2022-23 Spawner Report Survey

SKAGIT FISHERIES ENHANCEMENT GROUP

Contributors:
Myrriah Crowley
Chaney Haavik

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Summary/Abstract

Skagit Fisheries Enhancement Group's (SFEG) Volunteer Spawner Survey Program is a long-term salmon monitoring project that began in 1998. Monitoring data has been collected across 30+ creeks within the Samish and Skagit Watersheds over the last 24 years. During the 2022-2023 season, SFEG survey volunteers walked over 118 miles and collected data on 19 creeks. Within the two watersheds, SFEG volunteers surveyed from mid-October to the second week of February. The first fish of the season were three coho salmon seen October 23 on Thunder Creek in the Samish Watershed; and coincidentally, the last fish of the 2022-2023 spawner season was a "solo, frisky coho" seen January 30, also on Thunder Creek. The number of fish each creek sees fluctuates with each weekly survey and differs year to year. Salmon populations return cyclically, and due to an array of limiting factors and environmental conditions, understanding their populations takes years of data and monitoring. While our Spawner Survey Program plays an integral part in collecting watershed-wide salmon spawner data, we survey only a fraction of the spawning grounds each stream offers as viable habitat for redd making and juvenile rearing; therefore, we do not have the full scope to wholly understand salmon population and abundance in these streams. We do, however, contribute greatly to the story of fish in each creek and on each survey reach. Our data is utilized by Washington Department of Fish and Wildlife (WDFW), internally at SFEG to assess past or future restoration projects and is made public to landowners and our community to provide insight on future salmon returns, abundance, distribution, escapement, and local conditions.

WDFW coho return forecast predicted the 2022-2023 season to be greater in numbers for Chinook, chum and coho within the Samish and Skagit Watershed, in comparison to last year. However, due to a variety of environmental conditions and other undeterminable factors, a majority of the creeks the SFEG Spawner Survey Program monitored experienced salmon runs to be considerably later than expected, with many creeks seeing less fish than previous years. On average, previous years monitoring data reflects coho runs peaking across both watersheds in mid-November; this year's seasonal runs, on average, saw live spawning coho numbers peaking mid-December to early January. The most fish seen on a single survey this season was on January 8, 2023, on Parson Creek in the Samish Watershed in which volunteers, Sheila Tomas and Catherine O'Callaghan, counted 209 live coho and 301 coho carcasses. The second most fish seen on a survey was on December 29, 2022, on Ennis Creek, also in the Samish Watershed, in which AmeriCorps member and Spawner Survey Program Coordinator, Myrriah Crowley, and Washington Conservation Corps (WCC) member, Spencer Johnson, counted 181 live spawner coho. While the total number of fish seen during the 2022-2023 spawner season was fewer than predicted, we saw similar trends to last year's run with only slight decreases in live spawner coho counts which occurred a whole month later than what is considered "normal". Other notable streams were Gribble Creek, which saw twice as many coho during their peak count compared to last year's run, and Starbird Creek which saw coho later into the season than ever previously recorded. East Fork Walker Creek is of the most note-worthy creeks because the observed number of live spawner coho

has continued to increase, at a sharp rate, since monitoring began after SFEG completed a fish passage barrier removal project. East Fork Walker Creek saw over 100 more live spawner coho than it did last season, and last season also had an increase of over 100 coho. This continual rise in the coho population on East Fork Walker Creek shows positive results for restoration projects and sheds light on the importance of these actions.

In summation, over the entirety of the 2022-2023 salmon spawner run, SFEG AmeriCorps members, intern and volunteers counted a total of 2445 coho (*Oncorhynchus kisutch*), 4 Chinook (*O. tshawytscha*), 45 chum (*O. keta*), and 460 kokanee (*O. nerka*) within the Samish and Skagit Watershed. That is a total of 2954 live spawning salmon, and only a slight decrease from last season's total of 3311 live spawning salmon. WDFW utilizes our spawner survey data to report on population trends, and occasionally we are able to provide them with data which updates their current distribution database, SalmonScape. SalmonScape is an excellent educational tool, available to the public, to view salmon streams and understand what species are present on what streams. SalmonScape also indicates populations run times (i.e., Spring Chinook and Winter Chinook), and if a salmon species' presence was documented, presumed, or is determined gradient accessible (different species have varying levels of ability to migrate upstream based on stream slope, jumping pools and barriers). SFEG works closely with the Skagit River System Cooperative (SRSC), Skagit County, WDFW, local cities, and other local and state-wide entities to better inform and make decisions on how to best improve salmon habitat. This season's data builds on the importance of our Spawner Survey Program by providing SFEG, WDFW, and our community with data to educate, engage and emphasize the importance of keeping the Skagit watershed ecosystem healthy. Through this program and beyond, our goal is to ensure the Skagit has abundant and self-sustaining, wild salmonid populations that can be enjoyed by present and future generations.

Forward to Skagit Fisheries Enhancement Group's Volunteers:

On behalf of Skagit Fisheries staff and AmeriCorps members, we extend our deepest gratitude and sincerely thank our spawner survey volunteers for dedicating their precious time and energy to monitoring salmon populations in the Samish and Skagit Watersheds. Your generously donated time makes this program possible!

This year we experienced a wide range of odd weather patterns and a very delayed salmon run. From the beginning of the season when the days were hot and smoky, to the cold snaps, snow dumps and rainfall; despite the chaotic weather conditions our volunteers, collectively, donated over 1260 hours of their free time to walk the streams of the Skagit and Samish Watersheds. Additionally, many of the streams in our survey program are not near volunteer's homes; not only did they walk the streams but many of them drove significant distances in their own vehicles to complete the weekly surveys.

A special thank you to Chaney Haavik, SFEG's Spawner Survey Intern, for her tireless and diligent work analyzing all the data collected over the season. By reformatting and reorganizing past systems data entry, you were able to streamline data entry for future years spawners survey programs and create clear and easily interpretable graphs. Your thoroughness, ability to see areas in need of improvement, and then follow-through is greatly valued.

The data that spawner survey volunteers provided us with this season allows us to share current salmon spawning population, abundance and distribution on creeks that are integral to salmon recovery. We share this valuable information with partner organizations, funding agencies and the public to better understand our impact on salmon habitat and improve it for generations to come. By compiling real-time data on salmon populations collected by our volunteer community scientists, we improve our ability to secure future grant funding and continue to work with partners and landowners, current and new, on projects, project planning and understanding the success of past projects.

To all of you, your generosity and dedication is greatly appreciated and the value of the work you have completed is far reaching and incredibly impactful. Thank you!!

Sincerely,

Myrriah Crowley

AmeriCorps WSC Riparian Restoration Associate

Spawner Survey Program Coordinator

Skagit Fisheries Enhancement Group

SKAGIT FISHERIES ENHANCEMENT GROUP

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Table 1. Survey Season Summary

2022-2023 Spawner Survey Summary	
# of Active Sites	19
Total Miles Surveyed	123.15
Total Surveys Complete	219
# of sites where fish were observed	16
# of survey hours completed	1267.45

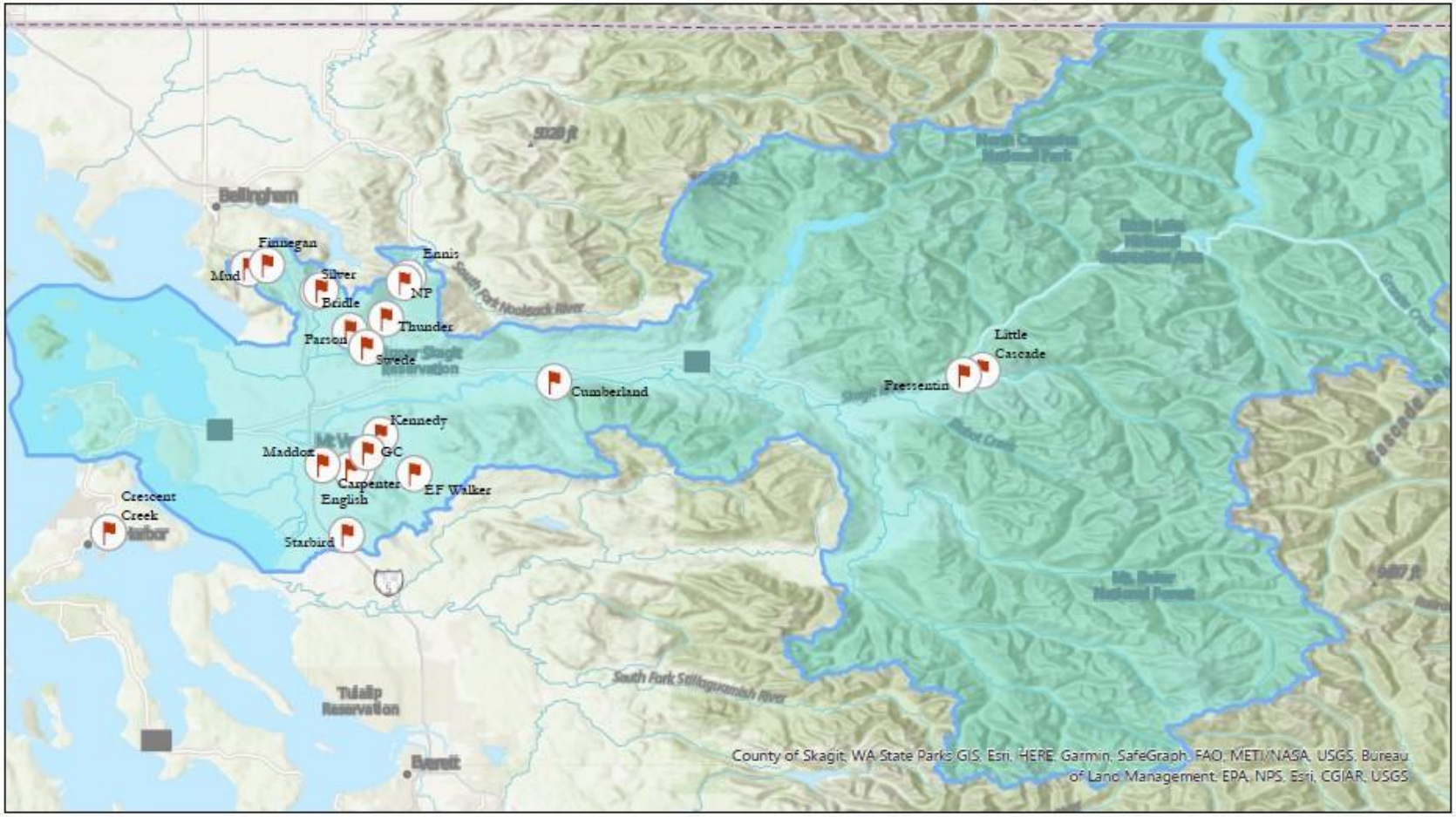
Table 2. Detailed Survey Season Summary (*Surveys Completed represents the number of full surveys physically surveyed from start of reach to end, not surveys interrupted due to hazardous safety conditions)

Creek Name	Watershed	Length (miles)	*Surveys Completed	Total Miles Surveyed	Volunteers
Ennis	Samish	1.4	15	21	Myrriah Crowley & Chaney Haavik
NP	Samish	0.3	14	4.2	Myrriah Crowley & Chaney Haavik
Parson	Samish	1.65	13	21.45	Sheila Tomas & Catherine O'gallhan
Thunder	Samish	0.3	15	4.5	Kirk Hale & Steve Purcer
Swede	Samish	0.5	12	6	Austin Wertz, Berkeley Johnson & Liz Zimmerman
Silver	Samish	0.6	11	6.6	Jim & Shirley Wilkinson
Bridle	Samish	0.2	4	0.8	John Leighton
Mud	Samish	0.5	10	5	Ryan Mielke & Collette Webb
Finnegan	Samish	0.3	10	3	Ryan Mielke & Collette Webb
Maddox	Skagit	0.8	13	10.4	Hal Lee & Kurt Buchanan
Carpenter & English	Skagit	0.5	9	4.5	Brianna Majrici & Elizabeth Drozda
East Fork Walker	Skagit	0.5	15	7.5	Chad Vertbitsky & Lindsey Juen
Starbird	Skagit	0.5	15	7.5	Dean Van Vleet & Loren Fuell
Gribble	Skagit	0.3	15	4.5	Christine Farrow & Karin Gribble
Kennedy	Skagit	0.3	12	3.6	Catherine Houck & Doug Davidson
Cumberland	Skagit	0.25	12	3	Mike Oras & Phil Latendresse
Little Cascade (Lyric)	Skagit	0.25	10	2.5	Hal Lee & Kurt Buchanan
Pressentin	Skagit	0.5	9	4.5	Mark Nihart, Ray Lewis & Rebecca Pratt
Crescent Harbor	Island	0.3	5	1.5	Chad Verbitsky & Brianna Majrici

Creek Name	Species	Live	Carcass	Redd
Ennis	Coho (*Oncorhynchus kisutch*)	576	54	98
NP	Coho (historically found)	0	0	0
Parson	Chinook (*O. tshawytscha*)	4	0	1
	Coho	698	642	184
	Chum (*O. keta*)	3	8	0
Thunder	Chinook	0	1	0
	Coho	267	34	17
	Chum	41	39	1
Swede	Coho	53	14	9
Silver	Coho	23	4	10
Bridle	Coho	4	0	0
Mud	Kokanee (*O. nerka*)	204	1	15
Finnegan	Coho	25	1	17
	Kokanee	256	9	17
Maddox	Coho	35	16	12
Carpenter & English	Chinook	0	0	0
	Coho			
East Fork Walker	Coho	404	342	18
	Trout (spp. unknown)	9	0	0
Starbird	Coho	5	0	0
Gribble	Coho	285	51	15
Kennedy	Coho	4	13	0
Cumberland	Coho	16	2	0
Little Cascade (Lyric)	Coho	54	28	22
Pressentin	Chum	1	2	0
	Coho	0	1	0
Crescent Harbor	N/A	0	0	0

Table 3. Creek summary of 2022-2023 season including total of live fish, carcasses and redds counted

Map 1. Survey Area with labeled Streams in the Skagit and Samish Watershed



SKAGIT FISHERIES ENHANCEMENT GROUP

Skagit Fisheries Salmon Spawner Survey Program 2022-2023

Streams Surveyed 2022-2023

Skagit & Samish Watershed

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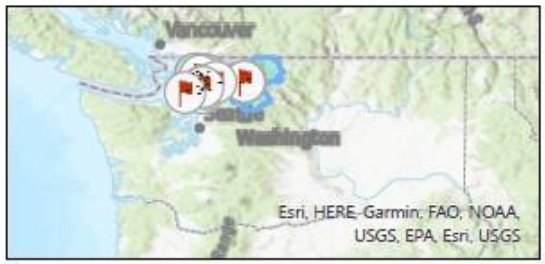

Samish Watershed:

The Samish Watershed rests just above the Skagit Watershed. It begins in Whatcom County and drains from both Whatcom and Skagit County into the Samish Bay. It is approximately 139 square miles and extends 25 miles before draining into the Samish Bay, just south of the Whatcom-Skagit County Border. This watershed is primarily used by Chinook (*Oncorhynchus tshawytscha*), coho (*O. kisutch*), chum (*O. keta*), kokanee (*O. nerka*) and steelhead trout (*O. mykiss*). Other less prominent species documented in the Samish River system include bull trout (Salvelinus confluentus), dolly varden (*S. malma*), resident coastal cutthroat (*O. clarkii*) and rainbow trout (*O. mykiss*).

