Washington Fish and Wildlife Commission, June 2013

Instream flows - Why they matter and what we do

Water Science Team

WDFW Habitat Program

June 7-8, 2013, WDFW
Commission Meeting Presentation

WDFW Water Science Team

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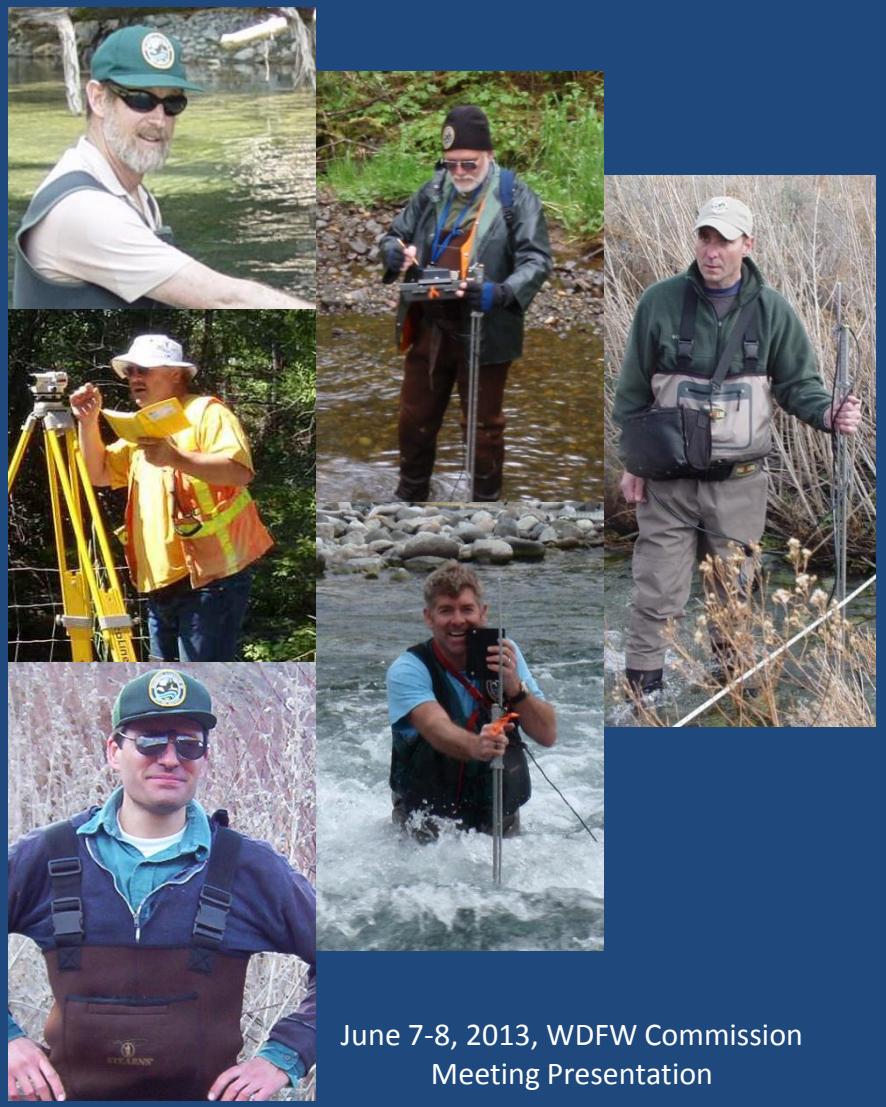


Instream Flow

- Instream flows are water rights for the state , the public, and the public's natural resources, to keep water instream.

