

This Presentation was part the

**California Fish and Game Commission's
Workshop on Strategic Improvement in
California's Anadromous Hatcheries**

Sacramento, February 4, 2014

Strategic Hatchery Management

HSRG reviews: A Roadmap for the Future

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California Hatchery Review Report



California Hatchery Scientific Review Group
June 2012



Scientific Review of Hatcheries: 1998-2012

- **1998** : Proposed ESA listing of Chinook salmon in Puget Sound.
- **1999**: U.S. Congress initiates Hatchery Scientific Review Group (HSRG).
- **2000-2004**: HSRG review of Puget Sound and coastal Washington hatcheries (state, tribal, federal).
- **2005-2011**: USFWS review of all federal hatcheries in ID, OR, and WA.
- **2006-2009**: HSRG review of all state, tribal, and federal hatcheries in the Columbia River basin.
- **2010-2012**: **California HSRG review of state and federal hatcheries in California.**

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

50 CFR Parts 222, 226, and 227

[Docket No. 980225050-8050-01; I.D. 022398C]

RIN 0648-AK65

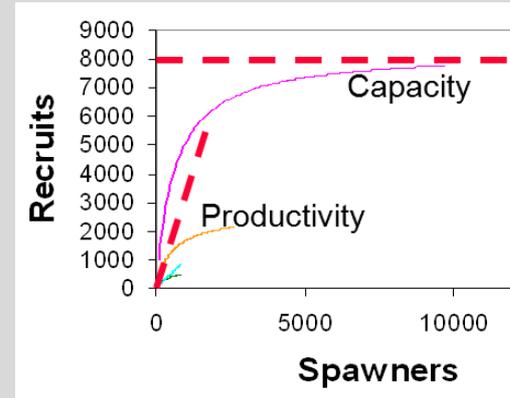
Endangered and Threatened Species: Proposed Endangered Status for Two Chinook Salmon ESUs and Proposed Threatened Status for Five Chinook Salmon ESUs; Proposed Redefinition, Threatened Status, and Revision of Critical Habitat for One Chinook Salmon ESU; Proposed Designation of Chinook Salmon Critical Habitat in California, Oregon, Washington, Idaho



Scientific Principles for Hatchery Programs

1. Quantified Goals for populations**

- Harvest
- Conservation



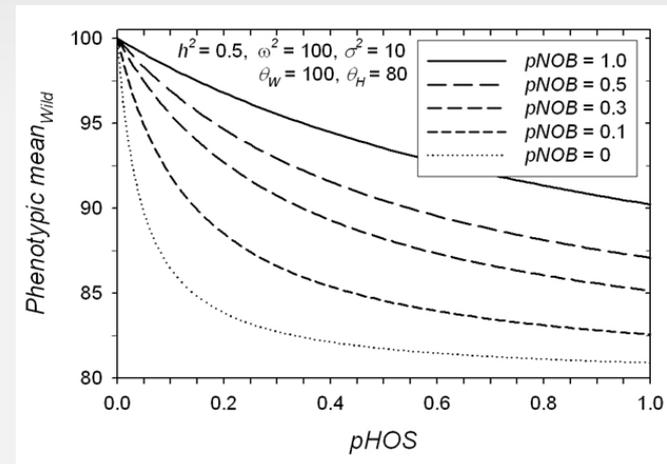
2. Scientific defensibility

- Programmatic (Plan)
- Culture methods
- Release strategies



3. Adaptive Management

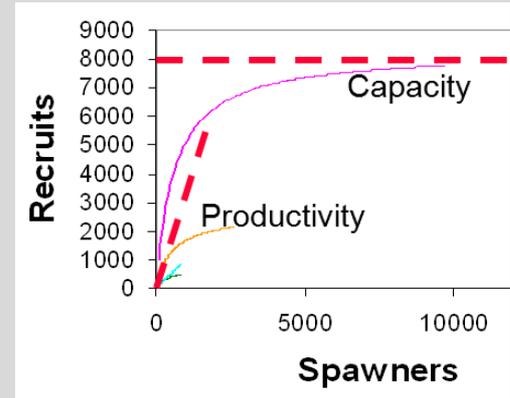
- M&E (benefits and risks)
- Scientific research
- Program adjustment



