frequent, intensive hazing at nesting islands.

Measure of Success

Predation of cutthroat by pelicans will be evaluated annually through tagging studies. The abundance of cutthroat trout in the Blackfoot River will be estimated annually at long-term monitoring sites with the goal of estimating increased trends in abundance toward recovery of this population.

Date of Initiation of Action

1. Hazing at the Blackfoot and Chesterfield colonies will occur from approximately mid-April to mid-September as necessary. Hazing will occur on the Blackfoot River as necessary from the beginning of the cutthroat trout spawning run (mid- April) until the birds migrate in late September.

2. Lethal take of pelicans on the Blackfoot River near the Reservoir will begin at the start of the cutthroat trout spawning migration (typically early April) when pelicans are present on the river. Lethal take of adults may also occur along upriver stretches where pelicans concentrate foraging efforts (mid-June-September).

Budget

The cost to manage pelicans at Blackfoot and Chesterfield reservoirs is about $53,000 annually, with part of the costs split between regional budgets ($28,000) and a contract with Wildlife Services using the depredation budget ($25,000). We anticipate the costs to manage pelican will be similar in 2026.

CHAPTER 6 - Upper Snake Region

Introduction

The Island Park area is surrounded by some of Idaho's most well-renowned fisheries including Henrys Lake and the Henrys Fork, and to a lesser extent Island Park Reservoir. Increased observations of pelicans beginning in the early 1990s caused some concern amongst anglers and biologists that piscivorous birds might be impacting the quality of these highly valuable fisheries. These fisheries are supported by a variety of native and non-native trout produced through natural spawning or in hatcheries. Species include cutthroat trout, rainbow trout, brown trout, and brook trout (*Salvelinus fontinalis*). Impacts are suspected based on literature from other systems.

Pelicans forage in the area to support a nesting colony on Trude Island in Island Park Reservoir. This nesting colony is relatively new. While pelicans from nearby Yellowstone Lake and Blackfoot Reservoir colonies have been observed in the upper Henrys Fork for decades, the establishment of a new breeding colony on Trude Island in 2012 has increased the number of pelicans in the area—perhaps in part due to management actions to the south at the Blackfoot Reservoir colony.

Staff have been monitoring pelican abundance on Trude Island since 2012 and have been pursuing efforts to limit colony growth to meet angler expectations since that time. Efforts have primarily included creating an enclosure on Trude Island for pelican nesting and hazing pelicans outside the enclosure to discourage nesting. While hazing efforts outside the enclosure have successfully limited pelican nesting activity, the number of nests constructed within the enclosure and resulting pelican fledglings often exceeded objectives. Department staff reduced the size of the enclosure, with little effect on the nest count. The size of the enclosure and the number of nests built by pelicans does not appear to be a linear relationship, and despite further reductions of the size of the enclosure in 2024 the number of nests placed by pelicans was not affected. Efforts to further reduce the nesting area would likely cause abandonment by pelicans.

Definition of Problem

The relative abundance of pelicans has increased at Island Park Reservoir. Also, pelicans have been observed preying upon congregations of spring-spawning trout near the mouths of tributaries such as tributaries to Henrys Lake, near migration obstacles such as Island Park Dam and Sheep Falls, and near springs such as Big Springs and those located along Warm River. Increased relative abundance of pelicans regionally and suspected population-level impacts has resulted in increased public concern about impacts to local fisheries. Limiting the size of the pelican colony or limiting all nesting on Trude Island at Island Park Reservoir may be necessary to help protect native and wild trout fisheries in the area and maintain social tolerance of pelicans.

Risk Assessment

Hazing activities on Trude Island come with some risk during early spring. Human access to Trude Island is often difficult when pelicans begin to arrive and establish nests. During the shoulder season between winter and spring, the reservoir is still covered in ice, but the ice is highly variable in thickness and quality and is generally unsafe for human travel. Additionally, the road to access the end of Island Park Reservoir near Trude Island is not maintained during winter, thus over-snow travel is required. Like deteriorating ice conditions on the reservoir, deteriorating snow conditions on the road are problematic for over snow travel. Access becomes much safer in mid-May once the

reservoir is ice free and is accomplished via powerboat. However, hazing must typically occur prior to ice-off to reduce successful pelican nesting attempts.