– RCW 90.22.010, 90.54.020(3)(a), 90.82.020(3)

Growth of human population and economy=increased demand for water

- Freshwater is a **finite resource**,
- but **human demand is growing**.
- The result will be **less water in streams** and
- **less production of fish and wildlife**.
- But, also increased demand for instream values – instream flows are for people

Objective

- **Protect and restore flow-dependent stream and riparian habitat for fish and other wildlife**

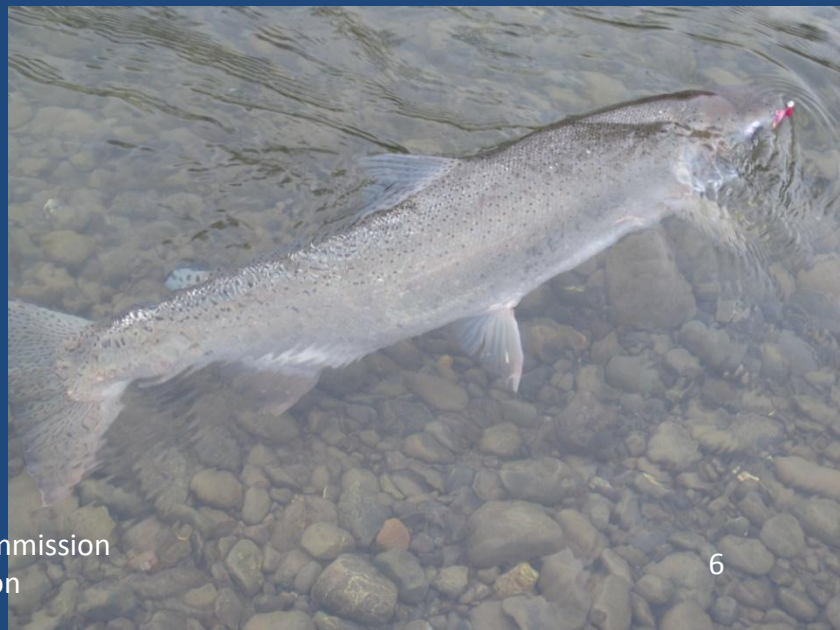
Instream flows through state and federal water law for

state water allocation and

major projects (FERC, EFSEC, CWA, etc.)

Policy and draft legislation review to attempt to retain habitat protection authority

- Water quantity and quality are important for all fish and wildlife
- (Even many marine species have indirect dependence on freshwater)



Flow Impacts to Fish

Acute (stranding, impassable shallow riffles, redd dewatering)

Chronic (crowding and interspecific competition, water quality) – mediated by habitat reduction

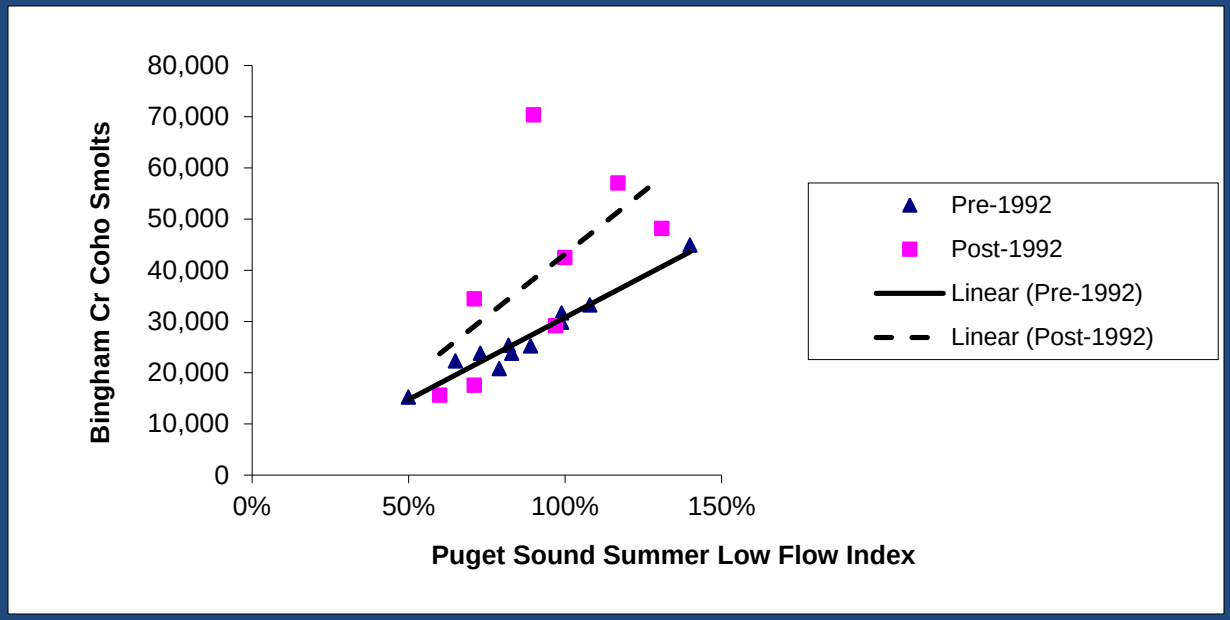
Flow Impacts to Fish: Washington and other Pacific coast studies since 1940s:

- Lower dry season flows → fewer smolts → fewer adult fish

  – strong relationship for coho salmon, detectable relationship for steelhead.

