Northwest **Power** and **Conservation** Council

November 6, 2018

MEMORANDUM

TO: **Council Members**

FROM: **Laura Robinson, Program Liaison Coordinator**

SUBJECT: **Presentation on the Corps' Predation Management in the Columbia River System**

BACKGROUND:

Presenter: Tim Dykstra, Fish Program Manager, Northwest Division, U.S. Army Corps of Engineers

Summary: At the November Council meeting, Tim Dykstra will summarize the U.S. Army Corps of Engineers' role in predation management in the Columbia River System. Tim has worked for the U.S. Army Corps of Engineers since 2008 and is currently serving in the Corps' Northwestern Division office as the Senior Fish Program Manager. In 2016, Tim relocated to Washington DC for the year to lead the water portion of the U.S. Senate's Energy and Water Appropriations subcommittee. Before moving to the Northwestern Division office, Tim was the Lead Fish Biologist for the Corps' Walla Walla District, Operations Division. Prior to working for the Corps, Tim served as the Fish and Wildlife Director for the Shoshone-Paiute Native American Tribe located in southern Idaho and northern Nevada. He has a B.S. in biology from Hope College, a master's degree in Environmental Science from University of Montana and additional coursework from the University of Michigan and Portland State University.

Relevance: The 2014 Fish and Wildlife Program identified as one of the seven emerging priorities the need to, "preserve program effectiveness by

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supporting expanded management of predators." The 2014 Program also contains several measures regarding the US Army Corps' predation management actions ranging from removal and management of avian predation to the exclusion of sea lions at Bonneville Dam.

Workplan: Predation presentations in preparation for the Program amendments

Background: This presentation is part of a series of presentations to the Council in preparation for the Program amendments. Also at the November Council meeting is a presentation by CRITFC on their observations of predation in the Basin and how to more effectively manage predators for a population-level benefit. At the October Council meeting, Joe Maroney presented to the Council on the Kalispel Tribe's successful suppression of Northern Pike in the Pend Oreille, and representatives from the three Mid-Columbia PUDs provided insights on their predation management efforts. You can access the slides for Joe's presentation here, Douglas PUD's presentation here, Chelan PUD's presentation here, and Grant PUD's presentation here. At the September Council meeting, Dan Roby presented to the Council on the long-term avian predation study funded by BPA and the Corps to investigate the impact of avian predators on the survival of juvenile salmonids in the lower Columbia River. The slides for that presentation can be found here.

Corps of Engineers' Predator Management in the Columbia River System

Tim Dykstra, Fish Program Manager

Northwestern Division

November 2018

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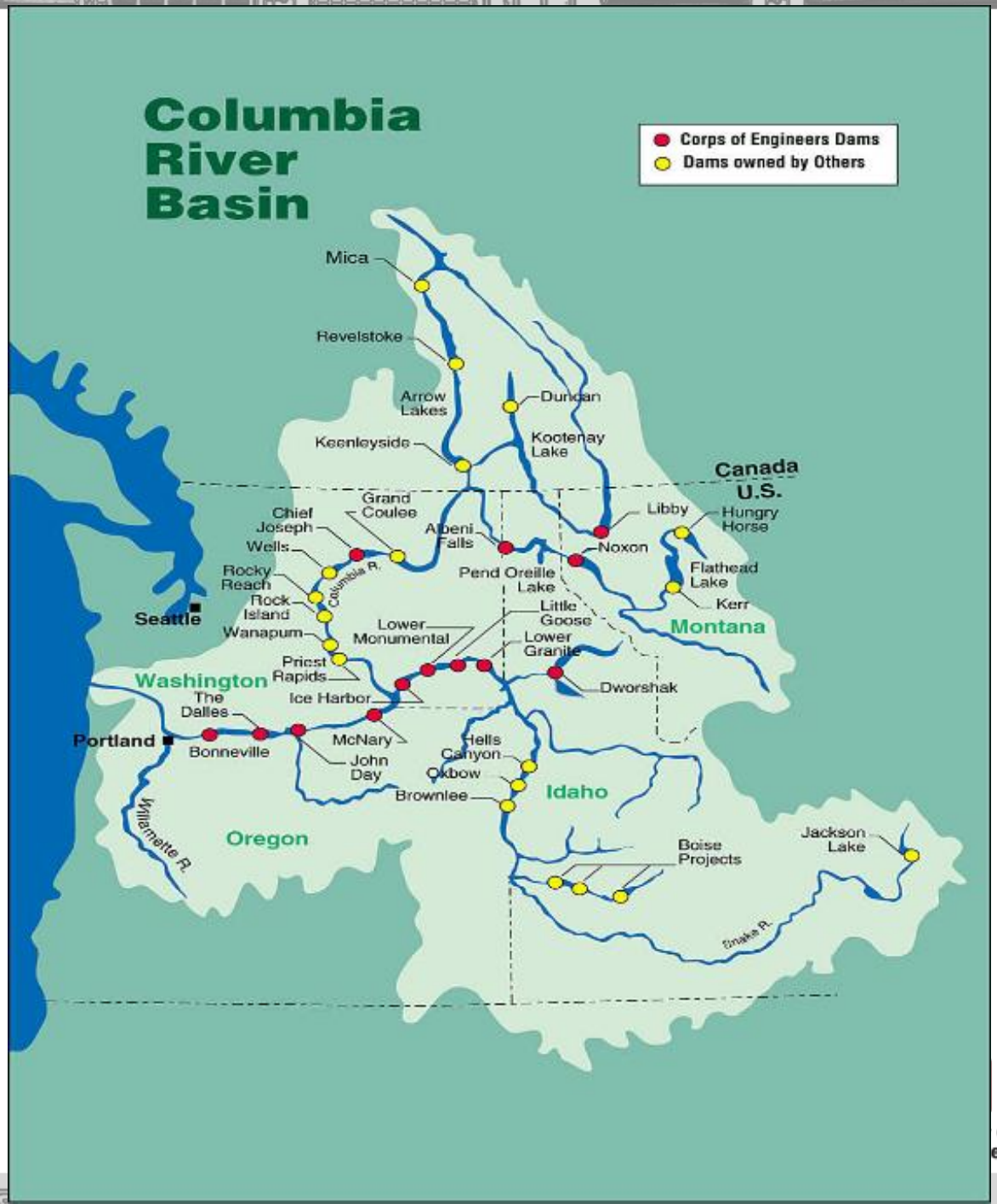

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Presentation Outline

I. Avian Predation
   1. Three Management Plans:
      a. Estuary terns
      b. Estuary Corms
      c. Inland terns
   2. Avian abatement at dams

II. Sea Lions at Bonneville Dam

Bottom line: the Corps intends to continue implementing the 3 avian management plans, avian abatement at dams, and sea lion monitoring at Bonneville; Until the CRS NEPA is complete the Corps is not planning to do new predator management actions.

