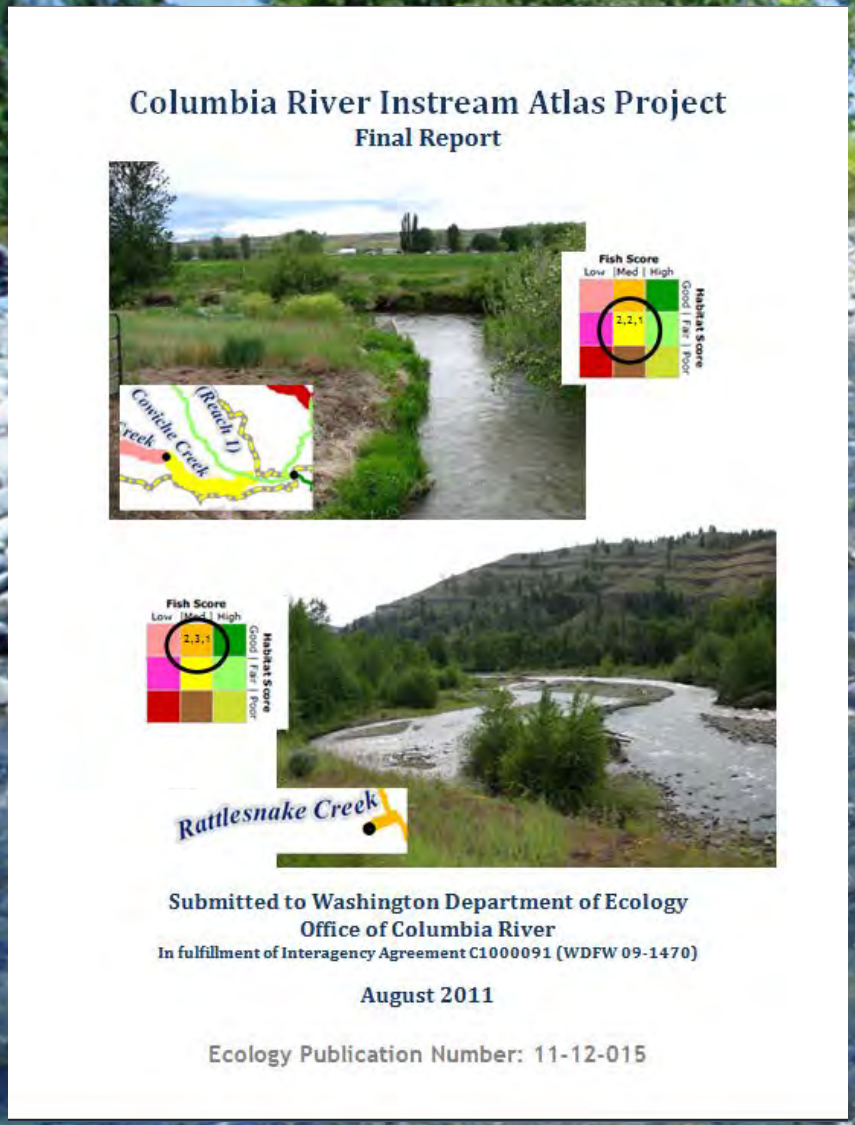


Washington Department of FISH and WILDLIFE

DEPARTMENT OF ECOLOGY
State of Washington

Columbia River Instream Atlas

A component of
Office of Columbia River
2011 Columbia Basin Water Supply
& Demand Forecast

Presented by
Jonathan Kohr, Habitat Biologist
Washington Department of Fish and Wildlife
Water Science Team

Office of the Columbia River (OCR) objectives for the Columbia River Instream Atlas (CRIA)

