

Title:

Yakima Basin EDT Current/Historic Diagnosis

Authors:

Joel Hubble; Yakama Nation; Nelson Springs Research, 771 Pence Road, Yakima, WA, 98902, (509) 966-5291, hubble@yakama.com

Bruce Watson, Mobrاند Biometrics Inc., P.O. Box 724, 9920 SW Bank Road, Vashon, WA 98070, (206) 463.5003, bwatson@mobrاند.com

Summary of Presentation:

The Yakima Basin EDT (Ecosystem Diagnosis and Treatment) diagnostic reports for spring and fall chinook, steelhead and coho were completed in March 2003. This represents the first complete EDT model run for steelhead, fall chinook and coho, and the second iteration for spring chinook. Diagnostic results will focus primarily on steelhead and coho at the 2003 YKFP Project Annual Review. Steelhead population results will be presented for each subbasin- Satus, Toppenish, Naches and upper Yakima. Coho population results will focus on the Naches and upper Yakima subbasins. Results will focus on population performance values (current vs historic conditions), high priority preservation and restoration reaches, and a highlight of key limiting factors. The baseline population performance values will be presented for Yakima spring and fall chinook.

Steelhead

For the Satus population the EDT model predicted a spawner escapement (on the spawning grounds and adjusted for the resident/anadromous equilibrium) of 747 adults for current conditions and 13,671 adults for historic conditions. Smolt-to-adult survival was 1.5% for current conditions compared to 8.0% for historic conditions. The adult returns per spawner were 2.2 versus 21.1 for current and historic conditions, respectively. The number one and two preservation reaches within the Yakima Basin for Satus steelhead was Satus-1 (Mouth-Mule Dry Creek) and Satus-4 (Logy Creek-Bull Creek). The number one and two restoration reaches were Logy Creek and Satus-2 (Mule Dry Creek-Dry Creek). Egg incubation was the key life stage effecting the Satus population productivity and abundance, which was a result of poor channel stability, sediment load and temperature. Predation upon smolts in the Yakima mainstem to a lesser degree impacted productivity and abundance.

For the Toppenish population the EDT model predicted a spawner escapement (on the spawning grounds and adjusted for the resident/anadromous equilibrium) of 250 adults for current

conditions and 10,124 adults for historic conditions. For current conditions the smolt-to-adult survival was 1.5% for upper Toppenish (above WIP canal) and 1.6% for lower Toppenish (below WIP canal, includes Simcoe subbasin) compared to 8.0% for historic conditions in both upper and lower Toppenish. The adult returns per spawner ranged from 0 (in Marion Drain) to 2.1 (upper Toppenish) for current conditions and 16.3 for historic conditions in both upper and lower Toppenish. Within the Yakima Basin the top two preservation reaches were the Yakima River: Satus Creek-Toppenish Creek and Toppenish-11 (SF Toppenish Creek-Panther Creek), and for restoration they were the Yakima River: Prosser Dam-Satus Creek and Simcoe-6 (Wahtum Creek-Forks). The key attributes effecting productivity and abundance were channel stability, sediment load, temperature and predation (on smolts) in the mainstem Yakima River.

For the Naches population the EDT model predicted a total spawner escapement (on the spawning grounds and adjusted for the resident/anadromous equilibrium) of 684 adults for current conditions. Spawner escapement was distributed as follows- American R.: 90, Bumping R.: 19, Little Naches R.: 204, Naches R. (mainstem): 189, Rattlesnake subbasin: 105 and the Tieton R.: 77. For historic conditions the spawner escapement was distributed as follows- American R.: 2908, Bumping R.: 3058, Little Naches R.: 6438, Naches R. (mainstem): 20514, Rattlesnake subbasin: 2183 and the Tieton R.: 10271. For current conditions smolt-to-adult survival ranged from 1.5% to 2.5% (Bumping River, mouth-dam), while for historic conditions values ranged from 6.9% to 12.1% (Nile subbasin). The adult returns per spawner ranged from 0 to 2.6 (American R.) for current conditions and 18.0 to 27.0 (Naches River: mouth-Tieton River) for historic. The top two preservation reaches were in the Yakima River: Prosser Dam-Satus Creek and the Yakima River: Satus Creek-Toppenish Creek. The two reaches with the highest restoration potential were the Naches River: Cowiche Creek-Tieton River and the Naches River: Nile Creek-Little Naches River. The primary attributes limiting productivity and abundance were channel stability, sediment load and water temperature, which affected predominantly egg incubation. In the mainstem Yakima River smolt predation was also a contributing factor impacting productivity and abundance.