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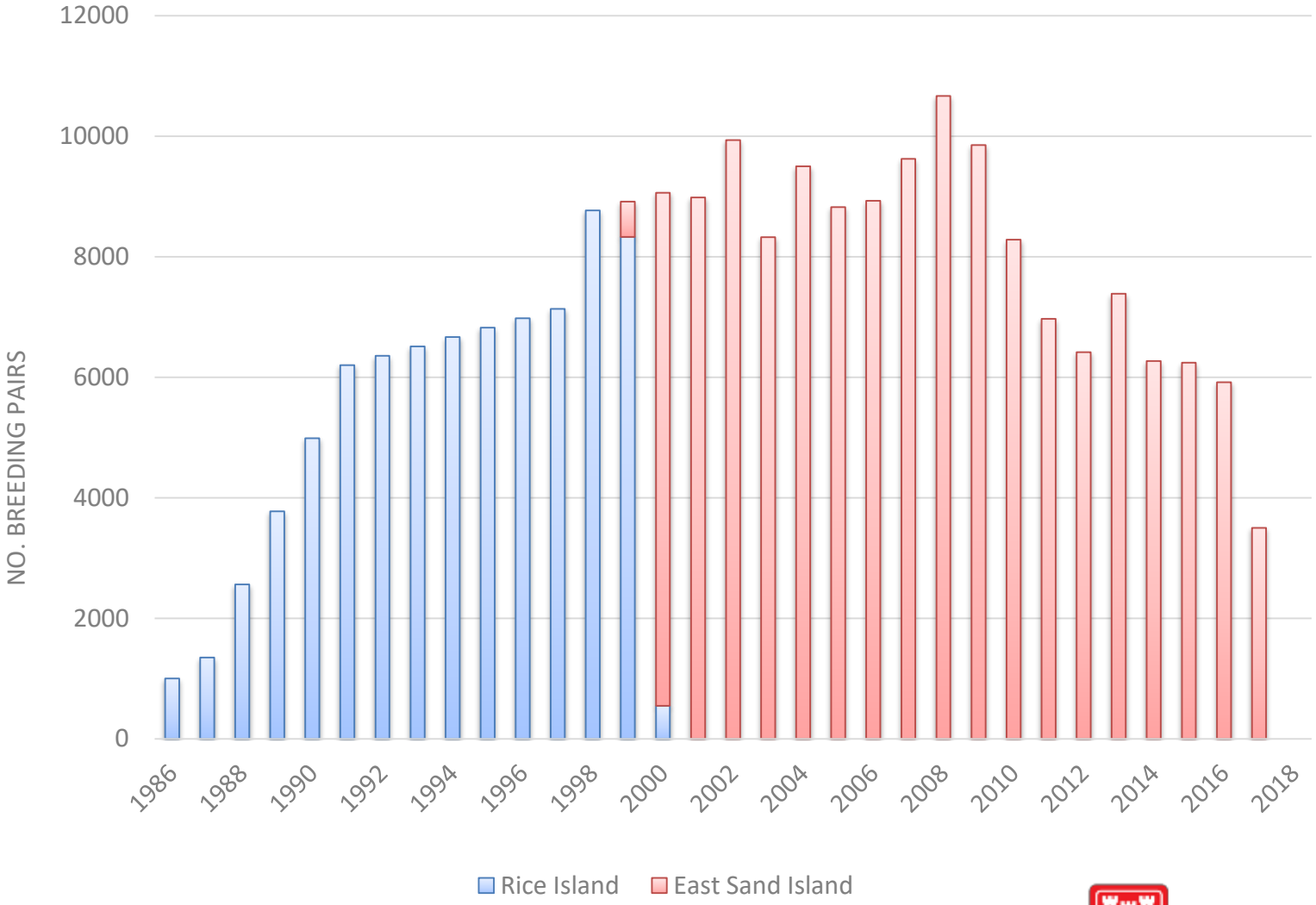
Problem: growing populations of fish-eating predators have increased predation-related mortality of salmon and steelhead

Terns and Cormorants in the Columbia River Estuary

Caspian Tern Breeding Colony Size in the Columbia River Estuary



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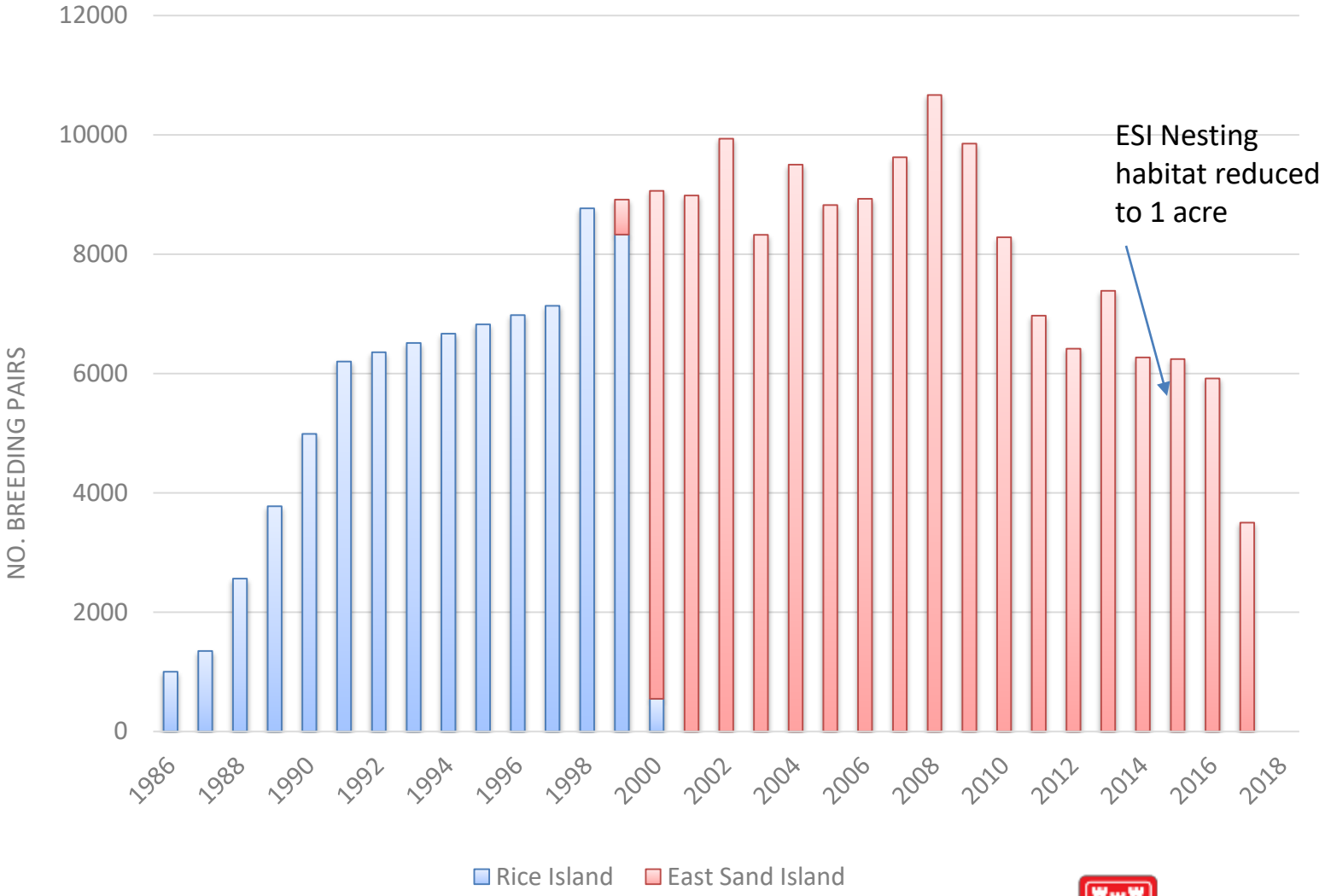
Management Actions – Estuary Terns

- Construct Nesting Habitat Out of Basin (pull)
- Reduce East Sand Island Nesting Habitat (push)
- Target: ~3000 nesting pairs at East Sand Island

Out of Basin Islands – the ‘Pull’

Location	Acres
Malheur NWR, OR	1.0
Lower Klamath NWR, CA	0.8
Crump Lake, OR	1.0
Tule Lake NWR, CA	2.0
Summer Lake, OR (East Link)	0.5
Summer Lake, OR (Gold Dike)	0.5
Lower Klamath NWR, CA (Orems Unit)	1.0
Fern Ridge, OR	1.0
San Francisco Bay, CA	1.5
Total Acres	**9.3**