  - (It's harder to detect the more complex the life history – coho salmon have the most consistent life history of salmon that rear in fresh water.)

Fish NEED Water



- Abundant literature relates fish growth, health, and production to flow and flow-related variables. For references, see:

http://www.instreamflowcouncil.org/ifcreferences.htm

So do WILDLIFE and RIPARIAN habitats.

Instream Flow – Legal Context

- Water quantity is regulated by the state (Ecology) with a few exceptions. Washington water law (RCW 90.03.010) is based on the prior appropriation doctrine:
- water rights, once issued, are perpetual subject to conditions;
- oldest (senior) has priority; but
- water rights can be lost if not used.

Instream Flow – Legal Context

- Unfortunately, this means that some people have the legal right to dry up a stream!

Instream flows through state and federal law

- Water right application review (RCW 77.55.050; 90.03 and associated water laws)
- Assist in establishment of instream flows for watersheds (RCW 90.22, 90.54, 90.82)
- Establish instream flows as conditions of hydroelectric licenses through the Federal Energy Regulatory Commission and Clean Water Act
- Restore stream flow and reduce impacts of diversion and water use (RCW 90.38, 90.42)
- Potential interaction with treaty rights

WDFW Water Science Team functions

- Use tools and knowledge of stream ecology, water use by humans, and water law for:
  - Water right application review
  - Recommend instream flows to be set by rule
  - Recommend instream flows for hydropower and other major projects
  - Recommend, prioritize, evaluate and monitor flow restoration
- Improve tools to strengthen credibility of our recommendations
  - Fish-flow interaction
  - Fish-habitat association
  - Modeling
- Legislation review and policy review
- Outreach and education – it is a public policy issue affecting public values and affected by public opinion

Putting the tools to work

- The bulk of Water Science Team time is spent applying instream flow methods:
  - (a) to establish instream flows and
  - (b) to restore flows

- and advocating and negotiating for instream flows.

Putting the tools to work

- LITIGATION and EXPERT TESTIMONY on instream flows – water rights appeals

- Including 1992 U.S. Supreme Court decision (case 92-1911) allowing states to set instream flows under federal Clean Water Act Water Quality Certifications that take precedence over Federal Energy Regulatory Commission license conditions.

