

LSRCP Hatchery Steelhead Salmon River

**LSRCP Steelhead Program Review
July 20-21, 2012
Clarkston ,WA**

Brian Leth and Carl Stiefel

Acknowledgments

- Hatchery staffs
 - Sawtooth
 - Magic Valley
 - Hagerman National
 - Pahsimeroi
 - Clearwater
 - Dworshak
- IDFG M&E staff
- IDFG Regional staffs
- SBT, NPT, USFWS, LSRCF
- Idaho Power
- PSMFC



Today's Presentation

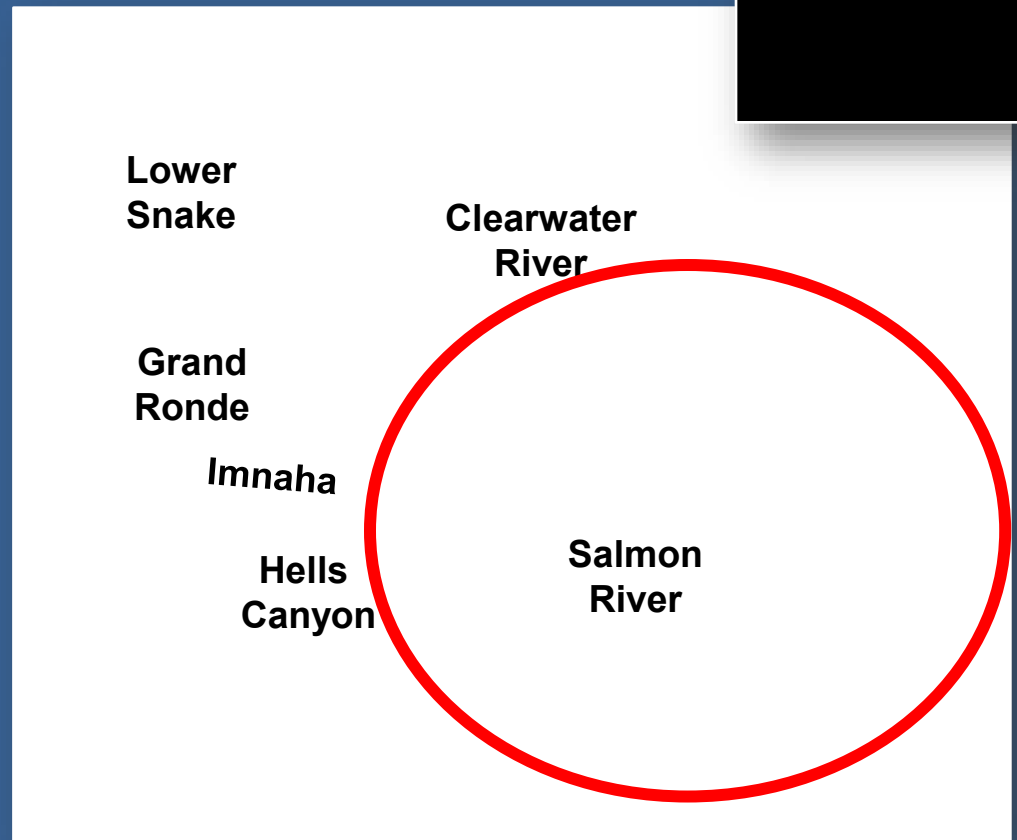
- **IDFG Management Objectives**
- **Status of Natural Populations**
- **Management Framework - Salmon River**
- **Mitigation Goals and Implementation**
- **Broodstock History and Hatchery Program Description**
- **Production/Productivity and Harvest Data**
- **Summary**

IDFG Management Objectives for the Salmon River

- Restore and maintain natural populations in the Salmon River**
- Restore and maintain recreational and tribal fisheries**
- Achieve LSRCP adult mitigation goals**
- Minimize impact of hatchery program on natural populations**

Status of Natural Steelhead Salmon River MPG

- **Salmon River Major Population Group (MPG)-**
 - None of the twelve populations meet viability criteria
 - All populations classified at moderate-high risk for A/P and low-moderate for SS/D
 - Lack of population specific A/P estimates
- Campbell and Vogel presentation to discuss recent work at Lower Granite Dam



Natural Steelhead Populations in the Salmon River

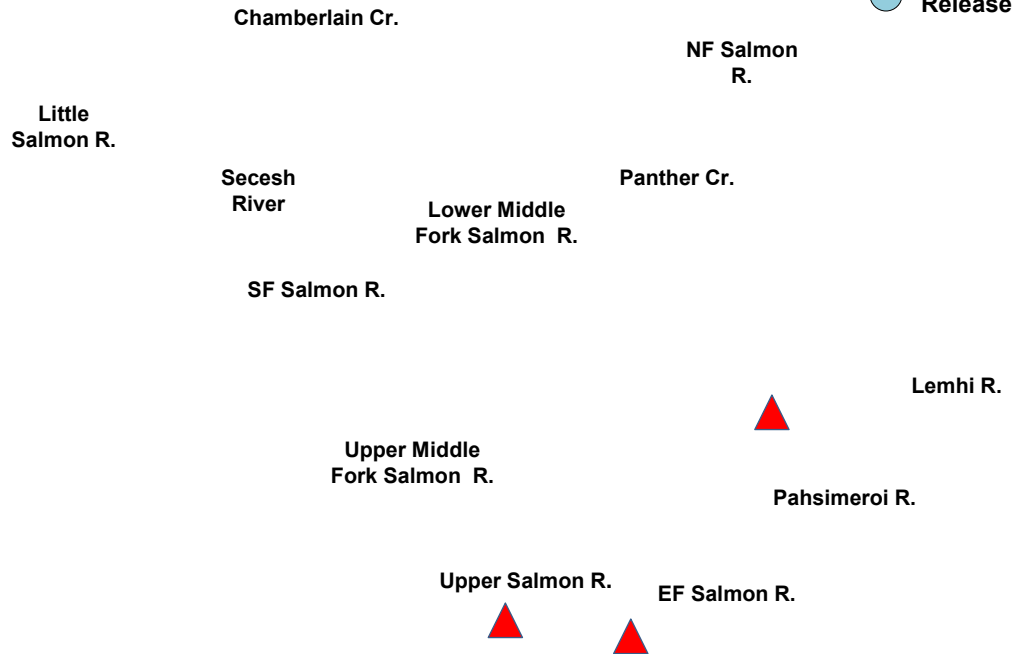
- Genetic data
 - Upper Salmon and Little Salmon
 - South Fork and Middle Fork Salmon rivers

Natural Population	Reporting Group	Avg. Pairwise F_{ST}	Hatchery		
			Sawtooth	Pahsimeroi	Oxbow
1. Sawtooth Weir	Upper Salmon River	0.005	Green	Green	Green
2. Valley Cr		0.008	Green	Green	Green
3. WF Yankee F Salmon		0.006	Green	Green	Green
4. Morgan Cr		0.012	Light Green	Light Green	Light Green
5. Pahsimeroi Weir		0.006	Green	Green	Green
6. Hayden Cr		0.008	Green	Green	Green
7. NF Salmon R		0.007	Green	Green	Green
8. Marsh Cr	Middle Fork Salmon River	0.032	Red	Orange	Red
9. Sulphur Cr		0.030	Red	Orange	Red
10. Rapid R (MF)		0.029	Red	Orange	Red
11. Pistol Cr		0.034	Red	Orange	Red
12. Camas Cr		0.023	Orange	Yellow	Orange
13. Loon Cr		0.022	Orange	Yellow	Orange
14. Big Cr (upper)		0.030	Orange	Yellow	Orange
15. Big Cr (lower)		0.025	Orange	Yellow	Orange
16. Chamberlain Cr		0.016	Yellow	Yellow	Yellow
17. Bargamin Cr	0.017	Yellow	Yellow	Yellow	
18. EF SF Salmon R	South Fork Salmon River	0.029	Red	Orange	Red
19. Secesh R		0.026	Red	Orange	Red
20. Lick Cr		0.026	Red	Orange	Red
21. Stolle Meadows		0.031	Red	Orange	Red
22. Boulder Cr	Lower Salmon River	0.012	Green	Green	Green
23. Rapid R		0.013	Green	Green	Green
24. Slate Cr		0.012	Green	Green	Green
25. Whitebird Cr		0.011	Green	Green	Green

Management Framework Salmon River



▲ Hatchery
● Release Site



- Hatchery releases confined to Little Salmon R. and Upper Salmon R.

- No hatchery releases in :

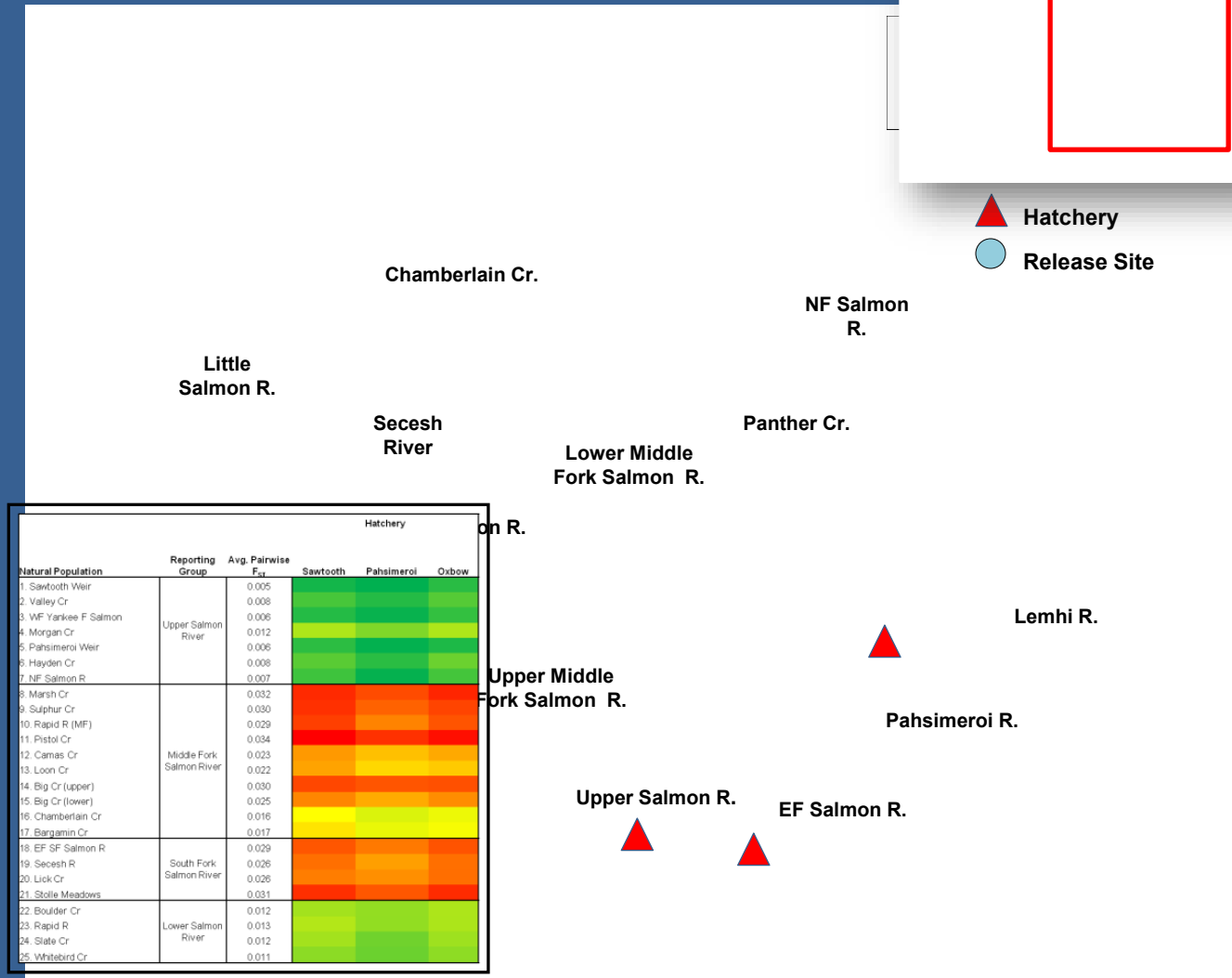
- South Fork
- Middle Fork
- North Fork
- Mainstem Salmon downstream of the North Fork

