Best Management Practices - A Tool Not a Rule

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"Knowledge is a tool, and like all tools, its impact is in the hands of the user(s)"

Dan Brown, The Lost Symbol

Tool versus Rule

Tool – something used in performing an operation or necessary in the practice of a vocation or profession.

Rule - a regulation or bylaw governing procedure or controlling conduct.

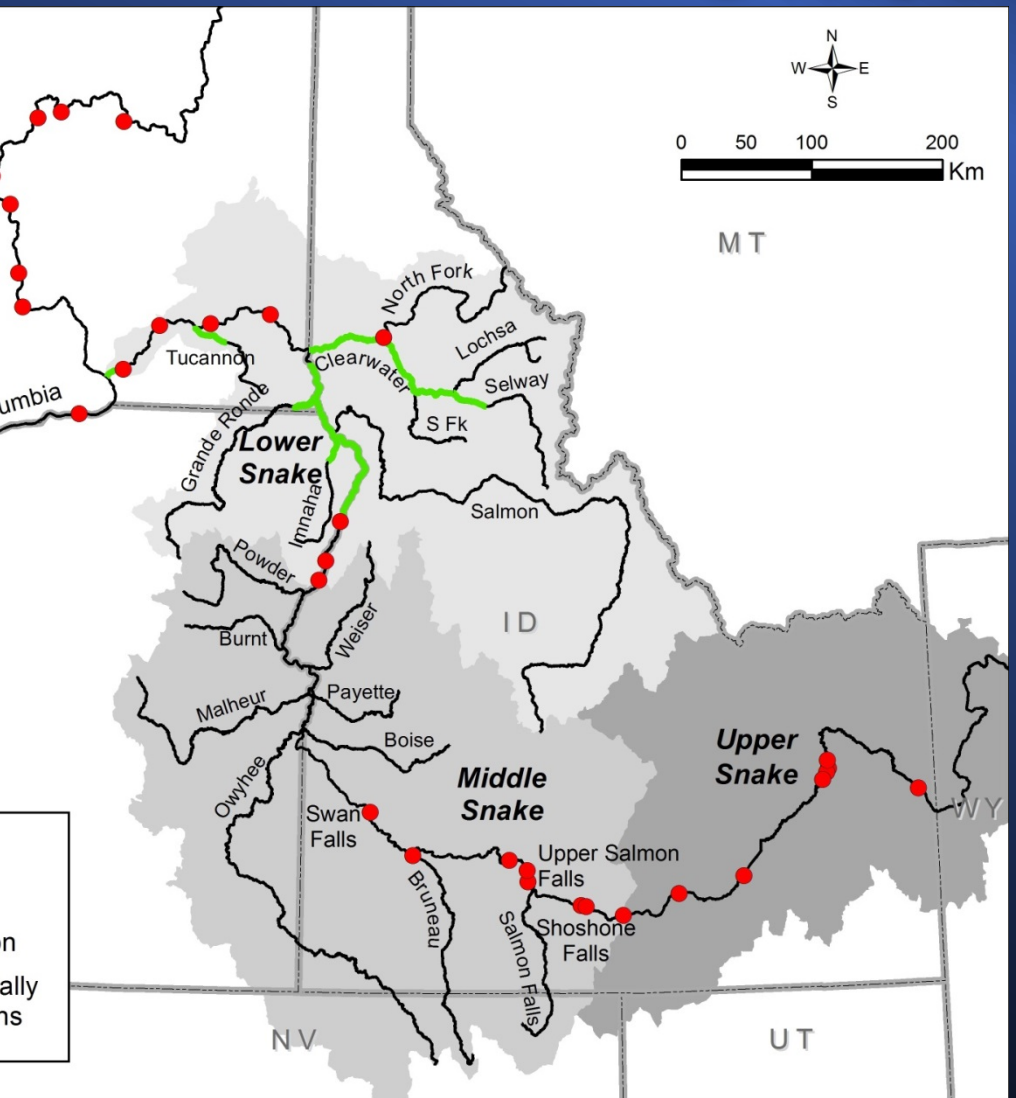
Conservation Hatchery Best Management Practice Recommendations

*"The HSRG's recommendations are **not the only possible alternatives** for managing hatchery programs to meet conservation and harvest goals. As such, the managers may develop other solutions which better meet their program principles and goals. Success over time will be defined by the managers' ability to take actions in the future to adjust hatchery programs based on good science to meet their conservation and harvest goals."*

