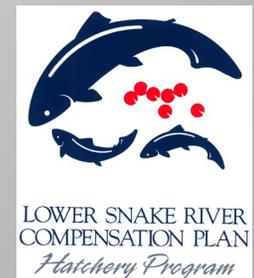


# Clearwater River – Clearwater Fish Hatchery

Spring/Summer Chinook Salmon Program Review



Bonneville  
POWER ADMINISTRATION





- Staffs at Clearwater, Dworshak, Nez Perce Tribal, and Kooskia hatcheries
- Harvest monitoring staffs from IDFG and NPT
- Fish Marking Crew-PSMFC

# Introduction

All hatcheries in Clearwater basin operated as more of a hatchery complex than as individual facilities.

- Highly coordinated efforts via Annual Operating Plan (AOP), Standard Operating Plan (SOP), and weekly coordination calls (April-Nov).
  - Similar coordination in other basins within the Snake R.
- More consistently meeting brood and production targets.
- Maximize beneficial use of returning hatchery fish.
- More effectively utilize facilities to allow increased smolt production capacity in the basin.
- Timely and coordinated response to unanticipated events.

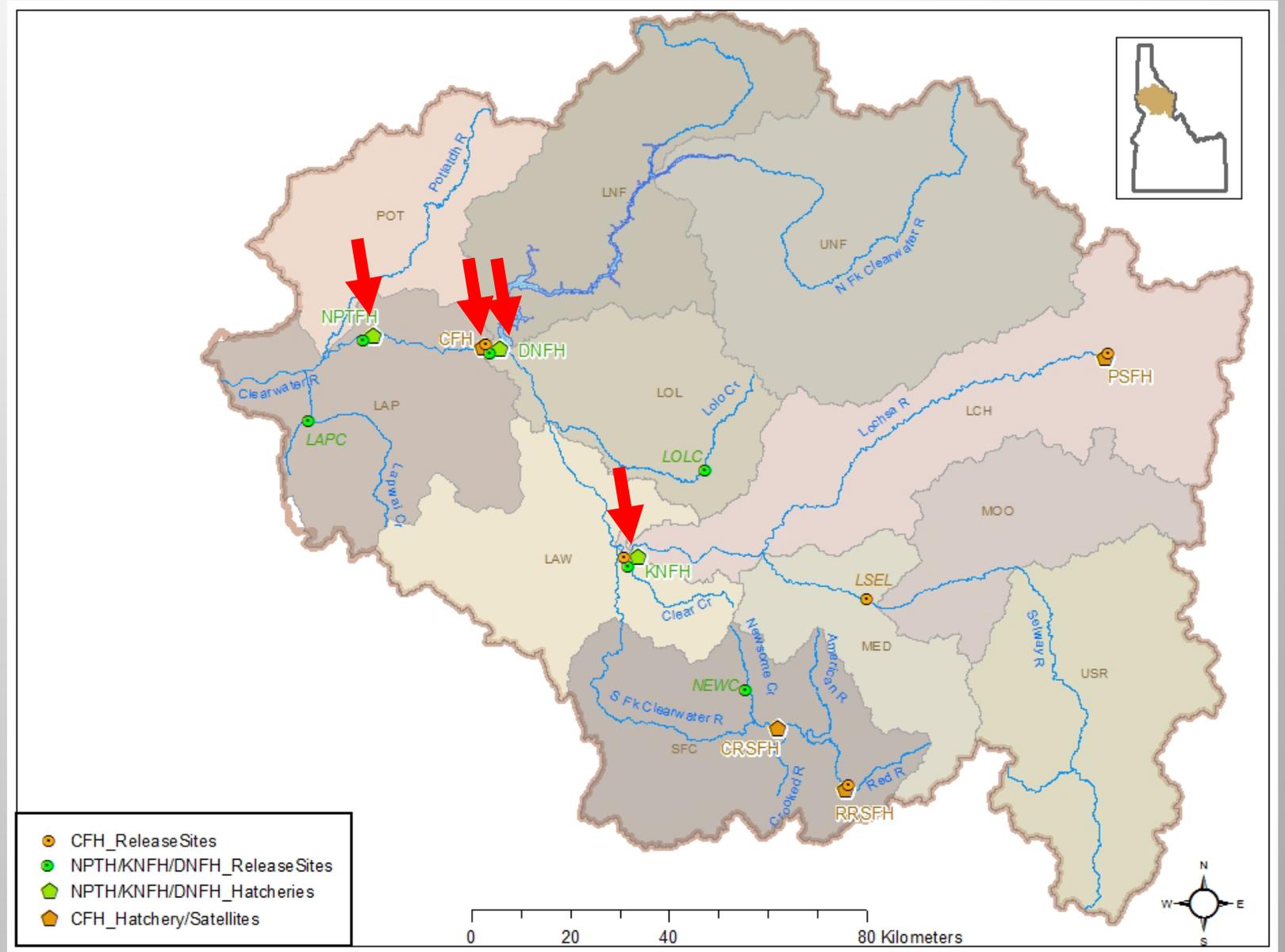
# Introduction

<b>Rearing Facility</b>	<b>Funding Source</b>	<b>Juvenile Lifestage at Release</b>	<b>2010 Juvenile Release Target</b>	<b>Current Juvenile Release Target</b>
Clearwater Fish Hatchery	LSRCP	Smolt	2,835,000	3,749,000
Dworshak NFH	LSRCP	Smolt	1,050,000	1,650,000
Nez Perce Tribal Hatchery	LSRCP	Smolt	0	400,000
Nez Perce Tribal Hatchery	BPA	Smolt	0	200,000
Nez Perce Tribal Hatchery	BPA	Parr and Pre-Smolt	625,000	225,000
Kooskia National Fish Hatchery	USFWS	Smolt	600,000	650,000
<b>Total Juvenile Releases</b>			<b>5,110,000</b>	<b>6,874,000</b>
<b>Total LSRCP Funded Releases</b>			<b>3,885,000</b>	<b>5,799,000</b>

# Introduction

## Rearing Hatcheries

- Nez Perce Tribal Hatchery (NPT)
- Clearwater Fish Hatchery (IDFG)
- Dworshak Nat. Fish Hatchery (NPT)
- Kooskia Nat. Fish Hatchery (NPT)



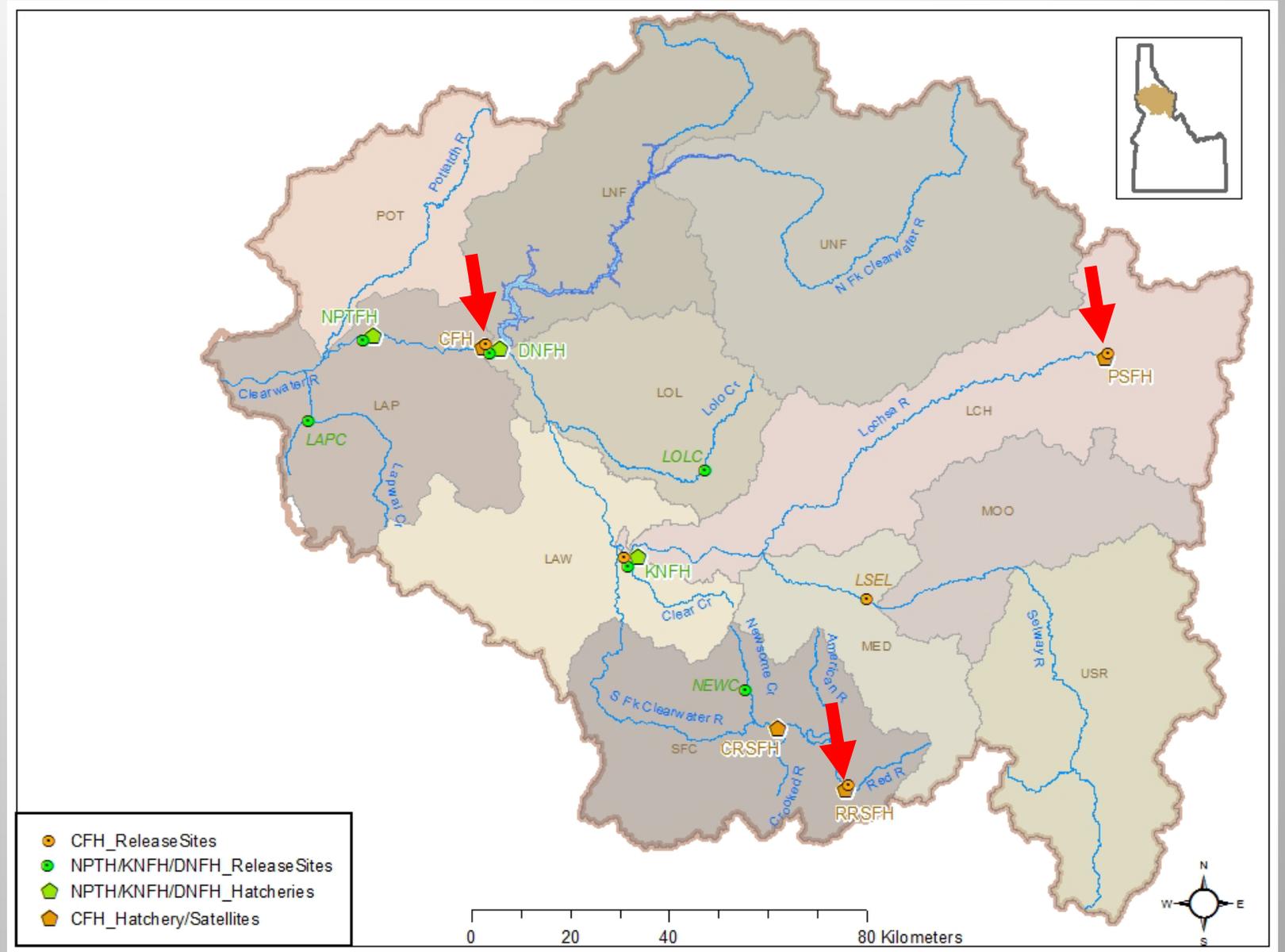
# Introduction

## Clearwater Fish Hatchery

- Located on North Fork Clearwater
- Construction completed in 1992

## Satellite Facilities

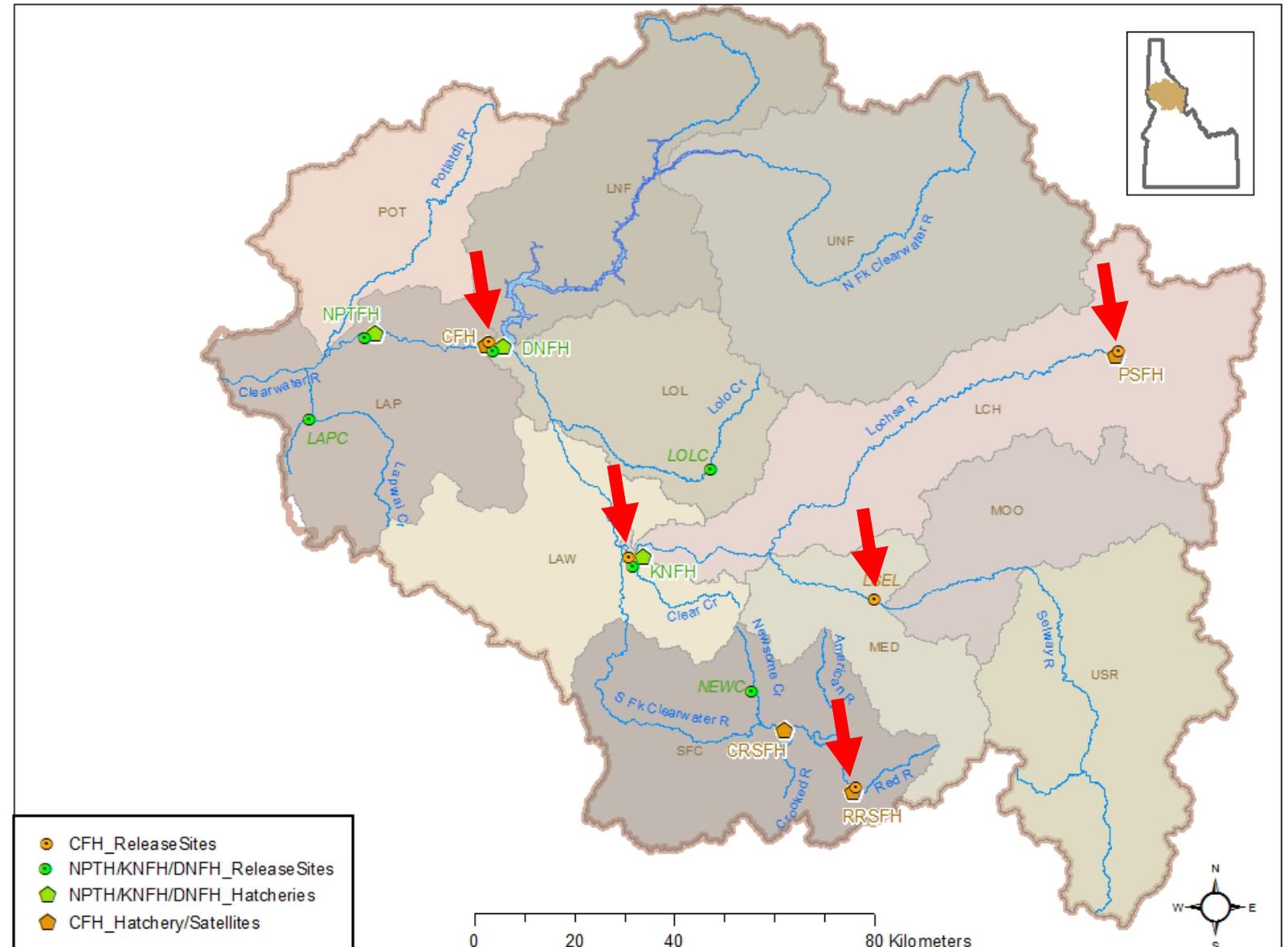
- Upper Lochsa River
  - Powell
- South Fork Clearwater Basin
  - Red River



# Introduction

## Juvenile Release Sites

- N.F. Clearwater River
- Red River
- Clear Creek
- Selway River
- Powell



# Clearwater Fish Hatchery-Mitigation Goals

Run	Project Area Adult Return Goal	Downstream of Project Area Adult Return Goal	Total Adult Return Goal
Spring	<b>9,882</b>	<b>39,528</b>	<b>49,410</b>
Summer	<b>2,033</b>	<b>8,132</b>	<b>10,165</b>
Total	<b>11,915</b>	<b>47,660</b>	<b>59,575</b>

Juvenile Release Target: **3,749,000** yearling smolts

SAR to achieve **Project Area Goal: 0.32%**

SAS to achieve **Total Adult Goal: 1.6%**

# Production Targets

Run	Release Site	Target Release Number
Spring	N.Fk. Clearwater River	709,000
Spring	Red River	1,280,000
Spring	Clear Creek	720,000
Spring	Selway River	400,000
Summer	Powell	640,000
<b>Total</b>		<b>3,749,000</b>

All juveniles released as yearling smolts



# Production Changes at Clearwater FH

## Changes since 2010

- Increased production from **2.84M** to **3.75M** juveniles
- Introduction of summer Chinook run in BY2009
  - Provide additional harvest opportunity and diversity
  - Initial release target of **200,000** yearling smolts
  - Current release target of **640,000** yearling smolts

# ESA Status and Consultation History

Wild Chinook Salmon in the Clearwater basin were extirpated due to construction and operation of the Lewiston Dam (1927-1973).

