

Hatchery Reform and our Pacific Region National Fish Hatcheries

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What is Hatchery Reform?

“Hatchery reform is actually quite simple in principle: its managing hatcheries as a type of habitat, managing fish as components of viable populations, and managing populations – both hatchery and wild - for maximum viability.” – Don Campton



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3 Guiding Principles for Hatcheries

1. Well-Defined Goals
stated in terms of Benefits and Purposes
2. Scientific Defensibility (Measured Benefits > Risks)
3. Decision Making based on Monitoring & Evaluation



Establish Well-Defined Goals



Example Goal for Warm Springs National Fish Hatchery:

Produce Hatchery Spring Chinook for Harvest Each Year
for Sport and Tribal Fisheries (> 500 fish)
while Maintaining Wild Natural Spawning (> 1,000 fish)

Scientific Defensibility



Hatchery Fish are Marked for Evaluation of Benefits & Risks

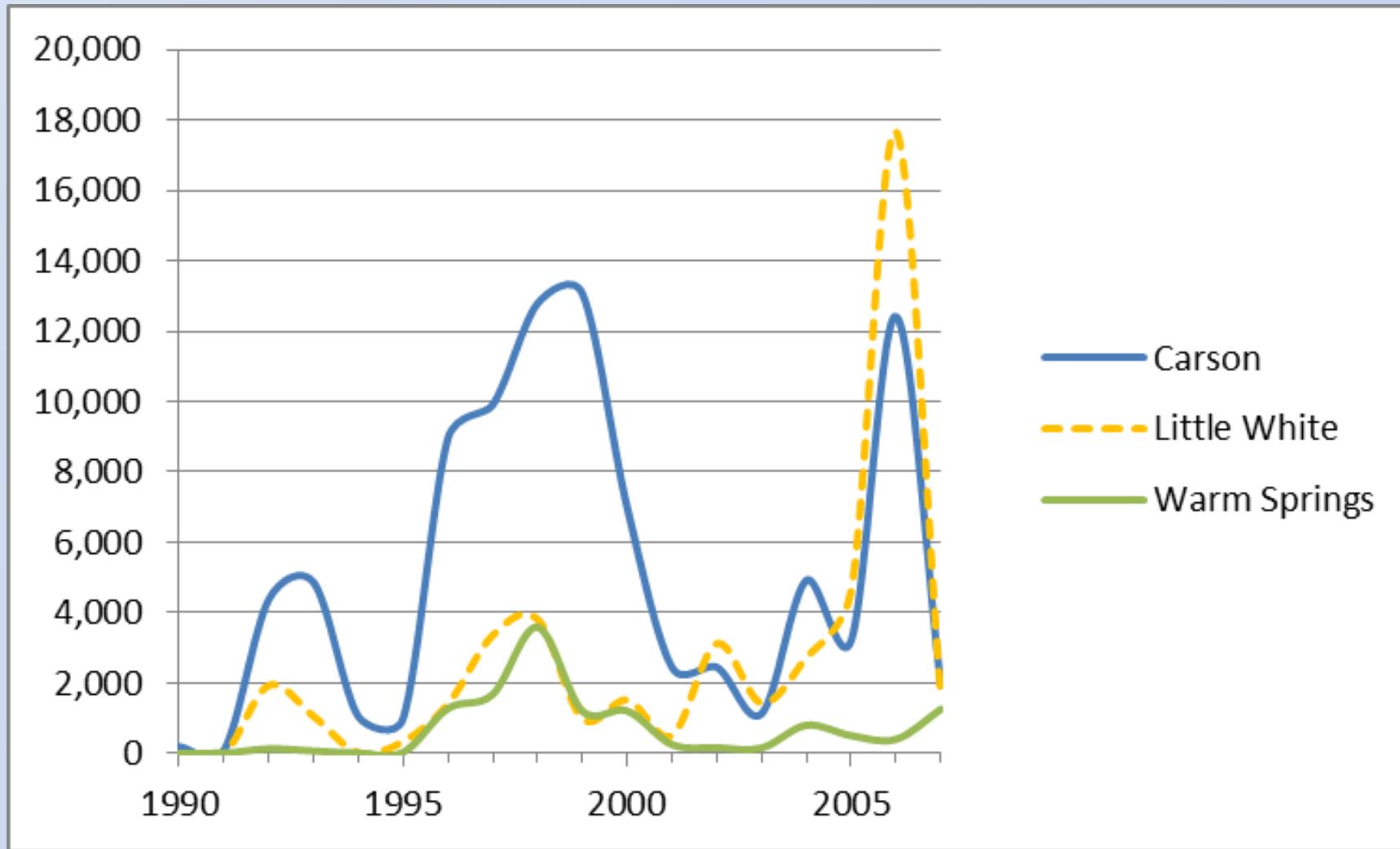


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Measurable Benefit: Spring Chinook Harvest by Brood Year