Program

Project Area

The area of concern includes Island Park Reservoir, the Henrys Fork Snake River from St. Anthony to the headwaters, tributaries to the Henrys Fork Snake River, including Fall River, Warm River, and Henrys Lake Outlet, Henrys Lake, and Henrys Lake tributaries (Figures 6.1).

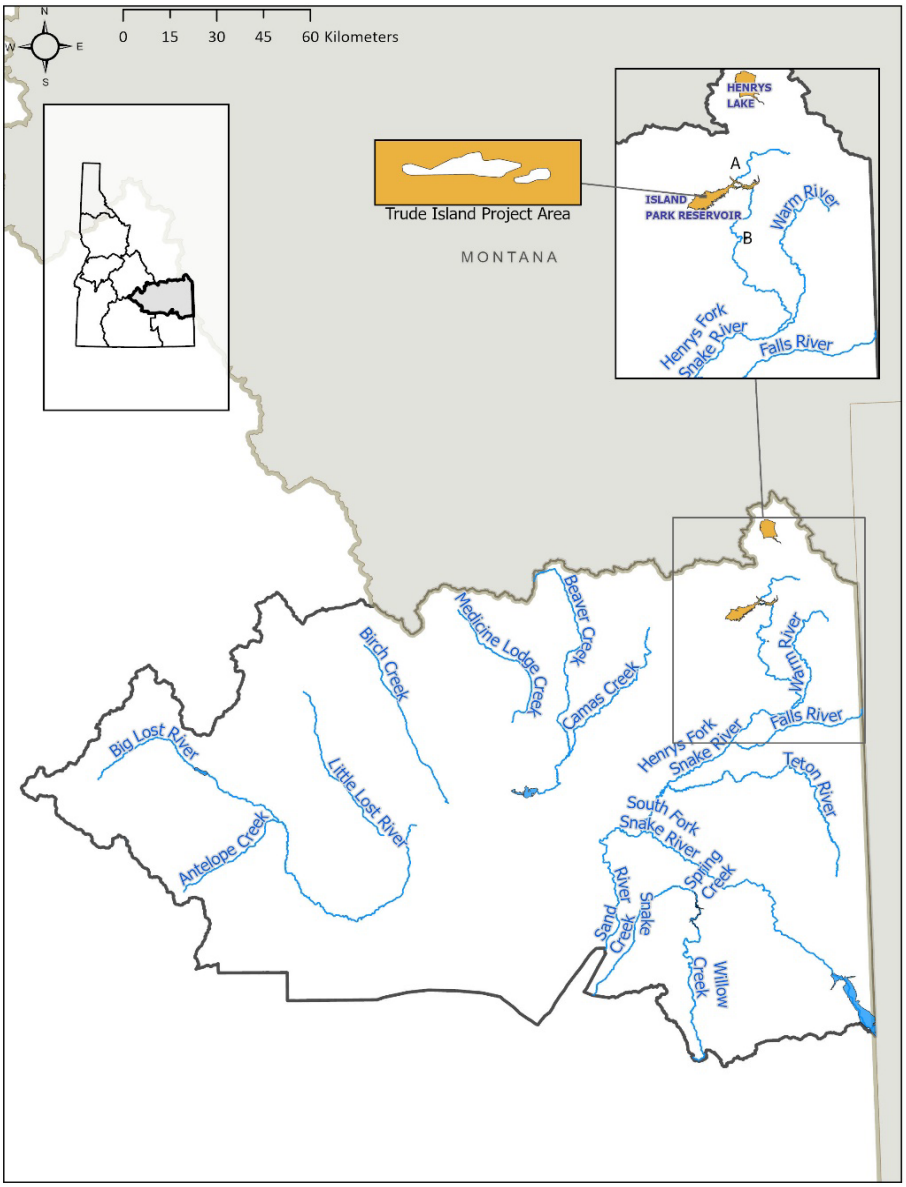

Figure 6.1. Trude Island project area on Island Park Reservoir, Henry's Lake, and other waters and tributaries where bird-fish conflicts occur. The area also includes Stoddard Mill Pond (A) and East Harriman Pond (B).

