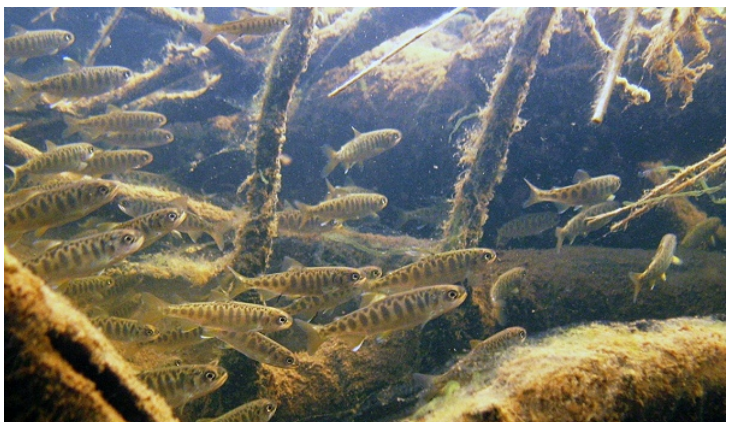
Protecting Anchor River streambanks for juvenile salmon, people, and cleaner water

This article is about protecting and improving streambanks in the Silverking Campground, which is just below the Old Sterling Highway bridge, in the Anchor River State Recreation Area. There's not much streambank between the parking lot and the river channel in Silverking—as shown on the map below. What's there is important and worth protecting.

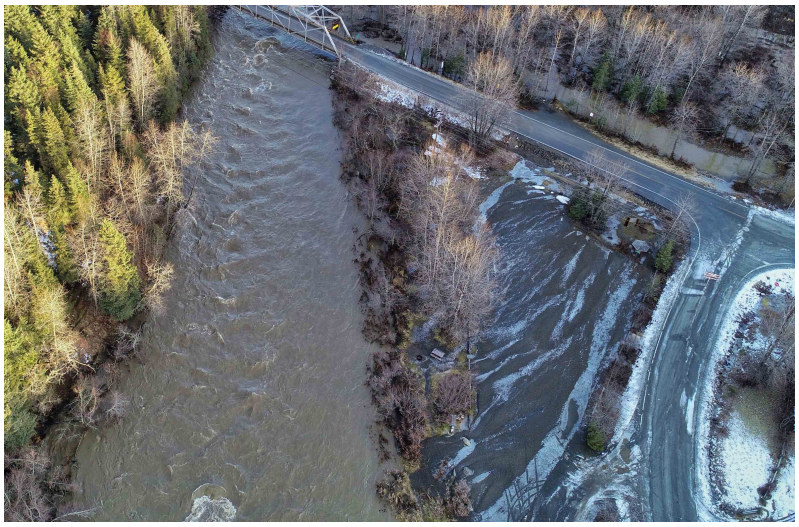
Why streambanks matter

Since 2018, Homer Soil and Water has received ACWA funding from the Department of Environmental Conservation to work with State Parks, ADF&G, USFWS, the Anchor Point community, and other partners to explore how best to protect streambanks in Silverking Campground. (ACWA stands for Alaska Clean Water Actions program.) Plants growing along the river in Silverking CG hold the streambank together and protect it from erosion. They also filter out pollutants washing into the river from the parking lot and the road—thereby improving water quality. And maybe most importantly for those of us who love salmon, vegetation along the river and within or above the flowing water is essential for survival of baby salmon rearing in the lower Anchor River. Streambank plants provide these juvenile salmon with food, concealment from predators, shelter from strong currents, shade from overheating sunlight, and visual barriers that reduce competition among them when they defend little territories for resting and feeding. Four species of salmon rear in the Anchor River—coho, chinook, chum, and pink—and all but pink spend from 1 to 3 years rearing in the river's mainstem, tributaries, or both. For a study of salmon use of the lower Anchor River, click here. For a video showing juvenile salmon sheltering among willow leaves and branches in British Columbia, click here.



What threatens streambank vegetation?