Current natural populations in the Clearwater R. basin are not part of the listed Snake River ESU.

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
  - Maintain existing natural spawning populations of Chinook salmon
  - Preserve and enhance habitat
- Monitoring and Evaluation objectives:
  - Production/productivity
  - Abundance and distribution
  - Life history
  - Evaluate alternative rearing strategies
  - Estimate contribution to fisheries
- For IDFG, natural production monitoring is funded through BPA Project # 1990-055-00

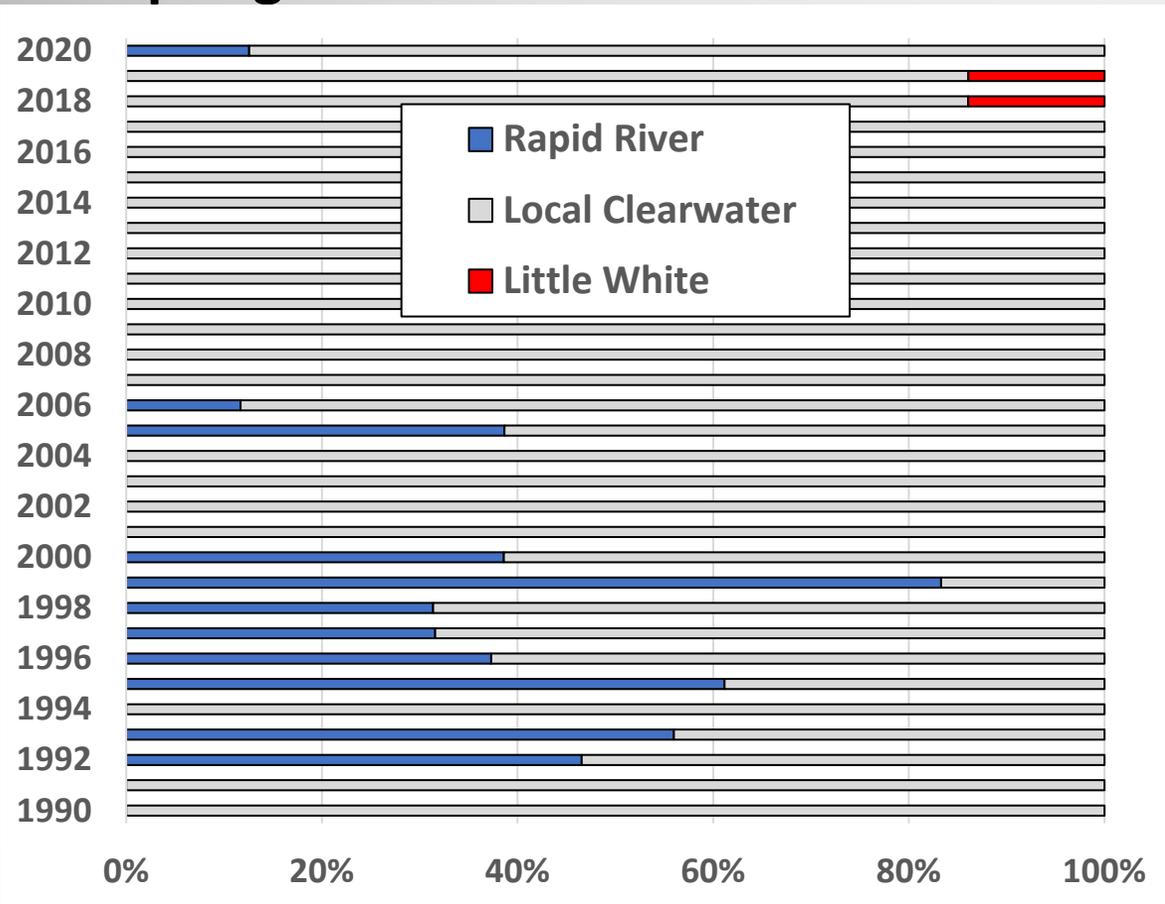
# Broodstock History

- Reintroduction efforts in the Clearwater began in the 1950s and ramped up in the 1970s
- These later efforts during the 1970s utilized primarily Rapid River stock but also included:
  - locally collected brood at Dworshak and Kooskia hatcheries
  - Middle Fork Salmon River
  - Carson NFH, and Leavenworth NFH stocks.
- Since the early 1990s, the majority of brood have been collected from Clearwater Basin returns.
- Returns of spring-run Chinook Salmon to all hatchery facilities in the Clearwater R basin are managed as a single stock.

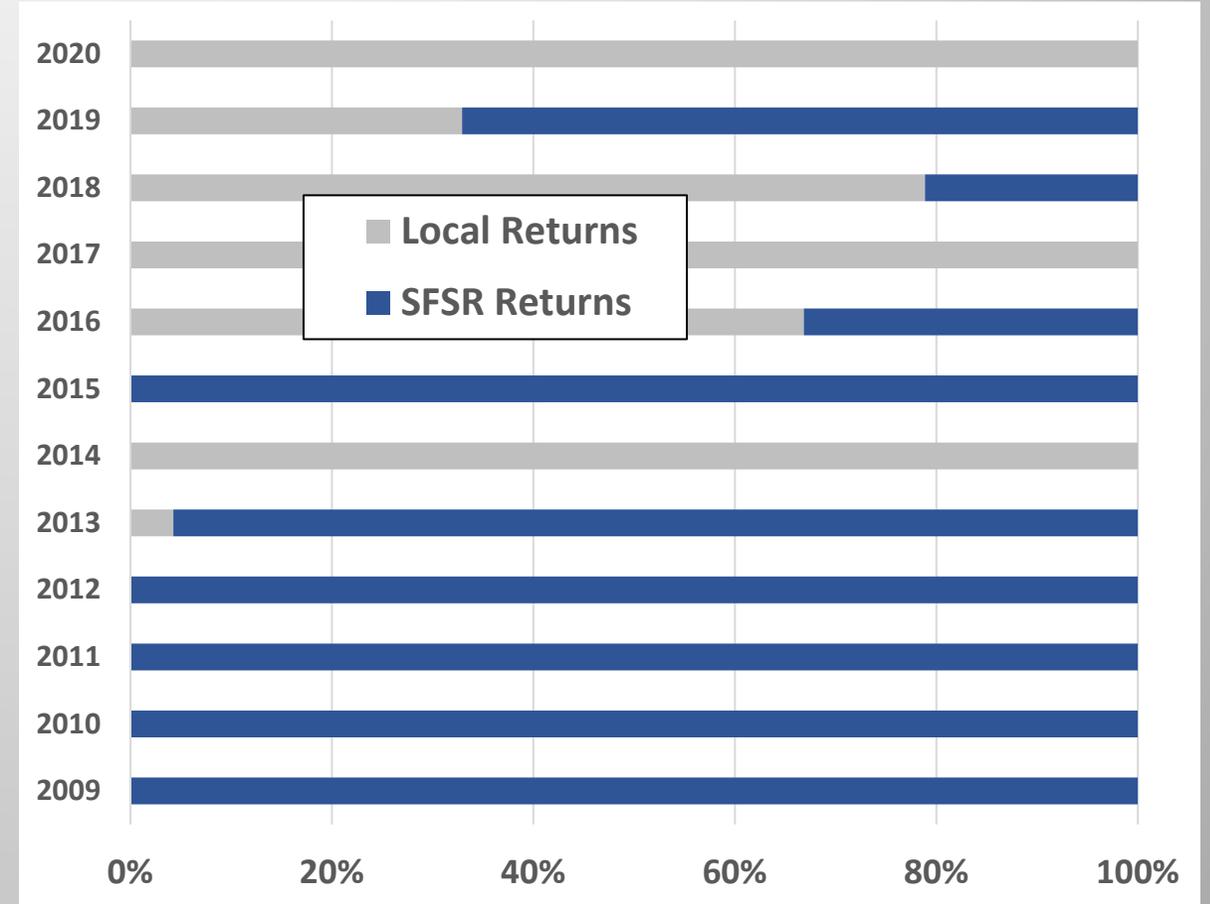
# Broodstock History

Current Broodstock Collection Goals:  
**2,165 spring** and **432 summer** adults

