



## **Pacific Flyway Council**

Recommendations, Informational Notes,  
and Subcommittee Reports

A Product from the Meetings of the:

**Pacific Flyway Nongame Technical Committee**

and the

**Pacific Flyway Study Committee**

August 21-24, 2023

In-person and Virtual Meeting

for the

**Pacific Flyway Council**

August 25, 2023

In-Person and Virtual Meeting

Fall 2023

## Preface

The Migratory Bird Treaty Act implemented multiple international treaties addressing migratory bird conservation and established federal authority over migratory birds. The U.S. Fish and Wildlife Service (Service), under the authority of the Secretary of the Interior, collaborates with the Pacific Flyway Council (Council) to develop regulations for migratory birds in the United States Pacific Flyway. Two technical committees advise the Council: the Study Committee (SC) and the Nongame Technical Committee (NTC), collectively referred to as Committees. The Committees are scientific fact-finding bodies whereas the Council is an administrative and policy setting body.

The Service develops migratory game bird hunting regulations annually by establishing frameworks including outside dates, season lengths, bag limits, and hunting areas. The Council makes framework recommendations annually to the Service according to biological status, management objectives, and policy considerations. Members of the Council and the SC meet in late summer/early fall to share data, review the status of populations and actions outlined in management plans, and propose annual hunting frameworks. They meet again in late winter to develop cooperative management programs, and coordinate research and management for the protection and conservation of migratory game birds. The Council typically makes season framework recommendations to the Service in October.

The NTC also meets twice each year with the Council and SC. The NTC provides a consolidated forum for the Service and state fish and wildlife agencies to discuss, plan, and coordinate actions to address management, regulations, monitoring, and other issues related to nongame migratory birds. The NTC both responds to emerging issues originating with the Council or the Service and works proactively with conservation partners and with other states to identify and prioritize flyway-relevant issues that require attention.

Recommendations, informational notes, and subcommittee reports are prepared by the Committees and forwarded to the Council for consideration or adoption. The Council may develop or modify Committee recommendations as necessary. The Council has a policy of considering management plans for adoption only after having received the management plan for review at least 45 days in advance. The Service assumes the Council support for continuation of the previous year's frameworks if no recommendation is received.

Each recommendation and informational note identifies a contact person. The contact person drafts the recommendation or informational note (or facilitates its development) to represent the position of the Committee or the Council. The contact person is usually knowledgeable on the specific subject matter and serves as a contact for more information. If the recommendation or informational note comes from a subcommittee, that subcommittee is identified on the recommendation or note. The Chair of each subcommittee ensures the preparation of the subcommittee's report and is identified on that report.

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# **PACIFIC FLYWAY COUNCIL**

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## **Members, Officers, and Representatives**

### **Pacific Flyway Council**

#### **Members**

Rick Merizon, Alaska Department of Fish and Game  
Josh Avey, Arizona Game and Fish Department  
Scott Gardner, California Department of Fish and Wildlife  
Brian Dreher, Colorado Parks and Wildlife  
Shane Roberts, Idaho Department of Fish and Game  
Ken McDonald, Montana Fish, Wildlife, and Parks  
Shawn Espinosa, Nevada Department of Wildlife  
Bernadette Graham-Hudson, Oregon Department of Fish and Wildlife  
Blair Stringham, Utah Division of Wildlife Resources  
Eric Gardner, Washington Department of Fish and Wildlife  
Doug Brimeyer, Wyoming Game and Fish Department

#### **Officers**

Chair, Brian Dreher, Colorado  
Vice-chair, Doug Brimeyer, Wyoming  
Secretary, Jason Schamber, Alaska  
Treasurer, Jeff Knetter, Idaho

#### **Consultants to U.S. Fish and Wildlife Service Migratory Bird Regulation Committee**

Eric Gardner, Washington (Sr.)  
Shawn Espinoza, Nevada (Jr.)

#### **Representative on the National Flyway Council**

Eric Gardner, Washington

#### **Representative on the North American Wetlands Conservation Council**

Justin Shirley, Utah

#### **Representative on the North American Waterfowl Management Plan Committee**

Eric Gardner, Washington

#### **Representative on the Sea Duck Joint Venture Management Board**

Rick Merizon, Alaska

**Representative on the Arctic Goose Joint Venture Management Board**  
Rick Merizon, Alaska

## **Pacific Flyway Study Committee**

### **Members**

Jason Schamber, Alaska  
Larisa Harding, Arizona  
Melanie Weaver, California  
Adam Behney, Colorado  
Jeff Knetter, Idaho  
Claire Gower, Montana  
Russell Woolstenhulme, Nevada  
Brandon Reishus, Oregon  
Jason Jones, Utah  
Kyle Spragens, Washington  
Sean Yancey, Wyoming

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Chair, Adam Behney, Colorado  
Vice-chair, Sean Yancey, Wyoming  
Treasurer, Jeff Knetter, Idaho

### **Subcommittees**

Aleutian Cackling Goose  
Cackling/Minima Cackling Goose  
Dusky Canada Goose  
Emperor Goose  
Interior Band-Tailed Pigeon  
Taverner's Cackling Goose and Lesser Canada Goose  
Lower Colorado River Valley Sandhill Crane  
Midcontinent Sandhill Crane  
Mourning and White-Winged Dove  
Pacific Brant  
Pacific Coast and Central Valley Sandhill Cranes  
Pacific Coast Band-Tailed Pigeon  
Pacific Trumpeter Swan  
Rocky Mountain Sandhill Crane  
Rocky Mountain Trumpeter Swan  
Western Tundra Swan  
Eastern Tundra Swan  
Western Canada Goose  
White Geese  
White-Fronted Goose

## **Pacific Flyway Nongame Technical Committee**

### **Members**

Tracey Gotthardt, Alaska  
Edwin Juarez, Arizona  
Shannon Skalos, California  
Brian Holmes, Colorado  
Vacant, Idaho  
Allison Begley, Montana  
Jonathan Young, Nevada  
Emily VanWyk, Oregon  
Russell Norvell, Utah  
Jessica Stocking, Washington  
Grant Frost, Wyoming

### **Officers**

Chair, Brian Holmes, Colorado  
Vice-chair, Grant Frost, Wyoming  
Treasurer, Jeff Knetter, Idaho

### **Subcommittees**

Raptors  
Double-crested Cormorant  
Pelican

## **Representatives to the Pacific Flyway Council and Technical Committees**

### **U.S. Fish and Wildlife Service**

Todd Sanders, DMBM, Grand Junction  
Steve Olson, DMBM, Vancouver  
Joe Sands, Columbia-Pacific Region, Portland  
Michelle McDowell, Columbia-Pacific Region, Portland  
Dan Collins, Lower Colorado Basin Region, Albuquerque  
Corrie Borgman, Lower Colorado Basin Region, Albuquerque  
David Olson, Missouri and Upper Colorado River Basin Region, Denver  
David Safine, Alaska Region, Anchorage  
Rick Lanctot, Alaska Region, Anchorage  
Thomas Leeman, California-Great Basin Region, Sacramento  
Emily Wells, California-Great Basin Region, Sacramento

### **Canadian Wildlife Service**

Megan Ross, British Columbia  
Garnet Raven, Alberta

### **Alberta Environment and Sustainable Resource Development**

Jason Caswell, Alberta

### **Alaska Migratory Bird Co-Management Council**

Vacant



## **RECOMMENDATIONS**

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## Recommendation 1 — Support for the 9<sup>th</sup> North American Duck Symposium

### Recommendation

The Pacific Flyway Council (Council) recommends amending the 2023 budget to provide \$5,000 in support of the 9<sup>th</sup> North American Duck Symposium (Ducks9) conference that will be held in Portland, Oregon, February 5–9, 2024.

### Justification

While the preceding eight duck symposiums have spanned all four flyways, this is the first time the meeting has returned to the Pacific Flyway since 2003. The theme for Ducks9, *Embracing New Frontiers in Waterfowl Ecology and Management*, recognizes the ever-changing landscape for ducks and people and the need to adapt so we best protect ducks in North America. The Science Committee for Ducks9 is currently working on the program details, which will include some combination of plenary talks, contributed presentations and posters, special sessions and workshops, lightning talks, and field trips with the goal of a mix of activities of interest to academics, federal and state biologists, and non-governmental organizations.

A symposium of this scale requires more support than can be generated by registration fees alone; consequently, the organizing committee is seeking financial support from affiliated government and non-government agencies, non-profit conservation organizations, and private donors. Funds will be used to help defray costs of the venue, underwrite field trips, travel and awards for students, and meeting socials. They are committed to keeping registration fees reasonable to maximize student attendance and participation to promote their professional development into waterfowl and wetland science and conservation careers. The organizing committee asked each Flyway Council to consider a level of support of \$5,000 to help defray costs of the meeting and field trips.

### Adoption

Pacific Flyway Study Committee  
August 23, 2023

Contact: Jeffrey Knetter

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Adam Behney, Chair

Pacific Flyway Nongame Technical Committee  
August 23, 2023



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Brian Holmes, Chair

Pacific Flyway Council  
August 25, 2023



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Brian Dreher, Chair

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## Recommendation 2 — Support for the 7<sup>th</sup> International Sea Duck Conference

### Recommendation

The Pacific Flyway Council (Council) recommends amending the 2023 budget to provide \$1,850 in support of the 7<sup>th</sup> International Sea Duck Conference (7<sup>th</sup> ISDC) that will be held in a virtual format January 8–11, 2024.

### Justification

The 7<sup>th</sup> ISDC will be held in a virtual format January 8–11, 2024, and the theme is: “*Bridging Communities: Human Connections to Sea Ducks.*” The organizing committee intentionally selected a virtual platform designed to bring together academia, government agencies, Indigenous organizations, conservation groups, industry, and other communities from both Europe and North America to discuss shared interests in sea duck research, conservation, management, and community connections. This “climate friendly” format is accessible for all attendees and reflects the conference theme of bridging communities by encouraging interaction and professional exchange among a greater diversity of participants from across the world to enhance sea duck conservation and management. The virtual format is intended to both engage researchers and wildlife managers who typically attend the conference, while broadening the reach to include additional members of the sea duck management community.

The organizing committee is seeking financial support from governmental and non-governmental agencies, non-profit corporate and private donors to defray the costs of the virtual venue, registration and awards, poster and artist exhibition booths. The organizing committee expressed gratitude for previous Pacific Flyway support for conferences and respectfully requested a level of support of \$1,850.

### Adoption

Pacific Flyway Study Committee  
August 23, 2023

Contact: Jeffrey Knetter and Kyle Spragens

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Adam Behney, Chair

Pacific Flyway Nongame Technical Committee  
August 23, 2023



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Brian Holmes, Chair

Pacific Flyway Council  
August 25, 2023



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Brian Dreher, Chair

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# PACIFIC FLYWAY COUNCIL

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## Recommendation 3 — 2024 Council Budget

### Recommendation

The Pacific Flyway Council (Council) adopts the attached budget authorizing Council expenditures in calendar year 2024.

### Justification

The Study Committee and Nongame Technical Committee are charged with preparing a calendar year budget for Council consideration. The budget includes administrative expenses, travel expenses for Flyway representation, and special project expenses.

The proposed 2024 budget includes \$82,990 in anticipated expenses. Expected income of \$213,890 includes \$49,500 from member assessments (11 states; \$4,500 each), \$6,390 from NABCI assessments (nine states, excluding Colorado and Wyoming; \$710 each), and an estimated carryover of \$158,000 from calendar year 2023. Please note \$20,000 of this carryover is earmarked for year five of the five-year commitment Council made to support banding snow geese on Banks Island in August 2017.

Changes to the 2024 budget from 2023 include an increase of \$2,400 to provide travel support for special projects, and a decrease of \$2,500 to continue support of the Rocky Mountain Population sandhill crane recruitment survey to inform the annual crane harvest allocation process.

Since 2013, member assessments of \$4,500 have provided a base budget. This budget recommendation does not require an increase in the base assessment in 2024.

### Adoption

Pacific Flyway Study Committee  
August 23, 2023

Contact: Jeffrey Knetter

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Adam Behney, Chair

Pacific Flyway Nongame Technical Committee  
August 23, 2023



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Brian Holmes, Chair

Pacific Flyway Council  
August 25, 2023



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Brian Dreher, Chair

**Pacific Flyway Council Budget - Calendar Year 2024**

Function	Attendance	Notes	Projected Amount
<b>A. Council, SC/NTC, and Regulatory Functions</b>			
National Flyway Council dues		1	\$ 2,000
Pacific Flyway Council March			
PFC Secretary (AK)	1 meeting, 1 person		\$ 1,200
SC and NTC Chairs (WY)	1 meeting, 2 persons		\$ 2,400
SRC Fall (SC support; WY)	1 meeting, 1 person		\$ 1,200
AHM Working Group (AK, OR)	1 meeting, 2 persons		\$ 2,400
NTC - SRC/AFWA BCC (NTC support; WY)	1 meeting, 1 person		\$ 1,200
<b>Subtotal</b>			\$ 10,400
<b>B. North American Waterfowl Management Plan</b>			
NAWMP Science Support Team (WA)	2 meetings, 1 person		\$ 2,400
Arctic Goose Joint Venture			
Management Board (TBD)	1 meeting, 1 person		\$ 1,200
Technical Committee (ID)	1 meeting, 1 person		\$ 1,200
Sea Duck Joint Venture			
Management Board (TBD)	1 meeting, 1 person		\$ 1,200
Cont. Technical Team (WA)	1 meeting, 1 person		\$ 1,200
<b>Subtotal</b>			\$ 7,200
<b>C. Other Flyway Representation</b>			
Special Projects as Needed	2 meetings, 2 persons		\$ 4,800
Mourning Dove Task Force (AZ, NV)	1 meeting, 2 persons		\$ 2,400
Human Dimensions Working Group (CO, NV)	1 meeting, 2 persons		\$ 2,400
Avian Knowledge Network Steering Committee (UT)	1 meeting, 1 person		\$ 1,200
PIF Western Working Group (CA)	2 meetings, 1 person		\$ 2,400
AMBCC Representation (TBD)	1 meeting, 1 person		\$ 2,500
Bird & Fish Conflicts Working Group (WA)	2 meeting, 1 person		\$ 2,400
Waterbird Conservation Council (UT)	1 meeting, 1 person		\$ 1,200
<b>Subtotal</b>			\$ 19,300
<b>D. Operational Surveys and Projects</b>			
PF Duck BPOP Survey Expansion		2	\$ 10,000
PF Supplemental Duck Banding			\$ 7,500
Fall RMP Crane Recruitment Survey			\$ 1,500
NABCI Coordination Support			\$ 6,390
<b>Subtotal</b>			\$ 25,390
<b>E. Administrative Costs</b>			
Misc. expenses including production of minutes, etc.		3	\$ 500
PFC Website maintenance			\$ 200
<b>Subtotal</b>			\$ 700
<b>F. One-Time or Time-Limited Special Projects</b>			
Banks Island LESG Banding Assessment - 8 states		4	\$ 20,000
<b>Subtotal</b>			\$ 20,000
<b>BASE BUDGET</b>			
Re-occurring annual costs Sections A-E			\$ 62,990
Time limited special project cost, Section F			\$ 20,000
		<b>TOTAL</b>	\$ 82,990
<b>REVENUE</b>			
Estimated carry-forward from 2023			\$ 158,000
Council assessments 2024			\$ 49,500
NABCI Assessments - 9 states			\$ 6,390
Southern Wings Assessment - voluntary participation			\$ -
		<b>TOTAL</b>	\$ 213,890

Pacific Flyway Council assessments to the 11 member states are based on projected expenses for flyway representation in Sections A - C, plus costs of operational PF-sponsored duck and crane surveys and duck banding in Section D and administrative costs in Section E. This provides for base budgeting at \$49,500 per year (11 states @ \$4,500).

**CY 2024 NOTES:**

1. NFC assessment of all flyways for Secretary travel and other expenses.
2. PF-sponsored surveys and banding included in base budget and assessment assumptions.
3. No expenses are budgeted for facilities and services for regular meetings; costs recovered in registration fees.
4. Banks Island banding will be funded through assessments collected in previous years.



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# PACIFIC FLYWAY COUNCIL

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## Recommendation 4 — Subsistence Season Framework

### Recommendation

The Pacific Flyway Council (Council) endorses the Alaska Migratory Bird Co-Management Council's (AMBCC) recommendation for change to the regulations for spring-summer subsistence harvest of migratory birds and eggs in Alaska:

- The AMBCC recommends the 3-year experimental registration permit harvest for the Kodiak Island Roaded Area (Roaded Area) be extended one year to include the 2024 spring-summer subsistence season. The 1-year extension would allow the current harvest opportunity to continue until an evaluation of the first three years of data (2021–2023) is completed and a proposal is developed to guide future harvest opportunity in the Roaded Area.

### Justification

In 2021, the Roaded Area was opened to spring-summer subsistence hunting of migratory birds and egg gathering. Hunting and egg gathering is by registration permit only with a harvest reporting requirement. The Roaded Area season was authorized as experimental for a 3-year period (2021–2023), after which the experimental season was to close. Because the Service Regulations Committee adopted the AMBCC's recommendation to open the experimental season and then close it after three years, and communicated this to the public, a recommendation from AMBCC to keep the season open in 2024 is required. The AMBCC will evaluate the harvest data from the experimental period when the 2023 season closes (i.e., after August 31, 2023) and assess the impact of the hunt. Based on this assessment, the AMBCC will develop a new regulatory proposal to consider operational status for the Roaded Area in 2025 and beyond. Because evaluation of the first three years of harvest reporting data will extend into 2024, the AMBCC is recommending the experimental period be extended through the 2024 spring-summer subsistence season to allow time for data evaluation and a recommendation to be developed for the 2025 subsistence season. A one-year extension will not require a change to current regulations in 50 CFR 92.31 but will require a Notice published in the Federal Register (FR) to inform the public the hunt will not close after 2023 (as originally published in the FR when the Roaded Area was opened in 2021).

### Adoption

Pacific Flyway Study Committee  
August 23, 2023

Contact: Jason Schamber

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Adam Behney, Chair

Pacific Flyway Nongame Technical Committee  
August 23, 2023

Contact: Tracey Gotthardt



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Brian Holmes, Chair

Pacific Flyway Council  
August 25, 2023



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Brian Dreher, Chair

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# PACIFIC FLYWAY COUNCIL

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## Recommendation 5 — Duck and Merganser Season Framework

### Recommendation

The Pacific Flyway Council (Council) recommends no change to the duck season framework.

Council recommends a 107-day season with a daily bag limit of 7 ducks and mergansers in the aggregate, including no more than 2 female mallards, 1 pintail, 2 canvasbacks, 2 scaup, and 2 redheads. For scaup, the season length is 86 days, which may be split according to applicable zones and split duck hunting configurations approved for each state.

### Justification

In 2008, Council and the U.S. Fish and Wildlife Service (Service) adopted the Western Mallard Adaptive Harvest Management (AHM) Protocol to inform duck harvest management decisions in the Pacific Flyway. Western mallards consist of two substocks and are those breeding in Alaska and Yukon Territory (Federal WBPHS strata 1–12) and those breeding in the southern Pacific Flyway including California, Oregon, Washington, and British Columbia (State and Provincial surveys) combined. In 2016, adjustments to AHM decision frameworks were made to inform duck hunting regulations based on the breeding populations and habitat conditions observed and the regulatory alternatives selected for the previous hunting season.

The Service and their partners were able to perform the Waterfowl Breeding Population and Habitat Survey (WBPHS) and estimate waterfowl breeding populations and evaluate breeding habitat conditions in 2023. The Service continues to use models to estimate 2020 and 2021 population sizes, which were not observed due to the COVID-19 pandemic. These estimates are based on the most recent information from monitoring programs including harvest and harvest rate estimates observed during the 2020 and 2021 hunting seasons.

### Duck and Merganser

The optimal regulatory alternative for the 2024 duck and merganser hunting season was calculated using: (1) the management objective of maximize long-term cumulative harvest of western mallards; (2) current regulatory alternatives; and (3) current population models and parameter estimates. Based on the liberal regulatory alternative selected for the 2023 hunting season, an observed 2023 breeding population size of 0.82 million mallards (0.38 million in Alaska and 0.44 million in the southern Pacific Flyway) the optimal choice for the 2024 hunting season is the liberal regulatory alternative.

More restrictive regulations for duck species of concern (i.e., pintail, scaup, canvasback, and redhead) are established within the context of the general duck season, and each is based on a separate harvest strategy protocol after the general duck seasons length is determined.

### Northern Pintail

In 2010, the Service and flyway councils adopted the AHM protocol to inform harvest

management decisions for northern pintails in all four flyways. For pintail, optimal regulatory alternatives for the 2024 hunting season in each flyway were calculated using: (1) an objective of maximizing long-term cumulative harvest; (2) current pintail regulatory alternatives, including a closed-season constraint of 1.75 million birds; and (3) current population models and their relative weights. Based on a liberal regulatory alternative with a 1-bird daily bag limit selected in 2023, an observed 2023 breeding population size of 2.22 million pintails observed at a mean latitude of 54.78 degrees, the optimal regulatory choice for the 2024 hunting season for all four flyways is the liberal regulatory alternative with a 1-bird daily bag limit.

### Scaup

In 2008, the Service and flyway councils adopted the adaptive harvest management protocol to inform harvest management decisions for scaup in all four flyways. For scaup, optimal regulatory alternatives for the 2023 hunting season were calculated using: (1) an objective to achieve 95% of long-term cumulative harvest; (2) current scaup regulatory alternatives; and (3) the current population model and updated parameter estimates. The resulting regulatory strategy includes options conditional on the regulatory alternative selected the previous hunting season. Based on a restrictive regulatory alternative selected in 2023, an observed 2023 breeding population size of 3.52 million scaup, the optimal regulatory choice for the 2024 hunting season for all four flyways is the restrictive regulatory alternative, with a 2-bird daily bag limit.

### Canvasback

At the October 2015 Service Regulatory Committee (SRC) meeting, the SRC requested a group be convened to develop a decision support tool (DST) to deliver canvasback framework recommendations for the 2017–18 hunting seasons. A group of US Fish and Wildlife Service and state biologists was formed to develop the DST. At the November 2015 Harvest Management Working Group meeting, this group established criteria for developing the DST, which consisted of the following: (1) it needed to be biologically-based, (2) must use data that are currently available, (3) must be simple (i.e., could not require lengthy, intensive analyses), and (4) would be used as a short-term approach for developing harvest recommendations, preferably only for the next one to two hunting seasons. The group agreed that an “assessment of harvest potential” analysis using fixed values for demographic variables would likely be sufficient to use as the framework for the DST. Results from the harvest potential analysis recommend canvasback seasons are open with a 1-bird daily bag limit provided the most recent breeding population estimate is above 460,000 birds. Moreover, the daily bag limit can increase to 2 birds per day when the most recent population estimate is above 480,000 birds. The committee recognizes this analysis used maximum sustained yield as a harvest objective and thus may not be fully reflective of the long-term canvasback population and harvest objectives of the flyways. Given the short-term use of the tool and that the flyways will be addressing long-term canvasback objectives as part of the process of revisiting overall duck harvest objectives, the committee was comfortable using the results of the DST to develop canvasback season recommendations.

Based on the 2023 survey results of 619,400 canvasbacks, the regulatory choice defined by the DST for the 2024 hunting season for all four flyways is the liberal regulatory alternative with a 2-bird daily bag limit. It is important to emphasize the DST is intended to be used in the short-term while the Service and the flyways continue to address long-term canvasback objectives.

## Redhead

The 2-bird daily bag limit on redheads has primarily been based on concern for canvasbacks. Because redheads look similar to canvasbacks, managers generally agree that any increase in the redhead bag limit likely translates into increased canvasback harvest. Redhead regulations have been tied to canvasback regulations as far back as 1972. A 2-bird daily bag limit for redheads has been in place since at least 1973 in the Pacific Flyway.

### **Adoption**

Contact: Jeffrey Knetter

Pacific Flyway Study Committee

August 23, 2023



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Adam Behney, Chair

Pacific Flyway Council

August 25, 2023



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Brian Dreher, Chair

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## PACIFIC FLYWAY COUNCIL

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### **Recommendation 6 — Idaho Swan Hunting Season Status**

#### **Recommendation**

The Pacific Flyway Council (Council) recommends the experimental swan hunting season in northern Idaho be granted operational status.

#### **Justification**

The Idaho Department of Fish and Game (Department) completed an evaluation of a three-year experimental swan hunting season in northern Idaho (attached). Fifty swan hunting permits were issued each year. Any hunter who harvested a swan was required, within three days of the date of kill, to present the swan carcass (for measurement and identification) and complete a harvest report. After the season, any swan tag holder who did not complete a harvest report was sent a survey questionnaire in the mail and asked to report their hunting activity and harvest. The average annual compliance rate for swan permit holders in returning their hunting activity and harvest questionnaire was 90%. The estimated average percentage of swan permit holders that actively hunted swans in Idaho was 69%. Hunter compliance in providing either species-determinant parts or bill measurements of harvested swans for species identification was 90% each year.

Mean annual harvest from 50 permitted swan hunters, as estimated from harvest survey questionnaires collected over the three hunting seasons, was 11 tundra swans and five trumpeter swans. This level of harvest had negligible impact to the status of Western Population (WP) tundra swans and Rocky Mountain Population (RMP) trumpeter swans. Current harvest levels are sustainable for WP tundra and RMP trumpeter swan populations as indicated by population abundance and growth rates over the most recent 10 years and relative to population objectives. The future threat of harvest impacts on tundra and trumpeter swan populations from the continued swan season in northern Idaho is low. Also, current trumpeter swan harvest levels across all Pacific Flyway states are well within conservatively estimated maximum sustained harvest levels (Gower et al. 2018). Gower et al. (2018) evaluated the impact hunting has had on RMP trumpeter swans and demonstrated swan hunting and trumpeter swan restoration are compatible with each other in the Pacific Flyway.

#### Literature Cited

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**Adoption**

Pacific Flyway Study Committee  
August 23, 2023

Contact: Jeffrey Knetter



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Adam Behney, Chair

Pacific Flyway Council  
August 25, 2023



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Brian Dreher, Chair

# **Evaluation of an Experimental Swan Hunting Season in Northern Idaho**

**Jeffrey M. Knetter**

**Idaho Department of Fish and Game**

**July 12, 2023**

## **EXECUTIVE SUMMARY**

Waterfowl hunters expressed interest in swan hunting opportunities in northern Idaho, similar to those in other Pacific Flyway states (i.e., Montana, Nevada, and Utah). Consequently, in 2018 Idaho Department of Fish and Game (Department) proposed a 3-year experimental swan hunting season in the Panhandle Region of northern Idaho, in accordance with procedures identified in the Pacific Flyway western Tundra Swan Management Plan (2017a). In 2020, the U.S. Fish and Wildlife Service (Service) approved a swan season framework in northern Idaho that was considered experimental for a period of at least three years. The Idaho Fish and Game Commission approved swan hunting seasons in northern Idaho during fall 2020, 2021, 2022 and 2023. The Department currently seeks approval from the Pacific Flyway Council (Council) and the Service for the swan season framework in Idaho to become operational.

The purpose of this report is to evaluate the experimental swan hunt in northern Idaho and seek operational status. Mandatory harvest survey questionnaires collected over the first three hunting seasons suggest limited annual harvest of 11 tundra swans and 5 trumpeter swans occurred in northern Idaho. This level of take has a negligible impact to overall tundra and trumpeter swan population status.



## **INTRODUCTION**

The Service first authorized a hunting season on tundra swans in the Pacific Flyway beginning in 1962, and a series of Environmental Assessments (U.S. Department of the Interior 1995, 2000, 2001, 2003) has since established an operational swan season framework in the Pacific Flyway. Waterfowl hunters in northern Idaho expressed interest in swan hunting opportunities similar to those in other Pacific Flyway states (i.e., Montana, Nevada, and Utah). In response to this interest, the Department proposed a 3-year minimum experimental swan hunting season in the Panhandle Region of northern Idaho to commence October 2020. The proposal followed the procedures identified in the Pacific Flyway Western Tundra Swan Management Plan (Pacific Flyway Council 2017a).

This proposal was subsequently endorsed by Council and the Service's Migratory Bird Regulations Committee during fall 2018. In 2019, the Service developed an Environmental Assessment (EA) of the proposed swan hunting season for public review and compliance with the federal National Environmental Policy Act. After review of public comment, the Service approved a swan season framework in northern Idaho in 2020 that was considered experimental for a period of at least three years where the framework could not be more liberal than described in the EA.

## **SWAN HUNTING FRAMEWORK**

The federal framework for the experimental swan hunting season in northern Idaho is as follows.