From the fall rainy season through spring meltoff, streambank plants are subjected to storms, flooding, ice flows, and ice jams. Surprisingly, except for occasional events that gouge out a chunk of bank here or strip off a chunk there—for example, when a tree falls into the river and its rootwad rips out of the ground, or when ice chunks carried by floods shear off streamside plants—vegetation handles these challenges remarkably well. The photo at right shows the huge amount of sediment left in Silverking in December 2020 after floodwaters swept across the parking lot—but as many photos below show, streambank vegetation handled this sediment dump and flooding without serious damage.



What riverside plants can't handle well is what happens during the summer growing season in popular campgrounds and recreation areas near the river's edge. That's when summer visitors arrive. To enjoy the river and to fish, visitors walk along the river's edge—as close to the water as possible—and clamber into and out of the channel. This trampling removes plants stem-by-stem and root-by-root exactly at the time they should be extending roots and adding to stems and branches.

As shown in the **photo at left**, visitors walking along the river's edge destroy all the vegetation in the pathways they create, while also compacting the soil so that rainfall and runoff flow along the path, eroding it deeper instead of infiltrating into the ground. Over time, these cleared pathway areas slowly pull apart and slump down the bank into the river, where they're washed away, eliminating streamside habitat and widening the river. (As sections of river grow wider, the water gets shallower, leading to warmer water temperatures that can be dangerous for salmon.) When one trail disappears, visitors create a new pathway upslope, starting the process over.

Where visitors make trails into the river—as seen in the **photo below**—or scramble or slip down the bank to access the water, they can create denuded slides that erode into deep gouges.

In Silverking Campground, these problems are worsened because there's so little bank between the active river channel and the parking lot. During flooding—as shown above—sediments, road oil, and other debris is flushed into the river.

Exploring ways to restore Silverking streambanks

Visitors come to the Anchor River State Recreation Area because they love the river—love walking along its banks or scrambling into the water, both for fishing and for the sights, sounds, and sensations of flowing water in a natural setting. The lower Anchor River is a beautiful place to spend time alone or to gather with friends and family. So how can we make these experiences possible without destroying the streambank vegetation that sustains the river's water quality and salmon populations? If we can figure out ways to enhance visitor enjoyment while also protecting streambanks, all of us win BIG, especially little salmon!

The first thing Homer Soil and Water wanted to find out was whether streambank revegetation practices that have worked on other rivers could work on the Anchor despite its dynamic nature. In June 2019, Homer Soil and Water, USFWS, and an experienced soil bioengineering contractor led a team of volunteers in revegetating two sites in Silverking Campground. Site 1, the larger site, is close to Silverking Campsite #14 and is shown on this page before and immediately after revegetation. Site 2, shown on the following page, is downstream and just west of where the Silverking parking lot ends. The location of both sites is shown on a map that follows.

Photos below – Site 1 before revegetation
(These photos are looking upstream; the picnic table visible in the lower photo is at Campsite #14 and appears in several other photos.)

Photo below – Before and After photos of Site 1 from educational signage (these photos are looking downstream)

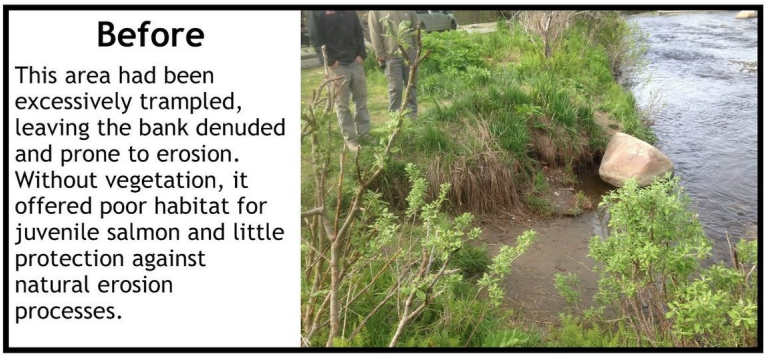


Photo top left – Site 2 before reveg, looking upstream
Photo immediately below – Site 1, a layer of willow cuttings

Revegetation involved creating a new vegetated streambank in layers, with compacted soil anchoring willow cuttings planted at an angle extending out from the bank (see **photos below**). The process can be seen step-by-step on Youtube—just search for "*Anchor River Silverking Campground streambank restoration*." Layers are labeled on the **bottom photo below** from Site 1, which shows the site 1 month after installation. Temporary fencing and signage are also shown, which educated visitors about the process and protected the sites until late spring 2020. The **close up photo below** shows willow cuttings about a month after planting.