Management Framework Salmon River



- ▲ Hatchery
- Release Site

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 - both LSRCP and IPC
- No hatchery releases in :
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LSRCP Hatchery Mitigation Goals

Salmon River

	Magic Valley Fish Hatchery	Hagerman National Fish Hatchery	Total
Adult Goal-Project Area	11,660	13,600	25,260
Adult Goal-Downstream of Project Area	23,320	27,200	50,520
Total Mitigation Goal	34,980	40,800	75,780
Smolt Release Target	1,749,000	1,700,000	3,449,000

LSRCP Hatchery Mitigation Goals Salmon River

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**Salmon River Program Represents
46% of the total LSRCP Steelhead Mitigation**

**Currently
releasing 2.9M
in Salmon River**

Implementation of the Mitigation Program

Primary focus for hatchery program is to provide harvest mitigation benefits

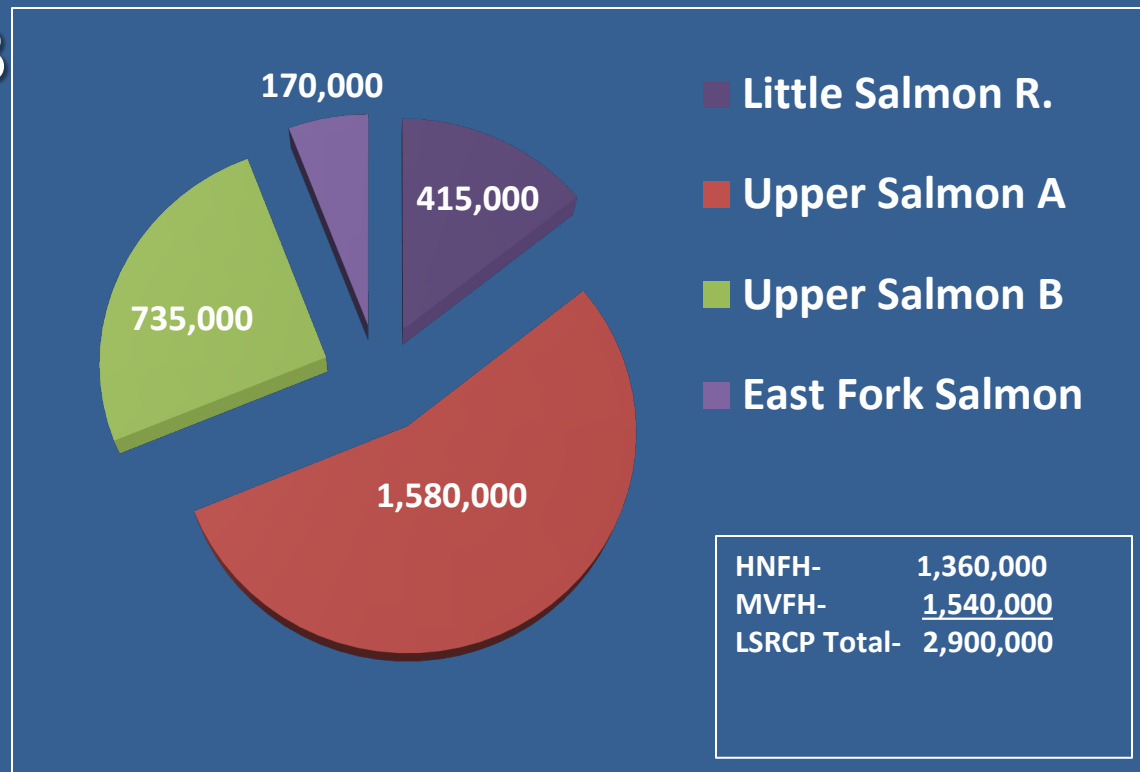
- **Two general life history types in the Salmon River**
 - **A-Run (Predominately 1-ocean returns)**
 - **B-Run (Predominately 2-ocean returns)**
- **Maintain four hatchery stocks to achieve mitigation objectives**
- **Utilize LSRCP, IPC, and COE facilities**
- **One hatchery component focused on supplementation strategy**

Salmon River Hatchery Broodstock History

- Snake River steelhead (Hells Canyon Dam) were transferred to Salmon River in 1966 at Pahsimeroi Fish Hatchery (PFH)- **the PahA stock**
- The locally adapted stock at PFH was extended to Sawtooth Fish Hatchery in 1984- **the SawA stock**
- B-run steelhead brought into the upper Salmon River (at PFH) from Dworshak Fish Hatchery in 1973- **the DworB stock**.
 - Transitioning to locally adapted B-run stock- **the USRB stock**
- East Fork Salmon River (EFSR)- **the East Fork** integrated stock. A history of both DworB and PahA hatchery releases in the EFSR

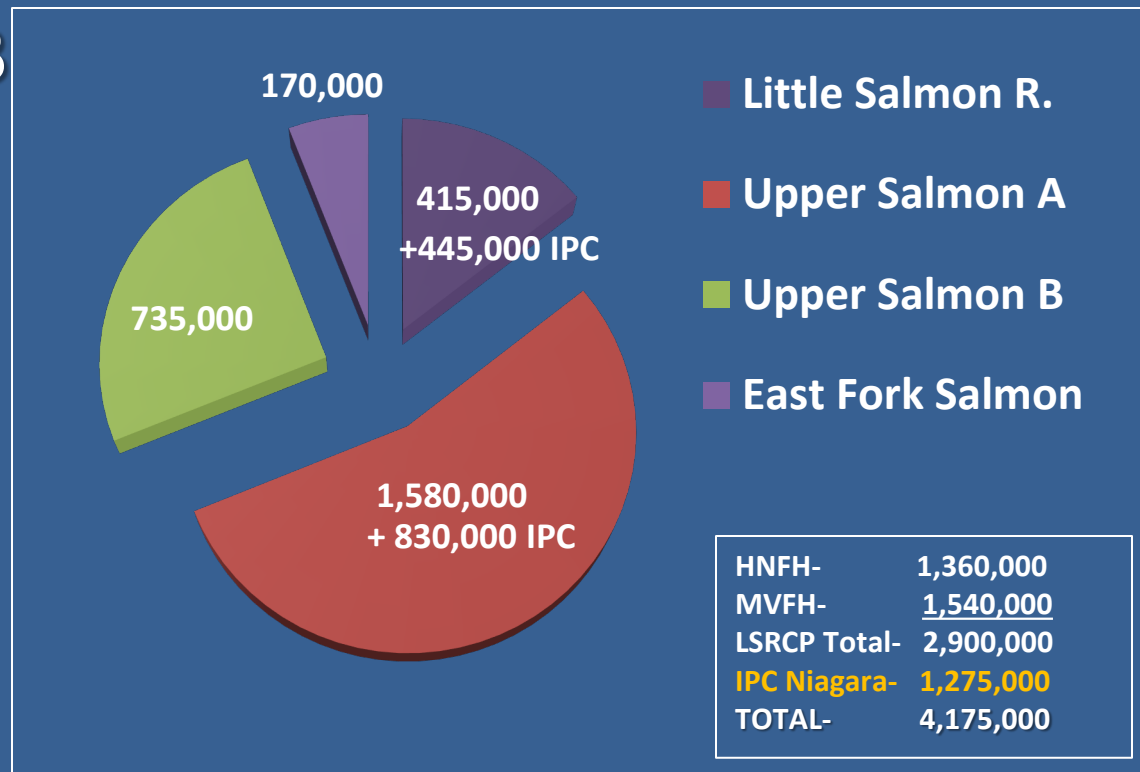
Description of Salmon River LSRCP Hatchery Steelhead Program

- Little Salmon A&B
- Upper Salmon A
– Yankee Fork
- Upper Salmon B
- East Fork Salmon



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- East Fork Salmon
- Idaho Power Co.



Description of Salmon River Program

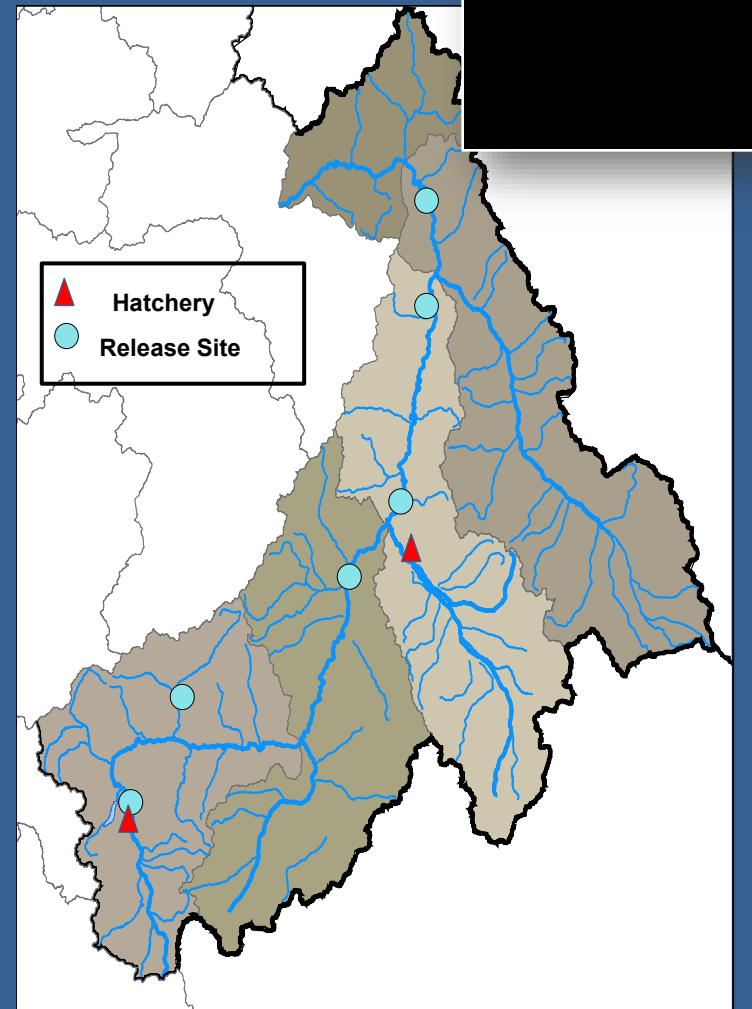
Little Salmon River

- Managed for harvest mitigation
- PahA and DworB stocks
- 415,000 smolts released
- No broodstock collection in the Little Salmon.
- IPC mitigation includes 445,000 smolts in the Little Salmon R.
- Enumeration of natural adults in Rapid River
 - No hatchery fish released upstream

Description of Salmon River Program

Upper Salmon A-Run

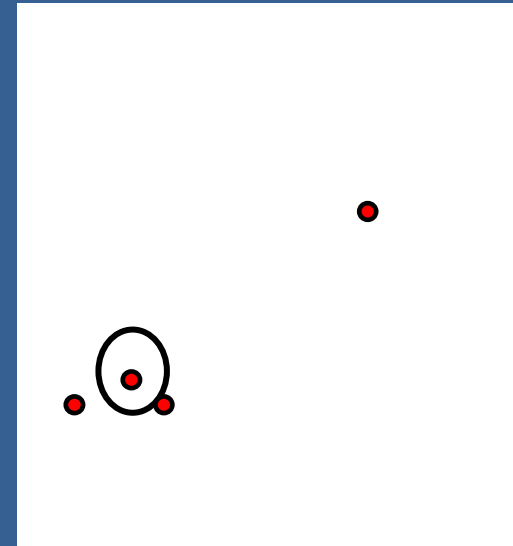
- Managed for harvest mitigation
- Includes both SawA and PahA stocks
- All broodstock is collected at Pahsimeroi and Sawtooth fish hatcheries
- 1,140,000 smolts in USR
440,000 smolts in Yankee Fork
1,580,000
- IPC Mitigation includes 830,000 PahA smolts