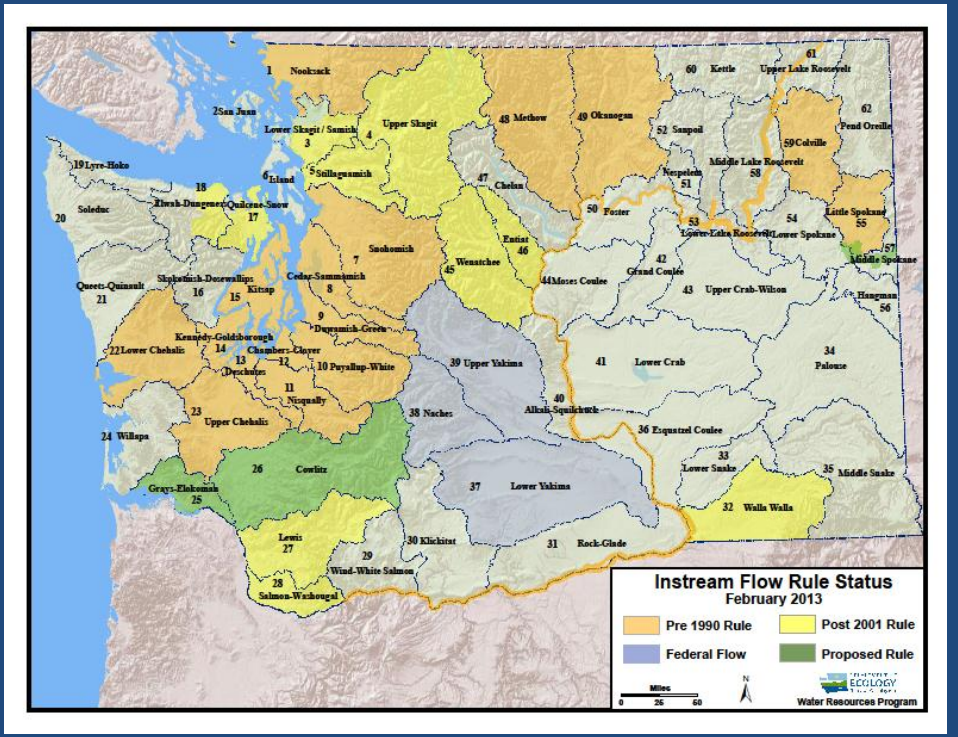
Water right application review

- "It is the policy of this state that a flow of water sufficient to support game fish and food fish populations be maintained ....
- "ecology may refuse to issue a permit if, in the opinion of the director, issuing the permit might result in lowering the flow of water in a stream below the flow necessary to adequately support food fish and game fish populations ....
- "The provisions of this section shall in no way affect existing water rights." RCW 77.57.020

Setting Instream Flows through Watershed Planning

(ESHB 2514; RCW 90.82, 90.54, 90.22)

- Provide technical assistance to watershed planning units and Ecology
- Conduct & review studies
- Provide instream flow recommendations and advocate for them



Setting Instream Flows through Watershed Planning (ESHB 2514; RCW 90.82, 90.54, 90.22)

- Given the critical importance of freshwater flow in streams for fish, wildlife, and many other beneficial uses,

together with the finite nature of freshwater flow,

setting instream flows (and then enforcing them) is one of the most important conservation tools available for long-term conservation.

Setting Instream Flows through Watershed Planning (ESHB 2514; RCW 90.82, 90.54, 90.22)

- On the day an instream flow is established it is the most junior water right on the stream. All previously established water rights are senior.

Setting Instream Flows through Watershed Planning (ESHB 2514; RCW 90.82, 90.54, 90.22)

- As time passes, other water rights may be established, but they will be junior to the instream flow. Without instream flows, these other water rights could lead to depletion of the stream. Thus, the **value of the instream flow increases with time**.

Setting Instream Flows through Watershed Planning (ESHB 2514; RCW 90.82, 90.54, 90.22)

- An instream flow may serve other conservation values. If an instream flow is based on a reasonable application of instream flow methods and ecological understanding, it serves as a **reference point for other conservation efforts**. These other conservation efforts can **build on the instream flow**, perhaps contributing to flow restoration.

Instream Flows for Hydropower Projects

- Instream flows for bypass reaches
- Original mechanism: recommendations to Federal Energy Regulatory Commission (FERC decides)
- US Supreme Court decision (Dosewallips-Elkhorn) allows Ecology to set instream flows as conditions of the Water Quality Certification (401) under the federal Clean Water Act

Watershed management – holistic view of instream flow

- Are there "flow equivalents" (e.g., riparian preserves, mechanical modification of regulated channel, passage restoration)?
- Human uses are here to stay – work with municipal water suppliers to protect watershed integrity with emphasis on headwaters
- Common goals
  - Clear water – low sedimentation, good vegetation condition
  - Good quality – low levels of pollutants
  - Stable flows – not flashy, typical of good vegetation cover
  - Ample flows, at least to point of diversion

Flow management for existing projects and addressing indirect flow impacts (e.g., impervious surfaces)

- Mitigation: Headwater reserves (natural vegetation), including healthy riparian zone
- Maintain hydrology
- Geomorphological processes – channel form
- Cool, clean water less vulnerable to floods – good spawning & rearing
- Connectivity from headwaters to estuary