For the upper Yakima population the EDT model predicted a spawner escapement (on the spawning grounds and adjusted for the resident/anadromous equilibrium) of 140 adults for current conditions and 36,722 adults for historic conditions. For current conditions the smolt-to-adult survival ranged from 1.8%

(upper Yakima tributaries) to 1.9% (Yakima mainstem above Roza Dam) compared to a range of 7.0% (upper Yakima tributaries) to 9.1% (Yakima mainstem above Roza Dam) for historic conditions depending on the subbasin. The adult returns per spawner ranged from 0 to 1.6 (Yakima mainstem above Roza Dam) for current conditions and 13.3 (Ahtanum/Wide Hollow subbasins) to 19.3 (Yakima mainstem above Roza Dam) for historic conditions depending on the subbasin. Within the Yakima Basin the number one and two preservation reaches were the Yakima River: Satus Creek-Toppenish Creek and the Yakima River: Prosser Dam-Satus Creek. The top two restoration reaches were the Manastash subbasin and the Wilson subbasin. The primary attributes limiting productivity and abundance were channel stability, sediment load and temperature, which affected predominantly, egg incubation. In the mainstem Yakima River smolt predation was also a contributing factor impacting productivity and abundance.

Coho

For the Naches population the EDT model predicted a spawner escapement (on the spawning grounds) of 97 adults for current conditions and 47,857 adults for historic conditions. Smolt-to-adult survival ranged from 1.2 to 1.7% depending on the subbasin for current conditions, and from 7.0% to 7.4% for historic conditions. The adult returns per spawner ranged from 0 to 1.3 depending on the subbasin for current conditions and from 11.1 to 23.9 for historic conditions. The top two preservation reaches within the Yakima basin were the Naches River: Cowiche Creek-Tieton River and the Yakima River: Ahtanum Creek-Naches River. The number one and two restoration reaches were the Naches River: Cowiche Creek-Tieton River and the Naches River: Nile Creek-Little Naches River. The primary attribute limiting productivity and abundance in the Yakima River mainstem was predation upon coho smolts. Within the Naches subbasin sediment load, key habitat quality and habitat diversity were the main attributes negatively affecting coho abundance and productivity.

For the upper Yakima population the EDT model predicted a total spawner escapement (on the spawning grounds) of 486 adults for current conditions and 88,945 spawners for historic conditions. For current conditions smolt-to-adult survival ranged from 1.5% to 1.8%, while for historic conditions values ranged from 6.3% to 6.9% depending on the subbasin. The adult returns per spawner ranged from 0 to 1.6 for current conditions and 13.2 to 20.3 for historic depending on the subbasin. The top two preservation reaches within the Yakima basin were the Yakima River: Easton Dam-Keechelus Dam and the Yakima River: Cle Elum

River-Easton Dam. The top two restoration reaches within the Yakima Basin were the Wilson Creek subbasin and the Teanaway River: below the Forks.

In the mainstem Yakima River predation on smolts was the main limiting attribute affecting coho productivity and abundance. In the Ahtanum subbasin key attributes were channel stability, sediment load, key habitat quality, which most impacted the egg incubation and over wintering life stages. In the Wilson subbasin key limiting factors were sediment load and channel stability, which affected most significantly the incubation and 0-age active rearing life stages. For the Manastash and Taneum subbasins flow, sediment load, habitat diversity and channel stability were the key limiting attributes. Coho productivity and abundance in the Teanaway subbasin was most affected by poor habitat diversity, key habitat quality, water temperature, flow and channel stability.