### **Hunting Areas**

The four most northwestern counties (Benewah, Bonner, Boundary, and Kootenai) of Idaho (Figure 1). All or portions of game management units 1, 2, 3, 4, 4A, 5, and 6 are contained within these counties.

### **Outside Dates**

Between the Saturday nearest September 24 and January 31.

### **Tags**

Swan hunting is by tag only. Up to 50 swan hunting tags may be issued and will authorize each tag holder to take no more than 1 swan per season with each tag. Only 1 tag may be issued per hunter.

### **Quotas**

There is no quota that would end the season upon attainment of reported harvest of trumpeter swans in Idaho.

### **Monitoring**

Hunter participation, species-specific swan harvest, and hunter compliance in providing either species-determinant parts (at least the intact head) or bill measurements (bill length from tip to posterior edge of the nares opening, and presence or absence of yellow lore spots on the bill in front of the eyes) of harvested swans for species identification must be evaluated.

## **SWAN HUNTING SEASON SELECTIONS**

The Idaho Fish and Game Commission approved swan seasons in northern Idaho during 2020–2023 that were more restrictive than the federal framework to reduce the probability of trumpeter swan take (Table 1). The opening of the season in northern Idaho was concurrent with the opening of the duck season and closed on December 1 each year. This season structure reflects the duration

tundra swans primarily inhabit northern Idaho during fall migration and did not extend into the months of December and January during which trumpeter swan observations generally increase. Each year, swan tag holders were contacted by mail and encouraged to take the Idaho swan orientation course at: [idfg.idaho.gov/hunt/swan](http://idfg.idaho.gov/hunt/swan). This course was designed to improve understanding of swan hunting issues, identify the difference between tundra and trumpeter swans, and understand swan hunting rules and regulations. Successful completion of the course was not required to hunt swans in Idaho.

## **SWAN ABUNDANCE**

Two populations of swans migrate through northern Idaho. They include the Western Population (WP) of tundra swans and the migratory Canadian breeding segment of the Rocky Mountain Population (RMP) of trumpeter swans. Both populations have been increasing in number and distribution in recent years.

### **Western Population of Tundra Swans**

The status of WP tundra swans is measured using survey data from the combined Waterfowl Breeding Population and Habitat Survey and the Yukon-Kuskokwim Delta Coastal Zone Survey. The most recent (2022) breeding ground index was 100,771 (95% CI: 79,942–121,601) swans, and the management index (3-year mean) was 107,357 (95% CI: 80,393–134,321) swans; 79% above the population objective of 60,000 swans. There is strong evidence WP tundra swans have increased in abundance over the long term and suggest the population is stable.

### **Rocky Mountain Population of Trumpeter Swans**

Historically, trumpeter swans were monitored about once every 5 years across North America during primarily April–September via an aerial cruise and ground survey (North America Trumpeter Swan Survey) conducted by the Service, Canadian Wildlife Service, states/provinces, tribes, and private cooperators (U.S. Department of the Interior 2017). This survey was last conducted in 2015 and 10,957 swans were estimated to belong to the migratory Canadian breeding segment of RMP trumpeter swans.

The U.S. breeding segment of RMP trumpeter swans is annually monitored during September throughout primary fall staging areas via an aerial cruise and ground survey (Fall Trumpeter Swan Survey of the Rocky Mountain Population U.S. Breeding Segment) conducted by the Service, states, tribes, and private cooperators. The survey provides a minimum count of trumpeter swans in the survey area. The population objective is to maintain a U.S. breeding segment of at least 718 adult and subadult (white) trumpeter swans (Pacific Flyway Council 2017b). The fall 2022 minimum count was 726 white trumpeter swans, and the 3-year average minimum count was 762 white trumpeter swans (U.S. Fish and Wildlife Service 2022). The number of white trumpeter swans detected during 2022 exceeded the population objective for the seventh consecutive year. Including cygnets, the 2022 minimum count was 940 trumpeter swans, and the 3-year average minimum count was 944 trumpeter swans.

There is strong evidence RMP trumpeter swans and the U.S. breeding segment have increased in abundance over both the long- and short-term based on the surveys designed to monitor abundance of this population and population segment.

### **Swans**

From 2018–2022, the Department conducted ground surveys, from October 1 through December 1, on state-owned Wildlife Management Areas and at high use areas (Figure 2) to gain an

additional understanding of swan abundance, species composition, and seasonal use. These fall surveys followed the Service waterfowl survey protocol established for the Coeur d'Alene River Basin (Appendix A).

Swans arrived in Idaho in early to mid-October and peak swan abundance occurred during November (Figure 3). Tundra swans were more abundant than trumpeter swans throughout the survey period.

## **SWAN HUNTER ACTIVITY AND HARVEST**

### **Hunter Activity**

In 2020, 50 swan tags were available for purchase by hunters on a first-come, first-served basis. These tags sold out very quickly, which caused frustration with some constituents. Therefore, in 2021 and 2022, the Idaho Fish and Game Commission adopted a controlled hunt framework to distribute swan tags (i.e., tags were allocated by random drawing). Successful applicants then purchased a swan tag to participate in the hunt. Hunting seasons were directed towards tundra swans and designed to minimize take of trumpeter swans. There was no quota of harvested trumpeter swans that would require the season to end if attained.

Additionally, any hunter who harvested a swan was required, within three (3) days of the date of kill, to present the swan carcass (for measurement and identification) to a conservation officer, regional office, or check station, and complete a harvest report. The Department also requested hunters voluntarily submit feather and liver samples from harvested swans when they completed their harvest reports. Feather samples were submitted to the U.S. Geological Survey for isotopic analyses that could determine breeding season location of the bird. Liver samples were submitted to the Department Wildlife Health Lab for analyses to increase knowledge of swan health. After the season, any swan tag holder who did not complete a harvest report was sent a survey questionnaire in the mail and asked to report their hunting activity and harvest. If an individual did not respond to the survey questionnaire, Department staff attempted to contact them by phone or email.

The 2020 hunting season was 44 days from October 19 through December 1 (Table 1). Fifty (50) tags were available on a first-come, first-served basis. The compliance rate for swan tag holders in returning their hunting activity and harvest questionnaire was 84%. The estimated percentage of swan tag holders that actively hunted swans in Idaho was 76%; an estimated 38 hunters spent 133 days hunting (Table 2). Hunter compliance in providing either species-determinant parts or bill measurements of harvested swans for species identification was 84%.

The 2021 hunting season was 44 days from October 19 through December 1 (Table 1). Fifty (50) tags were available through a controlled hunt application process. The compliance rate for swan tag holders in returning their hunting activity and harvest questionnaire was 92%. The estimated percentage of swan tag holders that actively hunted swans in Idaho was 65%; an estimated 33 hunters spent 118 days hunting (Table 2). Hunter compliance in providing either species-determinant parts or bill measurements of harvested swans for species identification was 92%.

The 2022 hunting season was 62 days from October 1 through December 1 (Table 1). Fifty (50) tags were available through a controlled hunt application process; however, only 43 tags were purchased by successful applicants. The compliance rate for swan tag holders in returning their hunting activity and harvest questionnaire was 93%. The estimated percentage of swan tag holders that actively hunted swans in Idaho was 65%; an estimated 28 hunters spent 106 days hunting

(Table 2). Hunter compliance in providing either species-determinant parts or bill measurements of harvested swans for species identification was 93%.

Data from the 2023 season are not yet available.

### **Harvest**

Swan harvest was annually estimated by expanding reported harvest to account for those tag holders that did not successfully complete and return a hunter activity and harvest questionnaire (Table 2). The estimated number of swans (tundra and trumpeter) harvested during the general swan season in northern Idaho during the 2020, 2021, and 2022 seasons was 18, 18, and 11, respectively. The number of trumpeter swans detected in the reported harvest during the general swan season in northern Idaho during the 2020, 2021, and 2022 seasons was 1, 11, and 2. Trumpeter swan harvest was estimated to be 1, 12, and 2, respectively, by expanding reported harvest to account for those tag holders that did not successfully complete and return a hunter activity and harvest questionnaire. Expanded estimates of total swan and trumpeter swan harvest may be biased high because hunters that did not report most likely did not hunt.

It is unknown if trumpeter swans harvested in northern Idaho are from the Canada or U.S. breeding segment, but the composition of trumpeter swan harvest is likely from the Canadian breeding segment given the exponential population growth experienced by this population segment. Feather samples from both harvested tundra and trumpeter swans were collected in each season to confirm population association, but analyses have not yet been completed.

The high number of trumpeter swans harvested in northern Idaho in 2021 appears to be associated with wetland conditions. Conditions were particularly dry in 2021 and migration was atypical as field staff and hunters reported observing higher than usual numbers of trumpeter swans and lower than usual numbers of tundra swans. The probability of hunters taking a trumpeter swan during the swan season is apparently higher during dry years than it is in wet years.

Juveniles were represented in the reported swan harvest in each season, with an estimated 7%, 6%, and 30% reported during the 2020, 2021, and 2022 seasons, respectively (Table 3). There was no reported harvest of juvenile trumpeter swans.

Hunters reported the general location (county and public or private hunting area) of their swan harvest in northern Idaho (Table 3; Figure 4). Most swan harvest in northern Idaho occurred in Boundary County. There are no wetland areas in northern Idaho that represent a disproportionate amount of trumpeter swan harvest.

## **SUMMARY**

### **Impacts on Swans**

The 2019 EA to establish a framework for swan hunting in northern Idaho estimated an additional harvest of  $\leq 23$  WP tundra swans and about 0.5 RMP trumpeter swans on average per year. During the 2020–2022 seasons, average annual estimated harvest was 11 WP tundra swans and 5 RMP trumpeter swans; however, only 1.5 trumpeter swan was harvested during 2 of 3 years the season was open (Table 2). Harvest of 11 tundra swans in northern Idaho is  $<0.01\%$  of the recent three-year average population size estimate (107,357 swans) for the WP. While reported harvest of trumpeter swans was higher than anticipated, harvest of 5 RMP trumpeter swans in northern Idaho is  $<0.01\%$  of RMP trumpeter swans (11,721 swans) and  $<1\%$  of the RMP trumpeter swan U.S. breeding segment (944 swans). However, all trumpeter swans harvested in northern Idaho are expected to be from the Canadian breeding segment based on observed swan habitat use and migration patterns; therefore, the U.S. breeding segment and RMP trumpeter swan restoration

efforts in general were likely not impacted. These reported harvest rates are all well within estimates of maximum sustainable harvest rate for WP tundra swans ( $\geq 1.3\%$ ), RMP trumpeter swans ( $\geq 6.5\%$ ), and the RMP trumpeter swan U.S. breeding segment ( $\geq 10.6\%$ ; Gower et al. 2018). The number of WP tundra swans and RMP trumpeter swans harvested during the 3-year experimental swan season in northern Idaho was low, and minimally contributed to the cumulative harvest from all states in the Pacific Flyway. Given swan hunting regulations are developed annually, the threat of incremental harvest impacts from continued swan seasons in northern Idaho is low. Furthermore, WP tundra and RMP trumpeter swan populations are currently sustainable with current regulations and harvest levels as evidenced by their population status or growth rates over the past 10 years and relative to management objectives.

Gower et al. 2018, evaluated the impact hunting has had on RMP trumpeter swans and demonstrated how swan hunting and trumpeter swan restoration are compatible with each other in the Pacific Flyway. Consequently, the Department currently seeks approval from Council and the Service for the swan season framework in Idaho to become operational.

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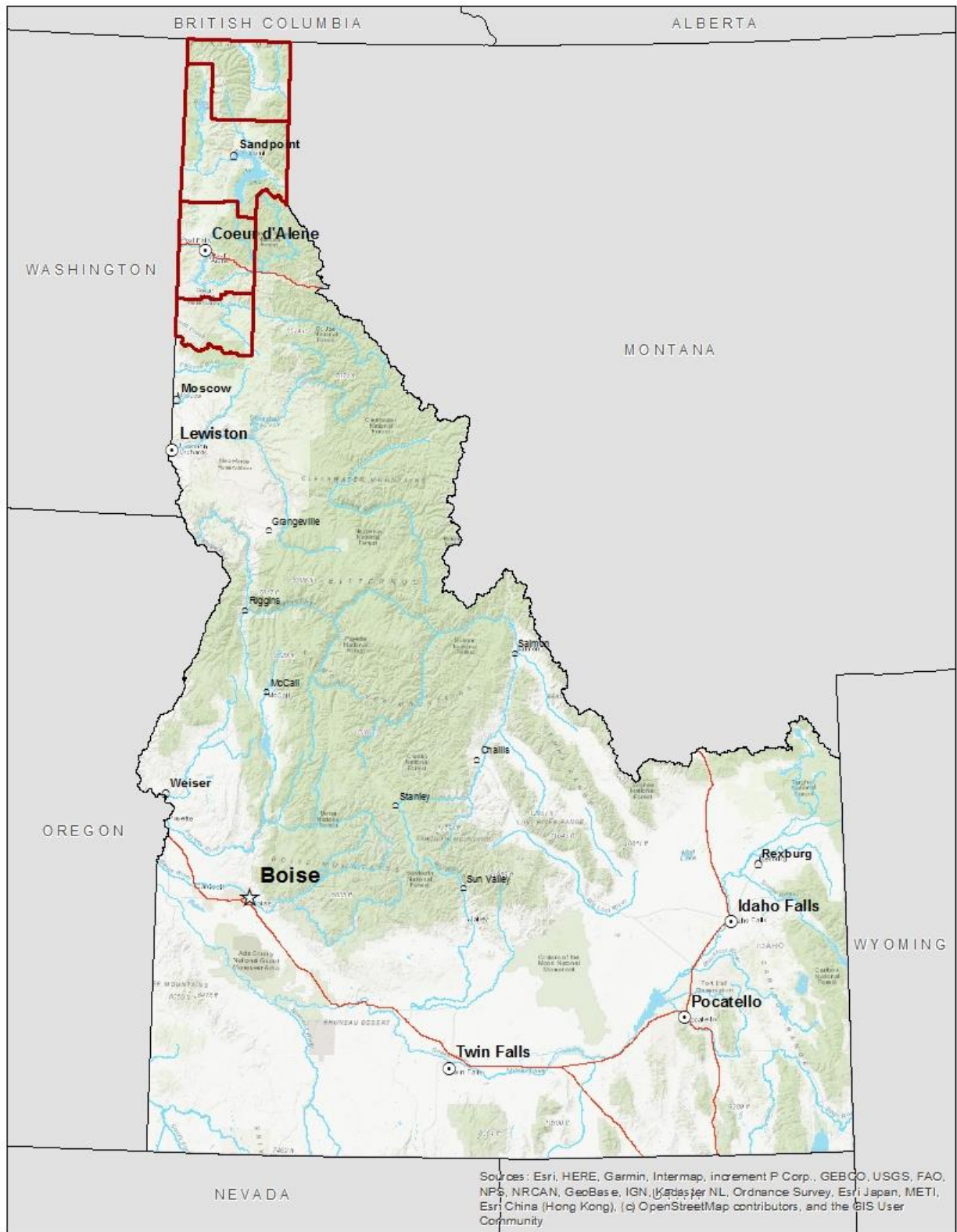


Figure 1. Swan hunt area boundary including Benewah, Bonner, Boundary, and Kootenai counties (area in red outline).



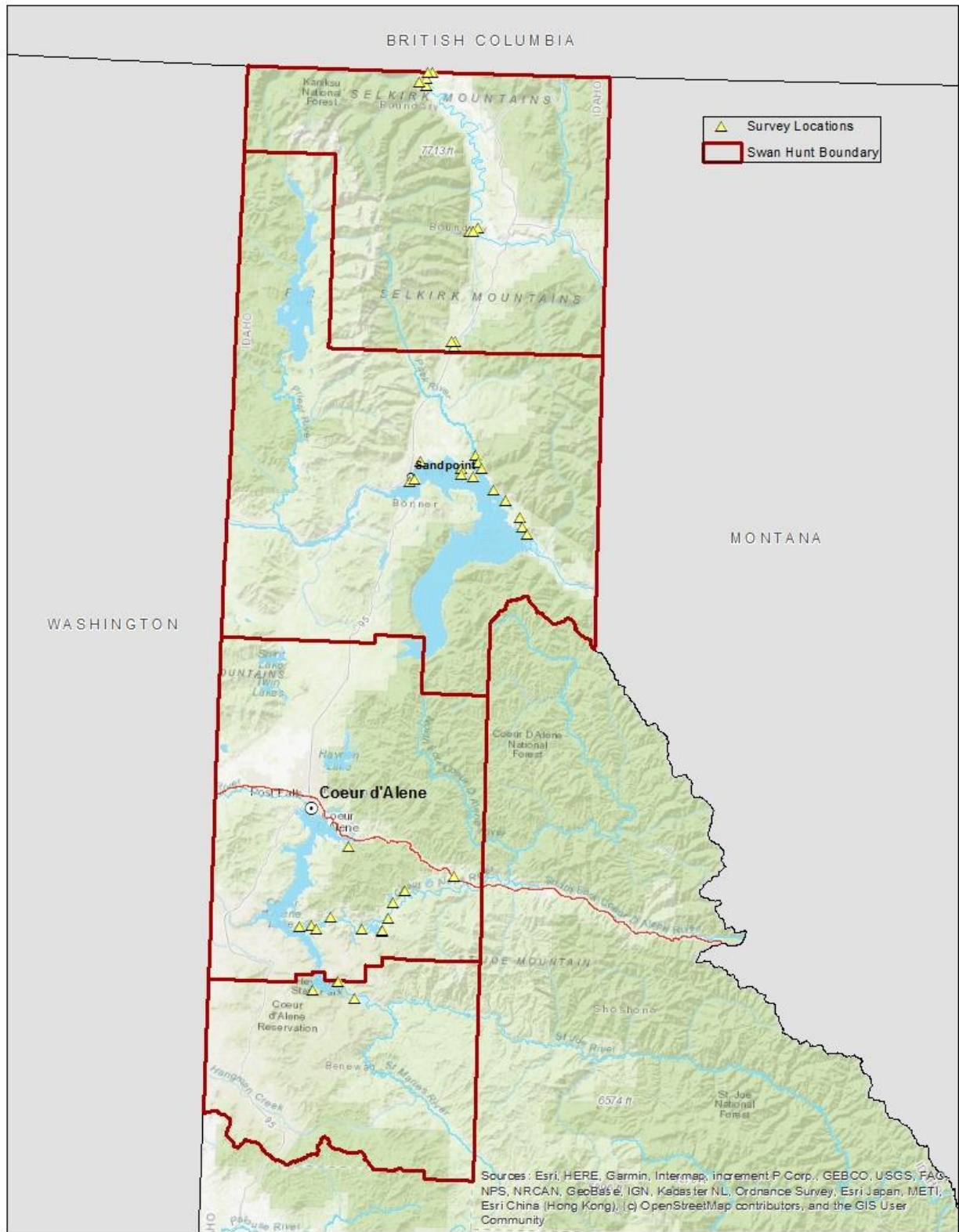


Figure 2. Locations of ground surveys conducted by the Department on state-owned Wildlife Management Areas and at high use areas during fall, 2018–2022.



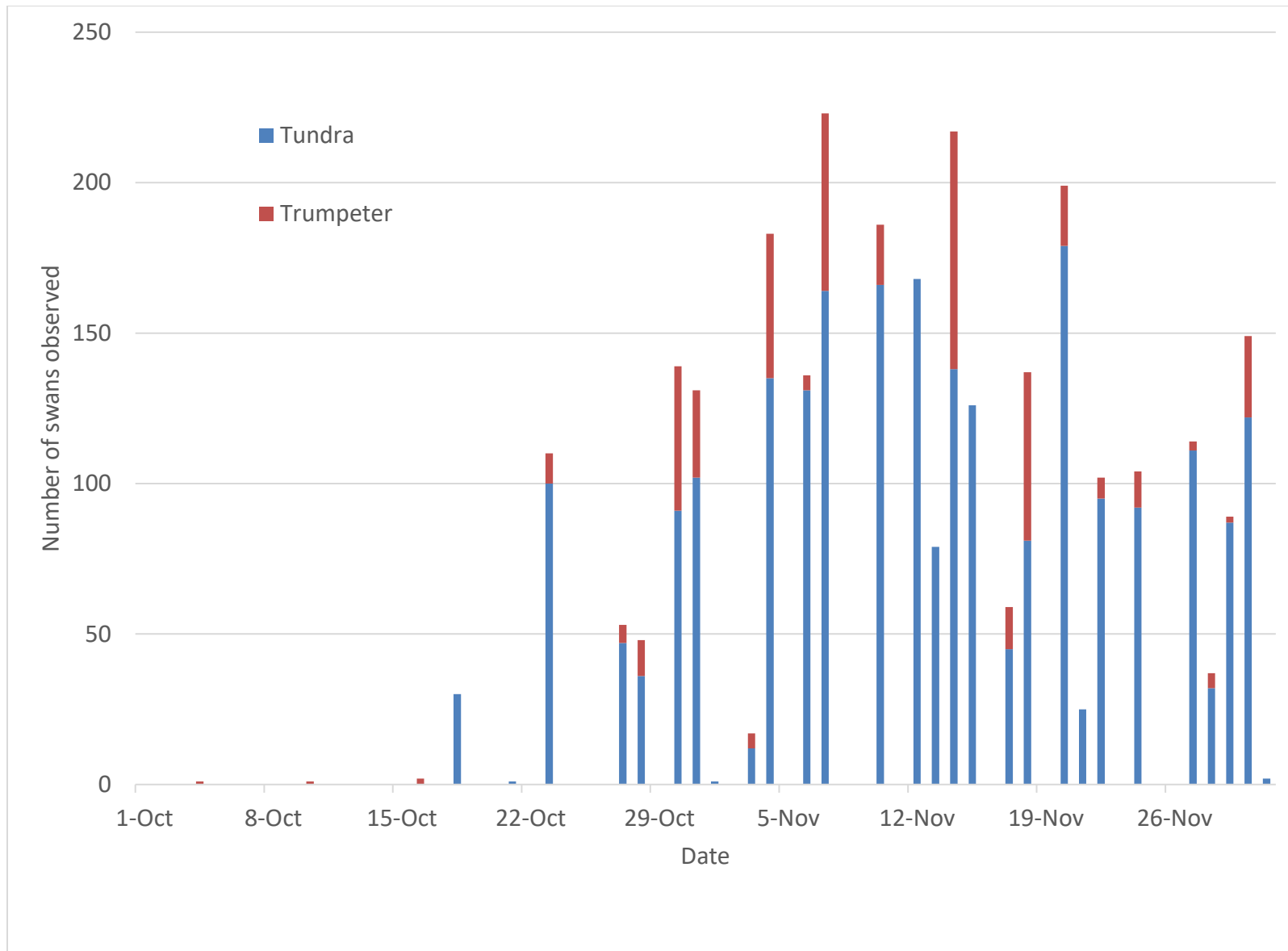


Figure 3. Tundra and trumpeter swan observations in northern Idaho during fall, 2018–2022.

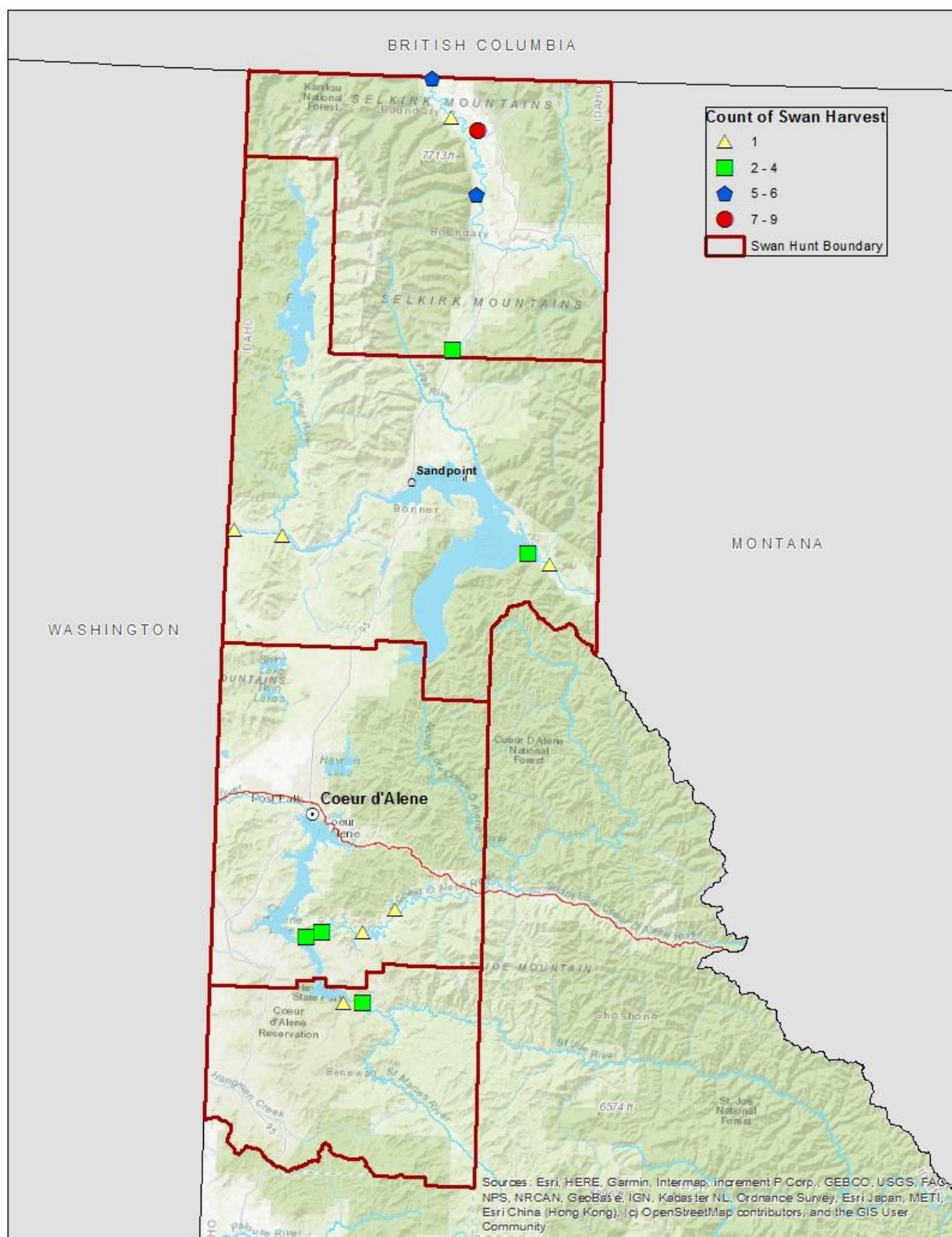


Figure 4. Locations of tundra and trumpeter swans harvested in northern Idaho, 2020–2022.

Table 1. Swan season opening and closing dates and season length in Idaho, 2020–2022.

Year	Idaho		
	Open	Close	Days
2020	19-Oct	1-Dec	44
2021	19-Oct	1-Dec	44
2022	1-Oct	1-Dec	62

Table 2. Idaho swan tags (applications and tags issued), information from tag holder questionnaire (returns, tag holder compliance, actively hunted, harvest, crippling, and days hunted), expanded estimates (total swan harvest, crippling, and days hunted), harvested swans measured for species determination (swan submissions and successful hunter compliance), and number of measured swans identified as a trumpeter swan, 2020–2022.

Season	Apps	Tags	Questionnaire						Expanded			Measured		
			Returns	Comp.	Active	Harvest	Crippling	Days	Harvest	Crippling	Days	Subm.	Comp.	Trump
2020	0	50	42	0.84	32	15	0	112	18	0	133	15	100	1
2021	243	50	46	0.92	30	17	1	109	18	1	118	17	100	11
2022	237	50	40	0.93	26	10	0	99	11	0	106	10	100	2

Table 3. Date, season, location, county, species, and age-class of reported swan harvest in Idaho, 2020–2022.

