

South Fork Salmon River – McCall Fish Hatchery

Summer Chinook Salmon Program Review



Bonneville
POWER ADMINISTRATION



Acknowledgements

McCall Hatchery staff
NPT and IDFG harvest monitoring staff
PSMFC tagging crew



Introduction

Hatchery

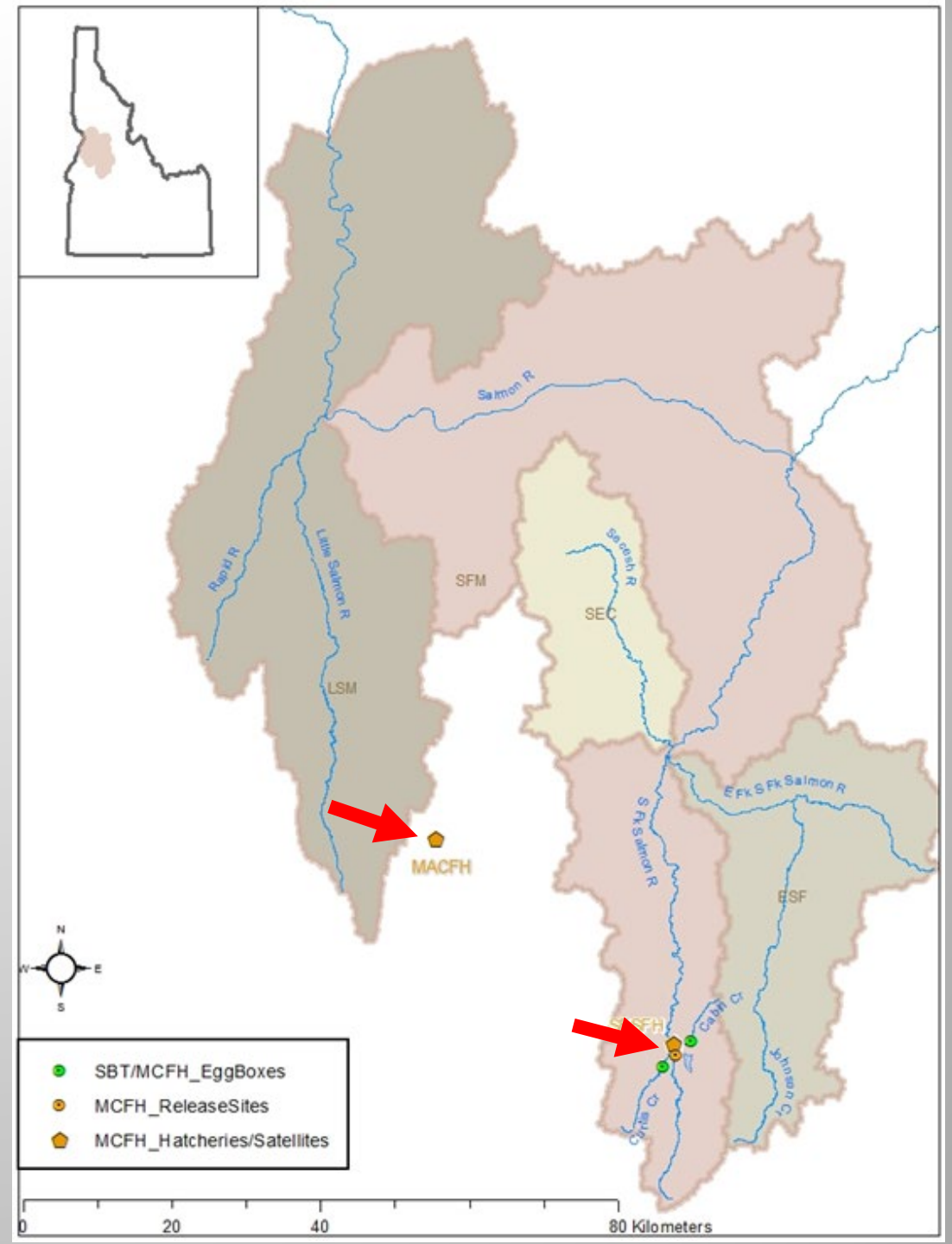
- Located on Payette River
- Construction completed in 1980

Adult Trap and Weir

- Located on South Fork Salmon River

Juvenile Release Site

- South Fork Salmon River at Knox Bridge
- SBT Egg Box Program



Mitigation Goals

Run	Project Area Adult Return Goal	Downstream of Project Area Adult Return Goal	Total Adult Return Goal
Summer	8,000	32,000	40,000

Juvenile Release Target: **1,000,000** yearling smolts

SAR to achieve Project Area Goal: **0.80%**

SAS to achieve Total Adult Goal: **4.0%**



Production and Management Changes

Changes since 2010

- Production goal has remained consistent throughout the duration of hatchery program
- The program has historically been managed as a segregated broodstock.
- In 2010 broodstock was changed to integrated
 - Reduce risk associated with spawning of hatchery adults downstream of weir
 - Supplementation upstream of the weir
 - Stepping-stone integration

Production and Management Changes

Integrated Broodstock Evaluation

- Due to uncertainties associated with the effectiveness of supplementation, an evaluation project was initiated in 2010.
- Funded through the BPA Fish and Wildlife Program (Project 2010-031-00)
- Evaluating
 - Weir and broodstock management objectives (pHOS, pNOB, PNI)
 - Reproductive success of hatchery and natural fish spawning naturally

ESA Status and Consultation History

Snake River Spring Chinook ESU (listed as threatened in 1992)

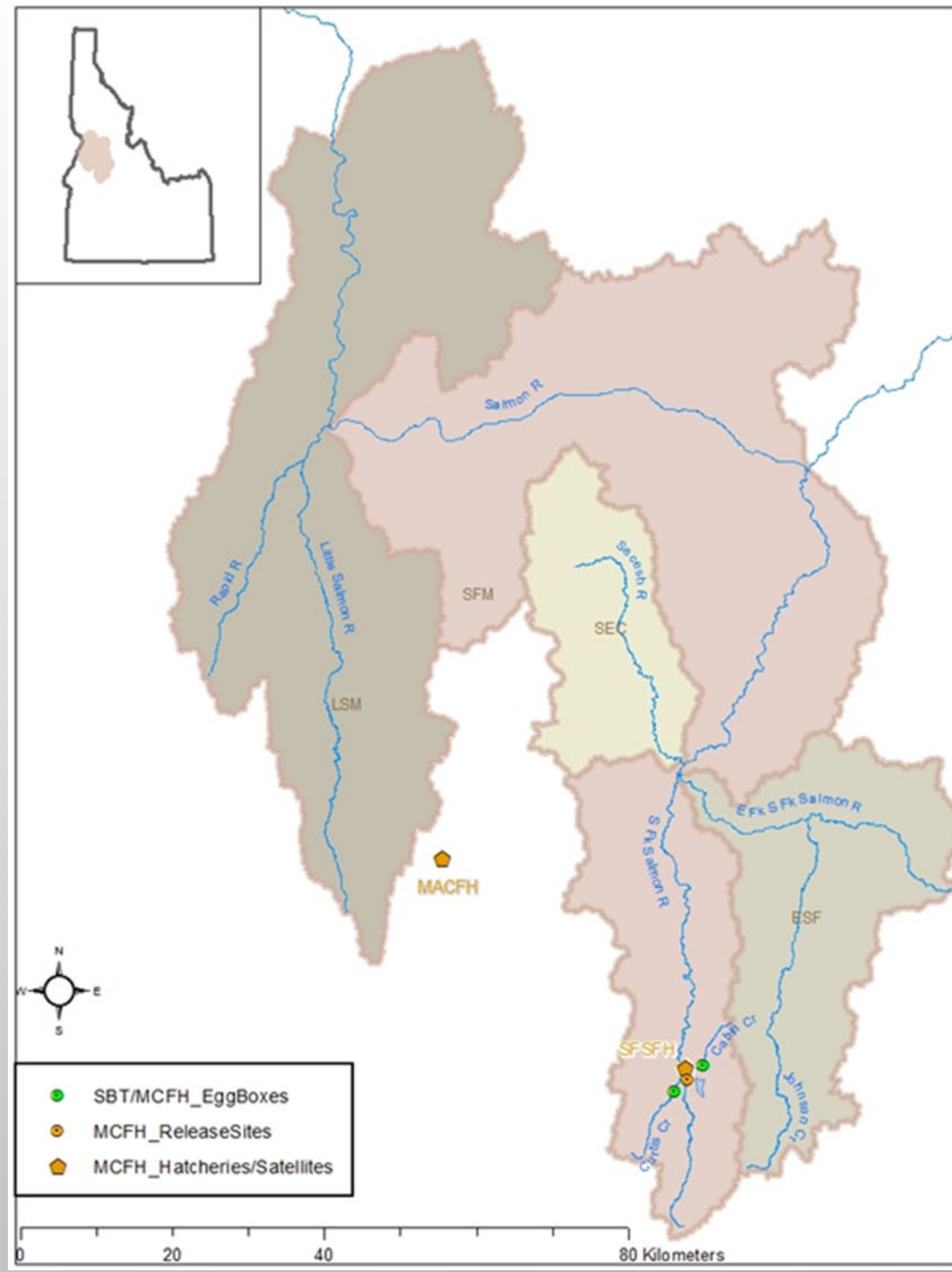
South Fork Salmon River MPG

- Four Populations
- South Fork Salmon River Mainstem population
 - McCall Hatchery Program- hatchery fish are part of the listed ESU

SFSR Mainstem population is rated at high risk for A/P and moderate risk for S/D

None of the populations in the MPG meet viability criteria

Consultations with NOAA Fisheries and the USFWS were completed in 2017 that established take limitations for ESA listed species impacted by the hatchery program.



