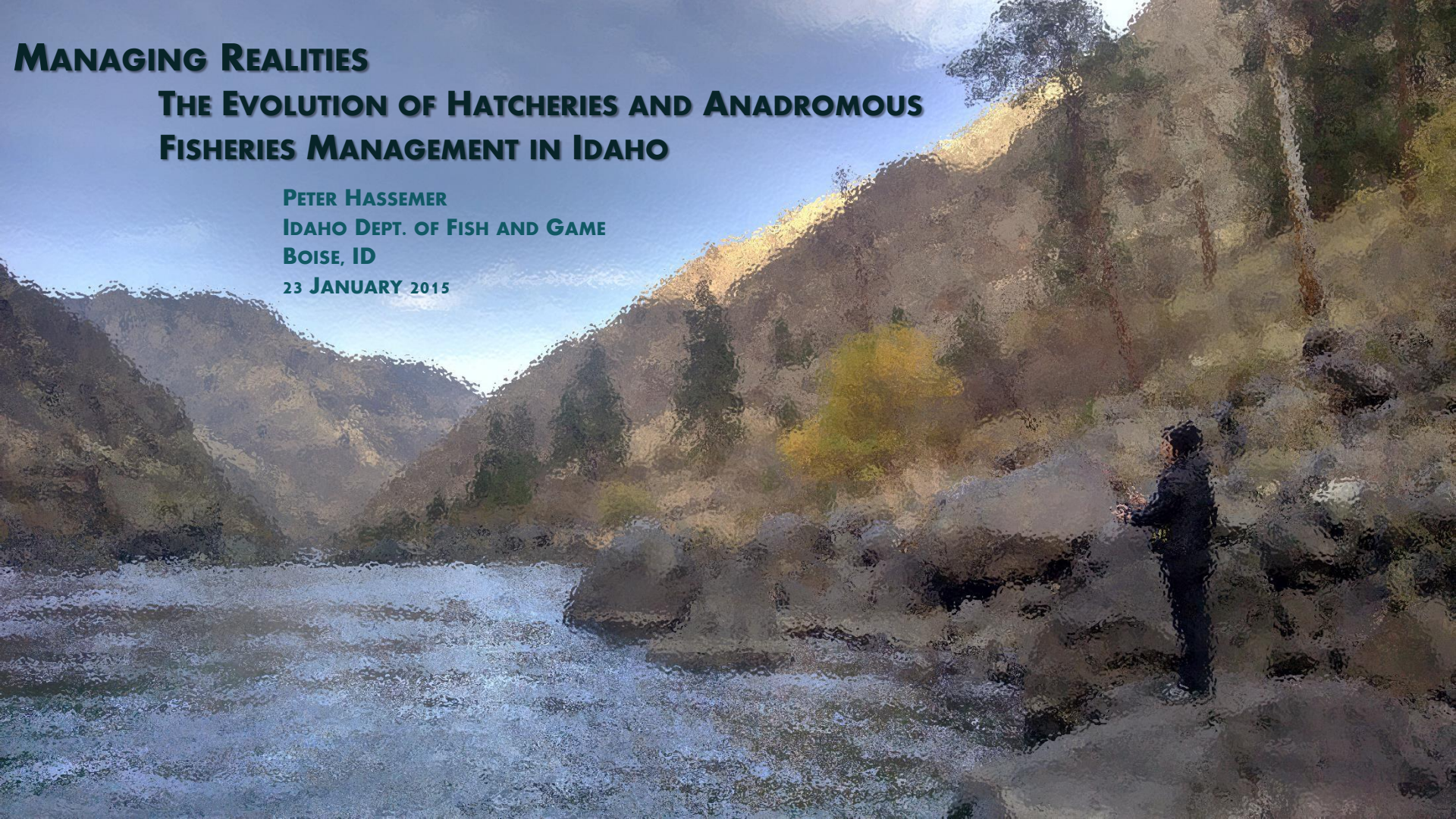
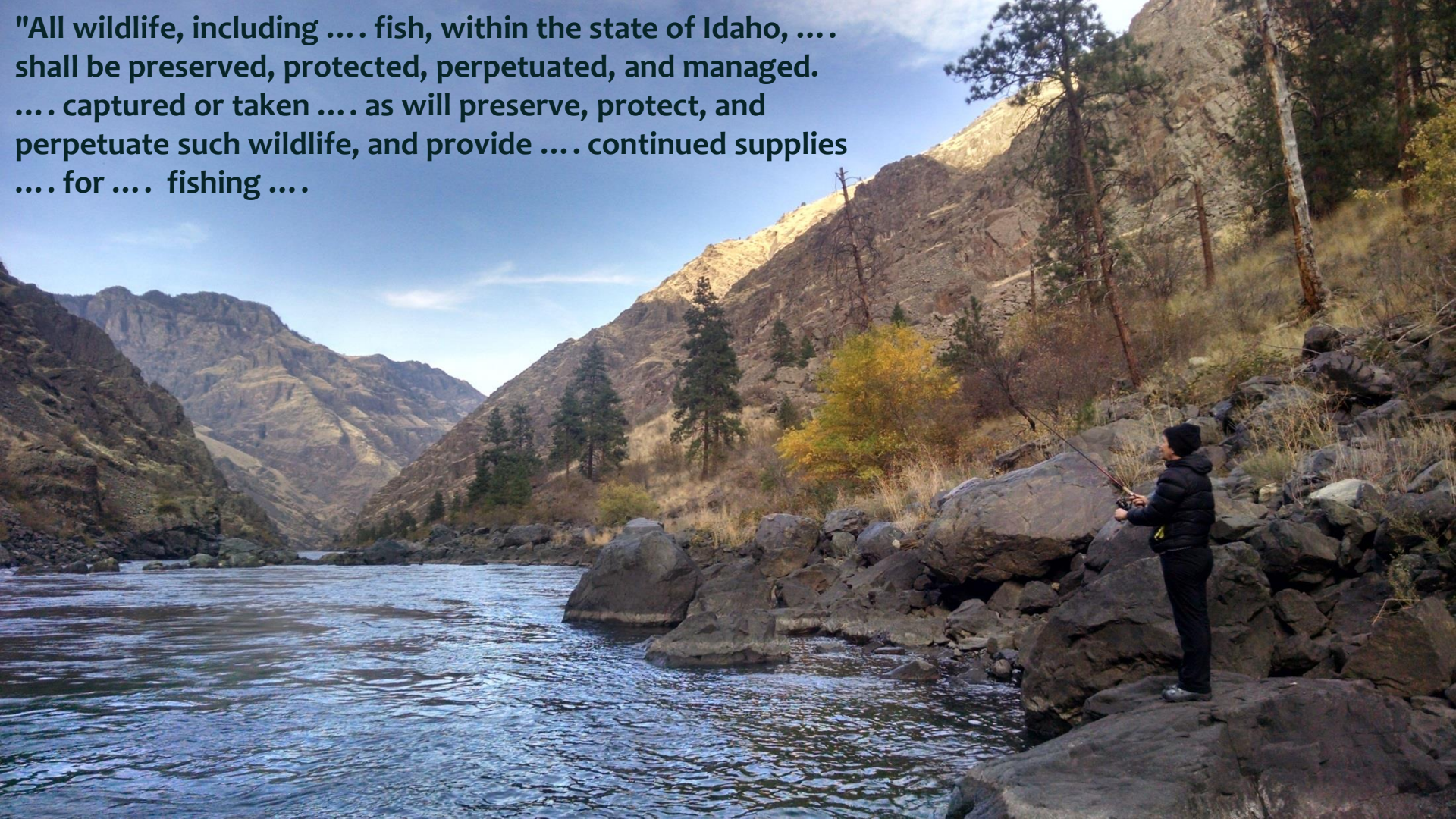
Managing Realities

