Beaver Creek

The State of the Watershed: Spring 2011

Summary

Beaver Creek joins the Sandy River downstream of Glenn Otto Park. The stream is composed mainly of the mainstem, which originates in the agricultural lands southeast of Troutdale, and Kelly Creek, a major tributary that forms the Mt. Hood Community College reservoir. Kelly Creek joins the mainstem below the reservoir. The headwaters of Beaver Creek flow intermittently in the summer. Many native fish including Chinook and coho salmon and rainbow trout live in Beaver Creek. However, high water temperature, turbidity, and degraded stream buffers impact overall stream health, which ranges from severely to moderately impaired. Bacteria, pesticides, and nutrient inputs are a continuing concern. More data is needed to better understand the biological health and water quality of the stream.

CITY OF GRESHAM 1905

MULTNOMAH COUNTY

EAST MULTNOMAH soil & water conservation district

People on the Land

Who lives in the Beaver Creek watershed?

The water that hits your property flows downhill and is part of a larger area, known as a watershed, which drains to a stream, river, wetland, or lake. The map below shows the Beaver Creek watershed in relation to city boundaries. Activities on all of the properties in a watershed affect water quantity and quality. Ultimately the responsibility for improving water quality rests with everyone who lives, works, or recreates in the watershed.

The streamside area, or "riparian zone", is perhaps the most important feature on the land to ensure stream health. Native trees and shrubs help shade the stream and filter sediment, provide habitat for birds, insects and wildlife, and provide trees that ultimately fall in the stream and create shelter for fish.

Erosion that results in sediment entering Beaver Creek could lead to excessively turbid (dirty) water and an increase in toxins due to the fact that many pesticides and pathogens attach to soil particles.

In urban areas there are additional contaminants of concern including metals, oils and combustion by-products from vehicles.

Impacts from Land

- Stormwater runoff includes nutrients, metals, oils, bacteria, pesticides, sediment
- Agricultural runoff includes nutrients, bacteria and pesticides attached to sediment
- Poor riparian buffer = loss of stream health and water quality

Land Use

Total population in Beaver Creek watershed: about 62,000 people

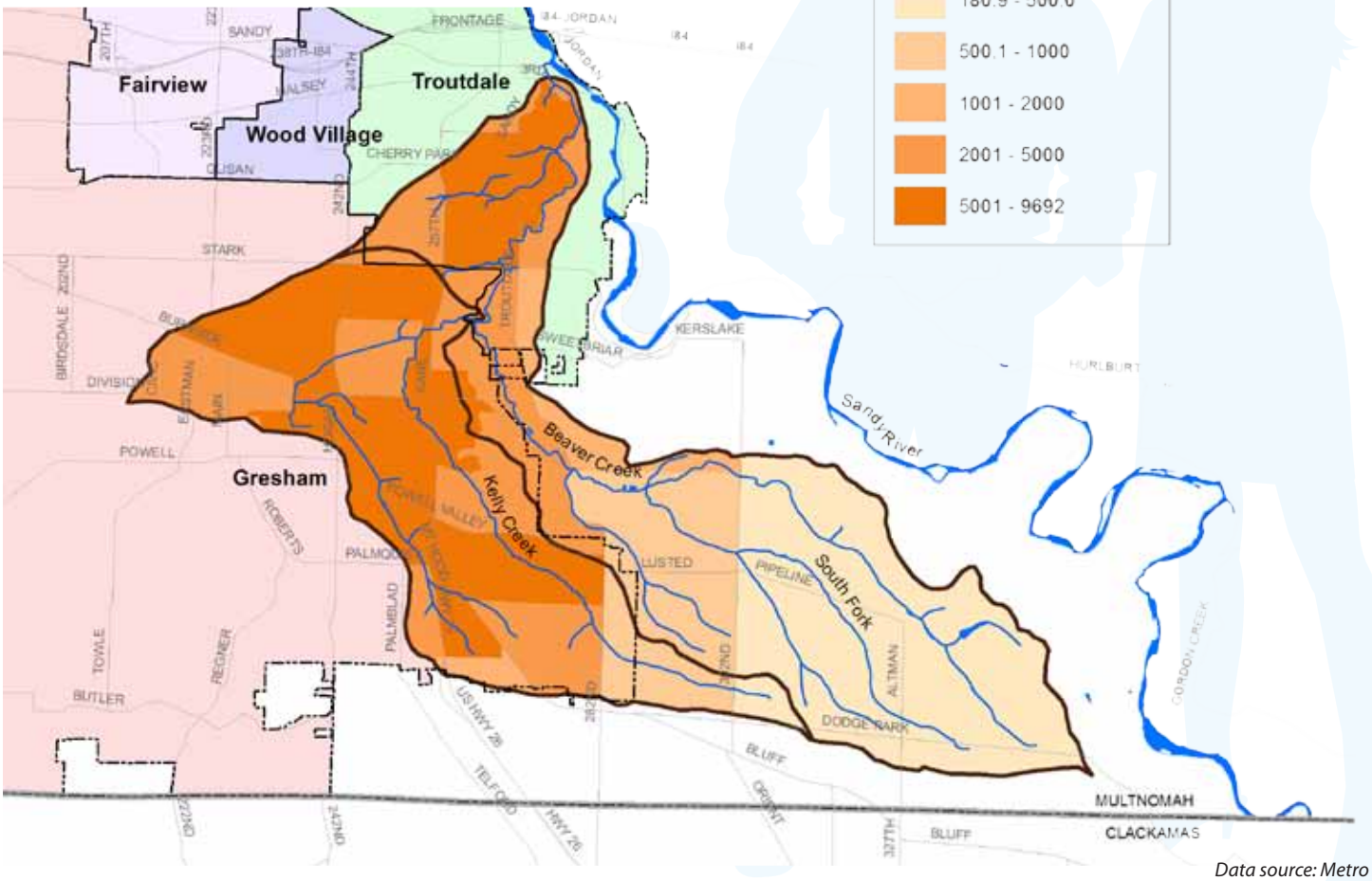
Total watershed area: about 13.5 square miles