Description of Salmon River Program

Upper Salmon A-Run: Yankee Fork

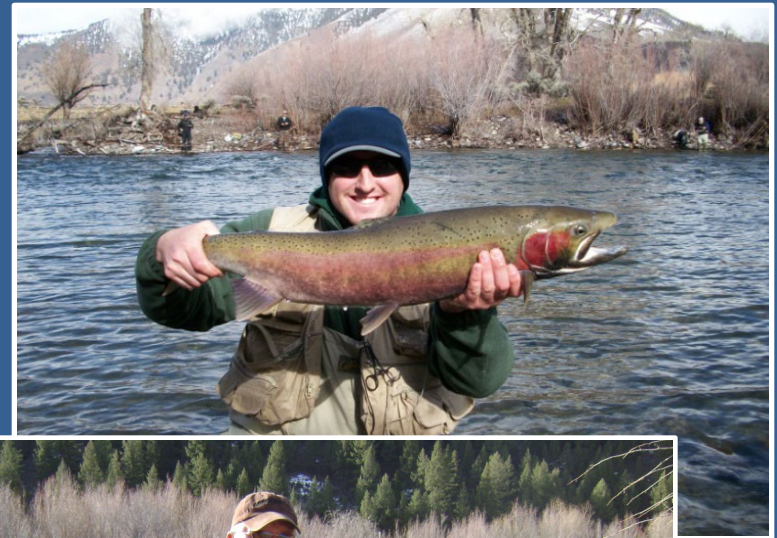
- Cooperative effort between SBT and IDFG
- Program is part of the USvOR Agreement
- Previously released in Valley Cr., Slate Cr., Lemhi R., and Yankee Fork Cr.
- Lack of infrastructure in YF to collect broodstock and monitor escapement
- Historically used SawA stock from Sawtooth Fish Hatchery



Description of Salmon River Program

Upper Salmon B-Run

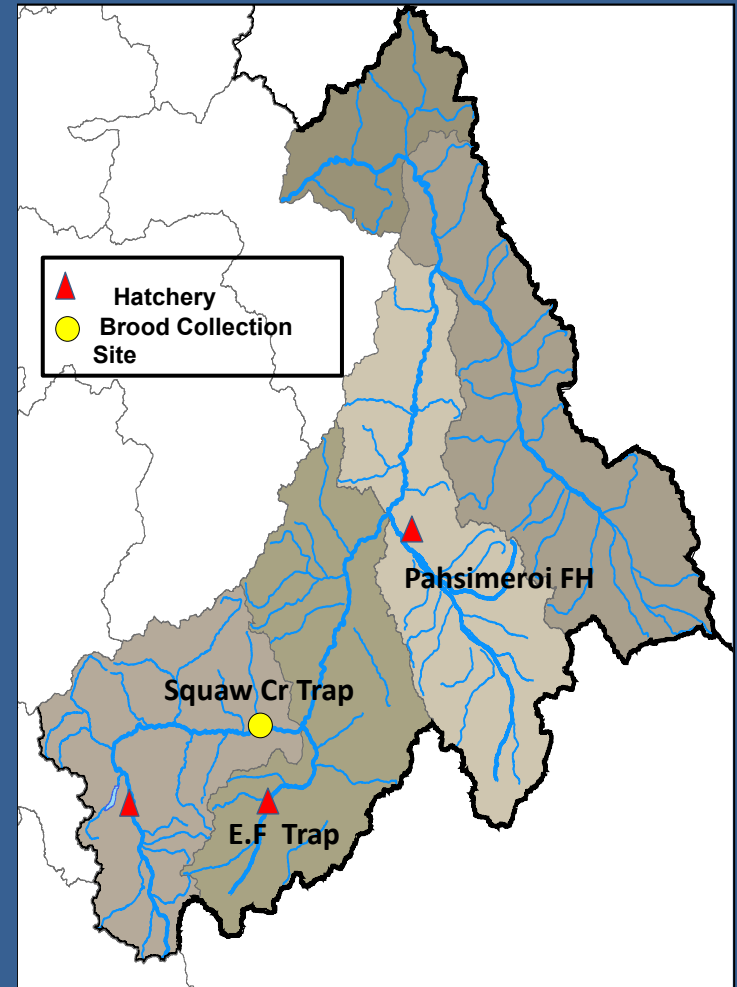
- Managed to provide in-kind harvest mitigation for larger 2-Ocean steelhead in the Salmon River
- Dworshak Fish Hatchery (Clearwater River) smolts released in the Salmon R. since 1973
- Goal to replace all DNFH stock in the Salmon and Little Salmon rivers with a locally adapted stock



Description of Salmon River Program

Upper Salmon B-Run

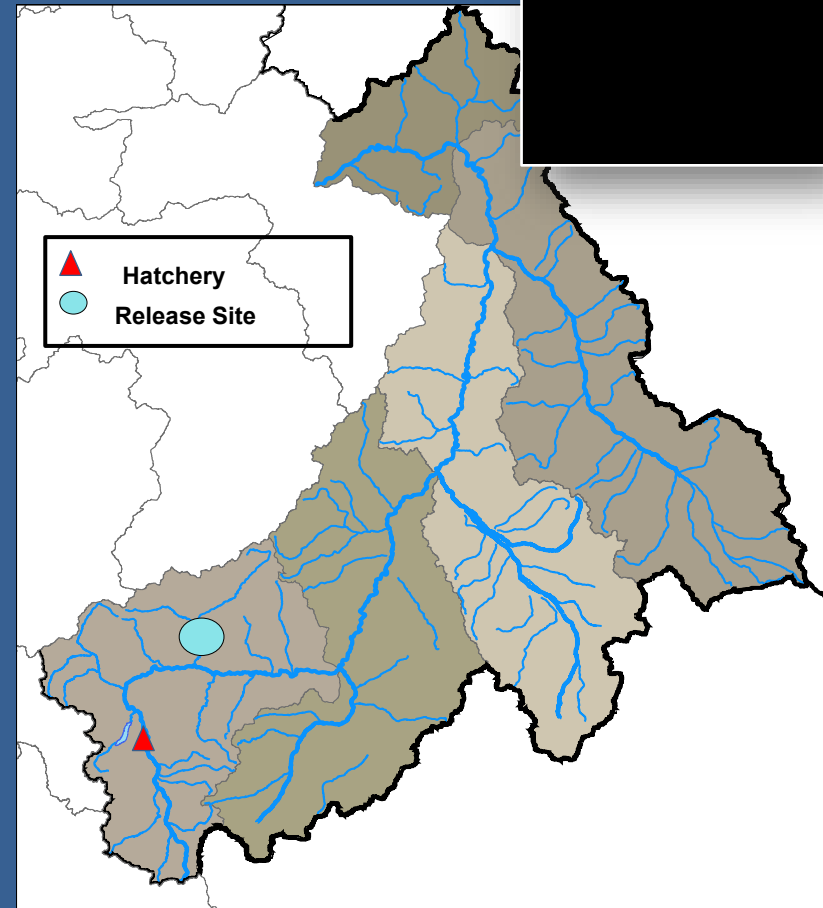
- Ineffective broodstock collection has limited program
- Since 2001, smolt releases from local returns have been 60-120k.
 - Goal is ~900,000 smolts
- In 2009 moved broodstock collection to Pahsimeroi Fish Hatchery (PFH)
- Returns in 2013 from first smolt release at PFH
 - expected to meet majority of the upper Salmon River egg needs
- PFH only intended to serve as a temporary location



Description of Salmon River Program

Upper Salmon B-Run

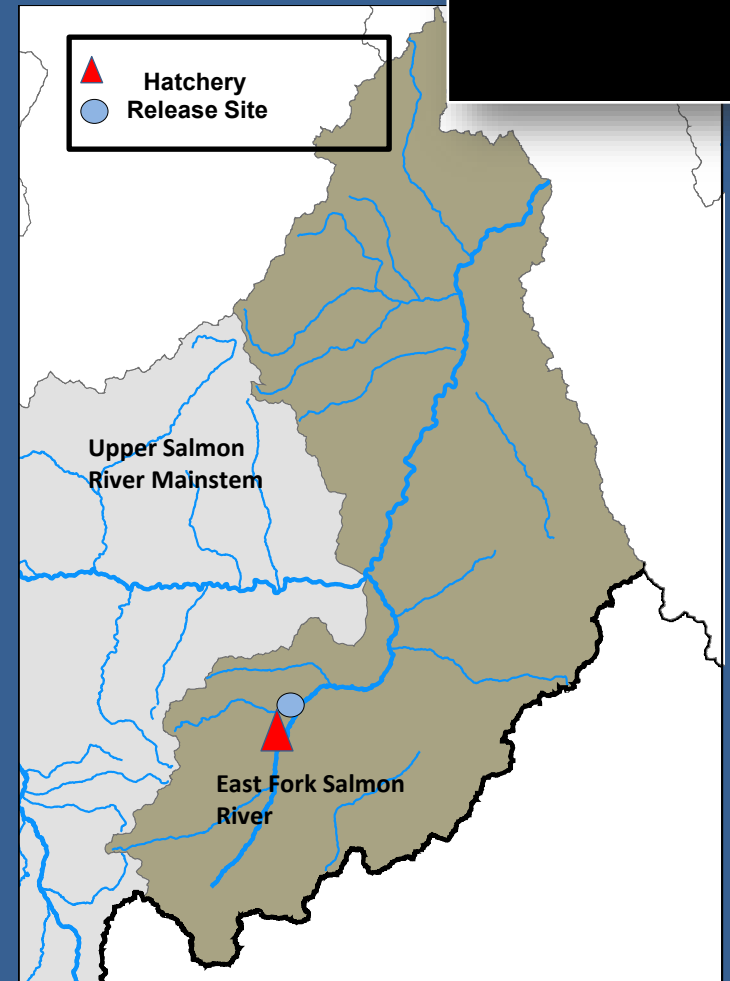
- Moving forward to shift program to Yankee Fork
 - concurrently with SBT effort to develop adult trapping infrastructure.
- Expectations for increased adult returns as DworB releases are phased out
- This brood will also be used to replace DworB releases in the Little Salmon R.