Caspian Tern Breeding Colony Size in the Columbia River Estuary



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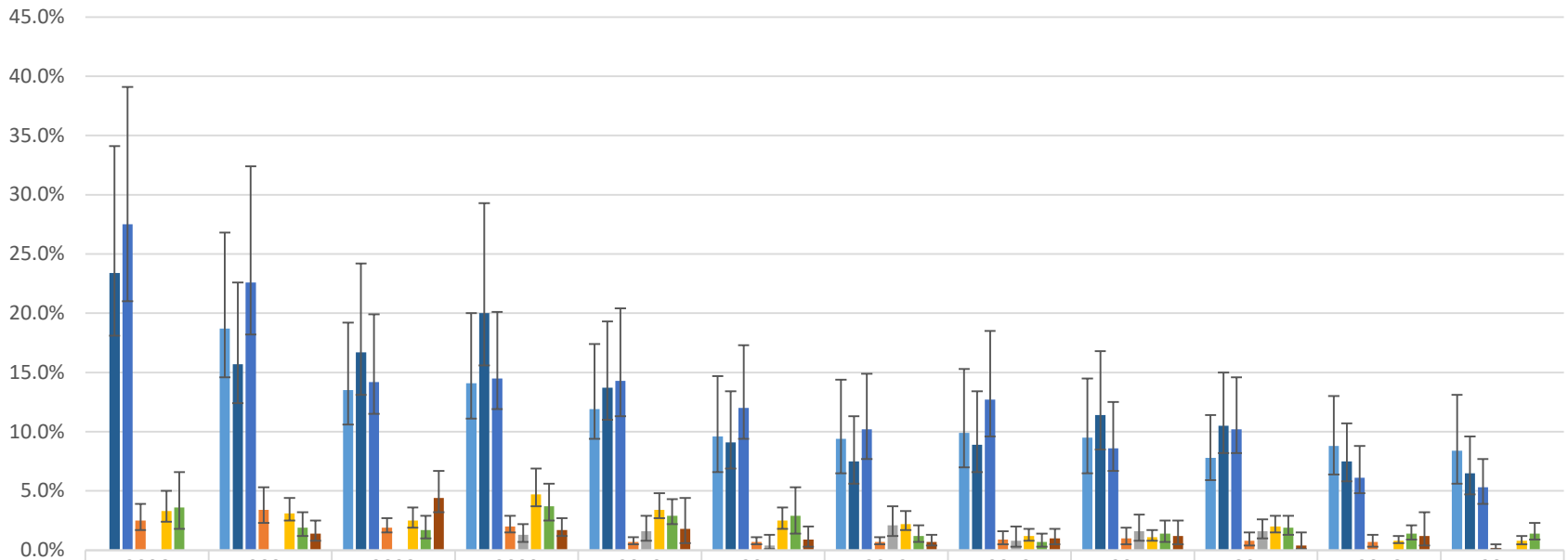
ANNUAL PREDATION RATES BY CASPIAN TERNS NESTING ON EAST SAND ISLAND

(Percent of available PIT-tagged juvenile salmonid last detected passing Bonneville or Sullivan dams consumed by Caspian terns nesting on East Sand Island)



	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
MCR Steelhead		18.7%	13.5%	14.1%	11.9%	9.6%	9.4%	9.9%	9.5%	7.8%	8.8%	8.4%
UCR Steelhead	23.4%	15.7%	16.7%	20.0%	13.7%	9.1%	7.5%	8.9%	11.4%	10.5%	7.5%	6.5%
SR Steelhead	27.5%	22.6%	14.2%	14.5%	14.3%	12.0%	10.2%	12.7%	8.6%	10.2%	6.1%	5.3%
SR Fall Chinook	2.5%	3.4%	1.9%	2.0%	0.7%	0.7%	0.7%	0.9%	1.0%	0.8%	0.7%	0.2%
SR Sockeye				1.3%	1.6%	0.4%	2.1%	0.8%	1.6%	1.6%		
SR Sp/Su Chinook	3.3%	3.1%	2.5%	4.7%	3.4%	2.5%	2.2%	1.2%	1.1%	2.0%	0.8%	0.8%
UCR Sp Chinook	3.6%	1.9%	1.7%	3.7%	2.9%	2.9%	1.2%	0.7%	1.4%	1.9%	1.4%	1.4%
UWR Sp Chinook		1.4%	4.4%	1.7%	1.8%	0.9%	0.7%	1.0%	1.2%	0.4%	1.2%	

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Tern Management Plan Next Steps

- The minimum proposed habitat acreage on East Sand Island (1.0 acre) was attained prior to the 2015 nesting season. Maintaining this 1.0 acre and hazing terns off areas outside the managed acre will continue into the future.

- The 2017 nesting season was Year 3 of monitoring after the final habitat reduction.
  - Shifting to monitoring all Pacific Flyway sites once every 10 years with a selected subset monitored every 2-3 years (USFWS);
  - Will continue PIT detection for predation rate monitoring on East Sand Island.

- Will continue nest dissuasion on dredge material placement sites as part of the Navigation BiOp.

- Completing O&M Manuals and prepare documentation (MOAs) to turn constructed sites over to appropriate landowners.

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DOUBLE-CRESTED CORMORANT MANAGEMENT PLAN

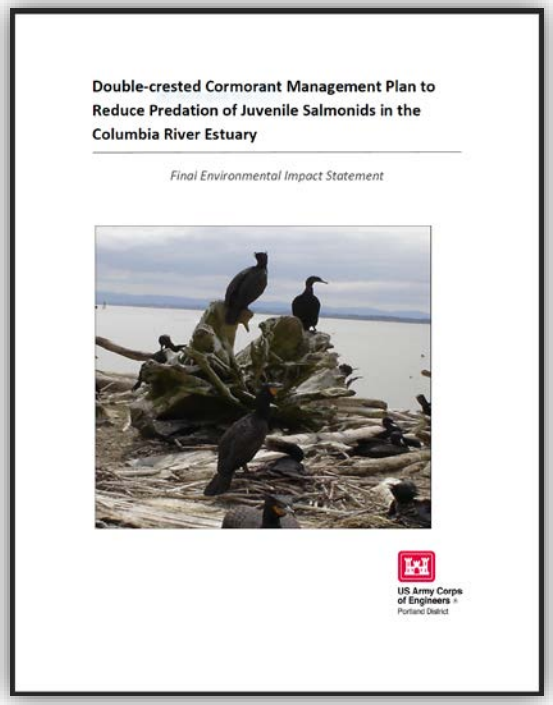
2008 (2010, 2014) FCRPS BiOp

- RPA 46: "The FCRPS Action Agencies will develop a **cormorant management plan** (including necessary monitoring and research) and implement warranted actions to reduce cormorant predation in the estuary to Base Period levels (no more than 5,380 to 5,939 nesting pairs on East Sand Island)."
- RPA 67: "The Action Agencies will **monitor the cormorant population in the estuary** and **its impacts on outmigrating juvenile salmonids** and develop and implement a management plan to decrease predation rates, if warranted."

2015 CORMORANT MANAGEMENT PLAN

(adopted in March 2015, implementation began during the 2015 nesting season)

- **Phase 1:** 4-year lethal strategy to achieve a colony size of 5,380–5,939 breeding pairs.
- **Phase 2:** Terrain modification and/or other habitat management supplemented with hazing as necessary.