Management and Monitoring/Evaluation Objectives

- Management objectives:
 - Meet LSRCP mitigation goals
 - Restore and maintain Tribal and non-Tribal fisheries
 - Enhance, recover, and sustain existing natural spawning populations of Chinook salmon
- Monitoring and Evaluation objectives:
 - Production/productivity
 - Abundance and distribution
 - Life history
 - Evaluate alternative rearing strategies
 - Evaluate supplementation as tool to increase natural population
 - Evaluate harvest contributions from hatchery returns
- Natural production monitoring is a cooperative effort between IDFG and the NPT
 - IDFG monitoring funded through BPA Project #1990-055-00

Broodstock History

Founding broodstock collected from 1974-1979 at Little Goose and Lower Granite Dams

- In 1980 brood collected at Lower Granite and Upper SFSR

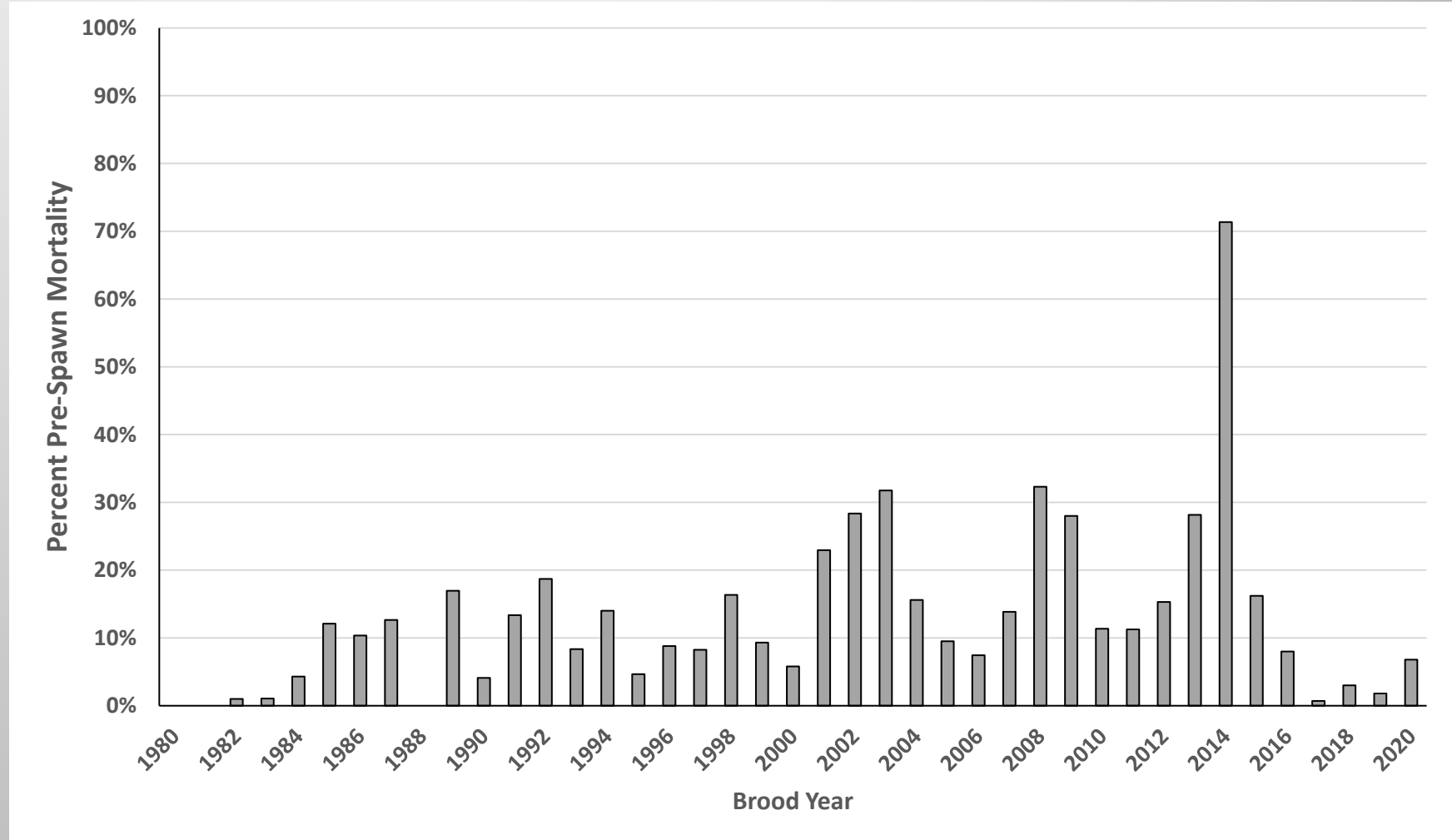
Since 1981, all broodstock have been locally returning adults to the South Fork Salmon River

Integrated stepping-stone broodstock implemented in 2010

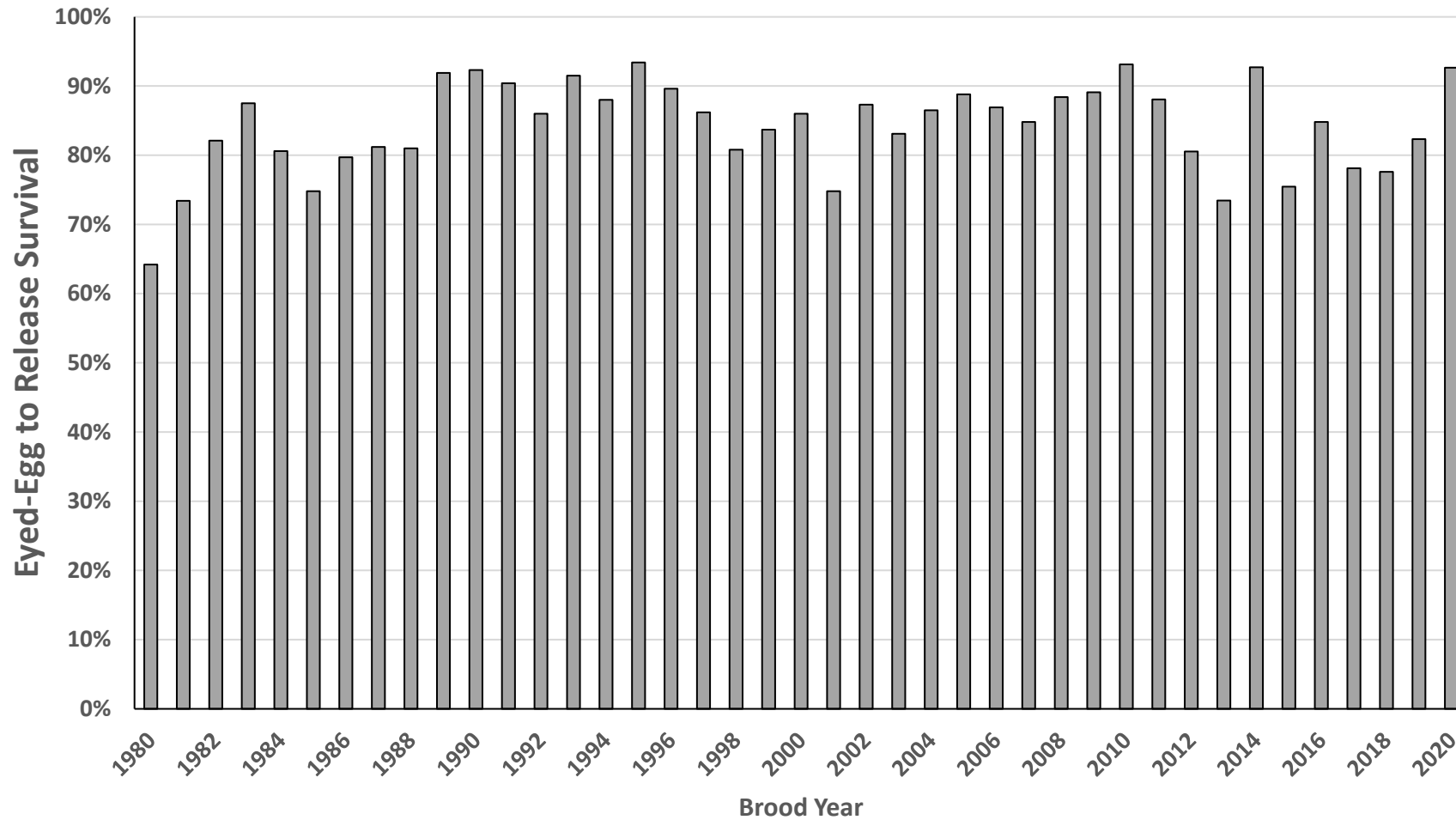
Current Broodstock Trapping Goals: **1,231 Adults**