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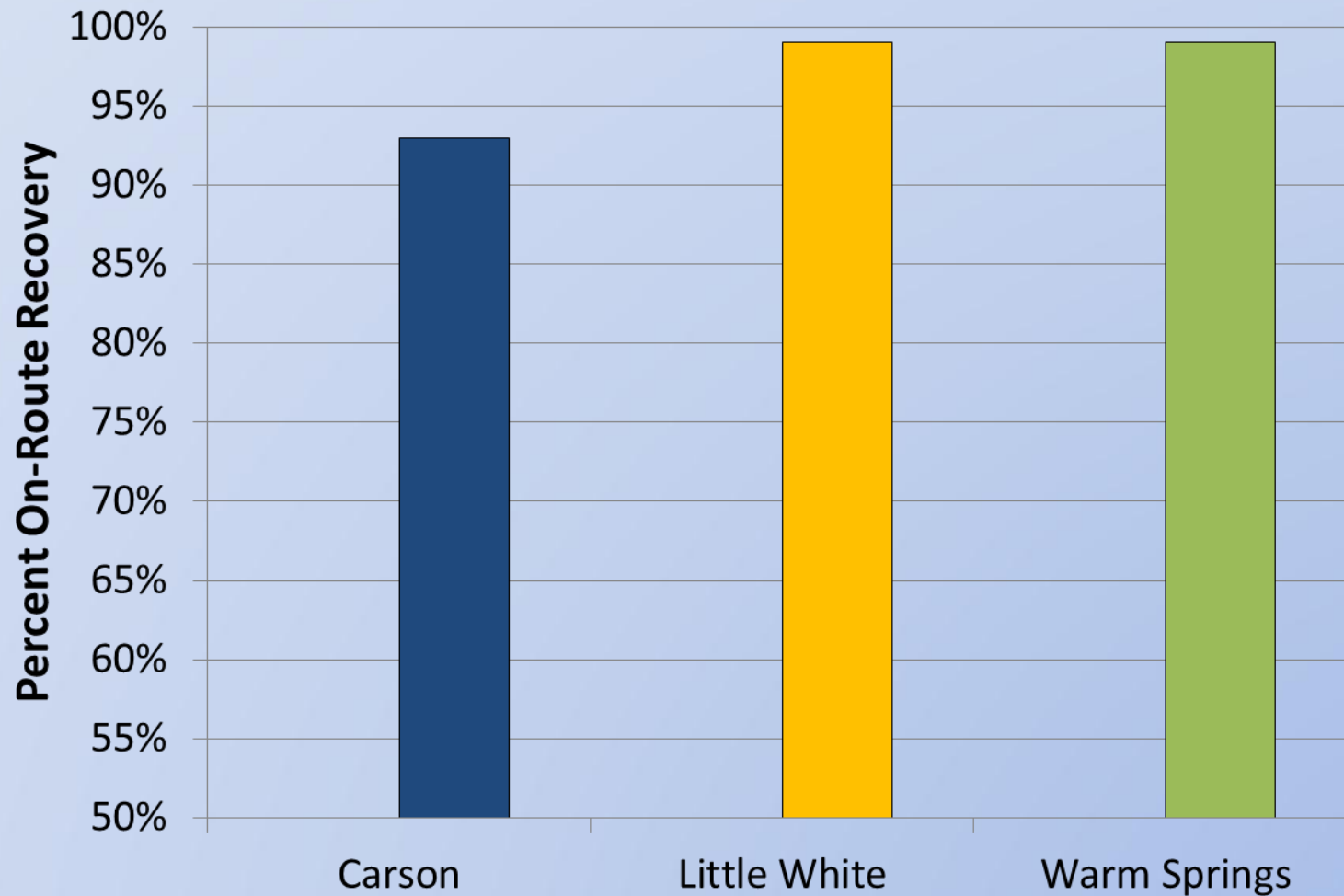
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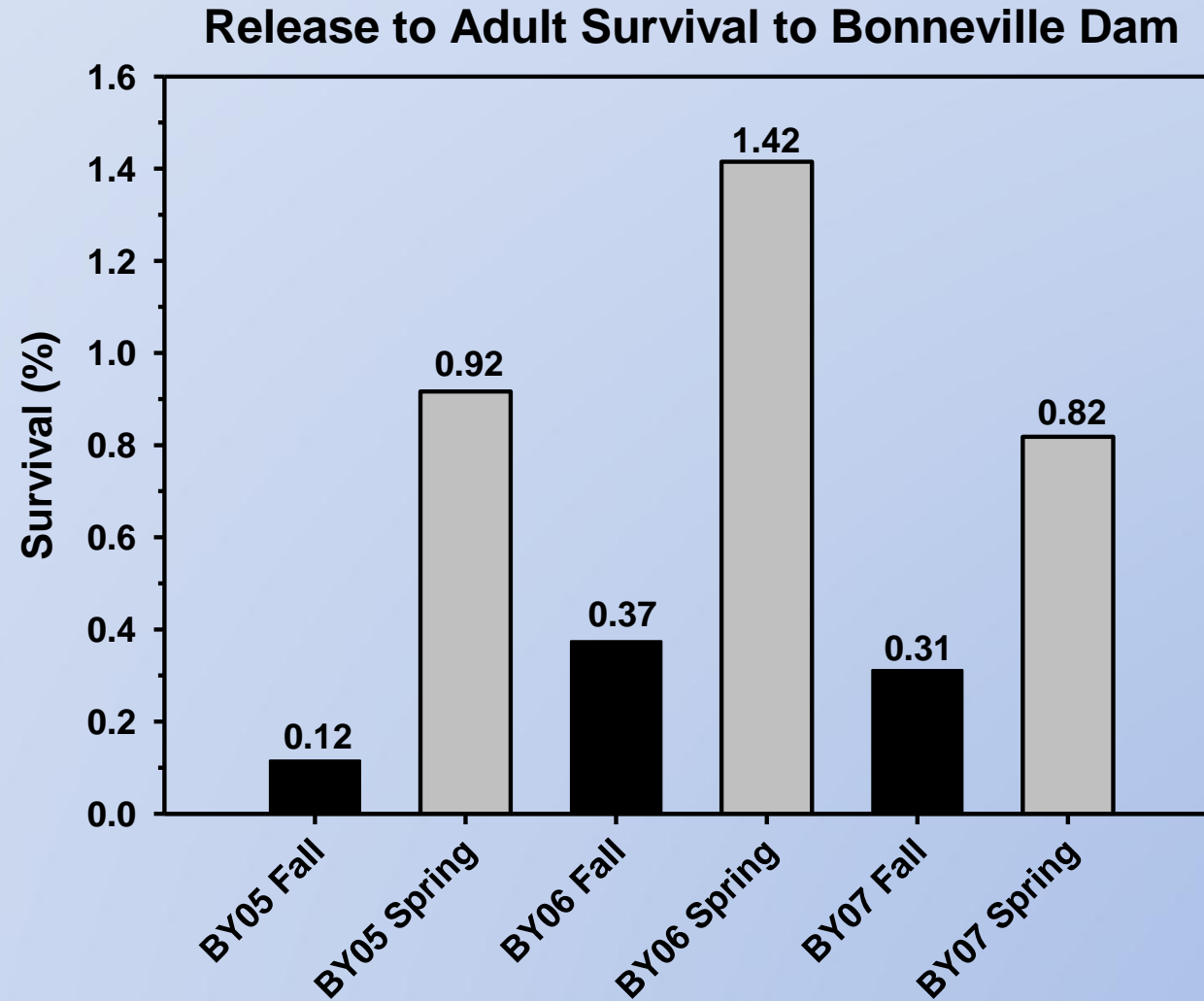
