

Recovery Strategy for Snake River sockeye salmon

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Sawtooth Valley Lakes

Sockeye salmon are historically native to 5 nursery lakes:

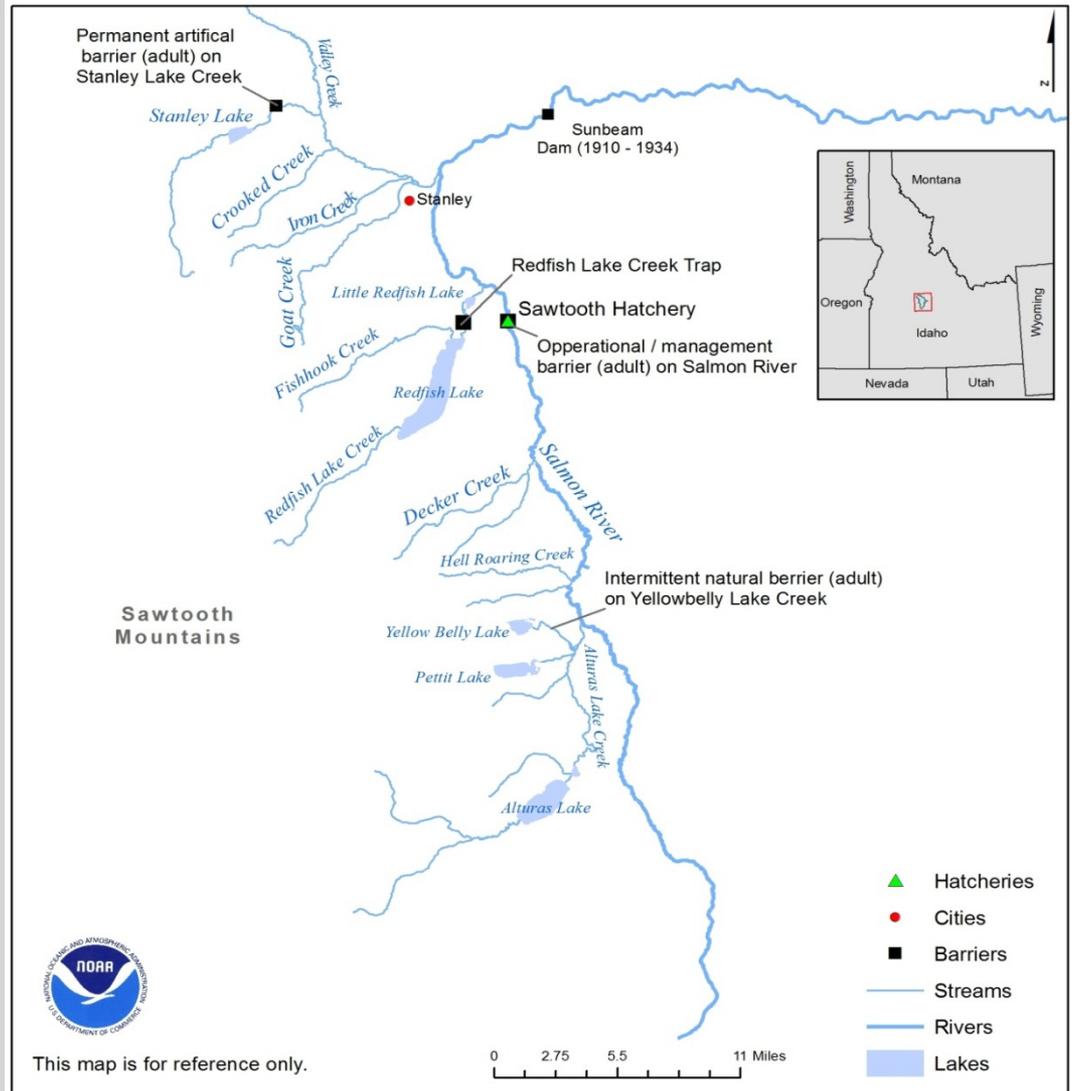
Redfish Lake*

Pettit Lake*

Alturas Lake*

Yellowbelly Lake

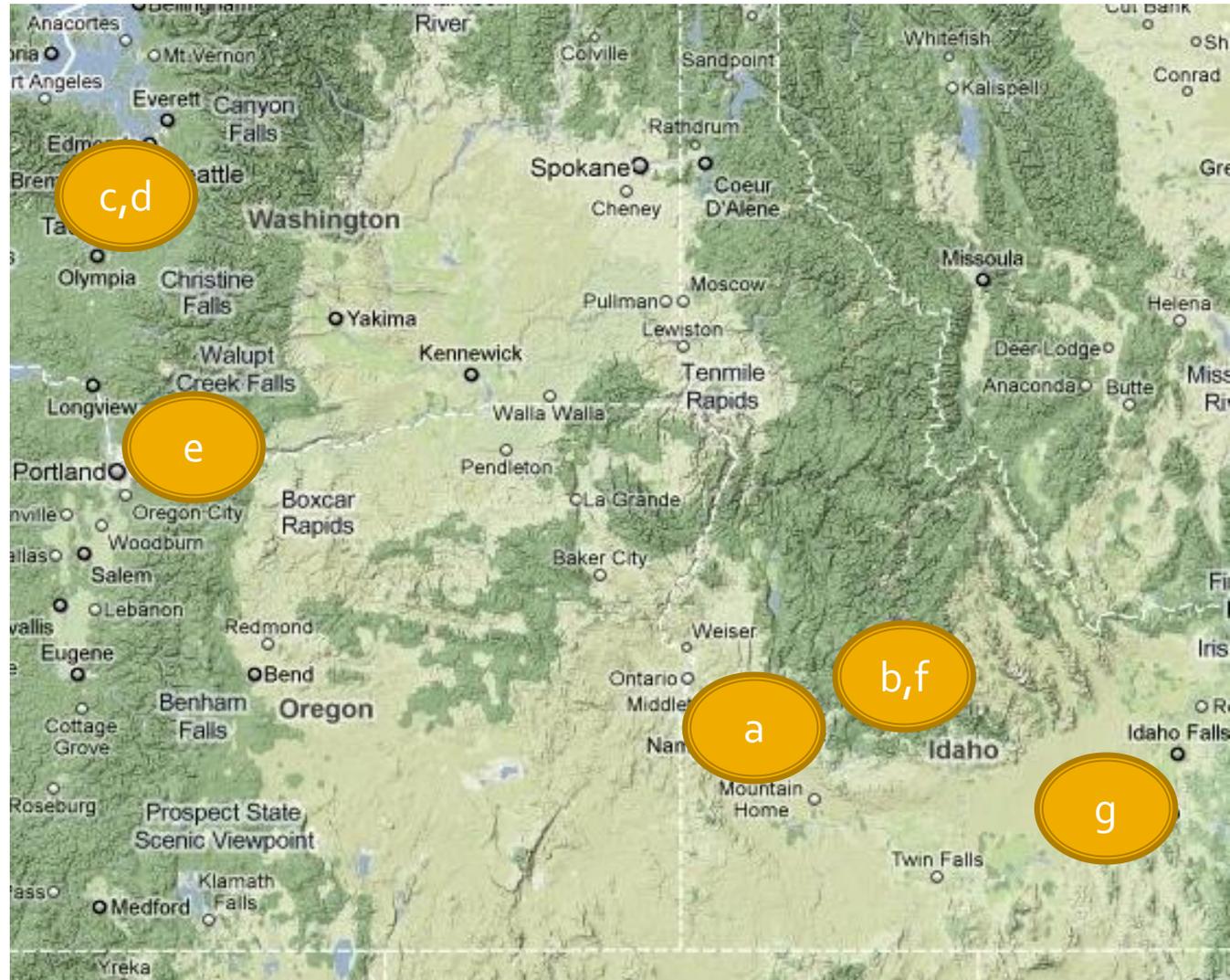
Stanley Lake



Facilities and Locations



- a) IDFG Eagle Fish Hatchery
- b) IDFG Sawtooth Fish Hatchery
- c) NOAA Manchester Research Station
- d) NOAA Burley Creek Hatchery
- e) ODFW Oxbow Fish Hatchery
- f) Sawtooth Valley
- g) IDFG Springfield Hatchery



Goal for recovery

- “Our strategic vision for recovery of Snake River sockeye salmon is to establish a viable self-sustaining, naturally spawning population in the wild that is sufficiently abundant, productive, and diverse and no longer needs Endangered Species Act Protection”.

