

Log of Recent Habitat Surveys

Different organizations have conducted a small number of independent surveys of Tryon Creek during the past decade. Listed below are the names of those we were able to locate. Transcripts are included either within the main report or in electronic Appendices, as noted.

1994 -- *Tryon Creek Survey*. Professor Charles Ault, Jr. with Lewis and Clark College students. Surveyed from Marshall Park to Willamette River only. Utilized "Streamwalk" EPA protocol. Complete document available as an electronic appendix, StreamNet Library website.

1997 -- Report on Tryon Creek State Park area only. Commissioned by Friends of TCSP--Pacific Habitat Services.

1997 -- *Upper Tryon Creek Corridor Assessment 1997*. Portland Bureau of Environmental Services – Main creek and tributaries within Portland. Includes data on natural resources, channel conditions and hydrology. Technical evaluations, hydrological modeling. The creek is viewed as part of the stormwater conveyance infrastructure system. Five private consulting firms performed the assessment for BES. Complete document will be available as an electronic appendix, as will be the *BES Management Plan for Tryon Creek*.

2000 -- Habitat Inventory Assessment. Oregon Department of Fish and Wildlife, commissioned by the Portland ESA-Team. Reaches include Tryon Creek from Marshall Park to the Willamette River, as well as the mid-to lower Arnold tributary only. Complete basic data will be available in an electronic appendix.

2001 – *Tryon Creek PFC Assessment*, National Riparian Service Team, commissioned by West Mult. SWCD. A survey of physical dynamics, it includes Tryon mainstem starting from I-5, going southeast downstream to the mouth of creek, and including the Arnold and Nettle Creek tributaries only.

2001 -- *Environmental Baseline Conditions and Limiting Factor Analysis for Anadromous Salmonids*. B. Klatte, Robert Ellis, PhD, for West Mult. SWCD. Lower Tryon Creek only. Utilized Washington Conservation Commission LFA protocol, as well as the NMFS "PFC Matrix and Checklist" protocol. Used ODFW 2000 Survey Reaches.

Note: The earliest stream habitat survey available was a limited one prepared for Metro in 1982 by Peter Bahls, Middlebury College: *The Potential for Salmon and Trout Enhancement Projects on Two Urban Streams: Mt. Scott Creek and Tryon Creek (ODFW-STEP project proposal)*. The study was financed under a U.S. EPA Area-wide Waste Treatment Management Planning grant. The writer mentions the Tryon wastewater pipe as having been installed in the state park during 1978. It is included in this publication as a reprint.

We also included in this publication the previously unpublished *General Stream Survey and Utilization of Spawning Habitat of Tryon Creek by Coho and Winter Steelhead*, 186-87, by Stephen Warner which describes his use of the ODFW-STEP protocol. Still missing from this publication, but intended to be included soon, are previously unpublished field records from ODFW electrofishing surveys (D. Caldwell, ODFW) which were performed annually from 1995 to 1997.

Summaries of Three Recent Habitat Surveys



Creek within the state park, below Iron Mountain Bridge, Nov. 2001.

A Comparison of Recent Physical Habitat Surveys: Survey 1. Portland Bureau of Environmental Services

Monitoring Sites	Reach or Sub basin	Agent, Date	Title or Description	Issues & Characteristics	Recommendations
Multiple: Upper Tryon mainstem, and Falling, Oak, Quail and Arnold tributaries	Multiple Reaches (mainly within City of Portland)	City of Portland BES, 1997	Upper Tryon Creek Corridor Assessment, Lee et al, 1997)	<p>Identified Water Quality, Hydrology and Habitat issues.</p> <p>Re WQ: nutrients, sediments, “elevated summer temps. As per ODEQ 303 (d) listing;</p> <p>Hydrology: development impacts from increased stream velocities, bank erosion, also severe localized damage e.g. undercut banks, land slides, exposed sewer pipes, undersized culverts;</p> <p>Habitat—degradation and loss; non-native invasive species.</p>	<p>Recommended: “Rehabilitation measures” for most-degraded middle reaches of mainstem; and “improvement projects” on nine “high-priority” reaches, such as certain high-resource or high-impact areas. Recommended rehabilitation measures included: rock armoring, bank stabilization via tree/brush plantings, boulder placement, log and rootwad anchoring, bank re-grading, relining channel beds with logs, rock gravel.</p> <p>Also recommended for hydrologic monitoring in reaches used by BES for pipe infrastructure and/or open-ditch stormwater conveyance; identification of areas for priority protection.</p> <p>Recommended that city avoid high density urban growth unless no net increase in runoff; and to control peak flows from development in the nine high-priority reaches. Report focused on stream corridor only, asked for more planning for uplands.</p>

Survey 2. Physical Habitat – WM-SWCD (NMFS-PFC method)