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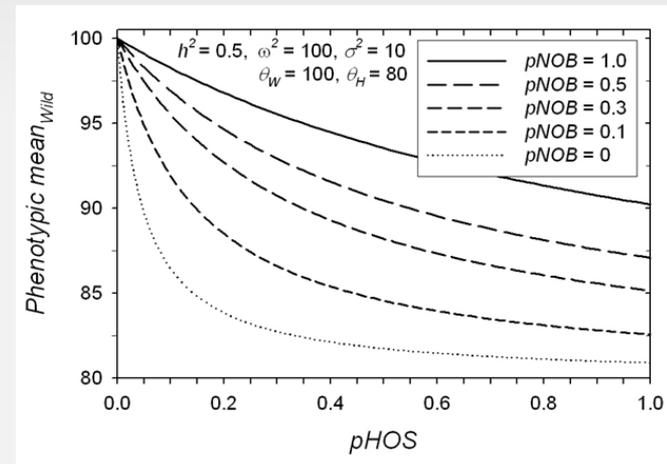
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Scientific Principles for Hatchery Programs

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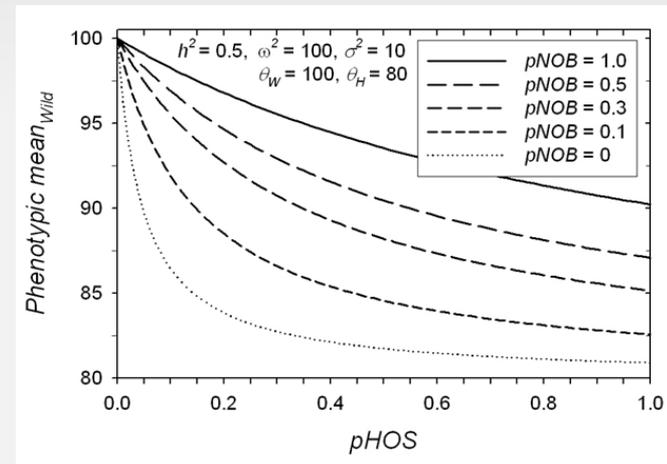
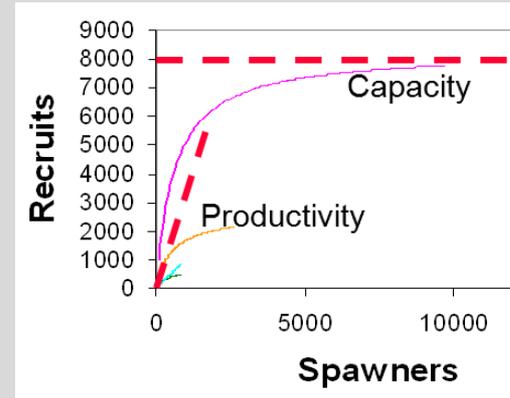
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California HSRG Report: General thoughts

- **CA-HSRG recommendations**: virtually identical to previous reviews in WA and Columbia River. [*Powerful message*]
- **CA-HSRG recommendation**: Express goals in terms of “*adult production*” relative to pre-harvest and spawning escapement.

Supplemental goal: Maintain *viable, self-sustaining populations*, regardless of where those populations are *intended* to spawn.

- **CA-HSRG recommendation**: Delineate the geographic boundaries of populations not listed under the ESA.

Supplemental need: Establish *viability goals* for all delineated populations in terms of *abundance* and *productivity*, but consider also *diversity* and *spatial structure* (NOAA-Fisheries VSP criteria).