## Spring

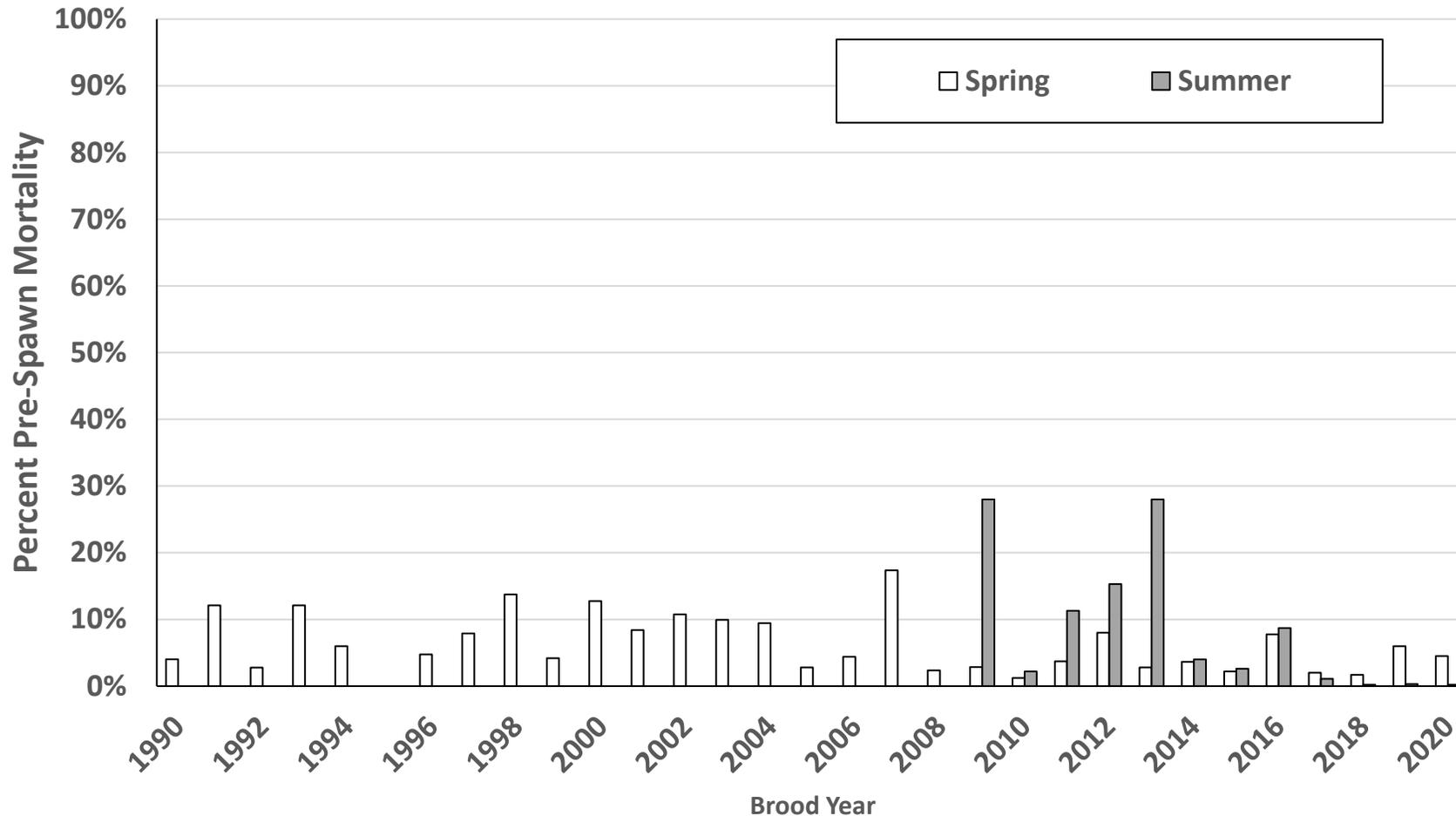


## Summer



Both spring and summer programs are managed as segregated broodstocks

# Pre-spawn Mortality



## Spring

- BY1990-BY2020  
Mean: **6%**
- BY2011-BY2020  
Mean: **4%**

## Summer

- BY2009-BY2020  
Mean: **8%**

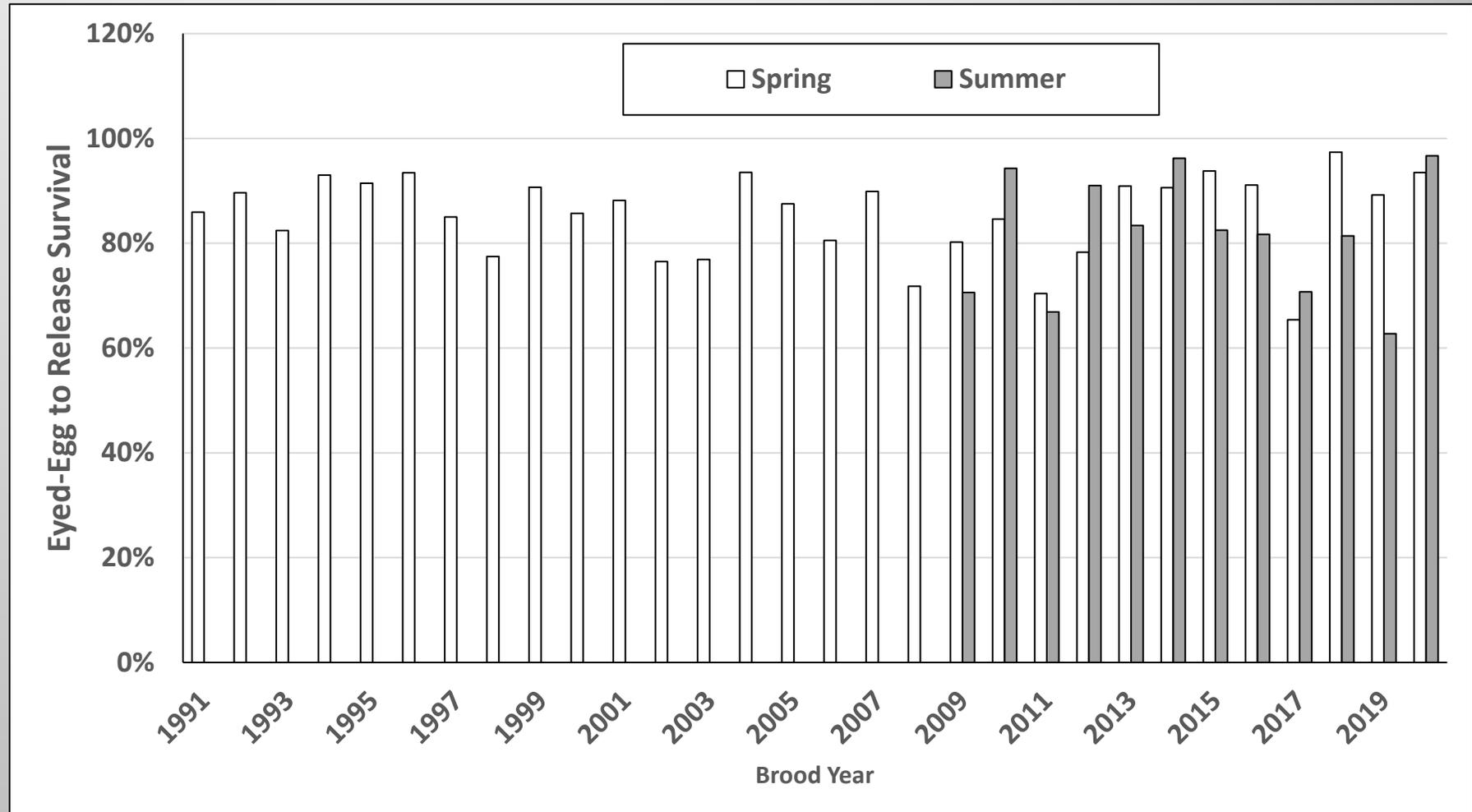
# Eyed-egg to Release Survival

## Spring

- BY1991-BY2020  
Mean: **85%**
- BY2011-BY2020  
Mean: **86%**

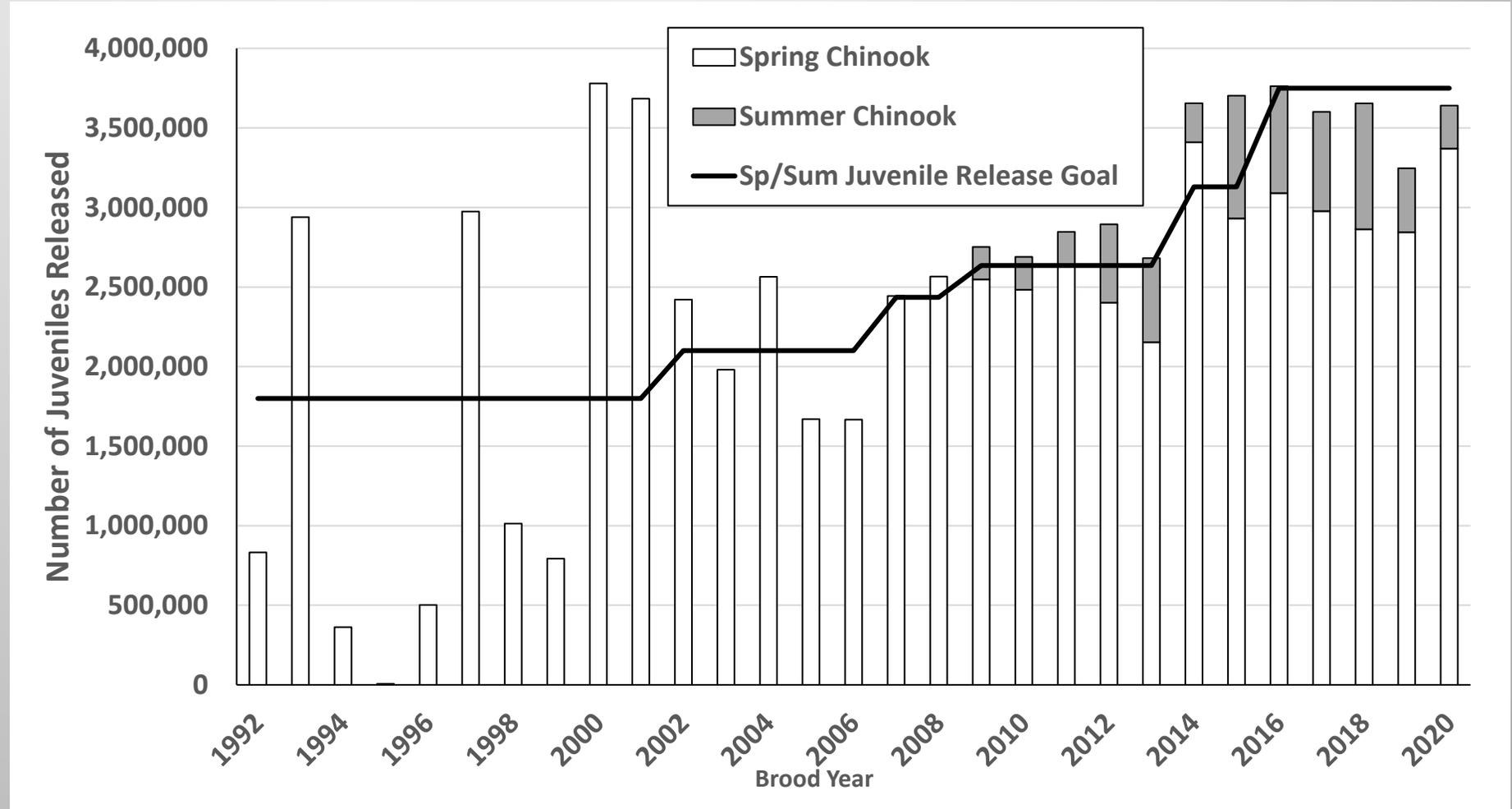
## Summer

- BY2009-BY2020  
Mean: **82%**



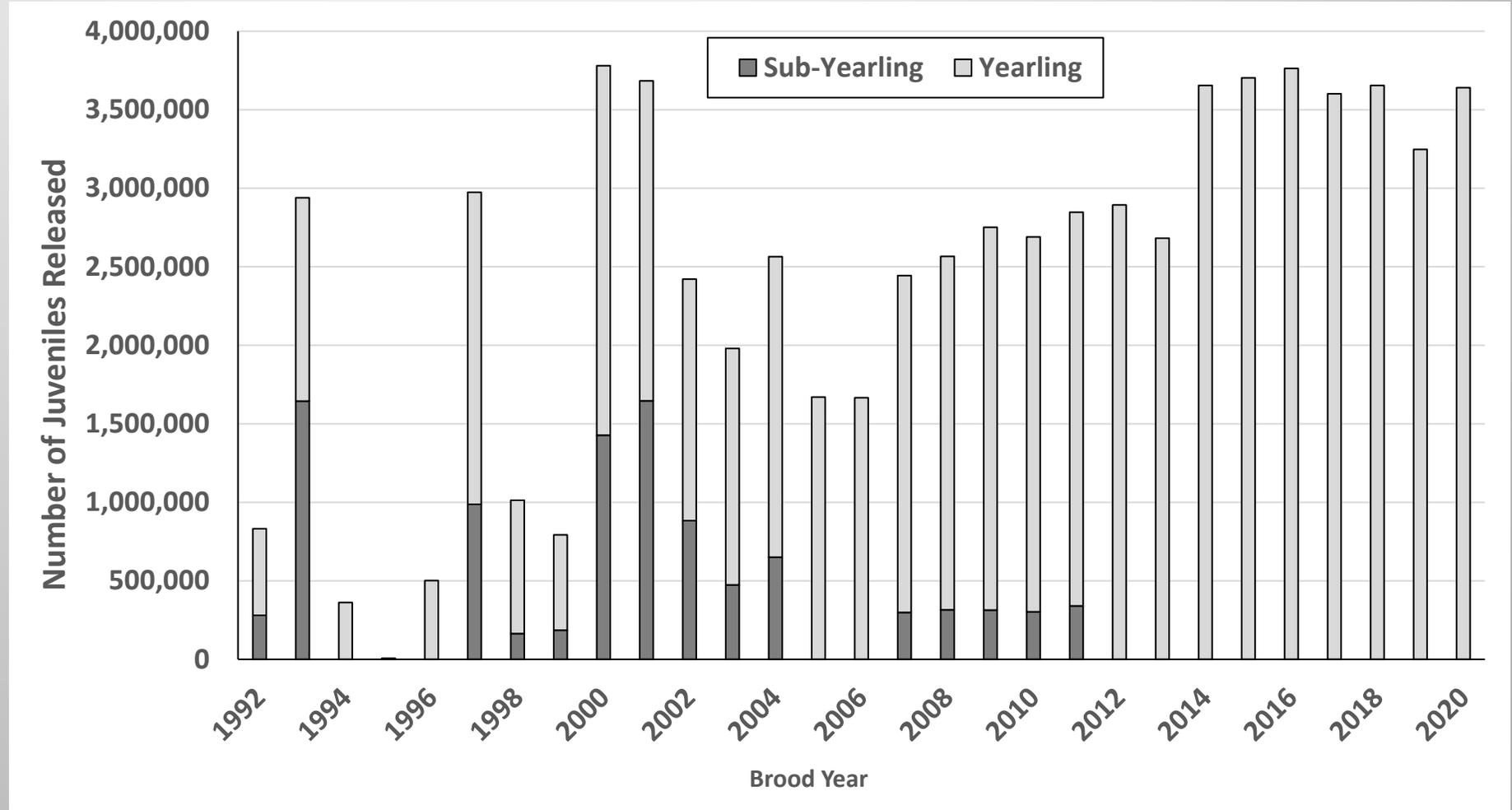
# Juvenile Releases

- Current Release Goal: **3.75M** yearling smolt



# Juvenile Releases

- Current Release Goal: **3.75M** yearling smolt
  - Sub-yearling releases ended in BY2011