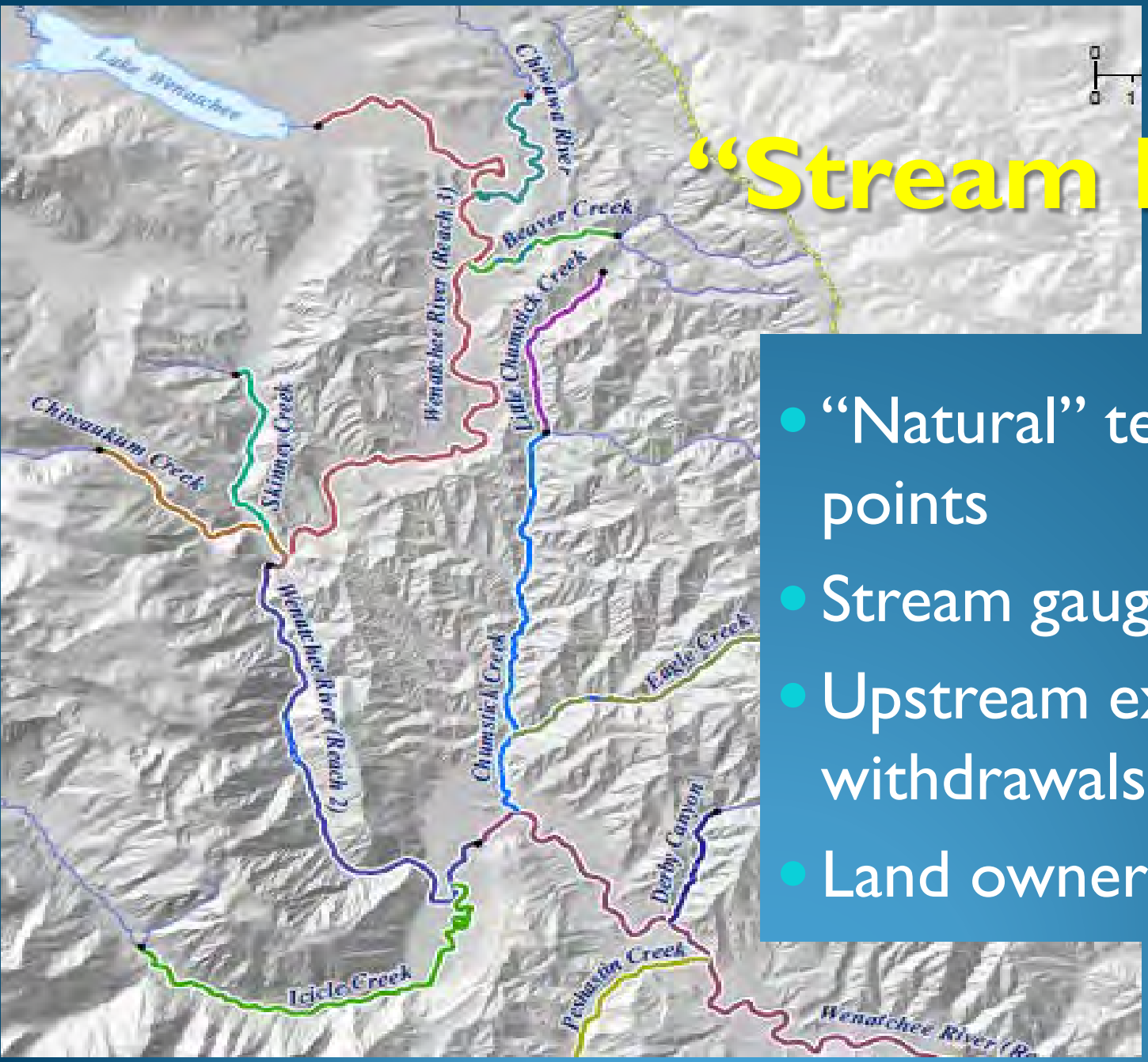
- Fish status & life history utilization
  - When are fish where doing what?
  - Simple visual format
- Habitat condition assessment
  - Incorporate new information
  - Focus on current condition
- Identify flow needs
  - Where are low flows occurring that could be inhibiting fish runs?
- Enhance OCR web tools
  - Use GIS to depict results

OCR Objectives for the Columbia River Instream Atlas

- Improve/simplify project selection
  - What projects in which locations benefit fish most?
  - When is water (not) available?
  - At what costs & benefits to fish?
- Supply & Demand Forecast
  - What is the fish "demand" for water?
  - Ensuring instream needs get equal consideration with other water supply demand.