California HSRG Report: Questions

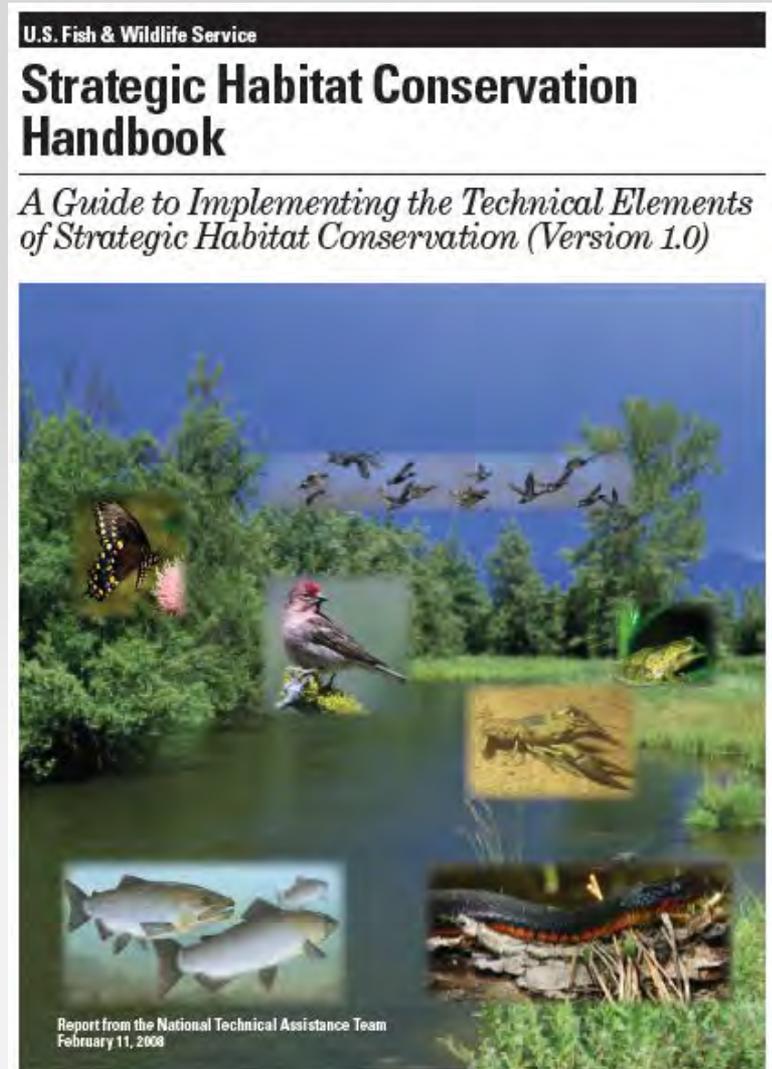
- **Comanager premise in Pacific Northwest:** Maintain viable, naturally spawning populations in all streams and watersheds accessible to anadromous fish. **Question: Is this a comanager premise in California also, particularly in the Central Valley?**
[It appeared to be an implicit assumption of the CA-HSRG]
- **It will take a lot of work to implement HSRG recommendations.**
What are the impediments to implementation?
 - **\$\$\$\$** . No bucks, no buckaroos (i.e., people).
 - **Human nature.** It is extremely difficult to break “old habits”.
 - **Societal values.** What is the *value* of **water and \$\$\$\$** in California for fish and habitat VS. people and agriculture? Do salmon have an iconic “value” in California for which people are willing to make sacrifices to conserve? How great are the political pressures that impede salmon conservation?

Question that arose at workshop-hearing

- **Question**: Should managers transport and release hatchery-origin fall Chinook juveniles off-site in San Pablo Bay and adjacent areas in 2014 because of the drought and expected adverse water temperatures and flows in the Sacramento River this spring?
- The answer is straightforward if the *viable salmonid population* (VSP) and renewable natural resource principles are applied.
- **My answer**: Hatchery-origin juveniles should *only* be released offsite if those actions will increase the number of adult returns back to the *hatchery* (the “home stream” for those fish) relative to onsite releases. This is a scientifically-defensible answer.
- **Caveat question**: If offsite releases are expected to increase adult returns back to their hatcheries, then should we trap natural-origin smolts and release them offsite also?

Strategic Habitat Conservation (SHC)