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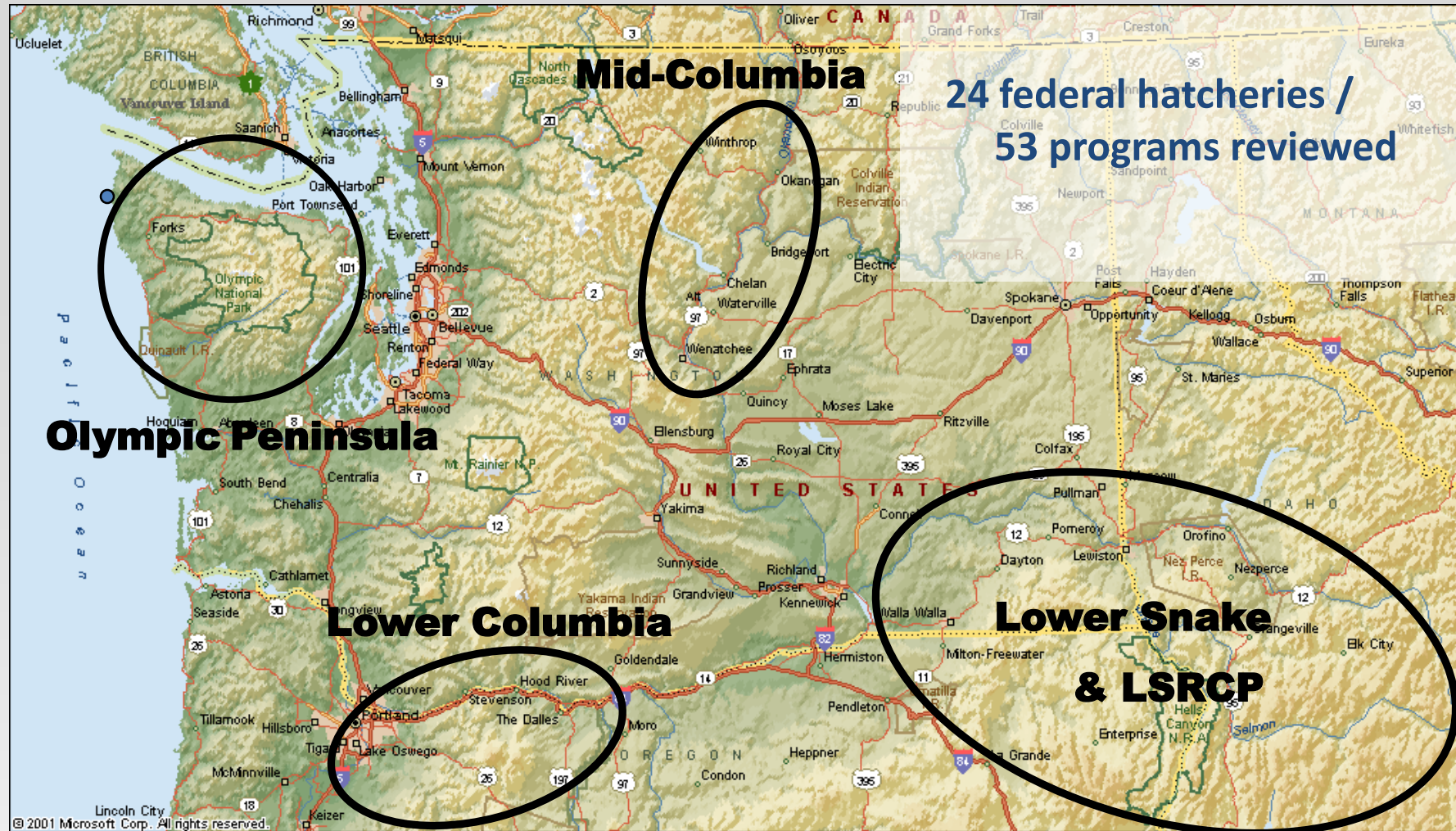
Measurable Risk: Homing vs. Straying (Pastor 2004)