Abundance and Productivity Targets

VSP Parameter	Proposed Criteria
Abundance	<ul style="list-style-type: none">• Minimum spawning abundance threshold: 1,000 for Redfish Lake and Alturas Lake populations (intermediate size category);• Minimum spawning abundance threshold: 500 for populations in the smaller historical size category (Pettit, Stanley, or Yellowbelly Lakes)
Productivity	<ul style="list-style-type: none">• Population growth rate is stable or increasing
Spatial Structure and Diversity	<ul style="list-style-type: none">• Multiple Populations and multiple life histories• Genetic Diversity

Two-thirds or more of the historical populations within the MPG should meet viability standards; and
At least two populations should meet the criteria to be “Highly Viable.”

Phased Approach to Recovery

OTHER GUIDANCE DOCUMENTS

- HSRG Recommendations
- 2008 FCRPS BioP
- IDFG Snake River Sockeye HGMP
- IDFG Springfield H. Master Plan

PHASES

- Phase 1: Captive Broodstock
- Phase 2: Re-colonization
- Phase 3: Local Adapation

Phased Approach to Recovery

- Phase 1: Captive Broodstock (1991 - present)

Goals: Avoid population extinction

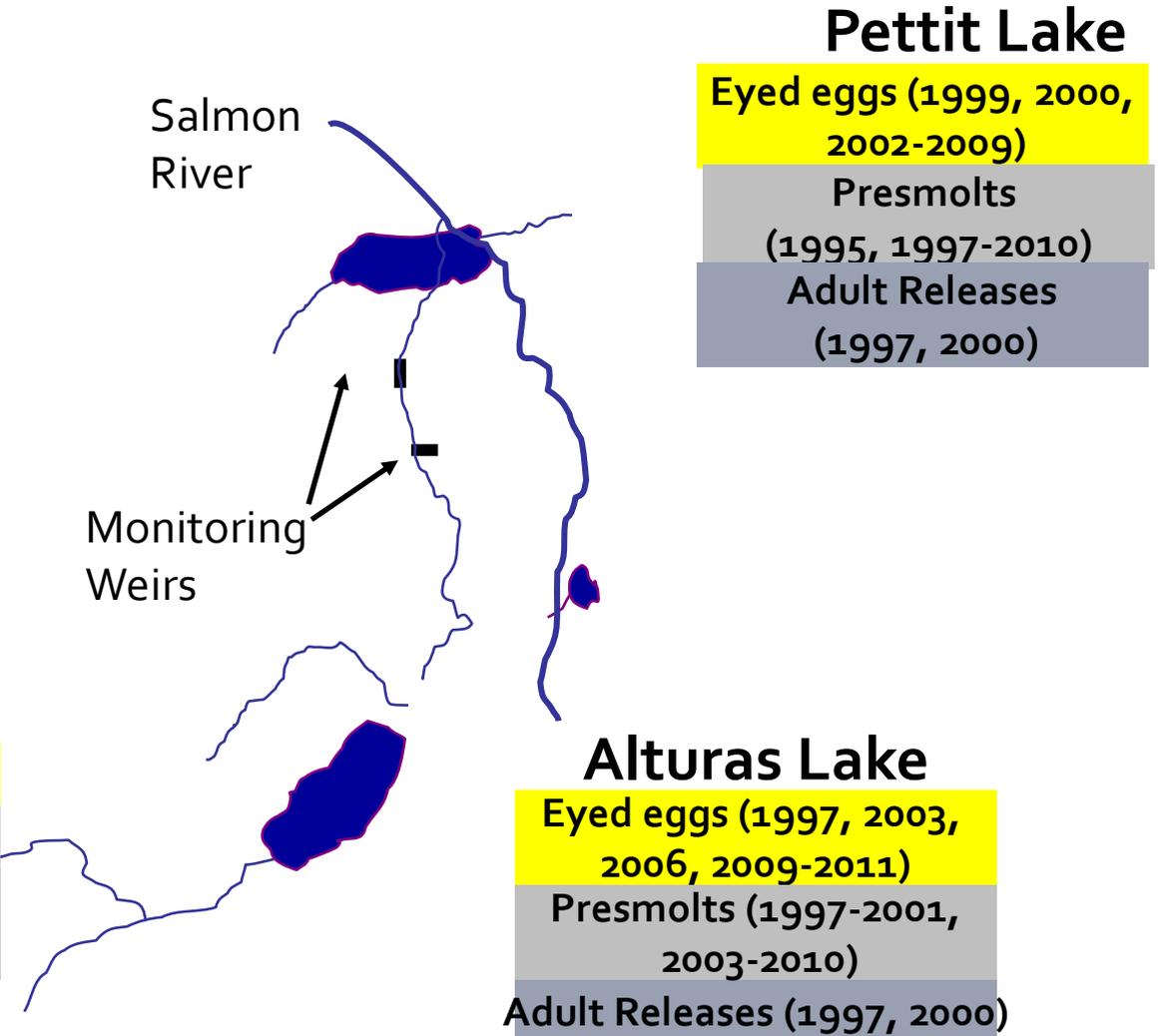
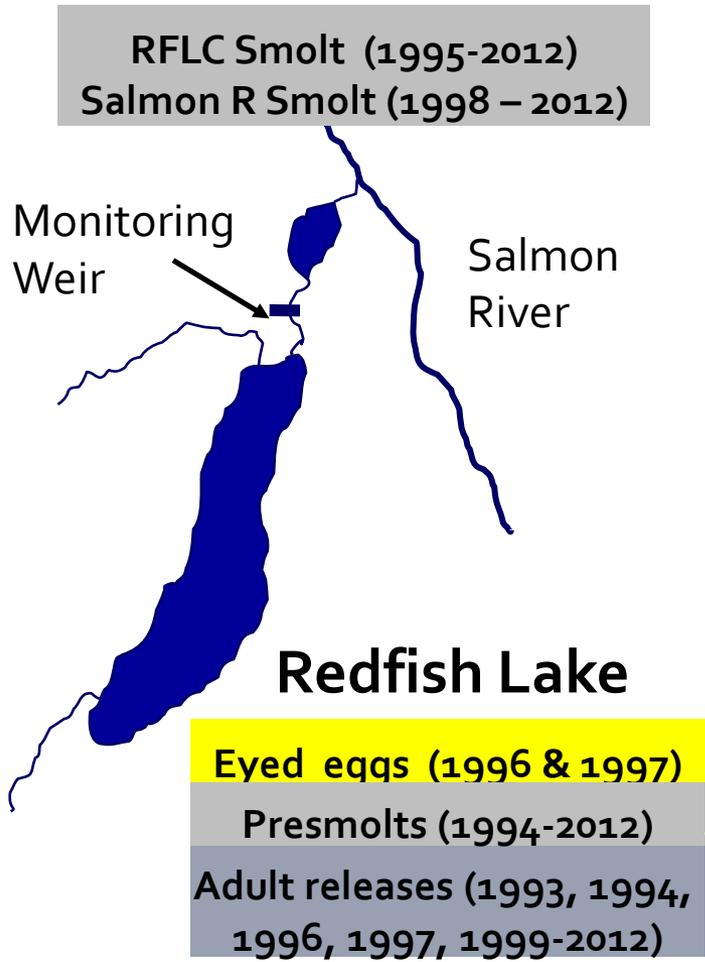
Successfully culture sockeye salmon