Forest and farm use: about 3,600 acres (5.6 square miles)

Urban use: about 4,300 acres (6.7 square miles)

Parks and open space: about 740 acres (1.2 square miles)

Beaver Creek Watershed



Data source: Metro

Water Quality

What's in the water?

Runoff can carry pollutants to Beaver Creek from driveways and streets, as wells as farm roads and fields. The Federal Clean Water Act requires that surface waters meet water quality standards, and a plan to clean up the water must be developed and implemented if standards are not met. Beaver Creek does not meet the water quality standards for temperature and fecal bacteria. High summer stream temperatures affect the survival of salmon species and other native fish. High bacteria levels can lead to illness in people that have contact with the water.

DATA GAPS:

Need to identify sources of fecal bacteria

Need to assess whether pesticide runoff is a concern

Need to monitor turbidity and work to remove sediment sources

LONG TERM MONITORING NEEDS:

Temperature monitoring in key reaches

Track bacteria levels in key reaches over time

There is currently no pesticide data available for Beaver Creek, however there is reason to believe pesticides are an issue in the stream. Pesticide contamination is widespread in the neighboring waters including Johnson Creek, the Clackamas River, and its tributaries. Pesticides are often attached to soil particles, and the high turbidity in Beaver Creek during storm events raises concerns of likely pesticide input.

The stream flow in Beaver Creek is significantly different in the summer and winter. Summer stream levels are much lower, with surface flow discharging from near the Division Street and Troutdale Road intersection in the driest months of most years. However, coho and rainbow trout are found holding in year-round pools in the upper area of Beaver Creek where the stream appears dry.