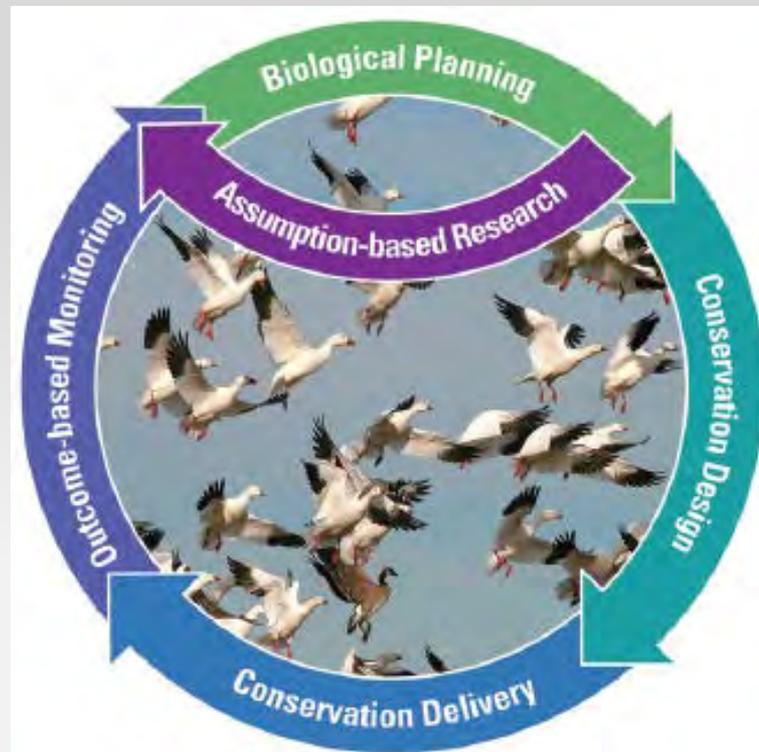
“The essence of SHC is setting explicit objectives for populations and then figuring out how to attain those objectives.”