Pre-spawn Mortality

- BY1980 – BY2020
Mean: **13%**
- BY2014: **71%** -
Flooding and
sediment deposition
in adult holding
facilities
- Several years of
>20% due to high
water temperatures.



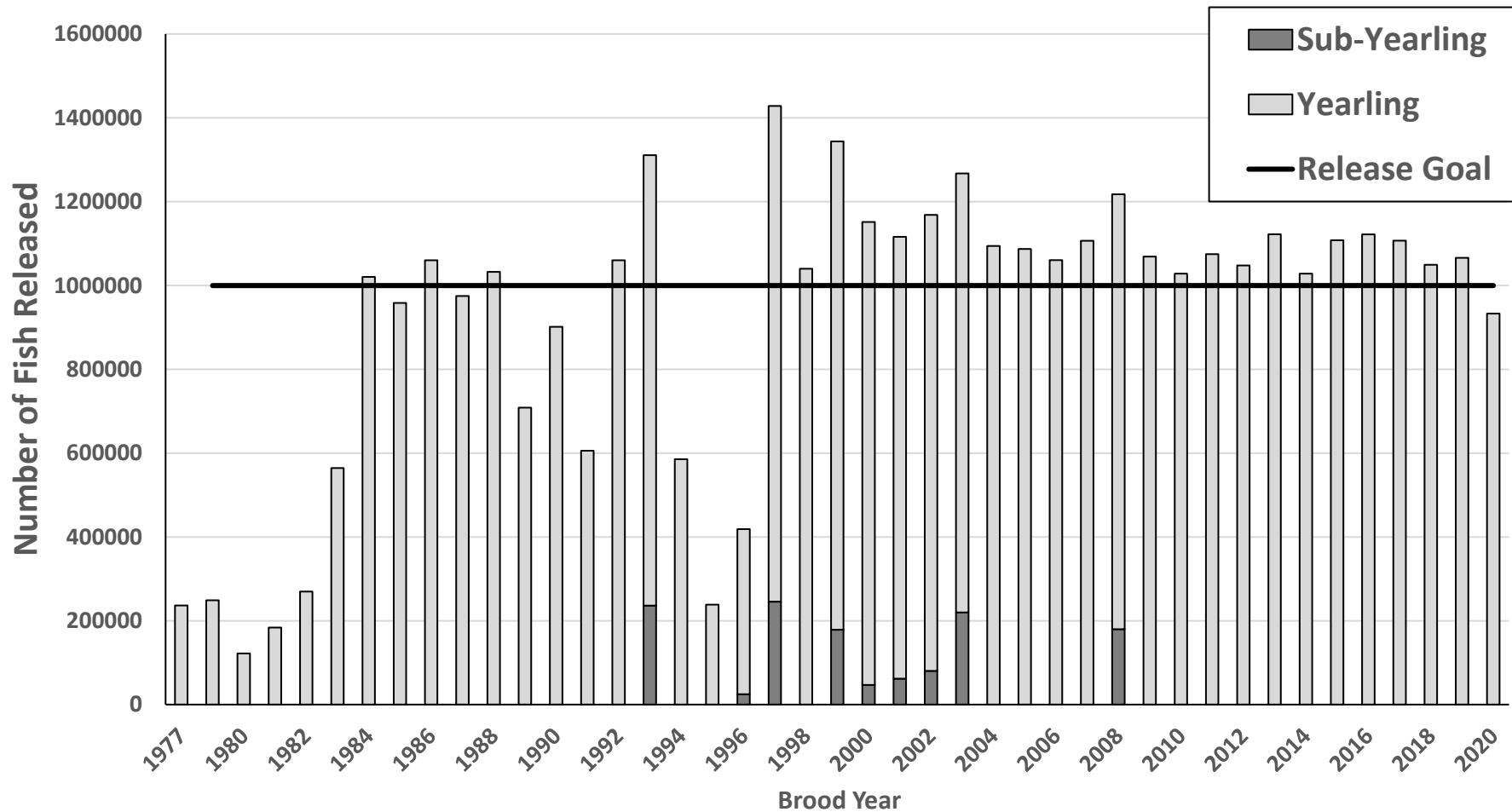
Eyed-egg to Release Survival



- BY1980 – BY2020
Mean: **84%**



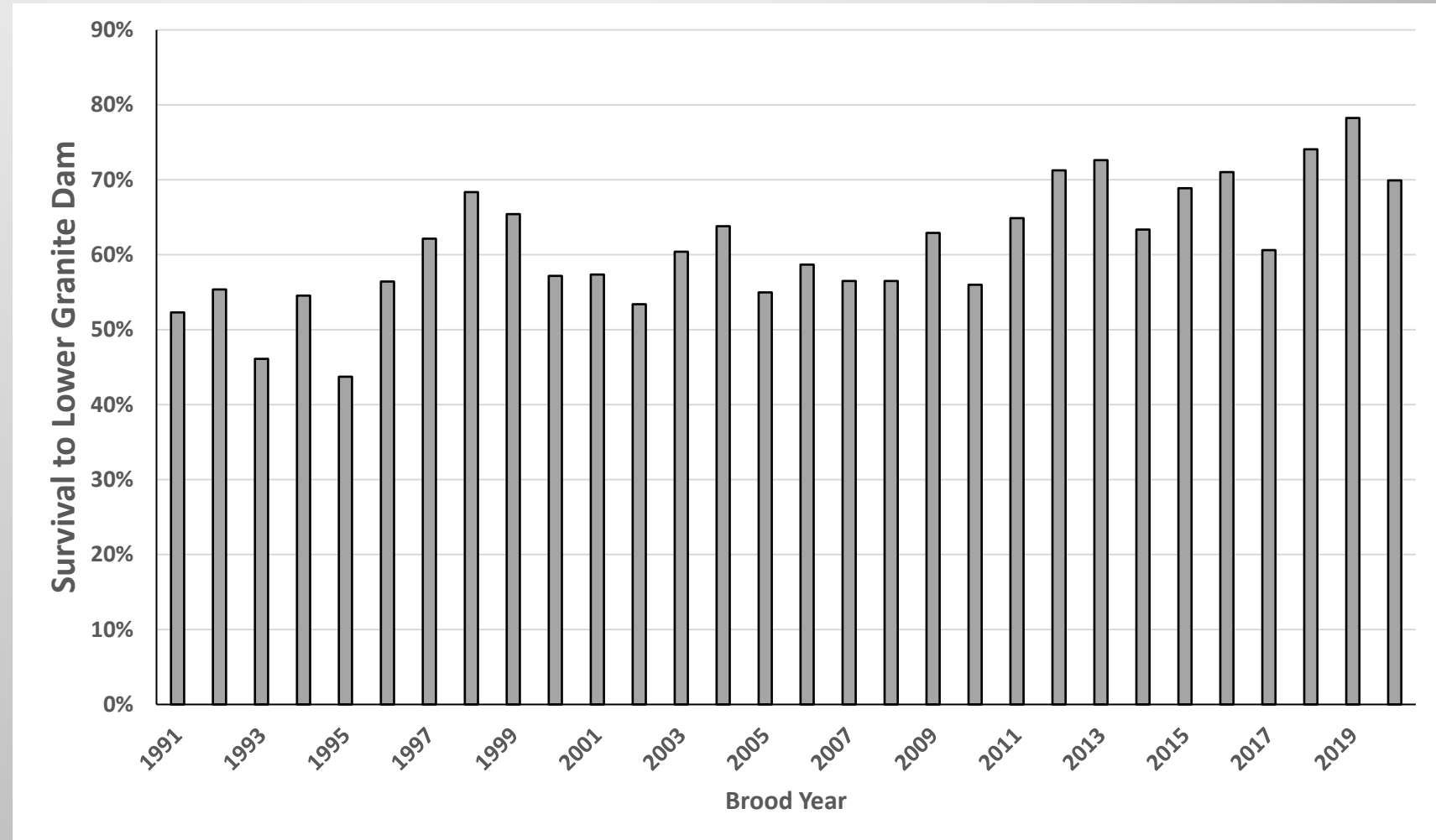
Juvenile Releases