Monitoring Sites	Reach or Sub basin	Agent, Date	Title or Description	Issues & Characteristics	Recommendations
<p>This study included four reaches: the Lower Tryon mainstem, lower Nettle and Arnold tributaries. (Reaches were based on ODFW’s habitat survey in 2000)</p>	<p>(Reach locations conform to ODFW’s)</p>	<p>B. Klatte, Fisheries Biologist --with guidance from Jim Turner, NMFS staff.</p>	<p>PFC Matrix of Pathways and Indicators (NMFS), also, Limiting Factors Criteria (as per Washington Conservation Commission’s)</p>	<p>Issues were identified reach by reach. Generally speaking, NMFS “PFC Matrix and Checklist” evaluation results indicated that the watershed is “no longer properly functioning” in regard to nearly all parameters important to salmonid fish species. Such as, among others, degraded water quality especially including high summer temperatures, excessive fine sediments. Also, numerous fish passage barriers; and lack of adequate large woody debris instream and in the riparian zone. General problem of floodplain “disconnection” due to bank hardening projects, channelization and channel incision.</p>	<p>Recommendations: Upgrade fish passage at problem culverts; Reduce fine sediment loading from headwaters tributaries; Lower summer stream temperature though riparian shade enhancement in upper basin, and create more deep pool habitat for winter refuge for juvenile salmonids.</p>

Monitor/Site	Reach	Agent, Date	Survey 3	Issues & Characteristics Summarized
<p>ODFW Study area is mid-to-lower stream system, including Tryon main creek and Arnold tributary</p>	<p>(Reaches correspond to WM-SWCD, B. Klatte survey.) Descriptions: Reach 1: Confluence of Tryon with Willamette River, ends at west end of State Route 43 culvert crossing (392 meters) Reach 2: West side of Route 43 culvert to confluence of Nettle Cr. With mainstem (Iron Mt. Bridge in state park) (1,309) Reach 3. Nettle Cr. confluence with Tryon mainstem in state park, to stream crossing of SW Boones Fy. Rd. (2,621) Reach 4: Confluence of Arnold Cr. with Tryon mainstem Tryon upstream to SW Lancaster crossing (2,157 meters).</p>	<p>ODFW Survey/ Sponsored by City of Portland</p>	<p>ODFW Aquatic Inventory Project: T. Tappenbeck, A. Vaivoda, 2001</p>	<p>Survey area land uses include: <i>industrial, state park, city park (urban and) rural residential.</i> Willamette river confluence is fairly open. Culvert crossings are likely biggest issue. Reach 1--Stream habitat is dominated by scour pools (47%) and riffles (20%); stream substrate distrib. Equally among fine sediments, gravel and cobble. Avg. residual pool depth—0.64 meters; wood volume low; deciduous tree species most common with some small diameter -coniferous. Riparian zone—poor, Channel—incised, u-shaped, beaver dam; Potential refugia—deep pools and and few pieces of large wood; Current biological use—beaver activity, rodents; Other—culvert under state highway 43 is steep with baffles. Reach 2--Constrained channel—alternating terraces and hillslopes within a broad valley. Land use is designated greenspace--park. Unit gradient avg.—1.3%; Habitat—scour pools (51%), dammed pools (25%) and riffles (17%). Stream substrate is equally distrib. Among fine sediments, gravel and cobble. Avg. resid. Pool depth is 0.59 meters. Wood volume—low (2.8). Decid. most common, largest conifers aprox. 50-90 cm dbh. Riparian—very good. Channel—many seeps and springs. Beaver, steep banks, wide areas for water storage. Better floodplain interaction here than in typical urban creeks. Potential refugia—very little off channel habitat. Some large wood. Biological use—current beaver activity, beaver pools. Other—sewage pipe is above ground in lower reach 2. Reach 3: Constrained channel—terraces within broad valley. Land use—desig. Green space, park. Str. Habitat—scour pools (57%) and riffles (29%). Str. substrate equally distrib. Among seds., gravel, cobble. Avg. resid pool depth 0.62 m. Wood vol.—low. Decid. trees most common. Riparian and channel are both similar to reach 2. Refugia—many small tribs. Good for off-channel habitat in high-flow periods. Bio. Use—indications of beaver, mink, muskrat/nutria, fish noted. Other—Boones Ferry Rd. long steep culvert not very fish accessible. Reach 4—Channel constrained by alternating terraces and hillslopes within a broad valley. Land use is Marshall city park and residential. Str. hab. dom. by rapids (37%) and scour pools (30%). Str. similar to reach 2, 3. Avg. resid. pool depth—0.46 m. Wood vol.—low. Decid. trees most common. Riparian—buffer narrower. Some lg. Trees, but houses encroaching on stream channel. Channel—more bedrock exposure; waterfalls and rapids in city park are possible natural fish passage barriers. Lots of erosion. Many bank areas stabilized or anchored with retaining walls by property owners. Refugia—very little. Bio. Use—none noted. Other--numerous human impacts and channel modifications.</p>