Conserve genetic diversity

Increase the size of the program (number of spawners)

Determine appropriate release strategy

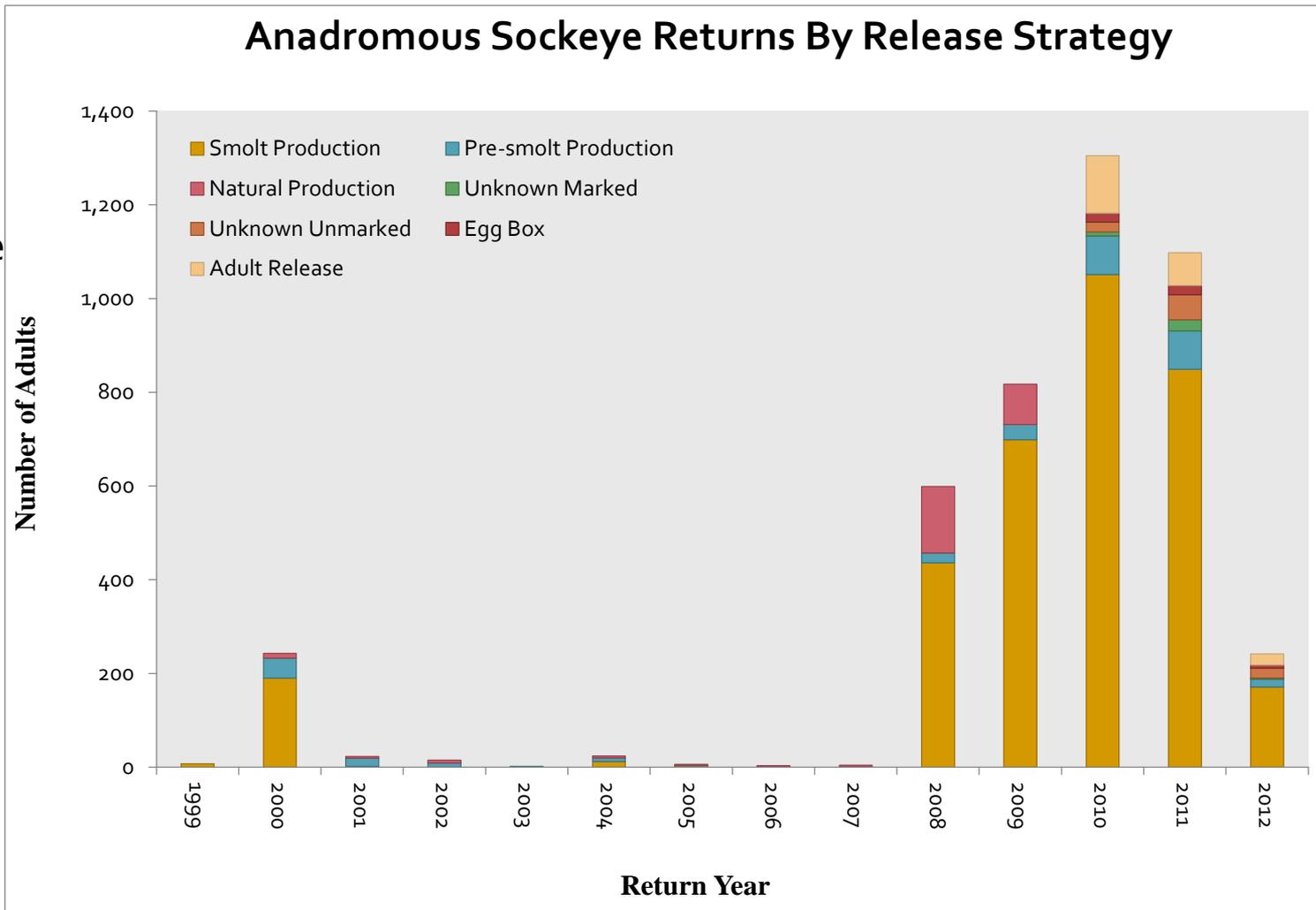
“Spread the Risk” Releases



Assignments to Release Strategy

Smolts make up the largest proportion of the return and provide the greatest demographic boost to the population