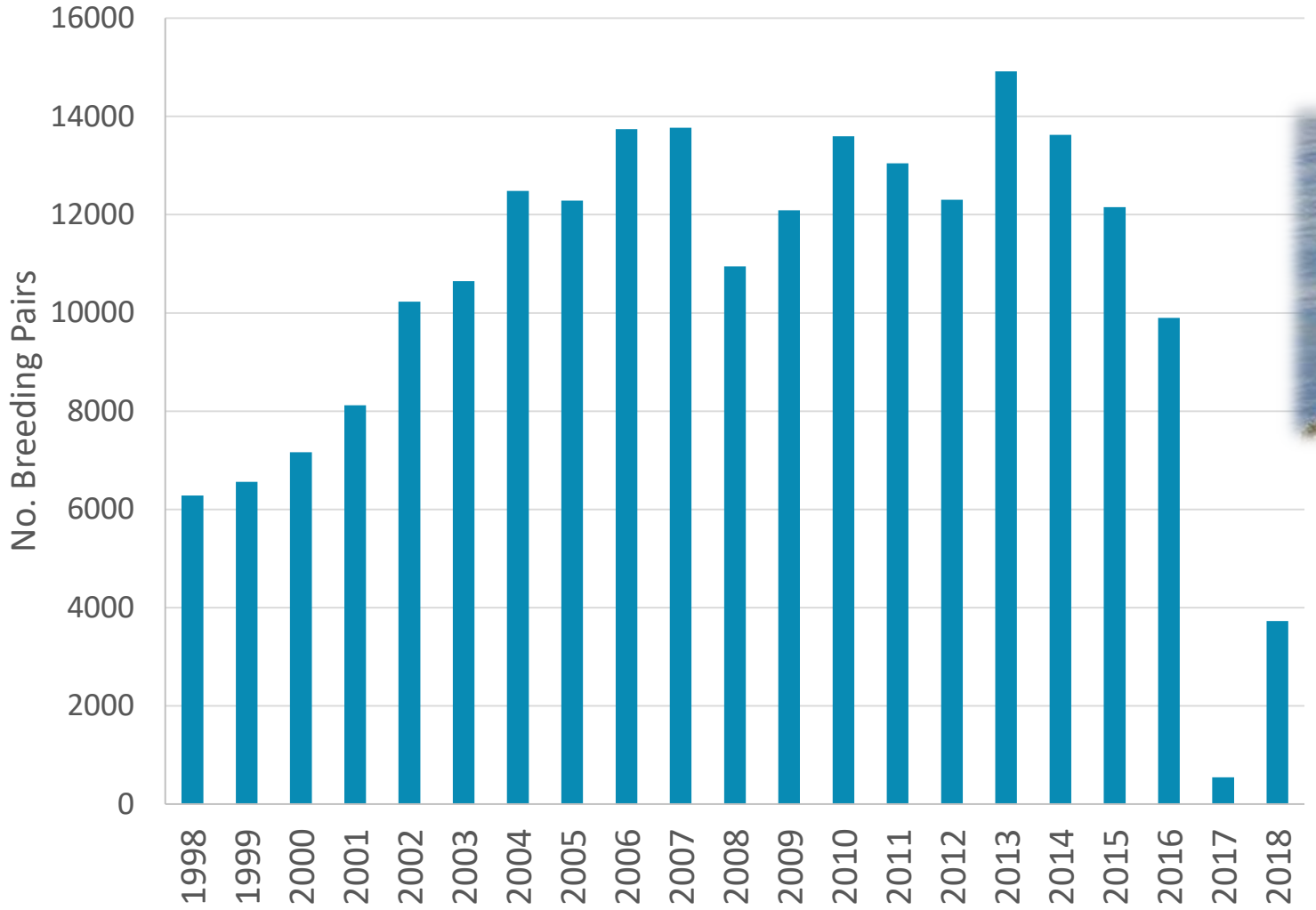


Monitoring and Evaluation

- Monitor DCCO on ESI annually for colony size and response to management (Phase 1 and Phase 2 as necessary).
- Monitor DCCO in the Columbia River Estuary annually for colony size and response to management (Phase 1 and Phase 2 as necessary).
- Implement the Pacific Flyway Council Monitoring Strategy annually to monitor DCCO population status throughout the Pacific Flyway (Phase 1).
- Evaluate DCCO predation rates of juvenile salmonids (Phase 1 and Phase 2 as necessary).

DOUBLE-CRESTED CORMORANT MANAGEMENT PLAN, PHASE 2

Cormorant Colony Size on East Sand Island in the Columbia River Estuary



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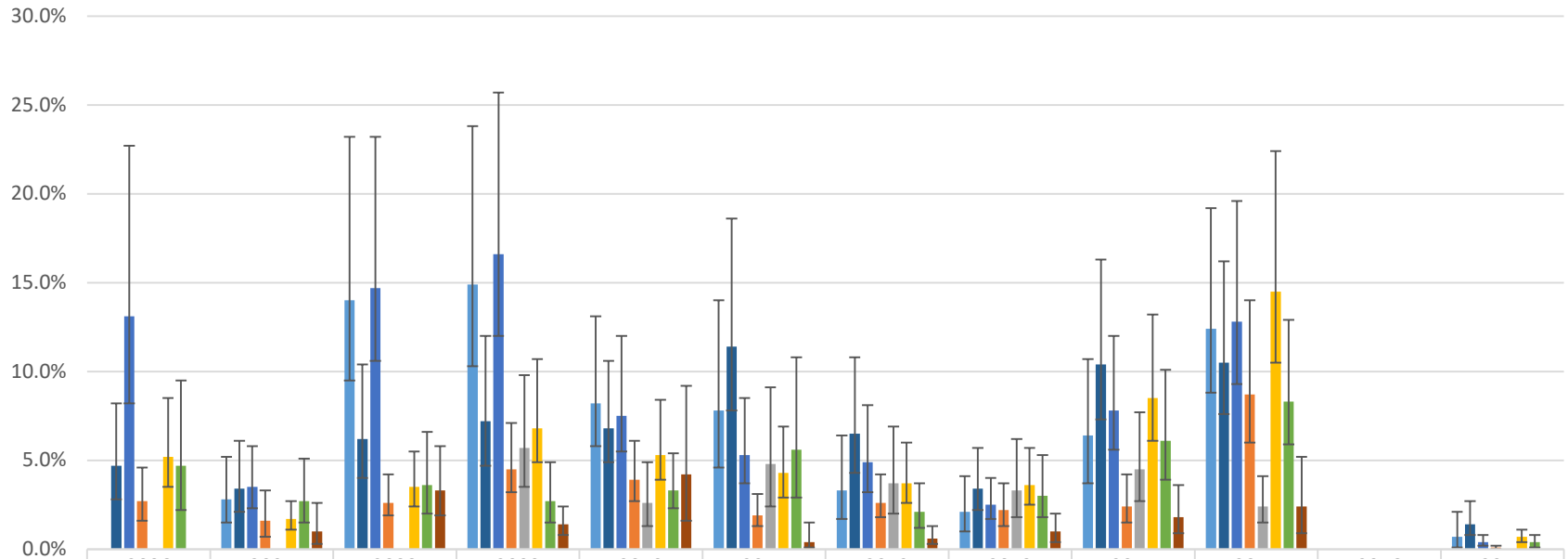
ANNUAL PREDATION RATES BY DCCO NESTING ON EAST SAND ISLAND

(*Percent of available PIT-tagged juvenile salmonid last detected passing Bonneville or Sullivan dams consumed by Double-crested cormorants nesting on East Sand Island)*