- Release Goal: **1,000,000** yearling smolts

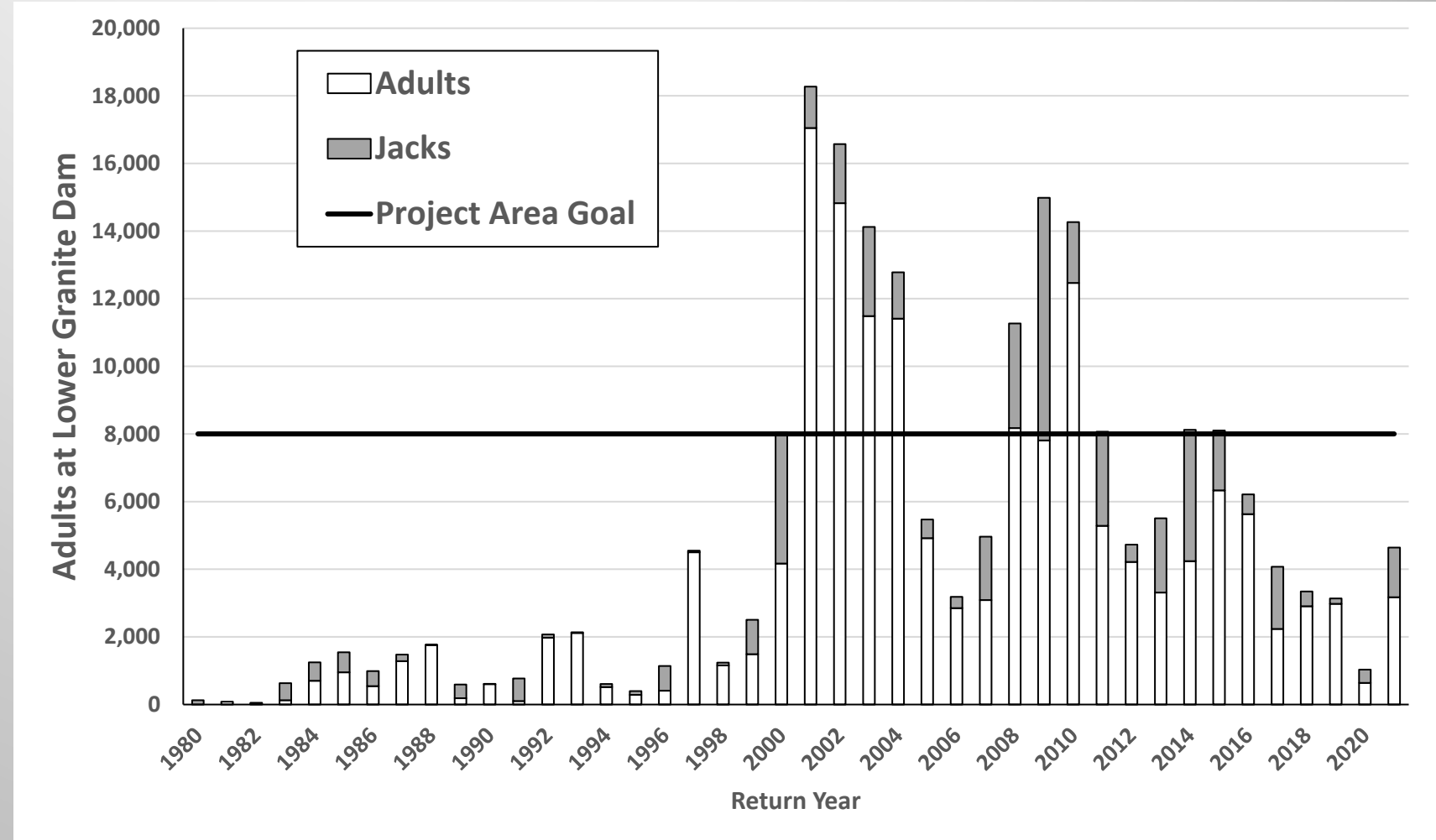
Juvenile Survival to Lower Granite Dam

- BY1991 – BY2020
Mean: **61%**
- Trending Upward
 - Most recent 10-year mean: **69%**

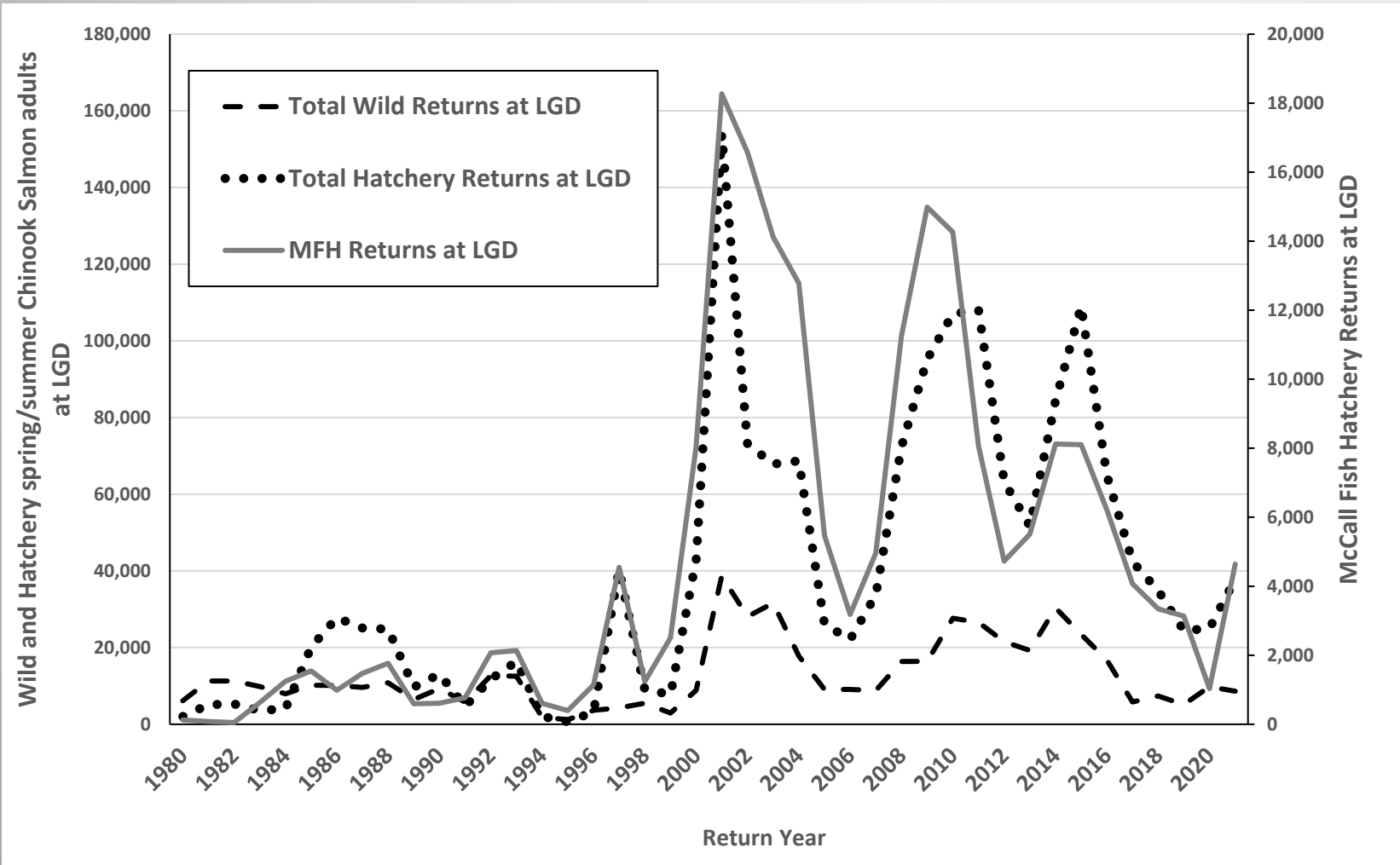


Adult Return to Project Area

- RY1980 – RY2021
Mean: **4,890**
- Project Area Goal (8,000) has been met **11** times
- 25-year low in 2020