Agriculture and forestry are major land uses of the watershed and have contributed to widespread degradation of streams in the last century; practices have, however, improved in recent decades. Increases of Pacific salmonid populations in the Samish watershed are posed with a variety of limiting factors such as loss of habitat, increasing water temperatures and sedimentation, and fecal matter contamination. In 2009 the Department of Ecology, Washington State's departments of Agriculture and Health, Skagit County's departments of Health, Planning, and Public Works, Skagit Conservation District, tribal governments, and non-profit organizations such as SFEG, began working together to combat pollution levels in the Samish River and improve riparian health, under the Clean Samish Initiative. Since 2009, the streams surveyed by SFEG have seen fluctuations in population numbers with no clear trend. Many surveyed streams within the Samish saw an exponential increase in the number of live fish counted in 2013, followed by a significant decrease, with some previously very fishy creeks seeing little to none in 2019 and 2020. Total live fish counts appear to be improving or at least staying consistent when comparing this season to last year, however SFEG lacks evidence to identify accurate and precise trends in salmon populations.

According to the USGS Samish River at Burlington gauge, the highest river level for the 2022-2023 spawner survey season was recorded December 28, 2022, at 10.28 feet. This high river level coincides with a week of the highest counts of coho seen on tributaries of the Samish River for the 2022-2023 season (Figure 1). The second highest river level was recorded November 4, 2022, at 9.54 feet which coincides with the second highest counts of coho seen on Samish tributaries.

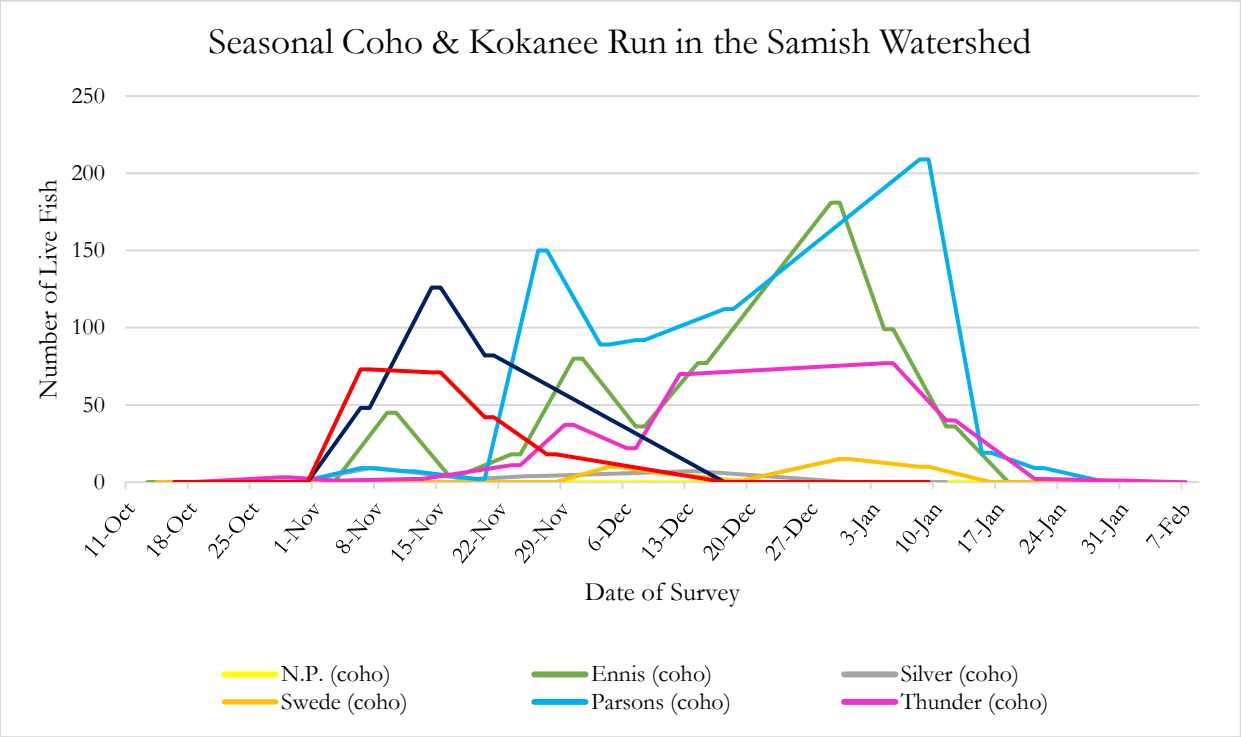

Figure 1. Seasonal coho and kokanee runs in the Samish Watershed. The live fish count of all streams surveyed in the Samish watershed are compared over the course of the season on this graph.

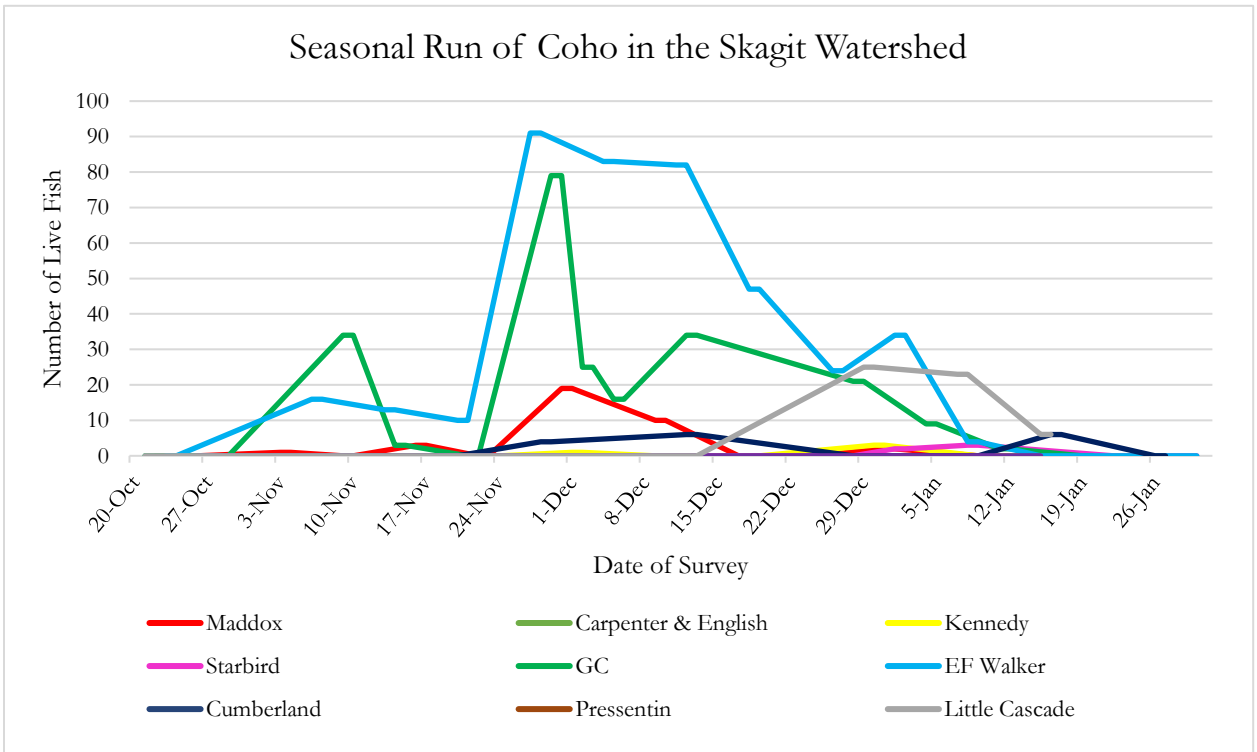

Figure 2. Seasonal coho runs in the Skagit Watershed. The live fish count of all streams surveyed in the Skagit watershed are compared throughout the season on this graph.

Skagit Watershed:

The Skagit Watershed and Skagit River begins in E.C. Manning Provincial Park in British Columbia, Canada and flows south/southwest as into Washington state, converging with the Cascade River in Marblemount, Sauk River in Rockport and further downstream with Nookachamps Creek in North Mount Vernon before draining into the Skagit Bay southwest of Mount Vernon. The Skagit Watershed is approximately 150 miles long and 90 miles wide, covering over 2,650 square miles and is fed by over 10,000 streams and creeks. The Skagit River system in Washington state is home to all five species of Pacific salmon: Chinook (*Oncorhynchus tshawytscha*), coho (*O. kisutch*), chum (*O. keta*), pink (*O. gorbuscha*) and sockeye (*O. nerka*), and five species of trout: steelhead, bull trout, dolly varden, coastal cutthroat and rainbow trout. The Skagit River is particularly important to Puget Sound Chinook which were listed as threatened in 2005 by the Endangered Species Act (ESA). In 2005, SRSC produced the Skagit Chinook Recovery Plan, identifying restoration actions to improve Chinook and other salmonid species production. The plan included improvements to areas of: spawning habitat and egg-incubation, freshwater rearing habitat in large river floodplains, tributaries, and non-tidal delta, tidal delta rearing habitat, and nearshore rearing habitat (primarily pocket-estuary restoration).

The Nookachamps Watershed is a subsection of the Lower Skagit Watershed and according to the Skagit Chinook Recovery Plan has significant Chinook production potential. Chinook, coho, chum, pink, steelhead resident coastal cutthroat and rainbow trout have all been documented in this watershed. Unfortunately, the Nookachamps watershed spawning habitat is considered "impaired" due to the lack of proper sediment size required for spawning and egg incubation, and warming water temperatures. Skagit Fisheries has worked and is continuing to work with landowners in the Nookachamps to improve riparian habitat and fish passage. East Fork Walker, Gribble and Kennedy Creeks are tributaries of Nookachamps Creek, all of which saw more fish this season than any previous season.

According to the USGS Skagit River at Mount Vernon gauge, the highest river level for the 2022-2023 spawner survey season was recorded December 27, 2022, at 25.30 feet. This high river level appears to coincide with a slight increase in live fish counts from a few creeks, including Little Cascade, East Fork Walker and Starbird. On November 5, 2022, the Skagit River peaked in Mount Vernon at 23.83 feet and was followed by the greatest amount of live fish counted on a single creek during the 2022-2023 spawner season (Figure 2).

Individual Survey Site Summaries

Ennis Creek

Ennis Creek is a tributary within the Samish Watershed and flows into a large wetland portion of the Samish River. It is historically a productive stream from coho, steelhead and cutthroat trout. This creek is a WDFW index stream that informs on salmon population returns, escapement and distribution. Prior to a SFEG and Whatcom Land Trust restoration project, Ennis Creek ran along Innis Creek Rd in an undersized channel, now it flows into 50 acres of protected wetlands owned by Whatcom Land Trust. Due to past logging practices and the previously routed channel along the road, Ennis Creek was not able to effectively transport sediment so in turn flooded annually. Large woody debris (LWD) and native plants were installed in 2005 to enhance habitat, increase pool riffle and flow complexity. These actions aim to improve rest and safety areas for both spawning adults swimming upstream and juvenile salmonids going out to sea. Since reconnecting the creek to its historic channel, there has been reduced flooding at the confluence of Ennis Creek and the Samish River wetland, however the Samish River continues to flood Wickersham Rd.

Ennis Creek was surveyed by Myrriah Crowley, Chaney Haavik, and Washington Conservation Corps Crew members from October 13, 2022 to January 30, 2023. The spawner survey season was significantly later than previous years; fish were not seen until November 9, when 45 fish were seen after the first heavy rain of the season. The creek continued to be low and the rain was followed by freezing temperatures so water levels remained low to medium until late December when there was a large snowstorm. The snow was followed by above freezing temperatures up to 6000 ft elevation which caused flooding throughout the Samish and Ennis Creek was not surveyable for 3 days after the peak flood. At one point the Samish River was flooding Wickersham Rd which by default means SFEG staff and intern do not survey. Water levels appeared to be lower than the previous days so surveyors decided to check conditions on Ennis Creek - at the base of the creek where it flows in the Samish Wetland there were 15 coho salmon seen in riffles. Safety was assessed and it was decided to carefully survey the creek. It was this day, December 29, the peak run of coho was seen on Ennis Creek (Figure 3). The total number of live adult salmon counted this season remains substantially less than it was 10 years ago, however, the population of Ennis Creek seems to be improving when compared to survey seasons in the last 5 years (Figure 4).

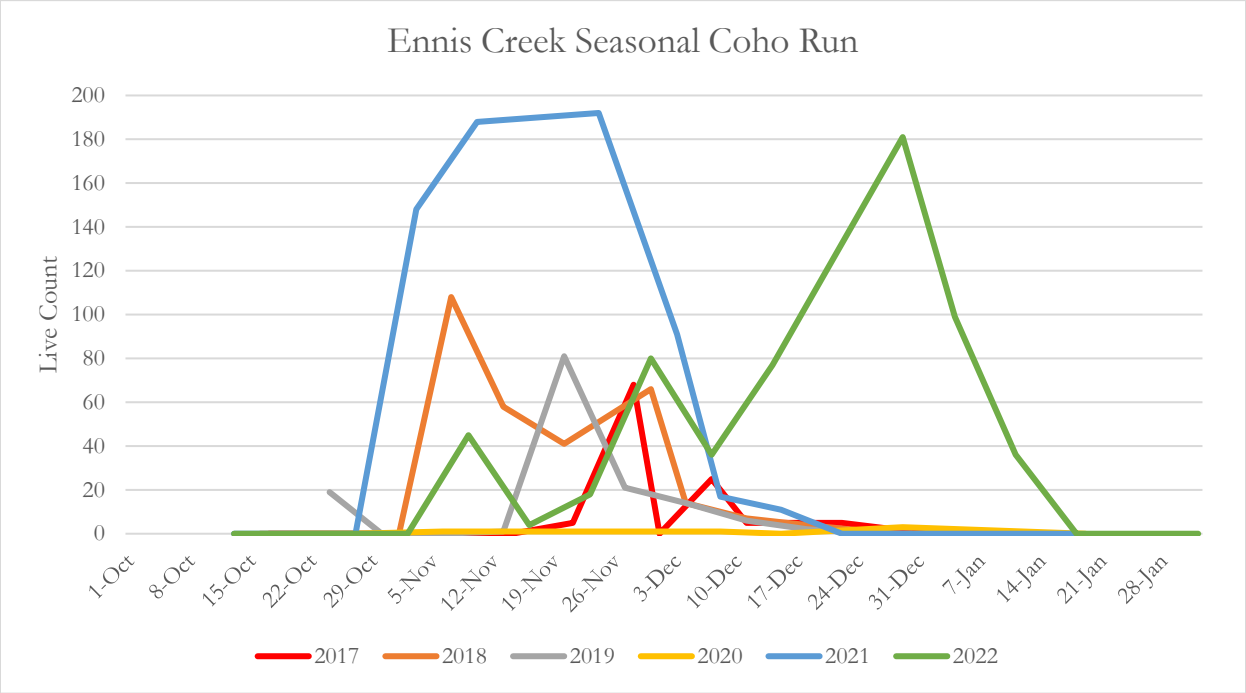

Figure 3: This year, the peak of the run was on Dec. 29th with 181 coho counted. This is about a month later than previous years. In 2021 the peak was on Nov. 24th with 192 coho counted.