Predator populations

Pelicans are the only species that may be affected by the proposed actions in this area. However, with a robust pelican colony at Lake Walcott (Minidoka NWR) and other nearby pelican colonies (Molly Island in Yellowstone Lake, WY and Gunnison Island in the Great Salt Lake UT), dissuasion activities should not impact the status of the western population.

Prey populations

Nearly all waters within the project area support robust fisheries supported by naturally produced trout which are highly valued by the public. Native cutthroat trout will benefit in Henrys Lake and Henrys Lake outlet, including tributaries to these systems. Wild rainbow trout and brown trout will benefit in the Henrys Fork Snake River and its tributaries. Wild rainbow trout, brown trout, and brook trout will benefit in Fall River and its tributaries. Wild rainbow trout and hatchery-supported rainbow trout and kokanee will benefit in Island Park Reservoir. Additionally, hatchery-supported rainbow trout fisheries at Stoddard Mill Pond and East Harriman Pond will benefit (Figure 6.1). Finally, the Department supplements wild trout fisheries in three riverine locations using hatchery rainbow trout. These include the Mack's Inn section of the Henrys Fork Snake River, the Buffalo River, and Warm River and these hatchery-supported fisheries may benefit as well.

Strategy

Manage for zero nests on Trude Island to reduce pelican/trout conflicts at Island Park Reservoir and surrounding waters.

1. Use non-lethal methods at the nesting colony on Trude Island to reduce pelican presence.
    a. Hazing will include human presence on Trude Island during the nesting season to disturb pelican nests with no eggs.
        i. Hazing activities occur daily as soon as pelicans arrive in spring.
        ii. If eggs are deposited before or during hazing events, hazing will be discontinued, and the area will be avoided to prevent nest abandonment. The Department does not have a permit to oil or destroy eggs (take authority) from the USFWS in the Upper Snake Region.
    b. Use the enclosure fencing to reduce the attractiveness of the area for nesting.
    c. Haze pelicans at tributaries during adult spawning migration.

Nest counts are conducted in late June on Trude Island, and fledgling counts are conducted in late August if necessary.

Measure of Success

Success of hazing activities will be defined as reduced adult pelican abundance at the mouths of Henrys Lake tributaries and other important fisheries which will lead to decreased bird-fish conflicts.

Date of Initiation of Actions

Hazing actions generally start in mid to late April (depending on snow depth) and conclude in early to mid-June when nesting activity ceases.

Budget

The cost to haze pelicans at Island Park Reservoir each year is about $33,000 from the depredation budget. We anticipate the budget to remain the same in 2026. Budget for work includes personnel funds for four seasonal employees for a three-month time span, operating funds for vehicles, uniforms, and field supplies.

CHAPTER 7 - Salmon Region

Introduction

The headwaters of the Salmon River, the longest undammed river in the contiguous United States, are managed by the Salmon Region. The Salmon River and its tributaries provide spawning and rearing habitat for resident and anadromous salmonid species, including four ESA-listed species (endangered: sockeye salmon; threatened: Chinook salmon, steelhead, and bull trout [S*alvelinus confluentus]*), all of which are vulnerable to predation by piscivorous birds at various life-stages.

Research directed at piscivorous bird predation of salmonids in headwater drainages in Idaho is limited. However, various migration and habitat use studies of resident and anadromous salmonids in the Salmon River have documented predation by herons throughout the upper Salmon River basin. Schoby and Curet (2007) documented herons preying upon adult radio-tagged Westslope Cutthroat Trout (*O. clarkii lewisi*) and rainbow trout ranging from 336 to 420 mm in the upper Salmon River and tributaries. Additionally, Axel et al. (2017) in their study of juvenile sockeye salmon migration and survival between release sites in upper Salmon River downstream to Lower Granite Dam, observed the highest rates of mortality in two reaches of the upper Salmon River with habitat conditions that facilitate predation by piscivorous birds and fish. Notably, their study identified lower survival per km traveled 1) the release site (Redfish Lake) downstream to the Valley Creek confluence with the Salmon River, and 2) the Salmon and North Fork Salmon River confluence downstream through the Deadwater Slough area compared to the rest of the 750-km study area. In the first reach, piscivorous birds were observed feeding on juvenile sockeye salmon in and around Redfish Lake after study fish were released. In the second reach, Deadwater Slough is known for low water velocities and multiple shallow braided channels with at least one heron rookery nearby.