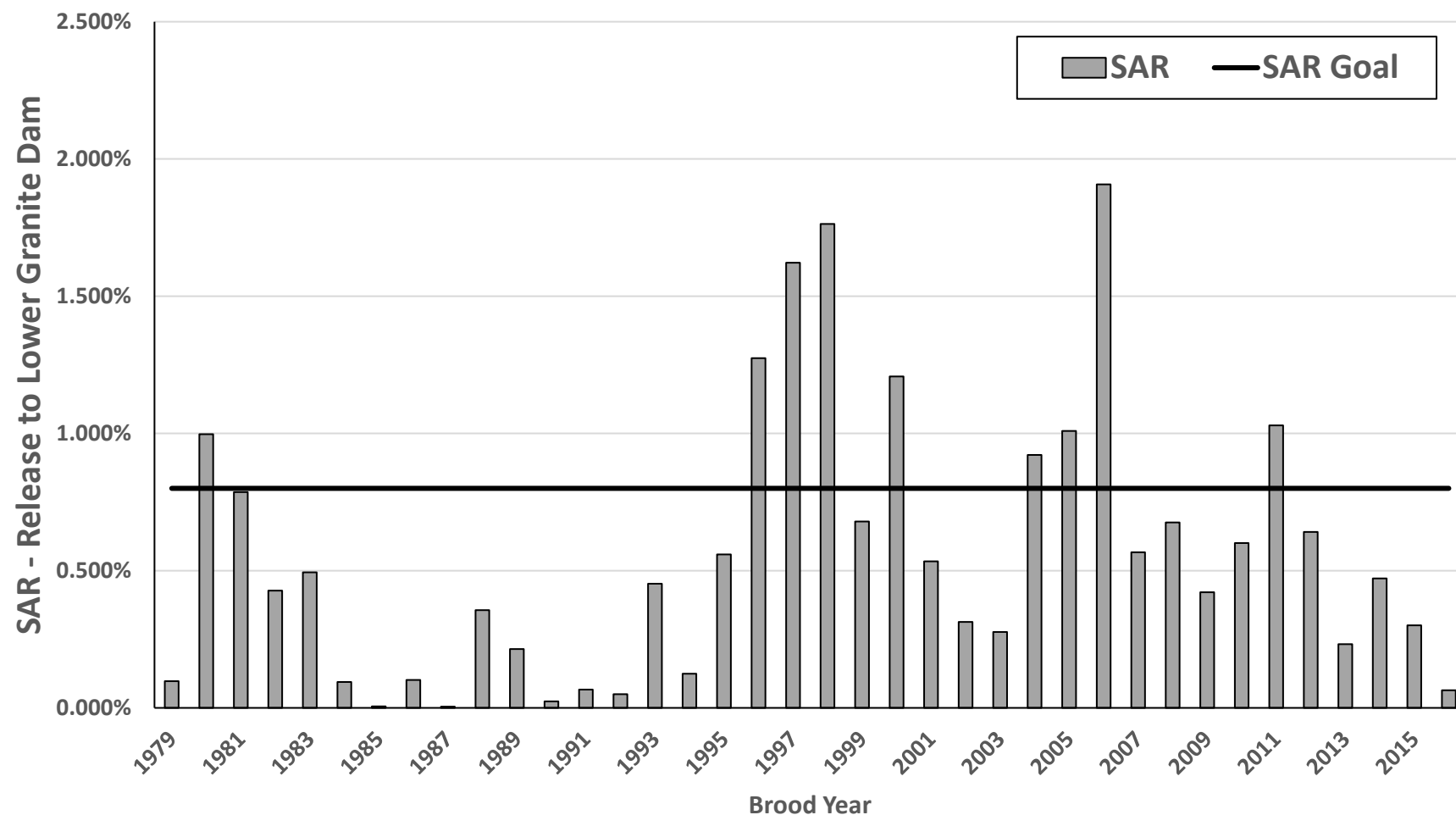
Adult Return to Project Area



Similar trends observed among wild and total hatchery returns



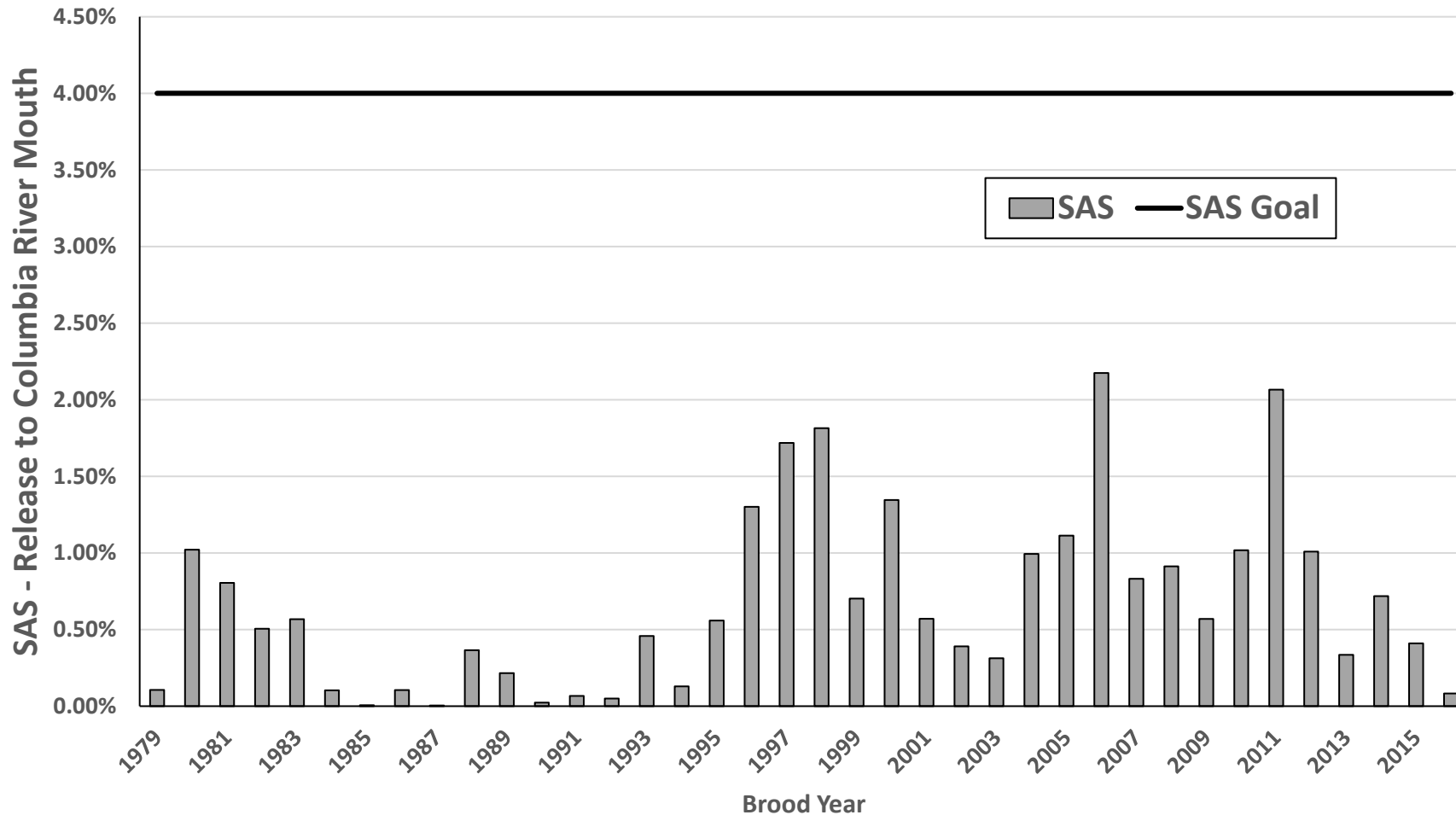
Smolt to Adult Return (SAR)