8 Columbia Basin WRIAs

- Okanogan
- Methow
- Wenatchee
- Upper Yakima
- Naches
- Lower Yakima
- Walla Walla
- Middle Snake River



"Stream Reach"

- "Natural" terminus points
- Stream gauge locations
- Upstream extent of withdrawals
- Land ownership

Scoring criteria:

1. Fish
2. Habitat
3. Flow

1. Fish Status & Utilization

- Species present in each reach
- When they are present (months)
- Status (ESA, SaSI)
- Habitat Utilization (life history stages)

Fish Scoring

Wenatchee

Wenatchee (WRIA 45) Fish Status & Utilization by Species

Fish Species - SaSI Stock	Life Stage	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Wenatchee Summer Chinook (Not ESA Listed; 1 Healthy SaSI Stock)	Adult In-Migration												
	Spawning												
	Egg Incubation & Fry Emergence												
	Rearing												
	Juvenile Out-Migration												

Fish Species - SaSI Stock	Life Stage	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Wenatchee Spring Chinook (ESA Endangered; 2 Critical, 2 Depressed SaSI Stocks)	Adult In-Migration												
	Spawning												
	Egg Incubation & Fry Emergence												
	Rearing												
	Juvenile Out-Migration												

Fish Species - SaSI Stock	Life Stage	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Wenatchee Summer Steelhead (ESA Threatened; 1 Depressed SaSI Stock)	Adult In-Migration												
	Spawning												
	Egg Incubation & Fry Emergence												
	Rearing												
	Juvenile Out-Migration												

Fish Species - SaSI Stock	Life Stage	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Lake Wenatchee Sockeye (Not ESA Listed; 1 Healthy SaSI Stock)	Adult In-Migration												
	Spawning												
	Egg Incubation & Fry Emergence												
	Rearing												
	Juvenile Out-Migration												

Fish Species - SaSI Stock	Life Stage	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Wenatchee Coho (Not ESA Listed; No SaSI Stock)	Adult In-Migration												
	Spawning												
	Egg Incubation & Fry Emergence												
	Rearing												
	Juvenile Out-Migration												

Fish Species - SaSI Stock	Life Stage	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Wenatchee Bull Trout (ESA Threatened; 7 Unknown, 4 Healthy SaSI Stocks)	Spawning												
	Egg Incubation & Fry Emergence												
	Rearing												