Spring Chinook

For the upper Yakima population the EDT model predicted a spring chinook spawner escapement (on the spawning grounds) of 2739 adults for current conditions and 107,467 spawners for historic conditions. Depending on the subbasin for current conditions the smolt-to-adult survival ranged from 3.4% to 3.6% compared to a range of 9.9% to 11.0% for historic conditions. The adult returns per spawner ranged from 0 to 3.5 for current conditions and 22.0 to 35.0 for historic.

For the Naches population the EDT model predicted a spring chinook spawner escapement (on the spawning grounds) of 1283 adults for current conditions and 60,141 spawners for historic conditions. Depending on the subbasin for current conditions the smolt-to-adult survival ranged from 2.7% to 3.8% compared to a range of 7.9% to 10.1% for historic conditions. The adult returns per spawner ranged from 0 to 4.5 for current conditions and 32.2 to 48.4 for historic.

Fall Chinook

A summary of the baseline population performance values were not available at the time of this writing, but will be made available at the PAR on March 25-26, 2003.

Title:

Yakima Basin Steelhead Status Report

Authors:

Joel Hubble; Yakama Nation; Nelson Springs Research, 771 Pence Road, Yakima, WA, 98902, (509) 966-5291, hubble@yakama.com

Shannon Adams, Yakama Nation, Toppenish Fisheries Resource Management, P.O. Box 151, Toppenish, WA 98948, (509) 865-6262, Shannon@yakama.com

Dave Lind, Yakama Nation, Nelson Springs Research, 771 Pence Road, Yakima, WA, 98902, (509) 965-6270, lind@yakama.com

Tom McCoy, Yakama Nation, Toppenish Fisheries Resource Management, P.O. Box 151, Toppenish, WA 98948, (509) 865-6262, tmccoy@yakama.com

Scott Prevatte, Yakama Nation, Toppenish Fisheries Resource Management, P.O. Box 151, Toppenish, WA 98948, (509) 865-6262, prevatte@yakama.com

Brandon Rogers, Yakama Nation, Toppenish Fisheries Resource Management, P.O. Box 151, Toppenish, WA 98948, (509) 865-6262, brandonr@yakama.com

Summary of Presentation:

Yakima Basin steelhead adult counts have been conducted at Prosser Dam beginning with the 1983-84 run, while counts at Roza Dam commenced with the 1991-92 run. This task is part of the ongoing monitoring and evaluation program under the Yakima/Klickitat Fisheries Project (YKFP).

There are three primary projects related to steelhead currently being conducted in the Yakima Basin that are funded by BPA, but are not directly under the guise of the YKFP. The Yakima Watershed Restoration-Satus Creek (project #199603501) was initiated in 1996. The stated purpose of this project is to "improve fish habitat in the Satus Creek watershed (Yakama Indian Reservation) by ameliorating the major land-use impacts." Associated with the habitat restoration activities are two important steelhead monitoring tasks. These are operation of a smolt trap near the mouth of Satus Creek since 1997 and continued annual redd surveys, which date back to the early 1980's.

The second project is the Upper Toppenish Creek Watershed Analysis (project #199803300), which began in 1998. The objective of this project is to, "analyze the key hydrologic features of the upper Toppenish Creek watershed which have a spatially disproportionate influence on runoff processes. Determine those areas with high storage capacity and implement restoration plans." In addition to the hydrological information being gathered for this project, complete annual redd surveys of the entire Toppenish/Simcoe subbasins are conducted, as well as, the monitoring of steelhead parr and smolt outmigration since 2000.

The final project is the Ahtanum Creek Watershed Assessment (project 199901300) that was initiated in 1999. The stated purpose of the project is to, "map irrigated lands & water delivery stems, measure water discharge & temperature. Determine efficiency of irrigation water conveyance and use. Gather data on stream channel condition, riparian function and salmonid populations in the Ahtanum Creek watershed." Information is being collected on steelhead through project monitoring and evaluation activities, which consist of operating a rotary trap in lower Ahtanum Creek, as well as, conducting redd surveys in portions of the subbasin.

A brief status of these activities and results will be presented at the 2003 YKFP PAR.