What has happened since?

The question was, would the revegetated banks in Silverking Campground withstand the stormwater flooding, icing, and ice jam flooding typical of the Anchor River. Photos tell the story best.

Site 1 on April 24, 2020, after ice jam flooding – The planted area is largely intact.

Site 2 on April 24, 2020, after ice jam flooding – The planted area is largely intact, although some of the vegetation mat added as the top layer has washed away.

Site 1 on June 20, 2020 – The revegetated site is doing well, but visitors are creating a new steep access slide down into the river just upstream of the revegetated area.

Site 2 on June 20, 2020 – Winter erosion exposed this "soil lift," installed above the bottom layer of willow cuttings; visitors then began using it as a step to get down to the river, further destroying vegetation and causing accelerated erosion.

When the temporary fencing was removed around the sites, the soil lifts became handy steps down the bank for visitors wanting to get into the river. This kind of activity was anticipated and is the reason for planning to install stairs into the river, as outlined below.

Site 1 during and after ice jam flooding this April 2021.

April 22, 2021 – Ice jam flooding, Campsite #14. The revegetated area is covered by floodwaters and ice.

April 22, 2021 – Circle shows approximate location of revegetated area.

April 29, 2021 – Campsite #14 after floodwater receded.

April 29, 2021 – Approximate revegetated area is circled.

April 29, 2021 – Approximate revegetated area is circled. Site 1 is still filled in, and soon we'll know whether the remaining willow cuttings have survived.

April 29, 2021 – Approximate revegetated area is circled; willow cuttings are visible. The tree was deposited by floodwaters.

April 29, 2021 – Willow cuttings visible at Site 1.

April 29, 2021 – Close up of willow cuttings at Site 1.

Site 2 after ice jam flooding – April 29, 2021.

As shown earlier, during summer 2020 the soil lift at Site 2 had become a step for scrambling down the bank and into into the river. In **photos above and at right**, the soil lift installed in 2019 above the bottom layer of willow cuttings can still be seen, as can the willow cuttings below it. Willow cuttings above the soil lift have been destroyed.

As vegetation greens up in 2021 and river water level drops, we will be able to determine whether any willow cuttings at Site 2 have survived.

What happens next?

To help protect streambank vegetation, in summer 2021 State Parks will install three access improvements to serve visitors to Silverking Campground: (1) a set of stairs for getting down into the river, (2) a platform for gathering or sitting by the water's edge, and (3) a gently sloping, geoweb-protected trail to the river's edge below the bridge. Approximate locations of these improvements are shown in orange at right. The photo also shows the locations of the two sites revegetated in 2019. (Again, notice how little streambank is left between the Silverking parking lot and the river channel.)

Stairs will give visitors access into the river near a fishing area: at low water, anglers will be able to walk into the channel, cross to the nearby island, and cast into the deeper channel on the far (north) side of the island. The platform will allow individuals and groups to gather at the water's edge and enjoy what's going on without damaging streambank vegetation. The plan is to include a ramp onto the platform so visitors with mobility issues can also access the platform. Finally, a geoweb-protected trail will be located where the slope down to the river is relatively gentle and where a trail to the water's edge makes sense. Geowebbing comes in different styles and thicknesses—an example of **a geoweb trail is shown at right**. Geoweb is backfilled with soil and gravel to protect the trail's surface from compaction and erosion, which also makes the trail smoother and less prone to becoming muddy. The trail will connect to a graveled trail that the Department of Transportation will install under the new bridge as part of bridge replacement. During bridge construction, many changes will occur in Silverking Campground, so once construction is complete, planning partners will look at what kinds of additional improvements can be made in Silverking.

Educational outreach will also take place during summer 2021 using signage, articles, and public meetings. One goal will be to explain that some sites along the river are good for fishing, but many are not. Destroying salmon habitat to access the river where fishing is poor makes little sense in the long run. Rope fencing or other simple barriers will be used to direct visitors to improved access locations. By the fall, Homer Soil and Water should be able to identify high priority sites for additional revegetation in 2022. To follow what's happening, check out the Anchor River Updates FB page. You can also sign up to receive Homer Soil and Water's biannual newsletter.