Note: Stock presence varies by stream reach

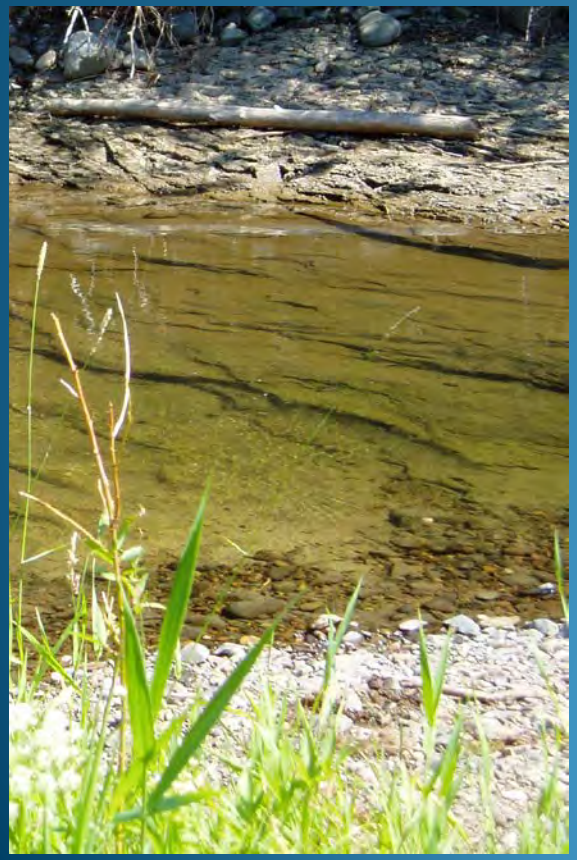
= No Use

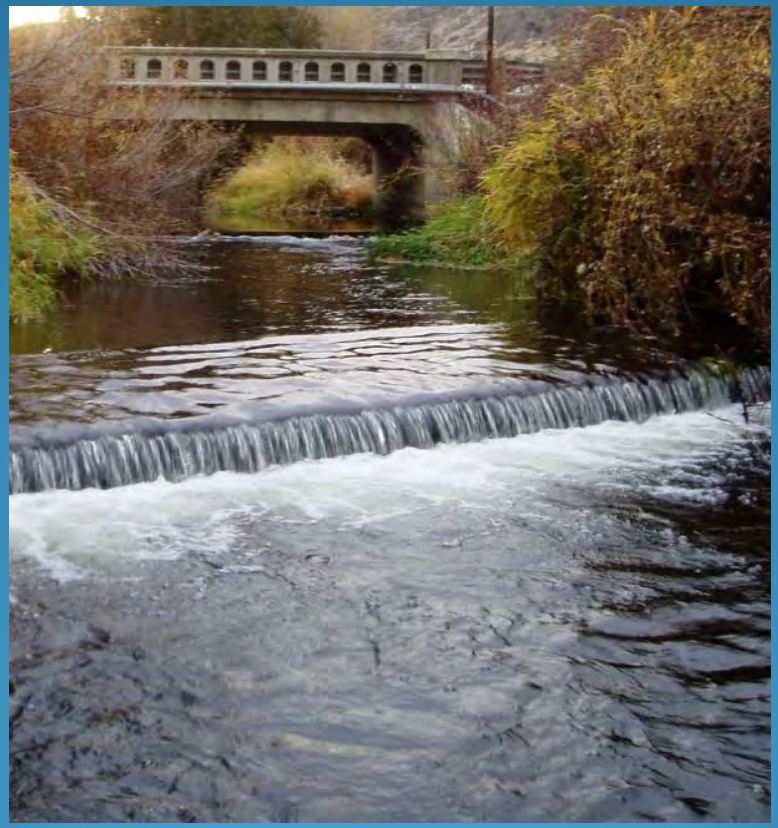
= Some activity or use occurring

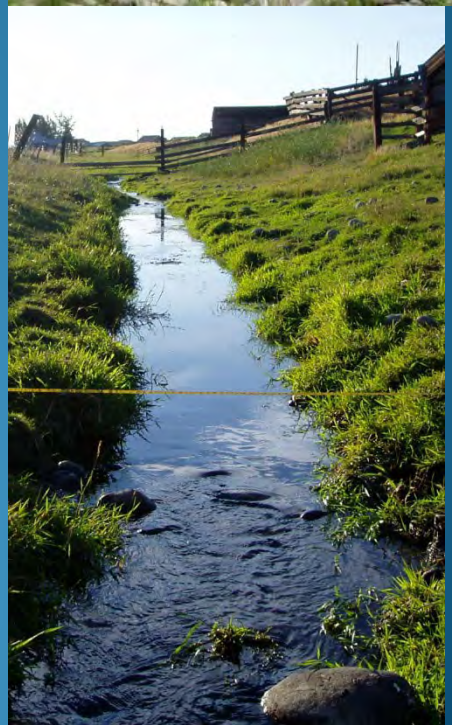
= Peak activity

2. Habitat Scoring

Floodplain connectivity
Rearing suitability
Spawning suitability
Off-channel habitat
Riparian condition
Passage conditions