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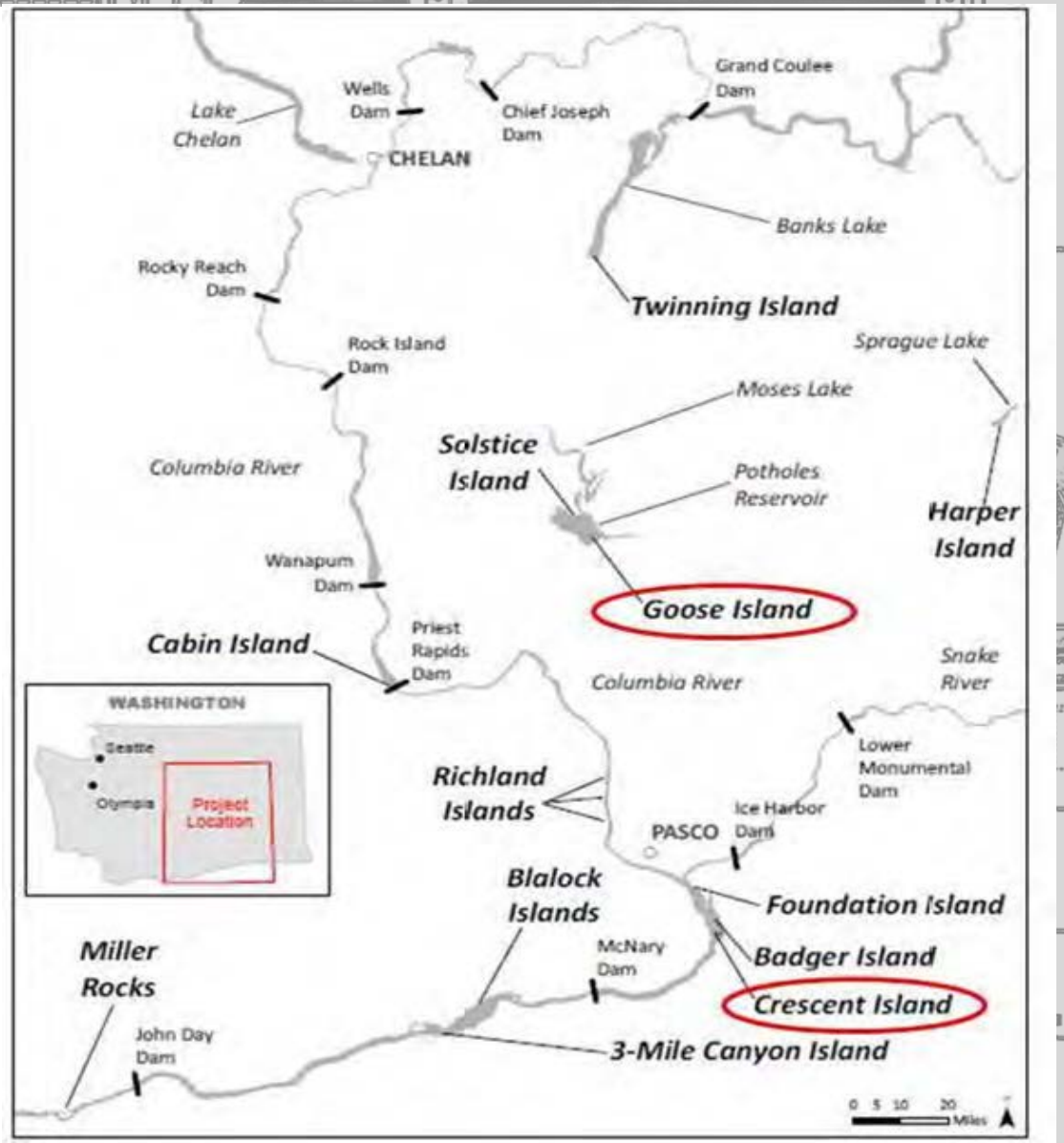
Inland Avian Predation

- Tern colonies at Goose and Crescent Islands responsible for greatest pre-mgmt tern losses

- Pre-management
  - 15.7% Predation Rate on Upper Columbia River Steelhead by Goose Is. Colony.

  - 3.9% Predation Rate on Snake River Steelhead by Crescent Is. Colony.



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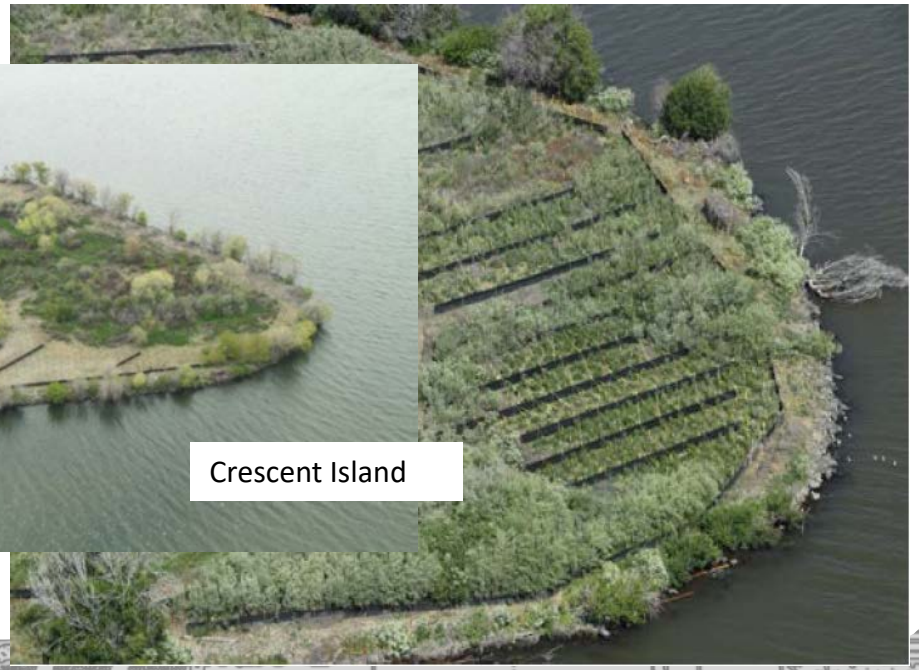
Management Actions – Inland Avian Predation (Pull/Push)

Goal – reduce predation losses of juvenile salmonids by tern colonies on Columbia River Plateau.

- Goose and Crescent Islands primary ‘push’ sites
- Create attractive out-of-basin nesting habitat (Pull)
  - Don Edwards San Francisco Bay NWR – 2015
  - Other ‘pull’ sites previously built
- Dissuade tern nesting on Goose Island (2014), Crescent Island (2015) (Push)

Goose Island (2018)

Crescent Island



Inland Avian Predation: Pre vs. Post-Management

Colony	Pre-Mgmt (2007-2013/14)	2015-2018 Ave
	Upper Columbia River Steelhead	
Goose Island	15.7%	0.1%
Crescent Island	2.4%	0.1%
Blalock Is Complex	0.6%	4.7%
	Snake River Steelhead	
Crescent Island	3.9%	0.1%
Blalock Is Complex	0.6%	4.5%


Goose Island (2018)


Unnamed Island, Lenore Lake (2018)