-- Jim Waldo, Chair Columbia River Hatchery Reform Steering Committee


Snake River

SNAKE RIVER FALL CHINOOK SALMON POPULATION AND ESU STRUCTURE

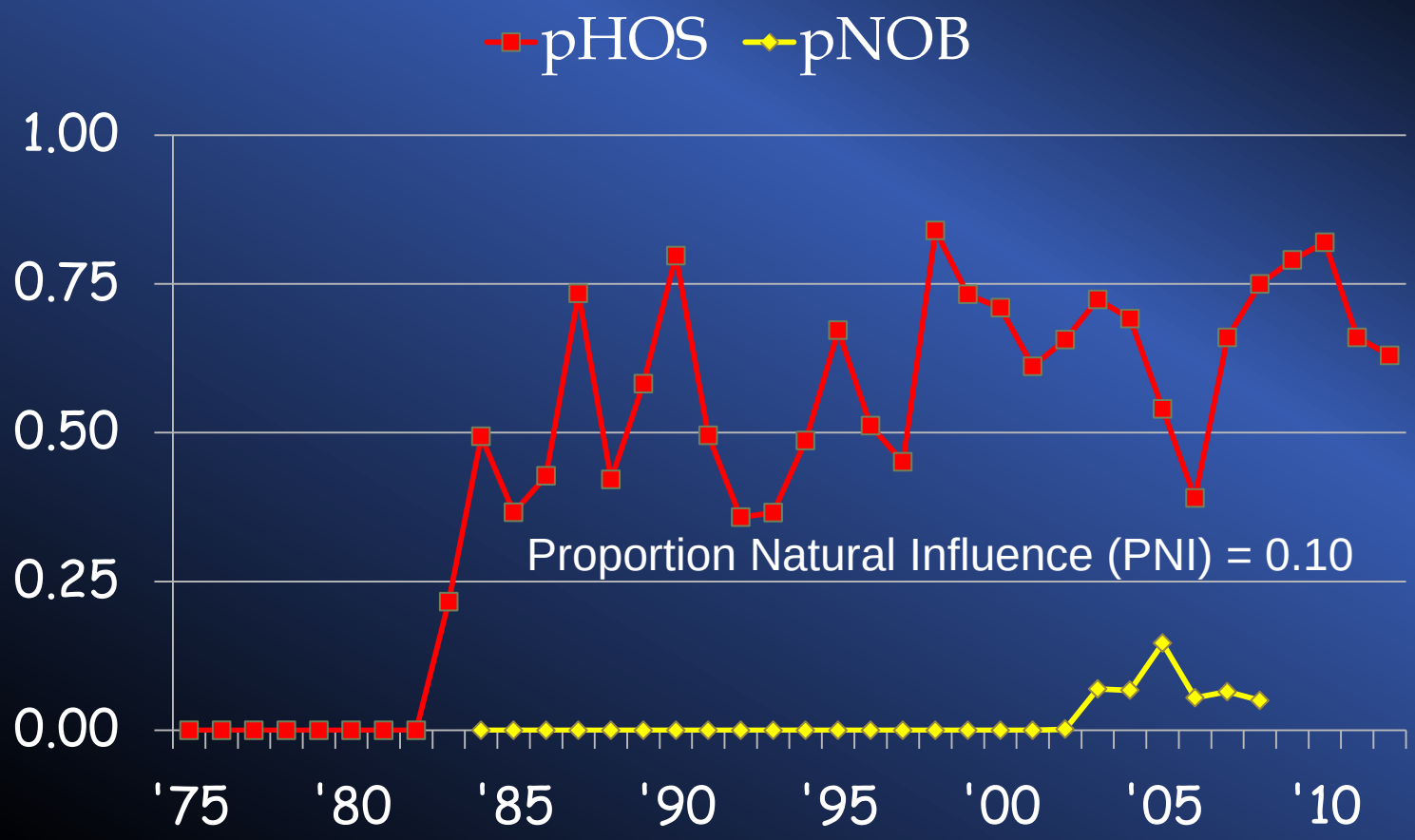


- One extant population
  - -Hatchery genetics very similar to natural-origin (endemic brood program)
  - -15% of historical habitat assessable
- Two extinct populations
- Congressionally mandated mitigation hatchery program

Conservation Hatchery Best Management Practice Recommendations

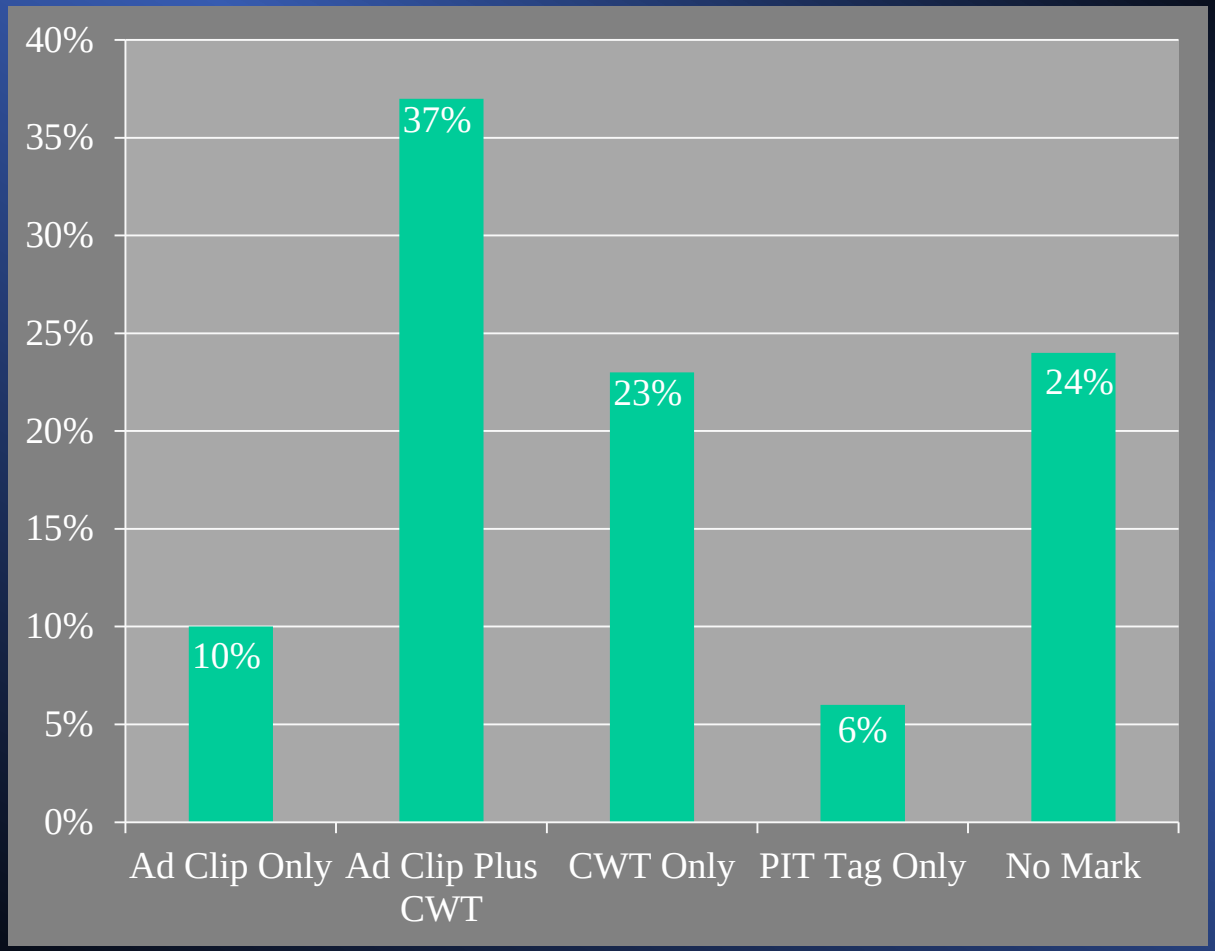
- Proportion Natural Influence (PNI) >0.67
  - Maximize percent natural origin in broodstock
  - Minimize percent hatchery origin on spawning grounds
- 100% marked hatchery production
- Selective harvest regimes
- Mimic natural life histories