<b>Date</b>	<b>Season</b>	<b>Location</b>	<b>County</b>	<b>Species</b>	<b>Age-class</b>
21-Oct-20	2020	McArthur Lake WMA	Boundary	Tundra	Adult
24-Oct-20	2020	Boundary/Smith Creek WMA	Boundary	Tundra	Adult
26-Oct-20	2020	Priest River	Bonner	Tundra	Adult
27-Oct-20	2020	North Fork of Clark Fork	Bonner	Tundra	Adult
31-Oct-20	2020	Ball Creek	Boundary	Tundra	Adult
31-Oct-20	2020	Ball Creek	Boundary	Tundra	Adult
7-Nov-20	2020	Ball Creek	Boundary	Tundra	Adult
7-Nov-20	2020	Ball Creek	Boundary	Tundra	Adult
7-Nov-20	2020	Ball Creek	Boundary	Tundra	Adult
9-Nov-20	2020	Boundary Creek WMA	Boundary	Tundra	Adult
15-Nov-20	2020	Clark Fork Delta	Bonner	Tundra	Cygnets
18-Nov-20	2020	Hepton Lake	Benewah	Tundra	Adult
20-Nov-20	2020	Hepton Lake	Benewah	Trumpeter	Adult
22-Nov-20	2020	Ball Creek	Boundary	Tundra	Adult
26-Nov-20	2020	Kootenai River	Boundary	Tundra	Adult
12-Nov-21	2021	Benewah Lake	Benewah	Tundra	Adult
13-Nov-21	2021	Harrison Slough	Kootenai	Tundra	Adult
13-Nov-21	2021	McArthur Lake WMA	Boundary	Trumpeter	Adult
15-Nov-21	2021	Kootenai River	Boundary	Tundra	Cygnets
16-Nov-21	2021	Killarney Slough	Kootenai	Tundra	Adult
17-Nov-21	2021	McArthur Lake WMA	Boundary	Trumpeter	Adult
18-Nov-21	2021	Boundary/Smith Creek WMA	Boundary	Trumpeter	Adult
19-Nov-21	2021	Boundary/Smith Creek WMA	Boundary	Trumpeter	Adult
20-Nov-21	2021	Boundary/Smith Creek WMA	Boundary	Trumpeter	Adult
20-Nov-21	2021	Boundary/Smith Creek WMA	Boundary	Trumpeter	Adult
21-Nov-21	2021	Kootenai River - Parker Creek	Boundary	Tundra	Adult
27-Nov-21	2021	Kootenai River - Copeland	Boundary	Tundra	Adult
27-Nov-21	2021	Kootenai River	Boundary	Trumpeter	Adult
27-Nov-21	2021	Kootenai River - Copeland	Boundary	Trumpeter	Adult
27-Nov-21	2021	McArthur Lake WMA	Boundary	Trumpeter	Adult
1-Dec-21	2021	Anderson Lake	Kootenai	Trumpeter	Adult
1-Dec-21	2021	Kootenai River	Boundary	Trumpeter	Adult
30-Oct-22	2022	Kootenai River	Boundary	Trumpeter	Adult
6-Nov-22	2022	Chain Lakes	Kootenai	Trumpeter	Adult
9-Nov-22	2022	Swan Lake	Kootenai	Tundra	Adult
12-Nov-22	2022	Kootenai River	Boundary	Tundra	Cygnets
22-Nov-22	2022	Kootenai River	Boundary	Tundra	Adult
26-Nov-22	2022	Harrison Bay	Kootenai	Tundra	Adult

26-Nov-22	2022	Harrison Bay	Kootenai	Tundra	Adult
27-Nov-22	2022	Clark Fork Delta	Bonner	Tundra	Cygnets
29-Nov-22	2022	Clark Fork Delta	Bonner	Trumpeter	Adult
30-Nov-22	2022	Pend Oreille WMA	Bonner	Tundra	Adult

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## Appendix A.

### **North Idaho Field Office (NIFO) Standard Operating Procedure (SOP)**

#### **NIFO 2014.1013      Waterfowl Survey in the Coeur d'Alene River Basin**

Prepared: 01/06/04 (Originally UCFWO 1020.1013)

Revised: 02/19/08; 09/08/10 (name change to NIFO 2010.1013); 10/03/14 (added detailed information on procedures, two new survey wetlands, and name change to NIFO 2014.1013)

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#### **I. General**

This SOP outlines waterfowl surveys conducted by the U.S. Fish and Wildlife Service (Service) Northern Idaho Field Office (NIFO) at the Bunker Hill Mining and Metallurgical Complex Operable Units 2 (OU2) and 3 (OU3) within the Coeur d'Alene River Basin (Basin). The Service is responsible for conducting biological resource monitoring to assist the U.S. Environmental Protection Agency (EPA) in evaluating the success of the Selected Remedies for these OUs. This work is supported through an Interagency Agreement with EPA (#DW1492256601) and follows the framework of the OU2 Environmental Monitoring Program (EMP) and the OU3 Basin Environmental Monitoring Program (BEMP).

Waterfowl surveys provide relative measures of waterfowl abundance, wetland use, and tundra swan mortality in the Basin. Surveys are conducted during spring migration at all major wetlands, marshes, sloughs and lakes from Smelterville Flats down river to the confluence with Coeur d'Alene Lake.

#### **II. Equipment**

The following equipment is needed to conduct waterfowl surveys:

- A. Field data forms
- B. Maps of observation points (GPS locations)
- C. Binoculars and spotting scope (window and/or tri-pod mounts)
- D. Camera/video camera, GPS, compass, and counter
- E. Idaho Road Atlas
- F. Field identification guides (e.g., *The Sibley Guide to Birds*)

#### **III. Procedure**

Twelve weekly surveys are conducted between February 7 and May 1 (Table 1). Surveys are completed within a single day, and on the same day per week whenever possible. Waterfowl surveys are vehicle-based and conducted along a pre-designated route where observation points have been determined to maximize wetland visibility. The route consists of observation points along Highway 97, Highway 3, Killarney Lake Road, River Road, Canyon Road, and Interstate 90. Specific observation points enumerated below are mandatory; however, opportunistic

observations from other vantage points and/or wetlands should also be recorded. Prior to each weekly survey event, start location and route direction are randomly selected (e.g., driving from Mission Slough west to Harrison Slough vs. driving from Harrison Slough east to Mission Slough) to avoid observing wetlands during the same time of day on every survey date. Time and weather constraints allow for modifications of these surveys. Any modifications, and reasons for the modifications, should be documented on the field data form for that particular survey date.

Table 1. Weekly Waterfowl Survey Dates

<b>Week</b>	<b>Date</b>
Week 1	February 7-13
Week 2	February 14-20
Week 3	February 21-27
Week 4	February 28-March 6
Week 5	March 7-13
Week 6	March 14-20
Week 7	March 21-27
Week 8	March 28-April 3
Week 9	April 4-10
Week 10	April 11-17
Week 11	April 18-24
Week 12	April 25-May 1

At each survey location and for each waterfowl species observed, estimates of the number of individuals engaged in a particular behavioral activity (Table 2) are recorded on the field data form (see attached). Incidental observations of non-waterfowl species (e.g., shorebirds and/or raptors) should be noted, but not included in overall waterfowl totals. For consistency between years, surveys conducted outside of the established weekly dates are not included in analyses. It's also important to recognize that waterfowl likely remain in the Basin for more than one week during spring migration and may be counted as individuals across multiple weeks, thereby overestimating actual waterfowl abundance.

Table 2. Waterfowl Behavioral Activities

<b>Activity</b>	<b>Definition</b>
Feeding (F)	Bird actively consuming vegetation/substrate.
Resting (R)	Bird on water and not feeding.
Loafing (L)	Bird on land/ice and not feeding.
Nesting (N)	Bird on nest.

Unusual dispositions of tundra swans (e.g., ill/isolated and dead individuals) are recorded including detailed field notes regarding their location (i.e., azimuth/bearing/trip odometer) to avoid double counting carcasses on subsequent survey dates.



Waterfowl observation points for OU2 (Page Ponds and Smelterville Flats) and OU3 are depicted on respective maps (see attached). Route stops are as follows:

- 1) Mission Slough (3 stops) – turn out along I-90 at the west end of the slough. West Cataldo East Cataldo ponds - turn out on mission access road approximately 0.25 miles and 0.1 miles from the overpass.
- 2) Page Ponds (4 stops) – pull out on the Silver Valley Road adjacent to West Swamp; survey wastewater treatment ponds from access road between ponds; proceed east on Silver Valley Road to view East Swamp.
- 3) Smelterville Flats (6 stops) – turn out on West Airport Road to view Emerald Pond (northeast of airport). Proceed through gate at west end of runway, follow paved road past hangers, and continue west on dirt road. From the beginning of the dirt road make the following stops: 0.1 miles near dirt piles to view pond to northwest; 0.3 miles to view ponds to the north; 0.5 miles to view ponds to northwest (this stop is at west end of county airport runway); view the next two ponds at 0.7 and 0.8 miles along dirt road. If dirt road conditions are hazardous, observe wetlands from shoulder of I-90 west-bound.
- 4) Whiteman's Slough (2 stops) – turn out 0.1 miles west of the mission overpass. Turn out 100 yards south of Canyon Road along the mission access road.
- 5) Cataldo Slough (1 stop) – turn out at dumpsters along Canyon Road (northwest end of slough).
- 6) Canyon Marsh (2 stops) – turn out approximately 0.3 miles and 0.75 miles from the junction of Tamarack and River roads.
- 7) Orling Slough (2 stops) – turn out at the east end of the slough, and 0.5 miles from the west end of the slough along River Road.
- 8) Porter Slough (1 stop) – turn out along Highway 3.
- 9) Bull Run Lake (2 stops) – turn out on Bull Run Road at the northeast end of the lake and along the dike separating the lake from Black Rock Slough (see below).
- 10) Black Rock Slough (2 stops) – along the dike separating Black Rock Slough from Bull Run Lake (0.5 miles southwest of Bull Run Road), and turn out on Black Rock Road 0.3 miles east of Highway 3.
- 11) Gleason's Field (2 stops) – along Killarney Lake Road, approximately 0.5 miles and 1.75 miles from Highway 3 turnoff.
- 12) Strobl Marsh portion of Killarney Lake (2 stops) – turn out just past the relay station 2.7 miles west of Highway 3 on Killarney Lake Road, and near the dike separating Strobl Marsh from Killarney Lake.
- 13) Killarney Lake (3 stops) – boat launch and turn outs 0.2 and 1.4 miles past the sportsman access on Killarney Lake Road.
- 14) Lane Marsh (2 stops) – north and mid-marsh turnouts along Highway 3.
- 15) Schlepp property east field (2 stops) – along Highway 3 at east end of wetland, and turn out along Robinson Creek dike (west end of wetland; east of homestead).

- 16) Robinson Creek (2 stops) – approximately 40 yards and 0.2 miles south along Brown Road from the junction with Highway 3.
- 17) Schlepp property west field (2 stops) – along Robinson Creek dike between east and west fields (near east field pump), and on west field access road near west field pump.
- 18) Moffit Slough (2 stops) – along north side of Rainy Hill Road approximately 0.2 miles east of the Medicine Lake stop and at turn out approximately 150 yards north of Rainy Hill Road on Highway 3.
- 19) Medicine Lake (1 stop) – Rainy Hill Campground and boat launch approximately 0.25 miles from Medimont Road on Rainy Hill Road.
- 20) Cave Lake (2 stops) – turn out at bridge separating Cave from Medicine Lake approximately 0.5 miles west of Highway 3 on Medimont Road (east end of lake), and near dumpsters at the Cave Lake Resort (west end of lake).
- 21) Swan Lake (1 stop) – Vista View on Highway 3 at mile marker 102.
- 22) Harrison Marsh (1 stop) – turn out on Highway 97 across from the Osprey Inn Bed and Breakfast.
- 23) Anderson Lake (1 stop) – turn out 0.5 miles east of Highway 97 on Bell Canyon Road.
- 24) Thompson Marsh (3 stops) – 0.2 and 0.7 miles east on Blue Lake Road from the junction with Highway 97; Wildlife Observation Site approximately 1.5 miles east of Highway 97 on Thompson Lake Road.
- 25) Thompson Lake (4 stops) – turn outs approximately 1.5 and 2.2 miles east of Highway 97 along Blue Lake Road, and adjacent to Bare Marsh; turn out on north side of lake near barn on Thompson Lake Road.
- 26) Bare Marsh (1 stop) – Coeur d'Alene River WMA office 2.5 miles east of Highway 97.
- 27) Harrison Slough (3 stops) – At the junction of Highway 97 and Harlow Point Road; approximately 1 and 2 miles west of Highway 97 on Harlow Point Road.

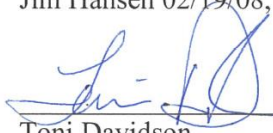
#### **IV. Documentation and Storage**

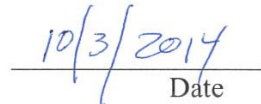
All relevant survey information is recorded on associated fields of the data forms. Original copies of data forms are retained at the Service's NIFO, Spokane, WA. Electronic data is submitted to USEPA via the Water Quality Exchange (WQX), and made available to the public at the STORET Warehouse and Water Quality Portal (<http://www.epa.gov/storet/>).

Prepared By: Brian Spears 01/06/04

Revised By: Jim Hansen 02/19/08, Roy Brazzle 09/08/10, Brittany Morlin 10/03/14

Approved By:

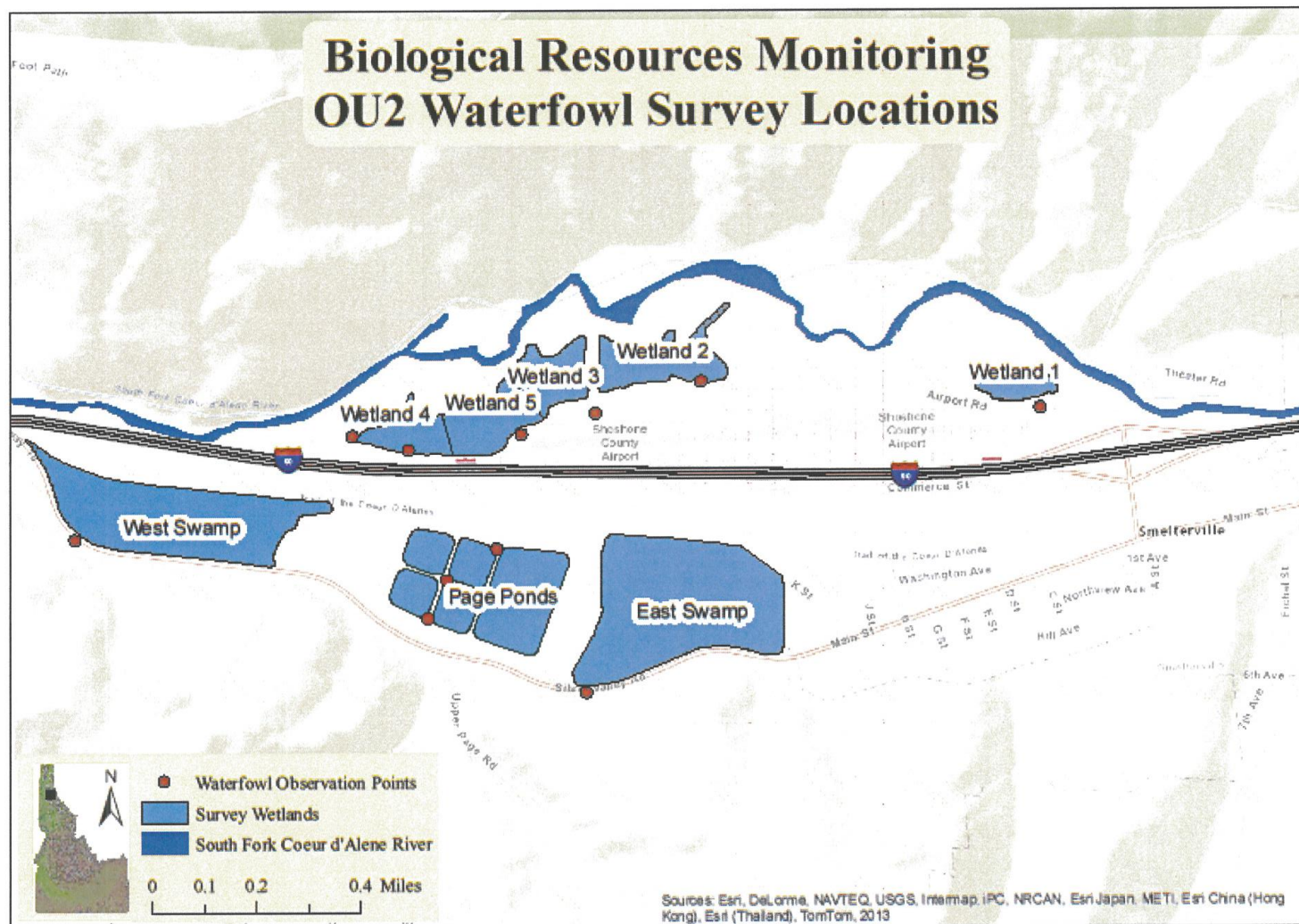
  
 Toni Davidson  
 Resource Contaminant Specialist  
 Northern Idaho Field Office

  
 Date

0xx Waterfowl Surveys Week No. \_\_\_\_\_ Date: \_\_\_\_\_ Wetland: \_\_\_\_\_

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This map was created by the U.S. Fish and Wildlife Service as a part of the EPA's Environmental Monitoring Plan. No warranty is made by the U.S. Fish and Wildlife Service as to the accuracy, reliability, or completeness of this data for individual or aggregate use with other data. Original data were compiled from various sources. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification.



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# PACIFIC FLYWAY COUNCIL

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## Recommendation 7 — Swan Season Framework

### Recommendation

The Pacific Flyway Council (Council) recommends no change to the season framework for swans in the Pacific Flyway except:

- to grant the experimental swan season in northern Idaho operational status; and
- to increase the number of swan permits from 650 to 750 in Nevada.

In portions of the Pacific Flyway (i.e., Idaho, Montana, Nevada, and Utah), an open season for taking a limited number of swans may be selected. These seasons are also subject to the following conditions:

Outside Dates: Between the Saturday nearest September 24 and January 31.

Hunting Seasons: Seasons may not exceed 107 days and may include two segments.

Permits: Swan hunting is by permit only. Permits will be issued by individual states and authorize each permittee to take no more than one swan per season with each permit. Only one permit may be issued per hunter in Idaho, Montana and Utah, two permits may be issued per hunter in Nevada. The total number of permits issued may not exceed 50 in Idaho, 500 in Montana, 750 in Nevada, and 2,750 in Utah.

Quotas: The swan seasons in Nevada and Utah must end upon attainment of the following reported harvest of trumpeter swans: 10 in Nevada and 20 in Utah. There is no trumpeter swan harvest quota in Idaho and Montana.

Monitoring: Each state must evaluate hunter participation, species-specific swan harvest, and hunter compliance in providing either species-determinant parts (at least the intact head) or bill measurements (bill length from tip to posterior edge of the nares opening, and presence or absence of yellow lore spots on the bill in front of the eyes) of harvested swans for species identification. Each state should use appropriate measures to maximize hunter compliance for swan harvest reporting. Each state must achieve a hunter compliance of at least 80 percent in providing species-determinant parts or bill measurements of harvested swans for species identification, or subsequent permits will be reduced by 10% in the respective state. Each state must provide to the U.S. Fish and Wildlife Service (Service), by June 30 following the swan season, a report detailing hunter participation, species specific swan harvest, and hunter compliance in reporting harvest. In Montana, all hunters that harvest a swan must complete and submit a harvest report with bill measurement and color information from the harvested swan within 72 hours of harvest for species determination. In Idaho, Nevada, and Utah, all hunters that harvest a swan must have the swan or species-determinant parts examined by a state or federal biologist within 72 hours of harvest for species determination.

Other Provisions: In Utah, the season is subject to the terms of the Memorandum of Agreement entered into with the Service in July 2019, regarding harvest monitoring, season closure procedures, and education requirements to minimize take of trumpeter swans during the swan season.

### **Justification**

The status of Western Population tundra swans is measured using survey data from the combined Waterfowl Breeding Population and Habitat Survey and the Yukon-Kuskokwim Delta Coastal Zone Survey. The most recent survey (2023) breeding ground index was 72,643 (95% CI: 63,613–81,673) swans. The management index was 97,709 (95% CI: 84,643–110,775) swans: 63% above the population objective of 60,000 swans.


The Idaho Department of Fish and Game completed an evaluation of the first three years of the experimental swan hunting season in northern Idaho. Fifty swan hunting permits were issued each year. The average annual compliance rate for swan permit holders in returning their hunting activity and harvest questionnaire was 90% and hunter compliance in providing either species-determinant parts or bill measurements of harvested swans for species identification was estimated to be 90% each year. Mean annual harvest from 50 permitted swan hunters, as estimated from harvest survey questionnaires collected over the 3 hunting seasons, was 11 tundra swans and 5 trumpeter swans. This level of harvest had negligible impact to the status of Western Population (WP) tundra swans and Rocky Mountain Population (RMP) trumpeter swans.

Over the last five years, the annual number of swan permits sold in Nevada was 650. However, in 2022 swan permit sales transitioned from a first-come, first-served process to an application process due to increased interest in swan hunting opportunities; there were 817 applicants for 650 available permits.

The mean annual participation rate for Nevada swan permit holders over the past five years was 63%, with a mean annual harvest of 200 swans (48% success rate); mean annual trumpeter swan harvest was 1.7. The estimated annual increase in swan harvest in Nevada with 100 additional swan permits is 30, and estimated harvest of trumpeter swans would be negligible.

**Adoption**  
Pacific Flyway Study Committee  
August 23, 2023


Contact: Jeffrey Knetter and Russell Woolstenhulme



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Adam Behney, Chair

Pacific Flyway Council  
August 25, 2023



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Brian Dreher, Chair

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## PACIFIC FLYWAY COUNCIL

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### **Recommendation 8 — Pacific Flyway Population of Western Canada Geese Management Plan**

#### **Recommendation**

The Pacific Flyway Council (Council) approves the Management Plan (Plan) for the Pacific Flyway Population of Western Canada Geese.

#### **Justification**

Western Canada geese (*Branta canadensis moffitti*) occur throughout the Pacific Flyway and were managed since the early 2000s with guidance from two management plans: Rocky Mountain (Pacific Flyway Council 2001) and Pacific (Pacific Flyway Council 2000) populations. The basis for managing two populations originated from banding records analyzed by Krohn (1977) and subsequent management recommendations by Krohn and Bizeau (1980). Western Canada geese have increased in abundance since these publications, and this current plan combines the Rocky Mountain and Pacific populations to manage and monitor western Canada geese in the Pacific Flyway. The draft Plan was provided to Council for their review during mid-July.

The Plan establishes a minimum population index of 200,000 western Canada geese as the management objective based on average annual abundance during the 1990s. This metric represents a population size that was greater than preceding decades but prior to a period of significant population growth when agricultural depredation and nuisance issues became prevalent. The harvest strategy for western Canada geese is intended to provide hunting opportunities commensurate with population status. The Plan also identifies three primary management issues on which to focus: population management and assessment, harvest assessment, and conflict management.

#### **Adoption**

Pacific Flyway Study Committee  
August 23, 2023

Contact: Jeffrey Knetter

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Adam Behney, Chair

Pacific Flyway Council  
August 25, 2023

A handwritten signature in black ink, appearing to read "B. Dreher", written in a cursive style.

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Brian Dreher, Chair



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# PACIFIC FLYWAY COUNCIL

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## Recommendation 9 — Goose Season Framework

### Recommendation

The Pacific Flyway Council (Council) recommends no change in the regular season framework for geese in the Pacific Flyway, except to modify the outside dates for Canada goose, cackling goose, and brant seasons in Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, and Wyoming; and Canada goose and cackling goose seasons in California, Oregon, and Washington from the Saturday nearest September 24–January 31 to the Saturday nearest September 24–February 15.

Additionally, Council recommends the 2024–2025 brant season framework for California, Oregon, and Washington be determined based on the harvest strategy in the Council management plan for the Pacific population of brant, pending results of the 2024 Winter Brant Survey (WBS). If results of the 2024 WBS are not available, results of the most recent WBS should be used.

Proposed changes to the 2023–2024 Final Frameworks as published in the Federal Register are detailed in Attachment 1.

### Justification

Monitoring activities over the last year indicated many goose populations are at or above levels justifying continued liberal goose hunting frameworks (Table 1). However, estimates for several populations declined substantially from 2022 to 2023, including dusky Canada geese (-27%), Taverner's cackling geese (-36%), minima cackling geese (-33%), Pacific brant (-24%), and Pacific white-fronted geese (-36%). Due to survey variability, annual changes (both positive and negative) of the magnitude observed this year have occurred several times in the past. This year's declines were not substantial enough to move management indices (typically the most recent three-year average) to thresholds where Council management plans necessitate changes to harvest regulations. However, should estimates for some of these populations remain at reduced levels in 2024, harvest regulations changes may be necessary for the 2025–2026 seasons.

In August 2023, Council adopted a management plan for the Pacific Flyway Population of Western Canada Geese, which were previously managed as two populations, the Rocky Mountain and Pacific populations. The harvest strategy in this new plan establishes outside season dates of no earlier than the Saturday nearest September 24 and no later than February 15 when the 3-year average population index exceeds the population goal of 200,000 geese. As shown in Table 1, the current 3-year average management index for Pacific Flyway Western Canada geese is 419,906 geese, 110% above the minimum population index.

Table 1. Recent status of Pacific Flyway goose populations, relative to established objectives.

	Most recent population indices	Most recent three-year average	Population objective	Status relative to objective
Pacific Flyway western Canada geese	387,033 (2023)	419,906 (2019, 2022, 2023)	200,000	above
Dusky Canada geese	9,576 (2023)	11,824 (2021–2023)	20,000	below
Lesser Canada geese	4,994 (2022)	6,690 (2018, 2019, 2022)	None	NA
Minima cackling geese	160,630 (2023)	201,381 (2021–2023)	250,000	below
Aleutian cackling geese	212,113 (2023)	201,010 (2021–2023)	60,000	above
Taverner's cackling geese	29,695 (2023)	39,551 (2019, 2022, 2023)	None	NA
Pacific brant	119,888 (2023)	143,052 (2021–2023)	162,000	below
Pacific greater white- fronted geese	422,372 (2023)	529,850 (2021–2023)	300,000	above
Tule white-fronted geese	13,029 (2022)	12,263 (2020–2022)	10,000	above
Wrangel Island snow geese	706,068 (2021)	611,063 (2019–2021)	120,000	above
Western Canadian arctic snow geese	451,000 (2013)	NA	200,000	unknown
Pacific Flyway winter white geese	1,269,628 (2022)	1,346,198 (2017, 2018, 2022)	NA	NA
Ross's geese (continental population)	1,582,107 (2019)	1,592,506 (2017–2019)	150,000	above

### Adoption

Pacific Flyway Study Committee  
August 23, 2023

Contact: Brandon Reishus



Adam Behney, Chair

Pacific Flyway Council  
August 25, 2023



Brian Dreher, Chair

## Attachment 1

Proposed 2024–2025 Federal Frameworks for geese in the Pacific Flyway. Deletions are represented by strikeout and additions are represented by bold, underlined text.

### Regular Canada Goose, Cackling Goose, and Brant Seasons

*Outside Dates:* Except as subsequently provided, Saturday nearest September 24 (September 21)–~~January 31~~ **February 15**.

*Season Lengths:* Except as subsequently provided, 107 days.

*Daily Bag Limits:* Except as subsequently provided, in Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, and Wyoming, the daily bag limit is 5 Canada and cackling geese and brant in the aggregate. In Oregon and Washington, the daily bag limit is 4 Canada and cackling geese in the aggregate. In California, the daily bag limit is 10 Canada and cackling geese in the aggregate.

*Split Seasons:* Seasons may be split into 3 segments. Three-segment seasons require Pacific Flyway Council and U.S. Fish and Wildlife Service approval and a 3-year evaluation by each participating State.

### Brant Seasons

*Areas:* California, Oregon, and Washington.

*Outside Dates:* Saturday nearest September 24 (September 21)–January 31.

*Season Lengths and Daily Bag Limits:* 27 days and 2 brant.

*Zones:* Washington and California may select seasons in each of 2 zones.

*Special Provisions:* In Oregon and California, the brant season must end no later than December 15.

### White-Fronted Goose Seasons

*Outside Dates:* Saturday nearest September 24 (September 21)–March 10.

*Season Lengths:* 107 days.

*Daily Bag Limits:* Except as subsequently provided, 10 geese.

*Split Seasons:* Seasons may be split into 3 segments. Three-segment seasons require Pacific Flyway Council and U.S. Fish and Wildlife Service approval and a 3-year evaluation by each participating State.

### Light Goose Seasons

*Outside Dates:* Saturday nearest September 24 (September 21)–March 10.

*Season Lengths:* 107 days. Seasons may be split into 3 segments.

*Daily Bag Limits:* 20 geese, except in Washington where the daily bag limit for light geese is 10 on or before the last Sunday in January (January 26).

### California

*Balance of State Zone:* A Canada and cackling goose season may be selected with outside dates between the Saturday nearest September 24 (September 21) and March 10, and may be split into

3 segments. In the Sacramento Valley Special Management Area, the season on white-fronted geese must end on or before December 28, and the daily bag limit is 3 white-fronted geese. In the North Coast Special Management Area, hunting days that occur after January 31 should be concurrent with Oregon's South Coast Zone.

*Northeastern Zone:* The white-fronted goose season may be split into 3 segments.

## Oregon

*Eastern Zone:* For Lake County only, the daily white-fronted goose bag limit is 1.