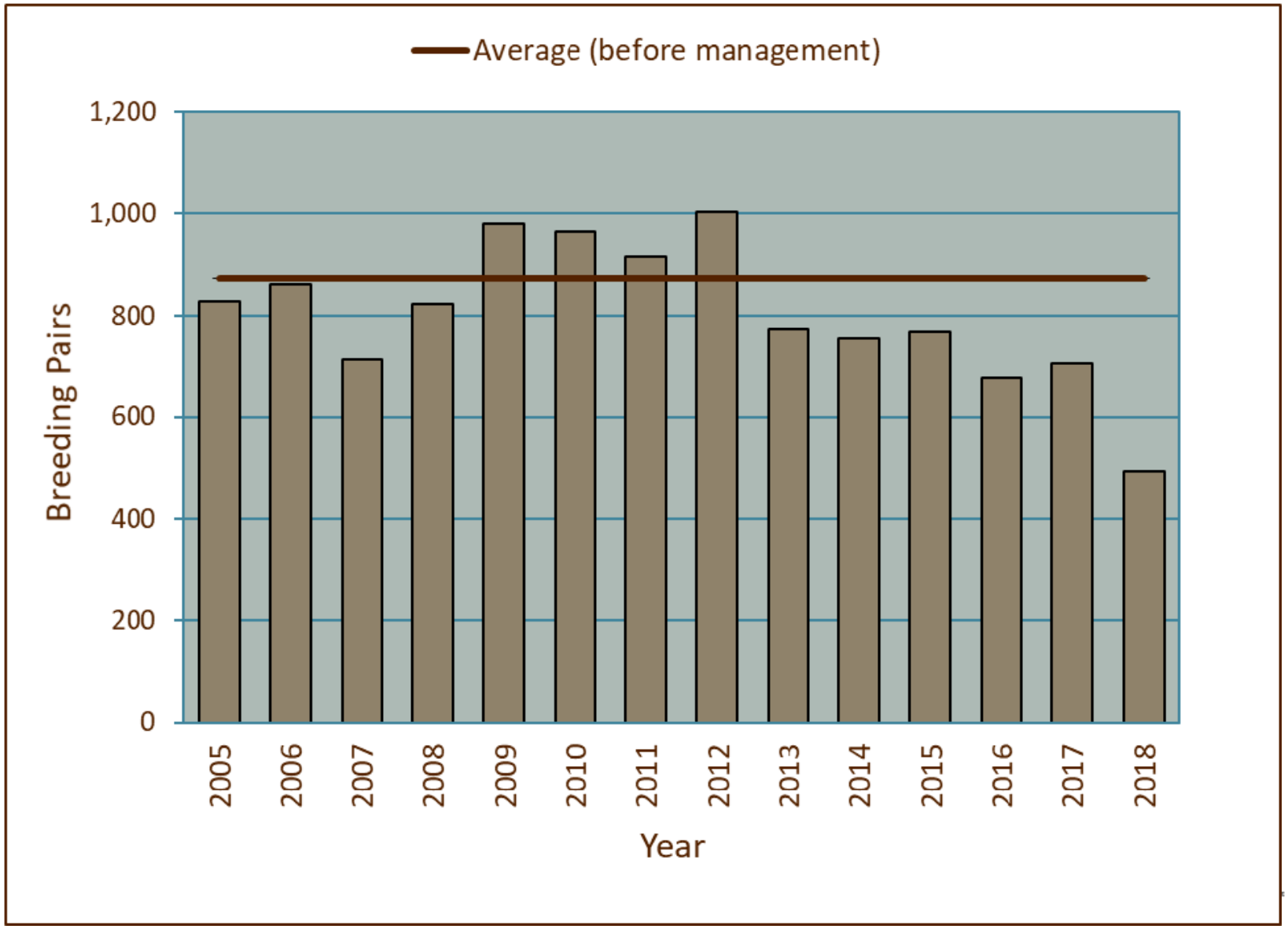
*2018 - 4 active Caspian tern colonies
Blalock Island Complex (313 prs)
Lenore Lake (92 prs)
Sprague Lake (77 prs)
Badger Island (8 prs)

*2018 - 490 breeding pairs CR plateau-wide
873 pre-mgmt (2005-'13)


Crescent Is (2018)


Middle Island, Blalock Island Complex

Total Caspian Tern Breeding Pairs
Columbia River Plateau Region



Inland Avian Predation Management Plan
Path Forward

- Reporting
  - Final 2018 Implementation & Monitoring Report
  - Multi Year Synthesis/Summary Report (2019) - Addresses summary of the three management plans monitoring data including how management plan metrics have been achieved

- Crescent Island – Annual monitoring 1-2 Days/year through 2021 to assess for tern use
  - Island was planted with native willow in 2017 & 2018 as long term nesting deterrent strategy
  - Active hazing and temporary Rope&Flagging discontinued after 2018

- Goose Island and Potholes Reservoir - Bureau of Reclamation
  - BoR intends to continue some dissuasion activities in future
  - Investigating potential long-term dissuasion alternatives in lieu of annual Rope&Flagging

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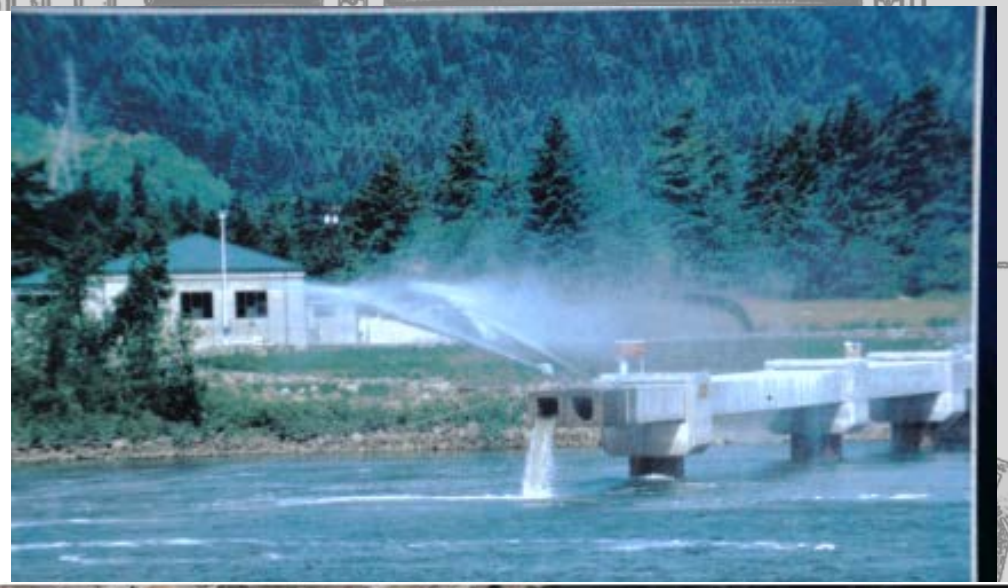
Avian Predation at Dams

- Wires
- Water Cannons
- Active Hazing
- Monitoring



Problem: California and Steller sea lions now consume anadromous fish at Bonneville Dam year-round.

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Marine Mammal Protection Act

CSL increase at Bonneville

CSL abundance and fish predation increase

CSL removal LOA renewed

1972 | 1980's | 2000 | 2002 | ◄► | 2006 | 2016 | 2018

Ballard Locks

USACE Monitoring Program

NOAA issues Letter of Authorization (LOA) for CSL Removal

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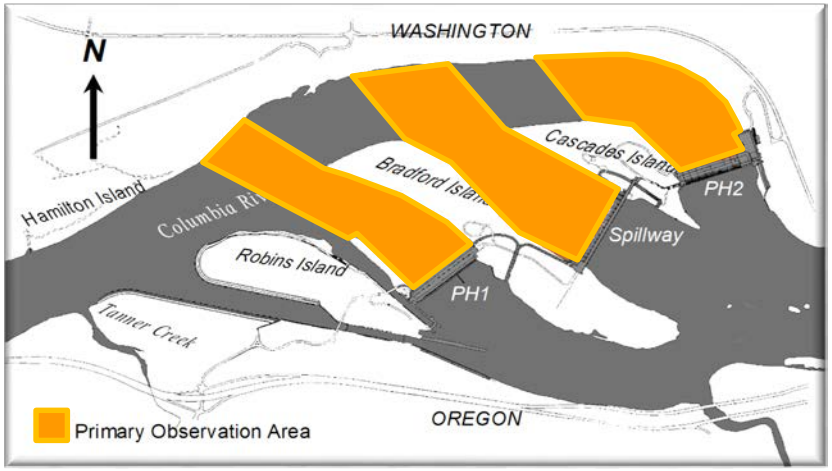
As Per BiOp RPA, USACE Fisheries Field Unit:

- Monitors pinniped abundance
- Estimates fish predation
- Evaluates deterrence measures



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Management Roles

CRITFC

USDA

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Challenges

- SSL are the most abundant BON pinniped predator. NOAA and States have authority and a plan for CSL removal, but none for SSL.
- Birds are mobile, adaptable, and unpredictable
- NEPA coverage limits new/additional actions
- Conflicts with other species
- Any One Agency has Limited Authority

Summary

- The Corps intends to continue implementation of the 3 avian management plans, avian abatement at the 8 lower CRS dams, and monitoring and hazing sea lions at Bonneville Dam.

- The Corps is not planning on conducting ***new*** research or ***new*** predation management actions as part of the 2018 Columbia River System Biological Opinion:
  - We lack authority to conduct more avian predation research (WRDA 511c capped the amount we could spend and we have reached that limit);
  - We lack the NEPA coverage for new actions, including further reducing nesting habitat at ESI to less than 1 acre;
  - The U.S. District Court of Oregon ruled that the Federal Action Agencies need to analyze the Columbia River System O&M proposed action in NEPA to encompass ***all*** potential alternatives. We are currently doing this comprehensive NEPA.