Spring Chinook Salmon at Warm Springs: Volitional Fall Release vs. Spring Release



Federal Hatcheries Reviewed

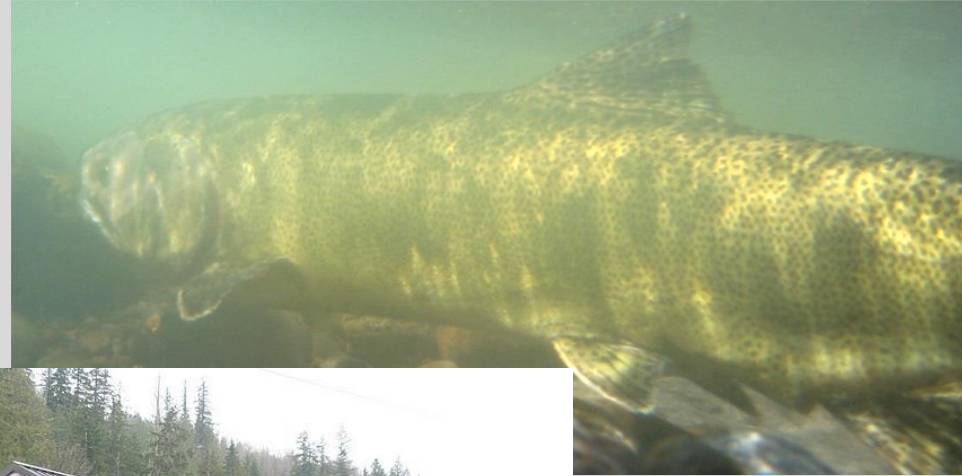


www.fws.gov/pacific/fisheries/hatcheryreview

Components of Reviews / Reports (2006-2011)

Assessment of benefits

- Harvest
- Conservation
- Research
- Education



Assessment of risks

- Genetic
- Ecological
- Demographic
- Physical



Recommendations

Program Alternatives





Outcomes of the Hatchery Review Process

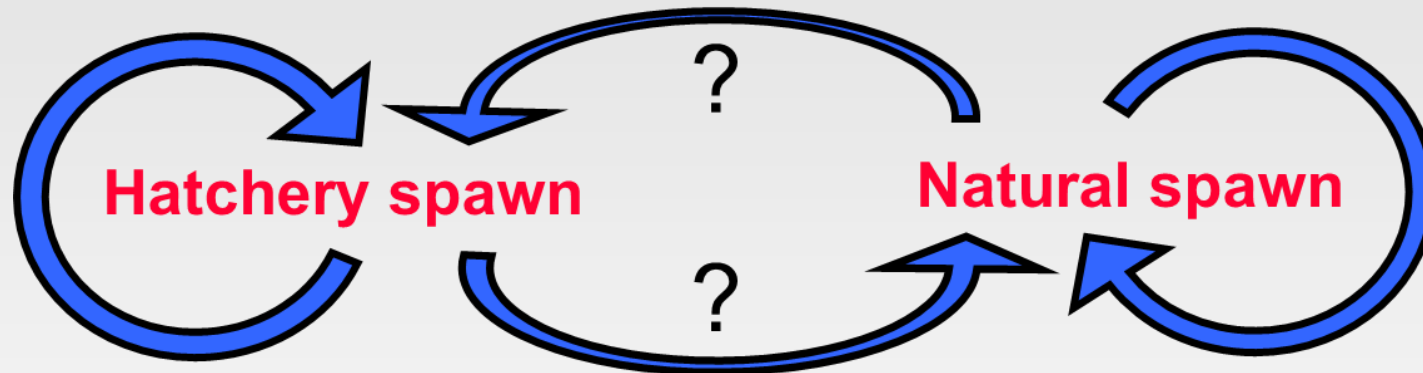
**24 federal hatcheries /
53 programs reviewed**

**~750 recommendations
17 region-wide issues
27 Best Management Practices**

www.fws.gov/pacific/fisheries/hatcheryreview

Olympic Peninsula: Makah NFH Chinook

Segregated or Integrated ? – that is the question



Lower Columbia: Eagle Creek NFH

- **Recommendation:** Reduce steelhead program by 1/3 to reduce ecological and genetic risks
- **Recommendation:** Continued support of tribal coho reintroduction programs in Yakama and Clearwater Rivers
- **Challenge:** Mitchell Act Budget Woes