*Northwest Permit Zone:* A Canada and cackling goose season may be selected with outside dates between the Saturday nearest September 24 (September 21) and March 10 with a daily bag limit of 3 geese in the aggregate. Canada and cackling goose and white-fronted goose seasons may be split into 3 segments.

*South Coast Zone:* A Canada and cackling goose season may be selected with outside dates between the Saturday nearest September 24 (September 21) and March 10 with a daily bag limit of 6 geese in the aggregate. Canada and cackling goose and white-fronted goose seasons may be split into 3 segments. Hunting days that occur after January 31 should be concurrent with California's North Coast Special Management Area.

## Utah

~~*Wasatch Front Zone:* A Canada and cackling goose and brant season may be selected with outside dates between the Saturday nearest September 24 (September 21) and February 15.~~

## Washington

*Areas 2 Inland and 2 Coastal (Southwest Permit Zone):* A Canada and cackling goose season may be selected in each zone with outside dates between the Saturday nearest September 24 (September 21) and March 10 with a daily bag limit of 3 geese in the aggregate. Canada and cackling goose and white-fronted goose seasons may be split into 3 segments.

*Area 4:* Canada and cackling goose and white-fronted goose seasons may be split into 3 segments.

## Permit Zones

In Oregon and Washington permit zones, the hunting season is closed on dusky Canada geese. A dusky Canada goose is any dark-breasted Canada goose (Munsell 10 YR color value 5 or less) with a bill length between 40 and 50 millimeters. Hunting of geese will only be by hunters possessing a State-issued permit authorizing them to do so.

Shooting hours for geese may begin no earlier than sunrise. Regular Canada and cackling goose seasons in the permit zones of Oregon and Washington remain subject to the Memorandum of Understanding entered into with the Service regarding monitoring the impacts of take during the regular Canada and cackling goose season on the dusky Canada goose population.

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# PACIFIC FLYWAY COUNCIL

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## Recommendation 10 — Dove Season Framework

### Recommendation

The Pacific Flyway Council (Council) recommends no change to the season framework for doves in the Western Management Unit (WMU), except to allow up to 10 white-winged doves in Arizona's daily bag limit during season days from November 1–January 15.

Council recommends a framework with outside dates between September 1 and January 15 with state-specific season lengths and bag limits as follows:

In Idaho, Nevada, Oregon, Utah, and Washington, the season length shall be not more than 60 days, which may be split between two periods. The daily bag limit is 15 mourning and white-winged doves in the aggregate. Oregon may select seasons in each of two zones.

In Arizona and California, the season length shall be not more than 60 days, which may be split between two periods, September 1–15 and November 1–January 15. The daily bag limit is 15 mourning and white-winged doves in the aggregate; of which no more than 10 may be white-winged doves.

### Justification

A mourning dove harvest strategy was endorsed by the Flyway councils and the Service Regulations Committee in 2013 for the Eastern, Central, and Western Management units with implementation beginning in 2014.

Harvest strategies for each Management Unit share a common assessment framework:

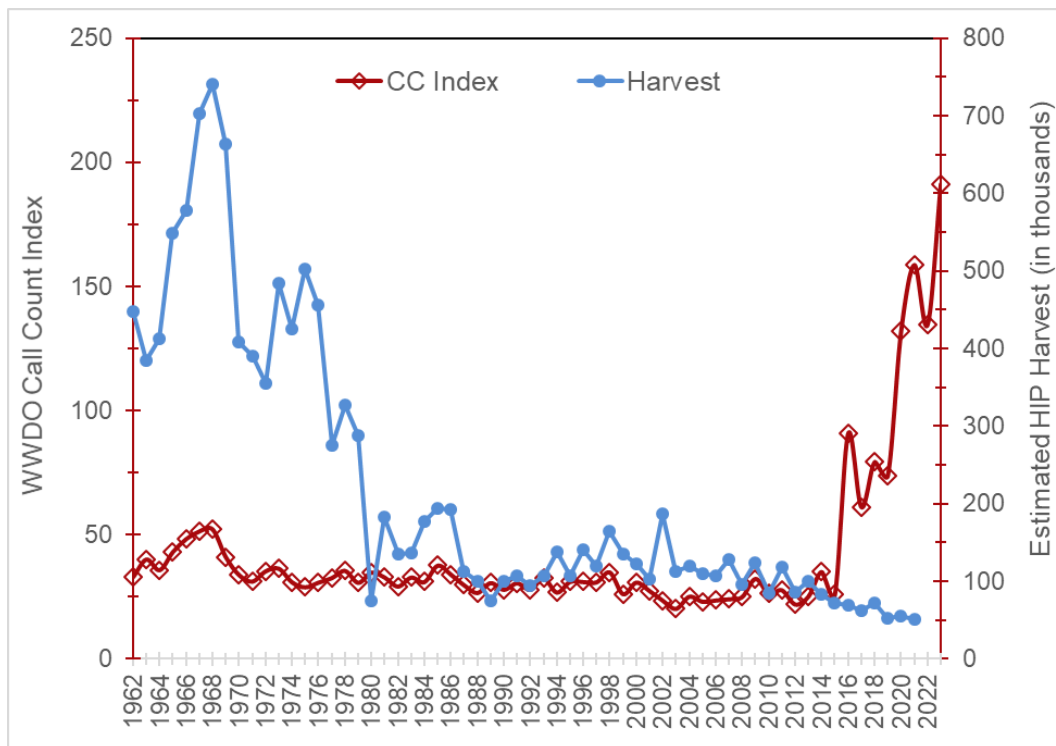
- 1) Discrete logistic model to estimate population parameters (intrinsic rate of growth, carrying capacity) and predict population abundance in the year subsequent to the data time series;
- 2) Critical abundance thresholds based on 30% and 50% of approximated maximum sustained yield;
- 3) 85% confidence predicted abundance exceeds the critical threshold necessary to trigger a regulatory change; and
- 4) Standard, restrictive, and closed regulatory alternatives with a consistent daily bag limit.

The predicted abundance of mourning doves and respective credible intervals for 2023 in the WMU is 40.50 million (70% CI: 28.76–56.29 million). The predicted abundance results in a “Standard” regulatory alternative as prescribed by the harvest strategy.

**Justification for the addition of white-winged doves to Arizona's daily bag limit in season days from November 1–January 15**

Within the WMU, Arizona contains the largest breeding populations for white-winged doves. The Arizona spring call count survey indicates white-winged doves have increased in abundance during the recent 10 years (Figure 1).

Of the states in the WMU, Idaho, Nevada, Oregon, Utah, Washington and California all have daily bag limits of 15 mourning and white-winged doves in the aggregate. Arizona represents roughly 53% of white-winged dove harvest in the WMU, with a current average harvest of  $3.9 \pm 1.0$  birds/hunter during the season. Historically in Arizona, white-winged doves migrated out of the state prior to November 1; however, in recent years, small numbers of white-winged doves have been present in the state during the late season. Because they remain and the late season frameworks stipulate that only mourning doves can be taken in the late season, Arizona hunters may incidentally harvest white-winged doves, thereby violating the late season harvest regulations. To avoid accidental or unintentional violations, Arizona would like to follow the same season frameworks as all other states with white-winged doves in the WMU. All the other states except California have aggregate bag limits for doves because there are fewer white-winged than mourning doves and the likelihood of harvesting a white-winged dove is low. Likewise, because the majority of white-winged doves have left Arizona before the late season, the incidence of take is expected to be low (i.e. < 2,000 birds). There is also no anticipated increase in take of mourning doves for the same late season.



**Figure 1.** Western white-winged dove (WWDO) harvest estimates in Arizona compared to the annual call-count (CC) index, 1962–2022.

**Adoption**  
Pacific Flyway Study Committee  
August 23, 2023

Contact: Larisa Harding, PhD.



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Adam Behney, Chair

Pacific Flyway Council  
August 25, 2023



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Brian Dreher, Chair

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## PACIFIC FLYWAY COUNCIL

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### **Recommendation 11 — Rocky Mountain Population Sandhill Crane Season Framework**

#### **Recommendation**

The Pacific Flyway Council (Council) recommends no change to the season framework for Rocky Mountain Population (RMP) sandhill cranes, except:

- Removal of a portion of the Over-the-Counter (OTC) Midcontinent Population (MCP) crane hunting district in northern Stillwater County, Montana and annexing it to an established Rocky Mountain Population (RMP) sandhill crane hunting district, 586-01 in Sweetgrass, Wheatland, Golden Valley, and Meagher counties in southern Montana.

Allowable harvest will be determined by the formula described in the Pacific and Central Flyway Management Plan for the Rocky Mountain Population of Sandhill Cranes pending results of the 2023 fall abundance and recruitment surveys.

#### **Justification**

The Pacific and Central Flyway Management Plan for RMP sandhill cranes specifies allocation of allowable crane harvest based on fall surveys if the 3-year average of the fall population index exceeds 15,000. The most recent 3-year average fall population index was 22,744 (2020–2023). The 3-year average fall population index has never fallen below 15,000 in the history of the survey (since 1997).

#### **Justification for modification of an existing RMP crane hunting district Montana**

The proposed modification would incorporate a small portion of northern Stillwater County, (that portion of Stillwater County lying north of Interstate 90), into sandhill crane hunting district 586-01 (Figure 1). The change would transfer this portion from an unlimited OTC crane hunt area to an established permitted hunt district. Hunt district (HD) 586-01 straddles both the PF and CF, with most of the area in the Central Flyway part of the state. The OTC hunt area is entirely in the CF and directed at MCP birds (i.e., lesser sandhill cranes). Hunt districts restricted to permit hunting are directed at RMP cranes in the Pacific Flyway. All the other permitted HDs in MT are in PF except 599-00, Carbon County.

Permitted HDs in northern Sweetgrass, Wheatland, Golden Valley, and Meagher counties (586-01) and Carbon County (599-00) have a 60-day season, managed under the RMP Greater Sandhill Crane Management Plan, which opens September 1 (September 1–October 30). Stillwater County, which lies between these two HDs is an unlimited OTC hunt area and has a 58-day season and a later opening date of October 1 (October 1–November 27), managed under the MCP of Sandhill Crane Management Plan. Local biologists believe northern Stillwater County comprises the same



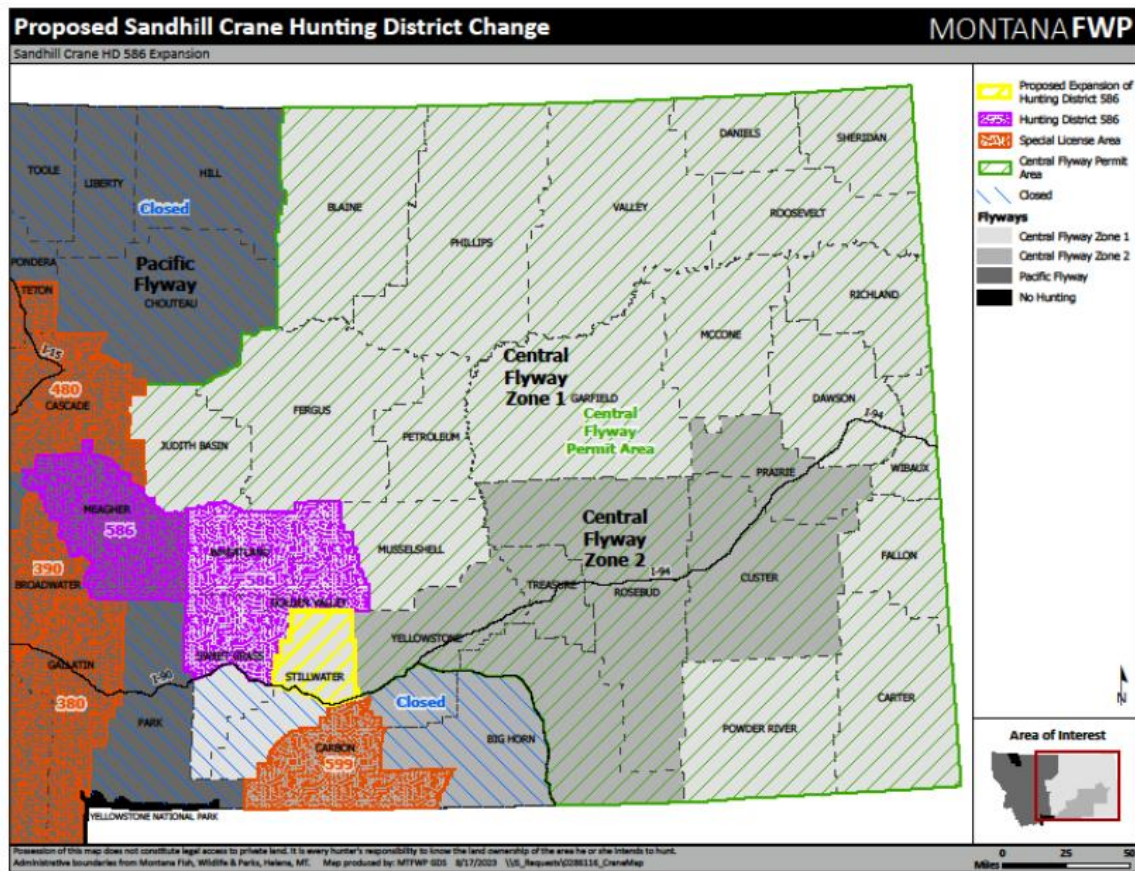
migration route for RMP greater sandhills as Sweetgrass/Wheatland/Golden Valley/Meagher counties and Carbon County and should have the same season structure.

This modification will make crane hunting in northern Stillwater County more restrictive (permit vs. OTC) and will have a more restrictive bag limit (2 licenses vs. OTC bag limit of 3); however, hunters report all cranes in northern Stillwater migrate through the area by the October 1 opener. Hunters prefer a season structure that would allow harvest opportunities in September, prior to migration.

In HD 586-01 the current number of applicants is slightly more than the number of permits issued, so while hunters may not be drawn annually, odds of drawing are quite high. If an applicant is drawn, they would receive 2 permits. For the 2024 season there would be no increase in permit numbers issued for the annexed hunting district.

Harvest allocation among states for RMP greater sandhill cranes is determined by a formula prescribed in the management plan approved for this population by the Pacific and Central flyways. Harvest of RMP sandhill cranes in Montana is typically below allocated harvest by 40-50%. This change would provide slightly more crane hunting opportunity for RMP sandhill cranes in Montana, but overall harvest is expected to remain well within the state allocation; anticipated harvest from the hunt area modification is expected to be negligible. All crane harvest would be attributed to the RMP.

Rocky Mountain Population sandhill crane numbers appear to be stable or growing in the proposed hunting district, as reflected by the annual September RMP sandhill crane flight. Long-term monitoring has been conducted in the proposed RMP hunting district and will continue through the coordinated September survey. Survey questionnaires will be used to estimate sandhill crane harvest as in existing hunting districts.



**Adoption**  
Pacific Flyway Study Committee  
August 23, 2023

Contact: Sean Yancey

Adam Behney, Chair

Pacific Flyway Council  
August 25, 2023

B. De

Brian Dreher, Chair

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# PACIFIC FLYWAY COUNCIL

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## Recommendation 12 — Alaska Season Framework

### Recommendation

The Pacific Flyway Council (Council) recommends no changes to the Alaska season frameworks for the 2024–2025 season.

For brant, Council recommends the 2024–2025 season frameworks be determined based on the harvest strategy in the Council management plan for the Pacific population of brant, pending results of the 2024 Winter Brant Survey (WBS). If results of the 2024 WBS are not available, results of the most recent WBS should be used.

### Justification

Ducks: The current framework is 107-day season and daily limits of 7–10 over five regulatory zones. Pacific Flyway duck regulations are based on the Western Mallard Adaptive Harvest Management Protocol. Western mallards consist of two substocks and are those breeding in Alaska and Yukon Territory (Federal WBPBS strata 1–12) and those breeding in the southern Pacific Flyway including California, Oregon, Washington, and British Columbia (State and Provincial surveys) combined. The 2023 estimated total breeding population size of western mallards was 0.82 million (SE: 0.05 million); combined totals of the Alaska-Yukon Territory (0.38 million; SE: 0.04 million) and California-Oregon-Washington-British Columbia (0.44 million; SE: 0.03 million). Based on these results, the prescribed regulatory alternative for the 2024–2025 hunting season in the Pacific Flyway is the liberal alternative. Alaska accounted for ~2.4% of the Pacific Flyway duck harvest in 2022.

Canvasbacks: The current daily bag/possession limits are 2/6 canvasbacks for Alaska. The 2023 breeding population estimate was 619,400 (SE: 63,900), which supports a Liberal 2 season for the 2024–2025 hunting season under the decision support tool. Since 2015, a decision support tool is used as an interim strategy, and incorporates available information on population size, growth rate, survival, and harvest to derive an optimal harvest policy. The season is closed when the observed population is below 460,000, a 1-bird daily bag limit when between 460,000–480,000 and a 2-bird bag limit when above 480,000. The estimated fall-winter harvest of canvasbacks in Alaska from the Harvest Information Program was 91 in 2022.

Sea Ducks: The current sea duck daily bag/possession limits are 10/20, in the aggregate, including no more than six each of either harlequin or long-tailed ducks. Lower limits are in place for nonresident hunters. Sea ducks include scoters, mergansers, common and king eiders, harlequin ducks, long-tailed ducks. The season is closed for Steller’s and spectacled eiders.

Geese: For goose populations with management strategies, many were above their population objectives (Table 1), or had prescribed regulatory restrictions in place (e.g., reduced limits for minima cackling geese, brant, and emperor geese), supporting no change in the Alaska frameworks.

Table 1. Most recent population status, and management plan objectives for Pacific Flyway goose populations in Alaska.

Population	Recent Index		3-year Average Index		Mgmt Index	Objective	Obj. Status
	Estimate	Year	Estimate	Years			
Pacific white-fronted geese	422,372	2023	529,850	2021–2023	3-year avg	300,000	77%
Midcontinent white-fronted geese	3,138,861	2021	2,675,020	2019, 2021	3-year avg & harvest rate	1,200,000	123%
Minima cackling geese	160,630	2023	201,381	2021–2023	3-year avg	250,000	-19%
Lesser Canada geese	—	2023	6,690	2018, 2019, 2022	No index	None	N/A
Taverner’s cackling geese	29,695	2023	39,551	2021–2023	No index	None	N/A
Aleutian cackling geese	212,113	2023	201,010	2021–2023	3- year avg	60,000	235%
Dusky Canada geese	9,576	2023	11,824	2021–2023	3-year avg	20,000	-41%
Vancouver Canada geese	No data				No index	None	
Emperor geese	24,349	2023	26,225	2021–2023	Single year	34,000	-28%
Pacific brant	119,888	2023	143,052	2021–2023	3-year avg	162,000	-12%
Western Arctic lesser snow geese	977,497	2022	1,058,556	2017, 2018, 2022	3-year avg	300,000	253%
Wrangel Island lesser snow geese	706,068	2021	611,063	2019–2021	3-year avg	120,000	409%

Western Tundra Swans: The current framework authorizes a permit hunt in Units 17, 18, 22, and 23 with no more than three swans allowed per permit. The western tundra swan population is managed using the three-year average of the breeding ground index, which includes the combined total bird indices from the Waterfowl Breeding Population and Habitat Survey (Strata 8, 9, 10, and 11) and the Yukon Kuskokwim Delta Coastal Zone Survey. In 2023, the breeding ground index was 72,643 (95% CI: 54,944–90,341) and the most recent three-year (2021–2023) average was 97,709 (95% CI: 72,099–123,319) swans; 63% above the management plan objective of 60,000 tundra swans.

Midcontinent Lesser Sandhill Cranes: The current framework is a daily bag of three cranes in Units 11–13 and 18–26. The spring 2023 photo-corrected estimate of abundance for sandhill cranes in the Central Platte River Valley was 1,259,199. The most recent three-year average from 2021–2023 was 909,046, which exceeds the established population objective range of 350,000–475,000 cranes. The 2022 estimated fall-winter harvest in Alaska was 764 cranes, accounting for <3% of the North American harvest.

Pacific Population Lesser Sandhill Cranes: The current framework is a daily bag of two cranes in Units 1–10, 14–17. Alaska is the only state that harvests this population. The 2022 fall-winter harvest estimate of cranes in Units 1–10 and 14–17 was 29 cranes.

Snipe: The current framework is a daily bag limit of 8 birds in all Units. The reported harvest of snipe during the 2022 fall-winter harvest in Alaska was 300±113%.

Falconry: The current framework is a daily bag limit of three birds. There are currently 49 registered falconers in Alaska that have a total of 47 falconry birds in possession. Migratory game bird harvest by falconry in Alaska is negligible.

**Adoption**  
Pacific Flyway Study Committee  
August 23, 2023

Contact: Jason Schamber



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Adam Behney, Chair

Pacific Flyway Council  
August 25, 2023



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Brian Dreher, Chair

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## PACIFIC FLYWAY COUNCIL

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### Recommendation 13 — Coot and Gallinule Season Framework

#### Recommendation

The Pacific Flyway Council recommends no change to the season framework for coots and gallinules. The daily bag limit is 25 in the aggregate and the possession limit is three times the daily bag limit. Outside dates and season length are the same as the duck season framework.

#### Justification

The coot and gallinule season framework includes three gallinule species; however, only the common gallinule is likely to be encountered by hunters in the Pacific Flyway, and primarily only in southwestern states.

The breeding population index for American coots in Washington, Oregon, and California combined, based on the 2019 North American Breeding Bird Survey (BBS), was 391,080 (SE = 76,119, 95% CI = 241,888–540,273) coots, down 26.4% from the 2018 index of 531,149 (SE = 103,514, 95% CI = 328,263–734,036) coots; however, the decline was not statistically significant (Z-score = 1.09, P = 0.28). The average abundance during the most recent two years of available data (2018 and 2019) was 461,115 coots (SE = 90,855, 95% CI = 283,040–639,190; John Sauer, USGS, unpublished analysis).

The most current BBS data for American coot indicate no trend in abundance in the 12 western states during the long-term (1968–2019; annual percent change = -0.46, 95% CI = -2.18–0.76) and recent 10 years (2009–2019; annual percent change = 0.40, 95% CI = -3.79–4.43). The most current BBS data for common gallinules indicate no trend in abundance during 1968–2019 (long-term; annual percent change = -2.79, 95% CI = -5.81–0.22) or most recent 10 years (2009–2019; annual percent change = -6.01, 95% CI = -16.25–5.11) in California where most gallinules in the Pacific Flyway occur.

The 2023 breeding population estimate for American coots from the Waterfowl Breeding Population and Habitat Survey (WBPHS) was 964,981, a 15.5% decrease from the 2022 estimate of 1,141,756, and a 49.1% decrease from the long-term (1955–2022) average of 1,900,911.

Current regulations have resulted in continued, modest coot harvest while providing additional opportunity to waterfowl hunters. Pacific Flyway coot harvest estimates from the Harvest Information Program for 2021 and 2022 were 27,100 and 67,100, respectively, while the annual estimate of active coot hunter numbers increased from 6,900 to 14,700, respectively. Harvest indices for gallinules indicate very minimal harvest and hunter participation in the Pacific Flyway.

**Adoption**  
Pacific Flyway Study Committee  
August 23, 2023

Contact: Sean Yancey



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Adam Behney, Chair

Pacific Flyway Council  
August 25, 2023



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Brian Dreher, Chair



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## PACIFIC FLYWAY COUNCIL

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### Recommendation 14 — Interior Band-tailed Pigeon Season Framework

#### Recommendation

The Pacific Flyway Council (Council) recommends no change to the season framework for Interior band-tailed pigeons.

Council recommends a framework in the Pacific Flyway portion of Arizona, Colorado, New Mexico, and Utah with outside dates between September 1 and November 30, season length of 14 days, and daily bag limit of 2. New Mexico may select hunting seasons in two zones: North and South Zones. The North Zone consists of the area north of a line following U.S. Highway 60 from the Arizona State line east to Interstate 25 at Socorro and south along Interstate 25 from Socorro to the Texas state line. The South Zone includes the remainder of the State. The South Zone season may not open until October 1.

#### Justification

Total harvest estimates, obtained from the Harvest Information Program (HIP), for Interior band-tailed pigeons was 600 birds in 2022, twice as high as reported numbers in 2021. The Breeding Bird Survey estimates that interior band-tailed pigeon numbers have been declining approximately 2.1% per year over 1968–2022, indicative of a low and stable trend. There is considerable uncertainty in harvest estimates from the federal harvest survey. All states are working to refine harvest surveys to improve harvest estimates, and each state (except Arizona) has a permit system required for anyone hunting band-tailed pigeons. This should provide a better sampling frame to increase the accuracy of harvest estimates.

#### Adoption

Pacific Flyway Study Committee  
August 23, 2023

Contact: Larisa Harding, PhD

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Adam Behney, Chair

Pacific Flyway Council  
August 25, 2023

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Brian Dreher, Chair



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## PACIFIC FLYWAY COUNCIL

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### Recommendation 15 — Pacific Coast Band-tailed Pigeon Season Framework

#### Recommendation

The Pacific Flyway Council (Council) recommends no change to the season framework for Pacific Coast band-tailed pigeons.

Council recommends a framework in California, Nevada, Oregon, and Washington with outside dates between September 15 and January 1, a season length of nine consecutive days, a daily bag limit of 2 birds, and a possession limit of 6 birds. California may select seasons in each of two zones (North Zone and South Zone). The North Zone includes Alpine, Butte, Del Norte, Glenn, Humboldt, Lassen, Mendocino, Modoc, Plumas, Shasta, Sierra, Siskiyou, Tehama, and Trinity counties. The South Zone includes the remainder of the state. The season in the North Zone must close by October 3.

#### Justification

The prescribed regulatory alternative for California, Nevada, Oregon, and Washington is the restrictive regulatory alternative. This is based on the harvest strategy in Council's management plan for Pacific Coast band-tailed pigeons and the results of the 2023 Mineral Site Survey (MSS). Assessment of the MSS data suggested no significant trend in the median annual count of Pacific Coast band-tailed pigeons observed at mineral sites during the long-term (2004–2023), last ten years (2014–2023) and last five years (2019–2023), indicating no evidence for a change in the abundance of Pacific Coast band-tailed pigeons over those time periods.

#### Adoption

Pacific Flyway Study Committee  
August 23, 2023

Contact: Brandon Reishus

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Adam Behney, Chair

Pacific Flyway Council  
August 25, 2023

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Brian Dreher, Chair

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# PACIFIC FLYWAY COUNCIL

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## Recommendation 16 — Rail Season Framework

### Recommendation

The Pacific Flyway Council (Council) recommends no change to the season framework for sora and Virginia rails.

Council recommends a framework including sora and Virginia rails in the Pacific Flyway portions of Colorado, Montana, New Mexico, and Wyoming with a season length of 70 days and daily bag and possession limits of 25 sora and Virginia rails in the aggregate. Season length may be split into two segments. The season shall be closed in the remainder of the Pacific Flyway.

### Justification

The most current data available from the North American Breeding Bird Survey indicate Virginia rail and sora abundances were stable or increasing in the 12 western U.S. states during the long term (1968–2019) and most recent 10 years (2009–2019) (John Sauer, USGS, unpublished analysis). For Virginia rail, the estimated annual percent change during the long term was 0.21 (95% credible interval = -1.28–1.13, routes = 117) and short term was 0.27 (95% credible interval = -2.25–3.12, routes = 44) indicating stable abundance during both time periods. For sora, the estimated long-term annual percent change was 1.16 (95% credible interval = 0.10–2.10, routes = 306) and short term was 4.51 (95% credible interval = 1.7–7.83, routes = 175) indicating increasing abundance over both time periods.

Hunter participation and harvest estimates for sora and Virginia rails are obtained from the Migratory Bird Harvest Information Program. However, no Pacific Flyway harvest information is available because rail seasons are only federally authorized in the western portions of Colorado, Montana, New Mexico, and Wyoming within the Pacific Flyway. Statewide harvest estimates in those four states in 2022 were less than 50 per state.

### Adoption

Pacific Flyway Study Committee  
August 23, 2023

Contact: Russell Woolstenhulme

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Adam Behney, Chair

Pacific Flyway Council  
August 25, 2023

A handwritten signature in black ink, appearing to read "B. Dreher", written in a cursive style.

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Brian Dreher, Chair

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## PACIFIC FLYWAY COUNCIL

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### Recommendation 17 — Snipe Season Framework

#### Recommendation

The Pacific Flyway Council (Council) recommends no change to the season framework for snipe. Council recommends a framework with outside dates between September 1 and February 28, season length of 107 days, daily bag limit of 8, and possession limit of 24. Season length may be split into two segments. Seasons may be selected by zones established for duck hunting.