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Backup Slides

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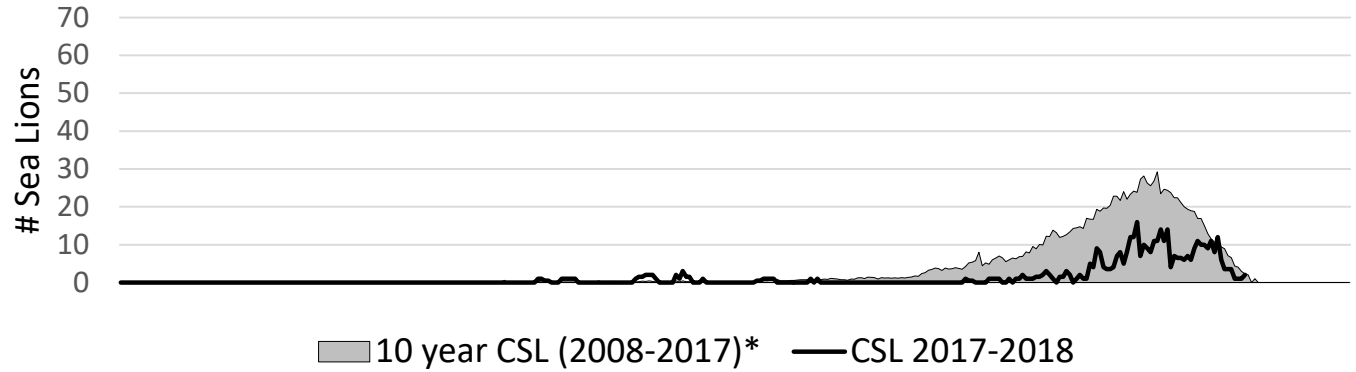
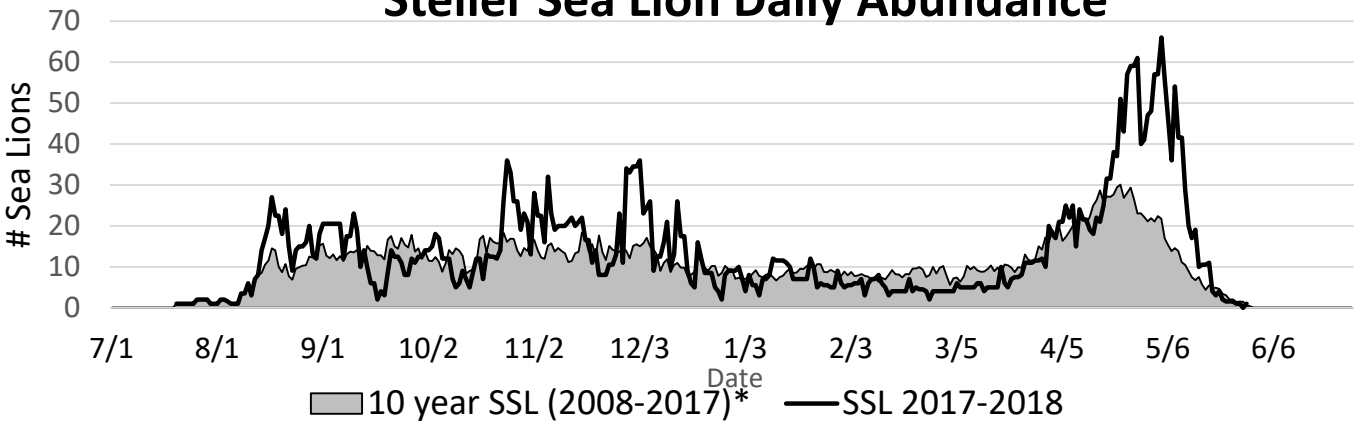
California Sea Lion Daily Abundance



Steller Sea Lion Daily Abundance



* Averages from 6/1 - 12/31 sporadic between years

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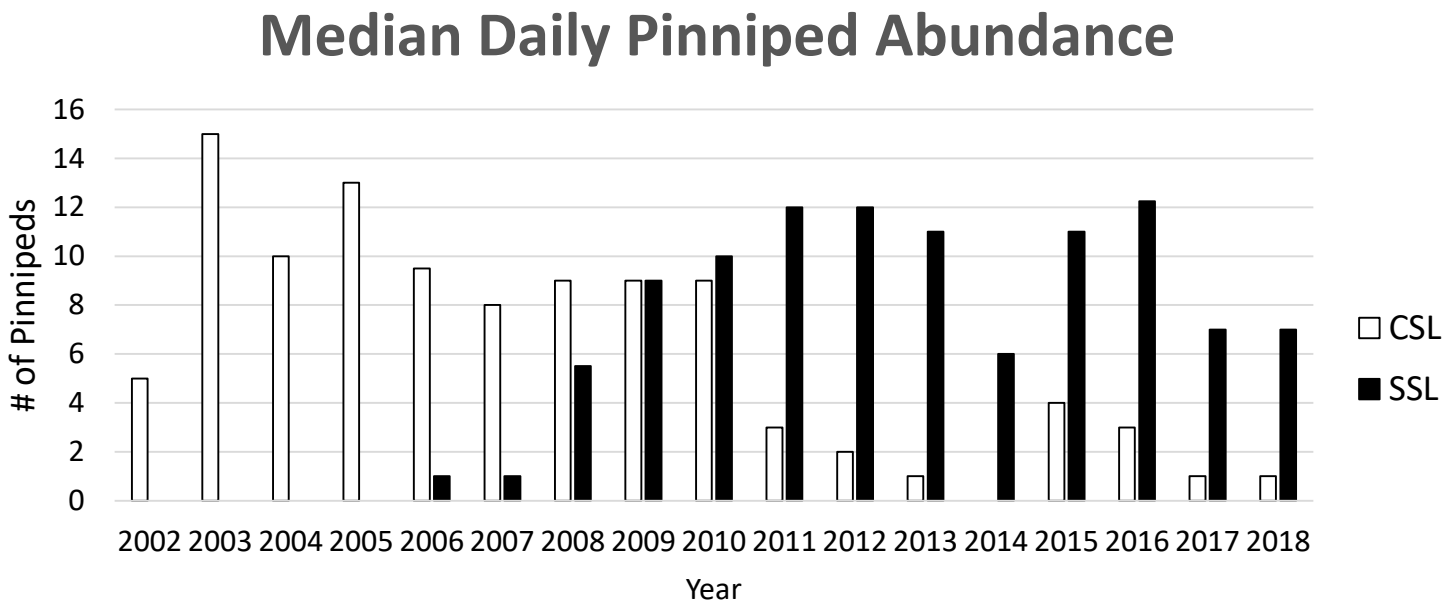