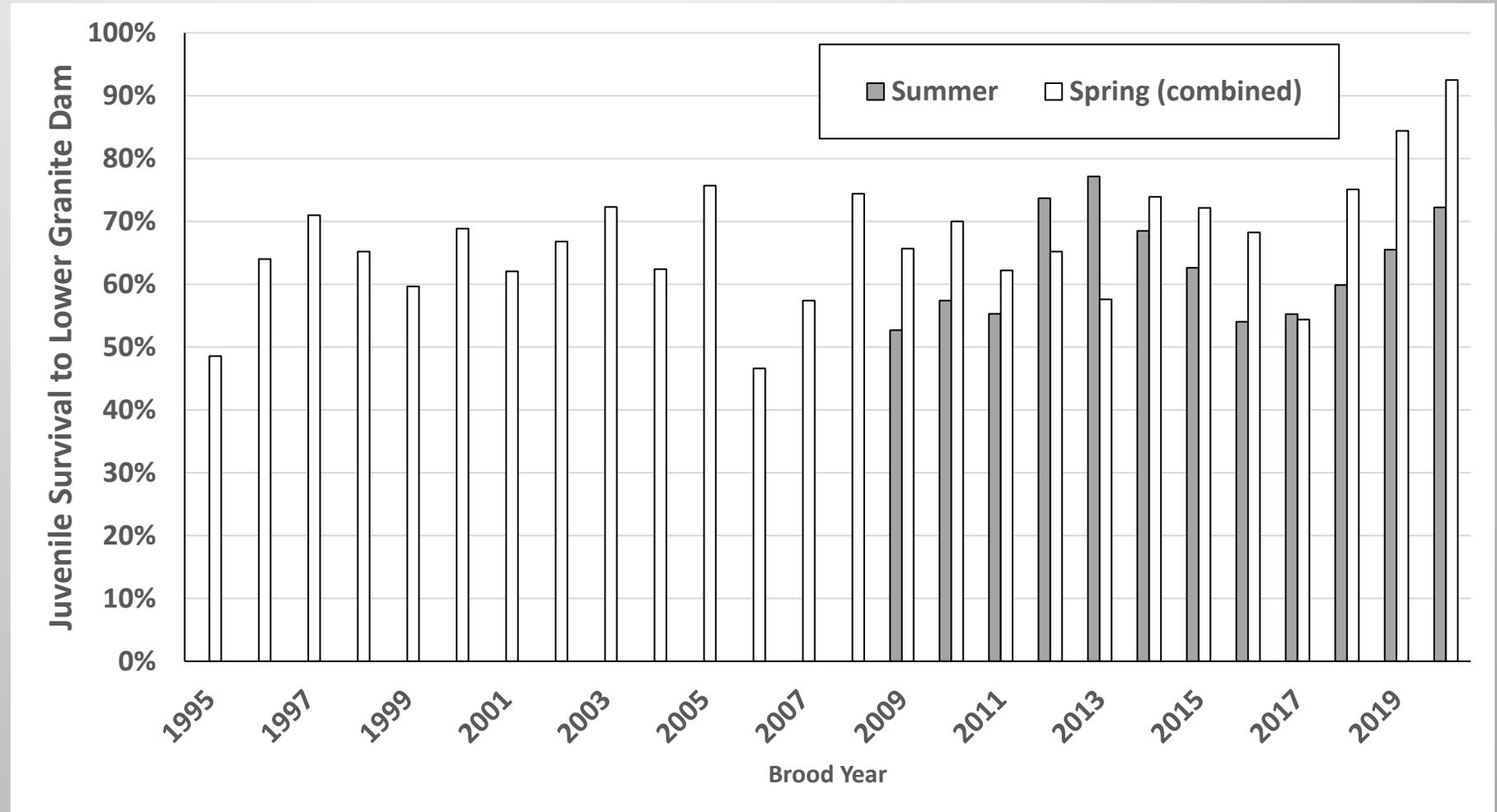
# Juvenile Survival to Lower Granite Dam

## Spring Run

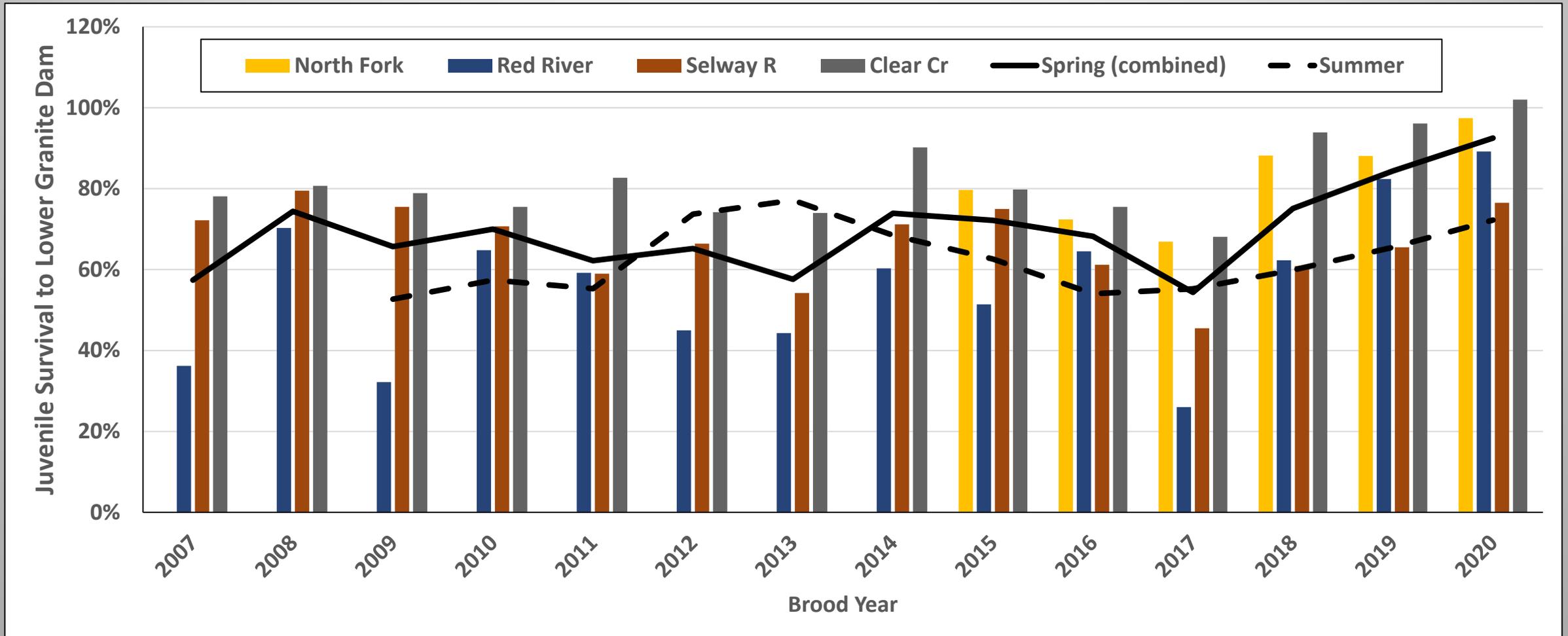
- BY1995-BY2020  
Mean: **67%**
- BY2009-BY2020  
Mean: **70%**