BMP: Proportion Natural Influence (PNI) >0.67



BMP: 100% Marking of Hatchery Production

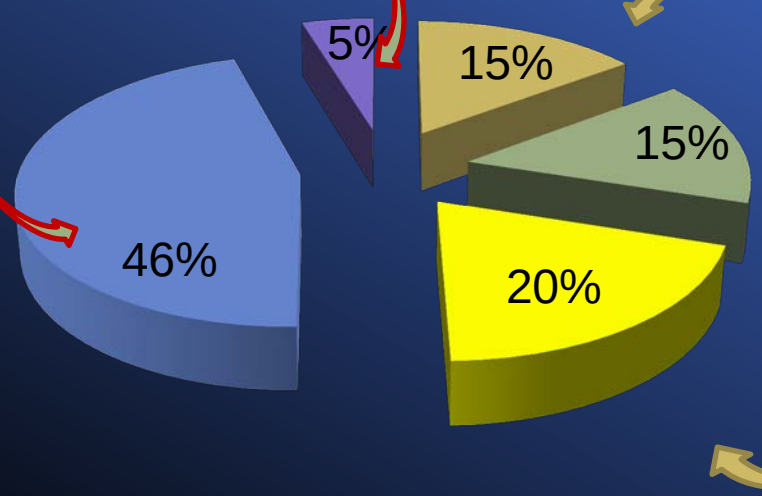
- 3 hatchery programs
- 11 release sites
- 5.5 million fish produced
- 5 mark types