The Evolution of Hatcheries and Anadromous Fisheries Management in Idaho

Peter Hassemer
Idaho Dept. of Fish and Game
Boise, ID

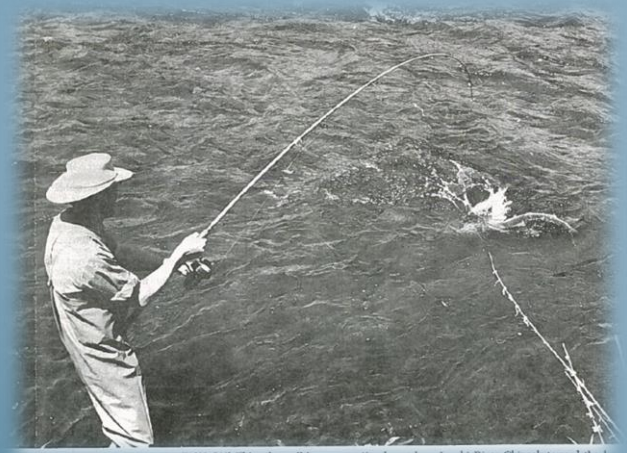
23 January 2015



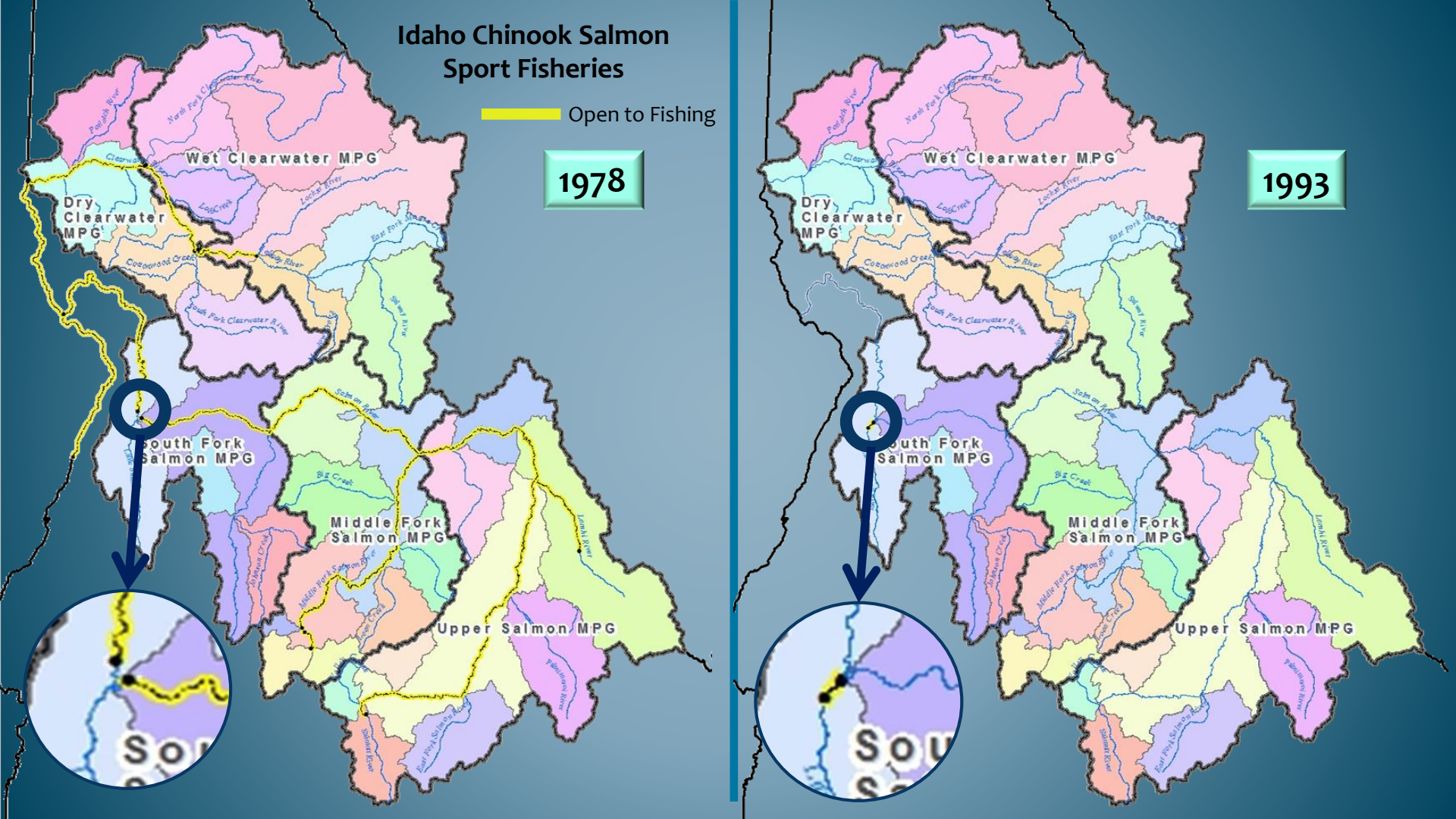

"All wildlife, including …. fish, within the state of Idaho, ….
shall be preserved, protected, perpetuated, and managed.
…. captured or taken …. as will preserve, protect, and
perpetuate such wildlife, and provide …. continued supplies
…. for …. fishing ….