- BY1979 – BY2016
Mean: **0.56%**

- SAR needed to achieve Project Area Adult Return Goal - **0.80%**

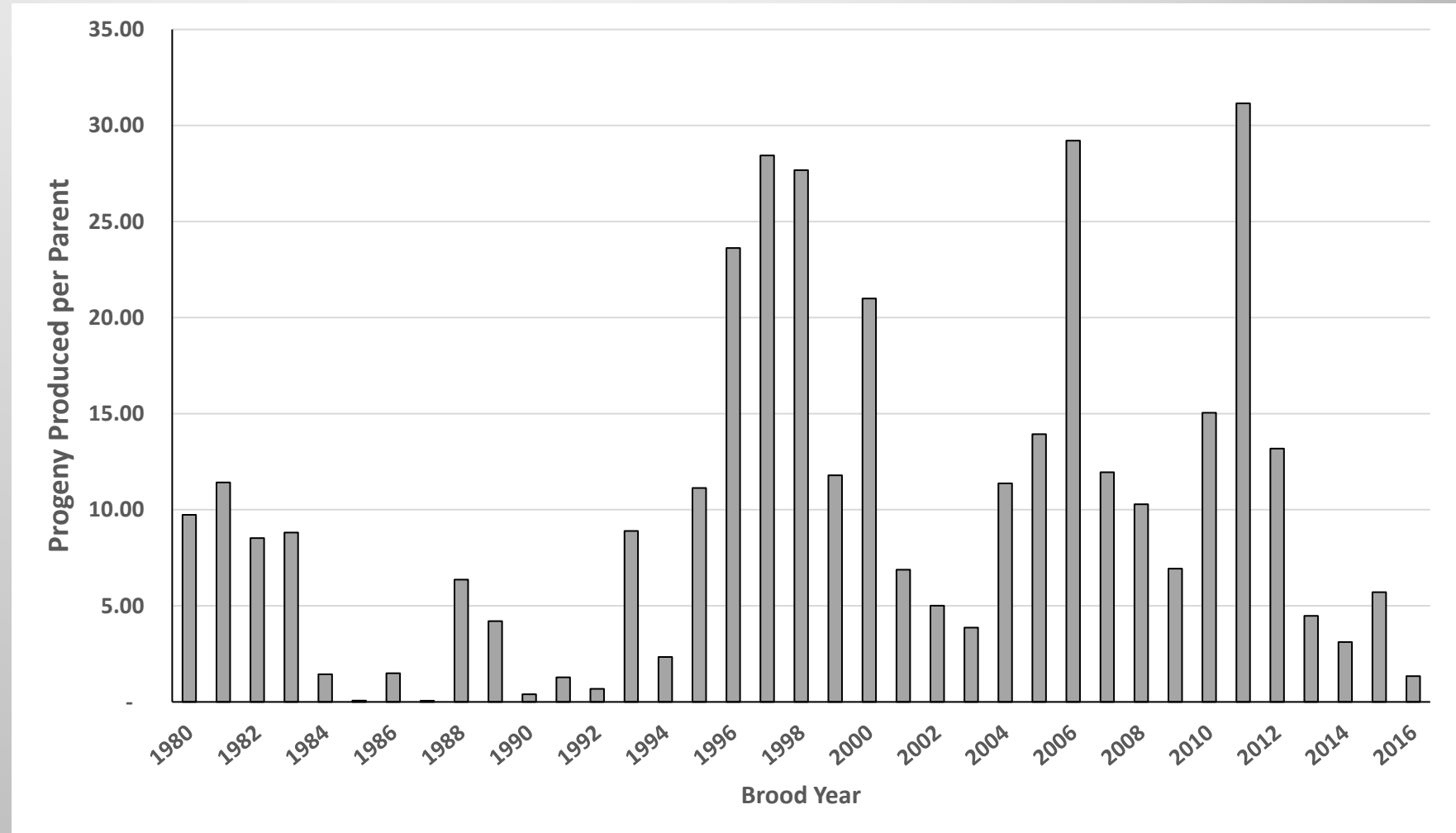
Smolt to Adult Survival (SAS)



- BY1979 – BY2016
Mean: **0.67%**
- SAS needed to achieve Total Adult Return Goal - **4.0%**