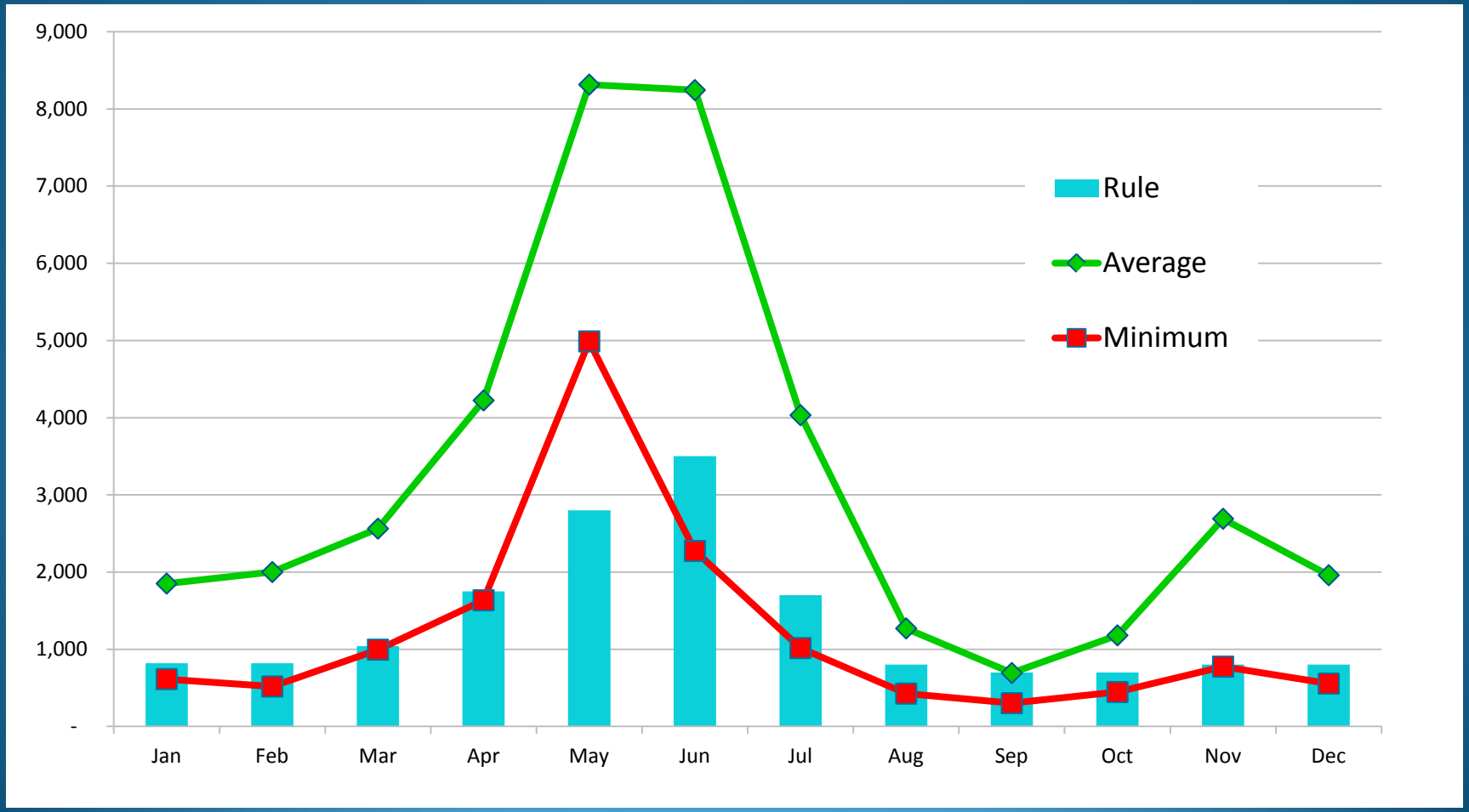
3. Flow Scoring

- Large stream? Tiny tributary?
- How often is flow below "target?"
- What percent of flow is being diverted?
- How bad is summer low flow?