Description of Salmon River Programs

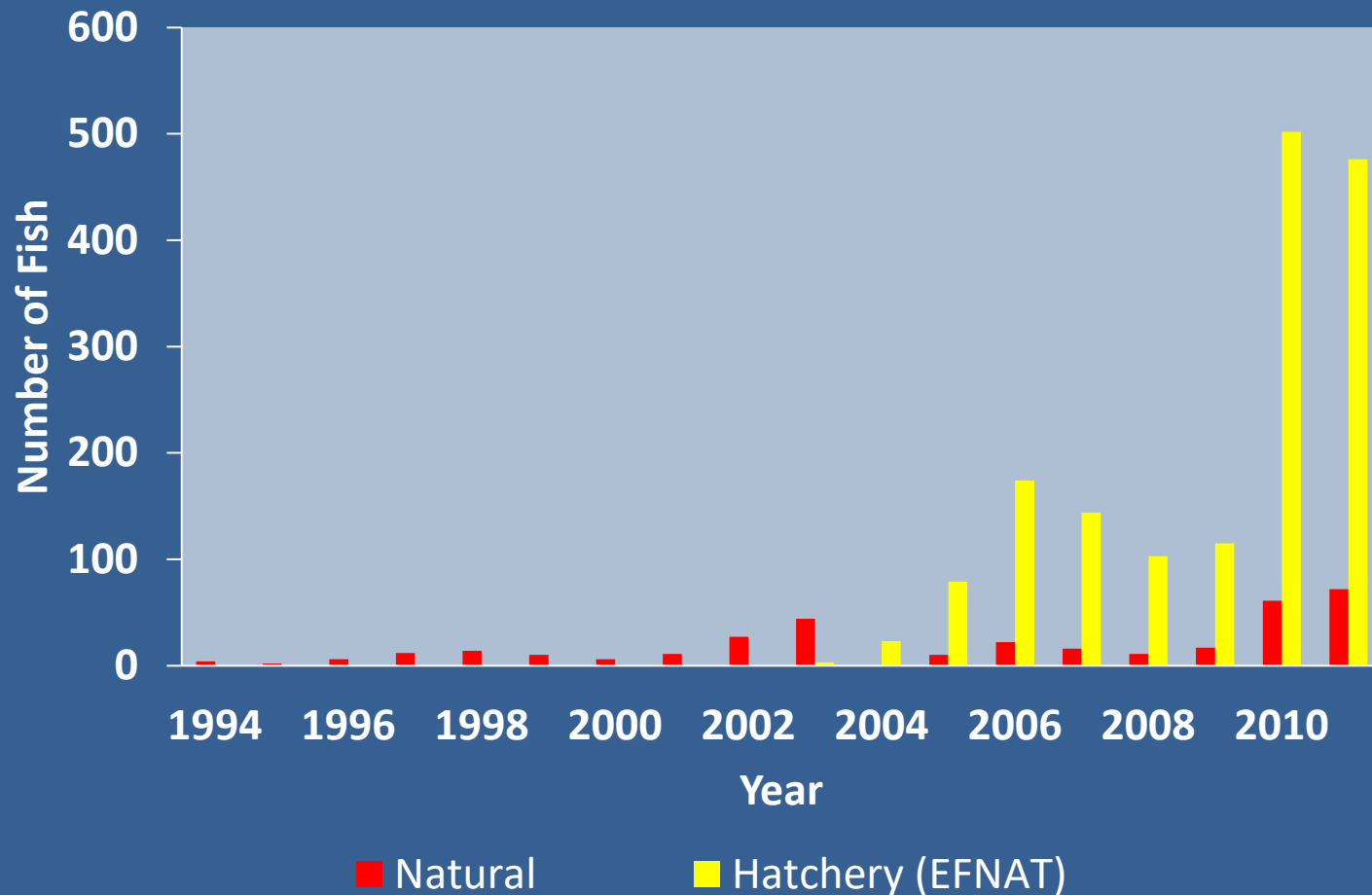
East Fork Salmon River

- Operated as a conservation program
 - initiated in 2001, with the intent to increase natural returns.
- Integrated broodstock
- 170,000 smolt release
- Spawning and rearing habitat in EF downstream of the EF weir.
- Currently limited to monitoring adult escapement at EF weir.
- Identified need to develop trapping site lower in the system (FCRPS Biop RPA 42; HSRG, HRT, and HGMP)



Description of Salmon River Programs

East Fork Salmon River



Description of Salmon River Programs

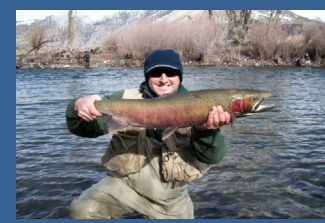
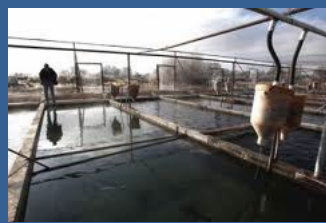
East Fork Salmon River

Program Limitations and Future Direction

- Inability to assess or control escapement in the EFSR
- Absolute need
 - Develop effective trapping facility in lower EFSR
- Reducing the size of the hatchery program (40-60k)
 - More influence from natural population
 - Target 100% natural broodstock
 - No restriction on hatchery returns released to spawn naturally

Hatchery Production and Survival Data

- Broodstock Performance
- In-hatchery survival
- Juvenile releases and survival
- Adult production and productivity

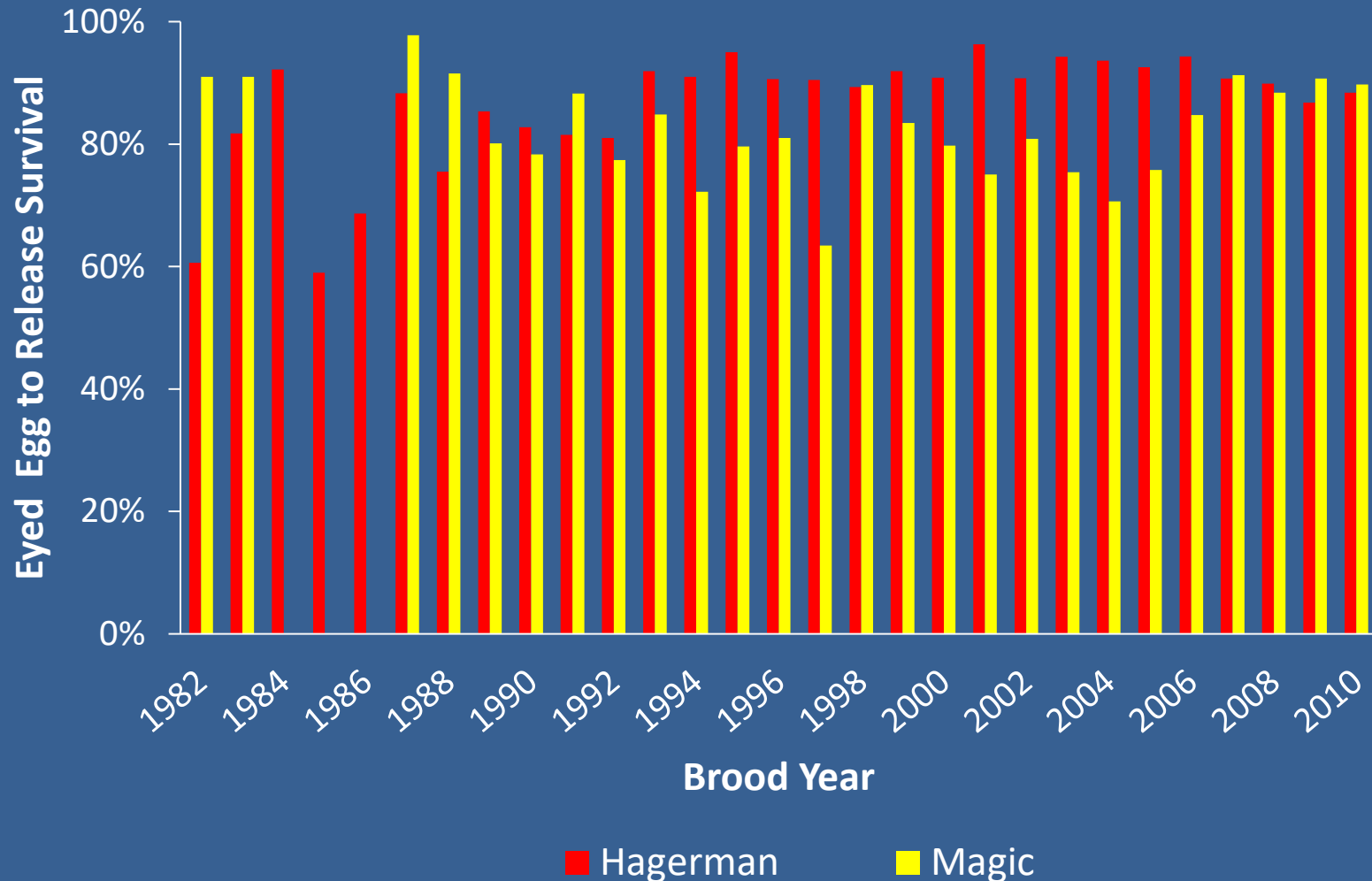


Hatchery Production and Survival

- Incubation and Rearing occurs at:
 - Magic Valley Fish Hatchery (IDFG)
 - Hagerman National Fish Hatchery (USFWS)

