WDFW Monitoring and Management of Fish in the East Fork Lewis River

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Salmonid Populations in the East Fork (EF) Lewis River and ESA Status

- Chinook (fall run) – Lower Columbia evolutionarily significant unit (ESU), listed in 1999 as ‘threatened’ in Endangered Species Act (ESA)
- Coho – Lower Columbia ESU listed in 2005 as ‘threatened’ in ESA
- Chum (fall) – Lower Columbia ESU listed in 1999 as ‘threatened’ in ESA
- Steelhead (summer and winter runs) – Lower Columbia distinct population segment listed in 1998 as ‘threatened’ in ESA
- Rainbow trout – contribute genetics to steelhead populations
- Cutthroat trout – not ESA listed, include anadromous life history
- Other native and non-native fish species – not ESA listed
WDFW Region 5 Salmonid Monitoring Strategy

  • Defines priority populations for recovery of listed ESUs (Primary, Contributing, Stabilizing)
  • Sets targets for recovery
  • Helps guide monitoring priorities

• Conduct annual monitoring of adult and juveniles to track recovery of ESA listed ESUs, hatchery-origin spawners, etc.

• EF Lewis River – spawning ground surveys, no recent juvenile monitoring
Salmonid population trends in EF Lewis Fall Chinook

- Primary recovery population
- Tule Chinook population includes NF and EF Lewis
- Natural-origin abundance above target recovery goal in recent years (LCFRB 2010)
- EF Lewis component of population is fairly large
- Return late-summer when river is warm/low
Salmonid population trends in EF Lewis Coho

- Primary recovery population
- Trend unclear but relatively low recently
- Below target recovery goal in most years (LCFRB 2010)
Salmonid population trends in EF Lewis Summer steelhead

- Primary recovery population
- Increasing population trend
- Above target recovery goal in most years (LCFRB 2010)
- Catch-and-release fishery, harvest of hatchery strays
- Return in summer months when river can be low/warm
Salmonid population trends in EF Lewis Winter steelhead

- Primary recovery population
- Stable or increasing population trend
- Recent years above target recovery goal (LCFRB 2010)
- Catch-and-release fishery, harvest of hatchery strays
EF Lewis Wild Steelhead Gene Bank

- Statewide Steelhead Management Plan requires gene banks in each Major Population Group (MPG)
- EF Lewis in Cascade MPG
- One of two wild steelhead gene banks established for the Cascade MPG in 2014
- Chosen with assistance from a steelhead workgroup
- With designation, hatchery steelhead cannot be released
- Regulations structured to protect wild steelhead
Salmonid population trends in EF Lewis Fall Chum

• Population monitoring has been difficult due to low population size

• Lewis River population (EF Lewis and NF Lewis)
  • Historical abundance: 125,000
  • Current: unknown (likely <100)
  • Target: 1,300

Photo: Chum salmon by Tony Overman (The Olympian)
Freshwater Temperatures and Salmonids

- Migration can be impaired by maximum stream temperatures above 18-20°C (64-68°F)*
- Adult mortalities can occur starting at 16°C (60°F), increased chance of mortality above 24-25°C (75-77°F)*
- Spawning success can be impaired by maximum temperatures above 14-16°C (57-60°F)*
- Eggs require daily maximum temperature below 13-15°C (55-59°F) to ensure survival success*
- Salmon will look for refugia to avoid warmer waters, hard to find in some areas, especially at low flows*

WDFW Temperature Monitoring in SW Washington

• In 2015, summer drought conditions raised concerns for fish
• Thousands of sockeye salmon died in Columbia River – likely due to temperatures well above 70°F
• Stream flows very low throughout SW WA
• Began actively monitoring stream temperatures to guide fishing regulations and better understand conditions
  • Used online data from DOE and USGS stations
  • Deployed dozens of small HOBO data loggers
• 2015 summer monitoring showed warm, cool areas in region
EF Lewis River Water Temperature Monitoring

- LCFRB (2010) Limiting Factors analysis showed temperature as a primary or secondary factor for fall Chinook and steelhead in EF Lewis

- Three sites in 2015: Lewisville Park, Heisson Bridge, above Sunset Falls

- Two sites in 2016 and 2018: above Lewisville Park, near confluence with NF Lewis River
Temperatures Near Confluence with NF Lewis River 2016 and 2018

- Tidally influenced area made for high variability within days
- Overall pattern similar to Lewisville Park area
Above Sunset Falls daily temperatures - 2015

- Temperatures were cooler in August than lower river
- Fishing not allowed in this area all year
Recent Changes to EF Lewis Sport Fishing Regulations

• 2015 summer regulations due to warm/low water
  • From mouth to top boat ramp at Lewisville Park: Closed
  • From top boat ramp at Lewisville Park upstream Horseshoe Falls: Closed from 2 PM to one hour before official sunrise (‘hoot owl’ closure)

• 2018 changes - WDFW/public review of fishing regulations statewide
  • Closed to fishing July 16 and Sept. 15 due to warm/low water conditions
  • Trout: release cutthroat trout and wild rainbow trout, can harvest 2 hatchery rainbows/steelhead (remove hatchery fish to benefit wild fish)
  • Salmon: Sept. 16 – Dec 31, daily limit 2 adult hatchery Chinook or Coho
  • Maintain fishing closure from 400 feet below Horseshoe Falls upriver