BMP: Implement Selective Harvest Regimes

Total SR fall Chinook in 2010
Includes ocean and freshwate harvest

Conservation
50%



Consumption*
50%

- Commercial
- Sport
- Treaty
- Natural spawning
- Broodstock

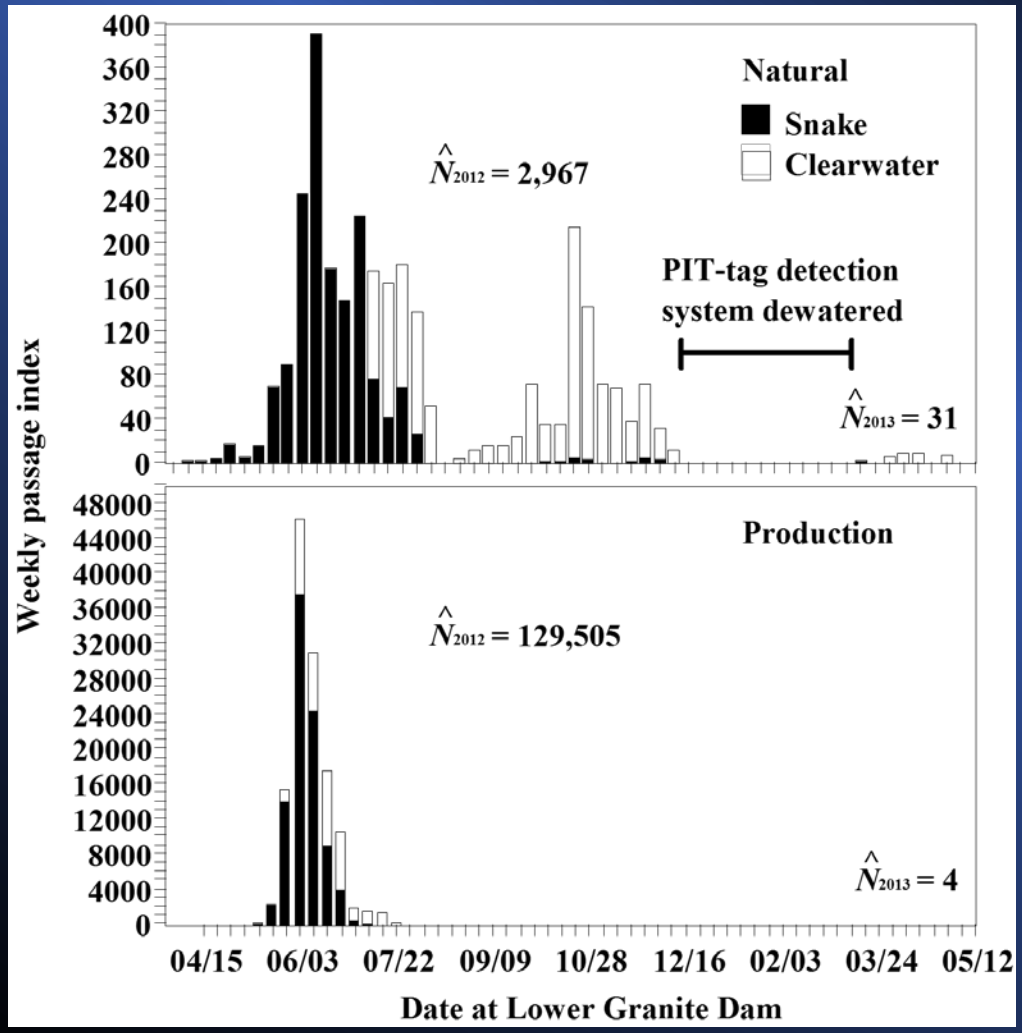
*Non-selective fisheries

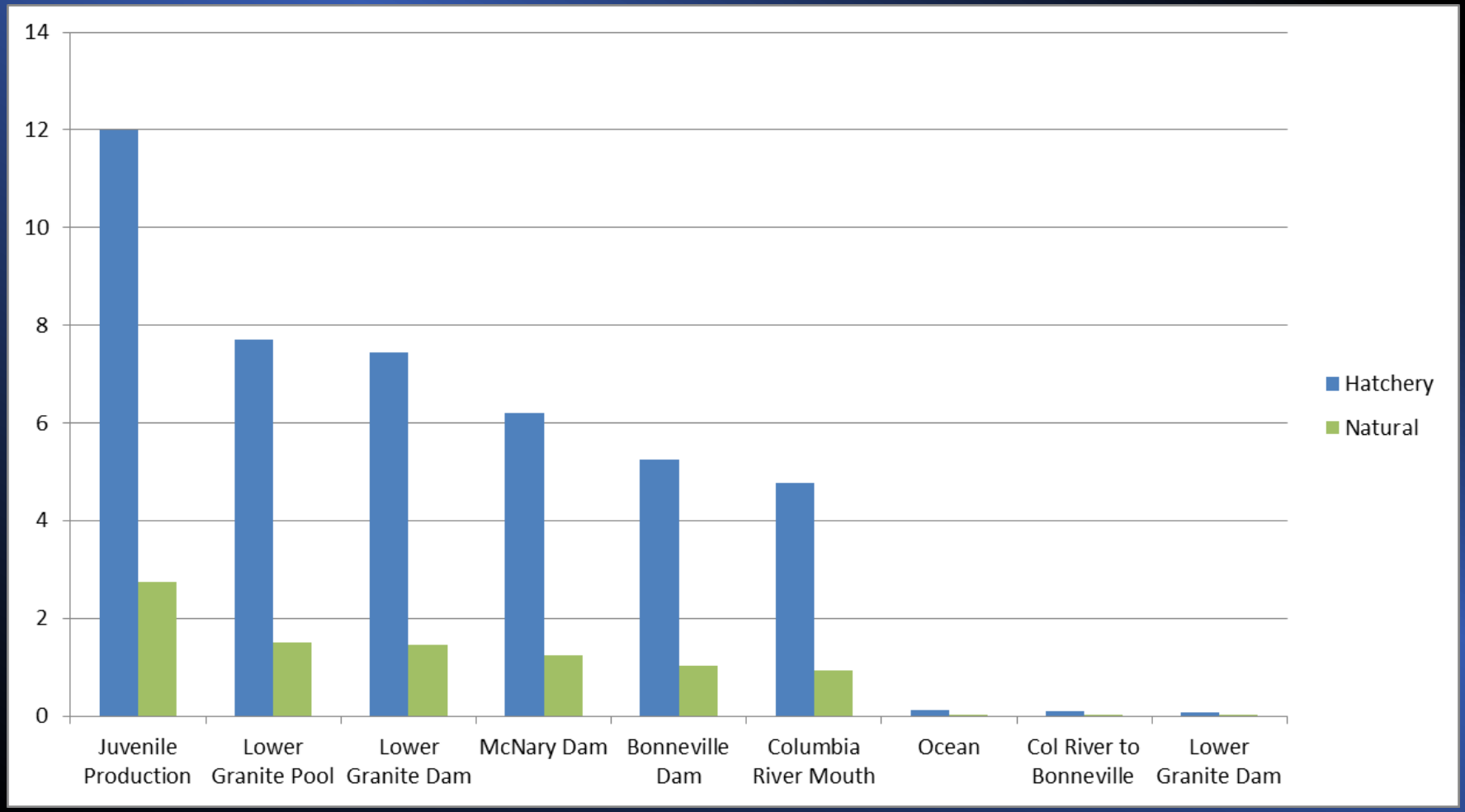
BMP: Mimic Natural Life Histories (size at release/emigration)