Managing Realities

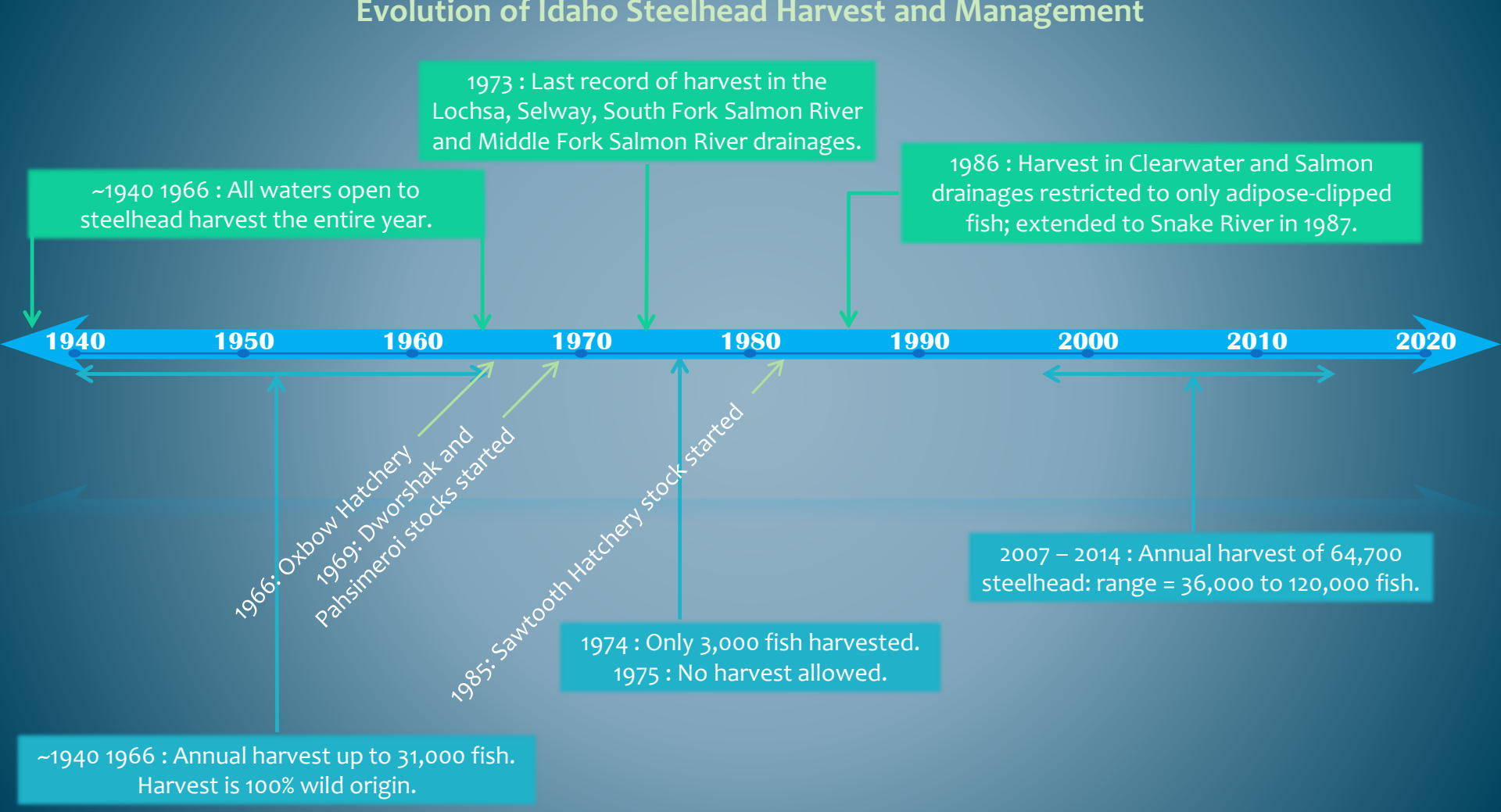
Reality 1 : Where we fish and what we catch has changed.



FISH ON! This salmon fisherman cautiously works a Lembi River Chinook toward the


Idaho Chinook Salmon
Sport Fisheries
Open to Fishing
1978
Wet Clearwater MPG
Dry
Clearwater
MPG
South Fork
Salmon MPG
Middle Fork
Salmon MPG
Upper Salmon MPG
1993
Wet Clearwater MPG
Dry
Clearwater
MPG
South Fork
Salmon MPG
Middle Fork
Salmon MPG
Upper Salmon MPG

Evolution of Idaho Steelhead Harvest and Management



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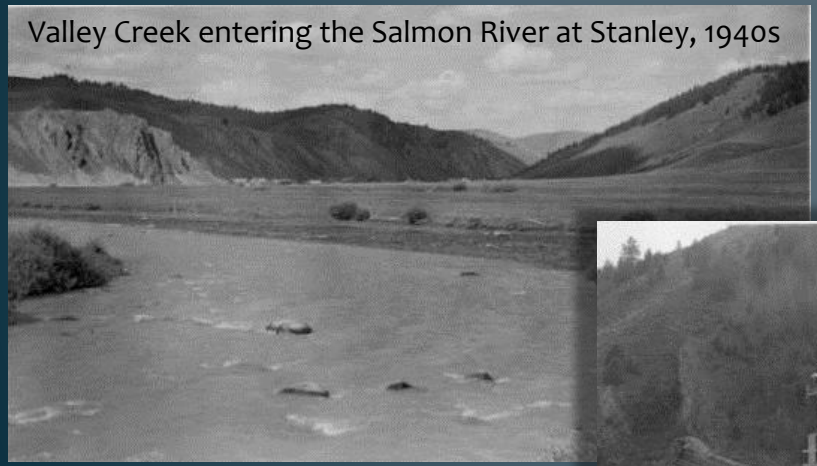
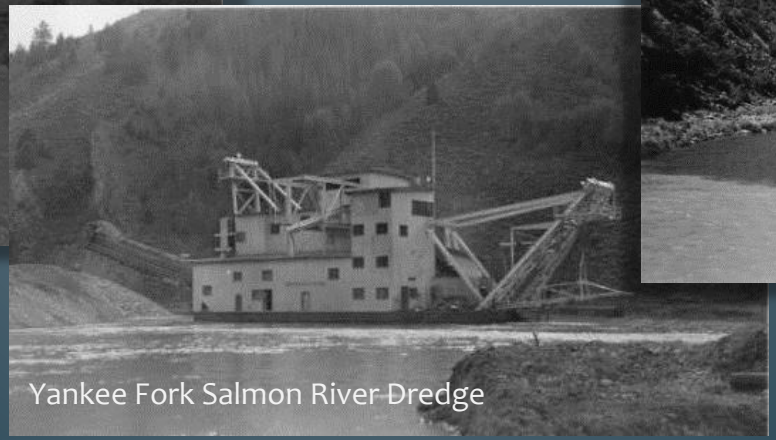
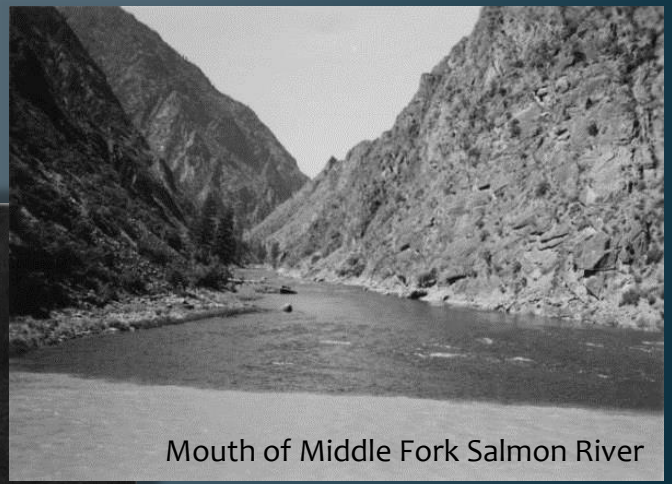
Reality 2 : Human impacts on the fishery resources have been large.