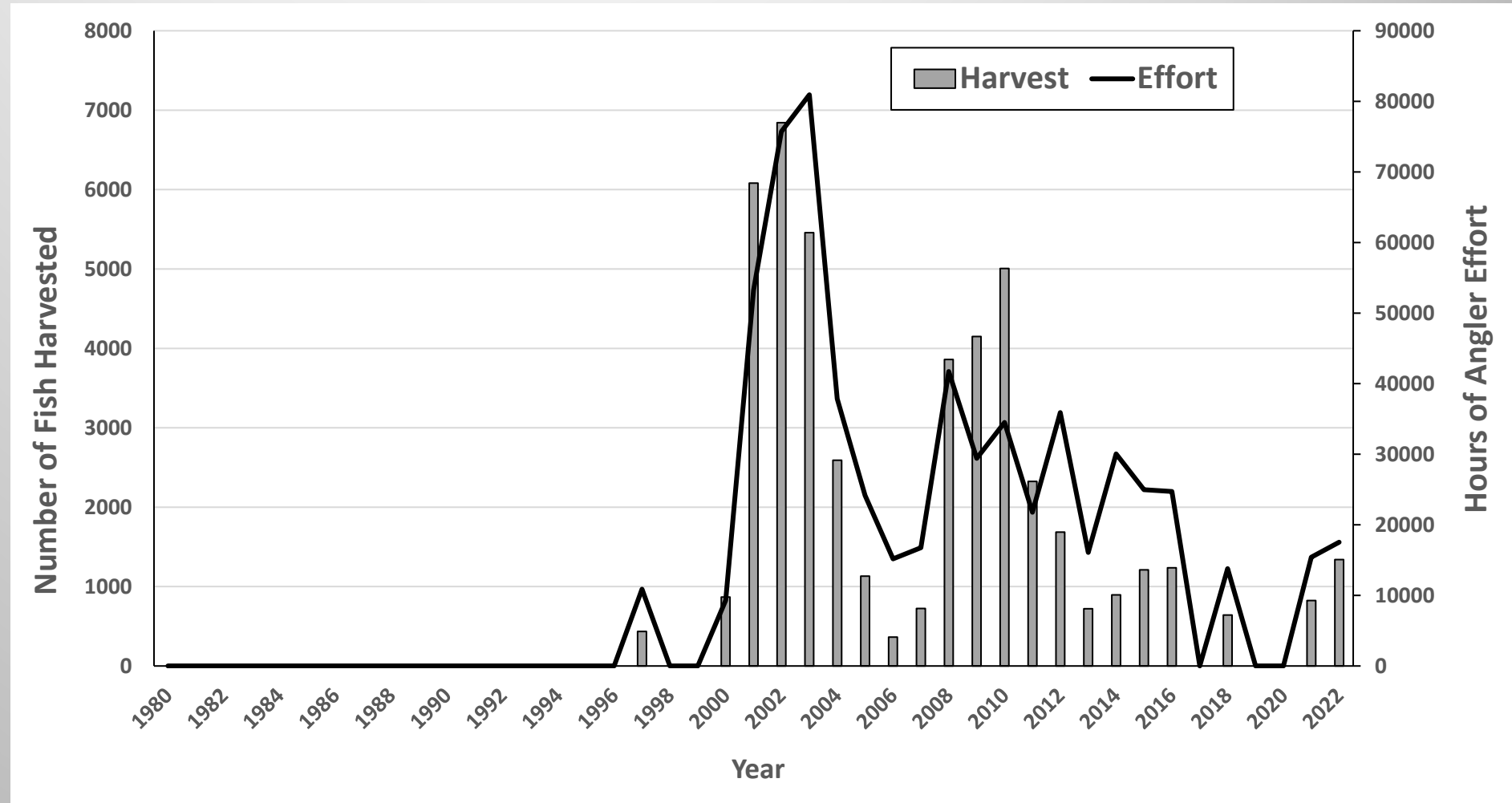
Recruits per Spawner

- BY1980-BY2016
Mean: **9.8**
- BY2007-2016
Mean: **10.3**

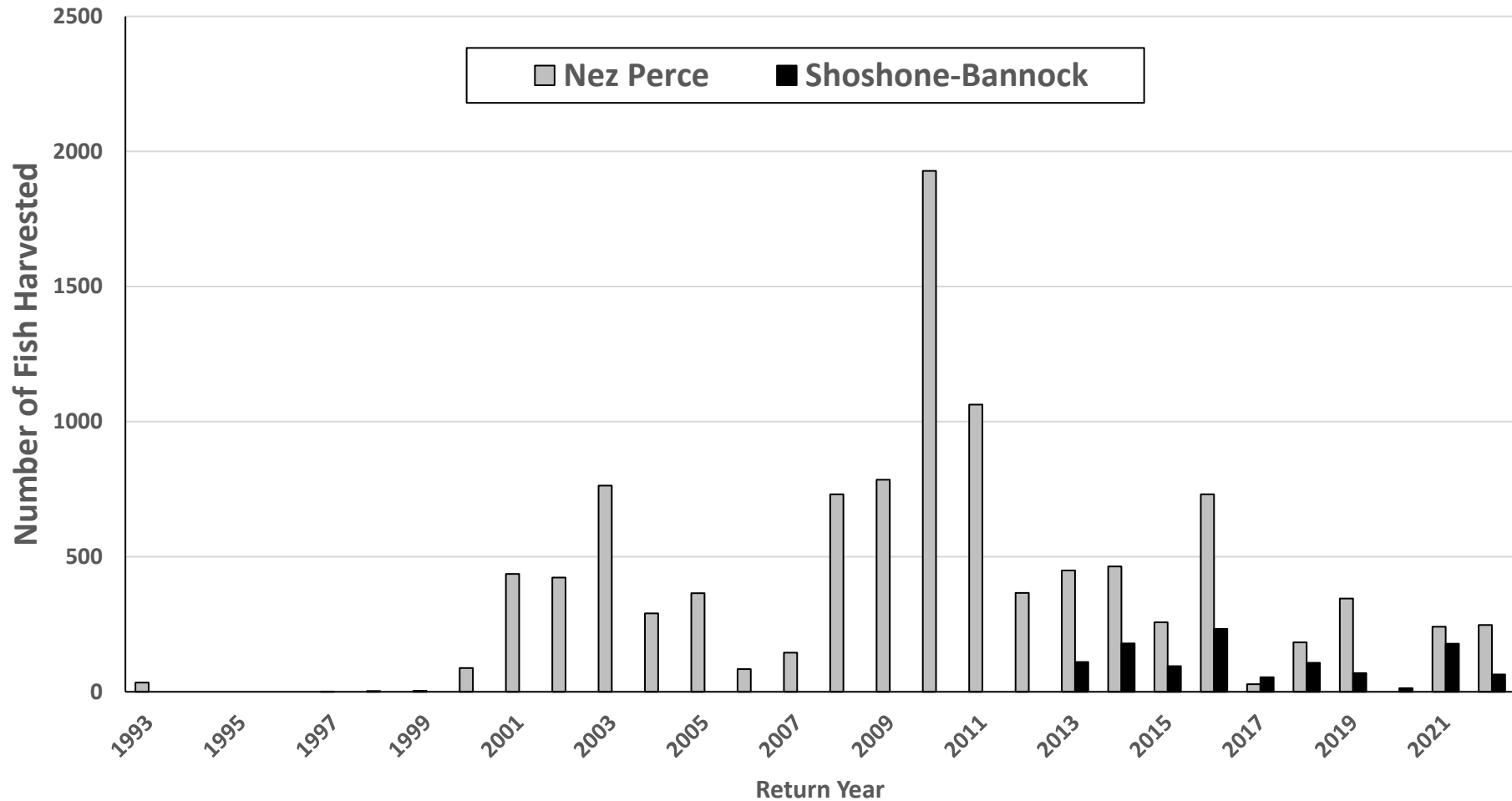


Harvest – Idaho Non-Tribal Fisheries

- Mean Harvest: **2,304** fish
- Mean Effort: **29,995** hours
- No Non-Tribal Fisheries in **1998-99, 2017, 2019-20**