Research on the effects of heron predation on juvenile salmonids is limited, but has shown increasing interest throughout the Pacific Northwest, with recent studies being completed in the Clearwater River drainage of Idaho (Myrvold and Kennedy 2018) and in British Columbia (Sherker et al. 2021), with additional research beginning in eastern Oregon (ODFW and NPT). While heron abundance has not been quantified in the Salmon Region, there are five known rookeries, and anecdotal observations indicate an increase in heron abundance associated with the outmigration of juvenile anadromous fish during the spring. This chapter will describe PIT-tag surveys conducted around heron rookeries and begin to explore the effects herons may have on the survival of juvenile salmonids.

Definition of Problem

Salmon Region fisheries staff began evaluating the impacts of herons on resident and anadromous salmonids in 2023 by searching for PIT-tags near five active rookeries throughout the upper Salmon River basin (Figure 7.1). Four rookeries are located on the Salmon River between Challis and North Fork, each approximately 40 km apart. One additional rookery is located on the Lemhi River near Leadore, approximately 80 km upstream from its confluence with the Salmon River.

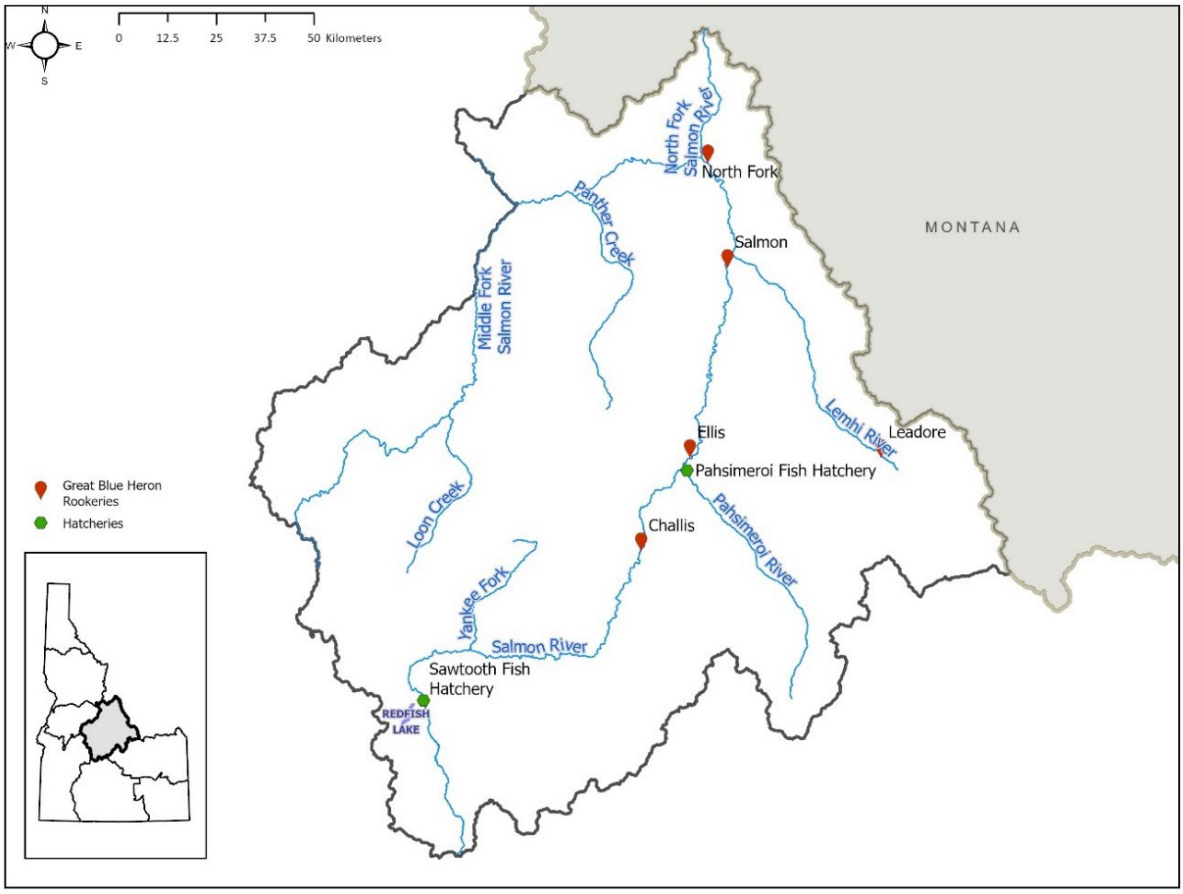

Figure 7.1. Location of surveyed heron rookeries and anadromous fish hatcheries in the upper Salmon River basin.

A total of 16,635 PIT tags were detected across all scanned rookeries (Table 7.1), representing both wild and hatchery-reared anadromous juveniles (steelhead, Chinook and sockeye salmon) as well as wild bull trout, Westslope cutthroat trout, and rainbow trout. Tags were detected from fish tagged between 2000 and 2023. Steelhead composed 61% of all tags, followed by sockeye salmon (23%), and Chinook salmon (13%). Bull trout, brook trout, and Westslope cutthroat trout composed the remaining 3% (Figure 7.2).

Table 7.1. Summary statistics for heron rookeries surveyed for the presence of PIT tags in the Salmon Region in 2023.

Rookery	Rookery area (m^2)[1]	No. of PIT tags	PIT tag density (no./m^2)	Downed nests	Active nests
North Fork	6,354	1,502	0.236	33	81
Salmon	23,593	8,941	0.379	144	130
Ellis	11,453	1,992	0.174	-	83
Challis	7,527	3,396	0.451	70	82
Leadore	2,064	804	0.390	17	24

[1]Estimated by measuring the extent of observed nests.