Mid-Columbia: Leavenworth NFH Complex

Progress:

- Entiat NFH Spring Chinook – Discontinued: Risks outweighed benefits, replaced with Summer Chinook
- Winthrop NFH Steelhead – Developed localized, integrated broodstock and Experiment with 2 year smolt

Potential Future Challenge:

- Reintroduction of Salmon and Steelhead Upstream of Grand Coulee

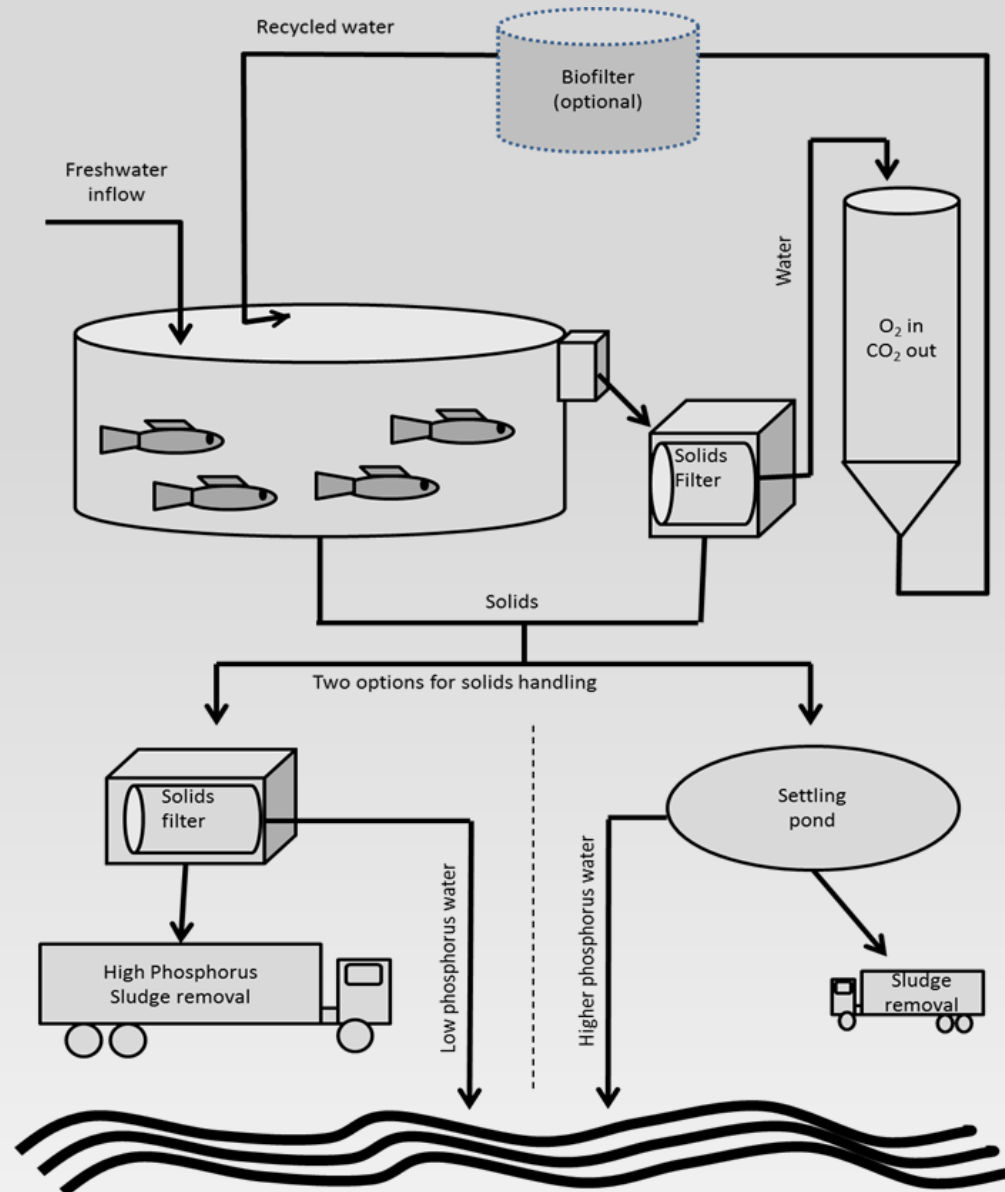


Snake River: Hagerman National Fish Hatchery

- **Recommendation:** Stop transferring Dworshak B-run Steelhead eggs to Hagerman NFH
- **Priority:** Declining Water Supply
- **Priority:** Carrying Capacity and Fish Health Implications



Recirculating Aquaculture System



Region-Wide Issues, Guidelines (2013)



PROGRAM MANAGEMENT

- Issue 1: Establish Well Defined Goals
- Issue 2: Ensuring Scientific Defensibility in Future Decisions
- Issue 3: Planning Documents and Multi-Year Co-manager Agreements
- Issue 4: Hatchery Evaluation Teams
- Issue 5: Fish Culture Best Management Practices
- Issue 6: Outreach Best Practices
- Issue 7: Mark/Tag and Tag Recovery Strategies
- Issue 8: Pollution Abatement and Management of Hatchery Effluent
- Issue 9: Water Use and Reporting
- Issue 10: Climate Change