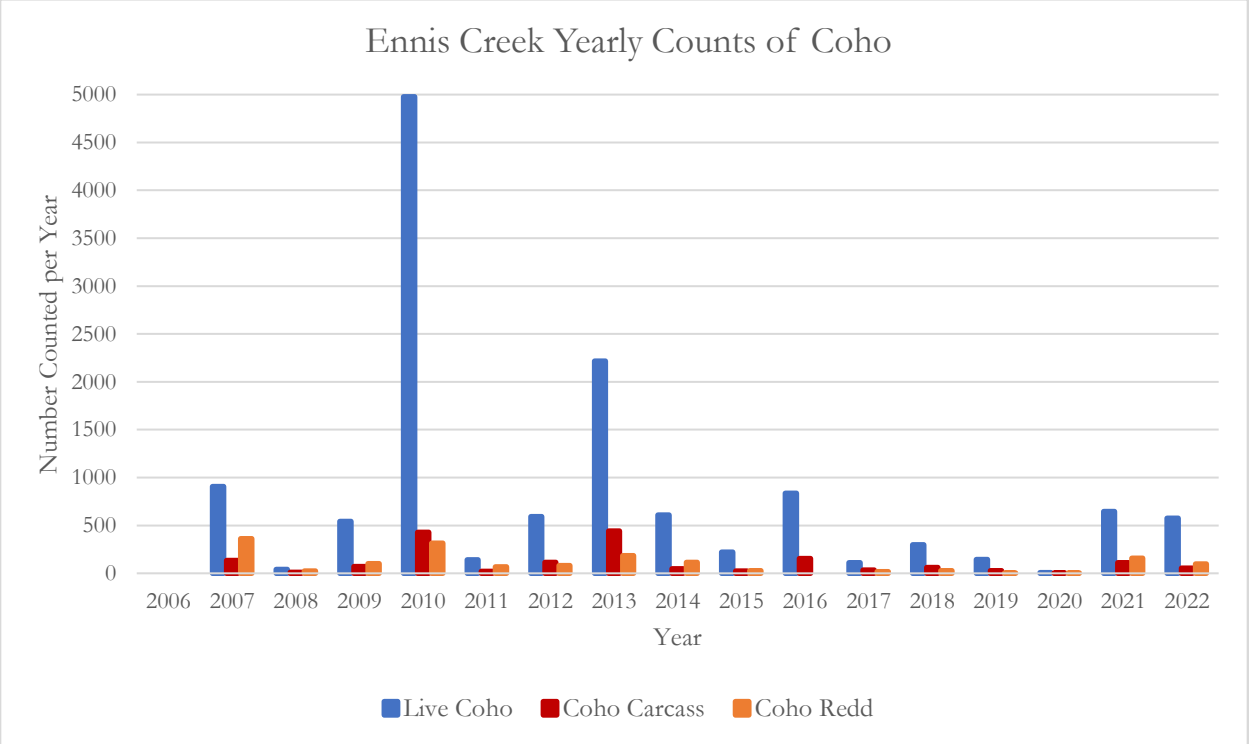

Figure 4: Ennis Creek saw a total of 576 live coho salmon this year. This is comparable to the last year, but significantly less than 2010, when 4,979 live coho were observed.

NP Creek

NP creek is also a WDFW Index stream and is a tributary of the upper Samish River, flowing down from Anderson Mountain at the southern end of Lake Whatcom. The creek passes under Hwy 9, through a rural neighborhood and follows the railroad for 400m before entering a Samish River wetland about a half mile from the Ennis Creek-Samish confluence. Historically, NP was the second most productive coho stream in the upper Samish Watershed. At some point before 2001, a failed cement foundation of a driveway bridge, just downstream of the Hwy 9 bridge over NP Creek, left a 2' tall barrier in the stream that restricted coho from upstream spawning habitat. During the 2001-2002 spawning season, nearly 3,000 live spawning coho were counted downstream of the fish passage barrier, unable to leap over. In 2003, WDFW observed many coho fry near the barrier. In 2005, SFEG removed the fish passage barrier and replaced it with a 40' driveway bridge and installed 7 large rock weirs downstream that increased pool depth and the ability of coho to travel upstream. This project was funded by the Nation Fish and Wildlife Foundation and the Salmon Recovery Funding Board (SRFB) and restored access to approximately 1.5 miles of high-quality spawning and rearing habitat for coho, steelhead, cutthroat trout.

There were no adult fish observed on NP Creek this season; however, several juveniles were seen in pools throughout the season. One juvenile was positively identified as a coho salmon and appeared to be more than one year old based on its size (about 3 inches), other juveniles were not able to be identified. Observing juvenile fish gives hope that adult fish are making it up stream and successfully spawning despite low observed numbers in the previous several years (Figure 5).

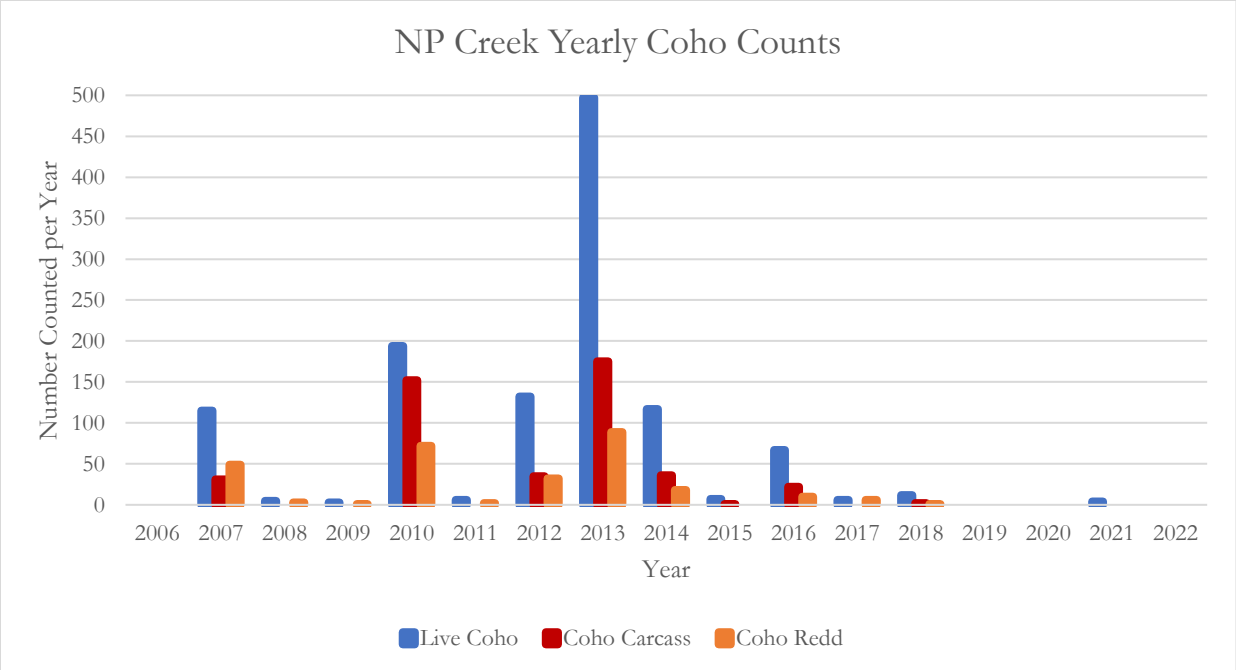

Figure 5: No adult salmon were seen on NP Creek this season. The lack of adult coho is similar to previous years, having seen zero in 2019 and 2020, but drastically different from 10 years ago when 497 coho were seen in a season.

Parsons Creek

Parsons Creek enters the Samish River about five miles downstream of the Thunder Creek - Samish confluence. Historically, this creek had a very productive coho run, however the population has been trending downward. In 2006, about a mile upstream of the Parsons Creek - Samish River confluence, a fish passage barrier removal project done by SFEG funded by the Family Fish Forest Passage Project (FFFPP) removed an undersized corrugated steel culvert and replaced it with an 18-foot-wide pipe arch made of structure plate steel. The replacement of this culvert made accessible a half-mile of high-quality spawning and rearing habitat for coho, steelhead and cutthroat trout. The upper watershed habitat consists of a stable step-pool habitat with substantial large woody debris and a well-developed forest canopy - coho, steelhead and cutthroat trout have been observed upstream of the replaced culvert. Within the lower section of Parsons Creek, Chinook and chum salmon have also been observed, however in much lower numbers. Similar to other creeks within the Samish Watershed, Parsons Creek is not seeing the high population numbers it saw a decade ago, however the population seems to be improving when compared to the last few years of surveys.

This season, Parsons Creek saw the most fish on a single survey, and the most total live fish counted throughout the season, of all the creeks surveyed across both the Samish and Skagit Watersheds. Survey partners Sheila Tomas and Catherine O'Callaghan, along with the occasional help of others, surveyed from October 29, 2022, to February 5, 2023. Parsons Creek did not see the same influx of fish after the first rain event at the beginning of November that many other streams in the Samish Watershed did. The season began slowly with only 9 fish counted on November 6. Survey counts remained below 10 live fish until November 26 when 150 live fish were counted. The seasonal peak coincided with other streams in the Samish Watershed after the high river levels at the end of December. Surveyors counted 209 fish and 301 carcasses on January 8 (Figure 6); this indicated that not only do fish need higher water levels to run upstream, but that there may have been more fish in the creek than counted on previous surveys. The total number of live fish seen in Parsons Creek more than quadrupled in comparison to last year's total count. Parsons Creek saw 698 live fish this season, this is the third most fish ever counted on this creek; in 2013 surveyors counted 1164 live fish, and in 2010, 783 live fish counted (Figure 7).

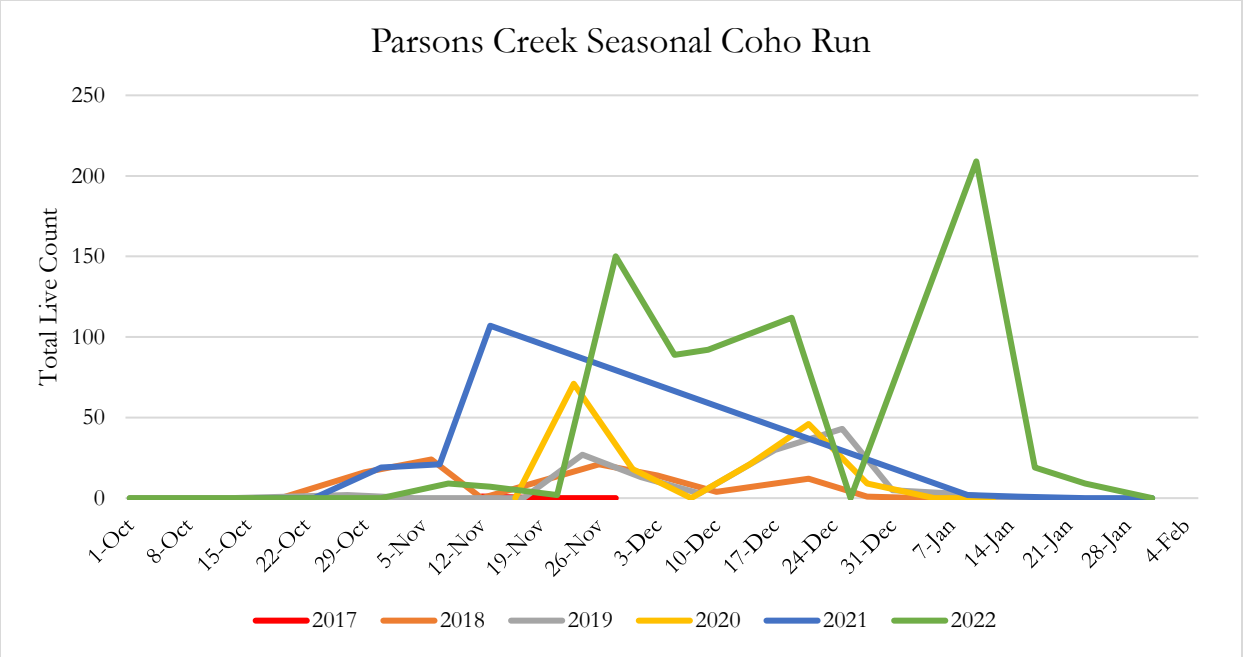

Figure 6: The peak of Parsons' season was on January 8th when 209 live coho were seen. This is almost two months later with more than double the fish than seen in 2021, when the seasonal peak was seen on Nov 13th with 107 live coho.