Valley Creek entering the Salmon River at Stanley, 1940s


Yankee Fork Salmon River Dredge


Mouth of Middle Fork Salmon River

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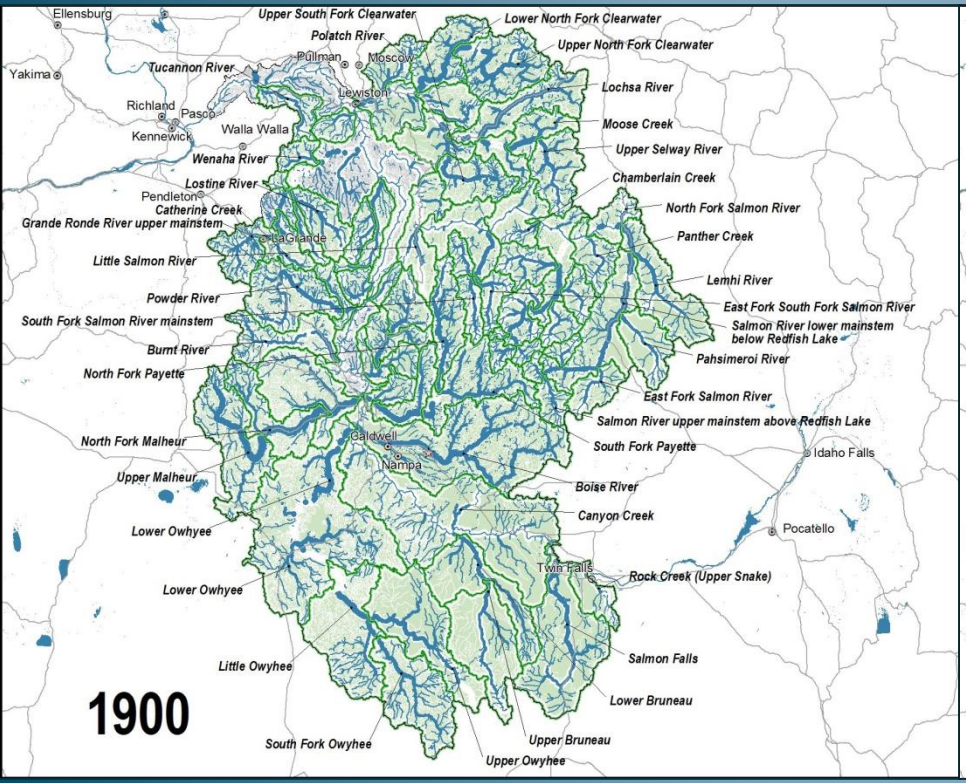
1901 Swan Falls Dam, Snake River

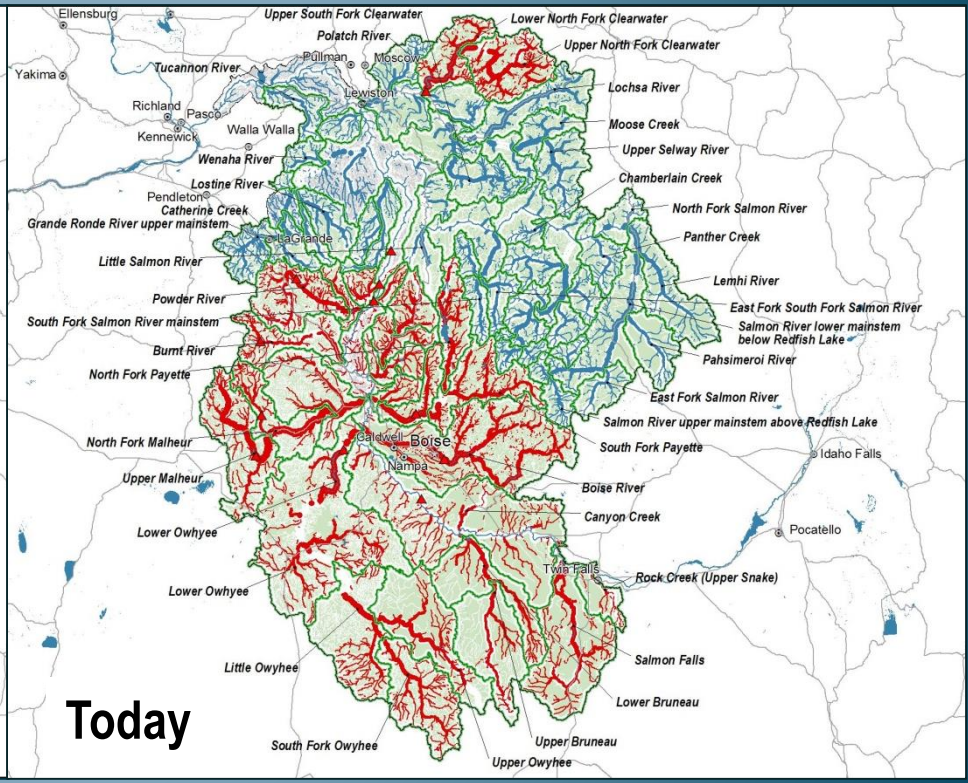
1908 Barber Dam, Boise River

Snake River basin habitat accessible to anadromous fishes

Chinook salmon intrinsic potential habitat (ICTRT)

Not Accessible





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Reality 1 : Where we fish and what we catch has changed.