PROTOCOLS, PROCEDURES, AND DATA MANAGEMENT

- Issue 11: Reports and Documentation
- Issue 12: Co-managers Working at National Fish Hatcheries
- Issue 13: Standard Operating Procedures
- Issue 14: Monitoring and Evaluation Standards
- **Issue 15: Data Management**
- Issue 16: Sharing Data Externally

RESEARCH

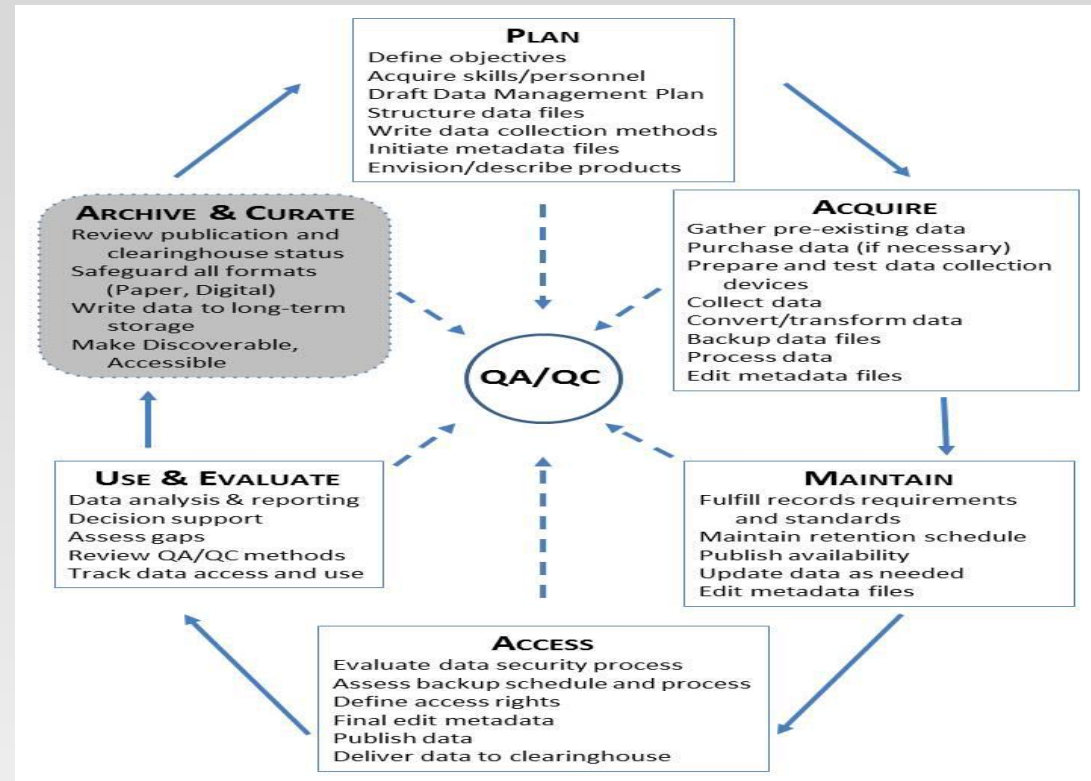
- **Issue 17: Research Needs**

Region-Wide Issue: Data Management

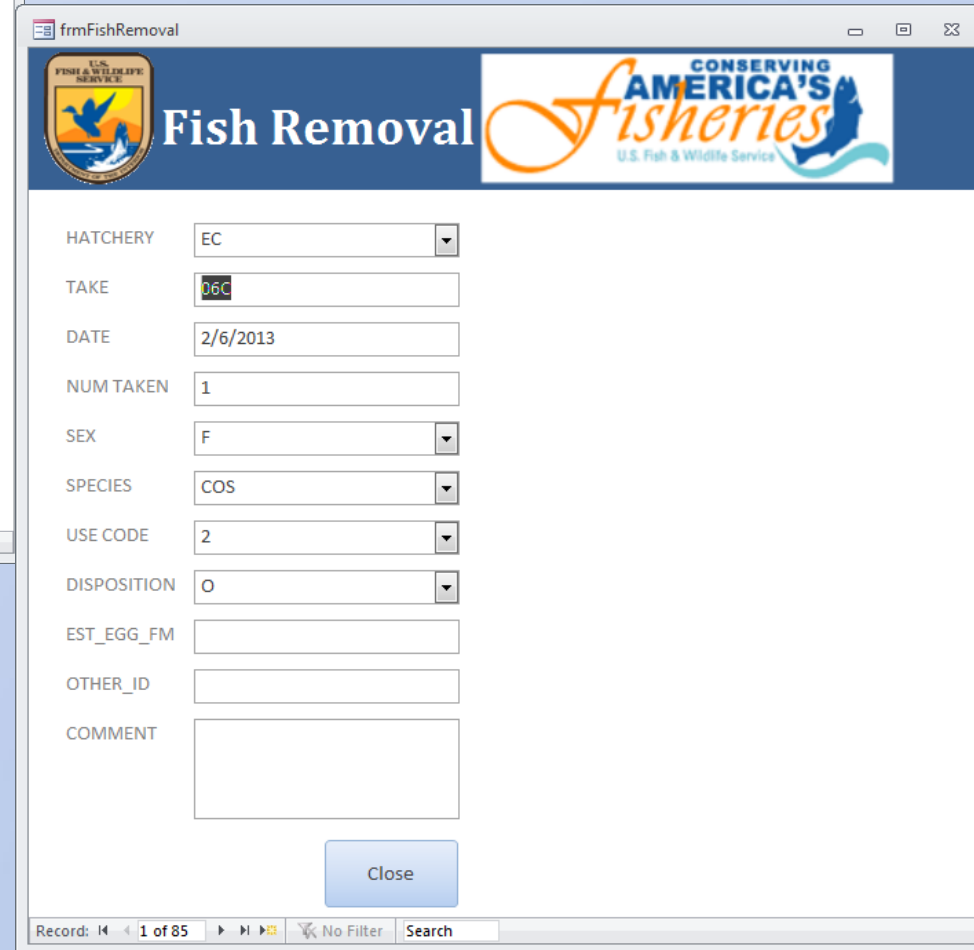
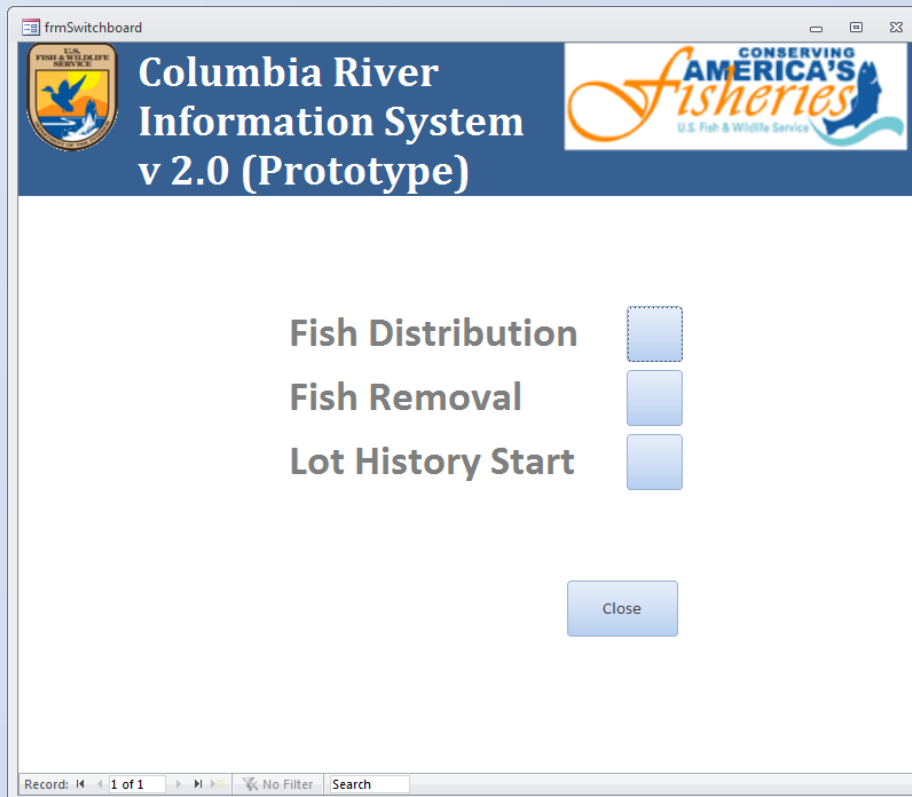
- * Several electronic data management systems
- * Different data management systems results in redundancies and errors
- * Much of the data are stored *locally*

* Data management system **should be** web-based for both uploading and downloading data.