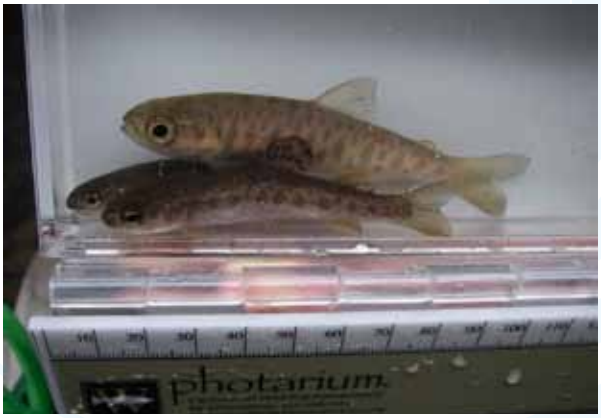


Photo credit: Wild Fish Conservancy

Water Flow

Data Source: USGS

Winter mean streamflow (2000-2009): 32 to 60 cfs*

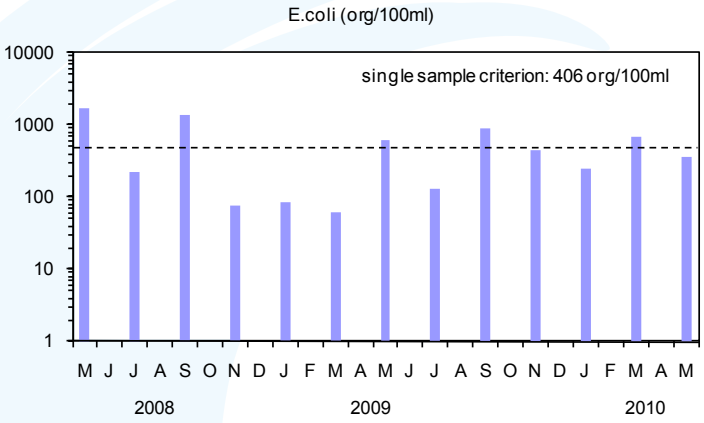
Peak winter streamflow (2000-2009): 361 to 1,080 cfs

Summer mean streamflow (2000-2009): 1 to 3 cfs

*cfs: *cubic feet per second*

Bacteria

Fecal bacteria (*E. coli*) is an indicator of water-borne pathogens, which create risks for human recreation and contact. *E. coli* counts in Beaver Creek during 2008-2010 were typically within the single sample water quality standard at the intersection of Troutdale Road and Division Street. However, the standard was exceeded at times. Wildlife, livestock, failing septic systems, and pet waste are common sources of fecal bacteria.



Data source: Multnomah County

Creek Water Temperatures

Data Sources: Student Watershed Research Project, City of Gresham, and Multnomah County

Year	Location	Max. Temp. (F)	# of days exceeding WQ standard (64° F)
2002	Beaver @ Kiku Park	72.3°	55
2004	Beaver @ Kiku Park	72.0°	61
2006	Beaver @ Kiku Park	72.9°	31
2007	Beaver @ Kiku Park	70.5°	40
2009	Beaver @ Troutdale/Division	85.6°	74
2009	Kelly @ 16th Dr.	70.0°	24

Fish and Aquatic Life

What lives in the stream?

Despite degraded stream habitat and water quality, fish surveys by Multnomah County and Mount Hood Community College have shown that Chinook and coho salmon and rainbow trout actively use Beaver Creek. County fish surveys found native fish in every habitat type surveyed. Many beavers are actively building dams in the creek which provide refuge for coho juveniles and trout. These fish need beaver dams to survive.

Multnomah County surveyed fish in Beaver Creek in summer 2010 and found 13 different native fish species, including juvenile coho and rainbow trout, throughout the watershed. Five non-native fish were also found, including large mouth bass, yellow bullhead, and mosquito fish. Kelly Creek was not surveyed for fish because upstream migration of fish is blocked at the Mount Hood Community College pond, and no salmon are found in Kelly Creek.

Mount Hood Community College students conducted salmon spawning surveys beginning in the fall of 2010 and found many live, adult Chinook and coho salmon in the reach between Troutdale Road and Cochran Road.

More comprehensive surveys are needed to adequately assess the numbers of salmon that use Beaver Creek.

Several road culverts hamper the upstream migration of fish. The County is currently working on plans to improve the fish passage at major road crossings.

Freshwater mussels known as "Oregon floaters" are found in the lower creek. Not much is known yet about this species' presence in the stream.