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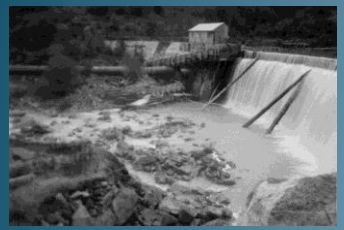
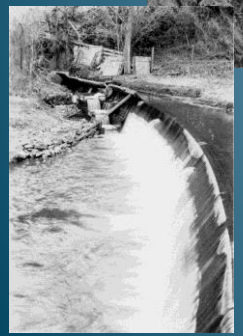
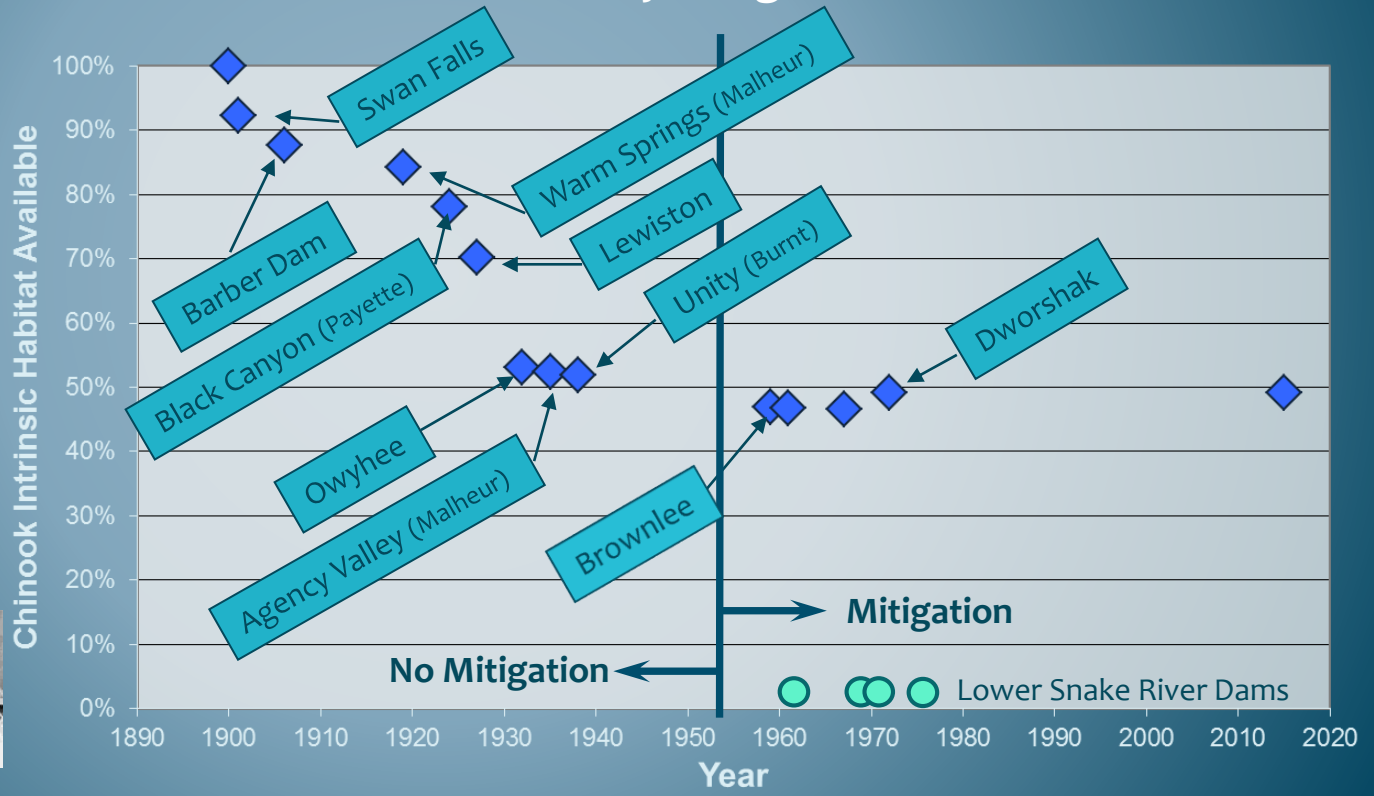
Reality 3 : Extensive resources were lost without any mitigation.







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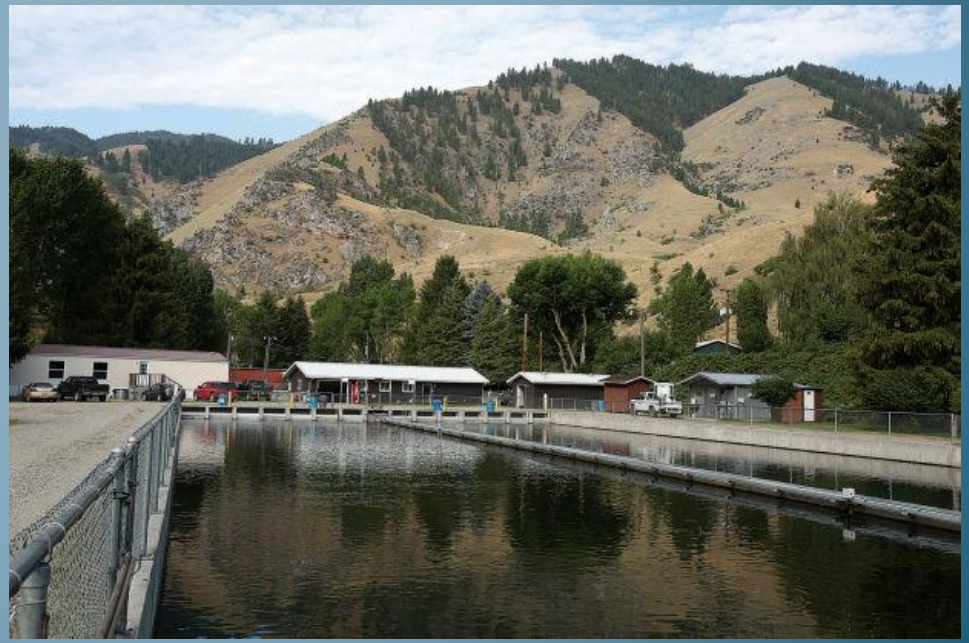
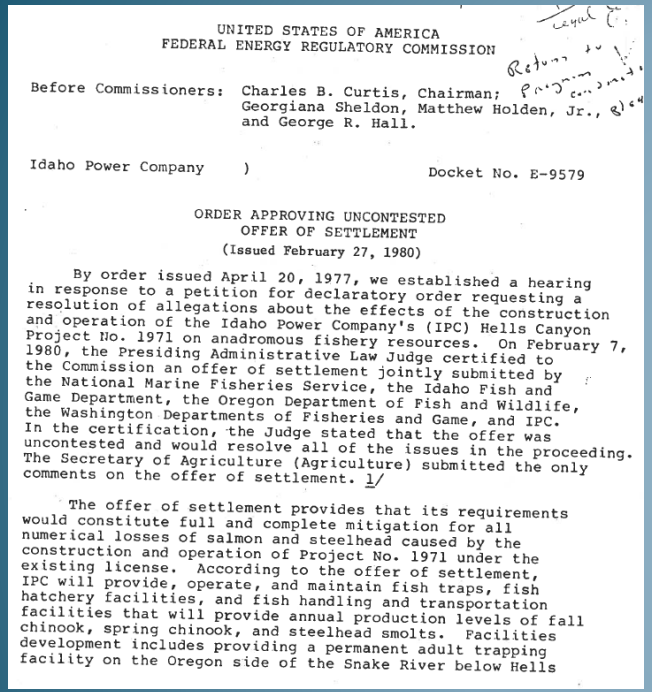


Hells Canyon Settlement Agreement



UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Before Commissioners: Charles B. Curtis, Chairman; Georgiana Sheldon, Matthew Holden, Jr., and George R. Hall.