## Summer Run

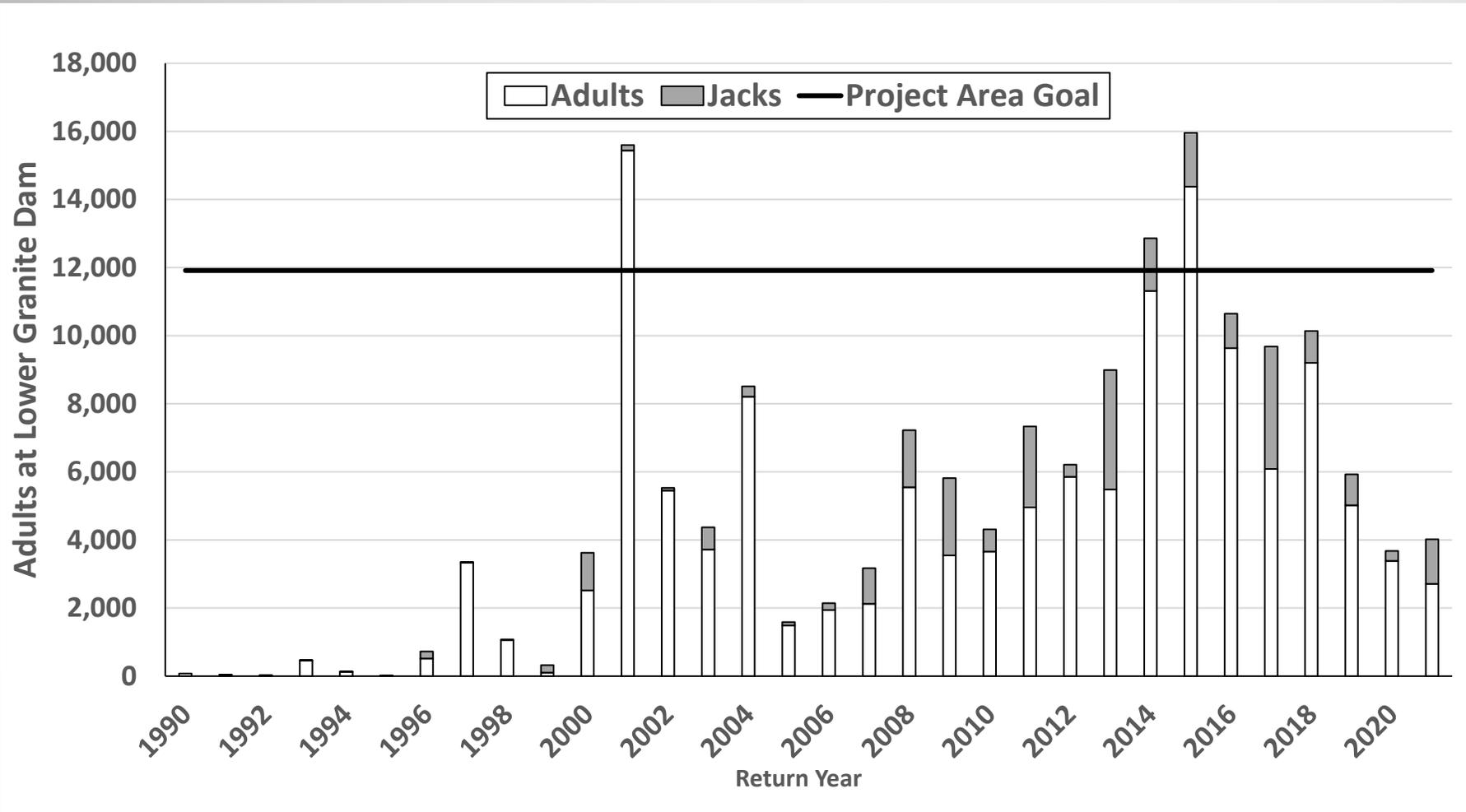
- BY2009-BY2020  
Mean: **63%**



# Juvenile Survival to Lower Granite Dam

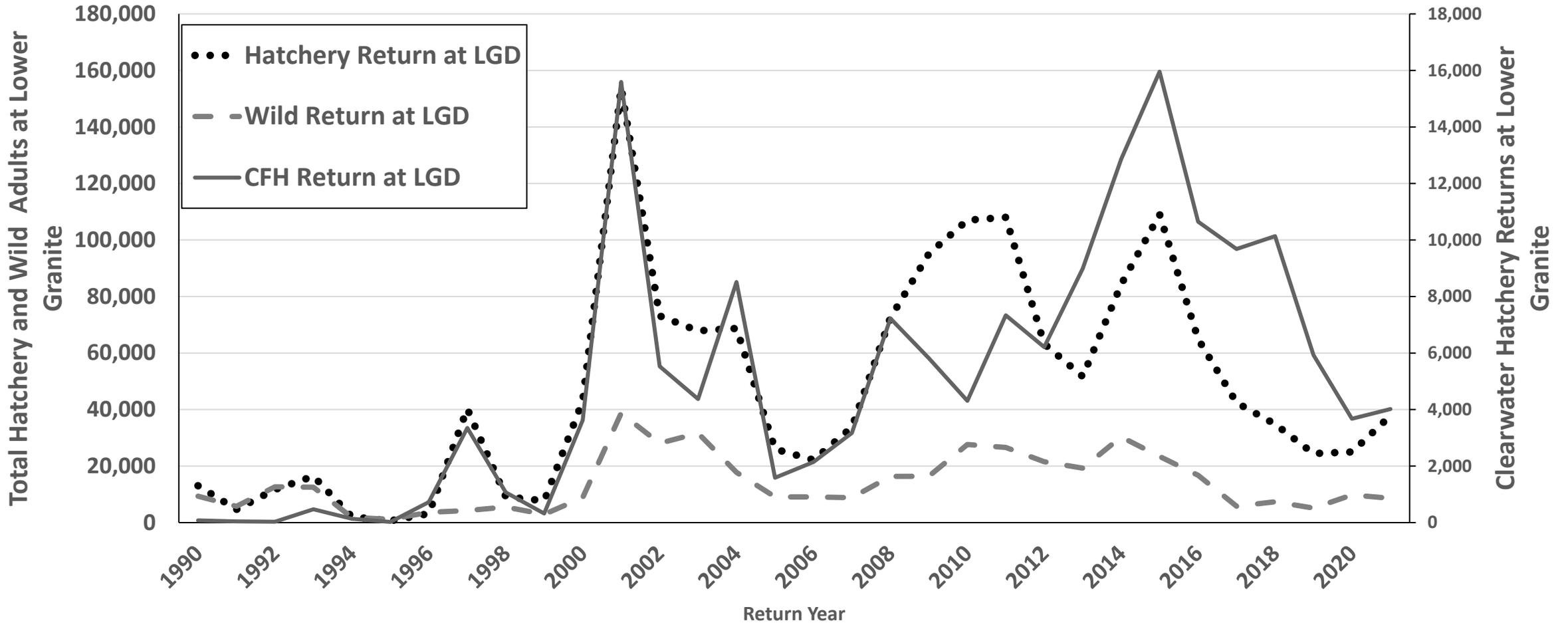


# Adult Return to Project Area

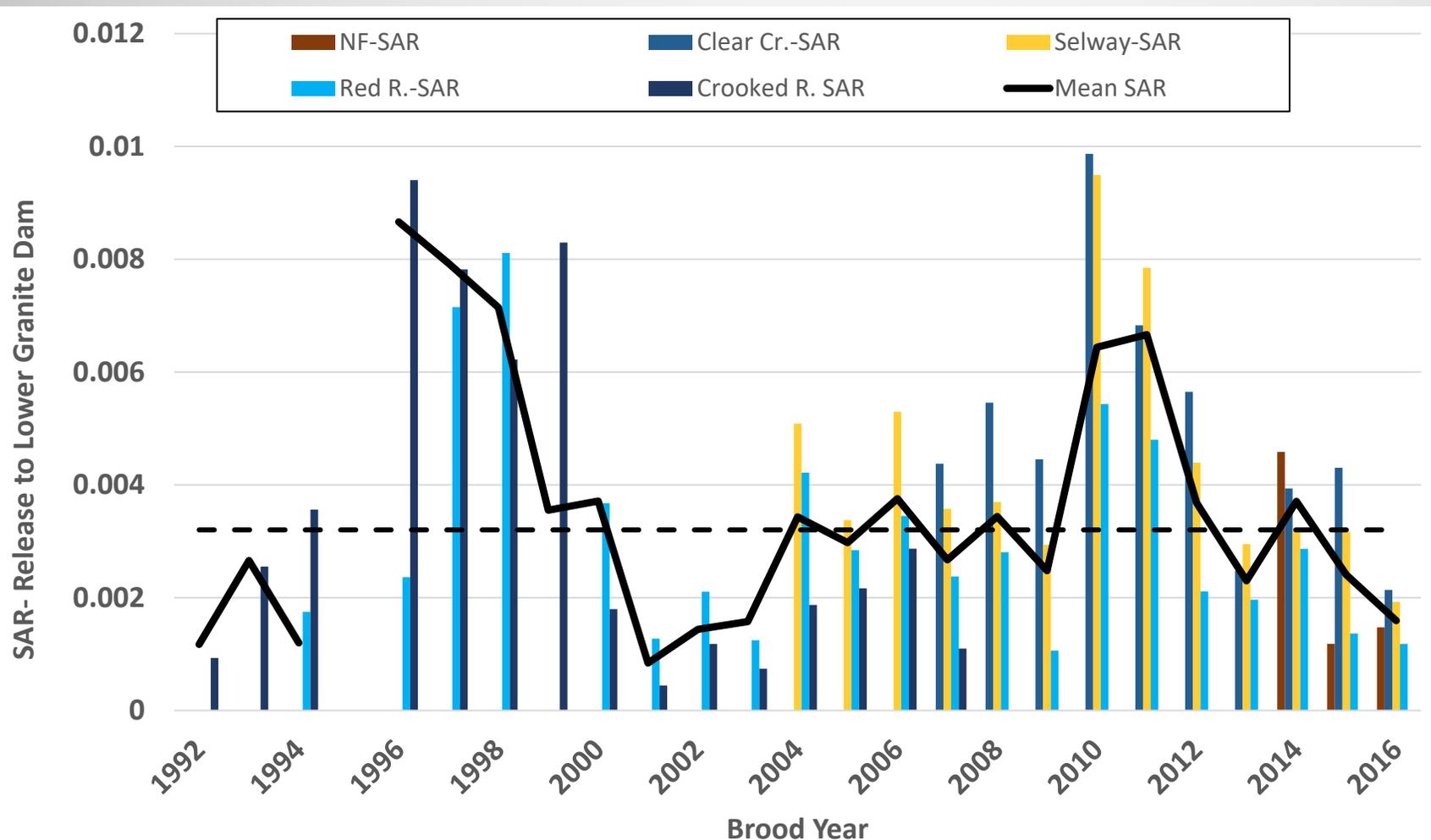


- RY1990-2021 Mean: **5,112**
- RY2012 – RY2021 Mean: **8,811**
- Project Area Goal (**11,915**) has been met **3** times
- Significant decrease since 2015

# Adult Return to Project Area



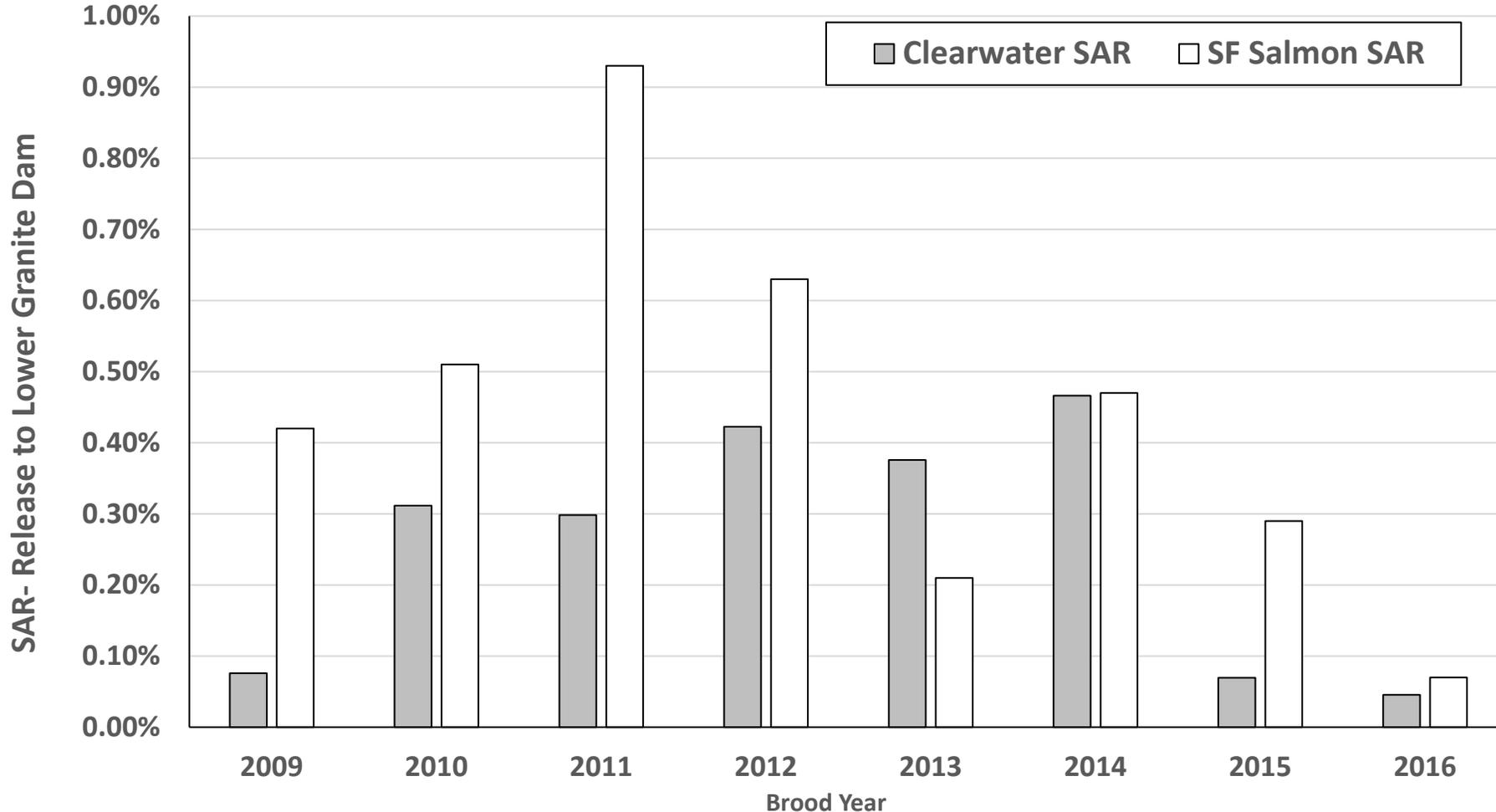
# Smolt to Adult Return (SAR)- Spring Run



- BY1992 – BY2006  
Mean: **0.36%**

- BY2007 – BY2016  
Mean: **0.35%**

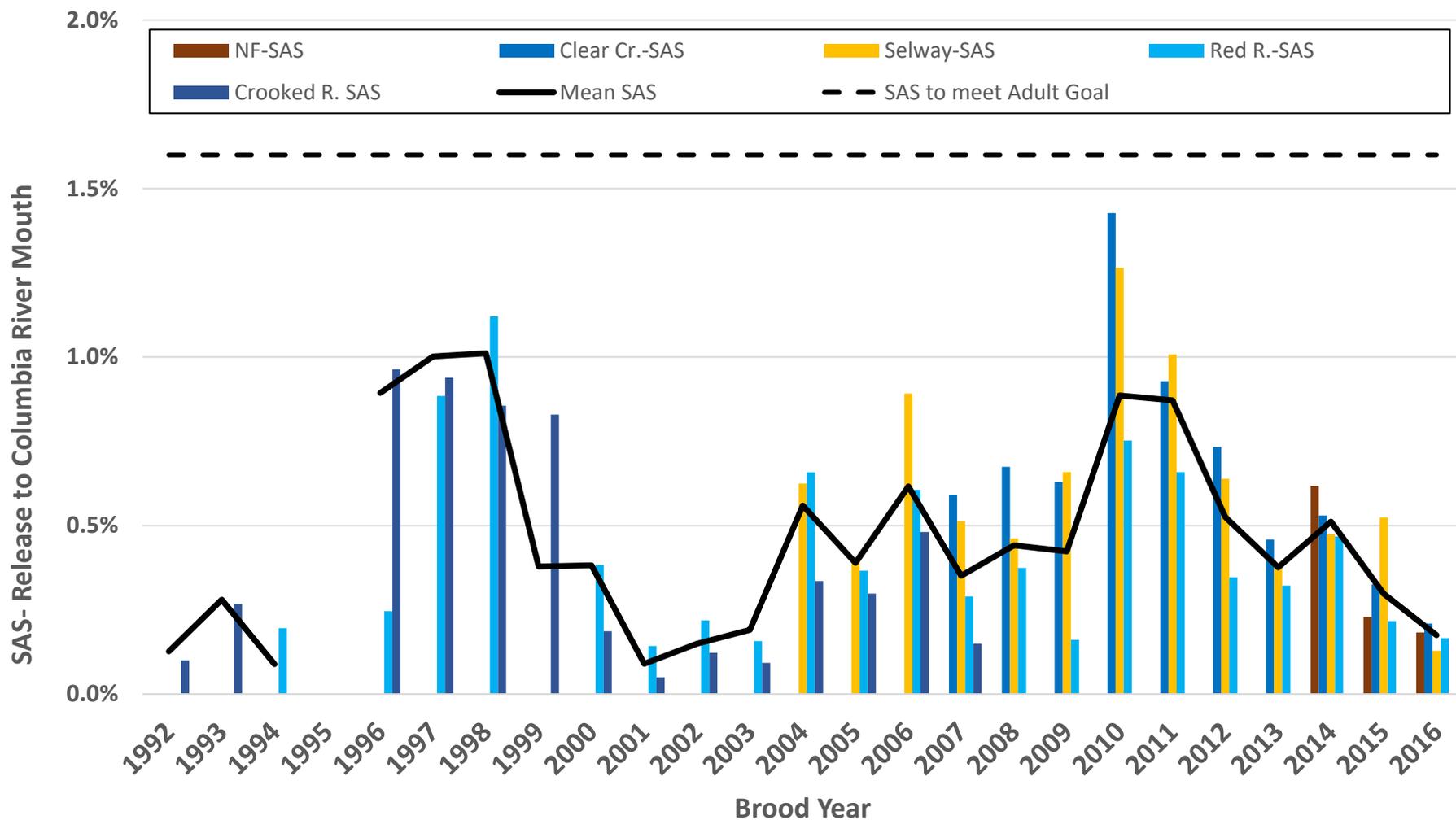
# Smolt to Adult Return (SAR)- Summer Run



BY2009 – BY2016

- Clearwater  
Mean: **0.26%**
- SFSR  
Mean: **0.44%**

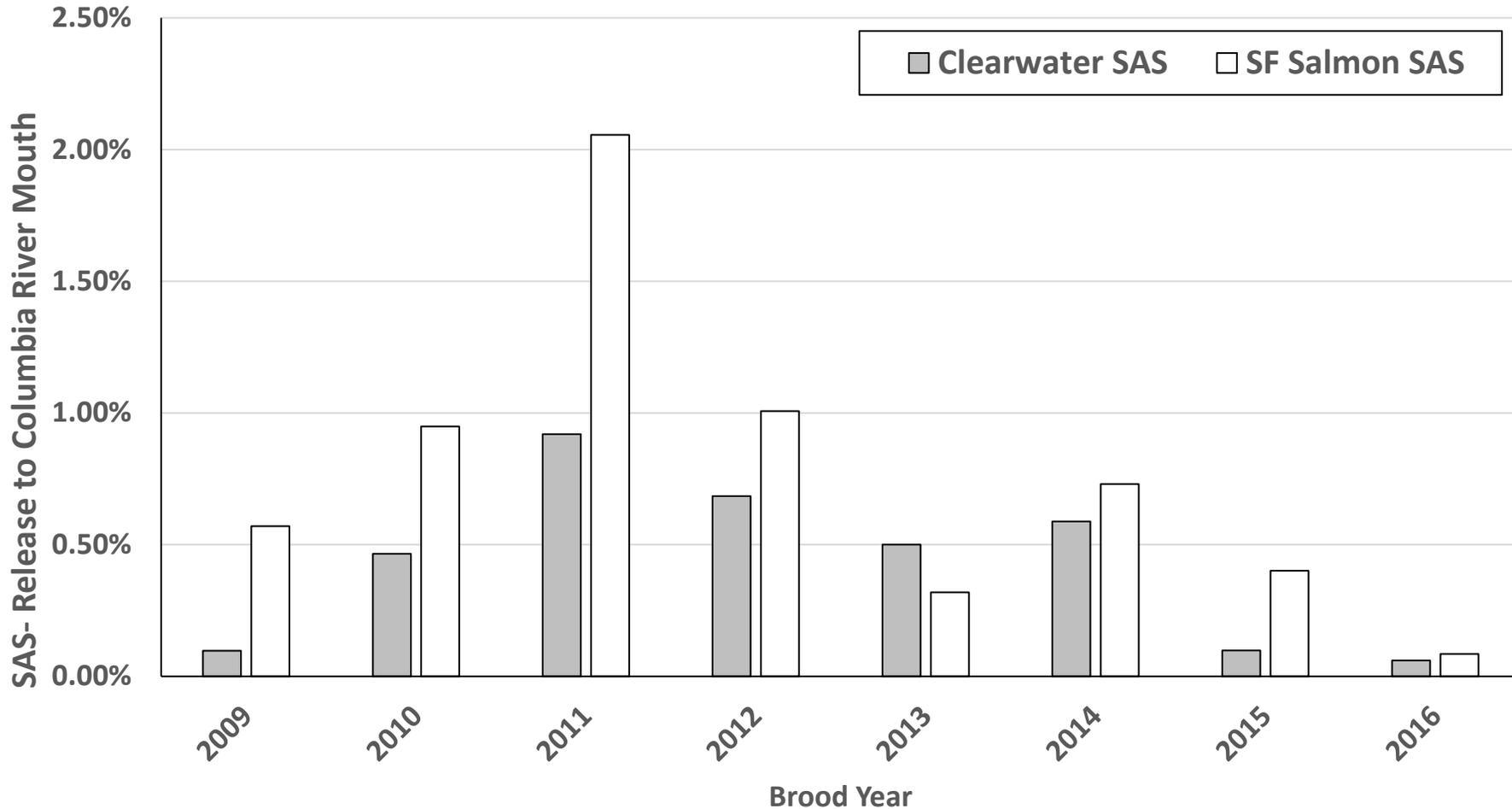
# Smolt to Adult Survival (SAS)- Spring Run