#### Justification

The most current data available from the North American Breeding Bird Survey indicated Wilson's snipe abundance was stable in the 12 western U.S. states during the long term (1968–2019) and most recent 10 years (2009–2019) (John Sauer, U.S. Geological Survey, unpublished analysis). The estimated annual percent change during the long term was -0.64% (95% credible interval = -1.67–0.21, routes = 642) and short term was -1.21 (95% credible interval = -2.91–0.47, routes = 433) indicating stable abundance during both time periods.

Hunter participation and harvest estimates for snipe are obtained from the Migratory Bird Harvest Information Program. In 2021 and 2022, the snipe harvest estimate in the Pacific Flyway was 4,100 and 6,800, respectively.

#### Adoption

Pacific Flyway Study Committee  
August 23, 2023

Contact: Russell Woolstenhulme

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Adam Behney, Chair

Pacific Flyway Council  
August 25, 2023

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Brian Dreher, Chair

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# PACIFIC FLYWAY COUNCIL

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## Recommendation 18 — Special Early Canada and Cackling Goose Season Framework

### Recommendation

The Pacific Flyway Council (Council) recommends no change to the framework for special early Canada and cackling goose seasons.

A Canada and cackling goose season of up to 15 days may be selected during September 1–20. The daily bag limit may not exceed 5 Canada and cackling geese, except in Pacific County, Washington, where the daily bag limit may not exceed 15 Canada and cackling geese. Areas open to hunting of Canada and cackling geese in each state must be described, delineated, and designated as such in each state's hunting regulations.

### Justification

The objective of the special early Canada and cackling goose season is to control or decrease abundance of resident Canada geese and to provide hunting opportunity. Resident Canada geese in the Pacific Flyway are generally part of the Pacific Flyway Population (PFP) of western Canada geese.

The population index for PFP western Canada geese is based on results of the Waterfowl Breeding Population and Habitat Survey (i.e., strata 76, and portions of strata 26–29 and 41–42) plus state/provincial breeding waterfowl surveys in British Columbia, Washington, Oregon, and California. The most recent (2023) breeding population estimate for PFP geese is 387,033 (SE = 16,351), a 3% increase over the long-term average (376,855). The current estimate is 110% over objective of maintaining at least 200,000 total birds based on 3-yr mean (419,906).

### Adoption

Pacific Flyway Study Committee  
August 23, 2023

Contact: Russell Woolstenhulme

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Adam Behney, Chair

Pacific Flyway Council  
August 25, 2023

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Brian Dreher, Chair

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## PACIFIC FLYWAY COUNCIL

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### Recommendation 19 — Special Falconry Season Framework

#### Recommendation

The Pacific Flyway Council (Council) recommends no change to the special season framework for extended falconry seasons. In accordance with 50 CFR 21.82, falconry is a permitted means to take migratory game birds in any State except for Hawaii. States may select an extended season for taking migratory game birds in accordance with the following:

Outside dates are September 1–March 10. For all hunting methods combined, the combined length of the extended season, regular season, and any special or experimental seasons must not exceed 107 days for any species or group of species in a geographical area. Each extended season may be split into three segments. Falconry daily bag limits for all permitted migratory game birds must not exceed three birds in the aggregate, during extended falconry seasons, any special or experimental seasons, and regular hunting seasons in each State, including those that do not select an extended falconry season. The possession limit is three times the daily bag limit. General hunting regulations, including seasons and hunting hours, apply to falconry. Regular season bag limits do not apply to falconry. The falconry bag limit is not in addition to shooting limits.

#### Justification

Impacts of falconry harvest on migratory bird populations are negligible. Most Pacific Flyway states select a 107-day season when available, so in many cases, no additional days remain for an extended falconry season. When waterfowl season frameworks are less than 107 days, additional days would be available for extended falconry seasons, and states may wish to consider extended falconry seasons at that time.

#### Adoption

Pacific Flyway Study Committee  
August 23, 2023

Contact: Jason Jones

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Adam Behney, Chair

Pacific Flyway Council  
August 25, 2023

A handwritten signature in black ink, appearing to read "B. Dreher". The signature is fluid and cursive, with the first name "B." and the last name "Dreher" clearly distinguishable.

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Brian Dreher, Chair

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## PACIFIC FLYWAY COUNCIL

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### **Recommendation 20 — Special Youth, Veteran, and Active Military Personnel Waterfowl Hunting Days Season Framework**

#### **Recommendation**

The Pacific Flyway Council (Council) recommends no change to the special youth, veteran, and active military personnel waterfowl hunting days season framework.

Council recommends states may select two days per duck-hunting zone designated as “Youth Waterfowl Hunting Days,” and two days per duck-hunting zone designated as “Veterans and Active Military Personnel Waterfowl Hunting Days,” in addition to their regular duck seasons. These days may be held concurrently. The Youth Waterfowl Hunting Days must be held outside any regular duck season on weekends, holidays, or other non-school days when youth hunters would have the maximum opportunity to participate. Both sets of days may be held up to 14 days before or after any regular duck season frameworks or within any split of a regular duck season, or within any other open season on migratory birds.

Daily bag limits may include ducks, geese, swans, mergansers, coots and gallinules and would be the same as those allowed in the regular season. Flyway species and area restrictions would remain in effect. Swans may only be taken by participants possessing applicable swan permits. Shooting hours are one-half hour before sunrise to sunset.

States may use their established definition of age for youth hunters. However, youth hunters must be under 18 years of age. In addition, an adult at least 18 years of age must accompany the youth hunter into the field. This adult may not hunt, but may participate in other seasons that are open on the special youth day. Veterans (as defined in section 101 of title 38, United States Code) and members of the Armed Forces on active duty, including members of the National Guard and Reserves on active duty (other than for training), may participate. All hunters 16 years of age or older must possess a Federal Migratory Bird Hunting and Conservation Stamp (also known as Federal Duck Stamp).

#### **Justification**

Council supports special opportunities for youth, veterans, and active military personnel to learn about waterfowl and wetland conservation, and waterfowl hunting. The intent of this special season is to (1) introduce hunters to the concepts of ethical utilization and stewardship of waterfowl and other natural resources (2) encourage youngsters and adults to experience the outdoors together, and contribute toward the long-term conservation of the migratory bird resource (3) to provide the best and safest learning environment for those who are interested in hunting (4) and provide a high-quality hunting experience for youth, veterans, and active military personnel.

The special season may help recruit non-hunters and novice hunters into the activity. In the long-term, participation in this special season may result in support for waterfowl and wetland



conservation and foster a more knowledgeable public, continued support for waterfowl hunting, and continued support for the protection and enhancement of wetland ecosystem.

**Adoption**

Contact: Kyle Spragens

Pacific Flyway Study Committee  
August 23, 2023



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Adam Behney, Chair

Pacific Flyway Council  
August 25, 2023



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Brian Dreher, Chair

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# PACIFIC FLYWAY COUNCIL

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## **Recommendation 21 — Harvest Management Working Group Priorities**

### **Recommendation**

The Pacific Flyway Council (Council) recommends the 2024 list of priority rankings and project leads for technical work be unchanged from the 2023 priority list.

### **Justification**

Each year the Harvest Management Working Group (HMWG) develops a list of work priorities for the upcoming year. Flyway councils are then asked to review and approve this list and suggest any necessary modifications. Councils' recommendations are then forwarded to the Service Regulations Committee (SRC) for consideration at their fall regulatory meeting. However, due to budget constraints and staffing capacity, the HMWG was unable to meet in summer 2023 to develop a 2024 priorities list. To address this issue, Flyway councils were asked to approve a priorities list for work in 2024 to be considered by the SRC at their fall meeting. The SRC will then work with Flyway consultants to provide the HMWG with a final priorities list for 2024.

Revision of the northern pintail Adaptive Harvest Management (AHM) remains a high priority for Council, and it is encouraging that progress has reached policy decision points. Council appreciates the investment in the revision process and agrees with the scheduled planning steps to implement a revised strategy in 2025. Council encourages the Division of Migratory Bird Management (DMBM) and the US Geological Survey (USGS) to continue communicate with the flyways at each planning step to ensure timely input and review.

Council recognizes the DMBM will likely continue to face budget constraints into the future, and that difficult decisions regarding long-term implementation of operational programs may need to be made. Council also recognizes cooperative monitoring programs for North American migratory game birds are vitally important for conservation of these birds.

### **Proposed Pacific Flyway Council 2024 Harvest Management Working Group Priorities**

Priority rankings and project leads identified for technical work:

#### **Highest Priorities (Urgent and Important)**

- Evaluate implications of changes in monitoring frequency on adaptive harvest management performance (Flyway Councils, DMBM, USGS)
- Northern Pintail AHM revision (Flyway Councils, DMBM, USGS)
- Reconsideration of North American Duck Harvest Management (Flyway Councils, DMBM)
- Evaluation of Experimental two-tier license system (Central Flyway, DMBM)

#### **Long-range Priorities (Non-urgent, but Very Important)**

- Time-dependent optimal solutions to address system change (e.g., habitat change, hunter dynamics, climate change) (USGS, DMBM)

### **Additional Priorities**

- Assessment of diving duck harvest capacity (Flyway councils, DMBM)
- Western mallard AHM revision (Pacific Flyway, BADS)
- Waterfowl Banding Needs Assessments (DMBM, USGS, Flyway councils)

### **Description of proposed priorities for Fiscal Year 2024.**

Assessments of potential changes to waterfowl monitoring programs: The DMBM anticipates continued budget constraints over the long-term. These constraints may be severe and require difficult decisions regarding cutting operational programs to stay within allocated budget. In response to this budget outlook, it is incumbent on the waterfowl harvest management community to take proactive steps to evaluate and implement changes to critical long-term monitoring programs that reduce operational costs, while continuing to provide the foundational data required to promulgate annual hunting regulations. This was a major focus of the HMWG meeting in December 2022 and a draft of a report was recently circulated to the flyway technical committees for comment, due early this fall.

Northern Pintail Adaptive Harvest Management revision process: The Pintail Working Group (PWG) has made substantial progress in developing a new state-of-the-art integrated population model that integrates information from waterfowl population surveys, the banding program, parts collection surveys, and the Harvest Information Program. Harvest potential dropped significantly in the 1980s, and updated population models confirm the persistence of the lower harvest potential. In the last year, a substantial advancement was made in the predictive models used to estimate harvest; the new population model estimates the effects of regulations on harvest *rate*, rather than total harvest. This has important effects on the optimal strategies, to the point that the trade-offs associated with adding a liberal-season three-bird bag alternative are significantly attenuated compared to the strategies under the old models. The PWG now seeks specific policy input from the Flyway technical committees and councils regarding four aspects of the pintails strategy to work toward implementation of a revised strategy in 2025:

- Do flyways desire a maximum-sustained-yield strategy for pintails or a “shoulder-strategy”, and, if the latter, which shoulder point should be sought?
- Should the liberal three-bird-bag package (L3) be allowed?
- The current strategy imposes a closure threshold (i.e., does not allow a closed season if the observed breeding population size is above 1.75 M). The PWG has explored a lower closure threshold of 1.0 M. Is such a threshold desirable in the pintail strategy?
- The Atlantic Flyway has asked the OWG to investigate the effects of a fixed pintail bag in their flyway. In some cases, this poses some costs to the other flyways. Are the trade-offs acceptable collectively to the councils?

Reconsideration of North American duck harvest management: The desire to reduce the complexity of waterfowl management in the United States has been a common theme across several HMWG priorities including the Pintail and Mid-Continent Mallard AHM revisions, development of the Atlantic Flyway Multi-stock AHM framework, and the experimental two-tier license system. There is recognition by all members of the HMWG that current procedures and

maintenance of multiple, single species harvest strategies is probably not sustainable in the long-term. There is a desire among all partners to reconsider the objectives and procedures used to establish annual waterfowl regulations to decrease complexity, ensure sustainability of waterfowl populations, and provide hunting opportunity. When this priority was proposed in July 2021, the HMWG did not recommend a specific project or task but recognized the need to re-think North American duck harvest management holistically. Since July 2021, the HMWG has been wrestling with trying to define the scope and scale of this priority based on input from each flyway and the Service. The HMWG completed a draft problem statement and elicited input during the 2022 winter meetings. Due to a shift in focus to the assessments of potential changes to waterfowl monitoring programs priority, progress on this priority in 2023 was minimal.

Experimental two-tier license system: As of December 2022, preliminary results indicate South Dakota has 1,737 Tier II registrants and Nebraska has 2,789. Both states have implemented additional strategies to increase Parts Collection Survey and Harvest Diary response rates. Like last season, a post season survey will be sent to Tier II hunters in both states in 2023. Possible measures of success were proposed seeking feedback from members. They are as followed:

- Annual estimated harvest of species with individual regulations not to exceed 10% additional harvest from Tier II participants (HIP average harvest 1999–2020)
- Duck hunter population lambda rates in SD and NE greater than or equal to 0.9 by the 2024–25 duck season
- By the 2024–25 duck season, demonstrate and identify recruitment, retention, and reactivation of hunters through HIP data (500 per year in combination per state). Similar to average annual loss rate in each state.  $N_{t+1} = N_t * (0.9) + R_3$ .
- Compare trends in HIP estimated hunters and demonstrate increased participation rates compared to neighboring states.
- Quantify increases in conservation support through duck stamp sales and other license requirements. This would represent a minimum of 1,000 additional duck stamps sales or \$25,000 increase in conservation dollars between states annually. Attempts will be made to quantify other funding increases (i.e., PR, etc).
- Quantify motivation, satisfaction, and utility of the simplified option through surveys and interviews.
- Quantify administrative burden to implement and demonstrate that implementation of 2-tier is not onerous to cooperating agencies.

Both states will continue to manage the regulatory Two-Tier system and pursue feedback regarding possible measures of success.

Time dependent optimal solutions to address system change: A big challenge for harvest management is anticipating system change in management strategies. When and how is early action needed to achieve objectives in a changing system? Tucker and Runge 2021 reviewed theoretical results for this question (), derived by assuming known future change (in the form of changes to underlying demographic parameters) and then applying finite-time dynamic programming to find time-dependent optimal policies that account for, and indeed, anticipate these changes. These results demonstrated optimal policies can anticipate future change and failing to account for system change has very different effects, depending on the nature of the change: failing to account for declines in carrying capacity (K) results in under-harvest; failing to account for declines in intrinsic growth rate (r) leads to over-harvest. We then present ongoing work applying these techniques to the question of setting hunting regulations for mid-continent Mallard (MCM),

given potential future climate change by using a simplified implementation of the AHM model coupled to a climate-based pond model.

We describe a model that predicts May pond counts in the Prairie region of the USA and Canada (a key predictor of mallard reproduction) as a function of climate variables (precipitation and temperature) and estimate parameters for two scenarios for May pond sensitivity to climate. By combining this pond model with downscaled projections of future climate from CMIP5 (ensemble projections based on 29 general circulation models for two emissions scenarios, RCPs 4.5 and 8.5), we develop projected trajectories of May pond counts in the Prairies under four climate futures. We then use dynamic programming and a simplified version of the AHM model to derive a time-dependent optimal policy for each climate future. We show how time-dependent optimal policies differ between these futures, with more liberal harvest policies being required to maintain harvest goals under futures where May ponds are more sensitive to climate. We also assess the expected value of perfect information (EVPI) about future climate change on achievement of the objectives for mallard harvest management. We conclude by emphasizing that the frequency of policy updates and monitoring provide important context for interpreting these results. Finally, we describe future plans. First, we are working to expand the treatment of uncertainty in the analysis. Second, we plan to apply these ideas to Atlantic Population Canada geese.

Assessment of diving duck harvest capacity: Conduct an assessment of the harvest capacity of diving ducks and evaluation of alternative regulatory approaches to diving duck harvest management.

Waterfowl Banding Needs Assessments: The DMBM in collaboration with the USGS Eastern Ecological Center (i.e., Patuxent) hired Kylee Dunham as a post-doctoral research associate to evaluate alternative monitoring designs based on marked individuals (i.e., standard bands plus other auxiliary markers) to support harvest and habitat management. The purpose of this project is to determine if new technologies can increase the amount and quality of data obtained per marked bird while also decreasing overall costs of the waterfowl banding program. This project is expected to be completed in late 2023 or early 2024.

**Adoption**  
Pacific Flyway Study Committee  
August 23, 2023

Contact: Brandon Reishus and Jason Schamber



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Adam Behney, Chair

Pacific Flyway Council  
August 25, 2023



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Brian Dreher, Chair

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# PACIFIC FLYWAY COUNCIL

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## Recommendation 22 — Northern Pintail Harvest Strategy Revision

### Recommendation

The Pacific Flyway Council (Council) recommends a derived harvest management strategy for northern pintail that: 1) uses Maximum Sustained Yield (MSY) as a harvest objective; 2) allows for a 3-bird daily bag limit (L3); 3) contains no prescribed closure constraint; and 4) does not allow a fixed daily bag limit in the Atlantic Flyway. Specifically, Council supports strategy 6 in the Pintail Working Group (PWG) progress report dated August 18, 2023. Council also recommends the pintail harvest management process continues to exclude Alaska.

### Justification

The PWG requested feedback from the flyway councils on several policy related questions.

Council has been interested in a pintail harvest strategy revision to address the perceived shortcomings of the current model and provided a problem statement to the Harvest Management Working Group (HMWG) in 2018. To date, Council acknowledges substantial effort has been invested to develop a new Integrated Population Model (IPM) to address concerns and inform pintail harvest management.

Council continues to have concern over the performance statistics (expected frequency of regulatory packages), as they have not been realized in the current strategy, and we continue to rely on predictions to determine policy in the new IPM. Further, constraints such as shoulder strategies, prescribed closure thresholds, and minimizing bag limit options are also problematic in that model performance is restricted and may provide suboptimal regulation packages as a result. Council offers the following preferences on a northern pintail harvest strategy (i.e., strategy 6, which meets long term Pacific Flyway goals:

#### 1. Consideration of shoulder strategy

The precedence to use MSY has been set by both the Western Mallard Adaptive Harvest Management (AHM) protocol and the current Pintail AHM protocol. Use of MSY in the IPM offers more stable regulations without unnecessary restrictions and minimal risk of an increase in closed seasons as determined by the model.

#### 2. Allowance of an L3 option

Allowing a 3-bird bag meets previously stated Council positions (2010 recommendation) and is a long-standing request of waterfowl hunters in Pacific Flyway states based on national and state-specific hunter surveys and constituent input. The probability of a closed pintail season does not increase at the expense of the L3 option. Closure probabilities do not change if the L3 option is eliminated, rather, it shifts the same predicted bag frequency to the L2 option.

#### 3. Consideration of closure threshold

The new strategy should be allowed to derive the most appropriate regulation package

based on population demographics (inputs), including when to close the season. Overriding the model with an artificial closure constraint could lower the population below that which is sustainable in the case of a 1 M bird threshold. To date, the northern pintail population has not dropped below 1.75 M birds. Using the current closure threshold of 1.75 M in the IPM does not result in improvement in strategy performance (e.g., no reduction in bag frequency changes or population increase).

#### 4. Consideration of a fixed pintail bag in the Atlantic Flyway

The effect of a fixed bag limit in the Atlantic Flyway may be minimal in the L1 option; however, higher bag limits likely have a negative effect on opportunity for the other flyways. In the spirit of a national harvest strategy and working towards conservation of northern pintail, deviation should not be encouraged. There is no precedent or defined criteria for when a flyway can opt out of a national duck harvest strategy. Further, human dimensions in all flyways and experience gained from the new strategy should be considered to understand results from the new IPM prior to removing a flyway.

The preferred strategy 6:

Strategy	Shoulder	L3	Closure	BPobs	Hobs	C	L1	L2	L3	fΔ
6	MSY	Yes	None	2.08	454	26.2%	2.9%	.5%	70.4%	15.8%

#### Adoption

Pacific Flyway Study Committee  
August 23, 2023

Contact: Melanie Weaver



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Adam Behney, Chair

Pacific Flyway Council  
August 25, 2023



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Brian Dreher, Chair

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## PACIFIC FLYWAY COUNCIL

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### Recommendation 23 — Nongame Technical Committee Representation on the Human Dimensions Working Group

#### Recommendation

The Pacific Flyway Council (Council) approves the following change to Nongame Technical Committee representation on the Human Dimensions Working Group:

- Jonathan Young (Nevada) will replace Joe Buchanan (Washington, retired)

#### Justification

The Nongame Technical Committee has assigned representation on the Human Dimensions Working Group based on interest and expertise. The above assignment for Pacific Flyway representation is necessary due to the retirement of Joe Buchanan. Travel expenses for representation to the Human Dimensions Working Group are covered by Council funds.

#### Adoption

Contact: Brian Holmes

Pacific Flyway Nongame Technical Committee  
August 23, 2023

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Brian Holmes, Chair

Pacific Flyway Council  
August 25, 2023

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Brian Dreher, Chair



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## PACIFIC FLYWAY COUNCIL

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### **Recommendation 24 — Nongame Technical Committee Representation on the Waterbird Conservation Council**

#### **Recommendation**

The Pacific Flyway Council (Council) approves the following change to Nongame Technical Committee representation on the Waterbird Conservation Council:

- Russell Norvell (Utah) will replace Colleen Moulton (Idaho)

#### **Justification**

The Nongame Technical Committee has assigned representation on the Waterbird Conservation Council based on interest and expertise. The above assignment for Pacific Flyway representation is necessary due to changes in personnel on the Nongame Technical Committee. Travel expenses for representation to the Waterbird Conservation Council are covered by Council funds.

#### **Adoption**

Contact: Brian Holmes

Pacific Flyway Nongame Technical Committee  
August 23, 2023

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Brian Holmes, Chair

Pacific Flyway Council  
August 25, 2023

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Brian Dreher, Chair

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### **Recommendation 25 — Letters of Recognition for Neil Clipperton, Joe Buchanan, and Thomas Leeman**

#### **Recommendation**

The Pacific Flyway Council (Council) approves sending the attached letters to Neil Clipperton (California Department of Fish and Wildlife), Joe Buchanan (Washington Department of Fish and Wildlife), and Thomas Leeman (United States Fish and Wildlife Service) in recognition of their service to the Pacific Flyway Nongame Technical Committee.

#### **Justification**

See attached letter.

#### **Adoption**

Pacific Flyway Nongame Technical Committee  
August 23, 2023

Contact: Brian Holmes

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Brian Holmes, Chair

Pacific Flyway Council  
August 25, 2023

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Brian Dreher, Chair

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## PACIFIC FLYWAY COUNCIL

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August 25, 2023

Neil Clipperton,  
California Department of Fish and Wildlife  
P.O. Box 944209  
Sacramento, CA 94244-2090

Dear Neil,

On behalf of the Pacific Flyway Council (Council) and the Nongame Technical Committee (NTC), we would like to take this opportunity to recognize your contributions to conservation and management of migratory birds in the Pacific Flyway. You have been a valued member of the NTC for 4 years, and your contributions have been substantial during this exceptional time. In your role as the State of California's representative, you provided leadership, technical expertise, and coordinated the implementation of conservation and management efforts focused on shared migratory bird resources of the Pacific Flyway across western North America.

Neil, when you began work with the NTC, you immediately took on the challenging role of Chair and then, to fill a gap, accepted an unprecedented second term. You also coordinated the second Conservation Partners meeting while serving your second term as Chair – no small feat. You excelled at this role by bringing a calm, professional demeanor coupled with your unique, witty humor. You've served as the Conservation Partners liaison for two years, fostering collaborations and networking with partners across the Flyway. You've helped bridge international and NTC conservation efforts as our liaison to the Partners in Flight Western Working Group where you provided NTC updates and initiatives to ensure open communication with partners. You took your role seriously and with careful consideration.

You've done an exceptional job leading the development of the NTC priority initiatives, the immediate outcomes of the Conservation Partners meeting. In your short tenure, you have helped NTC achieve many of these initiatives, including helping shepherd regional funding proposals for the Western yellow-billed cuckoo, short-eared owl, and the Intermountain West Shorebird Survey and subsequent projects. Your efforts and dedication have resulted in immeasurable contributions to the conservation and management of migratory birds in the Pacific Flyway.

Last, but certainly not least, you served as the NTC secretary for one year. You took on this role with dedication as you did your others, and helped develop NTC guidance documentation, have organized and tracked NTC products, templates, and other important resources that have continued to make NTC more efficient and successful.

Neil, you are a natural leader and the NTC benefited from your time and many contributions. Detailed, task-oriented, and always engaged, you have been a mainstay of the NTC for your entire tenure. On behalf of Council and the technical committees, we thank you again for your contributions. Your efforts were greatly appreciated, and your absence from the NTC will be tangible. We wish you the very best in the future.

Sincerely,

A handwritten signature in black ink, appearing to read "B. Dreher". The signature is fluid and cursive, with a large "B" and a stylized "Dreher".

Brian Dreher, Chair  
Pacific Flyway Council

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## PACIFIC FLYWAY COUNCIL

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August 25, 2023

Joe Buchanan  
Washington Department of Fish and Wildlife (retired)

Dear Joe,

On behalf of the Pacific Flyway Council (Council) and the Nongame Technical Committee (NTC), I would like to take this opportunity to recognize your contributions to conservation and management of migratory birds in the Pacific Flyway. You have been a valued member of the NTC since its founding in 2006, and your contributions have been substantial. In your role as the State of Washington's representative, you provided technical expertise, leadership, and coordination of conservation and management efforts focused on shared migratory bird resources across western North America.

Your depth of ecological knowledge across avian taxa, appreciation for nuance in policy discussions, and willingness to teach and mentor made you a leader within the NTC over the last 17 years. Your institutional knowledge provided consistency that allowed the NTC to build on previous efforts and be highly effective in the arena of nongame migratory bird management across the Flyway.

You served in many capacities within the Council during your tenure, including five years as the Council representative on the AFWA Bird-Fish Conflict Working Group. Within the NTC, you were vice-chair in 2016, chair in 2017, Treasurer from 2015 to 2023, and served on both the Habitat and Cormorant subcommittees. Externally, you represented the NTC on the Avian Knowledge Network in 2015 and 2016 and on the Human Dimensions Working Group from 2015 until 2023. Your passion and knowledge for Peregrine Falcons served NTC's need to balance opportunity for falconers while protecting subspecies and recognizing the international interests.

I would also like to acknowledge your commitment and leadership in promoting diversity and equity issues with the NTC and Council. Investment in advancing inclusion and increasing representation is critical to our overall success and credibility as leaders in avian conservation and management. This topic was not an easy one to address, but your efforts to get the conversation started are greatly valued.

On behalf of Council and the technical committees, I thank you again for your contributions. Your efforts are appreciated; we are thankful for your long-standing involvement with the NTC. Your absence from the NTC is already being felt; the impact of your time served will be felt for years to come. I offer you my best wishes on your upcoming endeavors.

Sincerely,

A handwritten signature in black ink, appearing to read "B. Dreher". The signature is fluid and cursive, with a large "B" and "D" and a smaller "reher" following.

Brian Dreher, Chair  
Pacific Flyway Council

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## PACIFIC FLYWAY COUNCIL

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August 25, 2023

Thomas Leeman  
U.S. Fish and Wildlife Service

Dear Thomas,

On behalf of the Pacific Flyway Council (Council) and the Nongame Technical Committee (NTC), I would like to take this opportunity to recognize your contributions to conservation and management of migratory birds in the Pacific Flyway as the U.S. Fish and Wildlife Service NTC Liaison. You have been a valued member of the NTC and your contributions have been substantial. In your role as the Service's liaison, you provided technical expertise, leadership, and coordination of conservation and management efforts focused on shared migratory bird resources across western North America.

Your depth of knowledge and eloquence in explaining Service plans, regulation changes, and leading policy discussions demonstrate the success you found in your liaison role. You served, and still serve, in many capacities within the NTC. Within your liaison role, during your 3 years, you provided outstanding mentoring and coordination for and with partners. Your continued role in developing guidance for common raven management is a true need for the NTC to ensure long term success and coordination. We will miss your levity, good-naturedness, and ability to laugh while navigating complex conservation decision-making processes.

On behalf of Council and the technical committees, I thank you again for your contributions. Your efforts were appreciated, and we are thankful for your involvement with the NTC. Your absence from the NTC liaison role is already deeply felt. I offer you my best wishes on your upcoming endeavors.

Sincerely,

Brian Dreher, Chair  
Pacific Flyway Council

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## PACIFIC FLYWAY COUNCIL

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### **Recommendation 26 — Letter to Oregon State University in Support of the Association of Fish and Wildlife Agencies Multistate Conservation Grant Proposal for Development of a Motus Prioritization Tool**

#### **Recommendation**

The Pacific Flyway Council (Council) recommends sending the attached letter to Dr. Patricia Wohner with Oregon State University in support of their Association of Fish and Wildlife Agencies (AFWA) multistate conservation grant proposal for the development of a Motus prioritization tool in the Pacific Flyway.