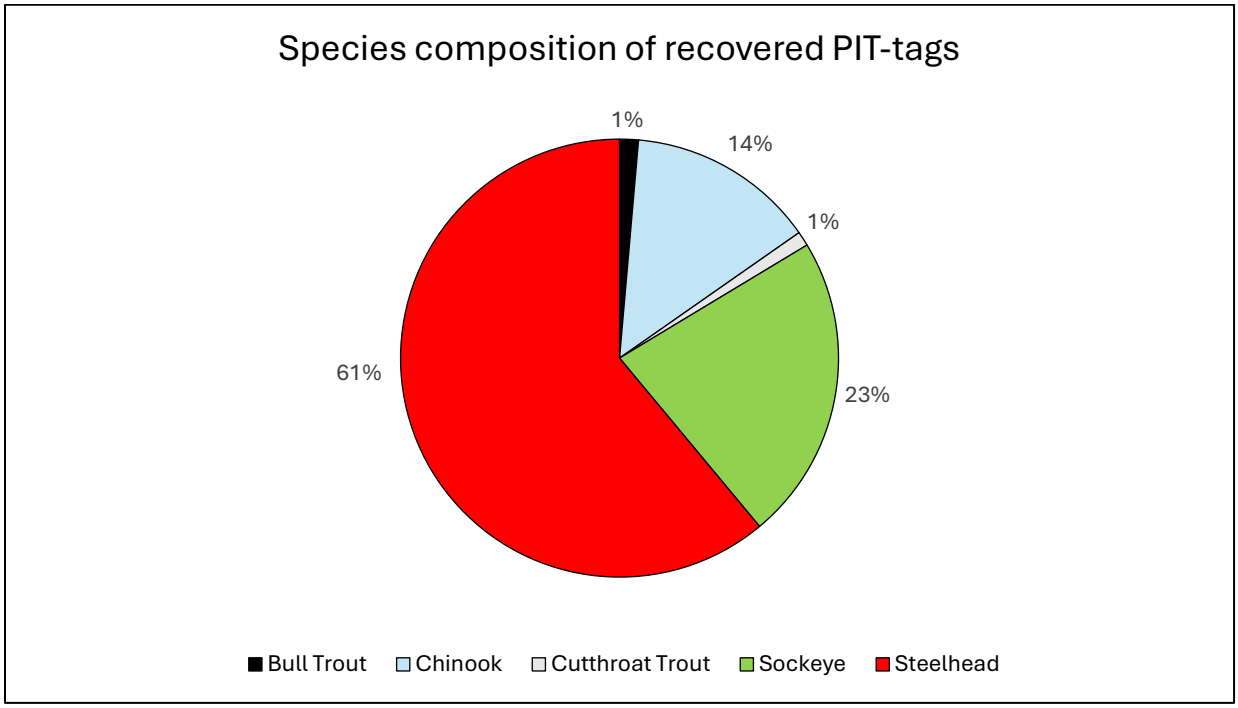

Figure 7.2. Species composition of all PIT-tags recovered from all heron rookeries surveyed in the upper Salmon River basin, 2023.

For hatchery-origin fish, preliminary analysis of PIT-tags indicated that predation probability was highest for steelhead, ranging from 2% to 8% being consumed by herons annually, followed by sockeye salmon (1-4%) and Chinook salmon (1-3%; Figure 7.3). Estimated sockeye salmon predation in 2015 was nearly 10% but was likely related to fish health issues associated with this release group from Springfield Hatchery.