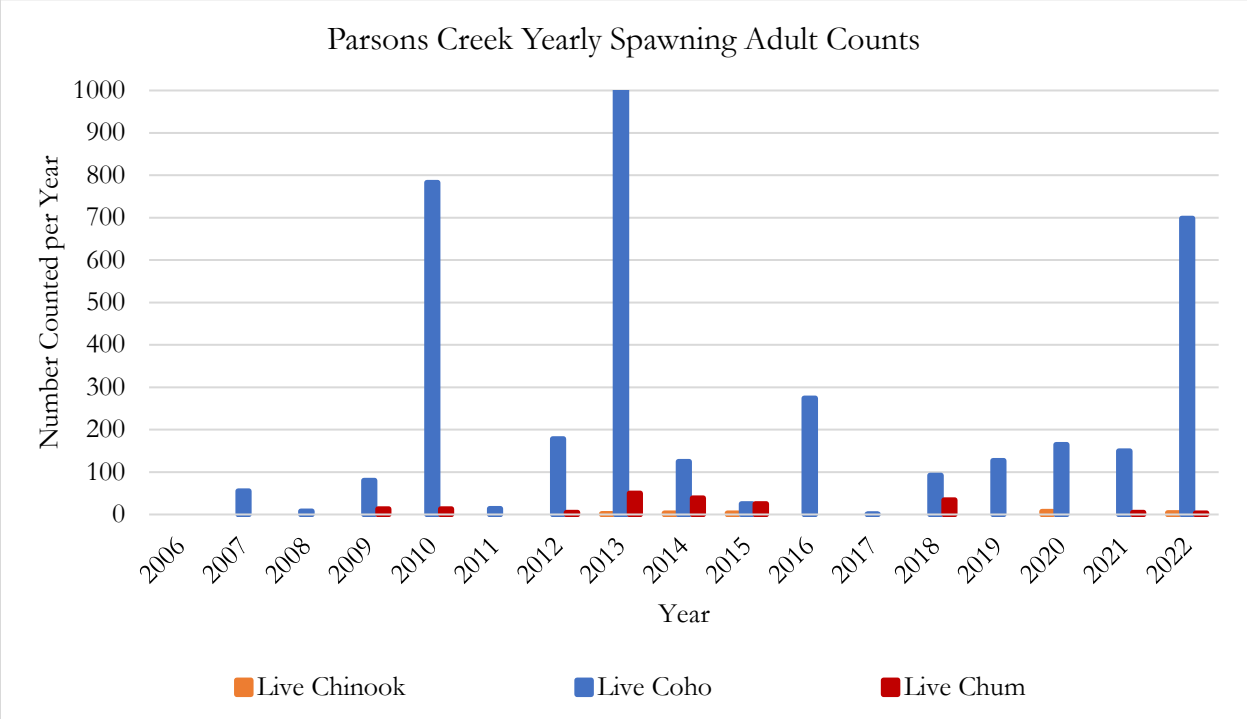

Figure 7: This year Parsons Creek saw 4 Chinook, 1 chum, and 698 coho spawning adults. There were significantly more coho this season than in recent years; but still a smaller run than 2013, when 1,164 coho were observed. Chum and chinook runs remain relatively low, on par with previous year counts. 2013, 2014, 2015 and 2018 had relatively large chum runs, seeing 50, 39, 25, and 34 adult spawners, respectively.

Thunder Creek

Thunder Creek is a major tributary of the Samish River that drains from Lyman Hill and discharges into it about 4 miles downstream from where Ennis and NP Creeks flow into the Samish. Thunder Creek provides critical spawning and rearing habitat for Chinook, chum, coho and steelhead, all of which have been documented in this system. Additionally, WDFW states that the creek is gradient accessible to pink salmon however none have been observed. SFEG began surveying this creek in 2007, taking a small hiatus until 2010, and has been surveying yearly since. Thunder Creek is about 3.5-miles in length, however WDFW states Chinook and coho only travel about 2.1-miles upstream, and SFEG surveys only 0.3 miles from the confluence upstream to the railroad bridge. This creek is important to salmon as well as other wildlife; birds of prey are frequently observed during surveys, as are other animal tracks. Between 2010 and 2015, SFEG worked with local landowners to remove invasive plant species and install native plants to enhance the riparian edge. The lower half of the creek is bordered by private residents so engaging landowners with restoration projects and providing education on salmon life history is of great importance.

This spawner survey season, Thunder Creek had the longest season run time of any stream surveyed across both the Samish and Skagit Watershed. Survey partners Kirk Hale and Steve Purcer, with the help of others, completed surveys from October 17, 2022, to February 13, 2023. Thunder Creek set several other records this season: it was the first to record seeing live fish, on October 28, three coho were counted, and throughout the season Thunder Creek had the greatest total number of live chum salmon, 45 were recorded (Figure 8). The relatively high number of chum salmon counted on Thunder Creek, in comparison to other creeks within the Samish Watershed, may suggest that Thunder Creek is important to the chum population within the Samish Watershed. Coho were the main species observed this season, and the most observed on a single survey occurred on January 4 when 77 live adult coho were counted (Figure 7). While this seasonal peak is over a month later than the seasonal peaks average of the last 10+ years, the increase of spawning adults seen was more gradual than previous years. The last week of December when high flow was experienced throughout the Samish Watershed, it was not possible to safely survey Thunder Creek, so it is unknown if/how many spawning adults migrated upstream during this time.

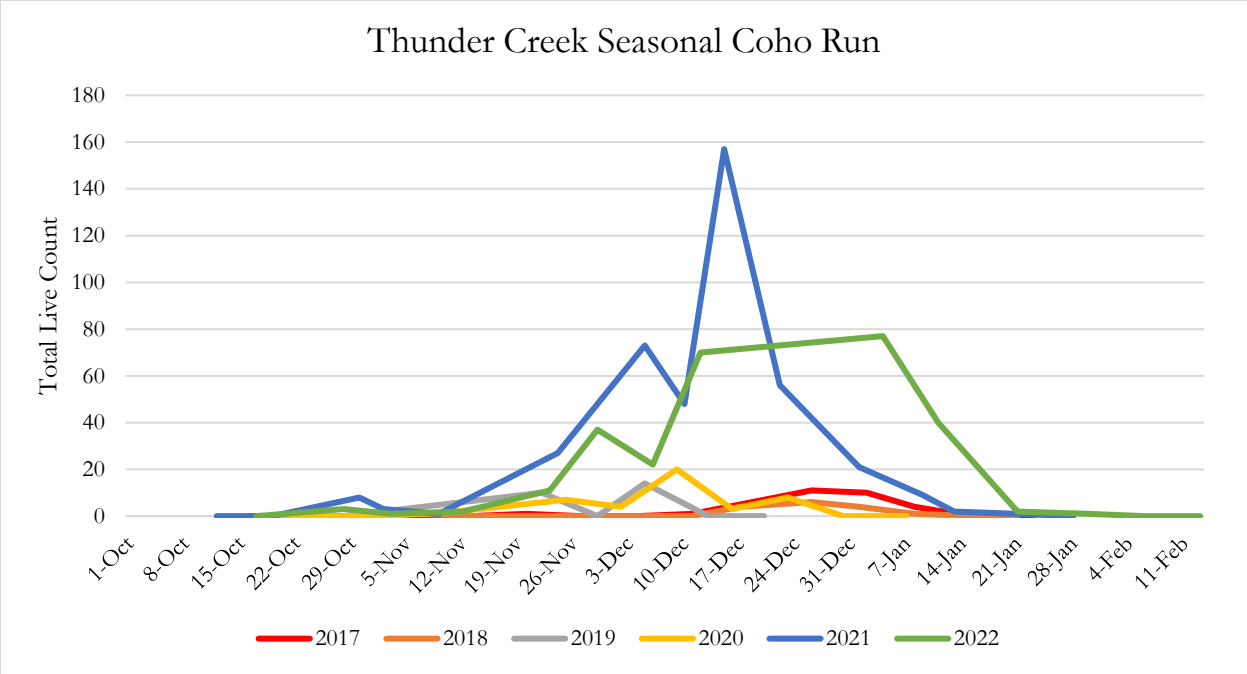

Figure 7: The peak of the Thunder Creek coho run this year was on Jan 4th, when 77 coho were observed. The seasonal peak is about a month later than previous years, however more the increase was more gradual than past years. In 2021 the peak of the coho run was on Dec. 15th, when 157 coho were seen.

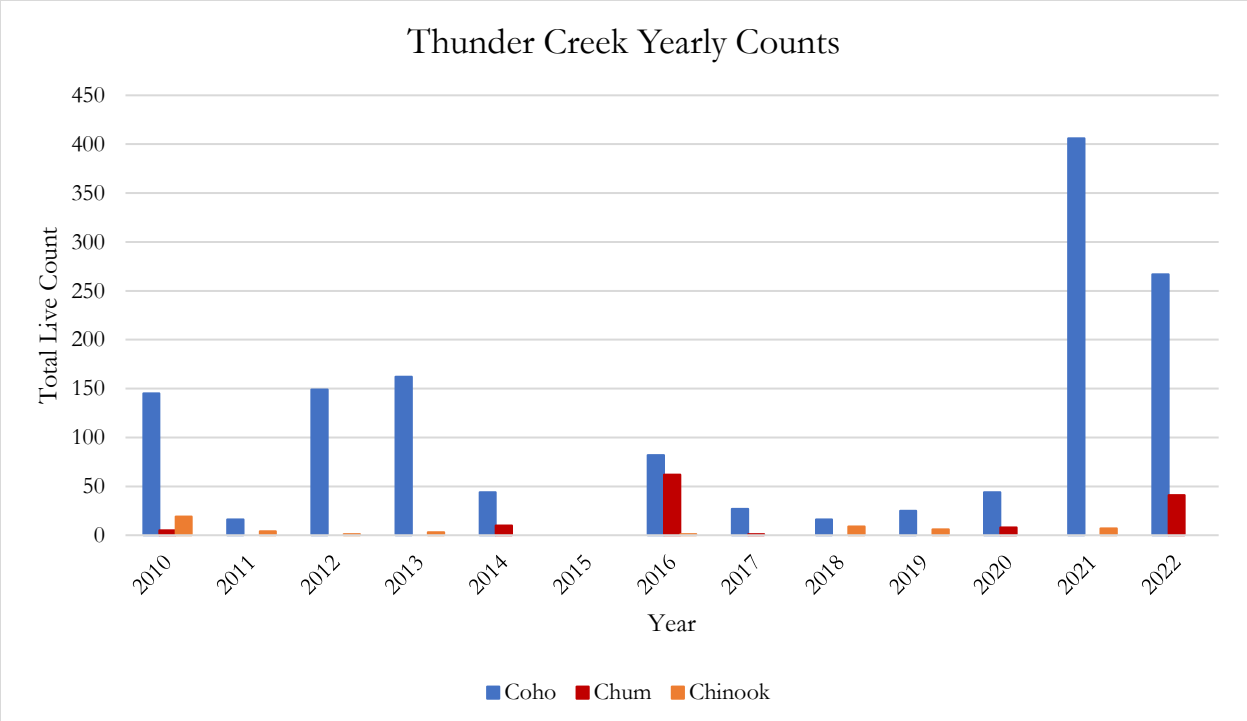

Figure 8: This year Thunder Creek saw 267 coho, 41 chum, and 1 Chinook. This is significantly more coho observed then all previous years except 2021, when 406 coho were seen. This year had the second largest chum run since surveying began, seeing 45 chum; the first largest being 2016 when 62 chum were seen.

Swede Creek

Swede Creek travels for about four miles from its main headwaters at Cranberry Lake, adjacent to Hwy 9, to its confluence with the Samish River three miles downstream of Parsons Creek. Swede Creek is also fed by upstream wetlands, so the water is dark with tannins making visibility difficult at times. While tannins do not harm salmon, they can make surveys difficult because of the lack of clarity and dark shade in the water. Rainfall can cause extra turbidity in the water and while salmon often utilize these higher flow events to travel upstream, being able to see the fish, live or dead, is variable and is sometimes not possible. This factor adds a level of assumed error in precise number of fish counted on Swede Creek year to year, however the strong use of survey methods and procedures by SFEG volunteers and staff help maintain accuracy. Swede Creek is known to have populations of coho, steelhead, sea-run and resident coastal cutthroat trout. SFEG began surveying Swede Creek in 2019 after completing the first of two large fish passage barrier removal projects funded by the Family Forest Fish Passage Program (FFFPP). In two separate sections of the creek, undersized culverts were removed and replaced with 40-foot steel bridges that granted instant access to upstream habitat for rearing salmonids. The first project on Swede Creek was completed in 2019 and the second in 2021; it was not until the second, more upstream project was completed that survey volunteers saw spawning coho salmon.

This spawner survey season was the second to see spawning coho, however less were seen this year than last. Spawner survey volunteers Austin Wertz, Berkeley Johnson, and Liz Zimmerman surveyed Swede Creek from October 14, 2022, to January 29, 2023. There were two small peaks of the seasonal run, the first November 27, when 12 coho were counted, and the following week 10 more coho, and the second peak December 30 when 15 coho were recorded (Figure 9). These peaks follow a similar trend to the other creeks in the Samish Watershed, trending up after big rain events. Volunteers recorded a total of 53 live coho, 14 carcasses and 9 redds for the 2022-2023 spawner survey season. These counts are reduced by half and more than half, respectively, than last year's observed numbers, however, is still an improvement from the first two years of monitoring (Figure 10).

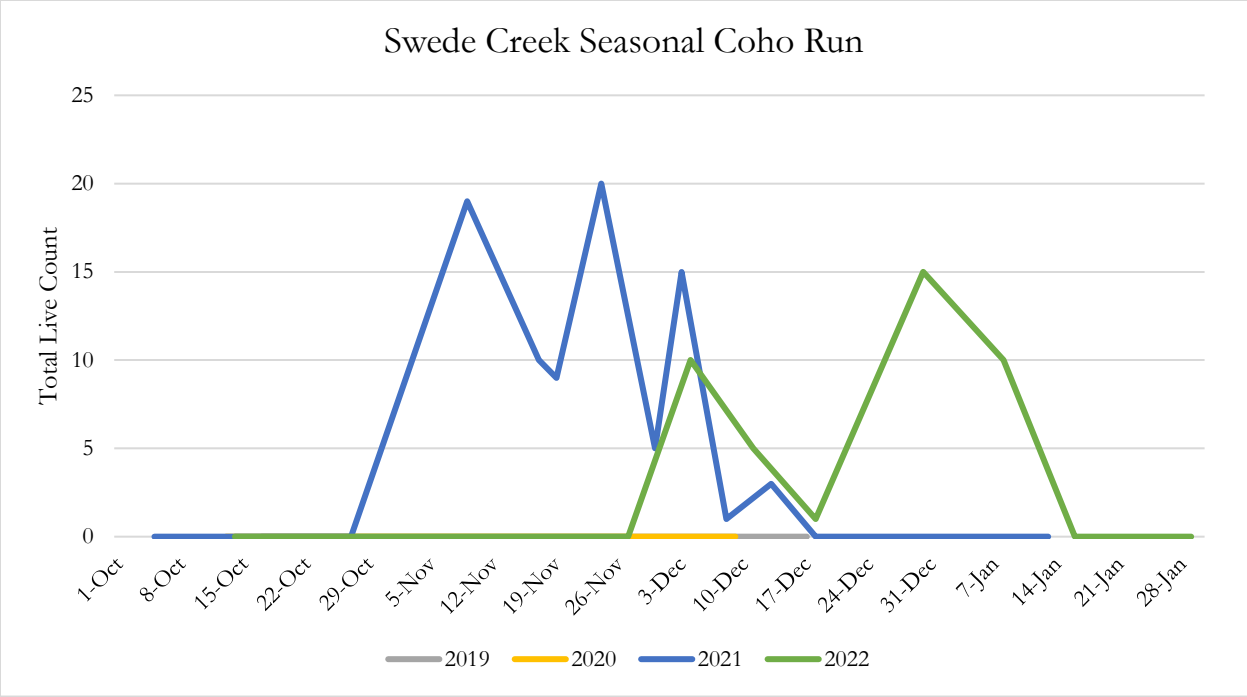

Figure 9: The peak of the season on Swede Creek was Dec. 30th when 15 coho were seen. This is almost a month later from the 2021 peak which was on Nov. 24th when 20 coho were seen. Additionally, spawning coho were observed almost an entire month later than were seen during the 2021 season.