Idaho Power Company) Docket No. E-9579

ORDER APPROVING UNCONTESTED OFFER OF SETTLEMENT
(Issued February 27, 1980)

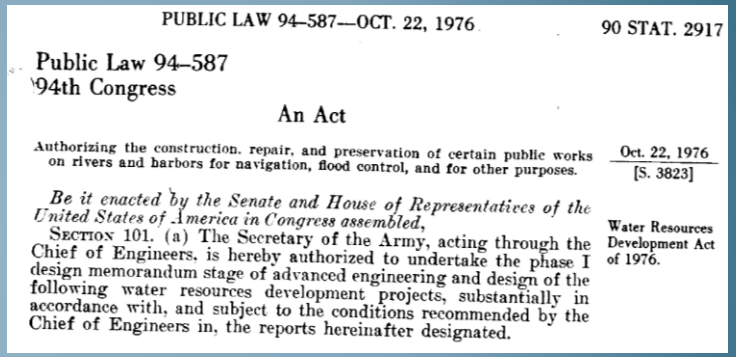
By order issued April 20, 1977, we established a hearing in response to a petition for declaratory order requesting a resolution of allegations about the effects of the construction and operation of the Idaho Power Company's (IPC) Hells Canyon Project No. 1971 on anadromous fishery resources. On February 7, 1980, the Presiding Administrative Law Judge certified to the Commission an offer of settlement jointly submitted by the National Marine Fisheries Service, the Idaho Fish and Game Department, the Oregon Department of Fish and Wildlife, the Washington Departments of Fisheries and Game, and IPC. In the certification, the Judge stated that the offer was uncontested and would resolve all of the issues in the proceeding. The Secretary of Agriculture (Agriculture) submitted the only comments on the offer of settlement. 1/

The offer of settlement provides that its requirements would constitute full and complete mitigation for all numerical losses of salmon and steelhead caused by the construction and operation of Project No. 1971 under the existing license. According to the offer of settlement, IPC will provide, operate, and maintain fish traps, fish hatchery facilities, and fish handling and transportation facilities that will provide annual production levels of fall chinook, spring chinook, and steelhead smolts. Facilities development includes providing a permanent adult trapping facility on the Oregon side of the Snake River below Hells

Mitigate for Brownlee, Oxbow, Hells Canyon dams
4 million spring chinook smolts
400,00 pounds steelhead smolts
1 million fall chinook smolts

Lower Snake River Compensation Plan

Mitigate for 4 lower Snake River dams
Mitigation goals:
55,100 adult steelhead
58,700 adult spring/summer chinook salmon
18,300 fall chinook salmon



PUBLIC LAW 94–587—OCT. 22, 1976 90 STAT. 2917

Public Law 94–587
94th Congress

An Act

Authorizing the construction, repair, and preservation of certain public works on rivers and harbors for navigation, flood control, and for other purposes.

Oct. 22, 1976
[S. 3823]

Water Resources Development Act of 1976.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 101. (a) The Secretary of the Army, acting through the Chief of Engineers, is hereby authorized to undertake the phase I design memorandum stage of advanced engineering and design of the following water resources development projects, substantially in accordance with, and subject to the conditions recommended by the Chief of Engineers in, the reports hereinafter designated.

Dworshak Hatchery (USACE)

"Mitigation Goal"
Maintain North Fork Clearwater B-steelhead run.
20,000 adult steelhead

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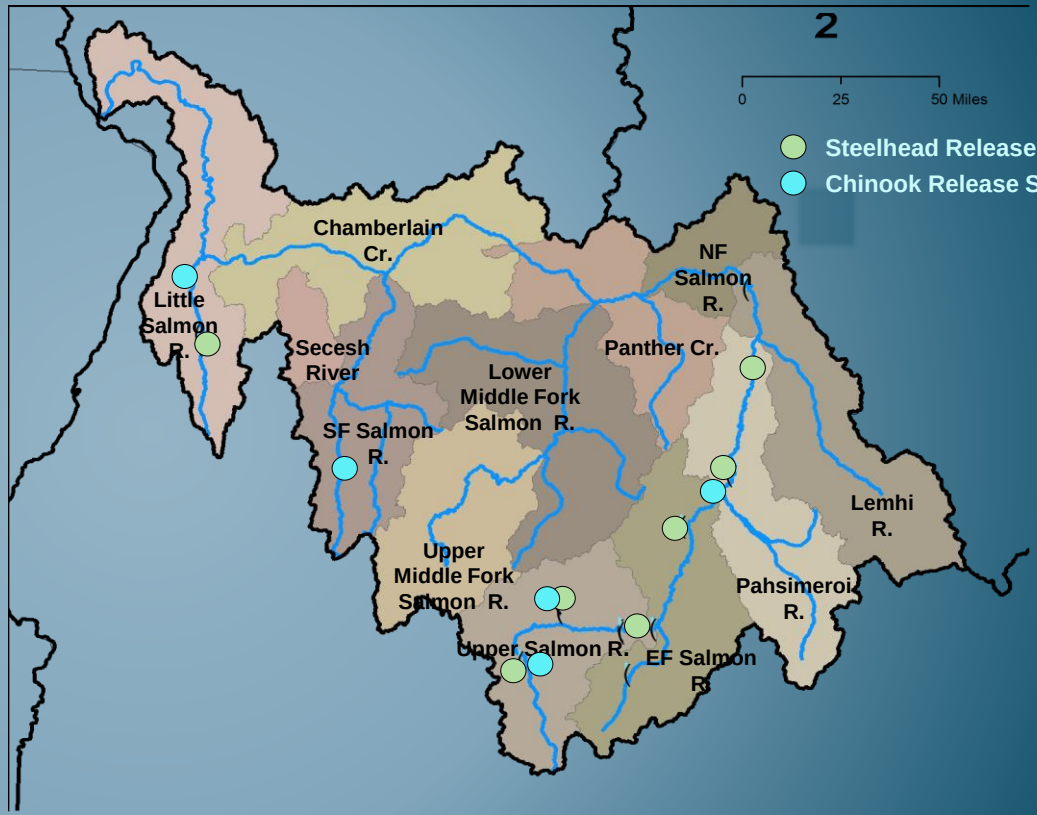
Reality 5 : Hatcheries become part of the landscape.
Hatcheries cannot provide complete in-place mitigation.
Hatchery and wild fish will interact.

Management Framework Salmon River

- No hatchery steelhead releases in :
  - South Fork Salmon River
  - Middle Fork Salmon River
  - North Fork Salmon River
  - Mainstem Salmon downstream of the North Fork
- Hatchery steelhead releases confined to Little Salmon R. and Upper Salmon R.