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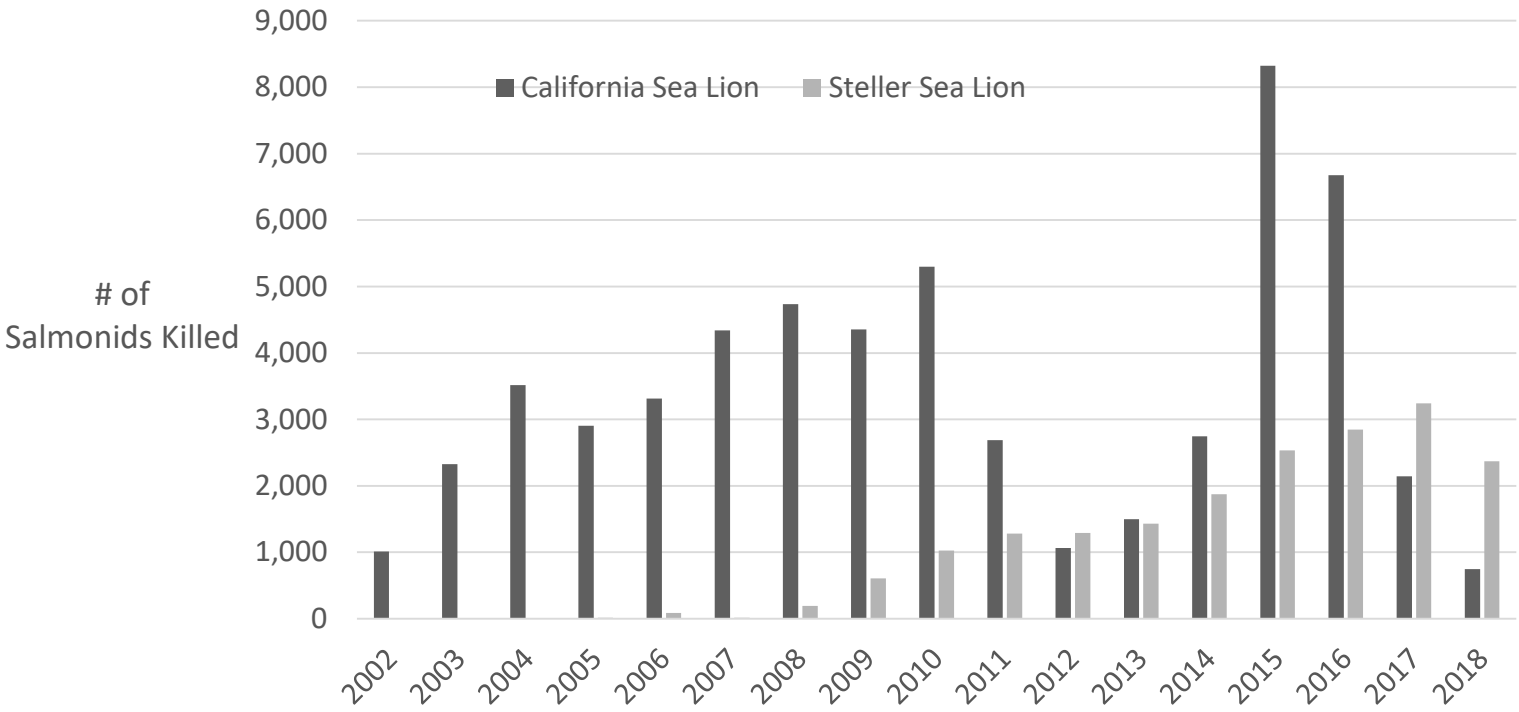
PREDATION estimates: Spring (1 Jan. – 31 May)



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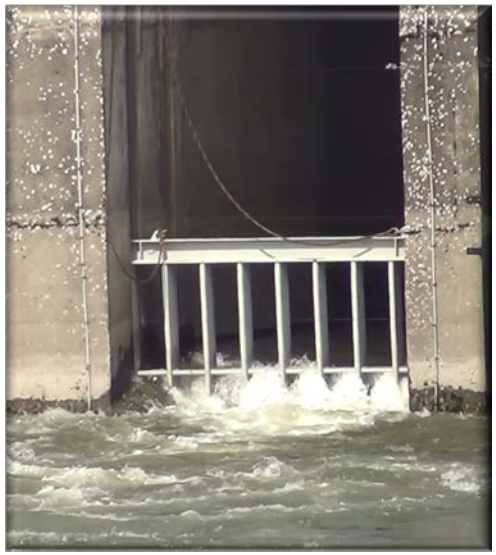
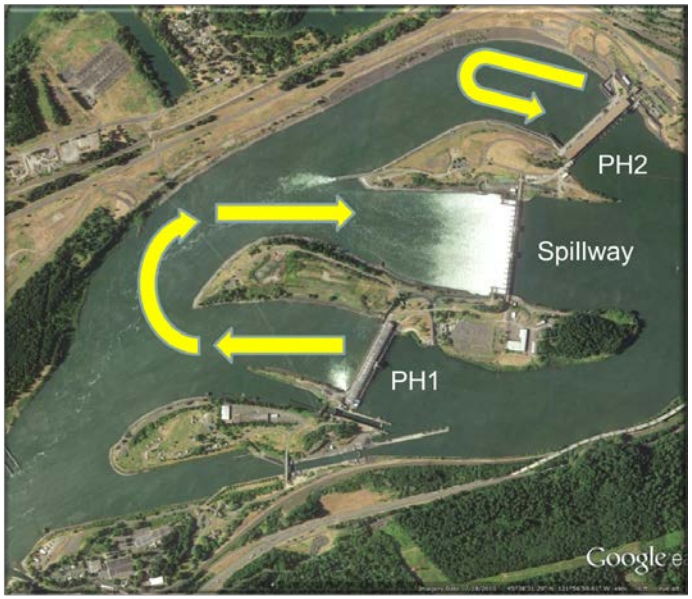
Results: Pinniped Deterrents





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REMARKS Sea Lions

- SSL are the most abundant BON pinniped predator.

- Fall and winter monitoring highlighted concerning impacts to winter steelhead and White Sturgeon.

- Management has authority and a plan for CSL removal, but none for SSL. Management has been authorized to remove 892 CSL since 2008, 217 have been removed.

- Results have informed management and guided policy changes that will expedite the removal process.

- Federal bills are pending and may alter removal authority and requirements for both species. If that occurs, resourcing the removal effort will be difficult.

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Proposed Science and Economics Review of Predation in the Columbia River Basin

Council Meeting

November 2018

Northwest **Power** and **Conservation** Council

Overview

- Why do we need a predation review?
- Proposed scope of the review
- Two distinct pieces of the review
- Request letter and scoping questions
- Next steps

Why do we need a review of predation management effectiveness?

- 2014 Program
- 2016 ISAB Predation Metrics Report
- 2019 ISAB draft work plan
- July PNWER Northern Pike meeting
- Program amendment process

Proposed scope of review

- Interest from Council members
- Past work of Council, IEAB, ISRP, and ISAB
- Current program investment
- Threat of Northern Pike
- Unknown impacts of other non-native predatory fish

Proposed scope of review

"A review of the biological and economic impacts of predators and non-native species, the effectiveness of predator management control efforts currently implemented, and specifically the potential impacts that the introduction and spread of Northern Pike can have on the Columbia River Basin."

"We seek an overall evaluation of predator impacts and predation management effectiveness in the Basin with a particular focus on piscivorous fish."

Proposed scope of review

"A review of the biological and economic impacts of predators and non-native species, the effectiveness of predator management control efforts currently implemented, and specifically the potential impacts that the introduction and spread of Northern Pike can have on the Columbia River Basin."

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Proposed scope of review

"A review of the biological and economic impacts of predators and non-native species, the effectiveness of predator management control efforts currently implemented, and specifically ***the potential impacts that the introduction and spread of Northern Pike can have on the Columbia River Basin."***

"We seek an overall evaluation of predator impacts and predation management effectiveness in the Basin with a particular focus on piscivorous fish."

ISAB+ letter and questions

November 6, 2018

DECISION MEMORANDUM

TO: Council members

FROM: Laura Robinson, Tony Grover, Leslie Bach, and Erik Merrill

SUBJECT: Council decision to request the ISAB and Council-selected economists to conduct a science and economic review or predation and predator management

PROPOSED ACTION: Review and approve draft letter and questions to the ISAB and Council-identified economists for a science review of predation throughout the Basin with a particular focus on predatory fish, and an associated economic review of the impact of Northern Pike in the Basin.

SIGNIFICANCE: In September, the Fish and Wildlife Committee recommended to move forward with scoping a science and economic review of predation in the Basin. At the November Council meeting, the Committee recommendation for the review and the staff draft questions and letter will be discussed with the members. Staff anticipates that this review will be informative for the Program amendments and requests the ISAB and economists to complete their review by the May 2019 Council meeting.

Next Steps

- Should Council approve:
  - Finalize letter and send to ISAB
  - Secure economists