

Matanuska-Susitna Basin Salmon Habitat Partnership

Site Tour, August 28, 2019

Cottonwood Creek Watershed

Cottonwood Creek as Salmon Habitat

East Settlement Avenue

Presenter: Sarah Wilber and Samantha Oslund (Alaska Department of Fish and Game)

Description: Cottonwood Creek is a groundwater fed system comprised of two first order streams and ten lakes. The lakes and ponds moderate any extreme flows and minimize the possibility of flooding. Temperature monitoring, water quality sampling, and juvenile salmon surveys have been the focus of research on this waterbody as development in the Matanuska-Valley area increases and we have focused concerns on climate changes and what this may mean for fish habitat.



Cottonwood Creek is a producer of coho, and sockeye primarily. Other indigenous species include Chinook, pink, and chum salmon, rainbow trout, Dolly Varden, longnose sucker, sculpin, and threespine stickleback. More recently, northern pike were found in Anderson and King lakes. In order to prevent the spread of this invasive fish, a rotenone

project is slated to begin next summer. In addition to invasive species, Cottonwood Creek faced another challenge this summer, with hot temperatures and low water resulting in a die off of sockeye salmon.

A sport fishery for coho and sockeye salmon occurs on Cottonwood Creek and the annual harvest of coho averages between 650-1,000 fish. The fishery has been restricted since 1999 to fishing downstream of markers located 1 mile above Hayflats Road on weekends, only between 5:00am-10:00pm. The harvest on this system closely correlates to Wasilla Creek. Major coho fisheries on the Knik arm have been Little Su and Jim Creek, the second largest coho fisheries in the state behind the Kenai River. Production of coho and sockeye contributes to the Northern District commercial fisheries,

Fish and Game monitors coho escapement each fall. Index surveys are conducted by staff in October to monitor populations. Cottonwood Creek is one of nine streams monitored by foot in the Northern Cook Inlet.

Presenter: Laura Eldred (Alaska Department of Environmental Conservation)



Polluted stormwater runoff being discharged directly to Lake Lucille in Wasilla.

Description: Just like humans need clean air to breathe and be healthy, fish and other aquatic life need clean water to survive. One of the biggest threats to water quality is polluted runoff from roads, highways, bridges, and parking lots entering area creeks and lakes. This polluted runoff is not treated in a wastewater treatment plant before being discharged to the creek or lake. This means the aquatic life is in contact with this pollution and often times ingesting it. Runoff pollution tends to concentrate in urban environments resulting in potentially life-threatening conditions for fish and other aquatic life.

The Mat-Su Salmon Habitat Partnership and partner organizations are working to measure water quality and identify any imbalance in the chemistry or other measures that may signal a problem in our local waterways as well as identifying locations where stormwater is entering these waterways. Partners are identifying potential solutions on how to fix these areas of runoff pollution and restore water quality. Challenges include changing the traditional

way stormwater is handled (directly shunting it to creeks, streams, and lakes) to incorporating other techniques (such as nature-friendly green infrastructure) at the design phase or retrofitting areas of known concern. We've all heard that it's cheaper to prevent a problem from occurring in the first place than to try and fix it later. This adage is certainly true when trying to restore water quality after a pollution problem is identified. Prevention is the key!

Presenter: Jessica Johnson (Alaska Department of Fish and Game)



Figure 1. Site Conditions Prior to 2010 project, looking west towards the parking lot.



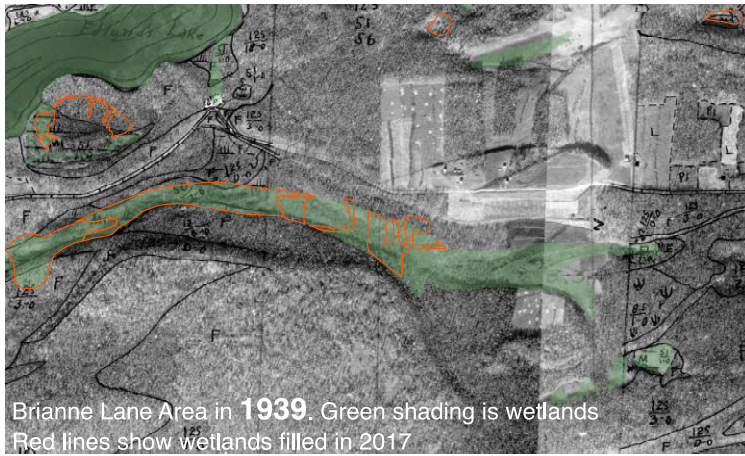
Figure 2. Project site in July of 2019, looking west towards the parking lot.

Project Description: Wasilla Lake is one of the nine lakes that Cottonwood Creek flows through and includes Newcomb Park - a popular area for swimming during the summertime. The City of Wasilla, Mat-Su Borough, Envision Mat-Su, USFWS, and ADF&G all worked together to complete revegetation at this location in 2010 and 2012. In 2010, 60' of brush layers and 40' of trenched willows were completed, along with a split rail fence. In 2012, partners completed 110' of trenched willows and 40' of live staking.