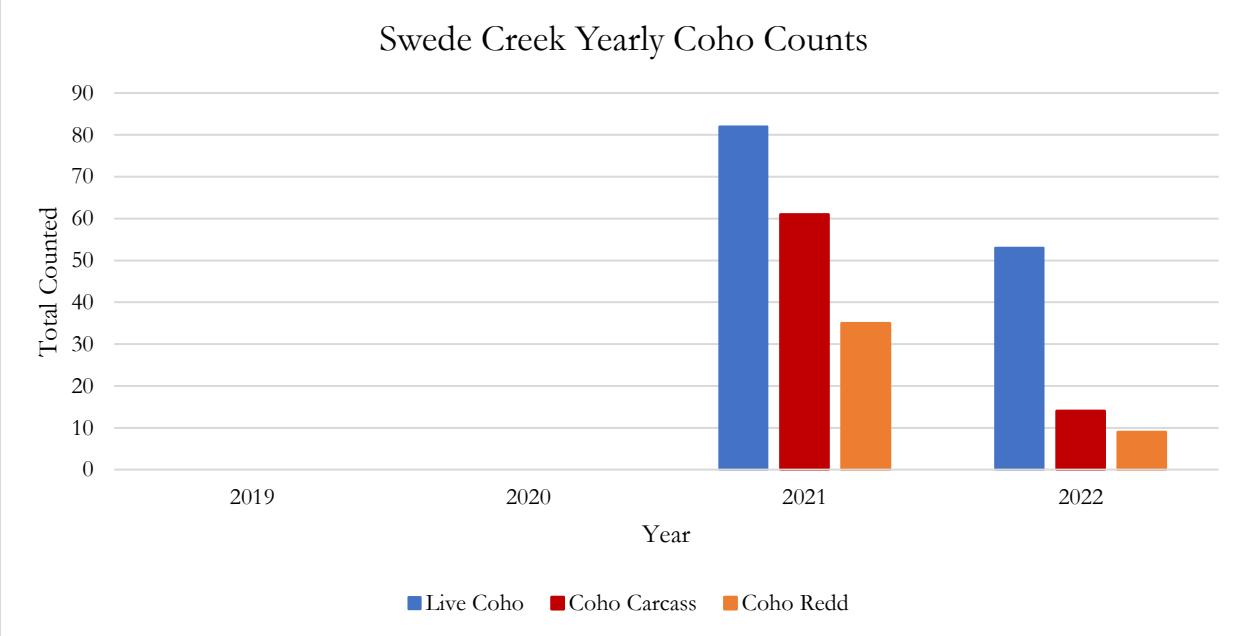

Figure 10: This year 53 coho were seen on Swede Creek. This is a vast improvement from 2019 and 2020 when no salmonids were seen on the reach; however, much less than was seen in 2021, when 82 coho were counted.

Silver Creek

Silver Creek is a larger tributary of the upper Samish Watershed; its headwaters are on Lookout Mountain, to the east of Lake Whatcom in Whatcom County, flowing into Cain Lake and is fed by several small tributaries before entering Friday Creek about 6.5 miles upstream of the Samish River confluence. Due to its length and diversity of creek characteristics, Silver Creek has documented all 5 species of Pacific salmon (specifically kokanee, not sockeye), however seeing Chinook and pink on this tributary of the Samish is an anomaly and the portion that SFEG monitors often only sees coho and steelhead. SFEG started monitoring a section of Silver Creek at the downstream end of Cain Lake in 2013 after completing a fish passage barrier removal project on a private neighborhood road. With funding from FFFPP, SFEG removed an undersized culvert and replaced it with a 50-foot steel bridge. In 2013, 129 live coho were recorded followed by 221 live coho in 2016. The initial increase in fish gave promise that the culvert removal was benefiting salmon spawning and rearing, however the coho population on Silver Creek has fluctuated over the last 5 years, trending downward with a soft uptick of live coho counted in 2020 (Figure 12).

During the 2022-2023 season survey volunteers Jim and Shirley Wilkinson, observed 23 live coho between October 14, 2022, and January 20, 2023. This season's observed coho run was smaller than last year's by two fish, however in comparison to last year, Jim and Shirley completed more than three times the number of surveys than was completed last season. In 2021 there were only 3 surveys completed due to hazardous flooding and weather conditions, whereas during the 2022 season 11 surveys were completed. These discrepancies make it difficult to compare the two seasons total fish counts, however it should be noted that the number of fish recorded has decreased. Due to the many factors, we cannot determine a specific cause of the reduced coho population on Silver Creek.

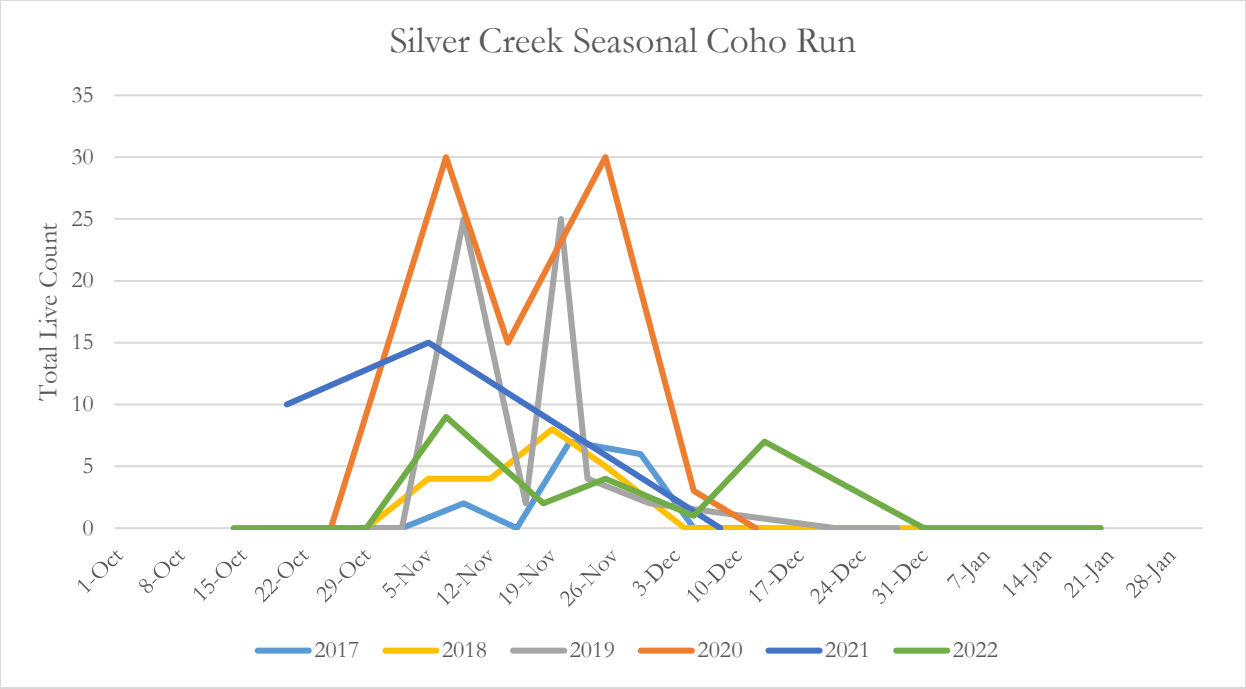

Figure 11: The Silver Creek coho run peaked on Nov. 7th when 9 coho were observed. This is similar to previous seasons; the 2021 season peaked Nov 5th when 15 coho were seen. There was a secondary peak this season on December 13th, which is unusual compared to previous years' trends.

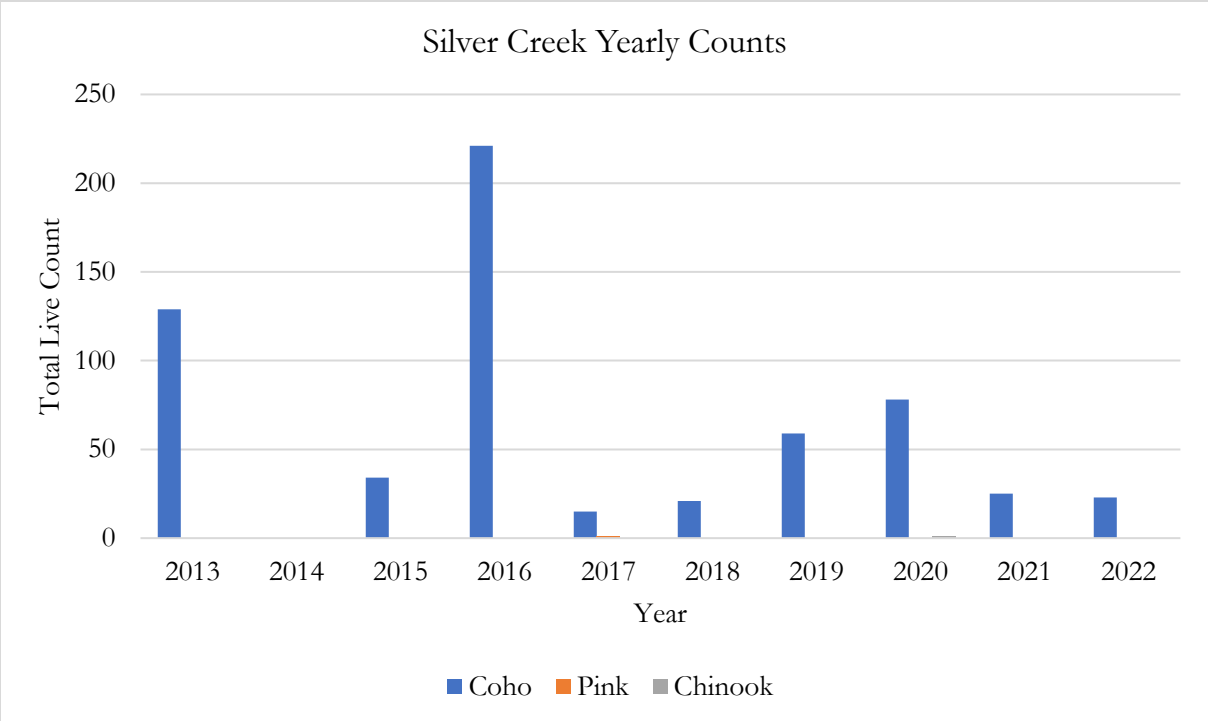

Figure 12: This year Silver Creek saw a total of 23 coho; similar to recent years' runs, but significantly less than 2016 when 221 spawning adult coho were observed. Due to the scale of this graph, the low number of live pink and Chinook are not visible. In 2020, 1 live Chinook was observed and in 2017 1 live pink salmon was observed.

Mud & Finnegan Creeks

Mud Creek drains from Chuckanut Mountain and flows into the north end of Lake Samish. Coho and WFDW stocked kokanee are the two most commonly observed salmon in this stream, however steelhead, rainbow and cutthroat trout have also been documented. The portion of the creek surveyed by SFEG meanders through Camp Lutherwood, a privately owned summer camp. SFEG has been monitoring Mud Creek since the early 2000's. In 2017, the Nooksack Salmon Enhancement Associate completed a fish passage barrier removal project. The kokanee run is the most prolific population of salmon observed on this tributary of Lake Samish, however in the last 4 years total seasonal counts have decreased drastically. The most ever observed in a survey season was in 2009 when 1799 live kokanee were counted (Figure 13). Only 5 years within the last 15 have been observed with less than 300 kokanee in a season, with numbers averaging around 500 per season. Since 2019 when 1271 live kokanee were observed, kokanee populations have decreased. Since SFEG began monitoring Mud Creek no more than 11 coho have ever been counted in an individual season; last year was the first year they have seen any coho in 4 years, seeing just nine live, five carcasses and one redd. Due to their low numbers, coho totals are not visible on the graph for yearly counts graph (Figure 13), from the year SFEG began monitoring Mud Creek, no more than 10 spawning coho have been recorded in a single season.

Finnegan Creek drains from Lookout Mountain into the middle section of Lake Samish and is home to a large population of kokanee and a lesser population of coho. Steelhead, rainbow, and cutthroat trout have also been documented on this tributary however seeing them is less common. In 1999, a fish passage barrier removal project corrected a culvert on residential road going over Finnegan Creek about 300-feet upstream of Lake Samish, however there is currently a partial barrier at the upstream end of the SFEG survey reach about 0.3 miles upstream from the mouth of the creek. Plans to remove this culvert are not known at this time, however this is an active SFEG planting site. Finnegan Creek has a much smaller population of kokanee than Mud Creek, and the Finnegan Creek kokanee population trend is positive, however no Finnegan Creek coho population has been recorded since 2019 (Figure 16).

Mud and Finnegan Creek were surveyed by volunteers Collette Webb and Ryan Mielke from October 16, 2022, to January 8, 2023. Neither of these creeks observed any live coho this season. Mud Creek saw less kokanee than it did last year, however the return of kokanee to Mud Creek fluctuates year to year; however, in 2019 over 1200 kokanee were recorded, this is more than has been observed in the last 10 years. While the populations trends appear to be declining, their numbers are fluctuating within 4–6-year period, the reason for this cannot, however, be determined by SFEG collected data alone. Finnegan Creek saw more kokanee this year than it has in the last eight years, more than 250 were observed (Figure 16).