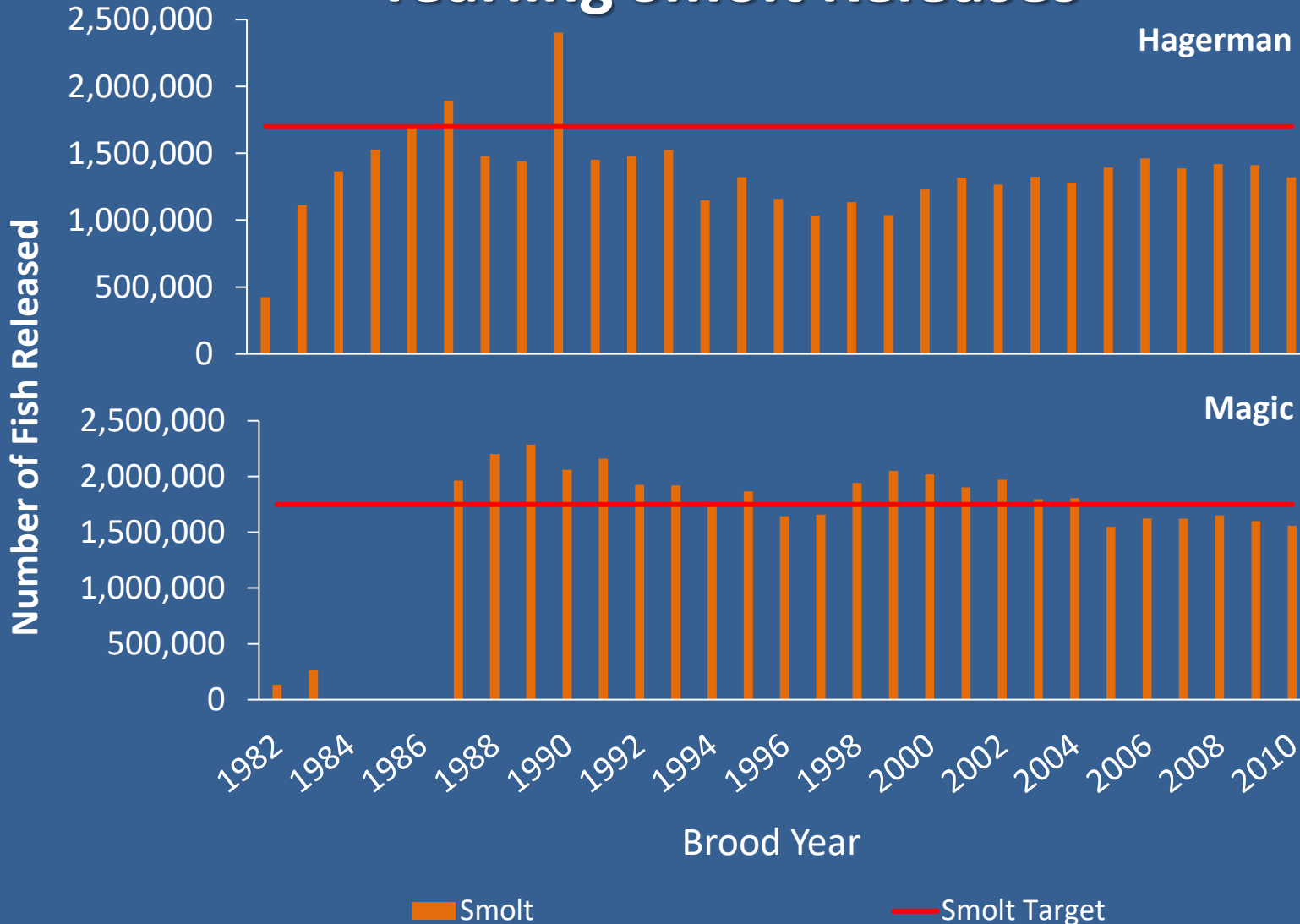
Hatchery Production and Survival Data

In-Hatchery Survival



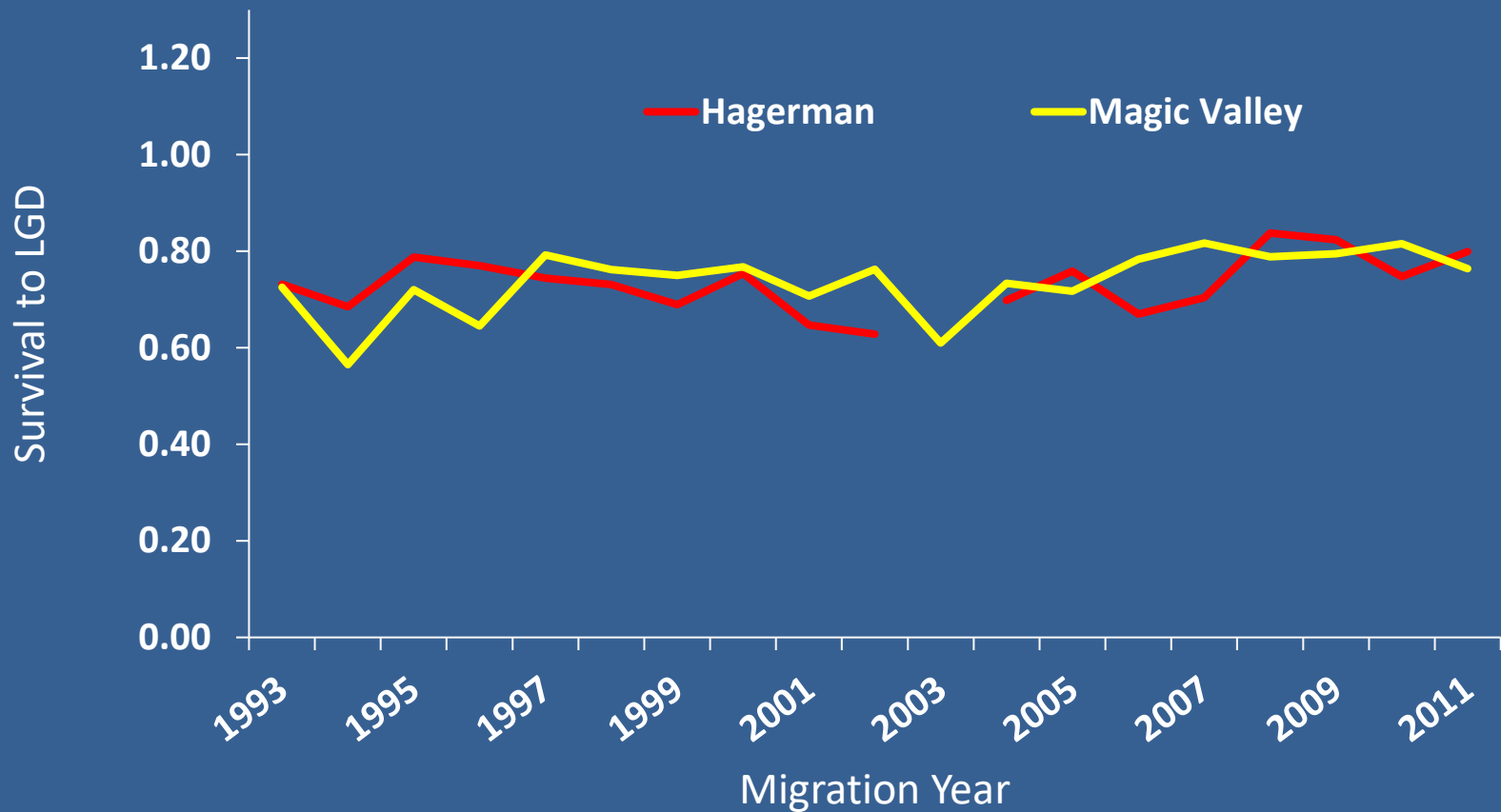
Hatchery Production and Survival Data

Yearling Smolt Releases



Hatchery Production and Survival Data

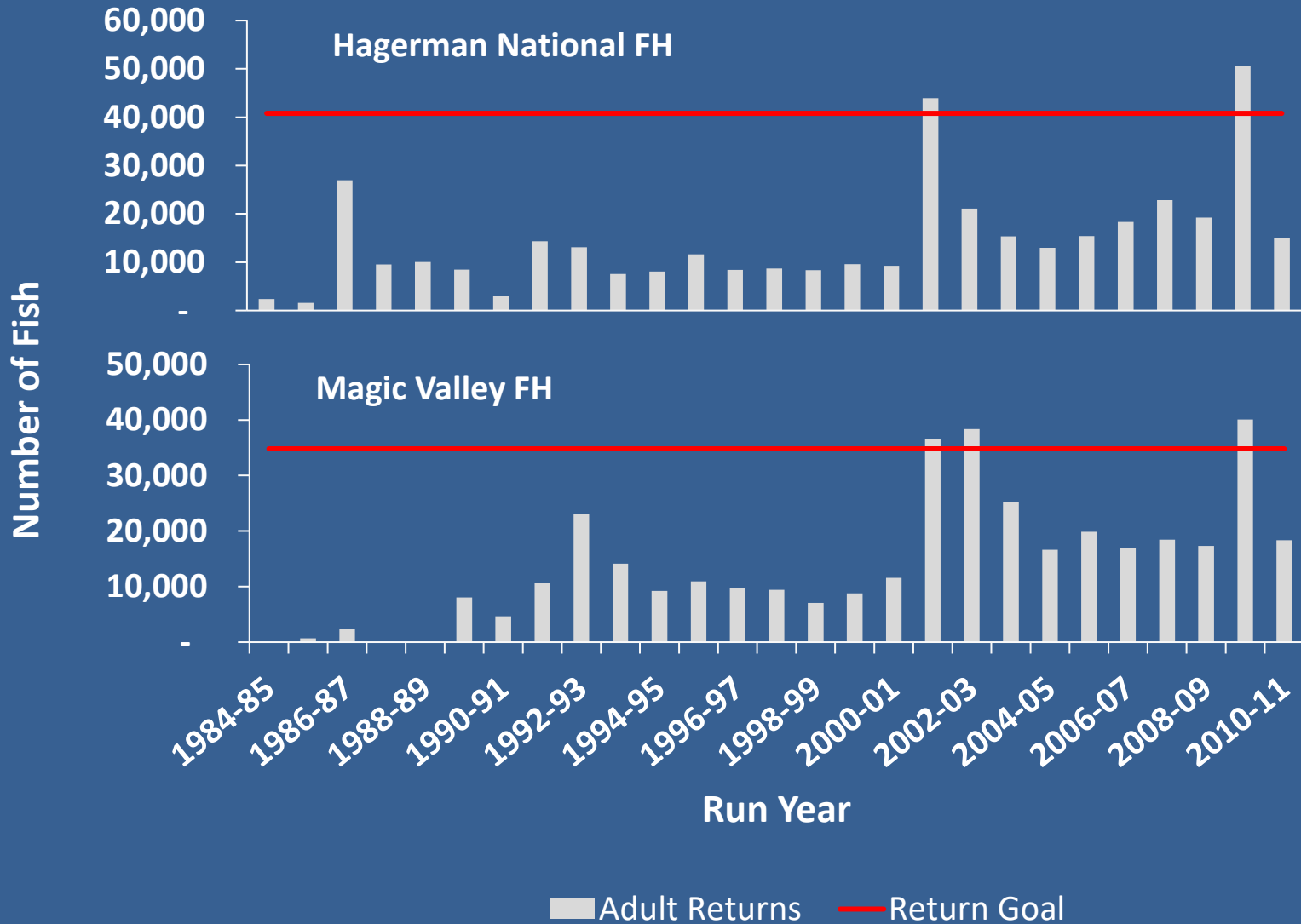
Juvenile Survival to LGD



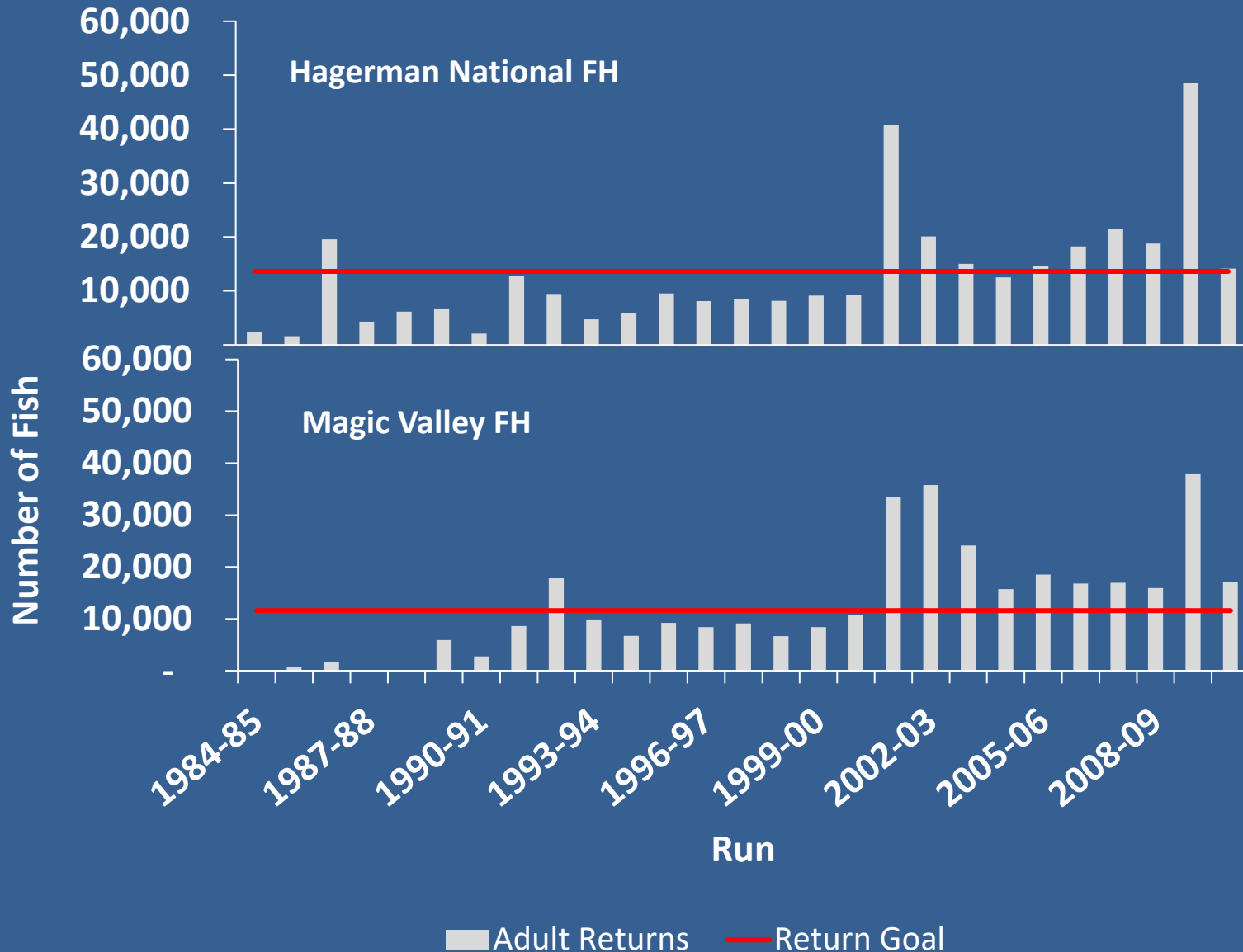
Fish Health/Disease

- Overall, disease has not limited the ability to meet smolt production targets
- Hagerman National Fish Hatchery
 - In Recent Years: Furunculosis, Sore back, Coldwater Disease
 - In Past years: IHN, and Bacterial gill disease
 - DworB stock was problematic
- Magic Valley Fish Hatchery
 - Coldwater Disease and IHN