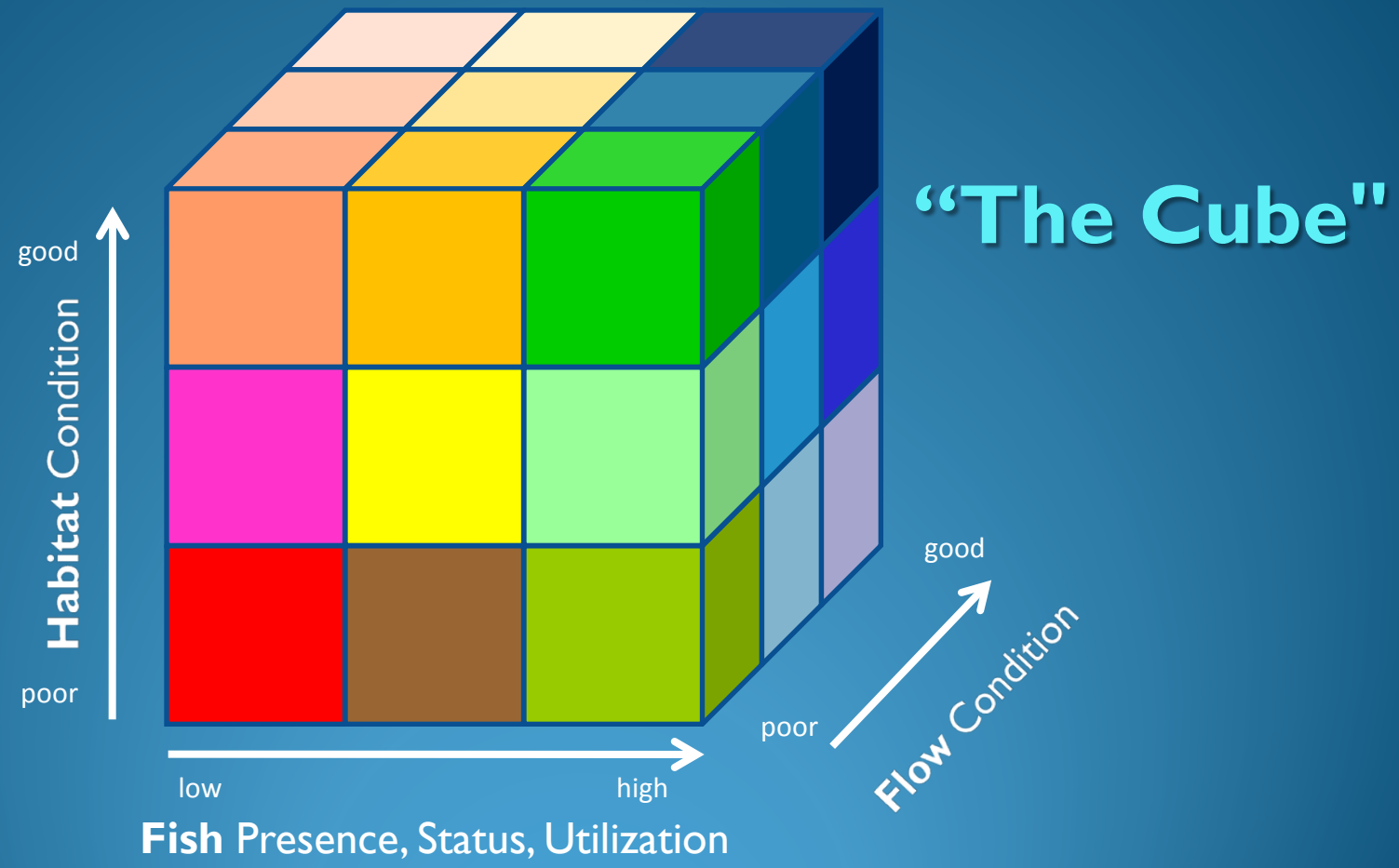
Visualizing Fish Needs

Wenatchee River - Reach 1 Hydrograph

Mean Annual Flow, Min Annual Flow, Instream Flow Rule



Scoring the 3 Axes Independently



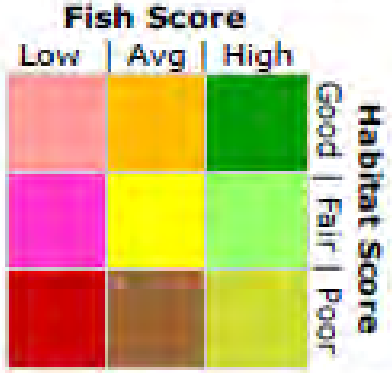
"The Cube"

Wenatchee River Basin

WRIA 45

Combined Prioritization Scores for Fish, Habitat, and Flow

Fish Status/Utilization and Habitat Condition scores use this color scheme:



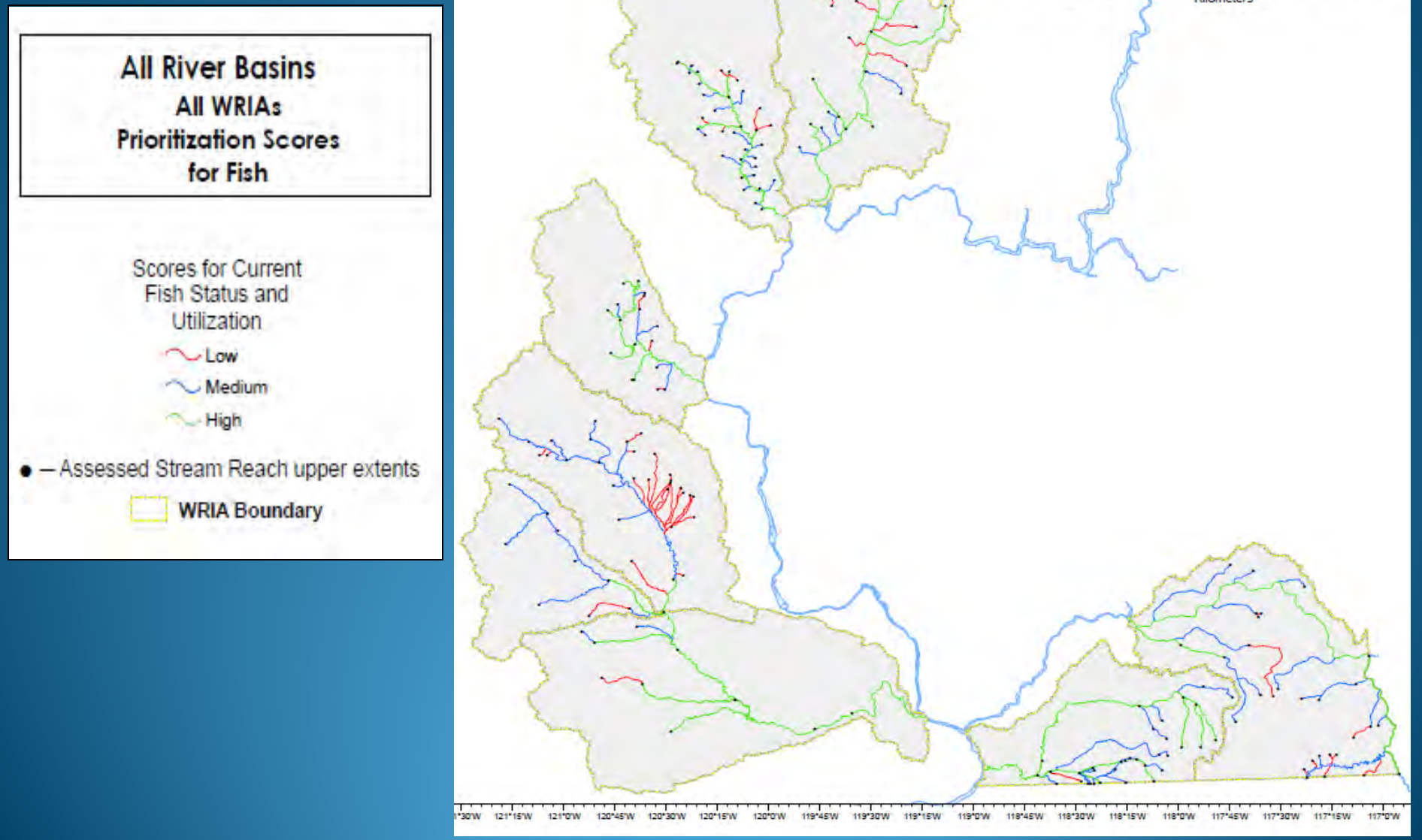
Flow Condition score uses line thickness