Anadromous Sockeye Returns By Release Strategy



Return of Sockeye Salmon by Release Strategy

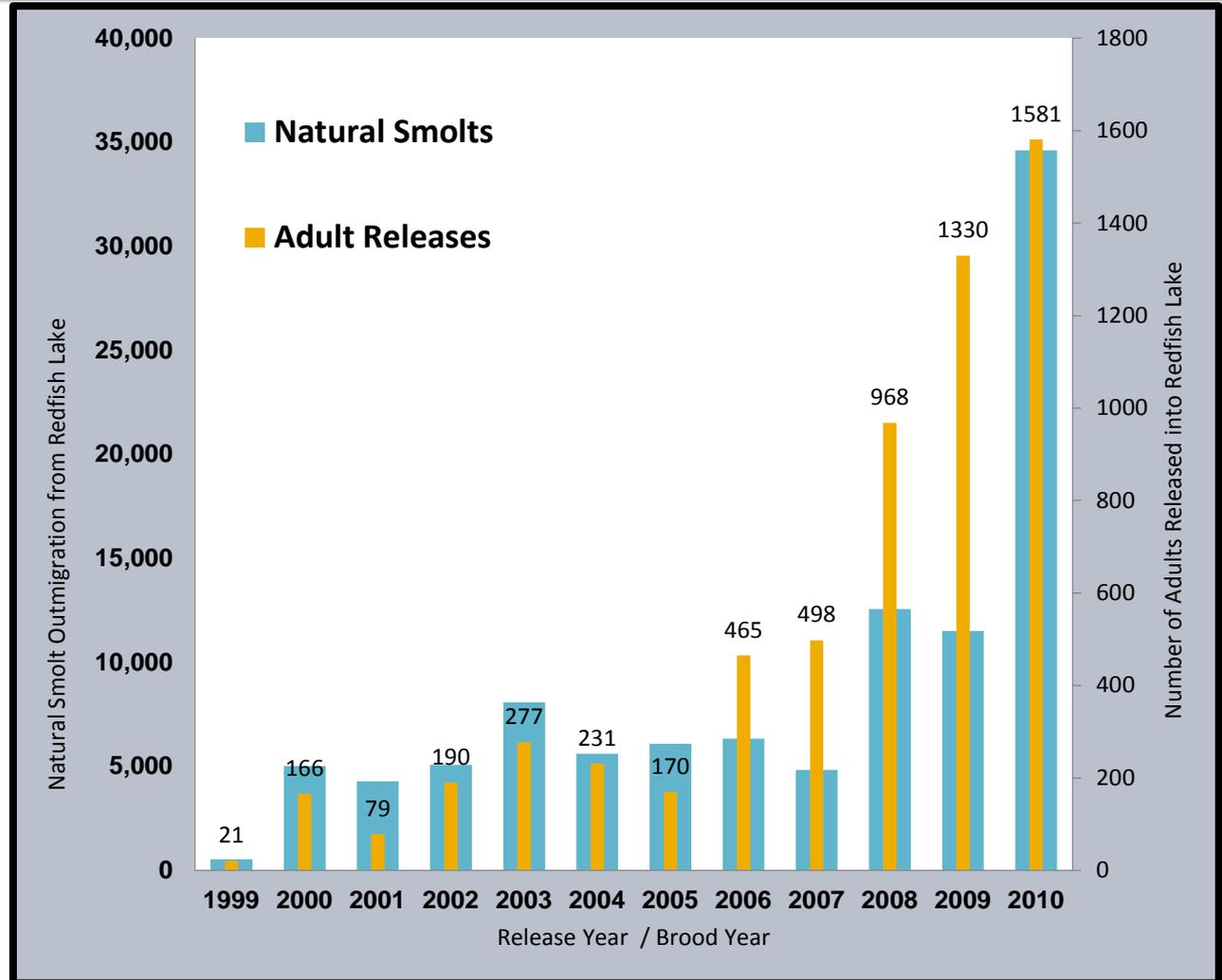
Reintroduction Strategy	1,200 Eyed Eggs (1 Captive Female)	If you Spawn 600 Females
Hatchery-produced pre-smolts	0.6 adults	360
Hatchery-produced smolts (Oxbow FH)	8.2 adults	4920
Egg – Boxes	0.2 adults	120
Total		



Expectations of New Strategy

As the number of adult returns increase as a result of increased smolt production, more adults will be released into the lake to boost natural production

Program will transition from captive broodstock to one that relies on hatchery and natural returns



Phase 2

- Initiate with development of expanded smolt program at Springfield Hatchery
- Construction of Springfield Hatchery will be complete in September, 2013 and the first group of eggs will be delivered in December, 2013

“The proposed hatchery strategy is the keystone of the document and appears to be well and thoroughly thought through. Appropriately, the stocking of life stages other than smolts will be discontinued, as they have not performed well in the past.

Springfield Hatchery

- 72 acre parcel owned by IDFG
- Existing (abandoned) hatchery previously operated as a private trout farm
- 50 cfs water right
- Nine artesian wells approx. 250 ft deep
- Water temp - constant 10.2 C

Phased Approach to Recovery

- Phase 1: Captive Broodstock (in progress)

Goals: Avoid Population Extinction

Successfully culture sockeye salmon

Conserve Genetic Diversity

Increase the size of the program (number of spawners)

Determine Appropriate Release Strategy

- Phase 2: Re-Colonization

Goals: Increase the size of the program (smolts)

Establish a self-sustaining anadromous broodstock and reduce reliance on captive broodstock