- No hatchery Chinook releases in :
  - Secesh River
  - Middle Fork Salmon River
  - North Fork Salmon River
  - Lemhi River
- Hatchery Chinook releases confined to five areas.



Chinook Salmon Spawner Surveys

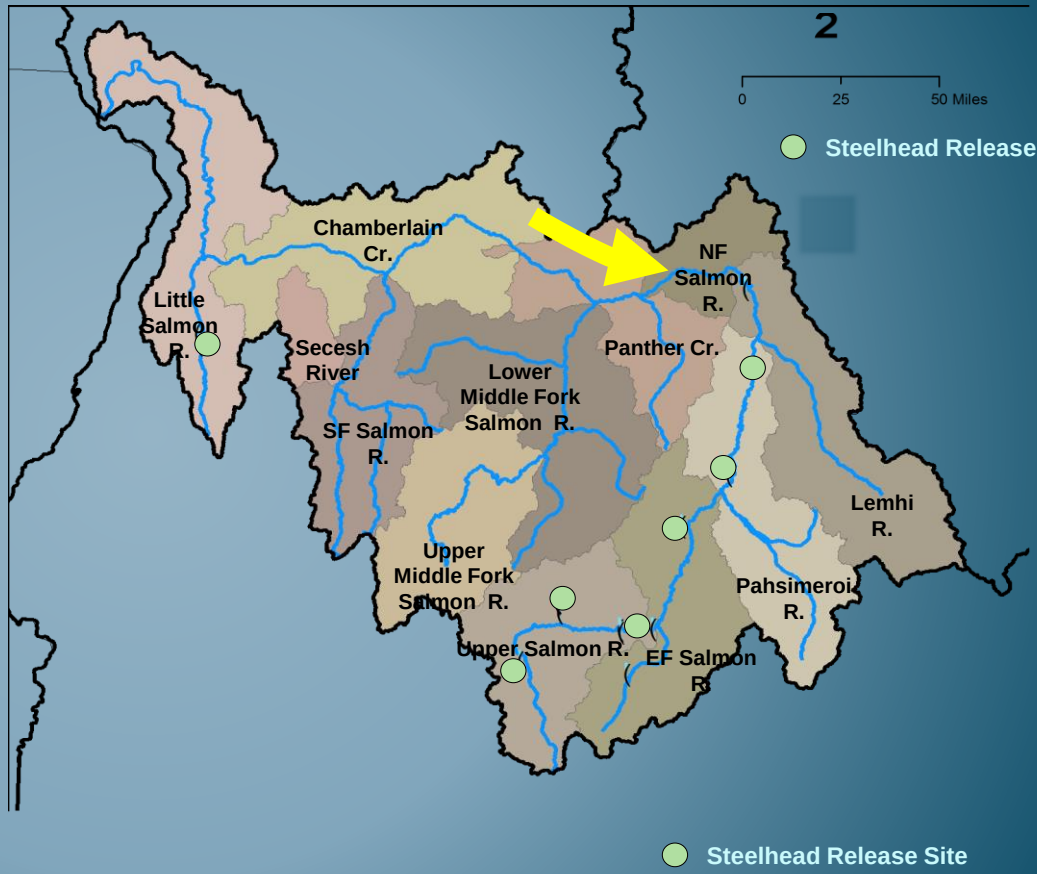
- 2003 – 2013
- 60,900 Hatchery Chinook returned to Pahsimeroi and Sawtooth traps + 7,500 harvested in sport fisheries
- 3,802 Chinook carcasses recovered in Middle Fork Salmon River spawning surveys
  - 3,678 natural origin (96.7%)
  - 102 unknown origin
  - 22 hatchery origin (0.6%)

Management Framework Salmon River

Steelhead Returns

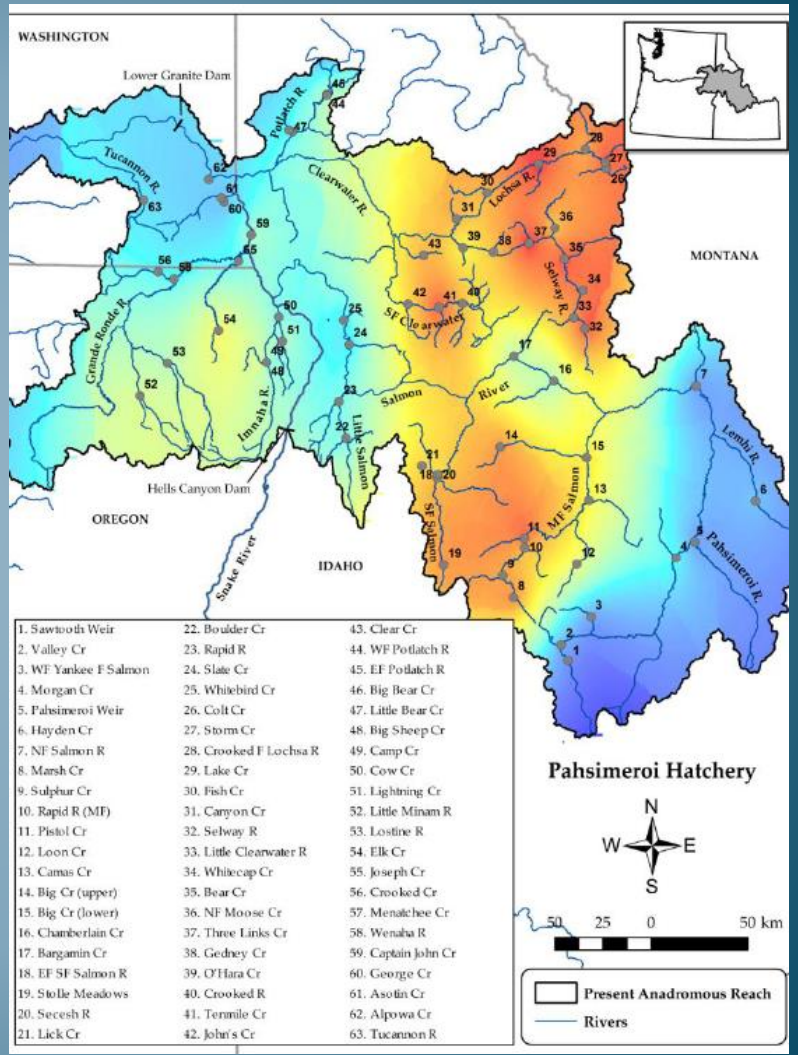
- 2000 – 2014
- 419,500 Hatchery steelhead returned upstream of the Middle Fork Salmon River (minimum)
  - 149,900 Hatchery steelhead returned to Pahsimeroi and Sawtooth traps
  - 269,600 Hatchery steelhead harvested in sport fishery