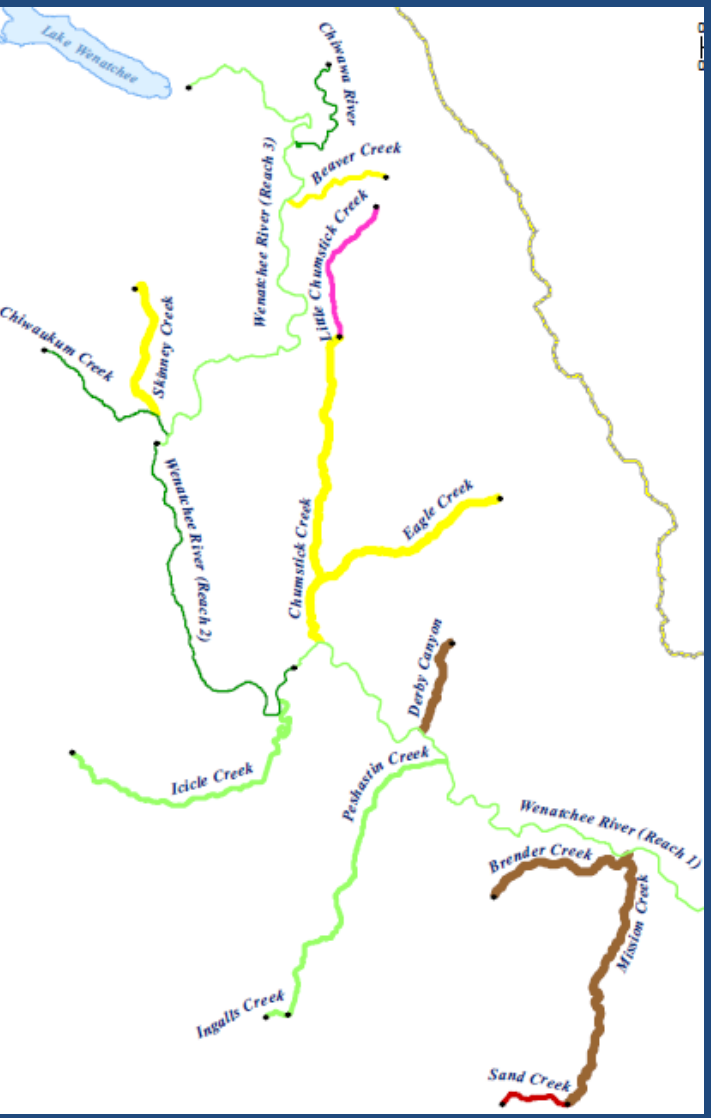
Flow restoration

- Restore stream flow and reduce impacts of diversion and water use (RCW 90.38, 90.42)
- Meet requirements for Columbia River instream flow in RCW 90.90
- Prioritize flow restoration based on fish benefit and opportunity