- Good
- Fair
- Poor

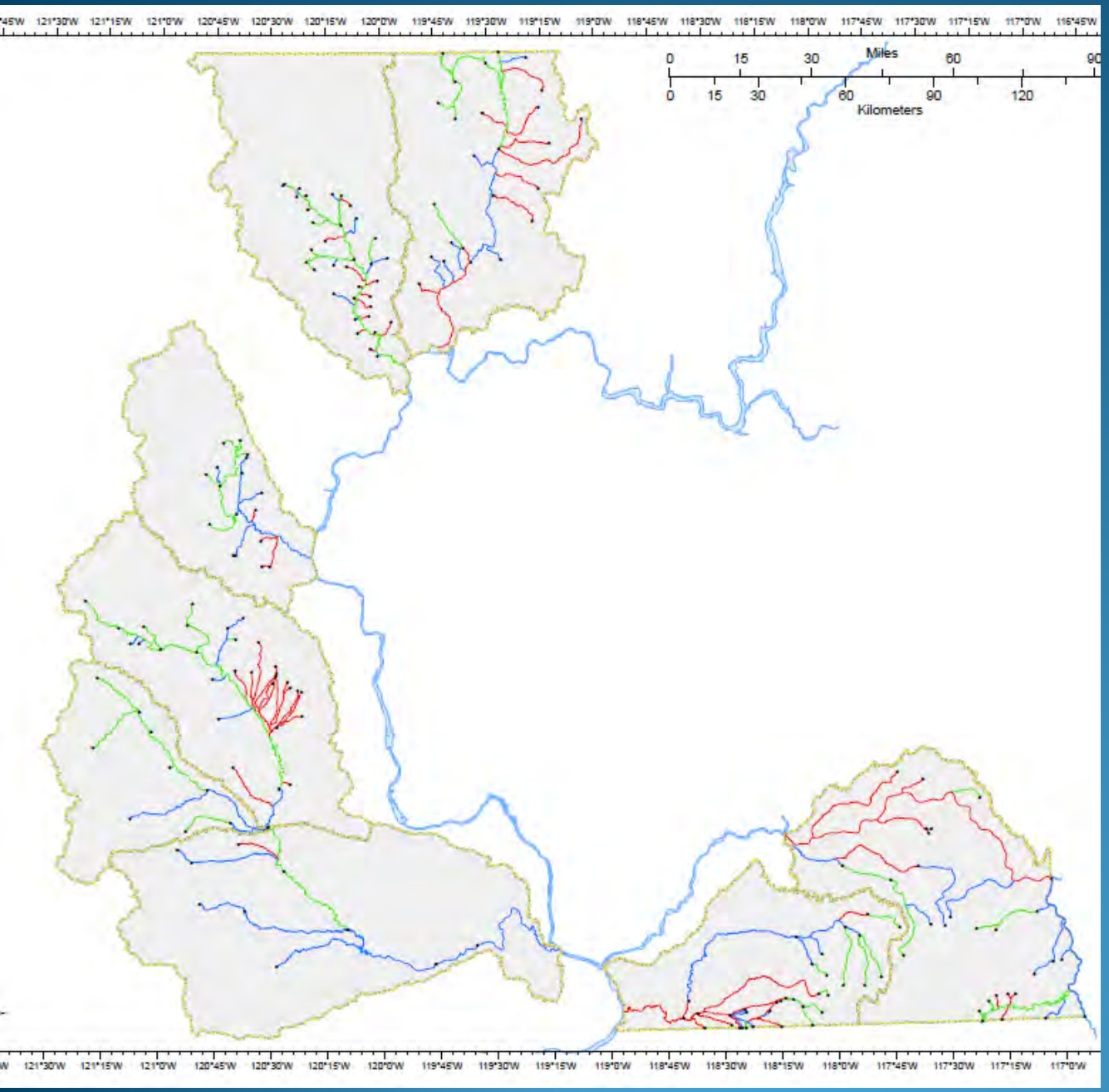
• — Assessed Stream Reach upper extents

WRIA Boundary

Fish status and utilization scores



Habitat attribute scores



All River Basins
All WRIAs
Prioritization Scores for Habitat

Scores for Current Habitat Condition

- Poor
- Fair
- Good

● — Assessed Stream Reach upper extents

WRIA Boundary

Conclusions

- Pursue water supplies in smaller, lower elevation streams with good to excellent habitat.
- Pursue water supplies in streams with good to excellent habitat in higher elevations or less populous areas.
- Pursue water supplies in lower mainstems through which all stocks/species must migrate.
- Any flow augmentation could be helpful in salmon & steelhead restoration efforts:
  - in smaller systems that have limited flow,
  - in over-appropriated basins, or
  - in combination with other recovery efforts.

Conclusions

The reality in these eight watersheds:

- Flow is needed in lower mainstems AND in upper tributaries.
- Opportunities for water right acquisition are limited and more market-driven than resource-driven.
- The easy solutions appear to have already been implemented.
- The next steps toward salmonid rebuilding will be difficult, expensive, and controversial.

Provide as much flow augmentation as possible throughout eastern Washington salmon-bearing streams as a hedge against climate change

Citation

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Jonathan.kohr@dfw.wa.gov

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