Wild 60-70 mm in May

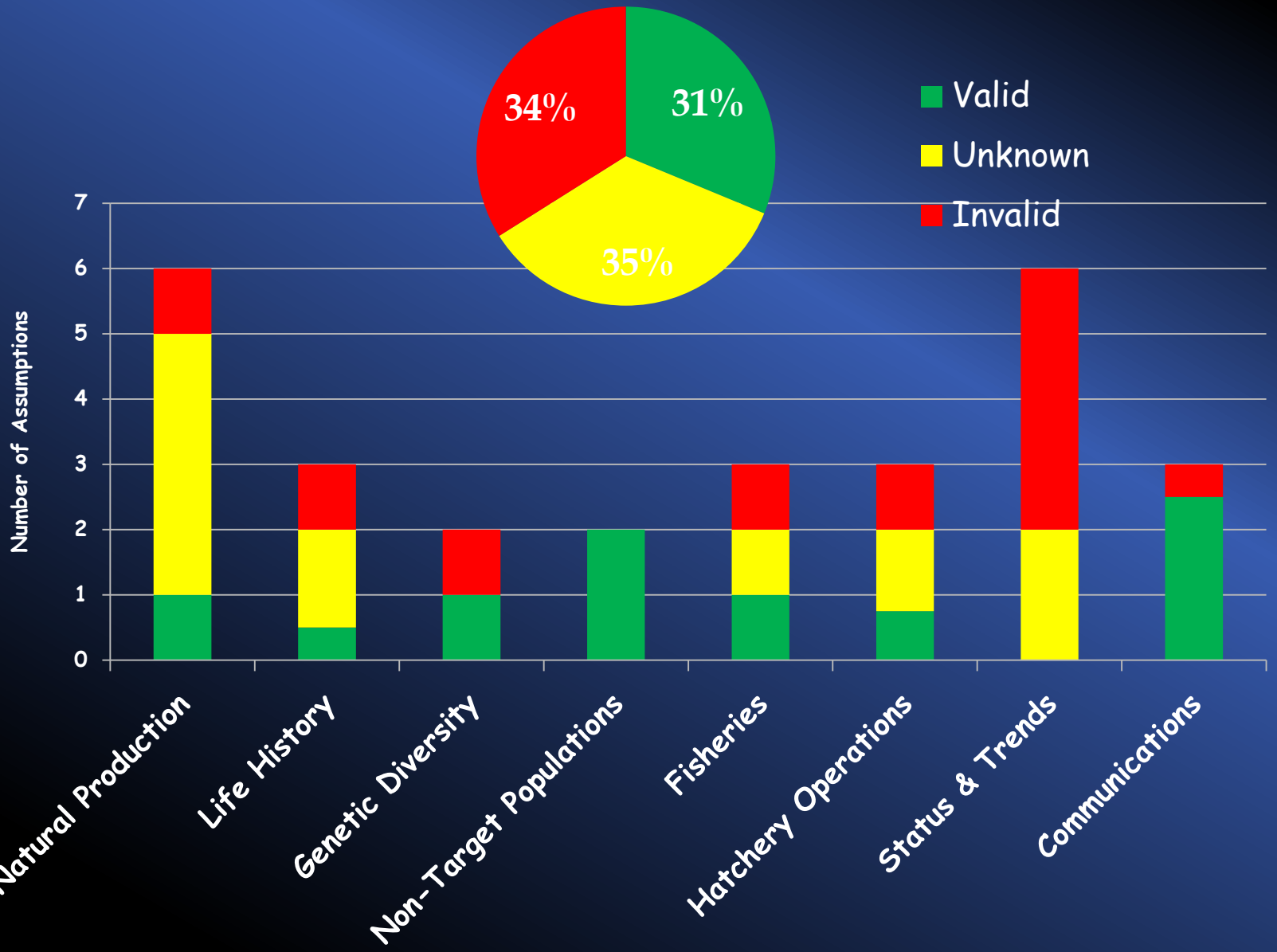
Hatchery 90-95 mm in May

BMP: Mimic Natural Life Histories (emigration timing)




14
12
10
8
6
4
2
0
Juvenile Production
Lower Granite Pool
Lower Granite Dam
McNary Dam
Bonneville Dam
Columbia River Mouth
Ocean
Col River to Bonneville
Lower Granite Dam
Hatchery
Natural