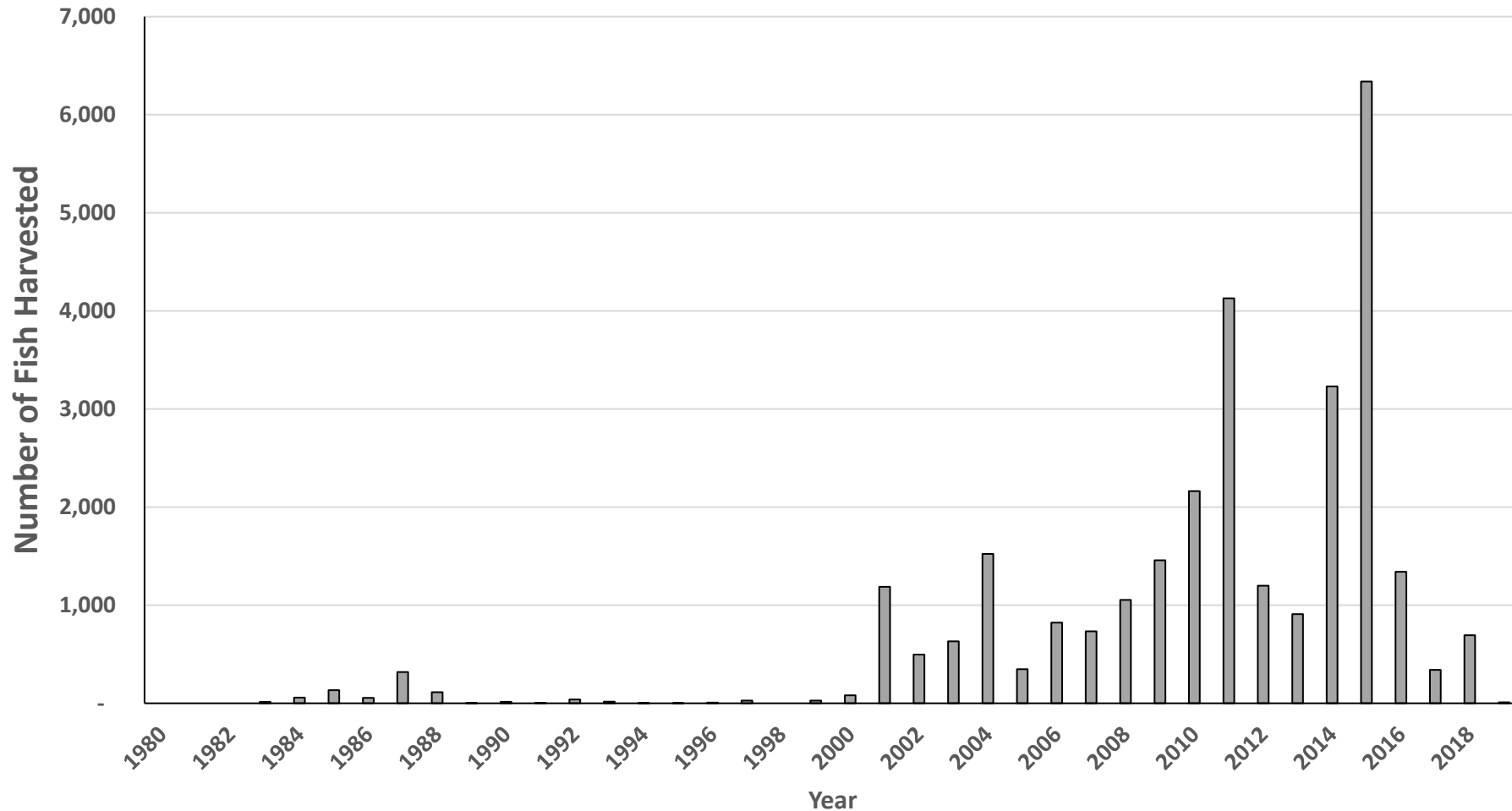


Harvest – Idaho Tribal Fisheries



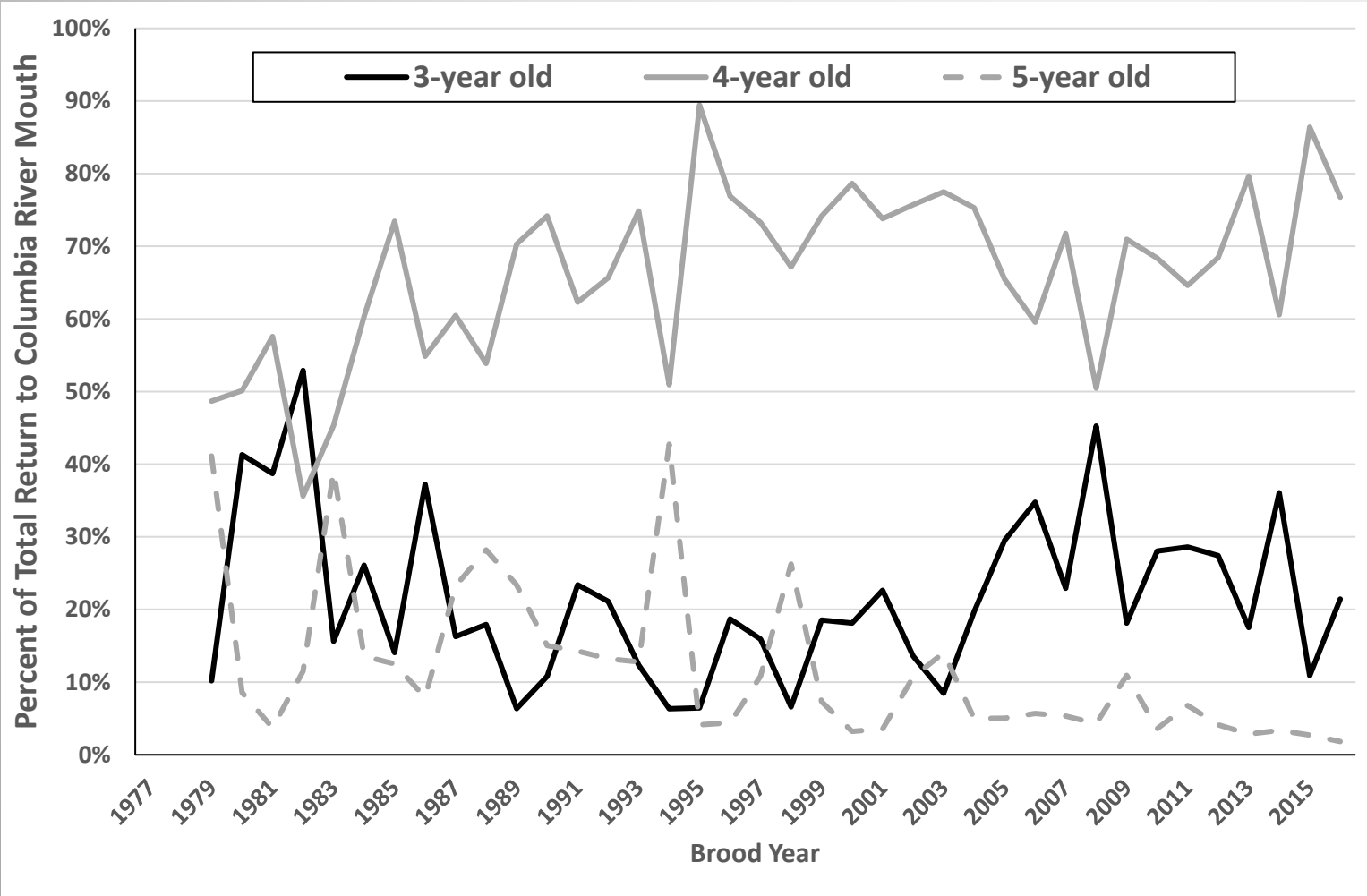
- Mean Annual Harvest: **385** fish

Harvest – Downriver Fisheries



- 1980- 2019
Mean Harvest:
820 fish
- 2010- 2019
Mean Harvest:
2,035 fish

Age Composition



**BY77 – BY06 Mean
Age: 3.9 years**

**BY07 – BY16 Mean
Age: 3.8 years**

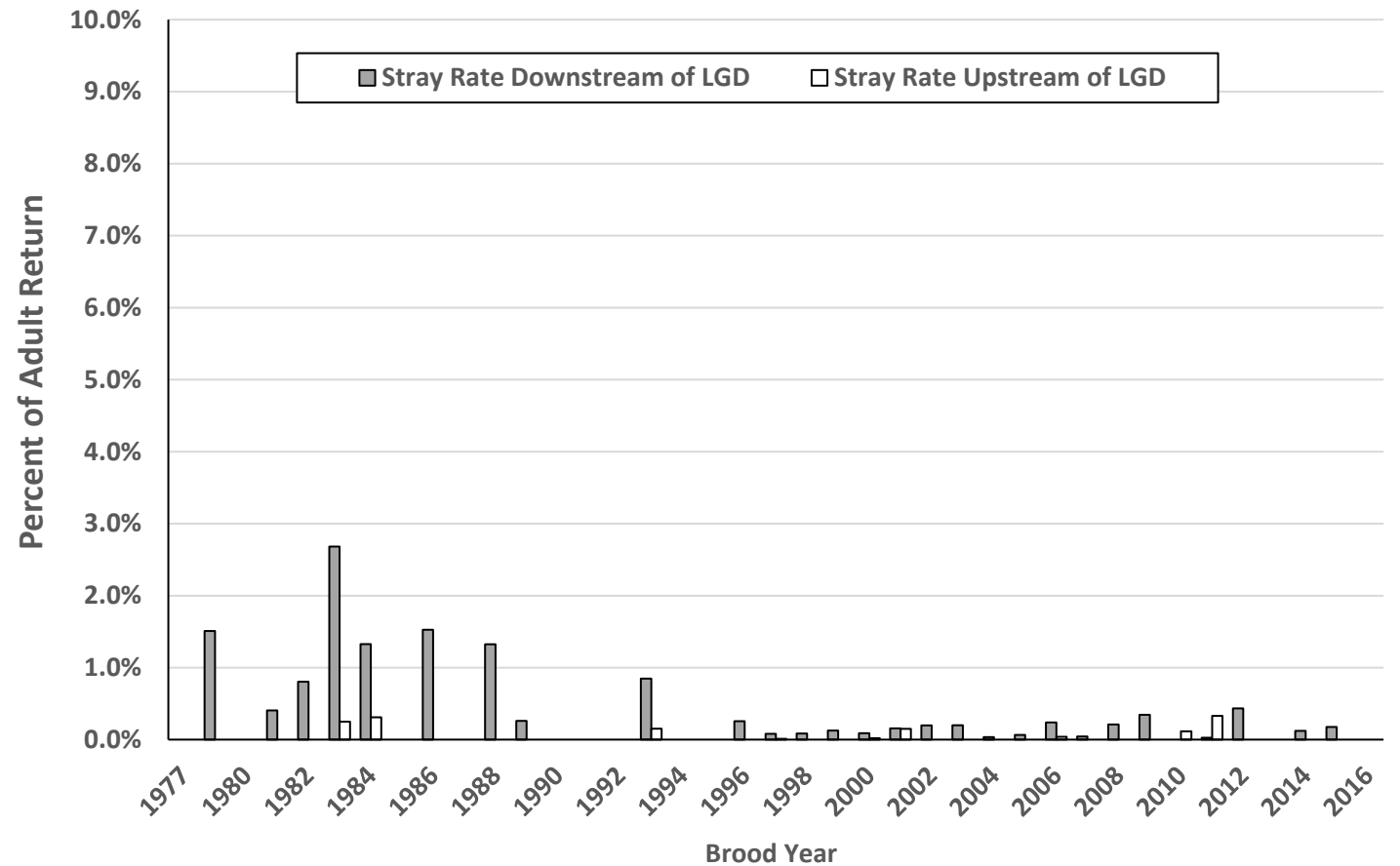
Straying Rates

Downstream of LGD

- BY77 – BY16 Mean: **0.35%**
- BY07 – BY16 Mean: **0.14%**

Upstream of LGD

- BY77 – BY16 Mean: **0.04%**
- BY07 – BY16 Mean: **0.04%**



Integrated Broodstock

Spawn Year	Observed pNOB	Observed pHOS	PNI
2014	0.86	0.54	0.61
2015	0.35	0.73	0.32
2016	0.57	0.84	0.40
2017	0.2	0.91	0.18
2018	0.38	0.82	0.32
2019	0.08	0.85	0.09
2020	0.59	0.12	0.83
2021	0.33	0.8	0.29

First integrated adults returned in 2014

- Target pNOB: **90%**
- Target PNI: **0.50 - 0.67**
- **Moving Forward**
 - Evaluate R/S for hatchery and natural adults spawning naturally
 - Can supplementation provide an increase in naturally produced adults?

Summary and Outlook for the Future

- Consistent and high in-hatchery survival – **84%** since program was implemented
- Highly variable post-release survival
 - Mean SAR of **0.56%**
- Adult return goal has been met **11** times
 - Steep decline after 2015
- Provided a fishery most years since 1997
 - **2,304** average annual non-Tribal harvest
- New adult holding ponds currently under construction
- Managers will continue to look for opportunities to increase adult returns through increases in productivity or production