Photo credit: Wild Fish Conservancy

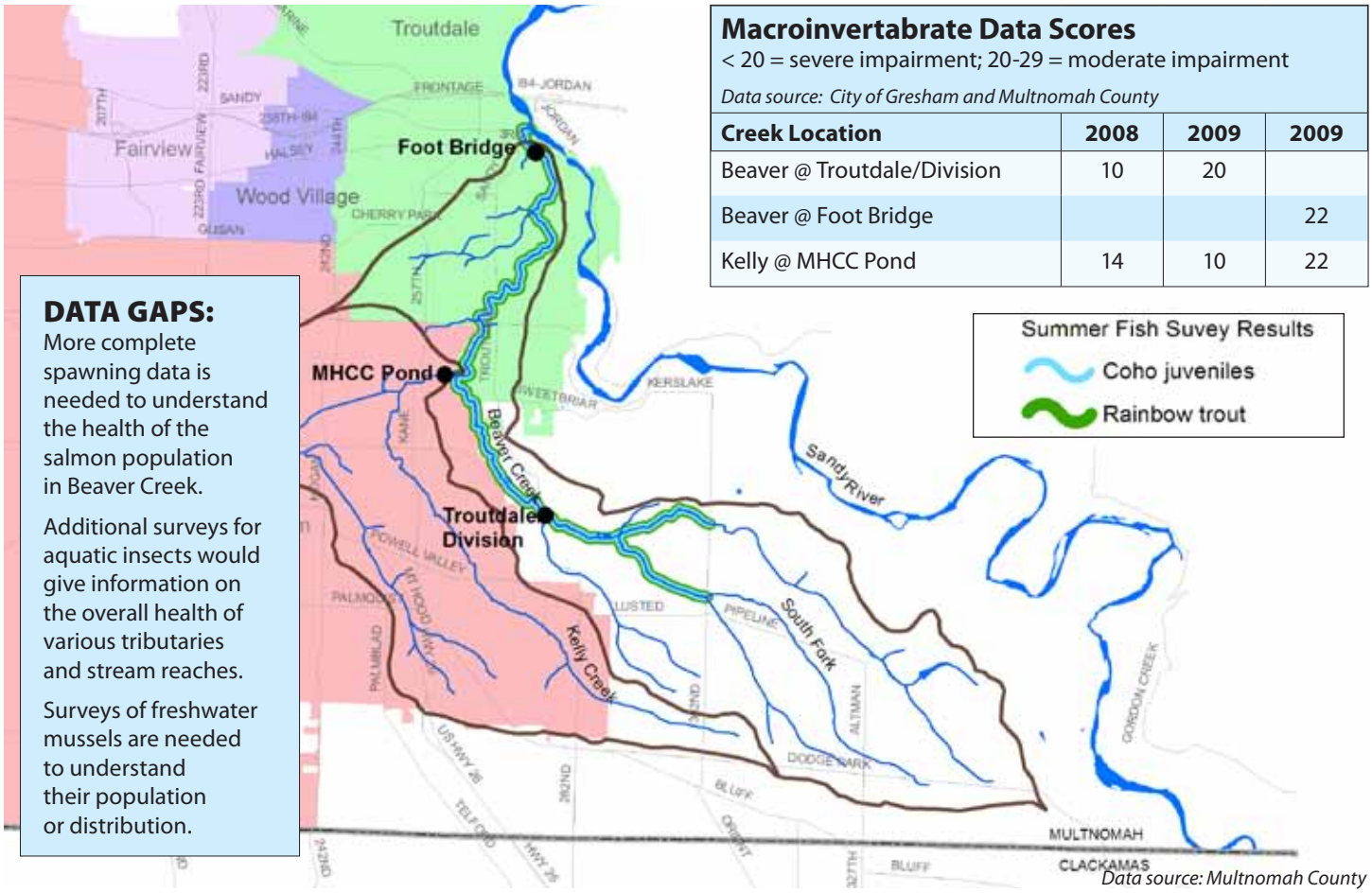
Aquatic insects and other aquatic invertebrates are indicators of the overall water quality in a stream. Surveys of these aquatic insects conducted in 2009 and 2010 revealed very low diversity of aquatic species, indicating poor water quality. Impacts to streamside habitat along with high temperatures and excessive sediment (and associated pollutants) are common causes of low aquatic insect numbers.

Macroinvertabrate Data Scores

< 20 = severe impairment; 20-29 = moderate impairment

Data source: City of Gresham and Multnomah County

Creek Location	2008	2009	2009
Beaver @ Troutdale/Division	10	20	
Beaver @ Foot Bridge			22
Kelly @ MHCC Pond	14	10	22



Data source: Multnomah County

DATA GAPS:

More complete spawning data is needed to understand the health of the salmon population in Beaver Creek.

Additional surveys for aquatic insects would give information on the overall health of various tributaries and stream reaches.

Surveys of freshwater mussels are needed to understand their population or distribution.

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