- BY1992-2006  
Mean: **0.43%**

- BY2007-BY2016  
Mean: **0.49%**

# Smolt to Adult Survival (SAS)- Summer Run



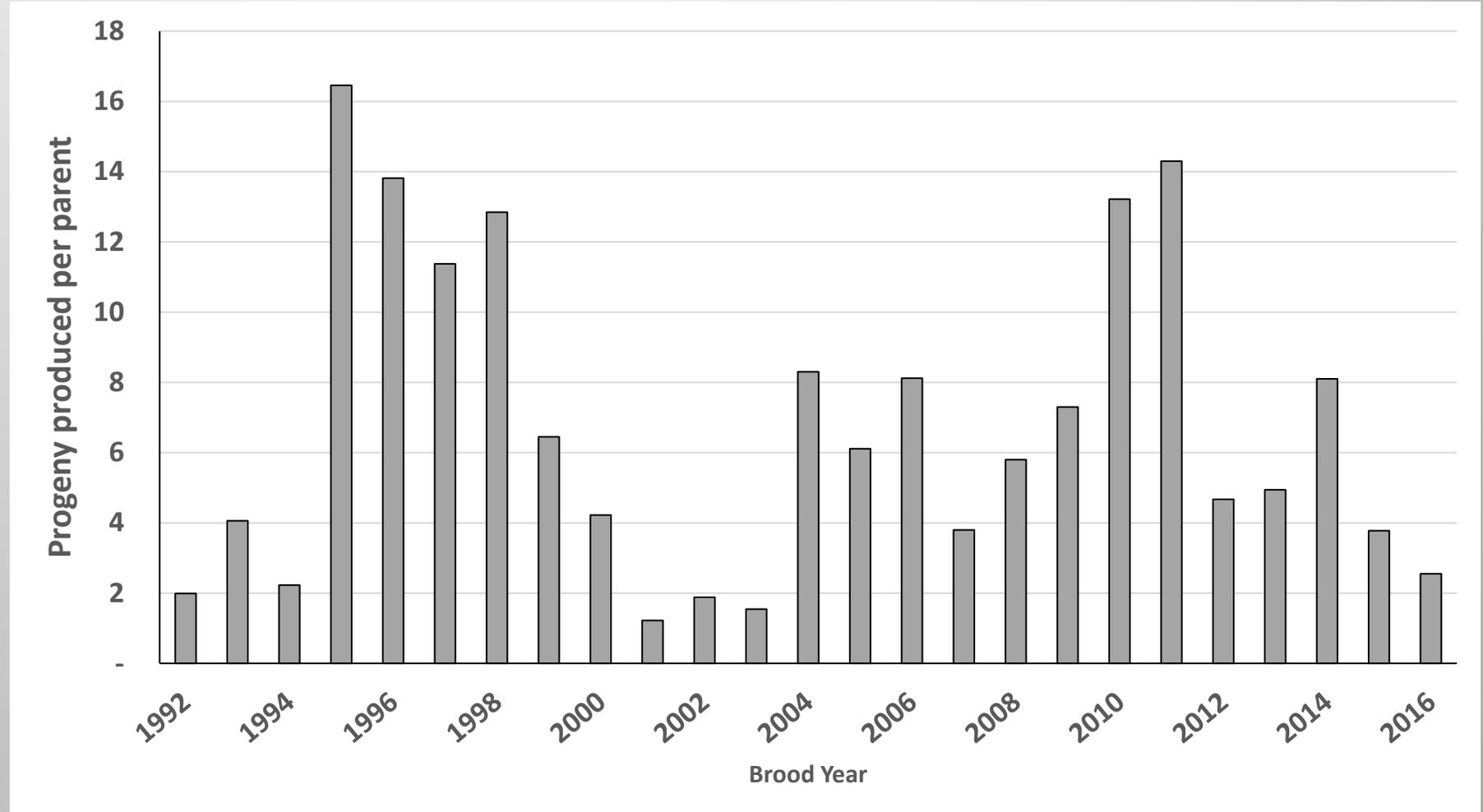
BY2009 – BY2016

- Clearwater  
Mean: **0.43%**
- SFSR  
Mean: **0.76%**

# Recruits per Spawner – Spring Run

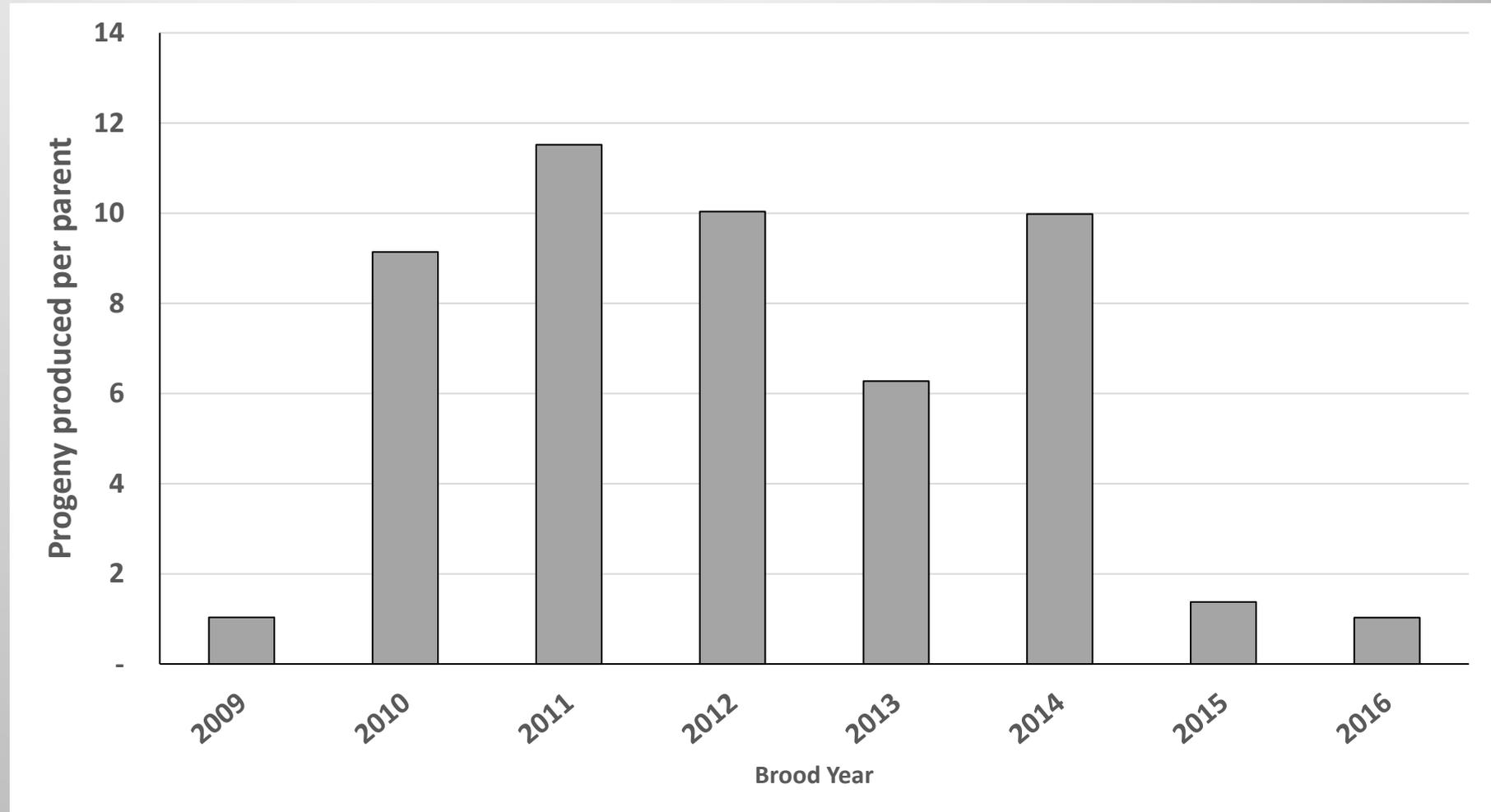
- BY1992-BY2016  
Mean: **6.8**

- BY2007-2016  
Mean: **6.9**



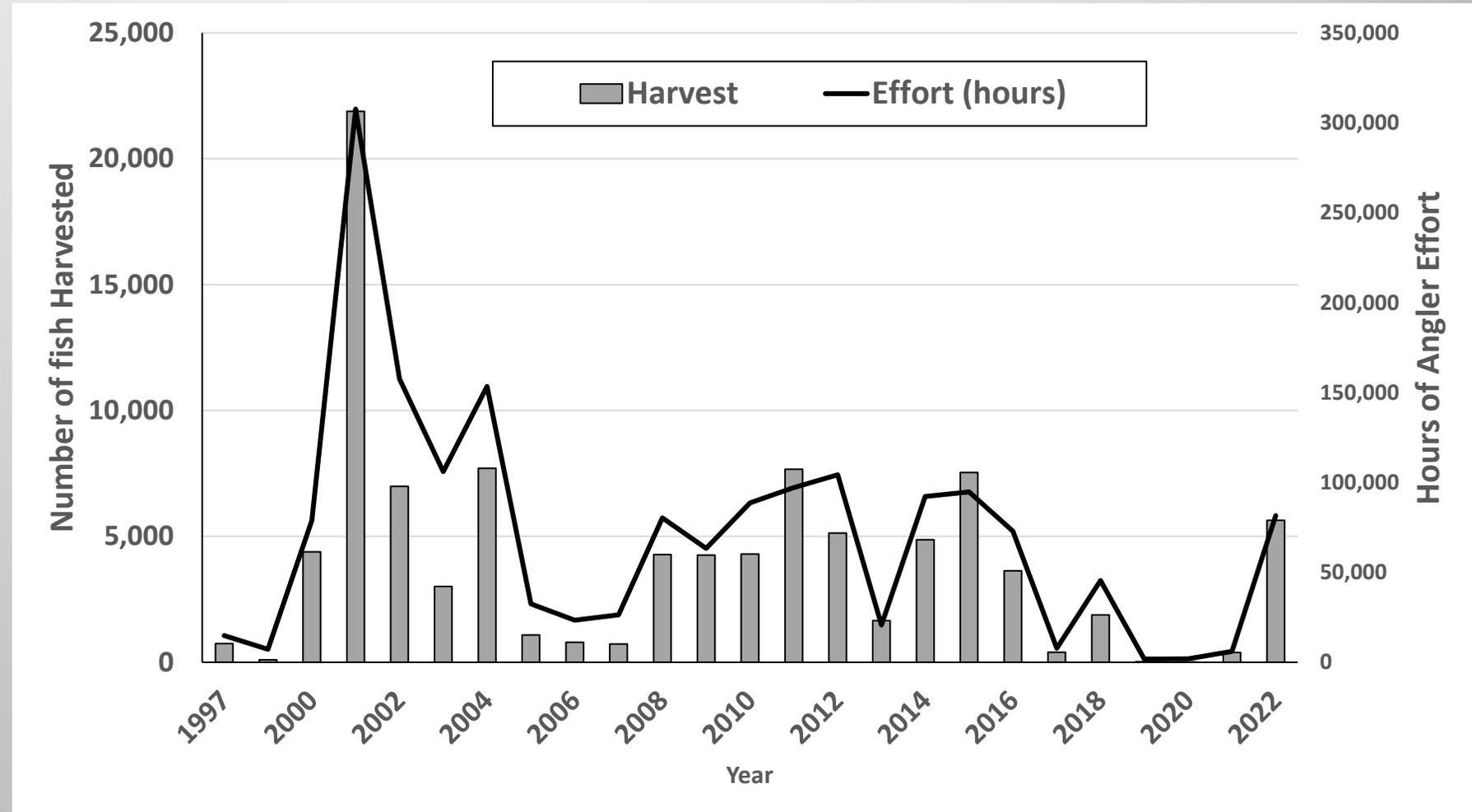
# Recruits per Spawner – Summer Run

- BY2009-BY2016  
Mean: **6.3**



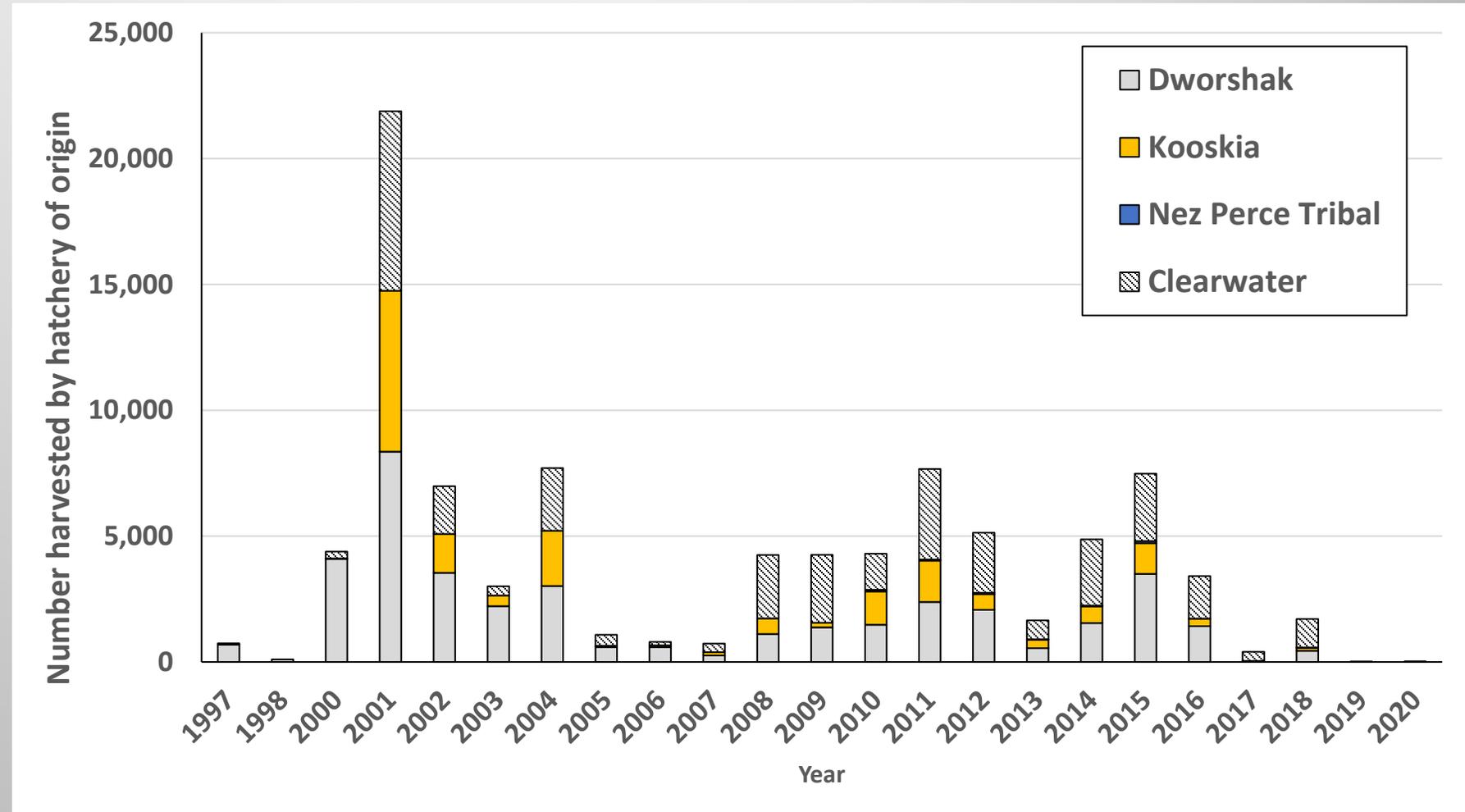
# Harvest – Idaho Non-Tribal Fisheries

- Mean Harvest: **3,963**