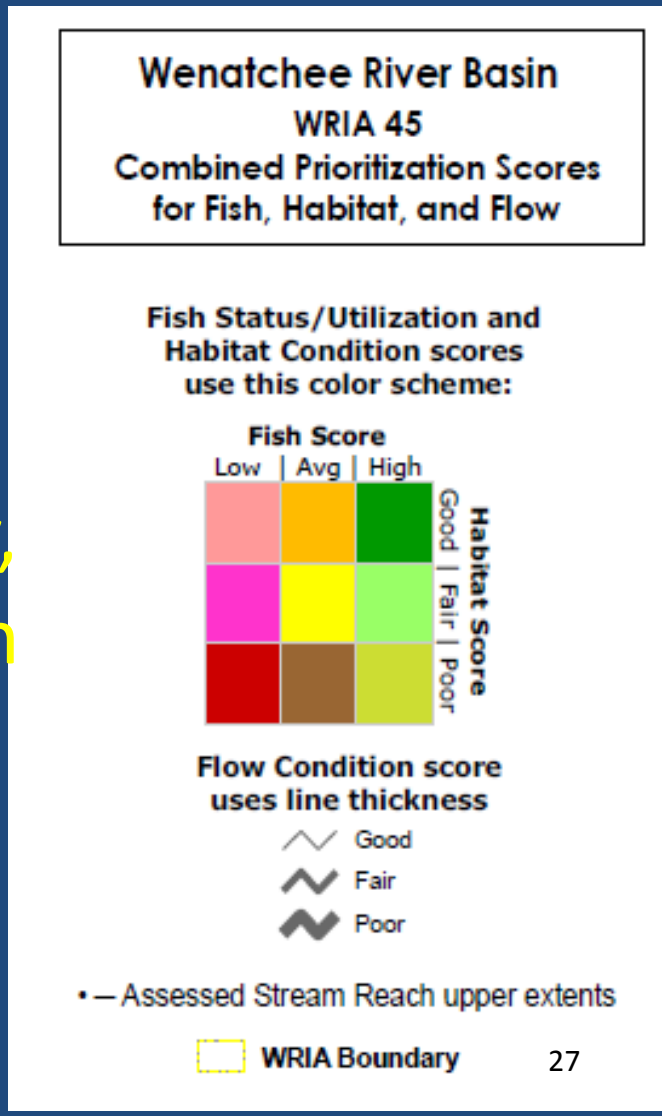
Flow Restoration: Trust Water Rights

- Trust water rights are water rights whose purpose is changed from an out-of-stream consumptive use to keeping the water in a stream.

Columbia River Instream Atlas



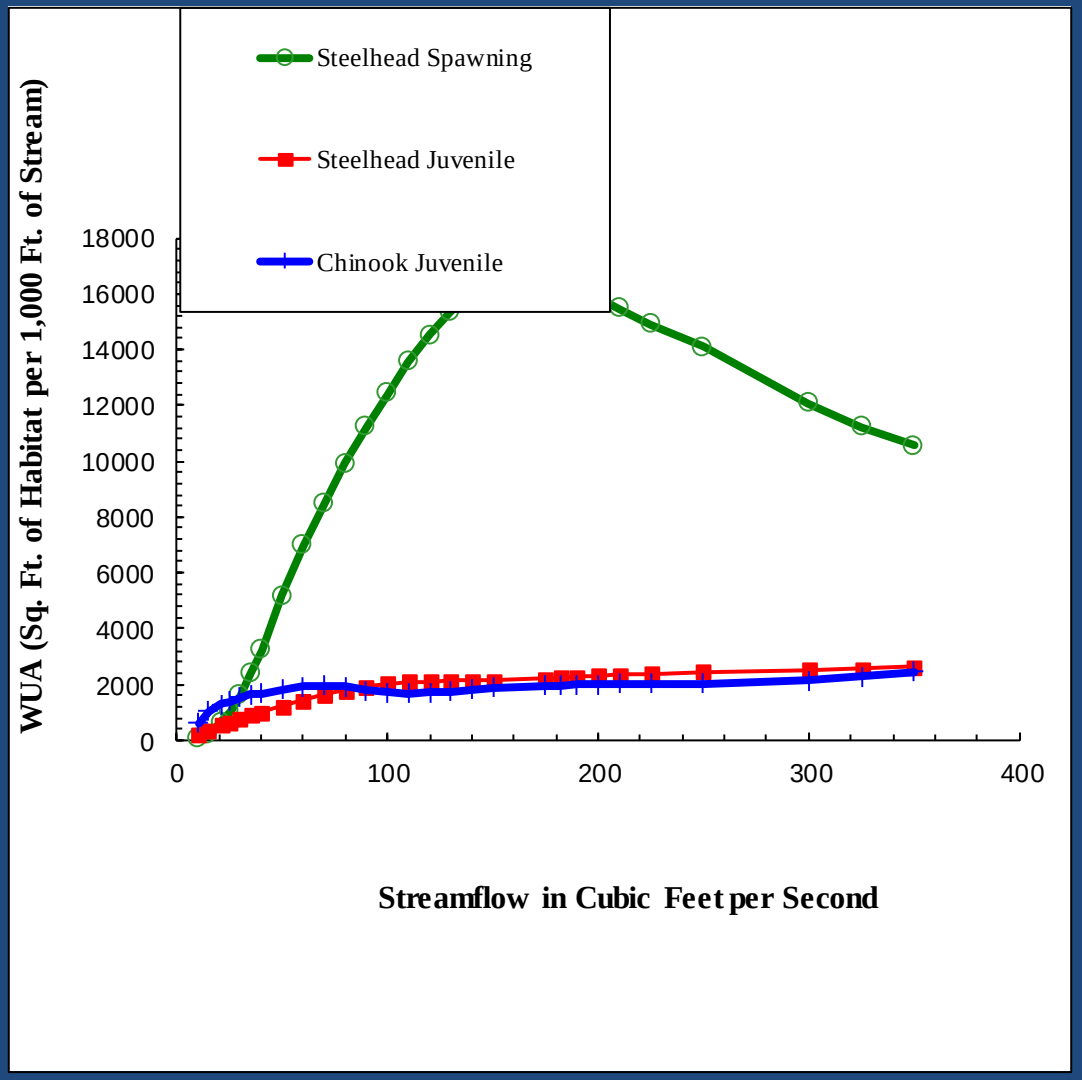
prioritization of water for flow restoration based on habitat quality, fish population status, and water supply