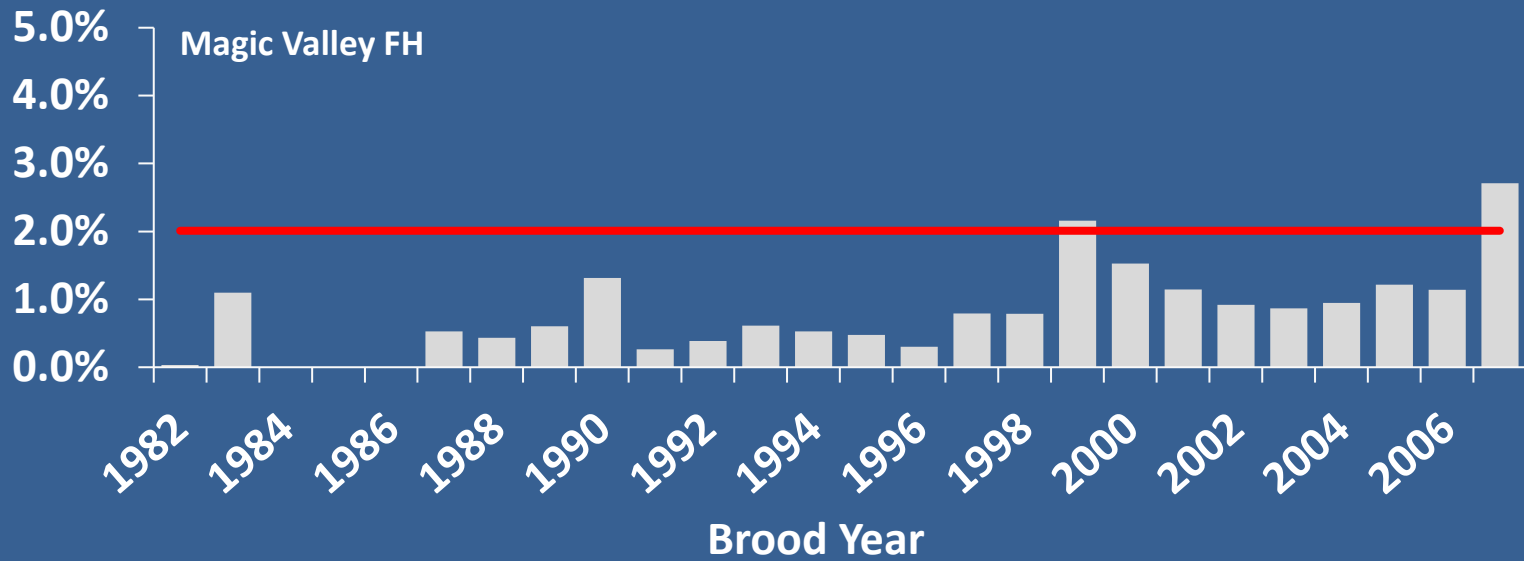
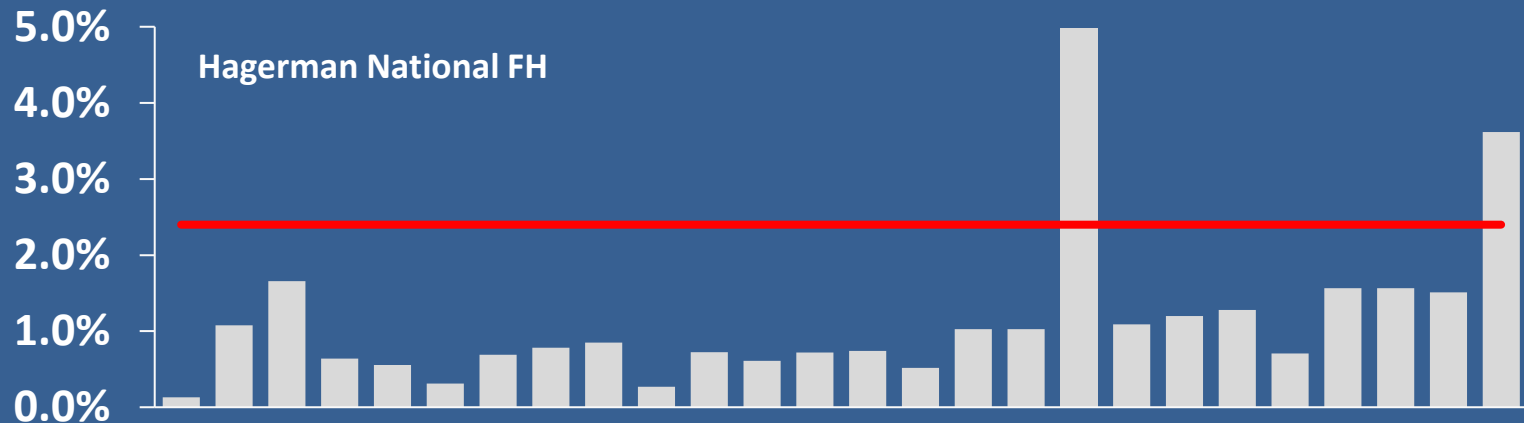
Adult Returns-Total Adults Produced



Adult Returns-Lower Granite Dam



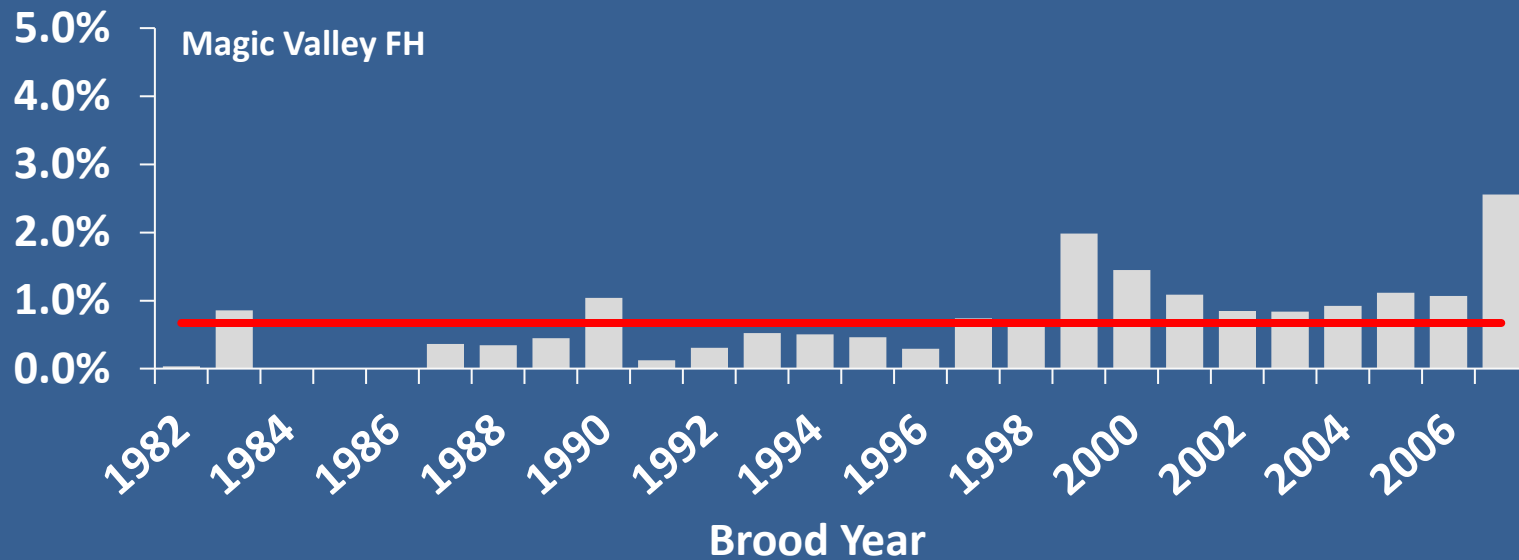
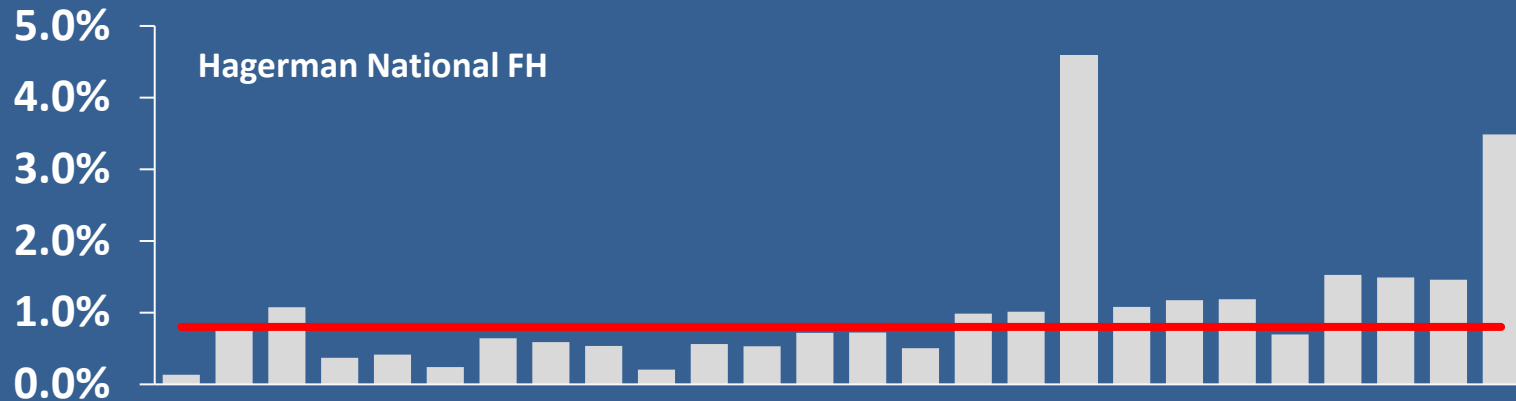
Smolt to Adult Survival (SAS)



■ SAS

— SAS (Assumed)

Smolt to Adult Return (SAR)