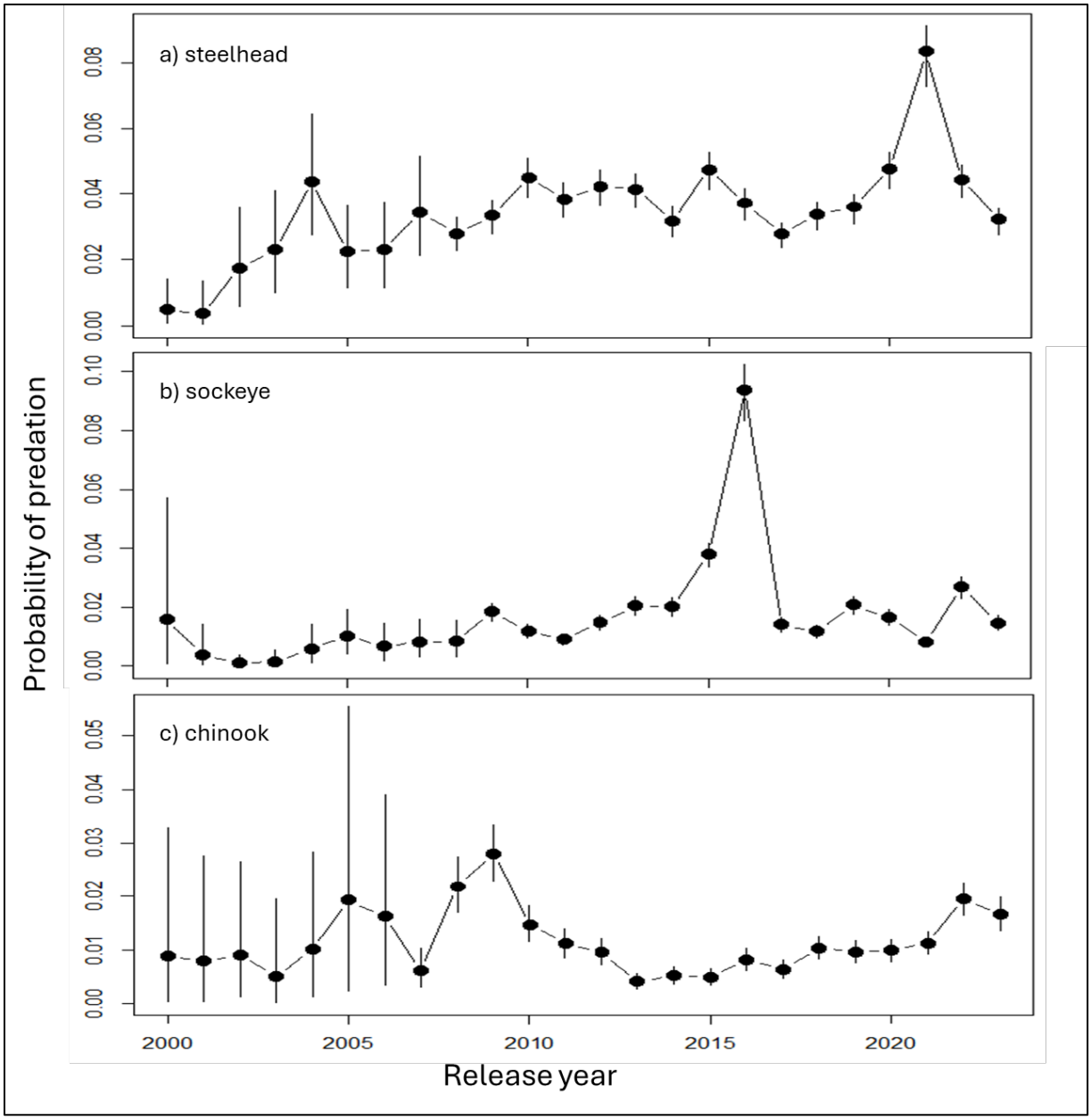

Figure 7.3. Estimated annual probability of predation by herons for a). steelhead, b) sockeye salmon, and c) Chinook salmon between 2000 and 2023. Note differences in y-axis scale.

It is currently not known whether herons are having population-level effects on salmonids. Likely, many factors play a role in predation rates by herons. The Salmon Region plans to continue to evaluate possible predation impacts by herons on salmonids and develop strategies to alleviate impacts if necessary.

Risk Assessment

Not applicable. For now, the Salmon Region will focus on monitoring and research to evaluate the impacts of heron predation on salmonids.

Program

Project Area

The upper Salmon River basin, from the confluence of the Middle Fork Salmon River upstream to the headwaters near Galena Summit, including major tributaries. Lowland lakes including Williams Lake and nearby ponds (Figure 7.1).

Predator populations

Great Blue Herons are the focus of ongoing research and evaluation in the Salmon Region. However, there are currently no proposed actions that will affect herons.

Prey populations

Wild/natural- and hatchery-origin ESA-listed spring/summer Chinook salmon, sockeye salmon, steelhead, and fluvial bull trout. All resident fish species that are stocked in lowland lakes and ponds. All native fish species that reside in mainstem river habitats (e.g., Westslope cutthroat trout, mountain whitefish, Pacific lamprey, cyprinids [minnows], catostomids [suckers], and sculpins) will benefit from actions taken to increase survival of these species

Monitoring Strategy and Future Research

1. Begin annual nest counts of herons
    a. Index relative abundance of herons, seasonal fluctuations, geographic distribution, and trends.