* A task team of Service data managers, biologists and hatchery staff **need to** be assembled to **develop** the desired specifications and plan.



CRiS v. 2.0 prototype



- User friendly windows Interface
- QA/QC during data entry
- Built in help messages
- Compatible with CRIS v1 summary and reporting



Region-Wide Issue: Research Needs

Conservation Hatchery Programs for USFWS Trust Species

Edwards Aquifer Species - San Marcos Aquatic Resource Center, Texas



Comal Springs Dryopid Beetle
– Endangered 1997



Texas Wild Rice – Endangered 1978



San Marcos Salamander – Endangered
1980



Texas Blind Salamander – Endangered
1967



Barton Spring's Salamander –
Endangered 1997



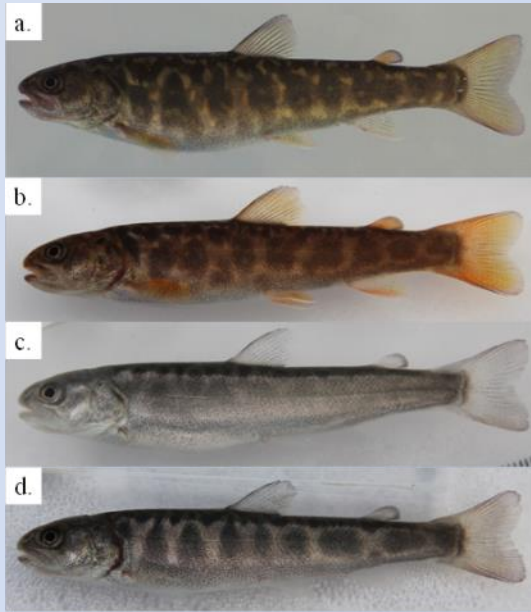
Comal Springs Riffle Beetle –
Endangered - 1997