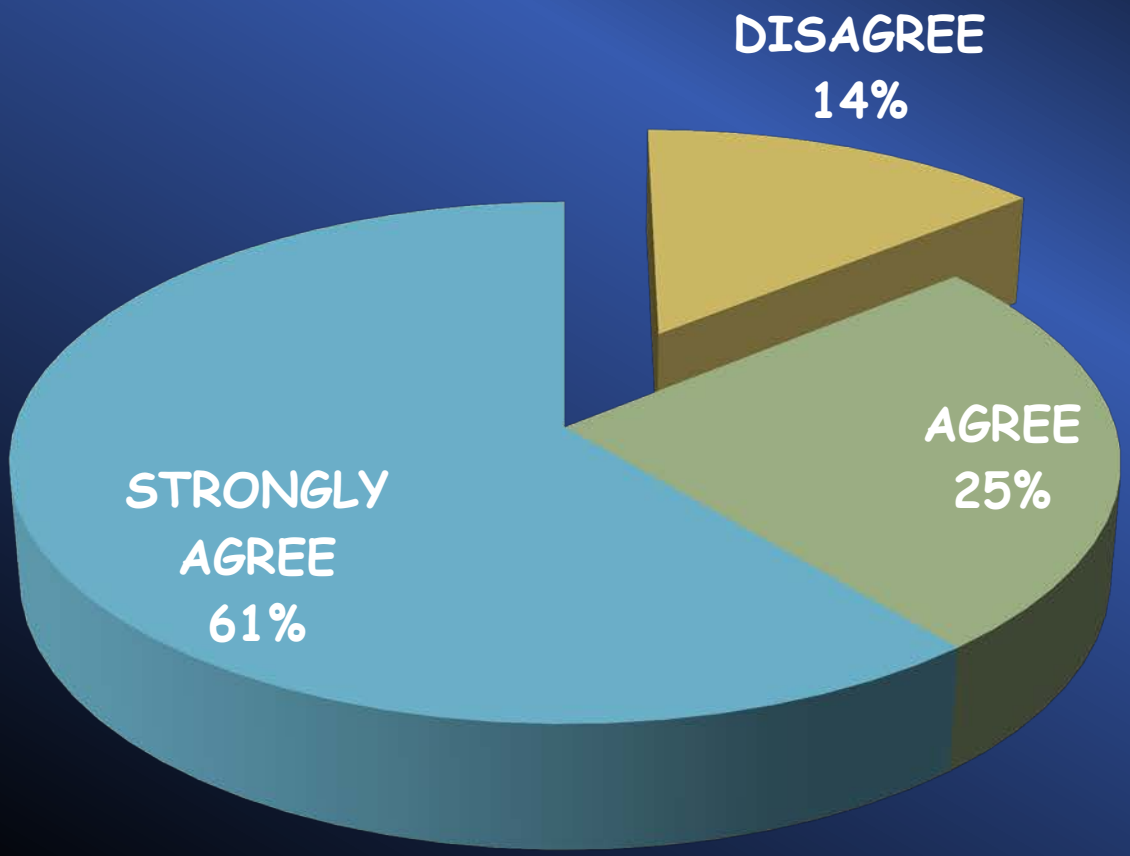
Management Assumption Status



Management Assumption	Current Status	New M&E Action Proposed	Anticipated 2017 Knowledge
1a. Adult progeny per parent (P:P) ratios for hatchery-produced fish significantly exceed those of natural-origin fish.	Valid. Questionable accuracy and precision associated with natural production P:P ratio.	1) 1) PBT marking. 2) Retrospective analysis of NOR abundance using 2010 (subtraction) run-reconstruction methodology. 3) Assess sensitivity of P:P analyses to various levels of non-selective and selective harvest.	10 to 14 years of hatchery production vs natural production P:P ratios. Two years of improved natural production P:P ratio precision.
1b. Natural spawning success of hatchery-origin fish must be similar to that of natural-origin fish.	Unknown. See "Guidance to develop alternatives for determining the relative reproductive success and effects on natural-origin fish of hatchery-origin Snake River Fall Chinook Salmon" (Peven 2010).	1) 1) PBT marking. 2) 2) RPA 64/65 RFP.	Description of natural-origin population growth rate as increasing, decreasing, or stable. Assessment of Relative Reproductive Success is not readily achievable at this time and is the subject of FCRPS BiOp RPA 64 and 65 (even if implemented in 2012 first year results will not be obtained until 2021). RRS study feasibility will be determined prior to 2017.
1c. Temporal and spatial distribution of hatchery-origin spawners in nature is similar to that of natural-origin fish.	Unknown. Carcass sampling only possible in Clearwater River. Fidelity of yearlings to release site areas described in Garcia (2003). Fidelity of subyearling releases unknown. Relative spawn timing of natural and hatchery-origin fish unknown.	1) 1) Radio tag study. 2) 2) PBT marking. 3) 3) Otolith micro-chemistry study	Two years of precise (10 plus years of imprecise) hatchery and natural origin spawner distribution data within the Clearwater River. Three to five years of subyearling fidelity to release site area data and LFH on-station release spawner distribution upstream of Lower Granite. Six years of natal spawning and rearing areas for natural origin fish.

No single set of guidelines is appropriate for all management situations?

PFIRM 2004 – Key pad survey



Recommendations

- Best Management ~~Practices~~ Principles
- Maintain Site Specific Flexibility
- Maintain Adaptive Management with Structured M&E program
- Integrate Biological, Legal and Political Perspectives.

Suggested Language for HaMAR

Changes to hatchery programs in response to scientific recommendations can be successfully implemented only with concurrent integration of associated non-technical factors and risks, including but not limited to:

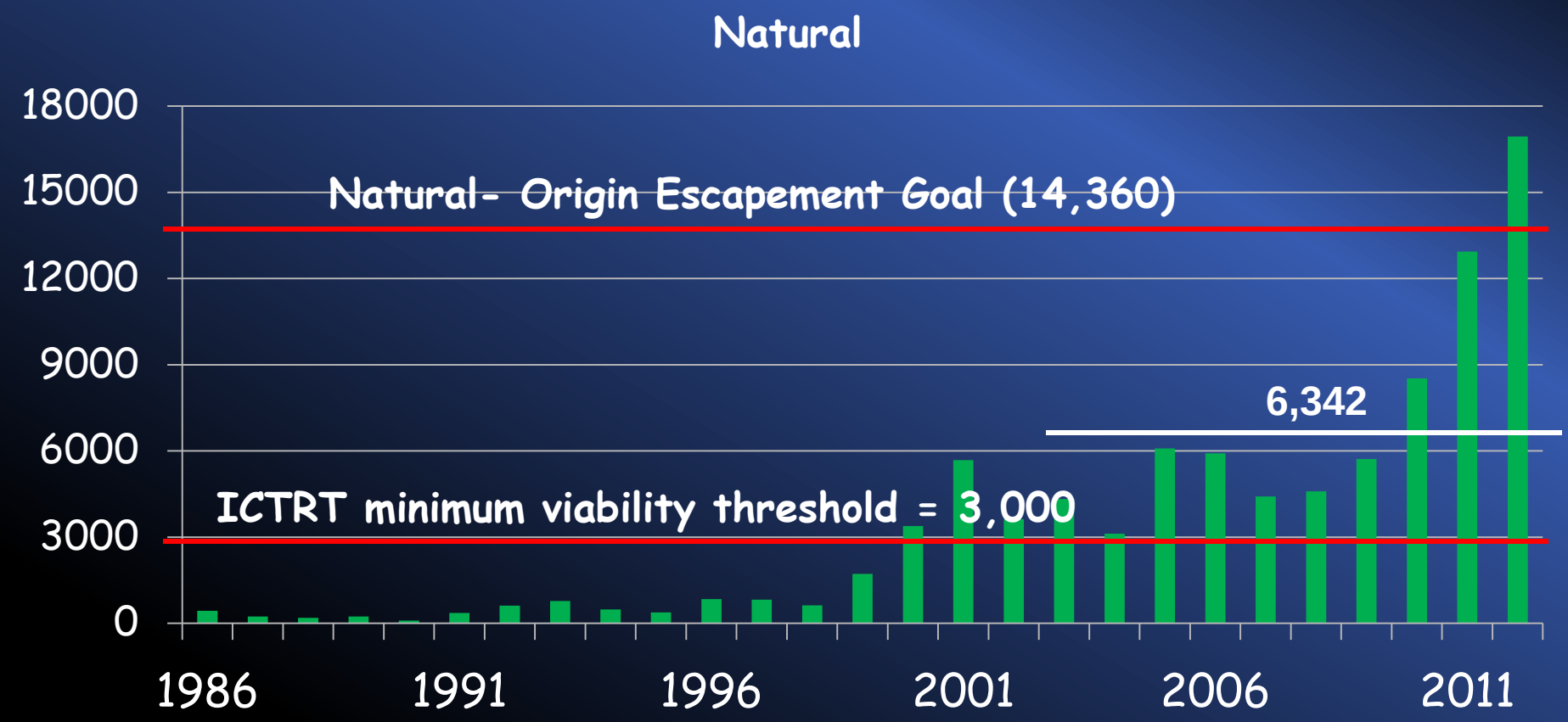
(1) legally authorized and mandated mitigation obligations,

(2) tribal treaty-reserved fishing rights - *United States vs. Oregon,*

(3) logistical challenges and infrastructure constraints, and

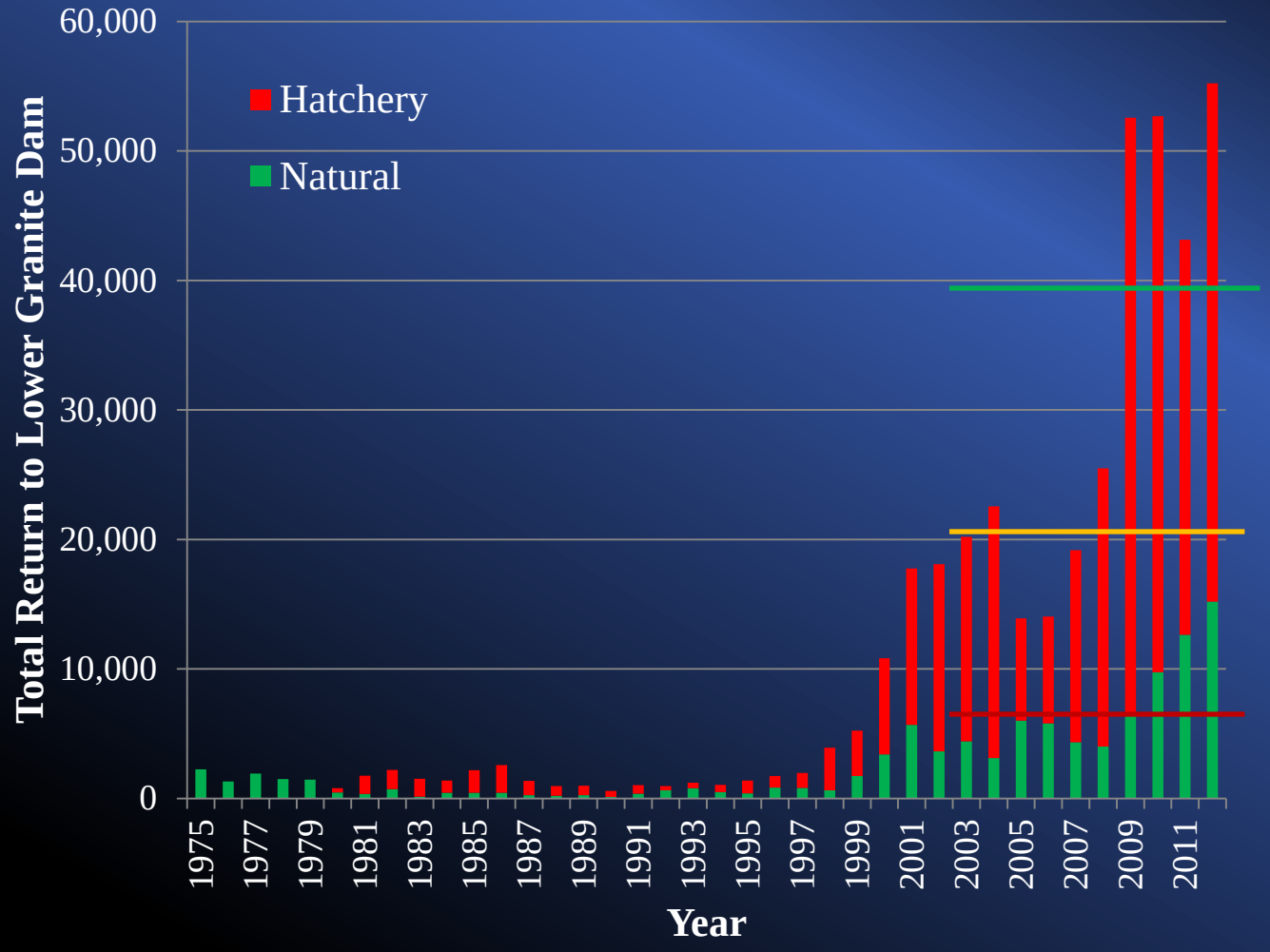
(4) funding and operating budgets for implementing the changes and monitoring their effectiveness.