- Mean Effort: **70,669**
- No non-Tribal fishery in **1999**



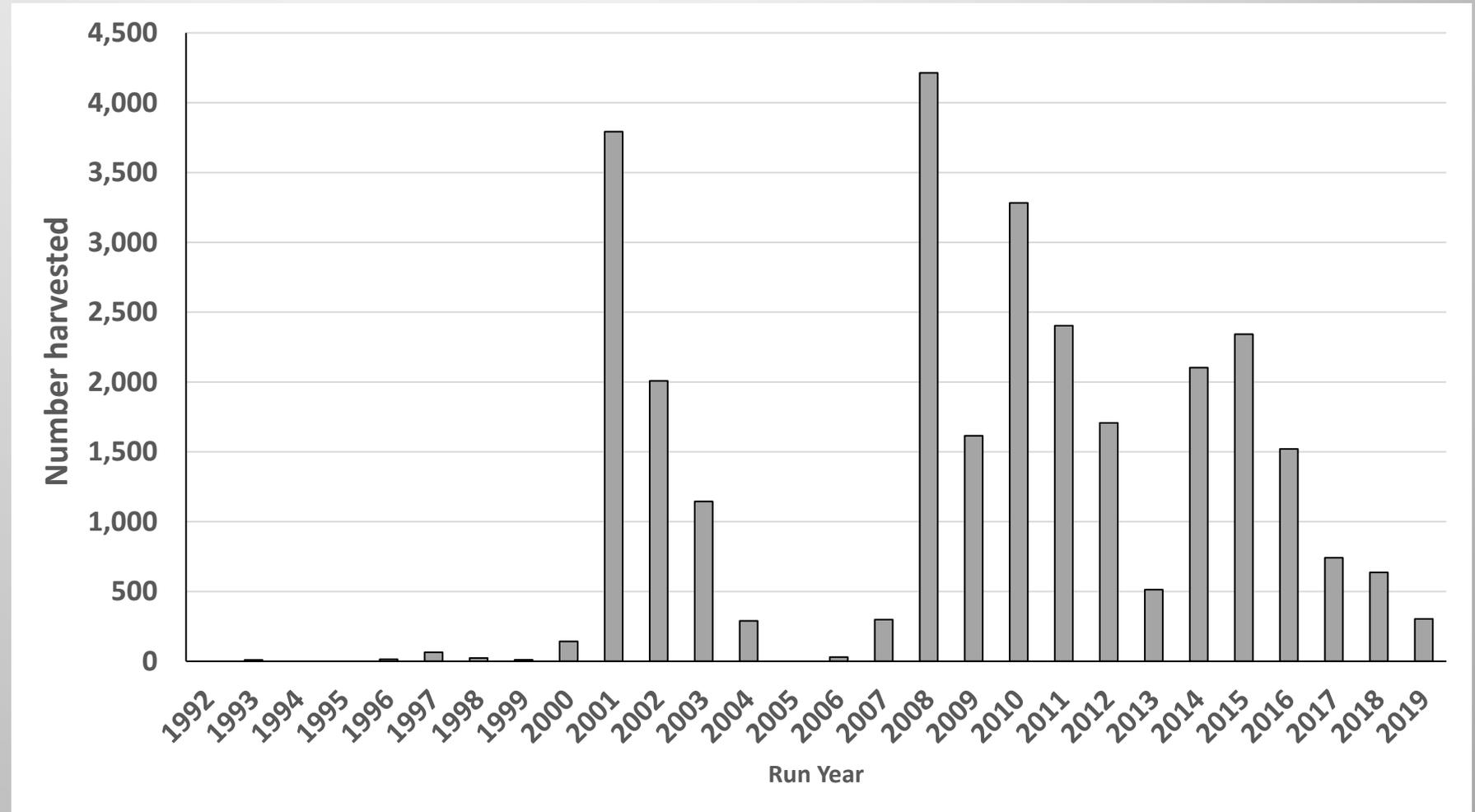
# Harvest – Idaho Non-Tribal Fisheries

- 1997 – 2020
  - **42%** of harvest is from Clearwater Hatchery
- 2011 – 2020
  - **59%** of harvest is from Clearwater Hatchery



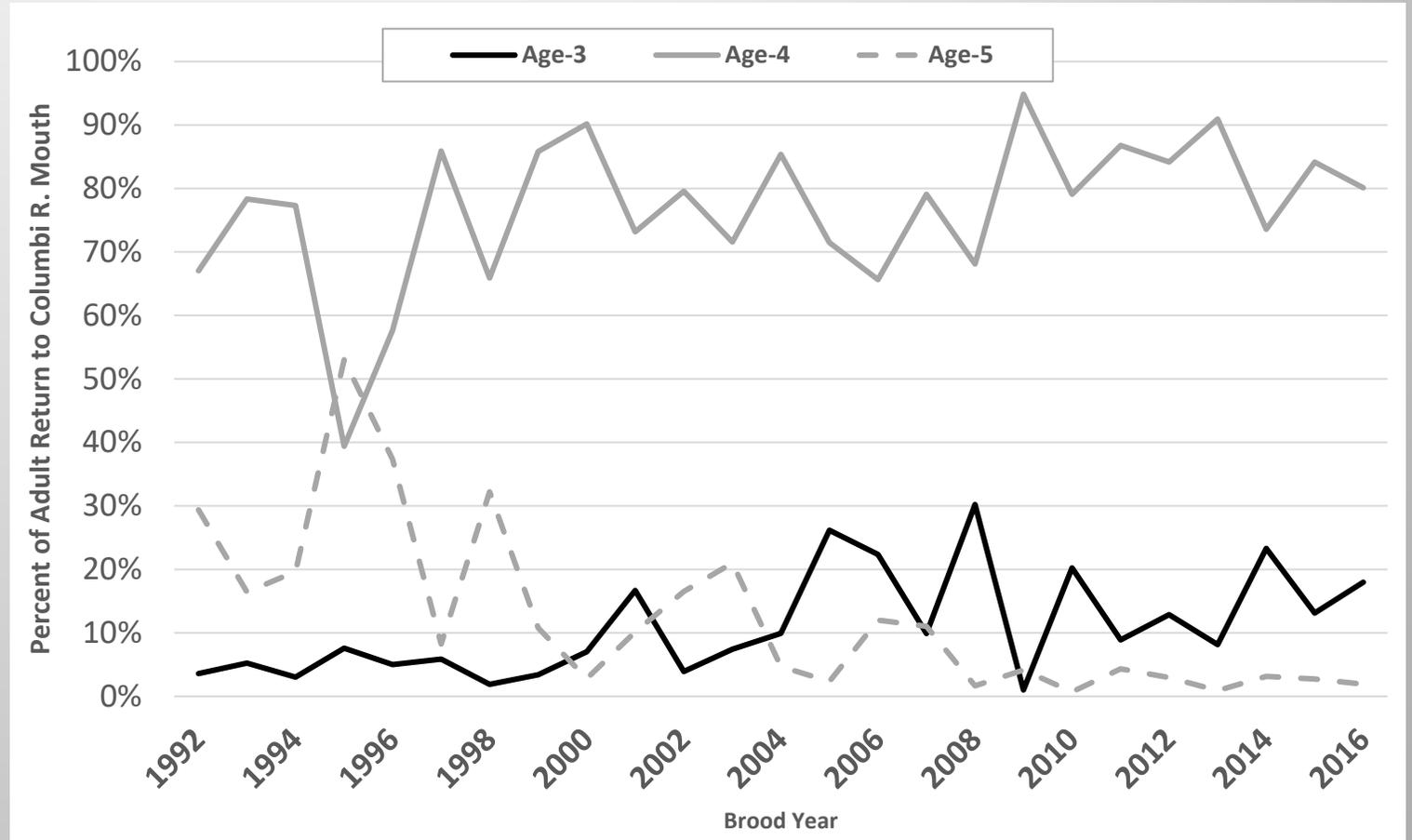
# Harvest – Downriver Fisheries

- 1992-2019 Mean Harvest: **1,043**
- 2010-2019 Mean Harvest: **1,555**



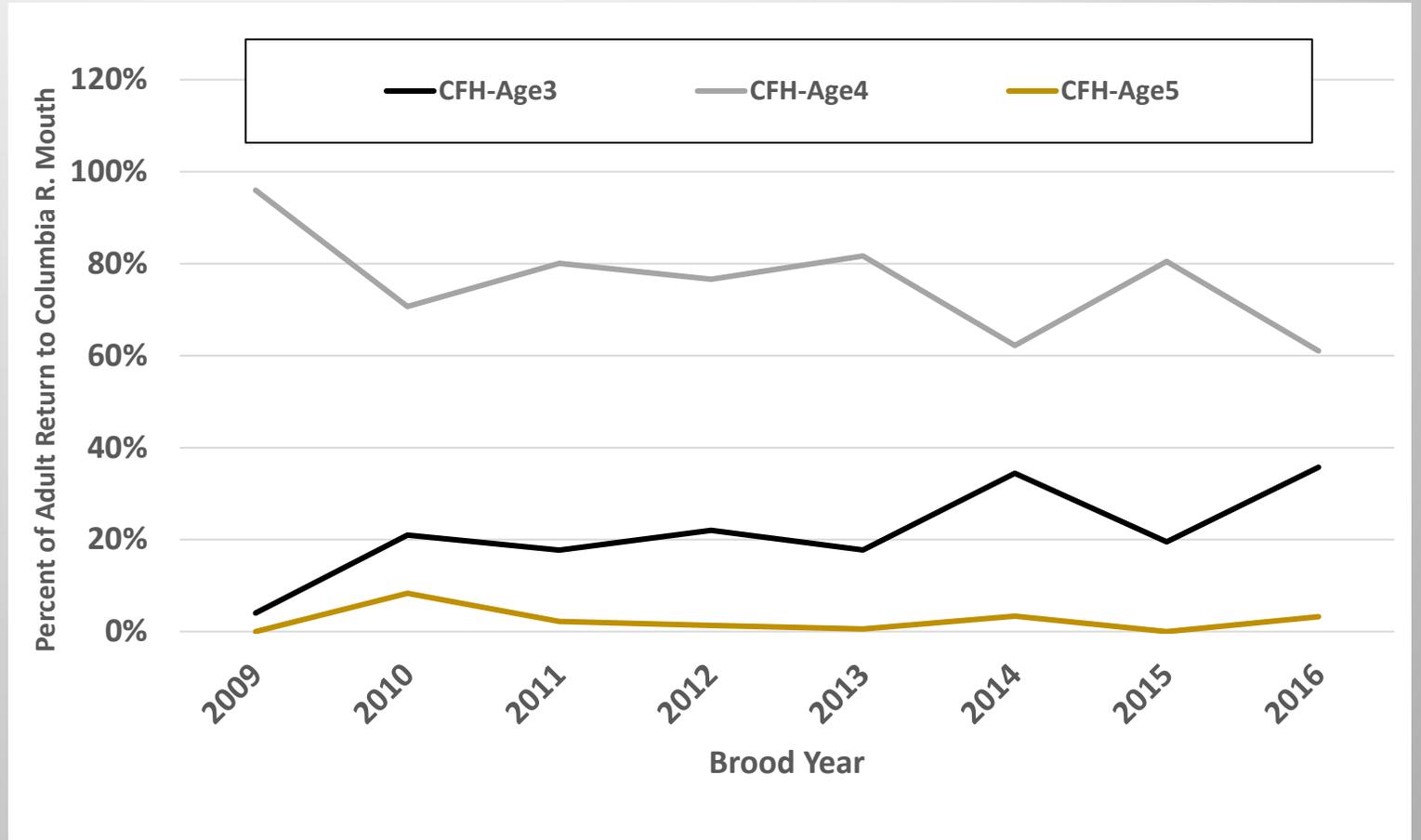
# Age Composition- Spring Run

- Age Composition by brood year measured at Columbia R. mouth
- Mean Age
  - 1992-2006 – 4.1
  - 2007-2016 – 3.9