#### **Justification**

The Motus network continues to grow in the Pacific Flyway. Understanding migration, stopover ecology, and connectivity across the Flyway and internationally for many priority species is critical to their conservation and management. The Pacific Flyway Nongame Technical Committee (NTC) identified several Motus tasks as priorities, including identifying and prioritizing Motus station locations, as well as developed a crosswalk of priority species that would benefit from Motus-informed research. Spatial prioritization is needed to identify future Motus station locations and strategically target priority species and regions. Researchers from Oregon State University, as well as collaborators with the United States Geological Society and Cornell Lab of Ornithology, propose to develop a multi-species multistate occupancy model to determine co-occurrence of Pacific Flyway priority species using eBird data. This effort will be coordinated with regional and state partners, as well as Partners in Flight Western Motus Initiative. This model can be used to inform Motus station placement across the Pacific Flyway as the Motus network expands. This letter will help Oregon State University secure funding and demonstrate support for the development of this tool by the Pacific Flyway.

#### **Adoption**

Pacific Flyway Nongame Technical Committee  
August 24, 2023

Contact: Shannon Skalos

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Brian Holmes, Chair



Pacific Flyway Council  
August 25, 2023

A handwritten signature in black ink, appearing to read "B. Dreher", written in a cursive style.

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Brian Dreher, Chair

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## PACIFIC FLYWAY COUNCIL

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August 25, 2023

Patricia Wohner, PhD  
Senior Research Associate  
Oregon Cooperative Fish and Wildlife Research Unit  
Department of Fisheries, Wildlife, and Conservation Sciences  
Oregon State University  
Corvallis, Oregon

Dear Dr. Wohner,

The Pacific Flyway Council supports your Association of Fish and Wildlife Agencies multistate conservation grant proposal to develop a prioritization tool for Motus station placement across the Pacific Flyway and wishes to facilitate the success of this project. We understand the Motus network has experienced significant growth in the Pacific Flyway in recent years, through the work of multiple partners, including Partners in Flight Western Working Group. The Motus network is critical in helping to better understand migration, stopover ecology, and connectivity for many priority species. Due to the vast landscapes in the West, the data collected from current Motus detections is not adequate to develop prioritization of Motus station placement. The Pacific Flyway Council, and its associated Nongame Technical Committee, have identified Motus network development and prioritization as a priority. The cost-effective project you are proposing will help address this priority and noted data gaps. Further, this tool will compliment and inform several ongoing state and regional Motus initiatives and coordination efforts to continue growth of the network in the Pacific Flyway, including the Partners in Flight Western Motus Initiative.

We endorse this project, which seeks to inform the prioritization and distribution of Motus station placements while maximizing benefits to multiple priority species where movement data are currently deficient in the Pacific Flyway. Further, we hope you may use this letter to encourage greater support in terms of additional funding and potentially enhance agency and partner organization engagement on this project.

Sincerely,

Brian Dreher, Chair  
Pacific Flyway Council

## **INFORMATIONAL NOTES**

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## PACIFIC FLYWAY COUNCIL

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### Informational Note 1 — Allocation of Captive-reared Trumpeter Swans to Approved Release Sites

In February 2023, Council approved allocation of captive-reared trumpeter swans for release at approved restoration sites. The actual number of cygnets available for release depended upon hatching success during spring 2023.

Following guidelines in the Pacific Flyway Management Plan for Rocky Mountain Population (RMP) trumpeter swans, and as recommended by Council, state leads discussed an equitable allocation of available cygnets in early July 2023.

Wyoming Wetlands Society (WWS) is the primary source of captive-reared trumpeter swans of RMP genetic origin for release at approved sites. During 2023, WWS produced 30 RMP origin cygnets for allocation. The recommended allocation of these cygnets to approved release sites is as follows:

Middle Madison, Montana 8

Teton Basin, Idaho 8

Yellowstone National Park 8

Summer Lake, Oregon ( $\leq 20\%$  of available RMP allocation) 0

Mud Lake, Idaho 0

Big Sandy, Wyoming 6

WWS also produced six cygnets of Pacific Coast Population/mixed origin. As per guidelines in the Plan, these birds cannot be released in Idaho, Montana, or Wyoming, so will go to the Summer Lake, Oregon project.

No other swans are known to be available for allocation 2023, although The Trumpeter Swan Society, The Association of Zoos and Aquariums, and Zoo Idaho have been working together to develop a holding facility in Pocatello, ID at Zoo Idaho, where captive reared cygnets of zoo origin can be held over winter to the yearling age. It is hoped this facility will provide the cygnets a semi-natural setting, along with other measures, to ensure they would be suitable for release as yearlings the following summer. Most of the swans that are likely to pass through this facility are of Pacific Coast or mixed genetic origin, leaving the Summer Lake, Oregon project the only approved site for their release. However, it is likely some of the cygnets will be of RMP origin, potentially adding an additional source of captive reared swans for approved projects in Idaho, Montana, and Wyoming. This facility will likely have yearling swans available for allocation to approved release sites in 2024.

**Adoption**  
Pacific Flyway Study Committee  
August 23, 2023

Contact: Claire Gower



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Adam Behney, Chair

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### Informational Note 2 — Pacific Flyway Nongame Technical Committee 2024 Work Plan

The Pacific Flyway Nongame Technical Committee (NTC) updated its 2024 work plan to reflect status updates and new and completed efforts. Notable changes include: 1) updating the “Peregrine Falcon Status Assessment Review” to complete, 2) updating the “Yellow Billed Cuckoo Survey Implementation/Reporting” to complete as of the end of 2023, 3) adding “Saline Lakes USGS/USFWS Coordination” as a potential activity, and 4) updating “Pursue funding for assessment of migratory pathways and stopovers” as in progress. The updated work plan is attached.

#### Adoption

Pacific Flyway Nongame Technical Committee  
August 24, 2023

Contact: Emily VanWyk

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Brian Holmes, Chair

## Nongame Technical Committee Work Plan

[illegible]

## **SUBCOMMITTEE REPORTS**



## **Western Canada Goose Subcommittee**

Jeff Knetter, Idaho Department of Fish and Game

### Population Status

The population index for the Pacific Flyway Population of western Canada geese is the sum of the total indicated Canada geese from surveys in northeast California, eastern Oregon, eastern Washington, and central British Columbia surveys, in addition to the estimated total Canada geese from the Waterfowl Breeding Population and Habitat Survey in strata 76 and portions of strata 26–29, 41, and 42. In 2023, the population index was 387,033 geese; down 18% from 2022. The 3-year average was 419,906, well above the minimum population objective of 200,000 birds.

### Harvest Information

Canada goose harvest estimates for the 2022–2023 season from the Harvest Information Program (HIP) were: Arizona 1,200; California 32,100; Colorado \*6,200; Idaho 50,100; Montana 23,600; Nevada 4,600; New Mexico \*1,500; Oregon 16,100; Utah 13,700; Washington 24,000; and Wyoming \*200. Harvest estimates preceded by an asterisk were derived from HIP point counts in the Pacific Flyway portions of these states. Overall, the 2022–2023 harvest estimate for Pacific Flyway Population of western Canada geese was 173,200.

### Management Activity

The following management activities were reported for 2023:

In California, 761 Canada geese were banded in northeastern California.

In Idaho, 562 Canada geese were banded, statewide. Additionally, U.S. Department of Agriculture-Wildlife Services conducted three roundups and one egg-oiling project; 246 birds were euthanized, and 19 nests were oiled.

In Oregon, Canada geese were banded, primarily in the Klamath Basin, but data has not yet been compiled.

In Utah, 1,516 Canada geese were banded, primarily along the Wasatch Front.

In Washington, 510 geese were banded in eastern Washington and 140 were banded in western Washington. Staff continue to analyze Canada goose banding data to update the Washington Department of Fish and Wildlife Game Management Plan.

Canada goose mortalities from Highly Pathogenic Avian Influenza (HPAI) were prevalent throughout the Pacific Flyway during fall 2022 and winter 2023; however, no mortalities were detected during spring or summer 2023.

### Research Activity

Kyle Spragens, Wahington Department of Fish and Wildlife, reported the Canadian Wildlife Service captured and banded 450 Canada geese molting off Westham Island during early July. Twenty-five geese were marked with black neck collars with alpha-numeric characters (CXX) and GPS-GSM capabilities. The goal of this effort is to map Canada goose habitat use patterns on the Fraser Delta, in particular interactions with bulrush/sedge marshes, agriculture, parks, and the Vancouver airport. Movement data will also identify any connections with locations outside the Fraser Delta.

## Recommendations

The subcommittee adopted three recommendations:

- The subcommittee recommended approving the management plan for the Pacific Flyway population of western Canada geese.
- The subcommittee recommended no changes to the framework for Canada goose seasons, except to extend the season closure date from January 31 to February 15.
- The subcommittee recommended no changes to the framework for special early Canada and cackling goose seasons.

## Dusky Canada Goose Subcommittee

Brandon Reishus, Oregon Department of Fish and Wildlife

### Population Status

The 2023 total breeding ground index was 9,576 down 27% from last year's estimate. The most recent 3-year (2021-2023) average population management index of 11,824 was 41% below the population objective of 20,000 birds, but well above the 7,500-bird threshold for restrictive regulations per the Pacific Flyway Council management plan (2015). The Alaska Department of Fish and Game (ADFG) did note that survey methodology for the Middleton Island portion of the survey differed this year as transect distance sampling was used instead of the typical nest plot survey.

### Harvest Information

Washington Department of Fish and Wildlife (WDFW) reported one dusky Canada goose was confirmed to have been harvested last season, a minimum estimate of harvest and the Oregon Department of Fish and Wildlife reported no known harvest of dusky Canada geese. Additionally, dusky Canada geese cannot be separated from other populations of Canada geese in the Parts Collection Survey, so there is no way to estimate harvest occurring in Alaska via the Harvest Information Program.

### Management Activity

Alaska Department of Fish and Game (ADFG) conducted a production survey in July on the Copper River Delta (CRD), and photo corrected counts indicated 4,826 adult and 1,892 goslings were observed. This is one of the highest gosling totals encountered in the history of this survey, indicating production may have been excellent in 2023.

The U.S. Forest Service (USFS) distributed a report on nest islands use and success. A total of 380 nest islands were monitored in June 2023; 377 were available for use by dusky Canada geese. Dusky Canada goose nests were found on 139 nest islands, in which 80 (60%) were deemed successful. Maintenance (i.e., landscaping, anchoring, or both) was performed on 114 islands. No additional nest islands were installed in 2023.

The USFWS analyzed available (1996–2023) data from the cooperative state-federal mark-resight survey in the Pacific Flyway for dusky Canada geese to estimate apparent annual survival probabilities and number of geese with a neckband. The best fitting model indicated annual survival probabilities for marked geese varied among three periods: 1997–2000 was 0.646 (SE = 0.013, 95% CI = 0.620–0.671), 2001–2015 was 0.816 (SE = 0.005, 95% CI = 0.806–0.826), and 2016–2022 was 0.779 (SE = 0.021, 95% CI = 0.735–0.818). There was no evidence that annual survival probabilities decreased annually during 2001–2022 ( $P = 0.48$ ) or during the periods 2001–2015 ( $P = 0.80$ ) and 2016–2022 ( $P = 0.44$ ). The estimated number of marked birds in the population during October 2022 was 636 (SE = 15.7, 95% CI = 610–673).

During the course of the mark-resight survey to estimate annual survival this past winter, a group of experienced observers made a concerted effort to estimate the ratio of marked to total birds. The number of geese examined for the presence of a neckband was 16,789 and the average number of marked geese per flock was 1.2. The ratio of total to marked geese was 21.7 geese. Based on the ratio of total to marked geese and the estimated number of marked geese in the population, total abundance of dusky Canada geese was 13,824 (SE = 1,140, 95% CI = 11,590–16,058). This estimate was similar to the management index of 13,156 (SE = 1,151, 95% CI = 10,900–15,411)

from the adjusted breeding surveys in May 2022 on the CRD and Middleton Island considering production and mortality that may occur between June and October when each survey is conducted.

Lastly, 2023 was a scheduled neckbanding year on the CRD and ADFG, the USFS and other partners neckbanded 414 adult dusky Canada geese out of a goal of 600. Very wet conditions and high productivity may have limited the number of failed and non-breeding geese available for capture and only one traditional capture site was used. A second capture occurred at Martin Lake on the east side of the Copper River, the first time dusky geese have been marked in large numbers in this area.

#### Research Activity

None reported

#### Recommendation

The subcommittee adopted two recommendations:

- The subcommittee recommends no change in frameworks directed at dusky Canada geese in the Alaska Season Framework, and
- The subcommittee recommends no change in the frameworks directed at dusky Canada geese in the Pacific Flyway.

## **Minima Cackling Goose Subcommittee**

David Safine, U.S. Fish and Wildlife Service (Alaska Region)

### Population Status

The management index for the minima cackling goose population is the 3-year average projected fall population size which is calculated by multiplying the indicated total bird index from the Yukon-Kuskokwim Delta Coastal Zone Survey (YKDCZS) by an index ratio of 3.42. The index ratio is estimated as the ratio between the indicated total bird index from the YKDCZS and population estimates derived from mark-resight data collected in 1989–2003 and 2011–2013. The 2023 minima cackling goose projected fall population is 160,630 (95% CI: 138,990 - 182,270). The management index (three-year average) is 201,381 birds, 19% below the population objective of 250,000.

If the 3-year average population index is greater than 10% above (275,000) or 10% below (225,000) the objective, regulatory actions should be implemented to regain the objective (Pacific Flyway Council 2016). Per Pacific Flyway Council recommendation, recent reductions in bag limits were implemented during the 2022–2023 hunting season in the primary areas where this subspecies is harvested (parts of Oregon, Washington, and Alaska). Harvest data suggests this restriction was successful in reducing minima harvest in Oregon and Washington. The subcommittee noted the decline in the 2023 population index, but the potential for the population index to be higher in 2024 due to factors including waning avian influenza activity and apparent high productivity on the Yukon Delta in 2023. Given the recent implementation of harvest restrictions and the potential for population index increased in 2024, the subcommittee did not recommend any further regulatory changes at this time. Population status in 2024 will be considered carefully.

### Harvest Information

There is no reliable method to differentiate the various subspecies of cackling geese from the U.S. Fish and Wildlife Service's (USFWS) parts collection survey, and therefore, there is no way to generate an estimate of total minima cackling goose harvest in the Pacific Flyway. However, various state surveys/check stations provide some information about harvest.

Oregon Department of Fish and Wildlife (ODFW) reported an estimated harvest of 14,369 minima cackling geese or 56% of the total goose harvest in the Northwest Oregon Permit Zone in 2022–2023 based on hunter self-classification of geese. Harvest in the previous three seasons was ~21,000–22,000 birds annually. Washington Department of Fish and Wildlife (WDFW) reported an estimated harvest of 1,138 minima cackling geese from Southwest WA, based on preliminary analysis of mandatory harvest report cards (an approximate 20% reduction from the previous year). California Department of Fish and Wildlife reported a harvest of 187 minima cackling geese on state-operated public hunting areas. The Alaska Migratory Bird Co-Management Council Harvest Assessment Program has no updated harvest data since 2019. There is no minima cackling goose specific estimate for fall-winter harvest in Alaska.

### Management Activity

In 2023, the USFWS Yukon Delta National Wildlife Refuge banded 885 cackling geese during helicopter drives in July. This banding effort is funded through the Arctic Goose Joint Venture (AGJV) operational banding project through 2026.

The USFWS Columbia-Pacific Region reported on the issuance of depredation permits and subsequent take of cackling/Canada geese. During 2021-2022, 8 permittees in Oregon were authorized to take up to 140 cackling/Canada geese, and they reported a take of 59 geese.

ODFW reported a significant amount of mortality for juvenile minima cackling geese during fall 2022, likely due to Highly Pathogenic Avian Influenza.

WDFW reported banding 78 minima cackling geese in the Yakima Valley of eastern Washington.

#### Research Activity

Joshua Dooley (USFWS) reported on AGJV Project #134 (Evaluation and improvement of U.S. goose harvest estimates and Lincoln estimator). A final annual report for the project was distributed (see below) and a publication is currently in review.

Dooley, J., P. Doherty, D. Otis, G. White, A. Piaggio. 2022. Arctic Goose Joint Venture Project #134: Evaluation and improvement of U.S. goose harvest estimates. 2022 Progress Report to the Arctic Goose Joint Venture. Unpubl. report for the Arctic Goose Joint Venture, U.S. Fish and Wildlife Service, Vancouver, WA.

#### Recommendations

The subcommittee adopted two recommendations:

- The subcommittee recommends no change to the Alaska season frameworks for Canada and cackling geese.
- The subcommittee recommends no change to the Pacific Flyway regular Canada and cackling goose season frameworks.

## **Taverner's Cackling Goose and Lesser Canada Goose Subcommittee**

Claire Gower, Montana Fish Wildlife and Parks Author Name, Affiliation

### Population Status

The population index for Taverner's cackling geese is the sum of indices from three annual aerial breeding population surveys: the Arctic Coastal Plain (ACP) Survey, the Yukon-Kuskokwim Delta Coastal Zone Survey (YKDCZS), and Strata 9 (YKD Inland), 10 (Seward Peninsula), and 11 (Kotzebue Sound) from the Alaska Waterfowl Breeding Population and Habitat Survey (WBPHS).

In 2023, the indicated total bird index was 29,695 (SE = 4,318, 95% CI = 21,232 – 38,159). The 2023 estimate is 35% below the long-term average 45,571 geese. No population goal has been established for this population.

The population index for lesser Canada geese is the sum of stratum-specific indices from the WBPHS; Strata 1 (Kenai-Susitna), 2 (Nelchina), 3 (Tanana-Kuskokwim), 4 (Yukon Flats), and 12 (Old Crow Flats). An undetermined but small proportion of Canada and cackling geese on the ACP are also believed to be lesser Canada geese, but they are not included in the population index. In 2023, strata 2 was not flown so the total AK-Yukon index for lesser Canada geese is not available for 2023. The most recent estimate is from 2022 where the indicated total bird index was 4,994 (SE = 4,313, 95% CI = 0 – 13,447). The long-term average is 7,488. No population goal has been established for this population.

### Harvest Information

For 2022–2023, Washington reported a statewide harvest estimate of 12,296 from the Harvest Information Program; most harvest was comprised of Taverner's cackling geese, but a small proportion (approximately 1,200) were minima cackling geese. A large proportion of this total harvest comes from the Columbia Basin. Currently, there is no reliable methodology to differentiate lesser Canada goose harvest from the total Canada goose harvest in Washington.

Oregon reported an estimated combined harvest of 2,161 lesser Canada geese and Taverner's cackling geese from the Northwest Permit Zone email survey (self-classified and reported by hunters) during the 2022-2023 season. This represents 8% of the total self-classified harvest.

### Management Activity

None reported.

### Research Activity

A research project, funded in part by the Arctic Goose Joint Venture, titled "Delineating flyway affiliation during winter of cackling geese (*Branta hutchinsii*) breeding on the Arctic Coastal Plain of Alaska" completed its third and final field season for nesting goose captures. The project is being led by USFWS Arctic National Wildlife Refuge (ANWR) staff (Chris Latty and Sadie Ulman) with collaboration from USFWS Migratory Bird Management staff, the states of Alaska, Washington, and Oregon, and the Wildlife Conservation Society.

During winter of 2022-2023, wintering locations were obtained from birds that were marked on the breeding grounds in June/July 2021 and 2022, and all birds wintered in the western portion of the Central Flyway, primarily in Colorado, New Mexico, and Texas. During summer 2023, crews deployed all remaining transmitters on nesting cackling geese females at three study sites: the Canning River Delta, Prudhoe Bay area, and Colville River/Teshkepuk Lake area. Twenty-eight birds were captured on nests and fitted with ~22-30 gram GSM/GPS neck collar

transmitters; seven at the Canning River Delta, seven at Prudhoe Bay, and 14 at the Colville River/Teshkepuk Lake. Most transmitters are expected to be offline until the geese begin to arrive in areas with better cellular coverage in October. All transmitters have now been deployed for this project.

Jason Schamber and Michael Guttery (AK) reported the Alaska Department of Fish and Game, Statewide Waterfowl Program, in collaboration with numerous partners, began capturing lesser Canada and Taverner's cackling geese in 2022 as part of a new research project aimed at gaining a better understanding of the seasonal distributions of these two species. Captured geese were marked with USGS metal leg bands and a sample of birds also received GPS-GSM collars. Given the success of the 2022 pilot project, the effort was expanded in 2023 to include additional capture sites and a larger number of GPS-GSM collars. During March 2023, ADFG staff joined biologists from Washington Department of Fish and Wildlife to capture and band 62 geese in central and eastern Washington, 18 of which also received GPS-GSM collars. During the timeframe from April through July, 321 geese were captured and banded in Alaska at locations including Anchorage, Palmer, Fairbanks, Delta Junction, Teshekpuk Lake, Prudhoe Bay, and Innoko National Wildlife Refuge. Seventy-three (73) geese also received GPS-GSM collars, 12 of which were marked in support of a research project being led by Dr. Chris Latty of Arctic National Wildlife Refuge. Additional marking in Alaska, including deployment of up to 40 additional GPS-GSM collars, is planned for late-summer 2023.

Dan Collins (USFWS Region 2) reported a Central Flyway project on Cackling geese is starting this fall / winter where geese will be marked in TX, OK, KS, CO, and NM. CO and NM and maybe TX panhandle geese have the potential to add to the current project involving the FWS and coastal states. To note 48 units were deployed last year in the Texas panhandle and approximately 110 will be deployed this winter season (25-CO, 15-NM, 10-15-OK, 25-KS, rest in TX). The 48 deployed have not hit the cell network yet, they are awaiting birds' return this fall migration.

### Recommendations

The subcommittee adopted two recommendations:

- The subcommittee recommended no change to the Alaska season framework for the 2023–2024 season.

The subcommittee recommended no change to the Pacific Flyway regular Canada and cackling goose season frameworks for the 2023–2024 season, with the exception to include the framework extension to February 15th.



## **Aleutian Cackling Goose Subcommittee**

David Safine, U.S. Fish and Wildlife Service (Alaska Region)

### Population Status

Based on indirect estimates from mark-resight data, the 2023 population estimate was 212,113 geese (SE = 35,203; 95% CI = 143,114–281,111), and the most recent 3-year average (management index) is 201,010 geese. The management index is 235% above the population objective of 60,000 geese (Sanders 2023).

### Harvest Information

Currently, Aleutian cackling goose tail fans submitted through the Harvest Information Program's parts collection survey cannot be differentiated from other cackling goose tail fans. Therefore, an Aleutian cackling goose specific harvest estimate cannot be calculated from the parts collection survey. The California Department of Fish and Wildlife (CDFW) reported a harvest of 86 Aleutian cackling geese on public hunt areas in 2022-2023. Oregon Department of Fish and Wildlife reported a harvest of 265 Aleutian geese in the Northwest Oregon Permit Zone estimated from hunter self-classification email surveys for the 2022-23 hunting season. Washington Department of Fish and Wildlife reported zero Aleutian geese were detected in the harvest in 2022-2023.

### Management Activity

CDFW reported that 116 geese were marked in California during November 2022. CDFW intends to continue during late October to early November 2023 in the San Joaquin Valley, with a goal of deploying 400 collars. Resight efforts are anticipated to continue during January-March 2024 in California and Oregon.

The Aleutian Goose Working Group (AGWG) continued to meet to address crop depredation issues resulting from increasing Aleutian goose populations in northern California counties (Humboldt and Del Norte). A regulatory revision was developed by the group to be implemented during the 2023-2024 season in California. The new regulations are as follows:

- From ~~November 9~~ October 7 extending for a period of ~~84~~ 77-days (Regular Season) and from February ~~18~~ 12 extending for a period of ~~21~~ 28 days (Late Season). During the Late Season, hunting is only permitted on private lands with the permission of the landowner under provisions Section 2016, Fish and Game Code.

### Research Activity

None reported.

### Recommendations

The subcommittee adopted two recommendations:

- The subcommittee recommends no change to the Alaska season frameworks for Canada and cackling geese.
- The subcommittee recommends no change to the Pacific Flyway regular Canada and cackling goose season frameworks.

## **White-fronted Goose Subcommittee**

Kyle Spragens, Washington Department of Fish and Wildlife

### Population Status

The management index for the Pacific Flyway population of greater white-fronted goose is the three-year average of the fall projected population; the sum of indicated total bird (ITB) indices from the Yukon-Kuskokwim Delta Coastal Zone Survey and Waterfowl Breeding Population and Habitat Survey, with fixed projection (ITB x 3.1648) to approximate fall population size. The 2023 Pacific white-fronted goose projected fall population was 422,372 (95% CL 337,690-507,054) and the management index was 529,850 (95% CL 418,039-641,661); 77% above the current population objective of 300,000.

The 2022 tule greater white-fronted goose estimate in California was 13,029 (95% CL: 657-25,402) with a 3-year average of 12,263; above the 10,000-bird management plan objective.

The most recent 3-year average (2019, 2021) adult Lincoln estimate for midcontinent white-fronted geese was  $2,675,020 \pm 323,319$  (SE; 95% CL = 2,041,315–3,308,725), with 0% of the estimate distribution below the 1.2 million threshold identified in the current version of the Management Plan.

### Harvest Information

Harvest Information Program (HIP) estimates for 2022 harvest of greater white-fronted goose in Pacific Flyway states are as follows: AK-324; AZ-245; CA-44,423; ID-274; MT-405; NV-153; OR-1,121; UT-0; WA-551.

California reported that in 2022–23, 442 white-fronted geese were harvested on public hunt areas. Genetic samples were obtained from 434 geese and were successfully amplified for subspecies determination. From these samples 129 tule geese were confirmed, accounting for 29% of the total greater white-fronted geese sampled.

The most recent three-year average (2020–2022) harvest rate estimate for midcontinent white-fronted geese was  $0.048 \pm 0.004$  [SE]; 95% CL: 0.040–0.055), below the harvest rate threshold, with 0% of the estimate distribution above the 7.5% threshold identified in the current version of the Management Plan.

### Management Activity

California and Oregon plan to continue captures of tule geese in fall 2023 at Summer Lake Wildlife Area and instrument them with VHF radio transmitter and GPS-GSM equipped collars.

The U.S. Fish and Wildlife Service (Service) Migratory Bird Management Program (Alaska Region) banded 1,030 midcontinent white-fronted geese at the Innoko National Wildlife Refuge in early July 2023.

USGS Alaska Science Center staff banded >800 white-fronted geese near Teshekpuk Lake in July 2023.

### Research Activity

In response to a request from the Arctic Goose Joint Venture, a Coordinated Arctic Goose Banding project in Alaska was funded for 2023 – 2026. Biologists from the USGS Alaska Science Center, USFWS Yukon Delta National Wildlife Refuge and Migratory Bird Management, Colorado State University, Bureau of Land Management, North Slope Borough, and Alaska Department of Fish

and Game will now meet annually to coordinate banding needs of Alaska and North American Flyway Councils and determine progress on the use of banding data for goose management plans. Through this effort, banding efforts on the Yukon Delta National Wildlife Refuge (for Black Brant and Cackling Canada geese), Innoko Wildlife Refuge (for Greater White-fronted geese), and the North Slope of Alaska (for Black Brant, Greater White-fronted geese, and Lesser Snow geese).

#### Recommendations

The subcommittee adopted two recommendations:

- The subcommittee recommends no change to the Alaska season frameworks for white-fronted geese.
- The subcommittee recommends no change to the goose season frameworks for white-fronted geese in the Pacific Flyway.

**Project Update  
Tule Greater White-fronted Geese  
August 2023**

Caroline Brady and Melanie Weaver, California Department of Fish and Wildlife

***Capture and marking***

In September 2022, 39 Tule geese were captured and 21 were marked with VHF radio collars and 11 were marked with GSM transmitter collars at Summer Lake Wildlife Management Area (WMA), Oregon.

***Telemetry***

The initial search list included 20 collars from previous years including cohorts from: 2018= 1, 2019 = 9, and 2021 = 10. Searches for radio-collared birds were conducted from the fall through spring via ground and aerial telemetry in the Summer Lake Basin, Klamath Basin, Sacramento Valley, and the Suisun Marsh. In total, 26 individuals were detected at least once between October 2022 and March 2023; of those, three were old radios (i.e., marked pre-2020). A total of 96 telemetry detections were made over this period; birds from 2019 comprised 4% of detections, 2021 was 15%, and those marked in 2022 made up 81% of total detections.