Strategic Habitat Conservation

Identify conservation goals for populations

Biological Planning



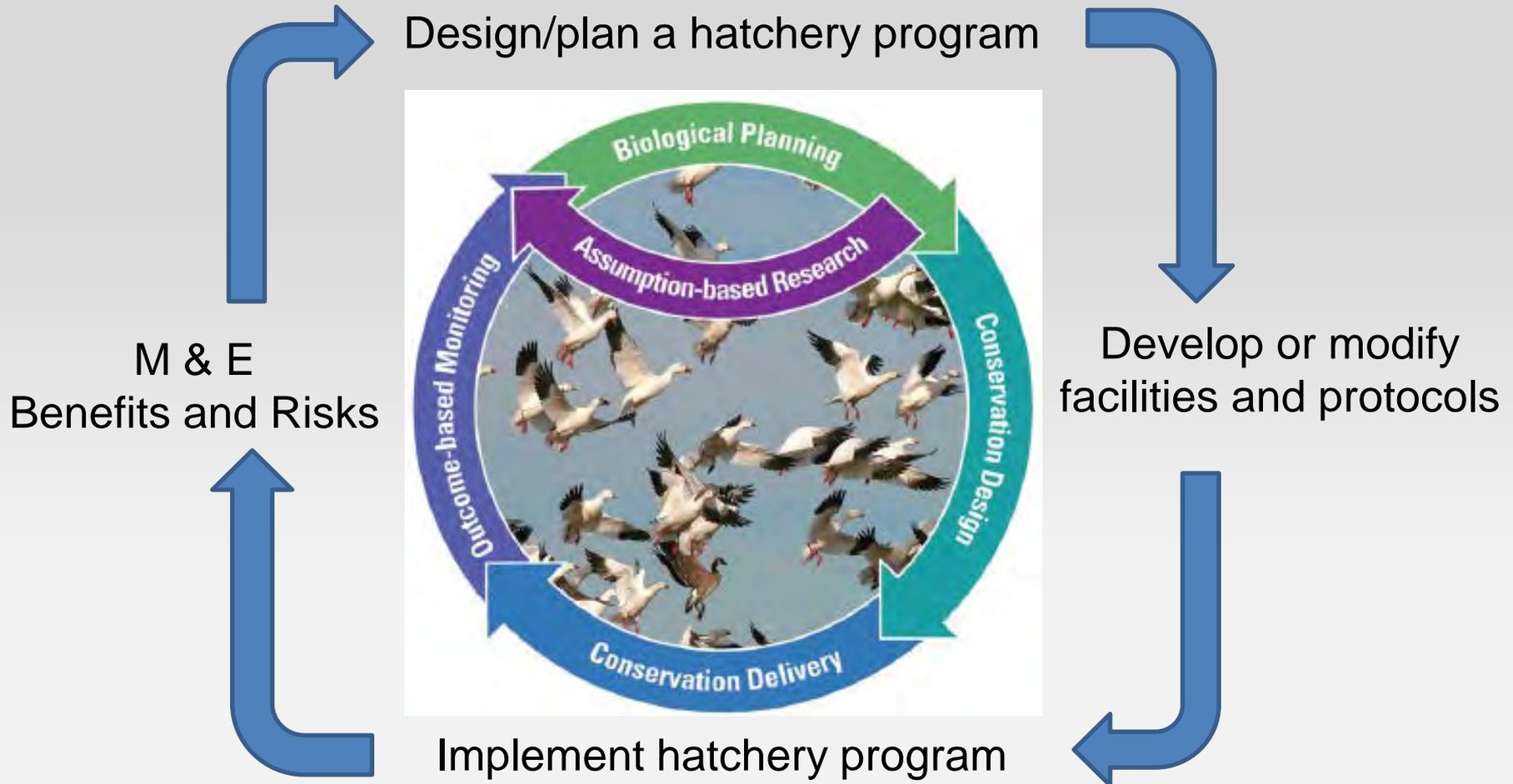
Outcome-based
Monitoring

Conservation
Design

Conservation Delivery

Strategic Hatchery Management

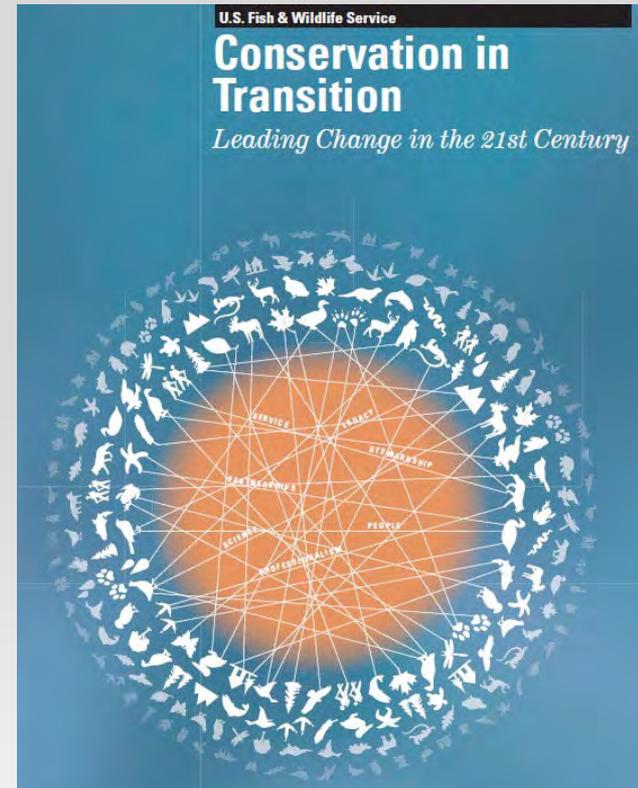
Identify conservation *and* harvest goals for populations



Conservation in Transition (*Vision for the Future*)

“The 21st Century will demand:

- A shift from managing individual resources to sustaining species, populations, and systems;
- An emphasis on science linking work to landscapes, major eco-regions, and species ranges;
- Increased use of predictive models and measurable biological outcomes;
- Increased emphasis on biological accountability;
- Increased emphasis on transparency, public participation, and engagement.”



Strategic Hatchery Management:

(Quantified Goals, Scientific Defensibility, Adaptive Management)

Conclusions

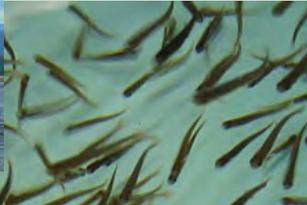
- Focus on populations, not facilities.
- Establish conservation and harvest goals for populations, not “goals” for facilities.
- View hatcheries biologically as a type of habitat.
- Use the same scientific principles for managing all populations, regardless of where they spawn.
- Establish benchmarks for achieving population goals and measuring success.
- Adjust hatchery programs in response to M&E to increase the likelihood of achieving population goals (increasing benefits and reducing risks).



*Roadmap to Success
Vision for the Future*

Strategic Hatchery Management: New Paradigm

View hatcheries biologically as a type of habitat, manage fish as components of sustainable populations, and manage populations – both hatchery and wild - for maximum viability with quantified conservation and harvest goals.



Paul Perkinson

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