■ SAR

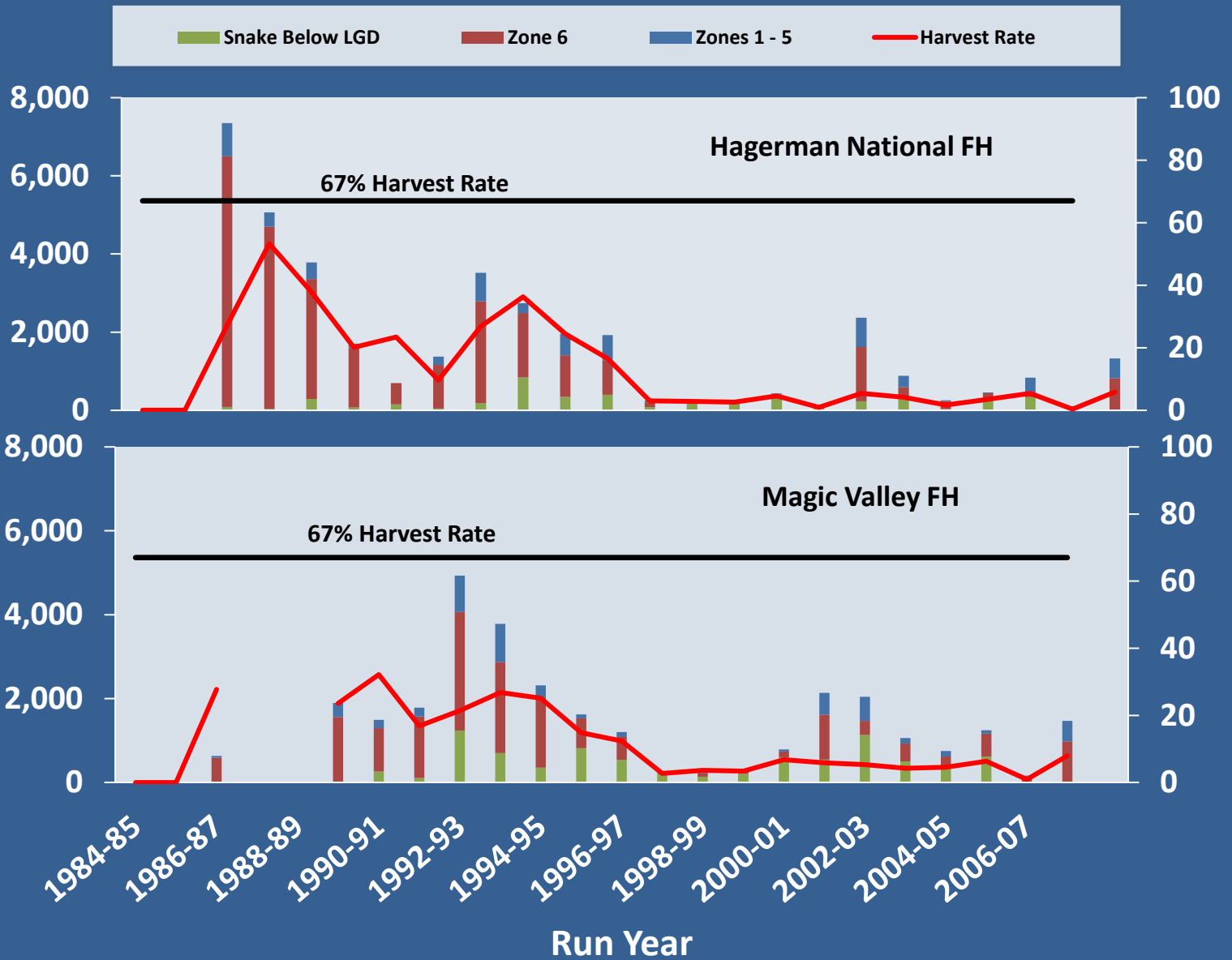
— SAR (Assumed)

Harvest and Escapement

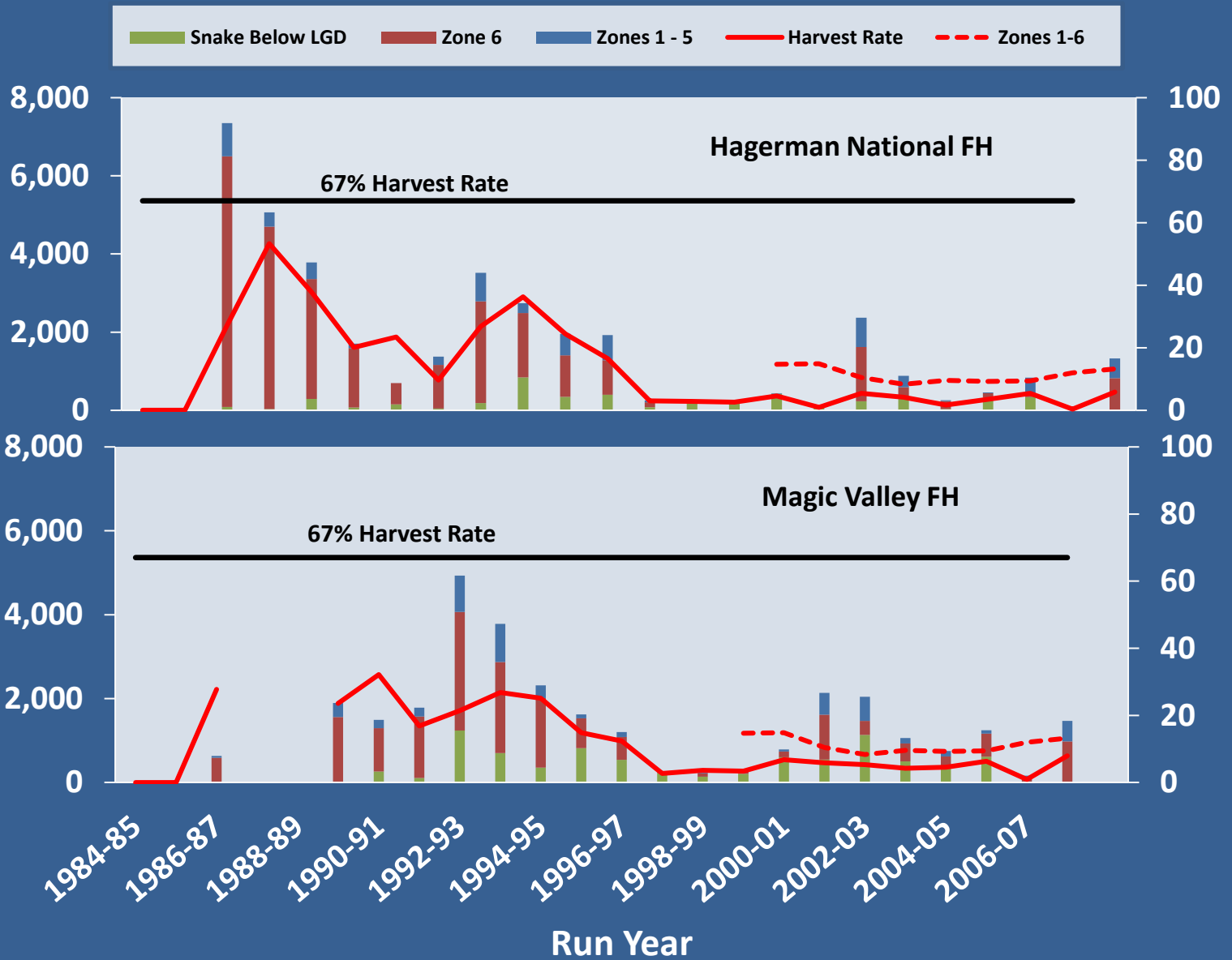
- Harvest and Effort
- Fishing Opportunity
- Strays