***Radio-marked geese availability***

<b>Year Marked</b>	<b>Total Marked (Sept only)</b>	<b>Available for Winter</b>	<b>Available for AK (survived hunt season)</b>	<b>Detected AK</b>	<b>Detected Fall #2</b>
2003	48	47	38	33	34
2004	26	23	17	14	12
2005	25	25	25	23	23
2006	51	44	39	31	33
2007	32	32	26	17	21
2008	24	24	20	13	9
2009	30	30	26	24	18
2010	32	31	30	25	22
2011	17	16	14	14	13
2012	21	21	20	15	11
2013	26	26	17	14	12
2014	30	30	23	17	20
2015	25	23	21	21	17
2016	22	22	20	16	18
2017	18	18	16	9	11
2018	20	18	15	11	8
2019	34	30	30	23	NA
2020	NA	NA	NA	NA	NA
2021	13	12	11	9	11
2022	21	21	20	11	NA

### ***Winter distribution***

From October 2022 to March 2023, there was a total of 96 telemetry detections made throughout the Sacramento Valley, Suisun Marsh, Summer Lake Wildlife Area, and Washington; no geese were detected in the Klamath Basin. For the Sacramento Valley radio-marked geese used traditional areas including the Sacramento NWR Complex, rice fields, private duck clubs and Suisun Marsh. There was a total of 40 telemetry detections made here; 15% of which were at Delevan NWR, 15% at Colusa NWR, 5% at Sacramento NWR, 1% at Grizzly Island Wildlife Area, 5% in the West Sac Valley but off refuge, and 1% in the Lurline Sink. A single tule goose detection was made at the Willapa NWR in Washington State in October 2022. Telemetry searches in the Summer Lake Basin and Warner Valley occurred in February and March; geese were only detected at Summer Lake Wildlife Area (55 detections).

### ***Migration timing and departure of geese***

*Fall* — The earliest detections were made in Washington State at the Willapa NWR in October 2022; 18 marked birds were picked up in the SONEC (Summer Lake WA) region at that time. In the Sacramento Valley, no birds were detected in October; the first radio-marked bird was found on 14 November 2022 on the Colusa NWR. By November 21 2022 an additional five radio-marked geese were detected in the Sacramento Valley (Colusa NWR = 2, Delevan NWR = 1, Sacramento NWR = 1, West Sacramento Valley = 1), four of which were marked in 2022, and one in 2019 at SLWA. Two additional birds were detected through December; both were captured and marked at SLWA in 2021 and 2022.

*Spring* — On 9 February 2023, two individuals were first heard at SLWA during spring migration, which increased to 12 individuals by 27 February.

### ***Radio-marked detections after hunt season (10 March) and Alaska.***

Considering detections made through 30 March and radio life, 20 radios were considered available in Alaska for summer 2023 telemetry by Alaska Department of Fish and Game and U.S. Fish and Wildlife Service. On the 24 and 25 May 2023, the Alaska Department of Fish and Game conducted two aerial telemetry flights in the Susitna Valley, 15 birds were detected (2019 = 1, 2021 = 3, 2022 = 11). On 11 July 2023, the U.S. Fish and Wildlife Service conducted one telemetry flight at Yukon Delta NWR; of the 14 birds detected in the Cook Inlet, five were found on the YDNWR (2022 = 7, 2021 = 5, 2019 = 2).

### ***Known mortalities***

Sixteen recoveries were reported as shot or found dead between July 2022 and July 2023.

*All known mortalities of radio-marked and leg band  
Tule white-fronted geese, 1 July 2022 to 1 July 2023.*

Location	Youth Hunt	Hunting Season Mortalities	Other Mortality	Total Mortalities
Alaska	0	0	1	1
Summer Lake, OR	0	1	1	2
Umatilla, OR	0	0	1	1
Northeastern, CA	0	0	1	1
Sacramento Valley, CA	0	9	0	9
Suisun Marsh, CA	0	1	1	2

### **2022-23 Check Station Harvest Assessment**

Since 1999 CDFW check station staff have used bill measurements of greater white fronted geese to determine subspecies on Sacramento, Delevan, and Colusa NWR's and Grizzly Island Wildlife Area. During the 2020-21 season, a new process was developed by the Genetics Research Unit of the Wildlife Health Lab to differentiate subspecies. This cost-effective genetic approach uses a panel of 83 single nucleotide polymorphisms (SNPs) optimized to discern between Tule and Pacific GWFG, addressing field staff inaccuracies and expediting the sampling process. In 2022–23, 442 white-fronted geese were harvested on these areas. Of these, genetic samples were obtained for 438 geese (99%), and 434 were successfully amplified and subspecies determined; 129 tule geese were harvested across the four check stations, 29% of the total greater white fronted geese sampled.

### **Summary of Subspecies determination across Sacramento NWR, Delevan NWR, Colusa NWR, and Grizzly Island WA.**

Location	<i>n</i>	Tule	Tule admixed	Pacific	Pacific admixed	Admixed	Proportion Tule	Missing Data*
Sacramento NWR	183	39	1	123	13	5	0.21	2
Delevan NWR	135	43	1	82	7	0	0.32	2
Colusa NWR	49	17	1	30	1	0	0.35	0
Grizzly Island WA	71	30	5	29	6	1	0.42	0
Total	438	129	8	264	27	6	0.29	4

\* Resulting from poor DNA quality ( $n = 2$ ) or no sample present ( $n = 2$ ). No subspecies determination possible. Listed as N/A in Table 3

### **Population estimates**

Four observers conducted ground surveys during two sampling periods for developing an indirect estimate of population size in mid-November and mid-December 2022. Population estimates are derived using the mean ratio of all flock observations multiplied by the number of marks available in the population. The following estimates are published in the forthcoming peer reviewed manuscript: Yparraguirre, D. R., Sanders, T. A., Weaver, M. A., and D. A. Skalos. 2020. Abundance of Tule geese *Anser albifrons elgasi* in the Pacific Flyway 2003 – 2019. *Wildfowl* Vol. 70 xx – xx.

***Tule white-fronted goose population estimates (N), confidence intervals (L95, U95) and coefficient of variation (CV) from mark-resight study 2003-current.***

Season	N	L95	U95	CV
2003	17,536	10,863	24,209	0.19
2004	9,115	3,848	14,381	0.29
2005	15,071	2,968	27,175	0.41
2006	33,342	11,997	54,686	0.33
2007	16,639	9,726	23,552	0.21
2008	11,038	5,818	16,258	0.24
2009	13,425	7,452	19,399	0.23
2010	17,002	7,990	26,015	0.27
2011	11,934	7,497	16,370	0.19
2012	16,265	6,924	25,606	0.29
2013	10,975	4,536	17,414	0.30
2014	8,940	4,287	13,593	0.27
2015	9,667	5,943	13,391	0.20
2016	18,445	8,436	28,453	0.28
2017	17,123	8,994	25,252	0.24
2018	6,992	3,939	10,045	0.22
2019	16,448	6,785	26,111	0.30
2021	11,713	687	22,739	0.48
2022	13,029	736	25,232	0.48

***Trapping and marking plans for 2023***

Thirty radio collars were purchased by ODFW and deployment attempts will be made September 2023 at Summer Lake Wildlife Management Area (WMA), Oregon.

***Telemetry and mark:resight surveys***

Searches will continue in 2023–24 for radio-collared birds in the Summer Lake Basin (ODFW), Klamath Basin (USFWS), Sacramento Valley (CDFW), the Suisun Marsh (CDFW). Two sampling periods are planned to obtain ratios of marked to unmarked birds during mid-November and mid-December.

***Acknowledgements***

The assistance from many individuals from agencies throughout the Flyway is sincerely appreciated.

***Alaska***

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### *Oregon*

Brandon Reishus (ODFW), Jared Sisemore (ODFW), Marty St Louis (ODFW), Kelly Walton (ODFW)

### *California*

John Beckstrand (USFWS), Mike Breiling (CDFW), Mike Carpenter (USFWS), Jennifer Isola (USFWS), Andrea Mott (USGS), Gavin Woelfel (CDFW)

### *Washington*

Steve Olson (USFWS), Todd Sanders (USFWS)

### ***Citations:***

Ahrens, K., Buchalski, M., Skalos, D., Weaver, M. 2021. Single nucleotide polymorphisms used for genetic stock identification of Greater White-fronted Geese (*Anser albifrons*) subspecies wintering in California. Tech. Rep. Sacramento, CA: California Department of Fish and Wildlife, Wildlife Genetics Research Unit; pp. 36.

Orthmeyer D. L., Takekawa J. Y., Ely C. R., Wege M. L., & Newton W. E. 1995. Morphological differences in Pacific Coast populations of greater white-fronted geese. Condor, 97, 123–132.

Sanders, T.A. & Trost, R.E. 2013. Use of capture recapture models with mark-resight data to estimate Aleutian Cackling Geese. Journal of Wildlife Management 77: 1459–1471.

Yparraguirre, D. R., Sanders, T. A., Weaver, M. A., and D. A. Skalos. 2020. Abundance of Tule geese *Anser albifrons* elgasi in the Pacific Flyway 2003 – 2019. Wildfowl Vol. 70 30-56.

## **Pacific Brant Subcommittee**

Brandon Reishus, Oregon Department of Fish and Wildlife

### Population Status

The management index for the Pacific population of brant is the 3-year average of the total count from the Pacific Flyway Winter Brant Survey (WBS), the sum of wintering brant counted along the Pacific Coast from Mexico to Alaska (Pacific Flyway Council 2018). The 2023 WBS indicated 119,888 brant, down 24% from 2022, resulting in a 3-year average of 143,052 brant (2021-2023).

Additionally, the fall brant ocular survey occurring at the Izembek Lagoon Complex estimated 156,830 brant were present at Izembek in early fall 2022.

### Harvest Information

The 2022 Harvest Information Program estimates were: California 600; Oregon 0; Washington 100; Alaska 1,700; for a Pacific Flyway (including Alaska) total 2,400 brant.

Additionally, Alaska reported on their efforts to conduct a state administered survey. They obtained all available email addresses (~1,500) for individuals who purchased an Alaska duck stamp and indicated that they planned to hunt brant during the 2022-23 waterfowl hunting season. A link to an email survey, along with text explaining the purpose of the survey were sent to all hunters. Response rate was on par with expectations (~25%). They used a Bayesian MCMC engine to estimate probabilities and averages in an integrated analysis which also allowed us to calculate derived estimates of total harvest, total wounding loss, and total harvest related mortality along with 95% credible intervals by propagating errors from the respective posterior distributions of the estimated quantities. They used appropriate statistical distributions for all calculations and used uninformative priors throughout. Sport harvest was estimated at 3,721 brant (95% BCI = 2,879 – 4,781). Total harvest related mortality (sport harvest + wounding loss) for brant was estimated at 3,935 birds (95% BCI = 3,061 to 5,022).

Last, Washington reported their state led harvest monitoring for brant this past season indicated 236 were harvested. Washington also noted that their northern brant hunting zone was closed during the past season, as aerial surveys did not detect enough brant to hold a season under Washington's season guidelines.

### Management Activity

Yukon Delta NWR staff reported apparent good production for brant on the Yukon-Kuskokwim Delta was 86% this summer and approximately 1,200 brant were banded during efforts in July.

USFWS – Alaska Region reported on the photographic survey of Pacific brant at Izembek Lagoon, Alaska that was initiated in 2017 with USGS-Alaska Science Center leading the design, analysis, and publication, and USFWS-Migratory Bird Management Alaska Region (MBM Alaska) leading data collection. The objectives of the photographic survey were to 1) improve population estimation by reducing bias associated with flock size estimation, double counting, and misidentification; 2) increase efficiency by developing a machine learning algorithm based on annotated aerial images; 3) develop a repeatable survey design to estimate population size with a measure of precision; and 4) compare estimates derived from photographic versus low-level ocular surveys. The objectives of the project were satisfied and recently published in:

Weiser, E.L., Flint, P.L., Marks, D.K., Shults, B.S., Wilson, H.M., Thompson, S.J., Fischer, J.B., 2022, Counts of birds in aerial photos from fall waterfowl surveys, Izembek Lagoon,

With the completion of the project objectives, the Alaska Science Center is transitioning the project to MBM Alaska to conduct all phases of the project including design and analysis. MBM Alaska is currently preparing for the 2023 survey, with a goal of 3 replicates in mid-October (presence of all components of the population) on dates that correspond with low tides during daylight hours. Best window for 2023 predicted Oct 7-14. MBM Alaska is requesting input from the Study Committee on the spatial coverage of the photographic survey. With transition to an operational photo survey in the fall at Izembek, the ocular survey will no longer be conducted.

Additionally, USFWS-Alaska Region indicated the 2024 winter survey at Izembek may be the last time this survey is conducted. If so, 2025 and beyond WBS indices would become incomplete, and not useful as a management index for brant. While the Council could likely transition to using the fall photographic survey from Izembek as a management index, winter distribution information would be lost. More discussion on this topic will occur at the Flyway's winter/spring meetings.

Since 1963, the U.S. Fish and Wildlife Service has conducted surveys in the fall to record the number of juvenile and adult Pacific black brant geese at Izembek National Wildlife Refuge, Alaska. These surveys yield an estimate of age ratio (number of juvenile birds compared to total birds seen) for the overall population of Pacific black brant. This fall age ratio estimate is the only measure of annual productivity for the entire population and an important piece of information for management agencies. USGS Alaska Science Center scientists worked with the U.S. Fish and Wildlife Service to release the data and model-based age ratio estimates through 2022. This information is available at <https://doi.org/10.5066/P9QIJIU2> and will be updated annually into the future to provide up-to-date information

### Research Activity

California reported on the brant work that is currently funded by their state duck stamp funds. Those activities are:

1. Collect reference tissue samples of breeding black brant from the Yukon-Kuskokwim Delta (YKD) and Arctic Coastal Plain (ACP);
2. Use double-digest restriction site-associated DNA sequencing (ddRAD-seq) on reference tissue samples to isolate single nucleotide polymorphism (SNPs) on the black brant genome;
3. Collect tissue samples from harvested black brant from Humboldt Bay; and
4. Determine breeding location of black brant harvested from Humboldt Bay to generate a set of distinguishable genetic groups of black brant on the west coast.

USGS Continues Goose Work on the North Slope of Alaska: USGS Alaska Science Center conducted late summer mark-recapture banding on the Colville River Delta and areas in the National Petroleum Reserve-Alaska, in coordination with the BLM Arctic Office, USGS Western Ecological Research Center, and USFWS Migratory Bird Management. In addition to other species, these studies focus on marking black brant with GPS transmitters for monitoring the response of molting black brant to helicopter disturbance and for informing BOEM on brant migration corridors in coastal California. Approximately 80 brant have been marked with transmitters and an additional 2,000 marked with leg bands as part of this research.

USGS Continues Monitoring of Eelgrass at Izembek National Wildlife Refuge: The USGS Alaska Science Center recently completed another annual assessment of eelgrass biomass and extent at Izembek Lagoon, Alaska. Reports and data from this and other eelgrass surveys in Alaska can be found here: [www.usgs.gov/centers/alaska-science-center/science/eelgrass](http://www.usgs.gov/centers/alaska-science-center/science/eelgrass)

#### Recommendations

The subcommittee adopted one recommendation:

- The subcommittee recommended the 2024–2025 brant season frameworks for Alaska, California, Oregon, and Washington be determined based on the harvest strategy in the Council management plan for the Pacific population of brant, pending results of the 2024 Winter Brant Survey (WBS). If results of the 2024 WBS are not available, results of the most recent WBS should be used.

## **Emperor Goose Subcommittee**

David Safine, U.S. Fish and Wildlife Service (Alaska Region)

### Population Status

The management index for emperor geese is based on the indicated total bird index (index) from the Yukon-Kuskokwim Delta Coastal Zone Survey in the previous year. The 2023 index was 24,349 (95% CI 21,446 - 27,251) emperor geese on the breeding grounds, which is consistent with a quota of up to 500 birds for the 2024-2025 fall-winter season as specified in the Pacific Flyway Council (Council) management plan for emperor geese.

### Harvest Information

The 2022–2023 fall-winter hunt was administered by the Alaska Department of Fish and Game (ADFG) using a registration permit system across seven hunt areas with a statewide harvest quota of 500 birds. The hunt was open to both Alaska residents and non-residents. Registration permits were issued to 465 residents and 25 nonresidents. Resident hunters reported harvesting 114 emperor geese and nonresidents reported harvesting 20 emperor geese, for a total reported harvest of 134 geese.

The Alaska Migratory Bird Co-Management Council (AMBCC) Harvest Assessment Program's most recent harvest estimate was from 2019.

### Management Activity

The 2023 spring-summer subsistence hunt began 2 April and will close on 31 August. The 2023–2024 fall-winter hunt will begin on 1 September in four of seven hunt areas and will begin in October in the remaining hunt areas with a statewide quota of 500 total birds. The ADFG will use the same allocation of the 500-bird quota among the seven hunt areas that was developed in consultation with the AMBCC in 2020.

The AMBCC emperor goose management committee (Committee) met on 1 and 15 August to discuss population status and regulations for the 2024 spring-summer season. The 2023 population index was consistent with the consideration of conservation measures within an open season for 2024. The Committee initially considered no change to the regulations for 2024, but wanted to hear from the Yukon-Kuskowkim Delta Region after their Waterfowl Conservation Committee (WCC) meeting. On 8 August, the WCC proposed a statewide 10-day season length reduction for both the spring-summer and fall-winter seasons. The Committee subsequently recommended this conservation measure to the AMBCC Executive Committee, but acknowledged a lack of consensus among the six regions that harvest emperor geese. Because of the lack of regional consensus, the Executive Committee decided to recommend no action on the recommended conservation measure (10-day season length reduction) for the 2024 seasons. Therefore, by default, the 2024 spring-summer season regulations for emperor geese will remain unchanged from the 2023 season (i.e., maintain the current egg harvest closure and education and outreach activities).

As the terms of the emperor goose management plans have expired, the AMBCC and Council subcommittees met several times between November 2022 and March 2023 to continue discussions of possible revisions to elements of the two management plans. The subcommittees plan to reconvene in fall 2023 to continue the management plan revision process.

### Research Activity

Bryan Daniels (USFWS Yukon Delta National Wildlife Refuge) reported that nest effort of all geese appeared high in 2023, and apparent nest success of emperor geese on Kigigak Island was 87%. The field crew recorded 125 band re-sights of emperor geese and captured and banded 61 nesting females to estimate survival, which is calculated to be declining since 2016 (survival from 2017-2023 was 74%). 14 Argos backpacks were deployed on nesting female emperor geese to determine seasonal survival and brood movements/habitat use. 109 Motus powertags were deployed on gosling emperor geese to determine seasonal survival and movements.

Tyler Lewis (ADFG) reported they continued a multi-year study tracking movements, habitat use, and survival of emperor geese using satellite telemetry. This past winter ADFG conducted capture trips to Shemya Island, in the far western Aleutian Islands, and Kodiak Island during January and February 2023, respectively. Emperor Geese were captured at roosting and feeding locations using rocket nets and implanted with satellite transmitters (PTTs). A total of 14 adult females and 10 juveniles (<1 year old) received PTTs, which are programmed to transmit location and survival data for three to four years. In total, ADFG has marked 124 adult females and 40 juveniles with satellite transmitters over the last five years. In addition, ADFG launched a new research project during summer 2023 to better understand effects of internal PTTs on reproductive biology of Emperor Geese. Specifically, ADFG biologists visited nesting sites of adult females to ascertain effects of implanted PTTs on egg morphology, clutch size, and timing of breeding. Biologists found 16 nests from implanted females, and early indications suggest a reduction in clutch size and little or no effect on egg morphology.

Liliana Naves (ADFG) reported the completion of four projects conducted by ADFG Division of Subsistence addressing topics related to emperor goose harvest management. The intent of these projects was to help inform the revision/update of the Emperor Goose management plans. Below are citations for the final publications:

Naves LC and Mengak LF (2023) Bird and egg harvest on the Aleutian-Pribilof Islands and Kodiak Archipelago, 2020. ADF&G Division of Subsistence Technical Paper No. 493. <http://www.adfg.alaska.gov/techpap/TP493.pdf>

Naves LC, Schamber JL, Mengak LF, Keating JM, & Fall JA (2023) Emperor goose fall–winter harvest monitoring and hunter's perspectives in Alaska. *Conservation Science and Practice*, e12928. <http://doi.org/10.1111/csp2.12928>

Mengak LF, Naves LC, & Schamber JL (2022) Survival estimates and hunter outreach are priorities for the collaborative harvest management of Emperor Goose in Alaska. *Ornithological Applications* 124(4), duac036. <https://doi.org/10.1093/ornithapp/duac036>

Naves LC, Mengak LF, & Fall JA (In Prep) Integrating traditional and scientific knowledge and perspectives for collaborative harvest management of Emperor Goose in Alaska. Draft manuscript at internal review stage.

### Recommendations

The subcommittee adopted one recommendation:

- The subcommittee recommends no change to the Alaska season frameworks for emperor geese for the 2024-2025 season.

## **White Goose Subcommittee**

Melanie Weaver, California Department of Fish and Wildlife

### Population Status

The Pacific Flyway winter white goose survey was conducted in December 2022. The most recent index of overall abundance was 1,269,628 white geese wintering in California, Oregon, and Washington. The current 3-year average is 1,346,198, down from the previous 3-year average of 1,456,202.

### Harvest Information

The 2022 Pacific Flyway snow goose harvest estimate from the Harvest Information Program (HIP) was 107,388 snow geese and 38,426 Ross' geese. HIP estimates for both Snow and Ross' geese may not be accurate as the ability to distinguish between the two species has decreased over time.

### Management Activity

Alaska Biological Research, Inc. (ABR) surveyed brant colonies on the Ikpikpuk River Delta to obtain a photo census and nest fate of snow geese and brant . ABR also conducted brood surveys for brant and snow geese in the Ikpikpuk River Delta area. ABR and the North Slope Borough were unable to conduct banding of brant and snow geese because of budget shortfalls.

USGS continues to mark Snow and Ross' geese with GSM transmitters in both California and Washington.

USGS Alaska Science Center conducted late summer mark-recapture banding on the Colville River Delta, this work focused on monitoring the growth of the lesser snow goose population on the Colville River Delta.

### Research Activity

Ongoing work by Josh Dooley and Mitch Weegman to develop an integrated population model (IPM) for Pacific Flyway light geese (Wrangel Island and Western Arctic lesser snow geese).

### Recommendations

The subcommittee adopted two recommendations:

- The subcommittee recommended no change to the regular goose season framework for white geese.
- The subcommittee recommended no change to the Alaska season frameworks for white geese.

## Rocky Mountain Population Trumpeter Swan Subcommittee

Russell Woolstenhulme, Nevada Department of Wildlife

### Population Status

The U.S. Fish and Wildlife Service (USFWS), reported the most recent survey of the U.S. breeding segment of Rocky Mountain Population (RMP) trumpeter swans was conducted during September 2022. The survey includes data from the tri-state region (Idaho, Montana, and Wyoming) and restoration flocks (Montana [Blackfoot valley], Nevada, and Oregon). Fall survey data were used to monitor the total number of white birds and cygnets fledged in relation to flyway management plan objectives.

Observers counted 940 swans (white birds and cygnets) in the U.S. Breeding Segment for RMP trumpeter swans during fall of 2022, which was a 1.8% increase from last year's count (923).

The number of white birds in the Greater Yellowstone Area (473) was an 8.2% increase from last year's count of 437. The total number of cygnets decreased 8.8%, from 91 in 2021 to 83 in 2022.

Twenty-seven white birds were observed at the Summer Lake Wildlife Management Area (WMA) and vicinity, which was a decrease of 11% from last year's count of 30, and two white birds were observed at Malheur National Wildlife Refuge (NWR); Ruby Lake NWR, Nevada observed no white birds.

Dave Olsen, USFWS, reported beginning with the September 2023 count, swans counted in the Blackfoot Valley, Montana will be added to the total US breeding segment of the RMP Trumpeter Swan annual count. This project reached nesting pair goals and project completion in 2022. While not included in the total count for 2022. The Blackfoot Valley, Montana survey in 2022 observed 20 nesting pairs and 98 total swans.

### Harvest Information

Results from the 2022–2023 swan hunting seasons are listed below by state. A total of 43 trumpeter swans were harvested during the past season, representing 3% of the overall swan harvest in the RMP. A number of feather samples were collected from harvested trumpeter swans in all states reporting harvest. These feather samples will be used to determine the summer origins for these birds through isotope analysis.

Idaho	9 tundra swans / 2 trumpeter swans
Montana	201 tundra swans / 19 trumpeter swans
Nevada	148 tundra swans / 1 trumpeter swans
Utah	864 tundra swans / 21 trumpeter swans; the season was closed early due to meeting, and subsequently exceeding, the trumpeter swan quota.

### Management Activity

Twenty-two captive-reared trumpeter swans were released from the Wyoming Wetlands Society at the following restoration areas in 2022:

Teton Basin, Idaho	6 cygnets
Middle Madison, Montana	4 cygnets, 2 yearlings
Summer Lake, Oregon	4 cygnets



Yellowstone National Park      6 cygnets

It was proposed that during the next work meeting, the subcommittee will review restoration project accomplishments in relation to the goals and strategies outlined in the RMP Trumpeter swan Management Plan. Oregon is investigating the Upper Klamath Basin as an expansion location for Trumpeter swan restoration.

In February 2023, Council approved the allocation of captive-reared trumpeter swans for release at approved restoration sites. The actual number of cygnets available for release depended upon hatching success during spring 2023. Following guidelines in the Pacific Flyway Management Plan for RMP trumpeter swans, and as recommended by Council, state leads discussed an equitable allocation of available cygnets in early July 2023.

WWS also has six cygnets of Pacific Coast Population Origin. Per the Management Plan, these birds can only be released in Oregon, so will go to the Summer Lake, Oregon project.

#### Research Activity

Trumpeter swan feather isotope analysis by Todd Katzner, U.S. Geological Service, continued in 2023. Data collection has completed and analysis and write up continues with results anticipated in early 2024.

Idaho plans to tag four of this year's restoration Trumpeter swans with GSM transmitters to garner additional survival and distribution information. Oregon received grant funds from the Trumpeter Swan Society to purchase 14 GSM transmitters for use on Trumpeter swans during the past year. Of those, seven transmitters were installed on swans at Malheur National Wildlife Refuge, and five were installed at Summer Lake.

#### Recommendations

The RMP Trumpeter swan sub-committee recommended no change to the season framework for swans in the Pacific Flyway except:

- to grant the experimental swan season in northern Idaho operational status; and
- to increase the number of swan permits from 650 to 750 in Nevada.

## **Pacific Coast Population Trumpeter Swan Subcommittee**

Kyle Spragens, Washington Department of Fish and Wildlife

### Population Status

The North American Trumpeter Swan Survey (NATSS), conducted by cooperators throughout Canada and the northern United States approximately every five years since 1968 to assess abundance, productivity, and distribution of breeding trumpeter swans (*Cygnus buccinator*) was discontinued ahead of the summer 2020 scheduled survey period. However, swan data has been collected as part of the annual Waterfowl Breeding Population and Habitat Survey (WBPHS) that may lend itself to providing an alternative index for the Alaska breeding portion of the Pacific Coast Population. The proposed alternative uses WBPHS strata 1 (Kenai-Susitna), 2 (Nelchina), 3 (Tanana-Kuskokwim), 4 (Yukon Flats), 6 (Koyukuk), and 7 (Copper River Delta). A preliminary analysis based upon these WBPHS strata indicates a 2022 estimate of 17,878 (3,127 SE) total swans, a 3-year average of 17,392 (3,354 SE), and a long-term average of 14,703 over the time series of this data set that spans 1984 to 2022, when all six strata have available survey data. The 2023 WBPHS survey was considered incomplete and reporting values would not be comparable as stratum-2 was not able to be flown, however of strata completed all showed lower counts compared to 2022. No evaluation has been made between the current management plan's objective and a potential new objective based on this proposed index, but this will be reviewed during the next winter work meeting for this subcommittee.

During 2022-23, Washington's Winter Swan Survey, focused on the North Puget Lowlands region, recorded a total of 11,660 trumpeter swans with 7.5% juveniles in the flocks, plus additional unclassified swans. An additional 801 (736 adult, 65 juvenile) trumpeter swans were identified in the Sumas Prairie, British Columbia. These are considered minimum counts.

### Harvest Information

The Pacific Coast Population of trumpeter swans is not subject to sport or subsistence harvest.

### Management Activity

Washington Department of Fish and Wildlife (WDFW) reported that during the 2022-2023 winter, 310 trumpeter swan mortalities were recorded. Of these 310 birds, a minimum of 37 were caused by lead poisoning, with 25 individuals collected as feather piles and additional 85 birds where no determination could be made. WDFW, in partnership with Puget Sound Energy, Snohomish Public Utilities District, Northwest Swan Conservation Association, Whatcom Humane Society, and Canadian Wildlife Service will continue response and monitoring of this chronic issue in northwestern Washington.