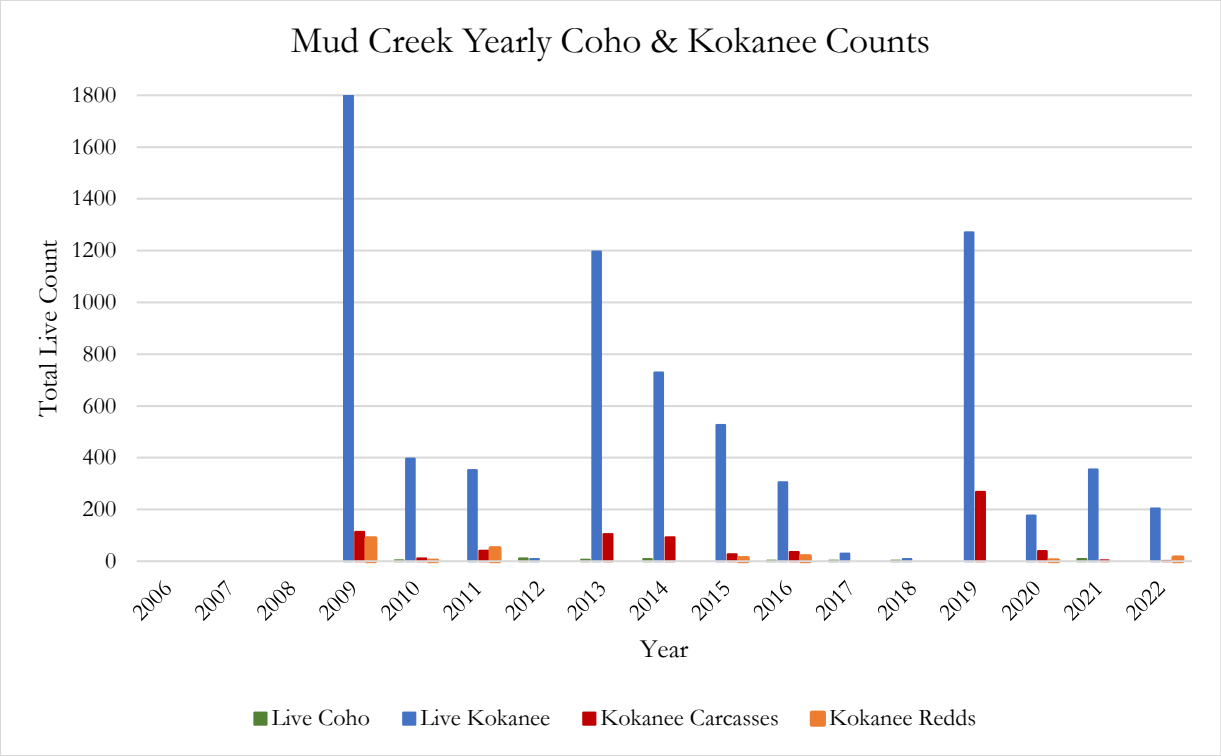

Figure 13: This year Mudd Creek saw 204 kokanee. This fits with the overall trend of recent years, but significantly less than some years. In 2019, 1,271 kokanee were observed.

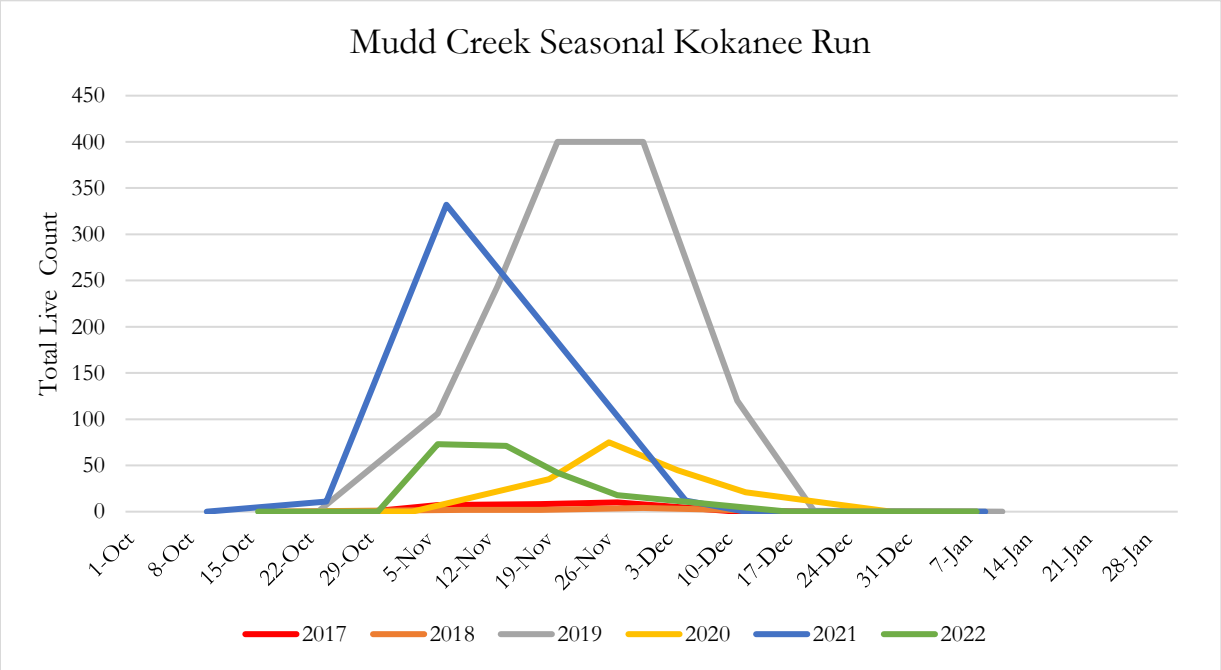

Figure 14: This year the peak of the run was on Nov. 6th, when 73 kokanee were seen. This is comparable to the peaks of previous seasons. In 2021, the peak was on Nov 7th, with 332 kokanee.

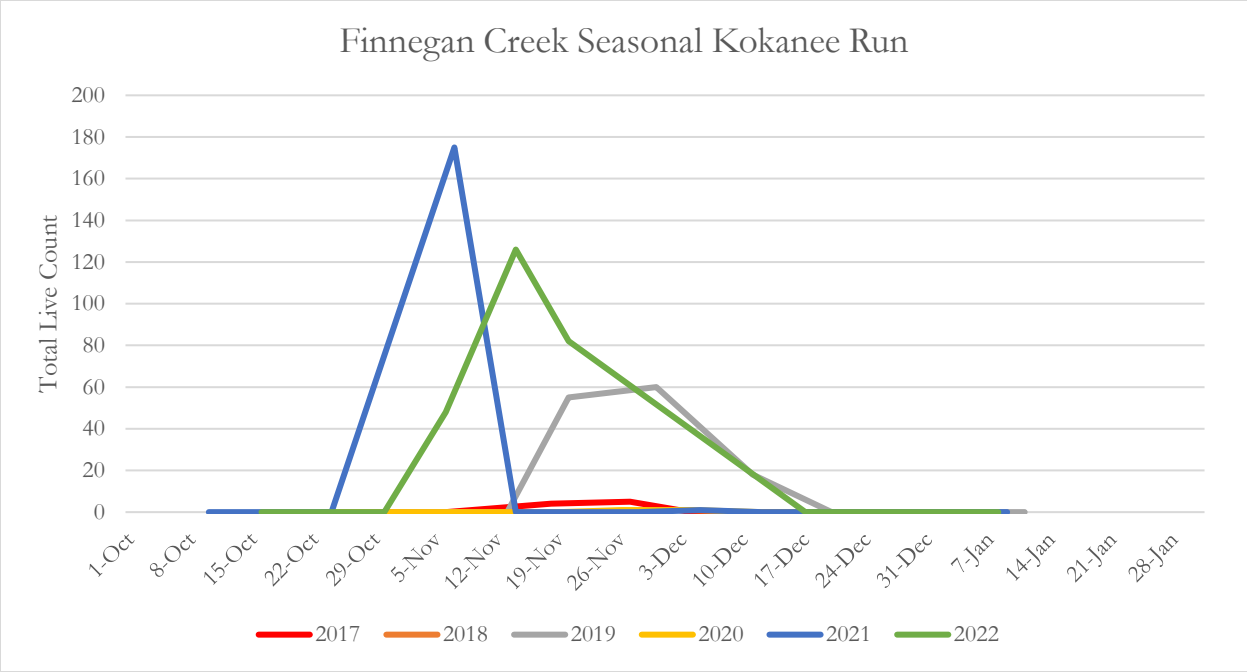

Figure 15: This season the peak of the run was on Nov 14th when 126 kokanee were seen. This is comparable to previous seasonal peaks. In 2021 the peak was on Nov 7th, with 175 kokanee.

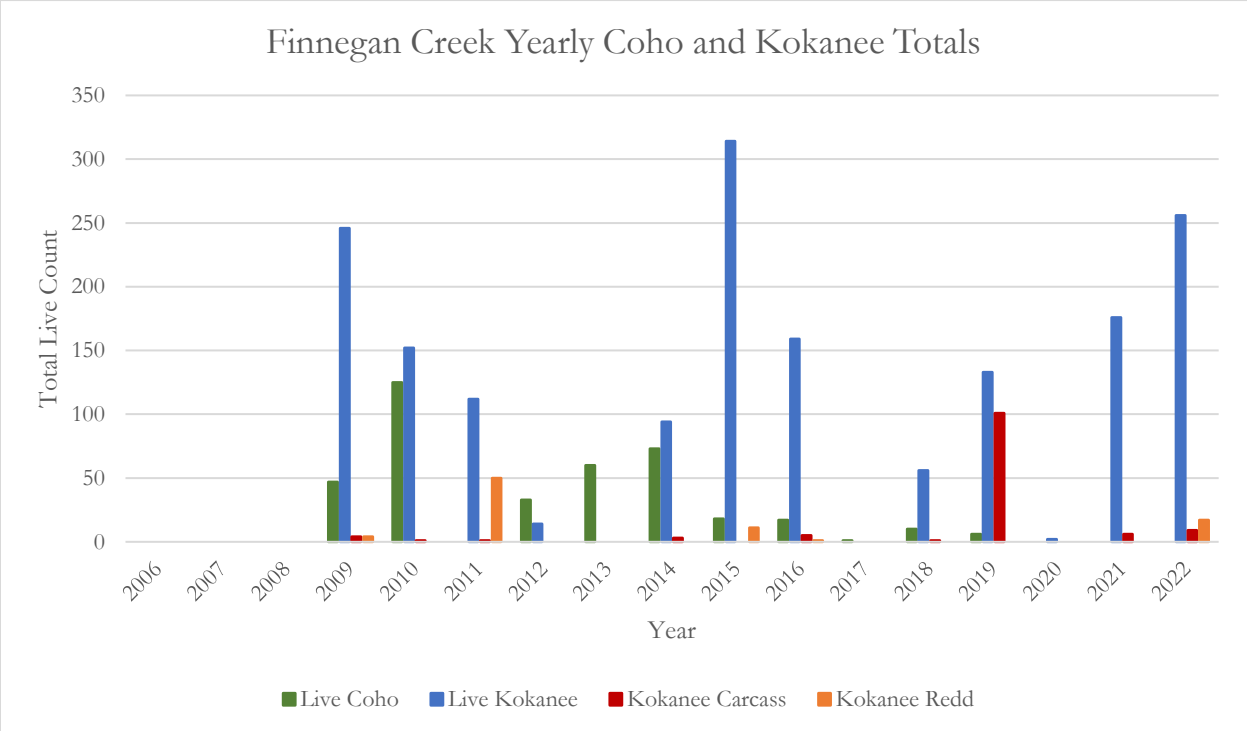

Figure 16: This year Finnegan Creek saw 256 kokanee and zero coho. Kokanee numbers are comparable to previous seasons, with the peak being in 2015 when 314 were counted. In the last 3 years, zero coho have been observed on the survey reach, but in 2010, 125 observed.

Maddox Creek

Maddox Creek is located in the Skagit Watershed, however it does not flow directly into the Skagit River, instead it flows south parallel to the Skagit River and Interstate-5 hemmed in on either side by a dike that puts out into estuarine marshlands adjacent to Conway. Maddox Creek is one of the most urbanized creek survey reaches SFEG has in the Spawner Survey Program. It begins within Mount Vernon city limits and flows through suburban neighborhoods and agricultural fields; so much of the riparian habitat that once existed along this creek is no longer intact. It has known populations of wild coho and resident cutthroat trout, and according to SalmonScape is gradient accessible to Chinook, pink and steelhead however they have not been formally observed in recent years. WDFW has records of coho spawning in this creek from the mid 1950's. In 2013, two impassible culverts were removed and replaced by large cement bridges allowing fish to regain access to a treed section of Bonnie Rae Park and an additional 3 miles of upstream habitat. In 2017, SFEG began monitoring Maddox Creek and saw very few coho, just 2 live and zero carcasses or redds.

This season Maddox Creek saw fewer overall fish than previous years, however the coho population of this creek appears to be trending in a positive manner. Stream survey volunteers Hal Lee and Kurt Buchanan surveyed Maddox Creek from October 15, 2022, to January 17, 2023. The peak of the 2022-2023 season was observed on November 30, when 19 live coho were counted, with 10 more live coho the following week (Figure 17). The peak of the season is about 2 weeks later than last year's peak, when surveyors counted 31 live coho on November 16, 2021. The season ran much later than has been previously recorded by SFEG, when surveyors saw their last 2 live coho on December 31, in comparison to the previous year's season that saw the last live coho on Dec 7, 2021 (Figure 17). Overall, this season counted the second most live coho and redds since stream monitoring began, and the most carcasses of all monitoring seasons (Figure 18). Similar to other creeks within the Skagit Watershed, the seasonal run peak appears to correspond with rain and high flow events. Thinking from a salmon's perspective, this factor seems particularly important because of the shallow ditch that Maddox Creek flows down to the estuary. Lack of stream complexity, LWD and overstory to provide shade and cover during migration create more difficult conditions for both spawning and rearing salmonids.