Having a healthy intact riparian zone (shoreline area) provides superior habitat for salmon and other wildlife. The native trees and grasses found in this zone provide shade and buffer water temperatures, insects that fall into the water from the vegetation provide food to fish, fallen wood provides fish habitat, and finally the riparian zone helps reduce pollution by filtering runoff before it enters the water. Since 2008 partners have worked together on 65 rehabilitation and protection projects in the Mat-Su Borough to help ensure Mat-Su salmon have healthy habitat to spawn, rear, and overwinter in.

Presenter: Mike Gracz (Kenai Watershed Forum)

Project Description: Wetlands cover about 40% of the area of the Cook Inlet Lowlands. These aquatic resources, which are found at the broad intersection between groundwater and surface water, provide green infrastructure. For free, they maintain water quality and quantity as well as habitat for fish and wildlife. Therefore, there is a trade-off between gaining prosperity by filling wetlands and losing value because the infrastructure that supported a clean productive well, for



Brianne Lane Area in 1939. Green shading is wetlands
Red lines show wetlands filled in 2017



The same area in 2017

example, must be replaced by something more costly. Numerous studies in small urbanized watersheds find that where hardened surfaces exceed anywhere from about 2-15% of the land, sharp declines in stream quality can be expected.¹

To determine what percentage of wetland infrastructure has been compromised in the Core Area of the Matanuska-Susitna Borough, a project funded by Kenai Watershed Forum, Mat-Su Borough, and the National Fish Habitat Partnership compared historic aerial photos to aerial photos acquired in 2017. In the Cottonwood Creek watershed, less than 5% of all wetlands have been filled with hardened materials. However, more than 10% of two different types of wetlands have been filled.

Different types of wetlands will support stream quality differently according to how water flows through them and the nature of the surrounding geology. Here at Brianne Lane is a type of wetland that is supported by high rate of groundwater flow through unconsolidated glacial river sediments. Among other things, this type of wetland will filter and retain precipitation before discharging it to the creek as groundwater.

At Brianne Lane, the vegetation is impacted in the part of the wetland that has not been filled. The most obvious impact is the dead and dying birch trees whose root systems are now flooded due to the fill that was discharged into the lower part of the wetland, which acts as a dam to shallow groundwater flow. In addition to killing the trees upstream, the fill will direct runoff straight into Cottonwood Creek, carrying pollution and causing higher peak water levels during rains and lower low water during droughts. That change in flow patterns and increase in pollution will harm salmon habitat and contribute to increased impacts to public and private infrastructure.

Presenter: Gillian O’Doherty (Alaska Department of Fish & Game), Jim Jenson/Alex Senta (Mat-Su Borough) and Trent Liebich (U.S. Fish and Wildlife Service)

Project Description: Fish passage has been a long-term focus for restoration activities in the Mat-Su Borough for over 15 years. Alaska Department of Fish and Game (ADFG) has assessed 567 crossings on fishbearing streams with about 70% of them some type of barrier to fish movement.



Cottonwood Creek culverts – before.



Cottonwood Creek culverts – after.

Riverdell Drive fish passage project is one of over a hundred fish passage projects carried out to date in the Mat-Su Borough. This original crossing was fairly typical of residential road development in the area, when the road was built several smaller culverts were placed into a large stream. Over time that type of structure causes a partial blockage of fish movement, erosion of the banks and bed of the stream and icing and flooding issues on the roads. Replacing the undersized culverts with a single large culvert and a constructed stream channel designed to mimic the natural channel allows for the free movement of flood flows, sediment, fish and other aquatic organisms. It also reduces or prevents ice damming in the winter. At Riverdell, due to the channel type, a second flood plain relief culvert was also installed that allows for animal passage.

This project was supported by the Mat-Su Borough, U.S. Fish and Wildlife Service, National Fish Habitat Partnership and Alaska Department of Fish and Game.

Presenter: Libby Kugel and Amanda Hults (Great Land Trust)

Description: Great Land Trust (GLT) is the local land trust; a non-partisan, nonprofit organization founded in 1995 by Alaskans. GLT works in voluntary partnership with landowners, agencies, communities and other partners to conserve lands and waters essential to the quality of life and economic health of Alaskans.

GLT's focus is on land conservation for community benefit – we work to protect wetlands that provide clean drinking water, intact healthy habitats for salmon and wildlife, miles of coastline for fishing and outdoor classrooms, to establish public access to the outdoors and open space, and to help bring awareness to local residents on ways they can contribute to conservation.



Cottonwood Creek outlet in Knik Arm

Over the past 24 years, GLT has strategically conserved over 8,500 acres of important local lands in the MSB, including over 45 miles of important shoreline. Many of those acres are now open to the public for traditional and recreational use. To identify these important lands and priority riparian and estuarine habitats, GLT created a science-based model which helped us strategically identify the most productive salmon habitats in the MSB to target our conservation dollars.

At this stop, we will look at and discuss habitat conservation and see examples of tools we use to help spread the word about protecting our important local salmon habitat and how individual citizens play a vital role in the success of salmon conservation in the MSB.

To learn more, please visit GLT's website at: <http://greatlandtrust.org/> and to view an electronic copy of the "Living Next to a Salmon Stream" booklet: <http://greatlandtrust.org/wp-content/uploads/2014/10/GLT-Living-Next-to-a-Salmon-Stream.pdf>

¹ CWP 2003. Impacts of impervious cover on aquatic ecosystems. Watershed Protection Research Monograph No.1. Center for Watershed Protection. Ellicott City MD, USA. 142 pp.

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