Increase the number of adults spawning naturally in the lake systems

Increase population fitness

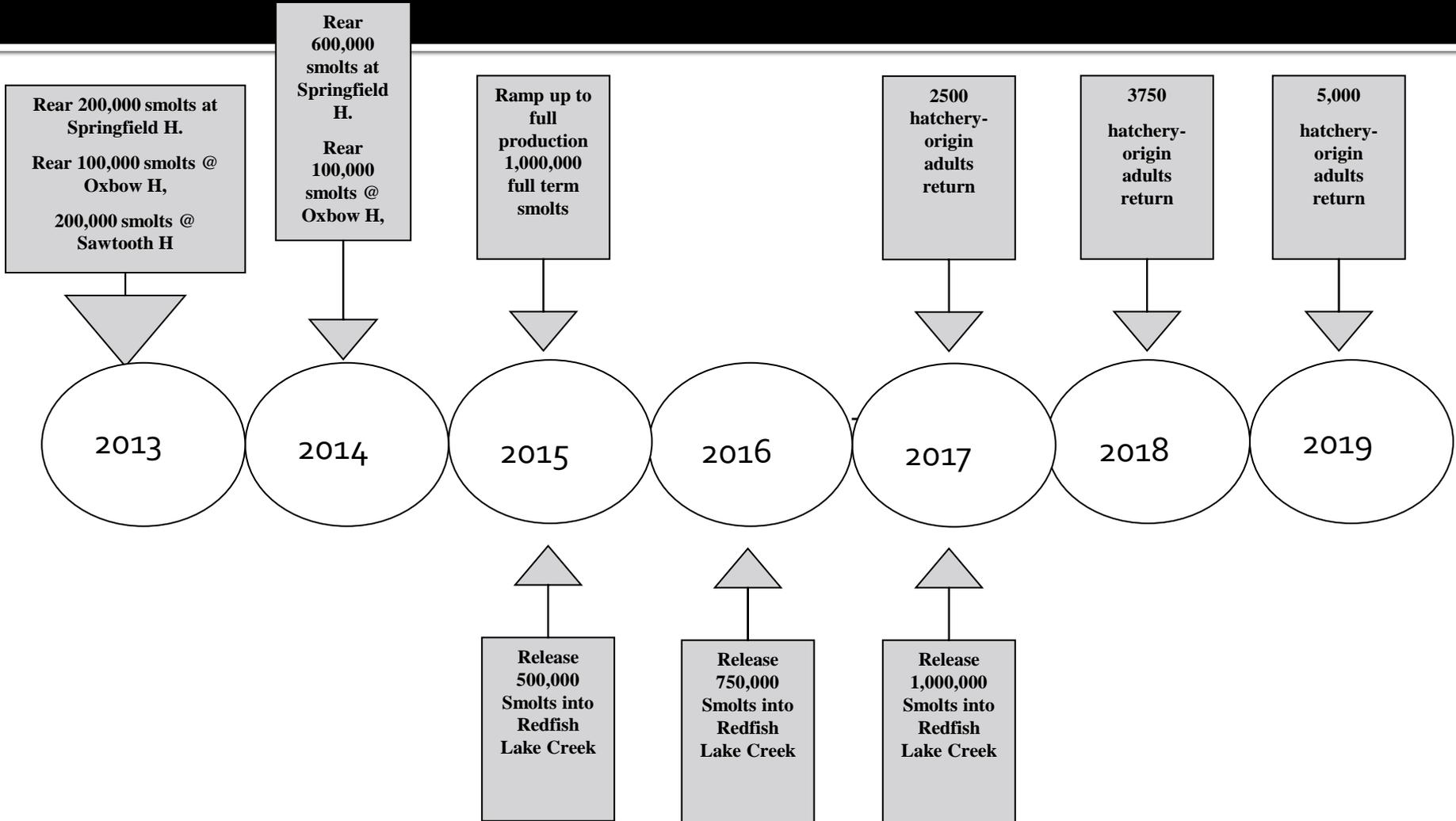
Springfield Hatchery – key to Phase

2

Springfield Hatchery will contribute significantly by:

- Producing up to 1 million full-term smolts (5X the current numbers)
- Producing over 4,000 returning hatchery-origin adults to be out-planted into the natural environment in addition to ~600 natural origin adults

Springfield Timeline



How will these anadromous fish be allocated?

Example of Projected Returns (2019):

600 NOR
5,000 HOR
1,000 Captive Brood Adults

Redfish Lake:

485 NOS
3965 HOS Released to RFL to spawn

Hatchery:

1,035 HOB
115 NOB (10% PNOB)

Pettit Lake:

1,000 Captive Brood Adults (while available)
Any fish trapped or netted at the Sawtooth Weir that is identified as Pettit origin adult
HOR adults (after sockeye are no longer at Sawtooth and Redfish Lake meets min. number of spawners)



What about the other lakes?