2. Evaluate preliminary PIT-tag recovery data from heron rookeries to:
    a. determine predation rates by herons on wild fish
    b. identify variation among rookeries (species composition differences), based on distance from nearest hatchery release sites
    c. identify heron migration distances to foraging areas
    d. determine how environmental factors (stream flow, turbidity) influence predation rates
3. Initiate counts of other piscivorous birds in the upper Salmon River basin.
4. Continue to monitor and measure predation rates of juvenile salmonids in mainstem rivers.

Increased understanding of this issue may help fisheries managers identify mitigation measures that may increase outmigration survival.

Measure of Success

Succes will be measured by identifying and implementing the most efficient methods to monitor herons, including rookery surveys, high-use feeding sites, and distance between rookeries and hatchery release sites. Success will also be measured by completion of analysis of predation rates and how (if) environmental factors influence predation rates.

Date of Initiation of Actions

Monitoring counts of predatory birds will occur throughout the year to determine seasonal differences in heron abundance. Data analysis is ongoing, and potential actions will be identified in the future.

Budget

No current budget planned. Current counts of herons at rookeries are completed opportunistically while completing other surveys.

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APPENDIX A – Summary of Actions Taken to Reduce Bird-Fish Conflicts.

This will be updated annually and will provide a region-by-region summary of actions taken during the year to address bird-fish conflicts.

APPENDIX B – Predation Management Plan Flowchart