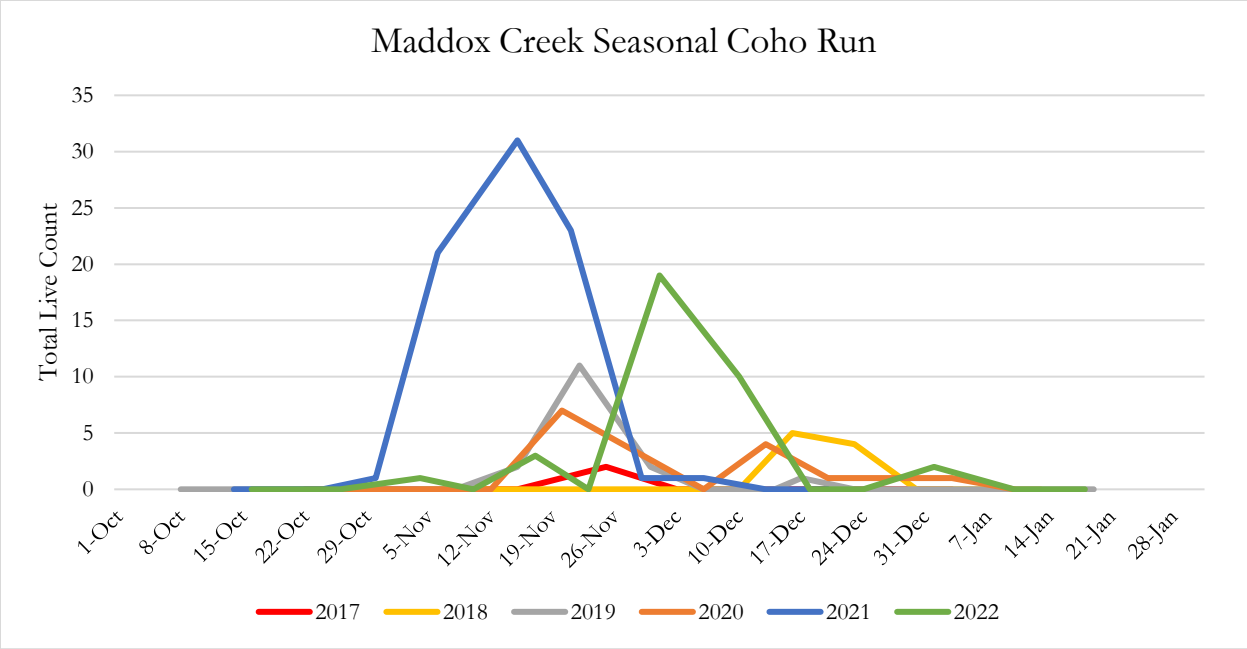

Figure 17: The peak of the coho run on Maddox Creek was on Nov 30th when 19 coho were seen. This 2nd most observed coho on a single survey. Last year, the peak was on Nov. 16th with 31 coho seen.

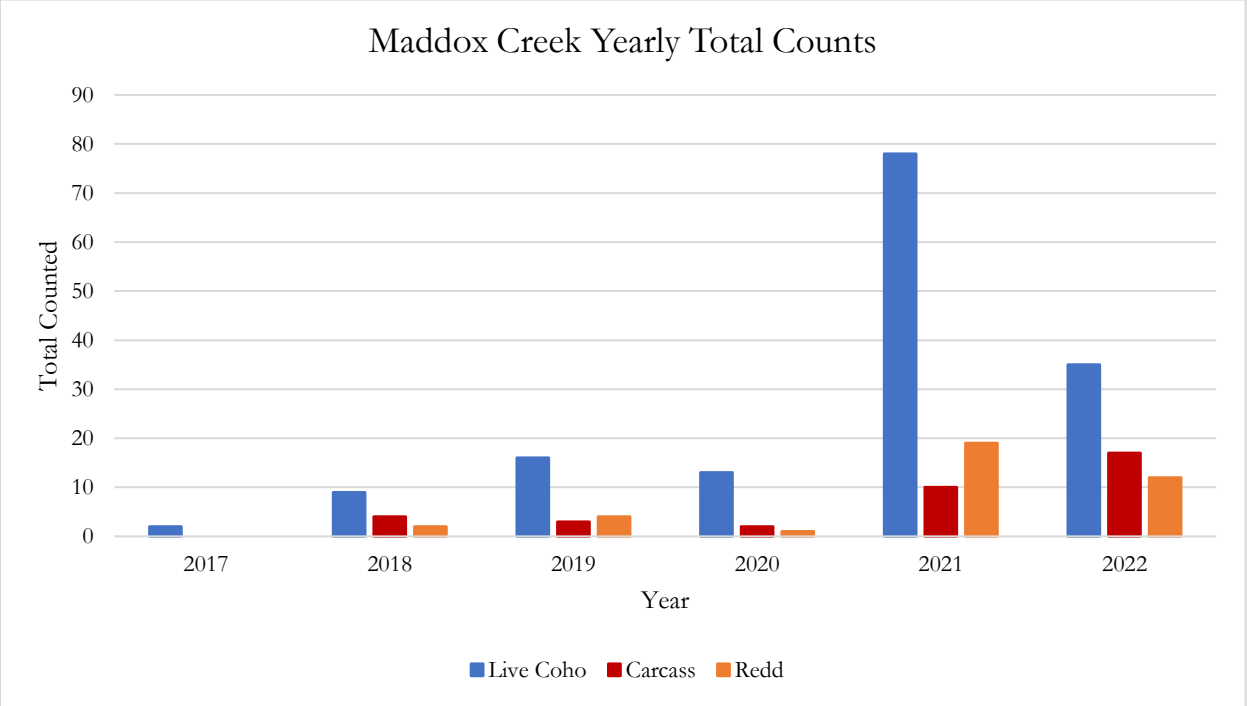

Figure 18: This year Maddox Creek saw a total of 35 coho. This is an increase from the average of the last 5 years, but less than was seen in 2021 when 78 coho were counted. More carcasses were counted than any previous yearly count.

Little Cascade Creek

Little Cascade Creek, also known as Lyric Creek, is a tributary of the Cascade River that downstream joins very quickly with the Skagit River. Little Cascade Creek is the upper most survey reach within the Skagit River Watershed and is located on Skagit Land Trust property. This creek is fed by Lookout Mountain east of Marblemount. This creek has documented all three runs of Chinook, spring, summer and fall, chum, and coho salmon, and according to SalmonScape is gradient accessible to pink salmon and steelhead trout but they have not been formally documented. In 2015, SFEG worked with volunteers to remove a fish passage barrier culvert that was installed for a now unused driveway, install native species restore the streambed and leave the crossing abandoned.

This year survey volunteers Hal Lee and Kurt Buchanan walked Little Cascade from October 7, 2022, to January 15, 2023. This year's total run of coho was much less than last year's, coming in a 54 live coho compared to 393 live coho recorded in 2021 (Figure 20). Last year's run, however, peaked around the same time as the historic flooding that occurred in late November, when surveyors saw 120 live coho November 18. This year the peak of the season corresponded with the larger of the two rain events when the Skagit River had high flow at the end of December (Figure 19). Due to the distance that this creek is in the watershed, it may be speculated that coho and other fish need higher water flow to more easily and/or reliably migrate upstream.

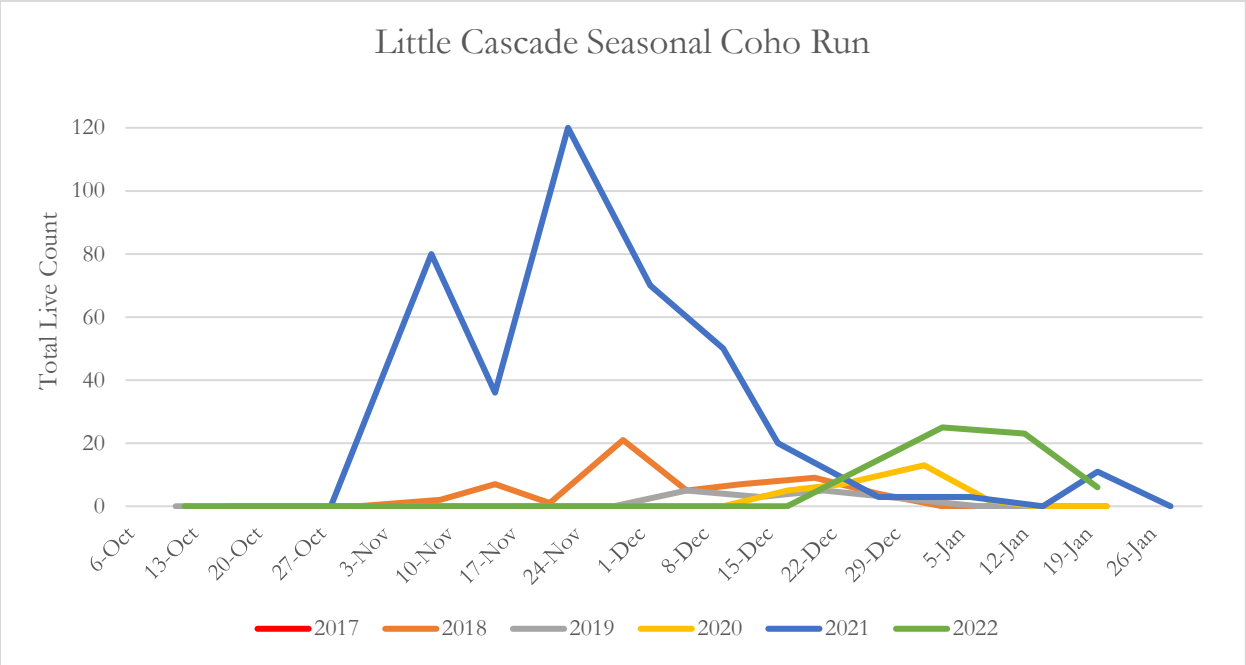

Figure 19: This season, the peak was on Dec 29th, with 25 coho seen. This is about a month later than previous seasons. Last year the peak of the season was on Nov 18th, with 120 coho observed.

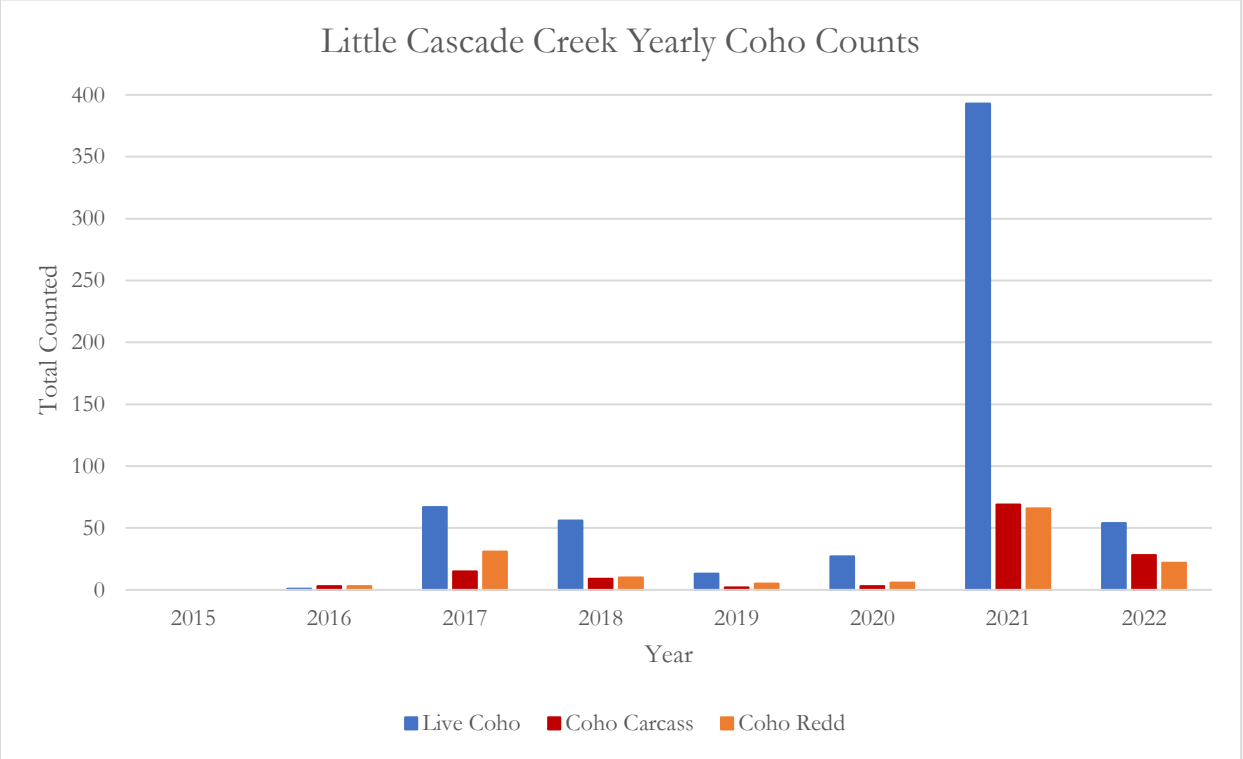

Figure 20: Little Cascade Creek saw 54 coho salmon this survey season. This is comparable to previous years, but significantly less than last year, when 393 coho were seen.

Starbird Creek

Starbird Creek is a tributary of Fisher Creek and flows into the Skagit Bay estuary very close to where Maddox Creek also enters the bay. While it does not flow directly into Skagit River, it is considered within the Skagit Watershed because it flows into the Skagit Bay. Starbird Creek has had two large fish barrier removal projects completed by SFEG, the first being a 60-foot steel bridge on Starbird Creek Lane in 2014, and the second being a 14-foot concrete bridge at the end of Fremali Lane on private property; both projects were funded by the FFFPP. This section of Starbird Creek has some very large, old trees and good habitat for spawning and rearing salmonids; by removing the two fish passage barriers, SFEG and local landowners aim to enhance the pre-existing habitat an increase the Starbird Creek salmon population. The creek is fed by boggy wetlands and is dark with tannins, similar to Swede Creek, the color of the creek makes it tricky to survey; additionally, due to the healthy riparian edge with lots of shade and low light settings another level of difficulty is added to collecting data. Historically, this creek has seen good coho runs. According to SalmonScape, Starbird Creek is gradient accessible to steelhead, chinook, chum and pink salmon, and it is presumed that cutthroat trout exists in the creek.

This year was a late and odd year for Starbird Creek. Spawner survey volunteers Dean Van Vleet and Loren Fuell surveyed from October 9, 2022, to January 29, 2023. No fish were seen for the first part of the season; but due to the tenacity of the surveyors continuing to monitor past the normal season, they were surprised with their first two spawning adult coho on January 1, 2023 (a Happy New Year, indeed). They saw another three live coho on January 8 (Figure 21). These observations are significant because according to SFEG and WFDW data, coho had never been recorded this late on Starbird Creek. Had the surveyors decided to stop surveying during the parameters of a normal season, they would have missed this observation. While they only saw five live coho total during the 2022-2023 season, it is exciting to see salmon on this creek for the first time in six years (Figure 22).