Management Framework Salmon River



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

From: Ackerman et al. 2012



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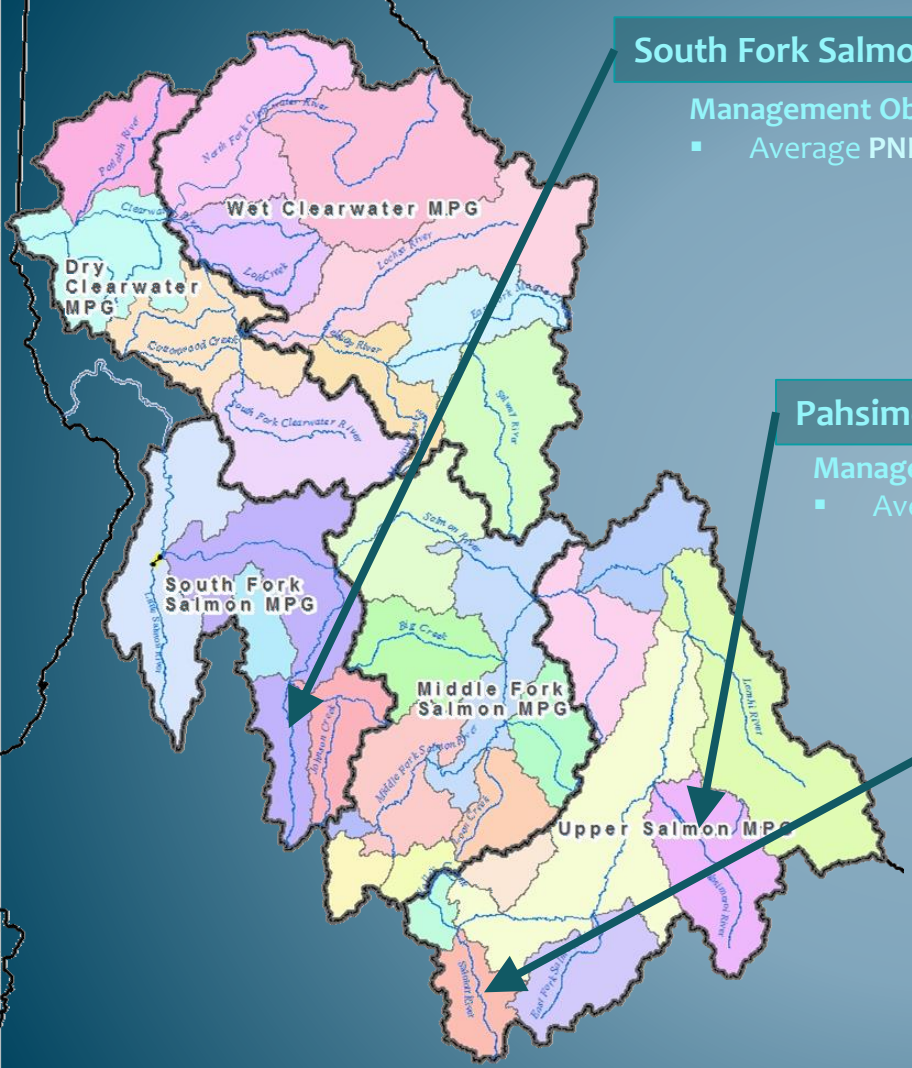
Hatcheries cannot provide complete in-place mitigation.
Reality 6 : Hatcheries have included population-specific conservation roles.



DRAFT INTEGRATED PROGRAMS

South Fork Salmon River Population

Weir control < 50%

Management Objective

- Average **PNI of 0.67**

Pahsimeroi River Population

Weir control 100%

Management Objective

- Average **PNI of 0.8**

Common Objectives

- Maintain a minimum escapement of 300 fish upstream of the weir
- Bring integrated hatchery fish into the segregated broodstock.

Upper Salmon River Population

Weir control 95+%

Management Objective

- Manage for an average **PNI of 0.67**

Pahsimeroi Summer Chinook

1 million smolt production capacity

Smolt Target	65,000
Individuals needed (m+f	41
pNOB Target	1.0

NOR Return to Weir		NORs Released Above Weir		# of NORs Held for Brood		# of Int HORs Rel Above Weir		Max % of NORs Retained for Brood	Max. pHOS	pNOB		pHOS		PNI		Fish In Habitat		Additional Fish in Habitat		% of NORS Retained		Excess Int Returns	
50	124	35	87	15	37	169	191	0.3	0.25	[illegible]		[illegible]		[illegible]		204	278	154	154	30.0%	30.0%	0	0
125	249	88	208	38	41	192	92	0.3	0.25	0.92	1.00	0.69	0.31	0.57	0.77	279	300	154	51	30.0%	16.4%	0	103
250	499	209	458	41	41	91	153	0.3	0.25	1.00	1.00	0.30	0.25	0.77	0.80	300	611	50	112	16.4%	8.2%	104	42
500	999	459	958	41	41	153	195	0.2	0.25	1.00	1.00	0.25	0.17	0.80	0.86	612	1,153	112	154	8.2%	4.1%	42	0
1,000	1,499	959	1,458	41	41	195	195	0.2	0.25	1.00	1.00	0.17	0.12	0.86	0.89	1,154	1,653	154	154	4.1%	2.7%	0	0
1,500	1,999	1,459	1,958	41	41	195	195	0.2	0.25	1.00	1.00	0.12	0.09	0.89	0.92	1,654	2,153	154	154	2.7%	2.0%	0	0
2,000	3,000	1,959	2,959	41	41	195	195	0.2	0.25	1.00	1.00	0.09	0.06	0.92	0.94	2,154	3,154	154	154	2.0%	1.4%	0	0

Min Escapement Above Weir (H+N)	[illegible]
Integrated HOR SAR	0.3%
# of Int HOR Returns	195

Pahsimeroi Summer Chinook

1 million smolt production capacity

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Individuals needed (m+f	41
pNOB Target	1.0

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2,000	3,000	1,959	2,959	41	41	195	195	0.2	0.25	1.00	1.00	0.09	0.0	0.92	0.94	154	3,154	154	154	2.0%	1.4%	0	0

Min Escapement Above Weir (H+N)	300
Integrated HOR SAR	0.3%
# of Int HOR Returns	195

Summary : Managing the Realities

- Fishing is different
  - Wild fish → Mitigation hatcheries
- Management is active, not passive
  - Integrated Programs
  - Segregated (Mitigation) Programs
  - Wild/Natural Areas
- Management has been effective, but not perfect
  - There are wild fish in wild areas
  - Hatcheries support fisheries
- New information tools to inform management
  - PIT arrays, PBT, GSI

Acknowledgements:

Mike Ackerman - PSMFC-IDFG
Evan Brown - IDFG
Matt Campbell - IDFG
Brian Leth - IDFG
Bill Schrader - IDFG
Craig Steele – PSMFC-IDFG
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Chris Sullivan - IDFG
Chuck Warren - IDFG
Kristen Wright – PSMFC-IDFG
Damon Holzer - NOAA-Fisheries