Peck's Cave Amphipod –
Endangered 1997

Conservation Hatchery Program Development

On-Going Research



- Rear **Bull Trout** under variable habitat, temperature and feeding regimes to understand and compare the survival of captive fish in the wild;
- Rear **Pacific Lamprey** and conduct feeding, thermal and antibiotic trials to evaluate growth, condition, and effects on metamorphosis;
- Develop a **Structured Decision Model** to inform bull trout and Pacific lamprey conservation actions.



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To Consider When Implementing Reforms

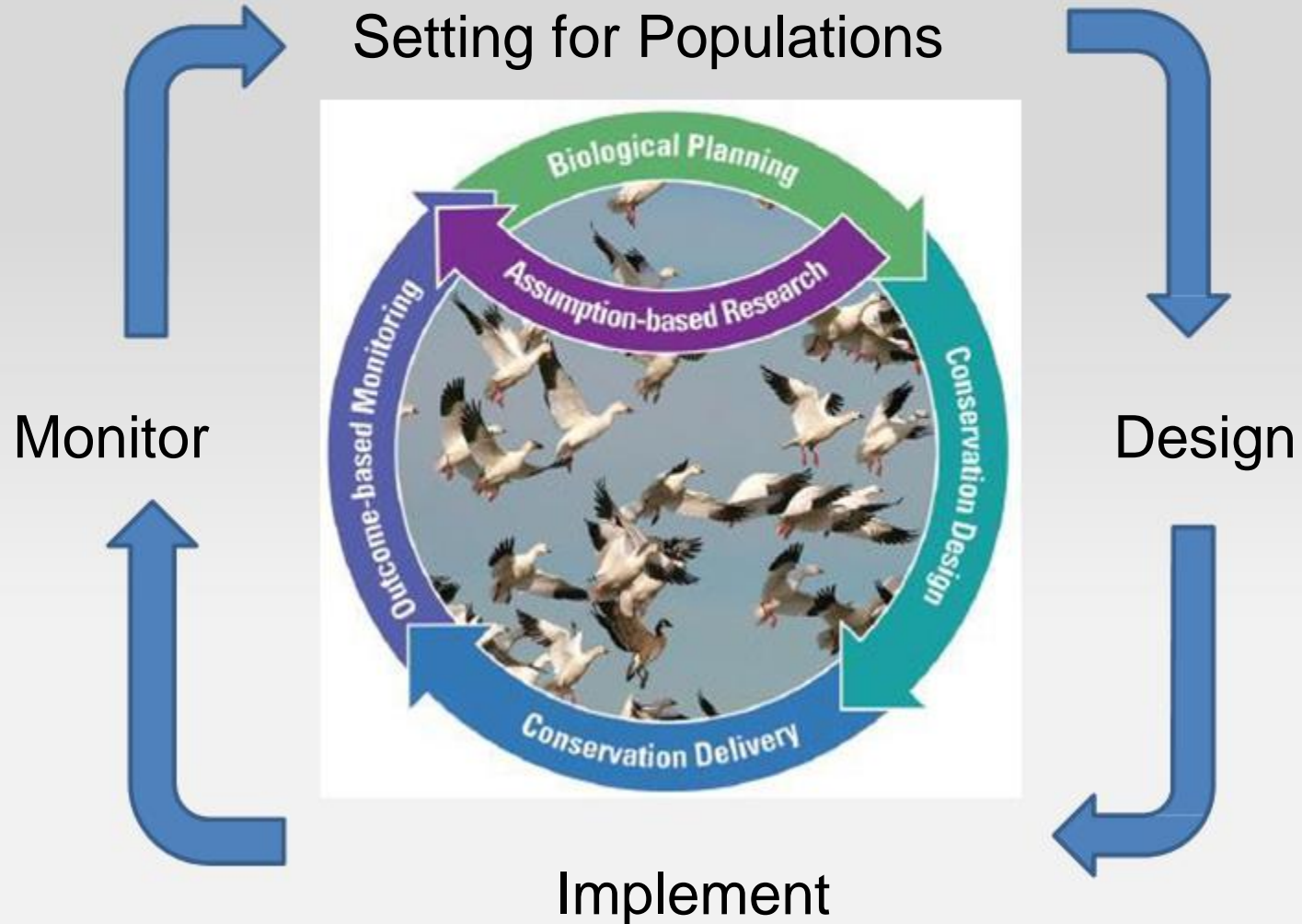
- Immediate to Several Years to Implement
- Programmatic Changes and Goal Setting for Hatcheries and their Populations Require Agreement Among Co-Managers
- Monitoring & Evaluation are Essential for Measuring Success towards Achievement of Population Goals
- Facility Upgrades often Needed to Reduce Risks, Increase Benefits



Implementation of Hatchery Reform is Strategic Hatchery Management

Adapted from USFWS Strategic **Habitat** Conservation Model

Goal and Objective
Setting for Populations





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