Alturas Lake:

Decisions need to be made regarding the appropriate target population (early stream-spawner or RFL stock)

In the interim, any fish identified as Alturas origin will be transported into Alturas Lake

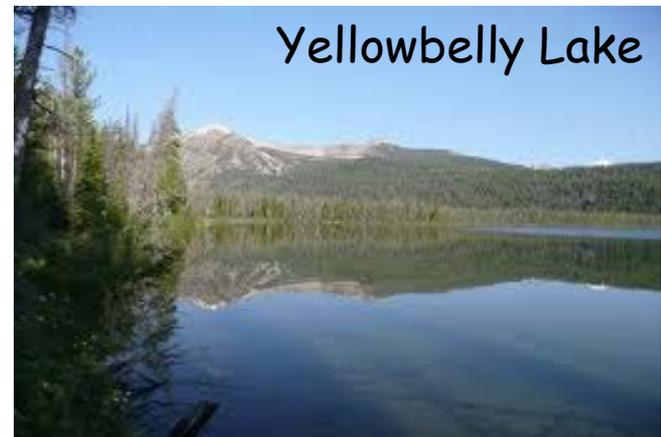
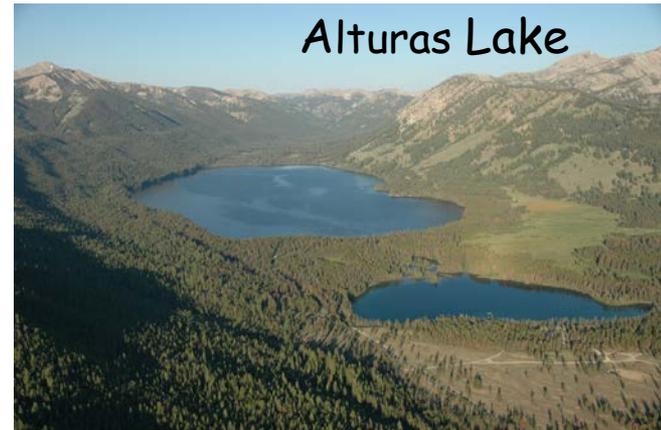
Yellowbelly Lake:

Discussion and Planning to Continue (Phase 3)

Natural Re-colonization possible once fish swim upstream of weir to lakes

Stanley Lake:

Discussion and Planning to Continue (Phase 3)



Primary Program triggers

- Trigger 1: When 5-yr running average return of anadromous adults $> 1,000$, begin to phase out NOAA captive broodstock
- Trigger 2: When 5-yr running average return of anadromous adults $> 2,150$, begin to phase out IDFG captive broodstock
- Trigger 3: When 5-yr running average return of natural-origin adults > 750 , initiate Phase III

Critical Uncertainties/Challenges in Phase 2

- What stock is most appropriate for Alturas Lake?
- Lake trout management and status of O. nerka in Stanley Lake?
- Barrier outlet, stock choice for Yellowbelly Lake
- When do fish volitionally swim upstream of Sawtooth?
- New trapping/holding facilities needed at RFL Creek and Sawtooth Weir

Phased Approach to Recovery

- Phase 1: Captive Broodstock (in progress)

Goals: Avoid Population Extinction

Successfully culture sockeye salmon

Conserve Genetic Diversity

Increase the size of the program (number of spawners)

Determine Appropriate Release Strategy

- Phase 2: Re-Colonization

Goals: Increase the size of the program (smolts)

Establish a self-sustaining anadromous broodstock and reduce reliance on captive broodstock

Increase the number of adults spawning naturally in the lake systems

Increase population fitness

- Phase 3: Local Adaptation

Goals: Transition to an integrated broodstock

Generate anadromous adult returns (HOR, NOR) sufficient to meet broodstock and escapement objectives to lake

Phase 3: Local Adaptation Phase

- Initiate local-adaptation phase when above two triggers met and 5-yr return of natural-origin adults > 750.
- Captive broodstock adults are no longer available for spawning, releases
- Smolt production reduced to approximately 600,000 smolts (reduced to manage for PHOS, PNI)
- Dependent on number of NORs and ensuring a continuum of a base level of in-lake spawning
- Manage escapement and broodstock development with sliding scale

Critical Uncertainties in Phase 3

- What is the strategy for HORs that we can't put into Redfish Lake (if PNI > 0.50)?
 - - Other lakes, harvest?

Summary

- Phased approach to Recovery is in place
- Still many challenges and uncertainties
- Expect to see record return in 2019!