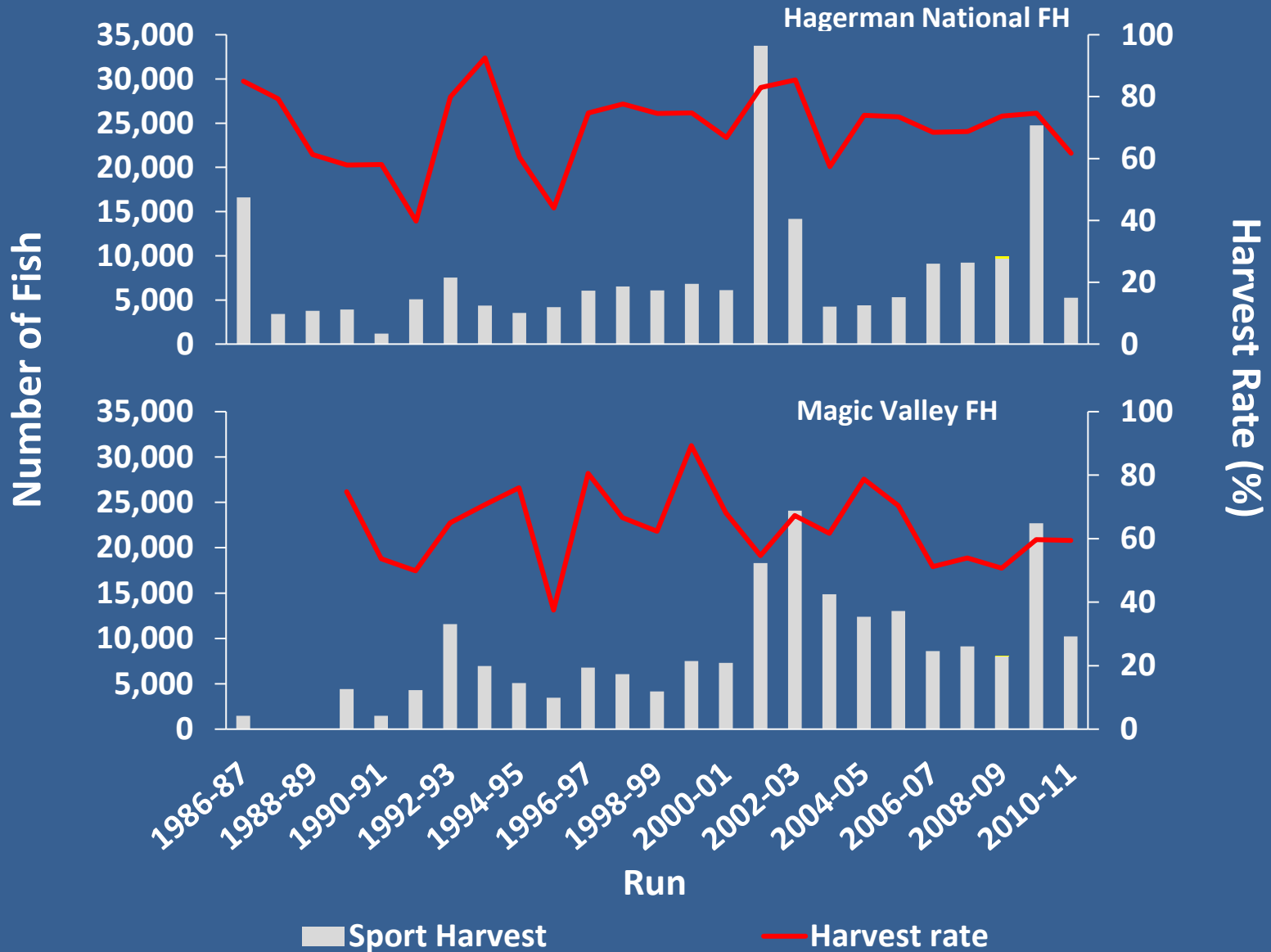
Harvest Downstream of LGD



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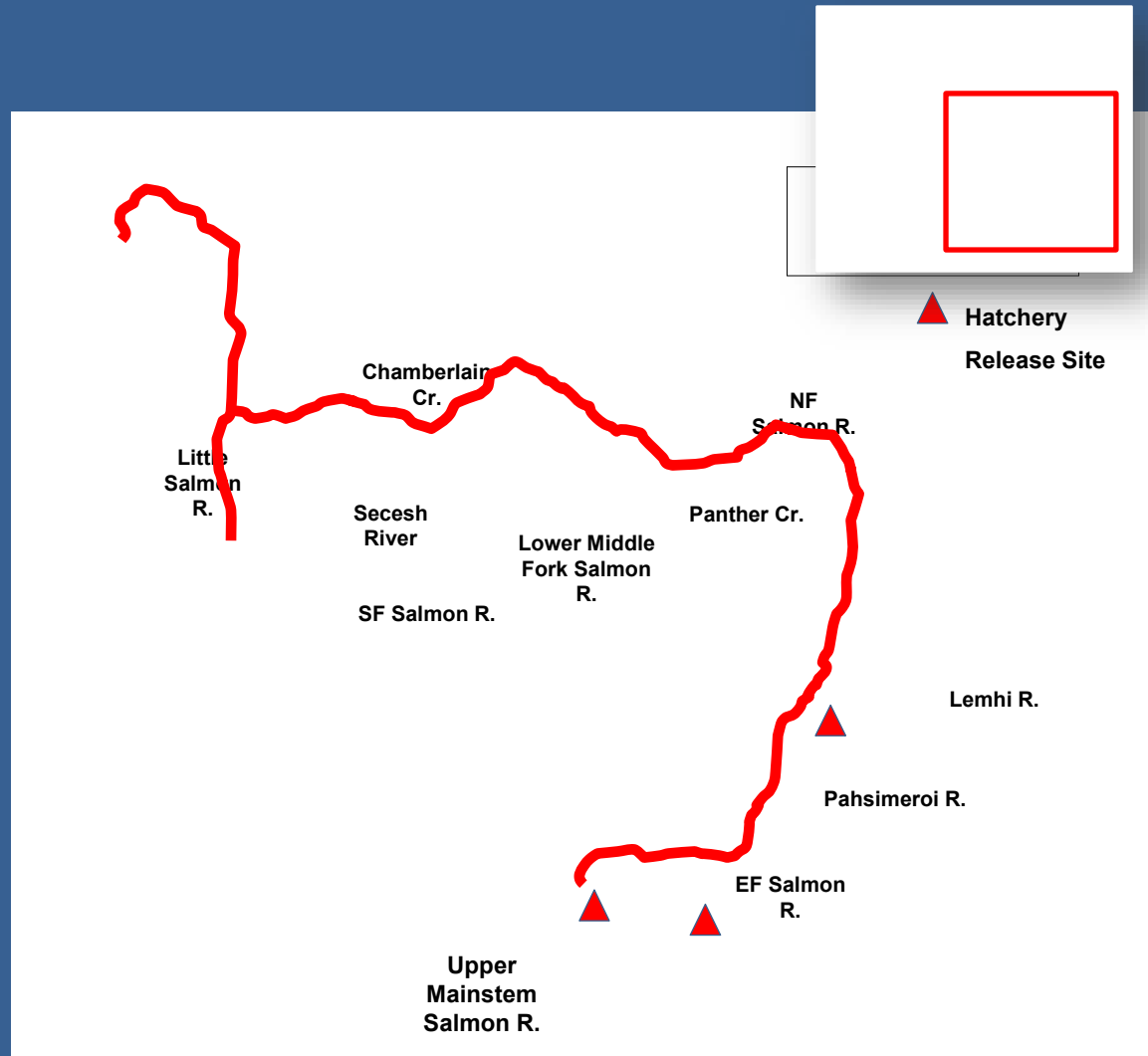


Harvest Upstream of LGD

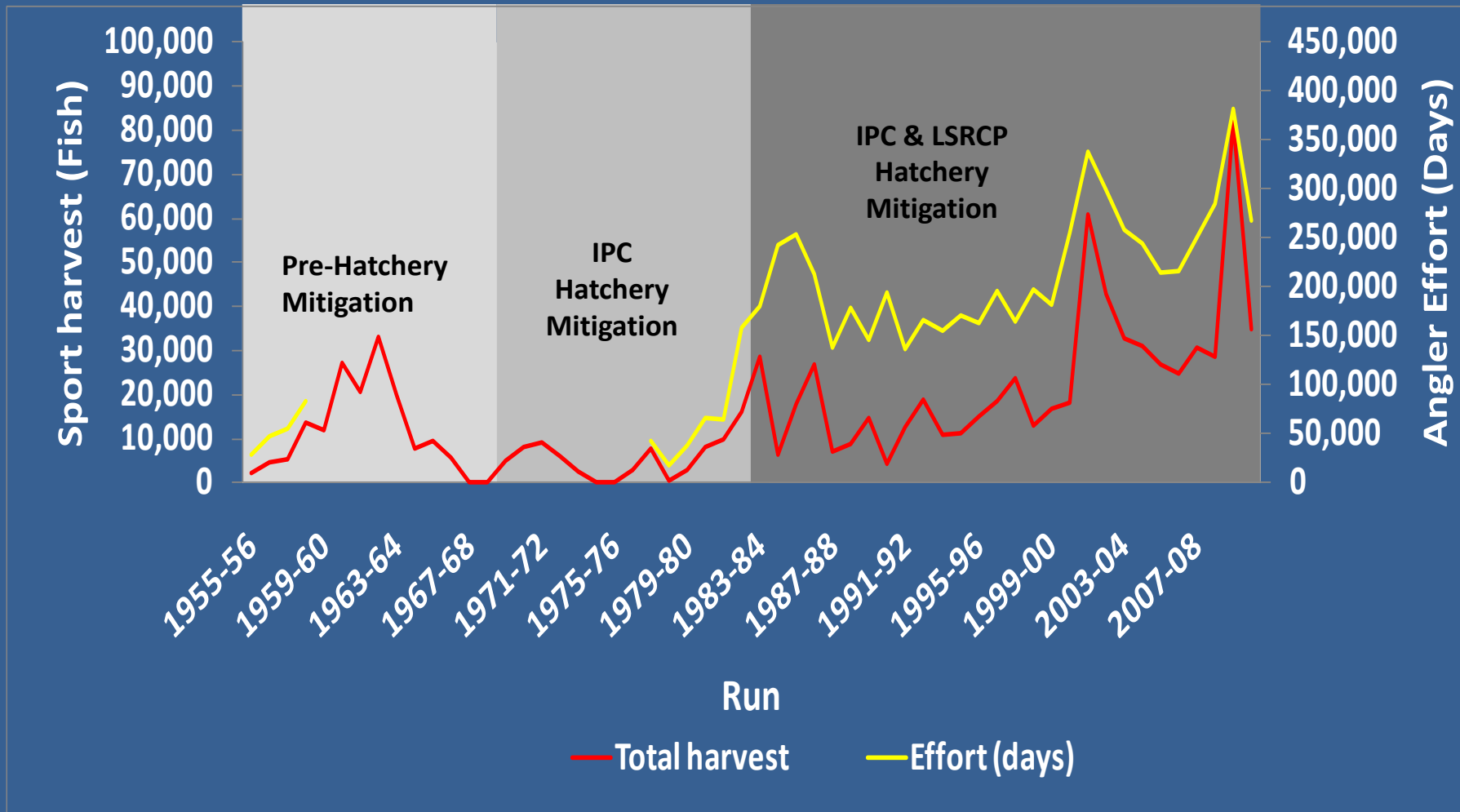


Harvest Opportunity Salmon River

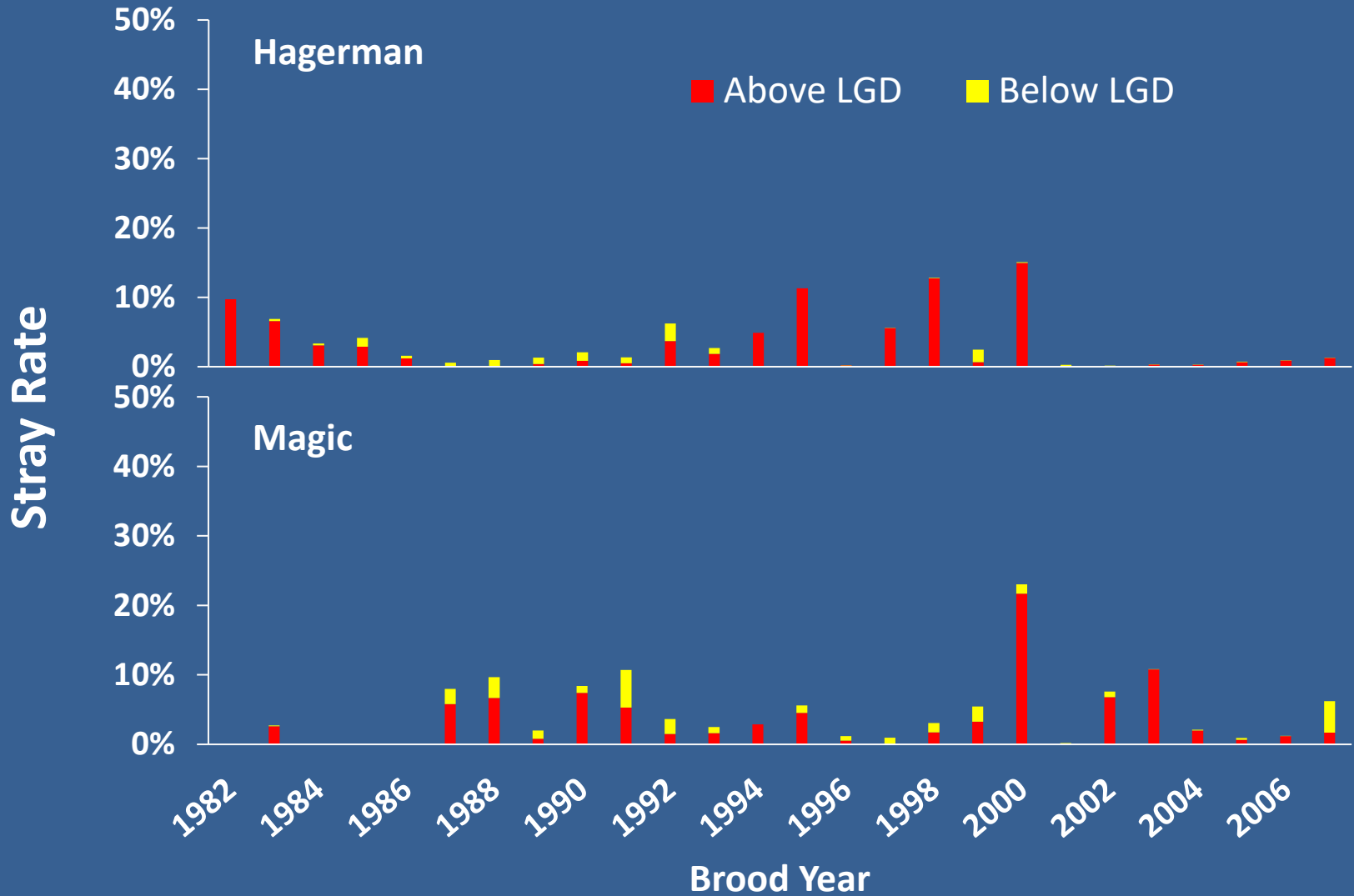
- Salmon and Little Salmon rivers
- 410 miles open to fishing in the Salmon and Little Salmon rivers
- 270 days open to fishing
- South Fork, Middle Fork Salmon rivers and Salmon R. tributaries
- Closed to fishing



Sport Angler Harvest and Effort in the Salmon River



Estimated Stray Rate



Summary of Salmon River Program

Hatchery production

No significant limitations with fish culture

Post release survival

Juvenile survival consistently >70%

Exceeded project area escapement goals in all of last 10 years

Have achieved total mitigation goals in only two years

Summary of Salmon River Program

Harvest Benefits

- Contribution below project area less than originally anticipated
- Appears that we are underestimating harvest below project area
- Consistently provides robust fisheries and harvest opportunity above project area
 - Average number harvested 16,700 (range: 3,000-47,000)
 - Angler Effort 219,00 angler days (range: 136,000-382,000)
 - Project Harvest Rates- 60-80%
- Economic benefits to many rural communities

Monitoring and Evaluation

Continued monitoring of hatchery production and productivity

– PIT Tagging

- Estimating adult survival
- Migration timing and inter-dam conversion
- Strays

– Parental Based Tagging (PBT)

- Adult survival
- Catch contribution
- Stock Identification
- Strays

– Run Reconstruction at LGD

Moving Forward

- **Continue to focus hatchery effort to provide harvest mitigation benefits**
- **Continue to maintain conservation management areas for wild populations**
- **Continue to evaluate effectiveness of hatchery tool to provide conservation benefits**
- **Maintain flexible adaptive management approach. Include new science and information to help guide best management practices**
- **Continue collaborative approach with federal, state and tribal partners in managing the hatchery program**
- **Increase information base on abundance and productivity of natural populations**

Questions?