How much water must be left in a stream to protect fish and other wildlife?

How much water?

- Establishing instream flows or seeking trust water rights requires knowing how much water is needed when and where.
- This is a major focus of WDFW's Water Science Team.



How much water?

Ecological instream flows in the context of watershed processes

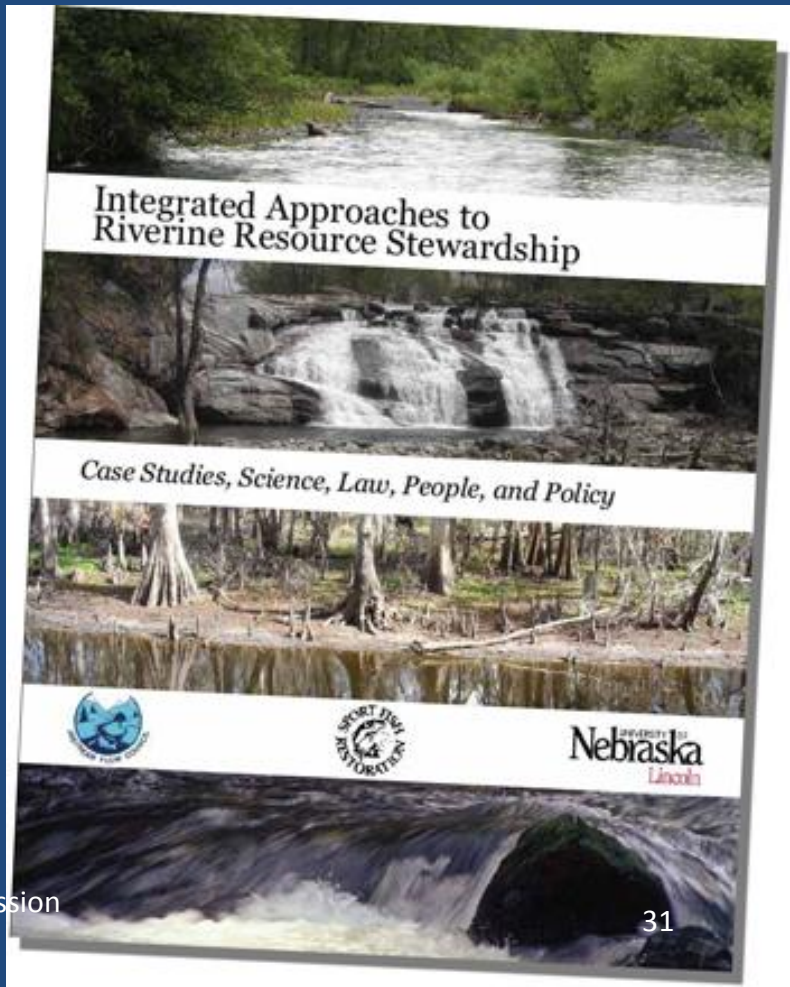
- Flows needed for channel form; riparian condition; water quality; temporal, lateral, vertical, and longitudinal connectivity (including migration); phenology

- Natural systems involve interactions among hydrology, geology, topography, seasonal cycles, daily cycles, tidal cycles (at estuaries), and biology