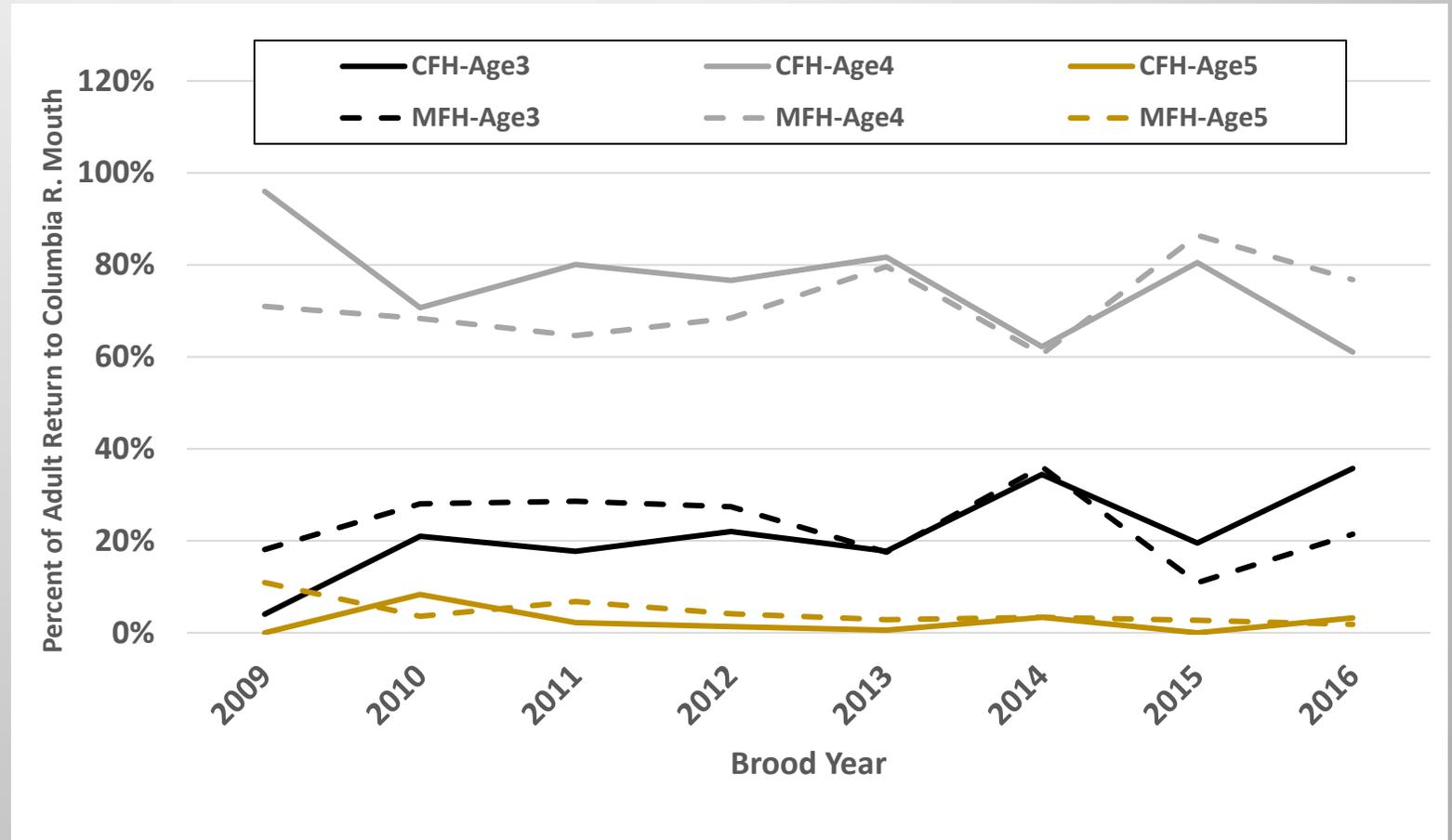
# Age Composition- Summer Run

- Age Composition by brood year measured at Columbia R. mouth
- Mean Age (2009-2016)
  - CFH – 3.8



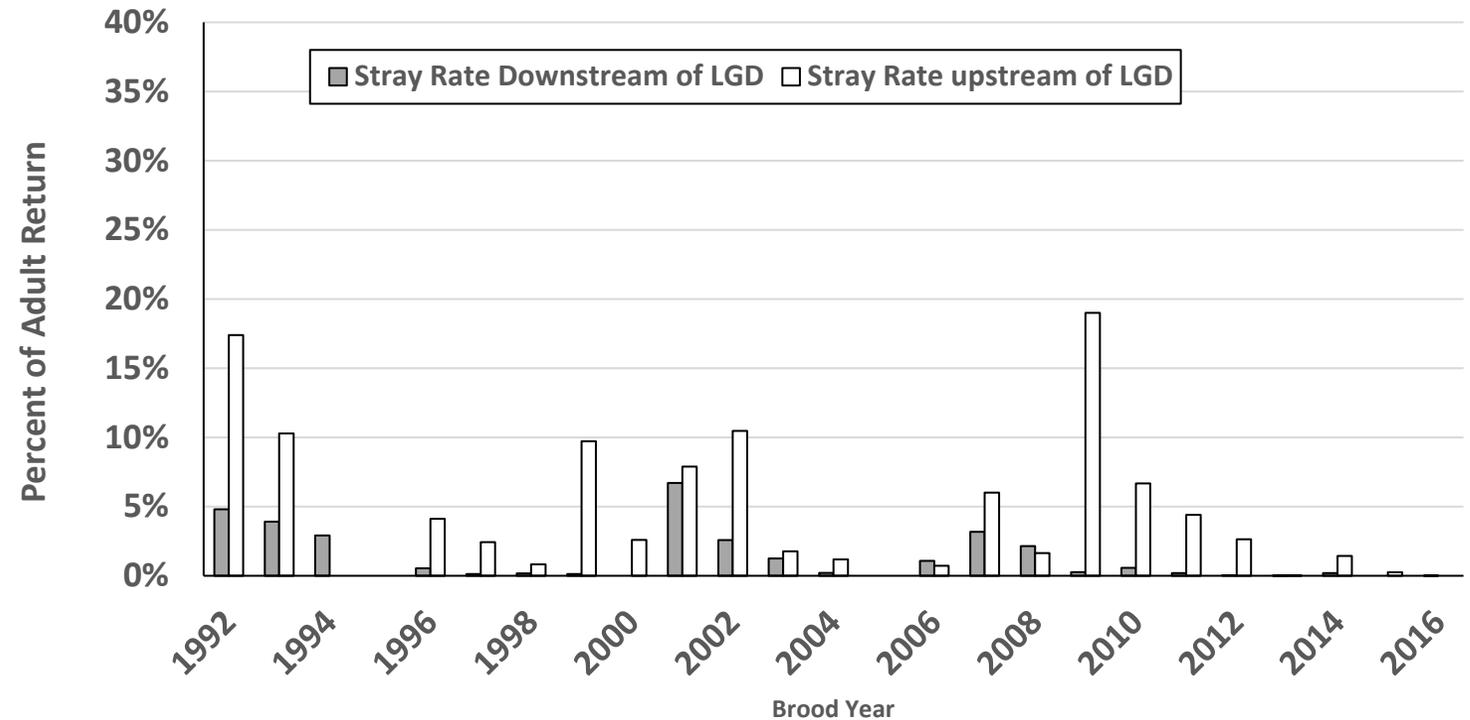
# Age Composition- Summer Run

- Age Composition by brood year measured at Columbia R. mouth
- Mean Age (2009-2016)
  - CFH – 3.8
  - MFH- 3.8



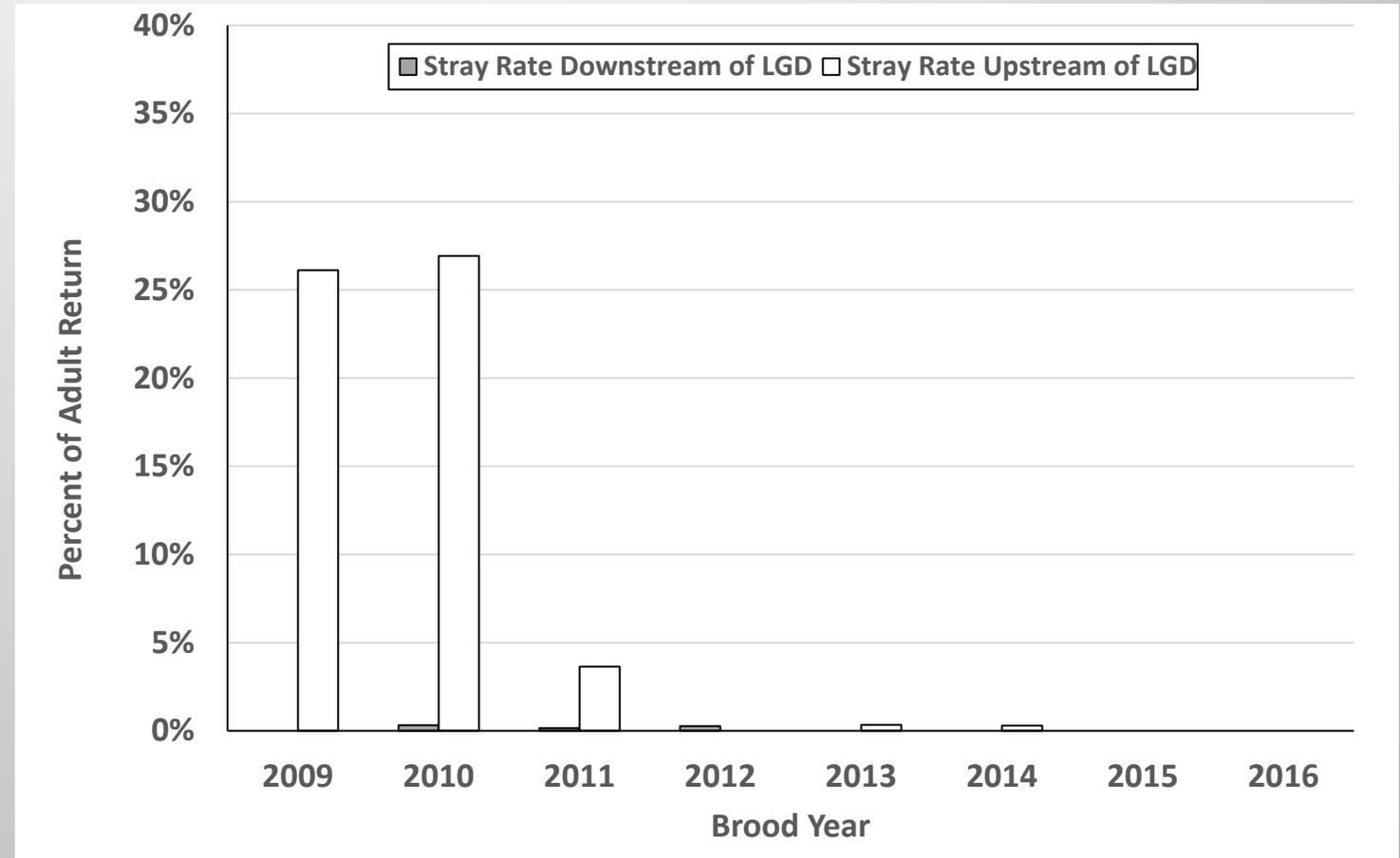
# Straying Rates- Spring Run

- Downstream of LGD
  - 1992-2006 : 1.6%
  - 2007-2016 : 0.7%
- Upstream of LGD
  - 1992-2006 : 4.6%
  - 2007-2016 : 4.2%



# Straying Rates- Summer Run

- Downstream of LGD
  - 2009-2016 : 0.1%
- Upstream of LGD
  - 2009-2016 : 7.2%
- Juvenile release location changed in BY12
- All recoveries were in the Clearwater basin



# Summary and Looking Ahead

- Coordination and efficiency of operating multiple facilities as more of a hatchery complex
- Increased smolt production
- Consistent high in-hatchery survival and highly variable post release survival
- Have only met project area goal in three years.
  - Most recent 10-year average - 74% of Project Area Goal
  - Previous 22-year average - 29% of Project Area Goal.
- Since 1997, have had fisheries every year except 1999
  - In last 10 years, annual average harvest of 2,603 in non-tribal fishery
- Summer run program was initiated in 2009
  - Modest fisheries benefits to date, but program is young and does hold promise
- Exploring alternative rearing practices to increase adult returns
- Continue to fine-tune release strategy to maximize returns and provide diverse opportunities for both tribal and non-tribal fisheries.