The subcommittee is considering revising the current management plan into a status review as a population objective is not being used to inform management decisions, but this will be an item for the winter work meeting.

### Research Activity

None reported.

### Recommendations

The subcommittee adopted no recommendations.

## **Eastern Tundra Swan Subcommittee**

Jason Schamber, Alaska Department of Fish and Game

### Population Status

The management index for the Eastern Population (EP) of tundra swans is the 3-year average of the Mid-winter Waterfowl Survey in the Atlantic (AF) and Mississippi flyways, and Ontario Canada. In 2023, a total of 137,781 swans were counted during the survey; 44% higher than the count of 95,730 swans reported in 2022. The 3-year average mid-winter index was 106,730; above the Management Plan population objective of 80,000 swans, but below the 110,000-swan threshold that allows for 12,000 permits to be issued for the 2024–2025 season.

Tundra swans breeding east of Point Hope and across the Alaska Arctic Coastal Plain (ACP) belong to the EP (versus the Western Population of tundra swans), as they winter principally in the AF from New Jersey to South Carolina. Since 1986, tundra swans nesting on the ACP have been monitored via a breeding pair survey. The 2023 total bird index from the ACP survey was 15,634 (95% CI: 11,633 – 19,636); 4% above the long-term (2007–2023) average of 15,047 birds.

### Harvest Information

There is not a permitted fall-winter harvest of EP tundra swans in Alaska.

The spring-summer subsistence harvest has not been monitored via a harvest survey since 2019. The estimated mean subsistence harvest of swans in the ACP region of Alaska (likely EP swans) was 116 swans and 172 eggs from 2016–2019.

The total harvest in the AF and Central Flyway (CF) in 2021 was 3,046 swans: DE (35), NC (2,389), VA (133), MT (87), ND (316), and SD (86).

### Management Activity

None reported in the Pacific Flyway.

No change in the number of EP swan permits (no more than 5,600 in AF and 4,000 in CF) is allowed for the 2024-2025 season: DE (347), NC (4,721), VA (532), MT (500), ND (2,200), SD (1,300).

DE will implement operational status for their swan hunt in the 2023-24 season.

### Research Activity

None reported.

### Recommendations

The subcommittee adopted no recommendation(s).

## **Western Tundra Swan Subcommittee**

Jeffrey Knetter, Idaho Department of Fish and Game

### Population Status

The status of Western Population (WP) tundra swans is measured using a 3-year average of the breeding ground index, which includes the combined total bird indices from the Waterfowl Breeding Population and Habitat Survey (Strata 8, 9, 10, and 11) and the Yukon Kuskokwim Delta Coastal Zone Survey (Pacific Flyway Council 2017).

The 2023 breeding ground index was 72,643 (95% CI: 54,944–90,341) and the most recent 3-year (2021–2023) average was 97,709 (95% CI: 72,099–123,319) swans, 63% above the management plan objective of 60,000 tundra swans.

During winter 2022–2023, the following states counted tundra swans: California – 37,001; Oregon – 13,732, 475 tundra swans and 11,254 unknown species; Utah 559; Washington 457.

### Harvest Information

Hunting of WP tundra swans is regulated by state-issued permits, which allow for reliable estimates of hunter activity and harvest. Allocation and number of permits within the Pacific Flyway in 2022–2023 were as follows: Alaska 87; Idaho 50; Montana 500; Nevada 650; and Utah 2,750.

During 2022–2023 seasons, the following harvest was reported: Alaska 24 tundra swans; Idaho 11 swans of which two were trumpeter swans, Montana 220 swans of which 19 were trumpeter swans; Nevada 149 swans of which one was a trumpeter swan; and Utah 885 swans, of which 21 were trumpeter swans. Utah met their trumpeter swan quota and closed their season early for the fourth consecutive year.

### Management Activity

The Idaho Department of Fish and Game (Department) completed an evaluation of a three-year experimental swan hunting season in northern Idaho. Mean annual harvest from 50 permitted swan hunters, as estimated from harvest survey questionnaires collected over the 3 hunting seasons, was 14 tundra swans and 5 trumpeter swans. This level of harvest had negligible impact to the status of Western Population (WP) tundra swans and Rocky Mountain Population (RMP) trumpeter swans. The Department requests the hunting season be granted operational status.

Nevada requests an increase in their number of swan permits from 650 to 750 due to increased interest in swan hunting opportunities. The estimated annual increase in swan harvest in Nevada with 100 additional swan permits is 31, and estimated harvest of trumpeter swans would be negligible. This would be the first increase in swan permits in Nevada since 1983.

The Utah Wildlife Board voted to prohibit the harvest of trumpeter swans in Utah, an action intended to prevent the swan hunting season from closing. Only tundra swan hunting permits will be issued to hunters, and it will be illegal to harvest a trumpeter swan. Hunters will still be required to check in any harvested swans at a Utah Division of Wildlife Resources office. Trumpeter swans will be seized, and the hunters may face a citation.

### Research Activity

The Environmental Protection Agency (EPA) continues a study of Lead (Pb) contaminants at the Bunker Hill Superfund Site in northern Idaho. Releases of Pb from Bunker Hill mining operations

resulted in contamination of 7,000 ha of wetland habitat used by tundra swans during their northward migration. Tundra swans feeding in the contaminated wetlands experience high Pb exposures due to sediment ingestion as they forage for rooted plants. Remediation activities include conversion of agricultural lands to uncontaminated wetlands and water level management practices to reduce time waterfowl spend in contaminated wetlands. To better track remedy effectiveness, EPA initiated a study with the objective to determine the most appropriate long-term monitoring approaches to deploy at Bunker Hill. Colored collars (n=8) were placed on birds to understand how swans interact with wetlands across the site.

Todd Katzner with the U.S. Geological Survey is finalizing his research on the movement ecology of trumpeter swans and stable isotope analyses of feathers collected from hunter-harvested or dead trumpeter and tundra swans. A final report and publication are forthcoming.

### Recommendations

The subcommittee adopted two recommendation(s):

- The subcommittee recommended no changes to the framework for swan seasons, except to grant the experimental swan season in northern Idaho operational status and increase the number of swan permits from 650 to 750 in Nevada.
- The subcommittee recommended no changes to the framework for swan seasons in Alaska.

## **Pacific Coast Band-tailed Pigeon Subcommittee**

Brandon Reishus, Oregon Department of Fish and Wildlife

### Population Status

Pacific Coast band-tailed pigeon population indices are monitored by the mineral site survey (MSS) that was implemented in 2004. Results from the 2023 assessment of the MSS data suggested no significant trend in the median annual count of Pacific Coast band-tailed pigeons observed at mineral sites during the long-term (2004-2023), last ten years (2014-2023) and last five years (2019-2023), indicating no evidence for a change in Pacific Coast band-tailed pigeons over those time periods.

### Harvest Information

Harvest and hunter participation are estimated from the Migratory Bird Harvest Information Program. Preliminary estimates from 2023 indicated total harvest, active hunters, and total hunter days afield for Pacific Coast band-tailed pigeons were 2,900 (95% confidence interval = 2,300–3,400) pigeons, 1,100 hunters, and 2,300 (2,000–2,700) days afield, respectively. Composition of harvest was 27% hatch-year pigeons. The 2022 hunter and harvest estimates are the lowest on record for this population.

Washington noted that their state harvest reporting requirements for band-tailed pigeons indicated hunters took 145 pigeons last season, similar to the HIP estimate of 200.

Oregon noted that 815 people purchased band-tailed pigeon specific HIP permits (required for hunting pigeons) and that HIP indicated approximately 400 hunters actually pursued pigeons in the state last season.

### Management Activity

Washington noted that in addition to the mineral sites they surveyed for the MSS, three additional sites were investigated this year (surveyed and sampled for mineral content). These sites, and one new one that was included in the MSS, were all identified by analysis of movement data from pigeons marked with GPS-GSM transmitters in the past several years in the Olympic Peninsula region.

Oregon noted that after an unusual summer last year, when pigeons caused significant depredations at several commercial blueberry farms, no reports of pigeon depredation were received this year. Field staff indicated that the natural berry crops (elderberry, cascara, etc.) are abundant across the landscape this year, in stark contrast to 2022 when an extremely cool and wet spring delayed or eliminated much of the natural fruit production.

### Research Activity

WDFW began deploying GSM-GPS transmitters on band-tailed pigeons in May 2021. Four primary objectives are targeted with this research, including: 1) to use new this new technology to help in identifying previously unknown mineral sites (by selecting a watershed where no known mineral sites exist), 2) document habitat use and movement patterns through high-resolution location data, 3) document departure dates of Washington-nesting band-tailed pigeon in relation to season dates, and 4) testing new technology on a species that's range is consistently in cellular network range (GSM capability). Through 2023, staff deployed 28 GSM-GPS transmitters on band-tailed pigeons in targeted areas of western Washington, including six this year. Additionally, 162 other pigeons have been marked with standard leg bands. As noted above, at least four new

mineral sites have been identified, with one already incorporated into the MSS. WDFW plans to expand this effort to the east, across Puget Sound, and mark birds in the Skagit area in future years.

Nevada noted they are in the process of purchasing 15-20 GPS-GSM transmitters to mark pigeons in the Sierras, west of Reno. They are currently working to establish capture locations and have leg banded approximately 12 pigeons this year. They are hopeful to begin transmitter deployment next spring. Project goals are similar to those in Washington.

#### Recommendations

The subcommittee adopted one recommendation:

- The subcommittee recommended no change in the season framework for Pacific Coast band-tailed pigeons.

## **Interior Band-tailed Pigeon Subcommittee**

Larisa Harding, PhD., Arizona Game and Fish Department

### Population Status

For the Interior population, the North American Breeding Bird Survey (BBS) indicated a long-term (1968–2022) decline (–2.1% per year, 95% credible interval = –4.6 to –0.5) in abundance, and that there were no trends during the recent 10- and 5-year periods. Caution should be used in interpreting results, particularly for the Interior region, because sample sizes (routes) and pigeon counts per route are low, variances are high, and coverage of habitat by BBS routes is poor. (Seamans 2023).

### Harvest Information

For the Interior band-tailed pigeon, the number of hunters who obtained a special permit was 3068, 5439, and 663 in Colorado, New Mexico, and Utah, respectively. All hunters who obtained a special permit were surveyed. The permit was free, except in Colorado, where the cost was \$5. For Interior band-tailed pigeons during 2022, total harvest, active hunters, and total hunter days afield were 600 (300-900) pigeons, 800 hunters, and 1,400 (1000-1800) days afield, respectively. (Seamans 2023).

Seamans, M. E. 2023. Band-tailed pigeon population status, 2023. U.S. Department of the Interior, Fish and Wildlife Service, Division of Migratory Bird Management, Washington, D.C.

### Management Activity

None Reported

### Research Activity

Collins, D.P., G. Zimmerman, S.A. Carleton, W. Kendall, and C.L. Coxen. 2023. Survival rates of band-tailed pigeons estimated using passive integrated transponder Tags. *Journal of Wildlife Management* 87:e22385. <https://doi.org/10.1002/wmg.22385>.

Ross, B., D.P. Collins, M.A. Boggie, C.A. Coxen, S.A. Carleton, and G. Jones. 2022. Habitat use of conifer forests for interior Band-tailed Pigeons is mediated by precipitation. *Avian Conservation and Ecology* 17(2):32. <https://doi.org/10.5751/ACE-02315-170232>.

### Recommendations

The subcommittee adopted one recommendation:

- The subcommittee recommends no change to the season framework for Interior band-tailed pigeons.



## **Western Management Unit Mourning and White-winged Dove Subcommittee**

Dan Collins, U.S. Fish and Wildlife Service

### Population Status

The absolute abundance estimate of mourning doves for September 2023 in the Western Management Unit (WMU) was 40.5 million (95% Credible Interval = 23.22-68.33). This abundance results in a “Standard” regulatory alternative as prescribed by the harvest strategy.

White-winged dove abundance is assessed through two surveys: the North American Breeding Bird Survey (BBS) and a state-specific survey in Arizona. The BBS indicates continental white-winged dove abundance has increased significantly during the most recently available 10-year period (2012-2022); however, abundance has not changed significantly in Arizona, California, or the Western BBS area during that same time period.

### Harvest Information

The 2023 WMU mourning dove harvest estimate was 947,500, a decrease of 20% from 2022. The 2023 white-winged dove harvest estimate was 83,600, a decrease of 0.3% from 2022.

### Management Activity

None to report

### Research Activity

Mark Seamans, U.S. Fish and Wildlife Service, Dove Specialist, has developed an Integrated Population Model (IPM) for mourning dove in the Western Management Unit similar to the IPM developed for the Central Management Unit but is still working through model code to assure the code is running properly. The IPM should be ready by the next regulation cycle for consideration of use.

The following publication is in prep:

Seamans, M. 2023. *Mourning Dove band reporting in the United States*. U.S. Department of the Interior, Fish and Wildlife Service, Division of Migratory Bird Management, Washington, D.C.

### Recommendations

The subcommittee adopted one recommendation:

The Pacific Flyway Council (Council) recommends no change to the season framework for doves in the Western Management Unit (WMU), except to allow up to 10 white-winged doves in Arizona’s daily bag limit during season days from November 1–January 15.

Council recommends a framework with outside dates between September 1 and January 15 with state-specific season lengths and bag limits as follows:

In Idaho, Nevada, Oregon, Utah, and Washington, the season length shall be not more than 60 days, which may be split between two periods. The daily bag limit is 15 mourning and white-winged doves in the aggregate. Oregon may select seasons in each of two zones.

In Arizona and California, the season length shall be not more than 60 days, which may be split between two periods, September 1–15 and November 1–January 15. The daily bag limit is 15 mourning and white-winged doves in the aggregate; of which no more than 10 may be white-winged doves.

## **Central Valley and Pacific Coast Populations of Sandhill Crane Subcommittee**

Kyle Spragens, Washington Department of Fish and Wildlife

### Population Status

The California mid-winter waterfowl survey (MWS) captures sandhill cranes of both populations and serves as the primary monitoring index. The 2023 MWS estimate was a total of 25,333 cranes combined from both populations. During spring 2023 breeding waterfowl surveys, California counted 2,691 in their NE stratum and Oregon counted 1,587 in eastern strata. In both surveys, these are considered minimums, as not all regions with nesting crane habitat are covered.

### Harvest Information

The Pacific Coast Population of sandhill crane is not subject to sport harvest in Washington, Oregon, or California. Alaska fall harvest reported 29 sandhill cranes from the Bristol Bay region. The most recent (2019) Alaska subsistence harvest estimate indicated 73 (199% CIP) sandhill cranes were harvested in the Bristol Bay region.

### Management Activity

None reported.

### Research Activity

Ongoing research on sandhill crane in and around the Ladd Marsh Wildlife Area in Oregon is ongoing. These cranes have been found to associate with both the CVP and Lower Colorado River Valley (LCRV) wintering areas with nine PTTs deployed, eight wintering in the Central Valley and one wintering in the LCRV. As research reports are distributed the Flyway will be included.

### Recommendations

The subcommittee adopted one recommendation:

- The subcommittee recommends no change to the Alaska season frameworks for sandhill cranes.

## **Rocky Mountain Sandhill Crane Subcommittee**

Sean Yancey, Wyoming Game and Fish Department

### Population Status

The September 2022 survey of the Rocky Mountain Population (RMP) of sandhill cranes (cranes) detected 18,632 cranes, a decrease of 5,331 (-22%) from 2021 (23,963 cranes). The most recent 3-year average (2020-2022) is 22,744 cranes. This average is greater than the population objective of 17,000 – 21,000 cranes described in the Pacific Flyway Council (Council) RMP Sandhill Crane Management Plan.

The 2023 fall staging survey is scheduled to be conducted the week of 25 September. The recruitment survey is scheduled to be conducted during the time period of October 16-27.

### Harvest Information

State harvest estimates for the 2022-2023 crane seasons indicate Arizona harvested 69 (from an allocated 207), Idaho harvested 273 (from an allocated 290), Montana harvested 174 cranes (from an allocated 535), New Mexico harvested 710 (from an allocated 988), Utah harvested 223 (from an allocated 314), and Wyoming harvested 277 (from an allocated 348). The reported harvest does not include crippling loss. The 2022-2023 total harvest estimate was 1,726 which was 62% of the total harvest allocation of 2,778.

### Management Activity

Modification of an existing RMP crane hunting district in Sweetgrass/Wheatland/Golden Valley/Meagher counties, Montana: The proposed modification would incorporate a small portion of northern Stillwater County, (that portion of Stillwater County lying north of Interstate 90), into sandhill crane hunting district 586-01. The change would transfer this portion from an unlimited OTC crane hunt area to an established permitted hunt district (HD 586-01). HD 586-01 straddles both the Pacific Flyway (PF) and Central Flyway (CF), with most of the area in the CF part of the state. The OTC hunt area is entirely in the CF and directed at MCP birds (i.e., lesser sandhill cranes). Permitted hunting districts (HD) are directed at RMP cranes in the Pacific Flyway. All the other permitted HD in MT are in PF except 599-00, Carbon County.

This change would provide slightly more crane hunting opportunity for RMP sandhill cranes in Montana, but overall harvest is expected to remain well within the state allocation; anticipated harvest from the hunt area modification is expected to be negligible. All crane harvest would be attributed to the RMP.

### Research Activity

Dan Collins, U.S. Fish and Wildlife Service, reported a total of 50 RMP cranes were banded in New Mexico this past 2022-2023 field season, with 32 banded, 17 auxiliary marked, and one GSM/GPS unit deployed.

Upcoming efforts include capturing and outfitting three sandhill cranes with leg GPS units in Central Utah. In part, this effort is to assess population affiliation of this segment as either Lower Colorado River Valley or RMP sandhill cranes.

To facilitate appropriate timing of pre-migration survey, it was discussed whether there is a future need to keep GPS marked individuals within the RMP population to see what portion of those marked individuals were available for detection during survey periods.

The following publications may have implications for RMP sandhill crane management:

Bunting, D.P. M.A. Boggie, D.P. Collins, P.P. Thorpe, and J.P. Donnelly. 2022. Linking ecological processes and animal movements to inform timing of long-term surveys of a migratory gamebird. *Ecosphere* 13:e4298. <https://doi.org/10.1002/ecs2.4298>

Boggie, M.A., D.P. Collins, and S.A. Carleton. 2023. Energetic Importance of Corn Subsidies for Migratory Birds Wintering in Central New Mexico. *Journal of Fish and Wildlife Management* 14:51-61. <https://doi.org/10.3996/JFWM-22-013>

VonBank, J.A., D.P. Collins, K.S. Ellis, J.P. Donnelly, and J.M. Knetter. Movement dynamics influence population monitoring and adaptive harvest management strategies in a long-lived migratory bird. *In Review: Global Ecology and Conservation*

### Recommendations

The subcommittee adopted two recommendations:

- The Pacific Flyway Council (Council) recommends no change in the season framework for Rocky Mountain Population (RMP) sandhill cranes, except:
  - Removal of a portion of the Over-the-Counter (OTC) Midcontinent Population (MCP) crane hunting district in northern Stillwater County, Montana, and annexing it to an established Rocky Mountain Population (RMP) sandhill crane hunting district, HD 586-01.
- Allowable harvest will be determined by the formula described in the Pacific and Central Flyway Management Plan for the Rocky Mountain Population of Sandhill Cranes pending results of the 2022 fall abundance and recruitment surveys.

## **Lower Colorado River Valley Sandhill Crane Subcommittee**

Melanie Weaver, California Department of Fish and Wildlife

### Population Status

4,719 estimated by AZGFD at Cibola NWR, Salton Sea and Colorado River Tribal Lands. A rough estimate of recruitment was generated for Cibola NWR at 6.4%.

### Harvest Information

There is no hunting on the Lower Colorado River Valley Population (LCRV). Discussion was had on how to implement a future hunt in Arizona. Todd Sanders indicated that a new environmental assessment will be required because the current one Lower Colorado River National Wildlife Refuges Comprehensive Management Plan and Environmental Assessment 1994-2014 is outdated.

### Management Activity

Dan Collins, Service Southwest Region Migratory Bird Program, has 8 GSM to deploy on cranes at Cibola NWR in December.

### Research Activity

Collins, D.P, M.A. Boggie, K.L. Kruse, C.M. Conring, J.P. Donnelly, B.A. Grisham, and W.C. Conway. Overwinter space use and habitat selection of the Lower Colorado River Valley population of greater sandhill cranes. *In Press: Waterbirds*.

### Recommendations

The subcommittee adopted no recommendations.

## **Midcontinent Sandhill Crane Subcommittee**

David Safine, U.S. Fish and Wildlife Service (Alaska Region)

### Population Status

The Management Guidelines for the Mid-continent Population of Sandhill Cranes identifies the annual spring photo-corrected aerial transect survey of the Central Platte River Valley in Nebraska as the primary measure of population status. The management index is the average of the three most recent and reliable photo-corrected estimates from the annual spring survey. The 2023 photo-corrected estimate was 1,259,199 cranes and the management index (3-year average) was 909,046 cranes. The management index is 91% above the upper threshold of the population objective range of 350,000–475,000 cranes.

### Harvest Information

In the 2022-2023 season: Alaska reported a harvest of 764 midcontinent cranes (Harvest Information Program), Arizona reported a harvest of 736 cranes, and New Mexico reported a harvest of 269 cranes (in the Central Flyway portion of the state).

### Management Activity

None reported

### Research Activity

None reported

### Recommendations

The subcommittee adopted one recommendation:

- The subcommittee recommends no change to the Alaska and Arizona season frameworks for sandhill cranes.

## Double-crested Cormorant Subcommittee

Emily VanWyk, Oregon  
Allison Begley, Montana  
Shannon Skalos, California  
Jessica Stocking, Washington  
Michelle McDowell, U.S. Fish and Wildlife Service

### Double-crested Cormorant Monitoring and Future Planning

#### Survey Goal

The goal of the Pacific Flyway Council's Double-crested Cormorant Monitoring Strategy (Strategy) is to establish a coordinated, long-term, flyway-level monitoring effort to estimate the breeding population size, trend, and distribution of the Western Population. This information is fundamental to support development of effective management recommendations, and for guiding and assessing management actions pertaining to double-crested cormorant (cormorant) depredation on fish resources.

#### Survey Summary

The cormorant subcommittee provided a full briefing of surveys conducted in the March 2023 packet, including a summary of surveys conducted between 2014 and 2021. Monitoring followed standardized methodology across the Western Population developed in 2013 and coordinated through the Flyway.

The strength in using the Strategy was the ability to detect change from 2014 forward with an agreed upon level of statistical power. Monitoring methods were standardized across the Western Population for the first time, and a sampling approach was used that does not require monitoring all colonies. Moreover, coordination of the overall effort was accomplished through the NTC, with NTC members subsequently coordinating within their agencies and with partners in their states.

#### Future Monitoring Plans

The Strategy states that implementation will occur every third year and thereafter for at least 10 years (Pacific Flyway Council 2013). The full monitoring strategy was completed in 2021, despite COVID-19 restrictions in some areas. According to the Strategy, the next survey would be conducted in 2023 but because of postponement of the survey originally scheduled for 2020, the next survey will be conducted in 2024. This will complete the planned 10-year interval.

The subcommittee is working with the Service (Branch of Assessment and Decision Support) to update the Strategy. New technology is now available to address bias and power concerns. A shift to 5-year sampling is being considered. The Service is interested in using the monitoring data to inform their permitting decisions associated with the 2020 National level EIS, Management of Conflicts Associated with Double-crested Cormorants (USFWS 2020). The updated Strategy will be used for 2024 implementation.

#### Progress on Next Steps and Decisions for Updating the Monitoring Strategy

- Error check and review of final database by the states have been completed
- These remaining preparation steps for the 2024 survey are expected to be completed within the next month:
  - Add any records for 2022
  - Identify desired precision and use in cost/benefit analysis

- Decide temporal sampling regime (every 3 or 5 years)
- Use packages in R for optimal sample selection and estimation of abundance
- Use historical counts to define strata and place colonies within strata for sampling
- Use historical data to estimate transition probabilities between strata for use in generating uncertainty
- Identify the colonies to sample in 2024
- Identify costs

As described during the March 2023 update, funding shortages and capacity issues are expected, especially for coastal sites requiring flight time.

### References

Pacific Flyway Council. 2012. A framework for the management of Double-crested Cormorant depredation on fish resources in the Pacific Flyway. Pacific Flyway Council, U.S. Fish and Wildlife Service, Portland, Oregon.

Pacific Flyway Council. 2013. A monitoring strategy for the Western Population of Double-crested Cormorants within the Pacific Flyway. Pacific Flyway Council, U.S. Fish and Wildlife Service, Portland, Oregon.

U.S. Fish and Wildlife Service. 2020. Management of Conflicts Associated with Double-crested Cormorants, Final EIS. U.S. Fish and Wildlife Service, Falls Church, Virginia.



## **Diversity, Equity, and Inclusion (DEI) Ad Hoc Subcommittee**

Emily VanWyk, Oregon Department of Fish and Wildlife

In August 2022, the Pacific Flyway Council (Council) supported a recommendation to create an Ad Hoc Diversity, Equity, and Inclusion (DEI) Subcommittee (Subcommittee). Council requested the Subcommittee develop an Action Plan and provide a progress report in August 2023. Details of the Action Plan were presented to Council in March 2023, and the Subcommittee has continued to work towards identified goals.

In 2023 the emphasis for the Subcommittee was placed on learning about resources, partners, and their needs as a means to educate us and build a framework for long-term, iterative engagement, and progress toward identified goals. Additionally, the group focused on clarifying relevancy of this effort to the Flyway process and migratory bird management across borders. Successful engagement on DEI is not short-term, and future success will stem from ongoing engagement initiated in 2023. Presented here are action items presented to Council in March 2023 and brief updates on each item.

1. Engage with other DEI committees to discuss and share common challenges, solutions, resources, and blind spots. Examples of possible committees to reach out to include those within WAFWA, AFWA, NABCI, TWS, AOC, or PIF.

Members of the Subcommittee engaged with a variety of external working groups and continue to engage and learn from other DEI groups. Examples of committees engaged directly include the WAFWA DEI working group, AFWA DEI working group, various state-based DEI working groups, the Atlantic Flyway, and Partners in Flight. This effort is ongoing and is based on a) the engagement of individuals working in the Flyway context already involved in these groups, and b) the direct outreach to groups with relevancy to the Flyway. An example of specific opportunities for the Flyway to engage further include work with the Partners in Flight Western Working Group on initiatives surrounding Conservation without Borders.

2. Explore opportunities with new and non-traditional partners that have a vested interest in migratory birds managed by the Pacific Flyway

As a first step towards more robust engagement with partners in Mexico, the Subcommittee invited two partners from Mexico to provide presentations to Council and the technical committees at the August 2023 meetings. The purpose of these invitations was to facilitate face-to-face interaction that allow members of the Flyway to ask questions and develop a better mutual understanding of how each of our governments work in the migratory bird management arena. This will inform our approach to realize effective outreach to partners identified in the bylaws of the Flyway that are not otherwise engaged. Additionally, these presentations will provide a deeper understanding of how Southern Wings projects funded through Council are implemented and how we can more effectively collaborate on needed conservation work across borders.

2. Evaluate opportunities identified by the WAFWA DEI assessment.

The WAFWA DEI assessment was made available during June 2023. Representatives from the Subcommittee attended these meetings and requested additional information on data presented, and have had initial conversations on results and applications. Participation in the survey effort across states included 16/24 WAFWA member organizations, with 8/24 providing more than 50 responses; five member states of the Pacific Flyway provided comments. Stepped-down analyses of data from the five states that had more than 50 participants were provided to each agency.

Preliminary analysis of the results provides some information that could benefit or inform the flyway process. The Subcommittee will continue to explore data presented to glean opportunities for future engagement.

### 3. Additional Actions for consideration:

The Subcommittee identified opportunities for future August meetings to facilitate communication within the Flyway and increase opportunities for exchange of ideas with Council, including special topic webinars, birding opportunities, and pertinent field trip events. Examples of these efforts to date include presentations provided on Southern Wings and the Alaskan Migratory Bird Co-management Council.

Additional actions for consideration to reduce barriers to participation include:

- Ensuring a virtual option is made available for Flyway meetings to support engagement from partners that are unable to travel
- Develop a funding assessment for translation services that could be available, as needed, to support online meetings that are accessible to international partners
- Support travel funding for invited partners to provide special topic presentations
- Provide a standard list of partner contacts for outreach to be shared with each forthcoming Chair to support continued long-term engagement. This list will be built from existing documents maintained by the Study and Nongame Technical committees

The Subcommittee will continue to investigate additional opportunities to engage in existing DEI efforts and to identify gaps in the partnerships within the flyway process and continue to build on this Action Plan.