Models for Success

- Seattle Water Department Habitat Conservation Plan – Cedar River*
- Dungeness River*
- Walla Walla River
- Entiat River
- Upper Kittitas
- Lewis; Salmon-Washougal

* featured in Instream Flow Council book on successes



Water Science Team Research

- Improve knowledge of fish habitat as affected by flow and water management
- Improve tools and models
- Reduce uncertainty in contentious negotiations
- Enhance WDFW credibility
- Improve effectiveness and ability to protect stream ecosystems

Water Science Team Research

Develop and test tools

- biological response correlations
- plunge pool method
- feeding station method - discontinued
- tidal estuary method
- migration cue
- incorporate mesohabitat
- assess effect of land use and riparian condition on IFIM / PHABSIM
- Improve shortcut tools

Review of draft legislation and policy

- How will it affect
  - –fish, wildlife, and habitat?
  - –WDFW ability to protect and restore habitat?

Outreach and education

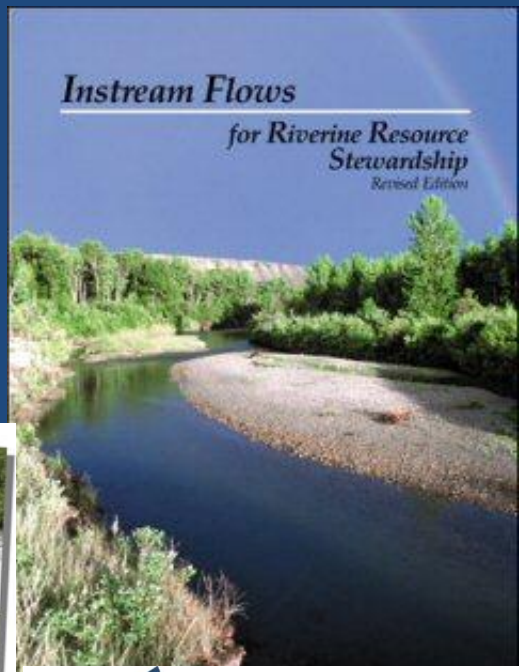
- Inform constituents about instream values and their sensitivity to water management
- Inform interested parties about consequences of options
- Instream flow and fish and wildlife are often taken for granted

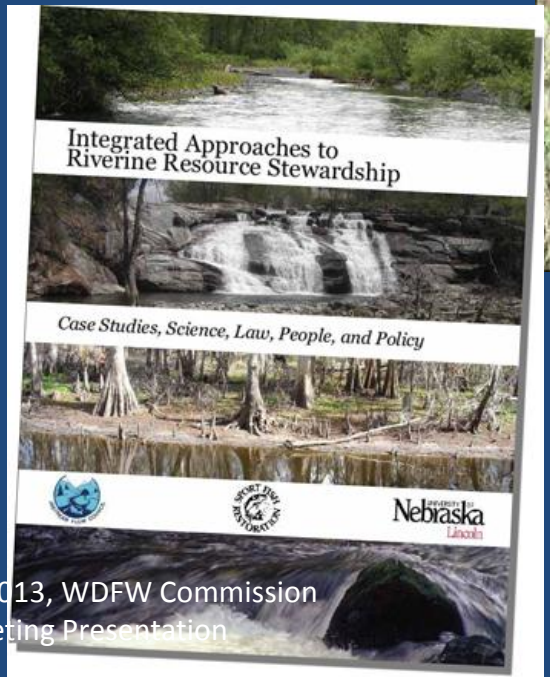
Public Education

- participation in conferences, workshops, watershed planning
- contributed to ***Instream Flows for Riverine Resource Stewardship*** (2004)

and

Integrated Approaches to Riverine Resource Stewardship (2008)





INSTREAM FLOW COUNCIL

American Fisheries Society letter to President Obama 1/17/13

- "Our [climate change] policy includes the following statement:
- … 4. Restore historic hydrologic regimes …"

Protecting and restoring aquatic habitat

- Establishing and restoring instream flow to protect and restore aquatic habitat requires extensive discussion and consideration of many factors, but solid technical support based on Water Science Team research improves chances of success.

WDFW Habitat Science

Washington Department of FISH AND WILDLIFE

Water Science Team – working to protect Washington's watersheds and stream ecosystems