Fall Chinook Salmon Escapement to Snake River Basin



How Good is Good Enough?

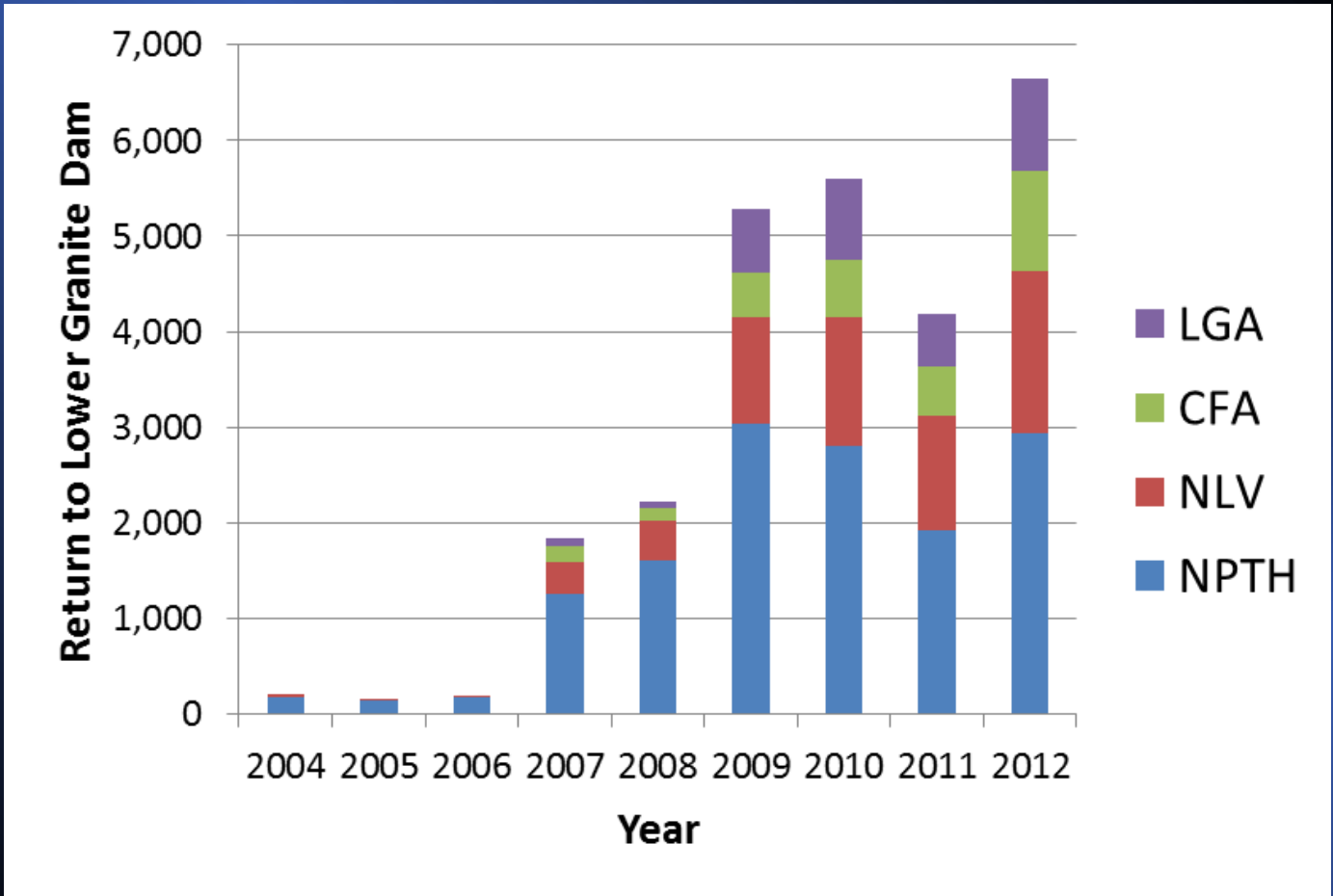
Snake River Fall Chinook Escapement



Management Escapement Goal = 39,110

Total Escapement 10 year geomean = 27,991

Natural-origin 10 year geomean = 6,342


Return to Lower Granite Dam
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
2004
2005
2006
2007
2008
2009
2010
2011
2012
Year
LGA
CFA
NLV
NPTH