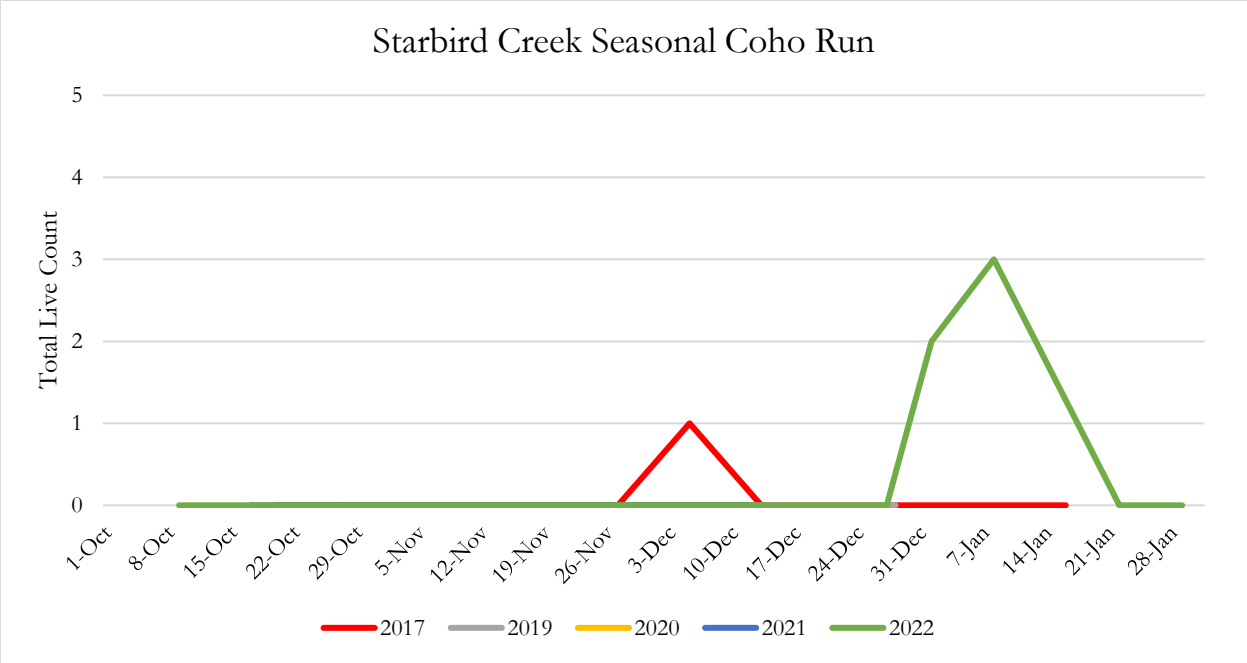

Figure 21: This year the peak of the run was on Jan. 8th, when 3 live adult coho were seen. This is about a month later than previous returns. In 2017 the peak was on Dec. 5th, when 1 coho was seen. This is the most coho seen in since 2017.

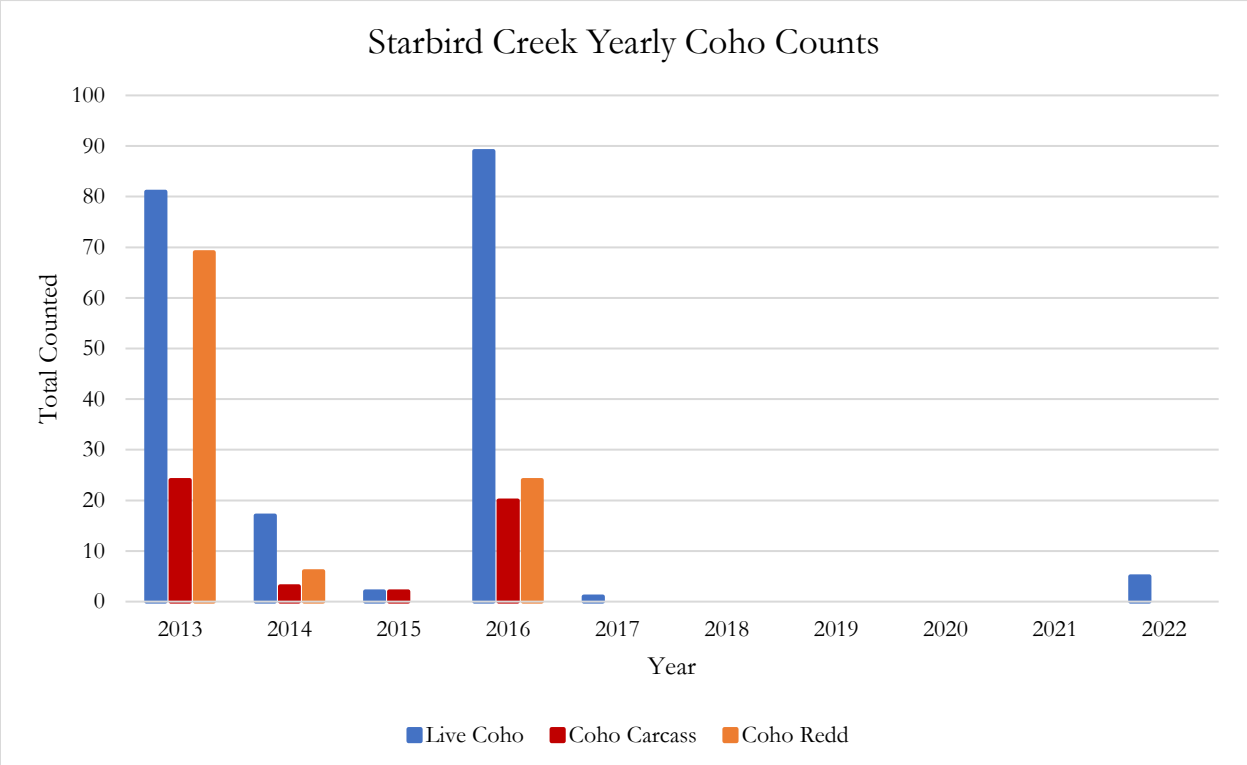

Figure 22: This year Starbird Creek saw 5 live coho. This is an improvement over the last 6 years, but not nearly as large as the 2016 run, when 89 coho were seen.

Gribble Creek

Gribble Creek is a tributary of West Fork Nookachamps Creek, a portion of the lower Skagit Watershed, and has been surveyed by SFEG since 2006. This creek supports varying coho runs and has seen a nice upward trend in its coho population in the several years. Gribble Creek is on privately owned land and is only accessible with landowner permission. There have been several fish passage barriers replaced on Gribble Creek, most in 2013 with Natural Resource Conservation Service (NRCS) funding. Last years' season had the highest number of coho salmon recorded on the creek as of then, this year surpassed those numbers.

Gribble Creek had an excellent year. Spawner survey volunteers Chris Farrow and Karin Gribble surveyed Gribble Creek from October 20, 2022, to January 31, 2023; to date this is the longest survey season SFEG volunteers have had on Gribble Creek. This creek set another record this year, counting an incredible 285 live coho, almost three times as many as the previous year's run which was then considered the best year yet. Gribble Creek's coho run peaked at the end of November when surveyors counted 62 coho, and another 79 coho on their following survey (Figure 23). Gribble Creek saw its last live coho of the season on January 11. The respective spikes in live fish counts appear to coincide with rainfall and high river flow. Since monitoring commenced on Gribble Creek, the coho population has improved substantially (Figure 24).

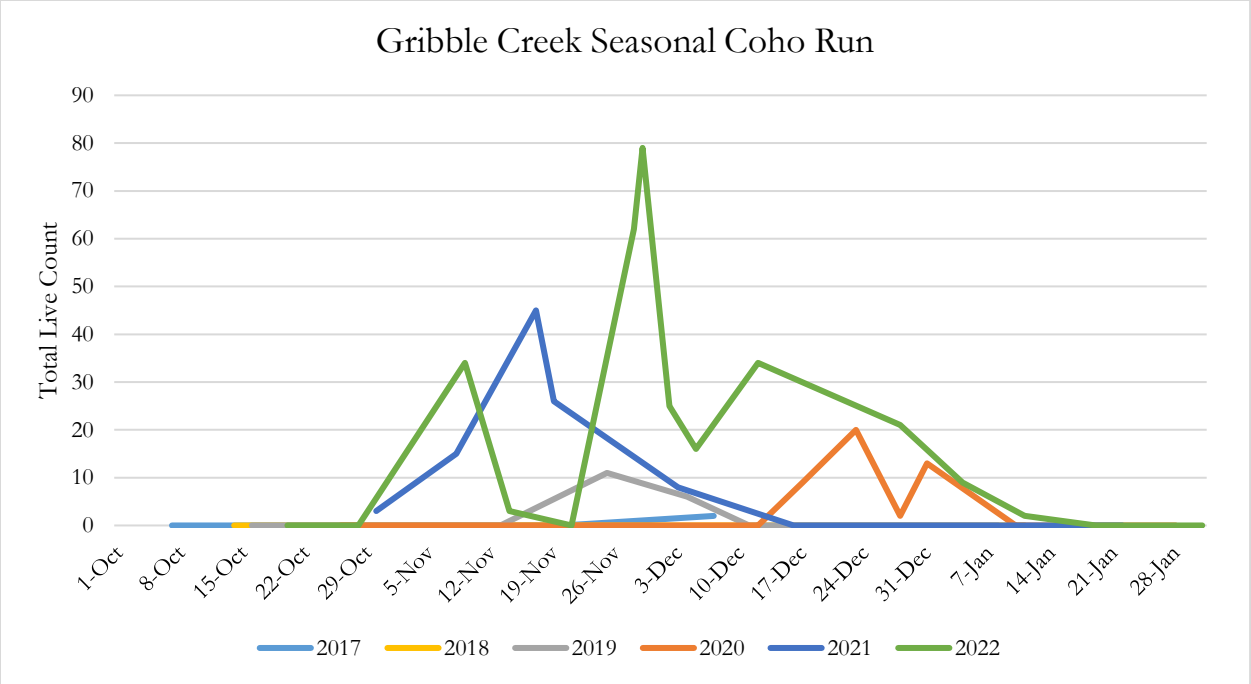

Figure 23: This year the peak of the season on Gribble Creek was on Nov. 29th, with 79 coho seen. This is comparable to previous peak seasons. Last year the peak was on Nov 17th with 45 coho seen.

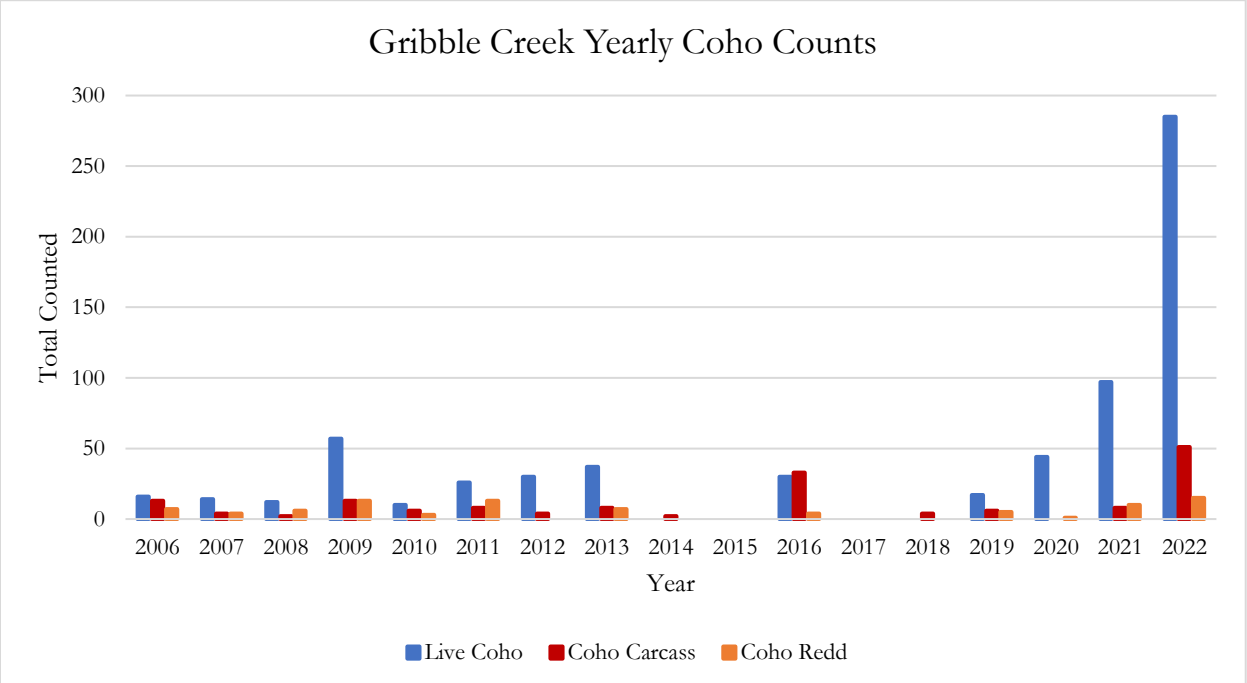

Figure 24: This year Gribble Creek saw 285 coho. This is significantly more than previous seasons; 97 live coho were observed last year, which at the time was the most seen in a single season.

East Fork Walker

East Fork Walker is a tributary of East Fork Nookachamps Creek and flows down from the Cultus Mountains between Big Lake and Lake Challenge. The survey reach of East Fork Walker encompasses a portion of the stream that underwent construction in 2015; with funding from the FFFPP, SFEG removed a culvert barrier that restricted fish passage and installed a 60-foot steel bridge restoring access to over a mile of upstream spawning and rearing habitat. With funding from the Washington Department of Ecology, SFEG and volunteers, including middle schoolers, Skagit Valley College Environmental Club and local community members, planted 2.5 acres with native conifers and deciduous trees and shrubs. By enhancing this riparian edge, the SFEG community is helping ensure that future salmon runs will have well-forested, shaded streams, as well as cleaner water through reduced erosion and increased water filtration by native plant root systems. All of these aspects are critical to healthy and abundant salmon populations. Chinook, chum, coho, and spring and winter steelhead have been documented in this stream and since project completion the population of coho has increased.

This East Fork Walker Creek coho run had a great season. Spawner survey volunteers Chad Verbitsky and Lindsey Juen monitored the creek from October 9, 2022 to February 8, 2023. They saw their first fish, 16 live coho, on November 6 and their last four live fish on January 8. The season peaked on November 27, 91 live coho were counted, and continued steady for the two following weeks (Figure 25). East Fork Walker had an exceptionally long run and while the peak of the season was only about a week later than average, the coho season drummed on a whole month later than the average seasonal run of the last 5 years. This season saw the most fish counted yet, since the removal of the culvert in 2016 when monitoring of the stream began (Figure 26). The continued efforts of surveying this reach to see how the coho population persists is highly recommended because as it stands, it proves to be an excellent success story for fish passage barrier removal and riparian habitat enhancement.

At one point in the season Verbitsky mentioned he was, "surprised [by] the amount of salmon carcasses that [went] seemingly untouched over [a couple] of weeks". This led to an interesting discussion about the presence of predators, or lack thereof, in our riparian edges. Urban and rural sprawling have increased pressure from people and caused many predators to shift their habits and change their ranges; in areas that historically had bears, mountain lions, wolves, plentiful eagles and other smaller predators, fish carcasses were likely to be dragged away from the stream. This not only reduced the number of salmon carcasses directly on the bank but would also increased the area of distribution of marine derived nitrogen into the surrounding forest. This discussion can serve as a reminder to the wide range of impacts that salmon populations have on our environment and the ecology of waterways and forests, and who all benefits from the continued efforts to improve salmon habitat.

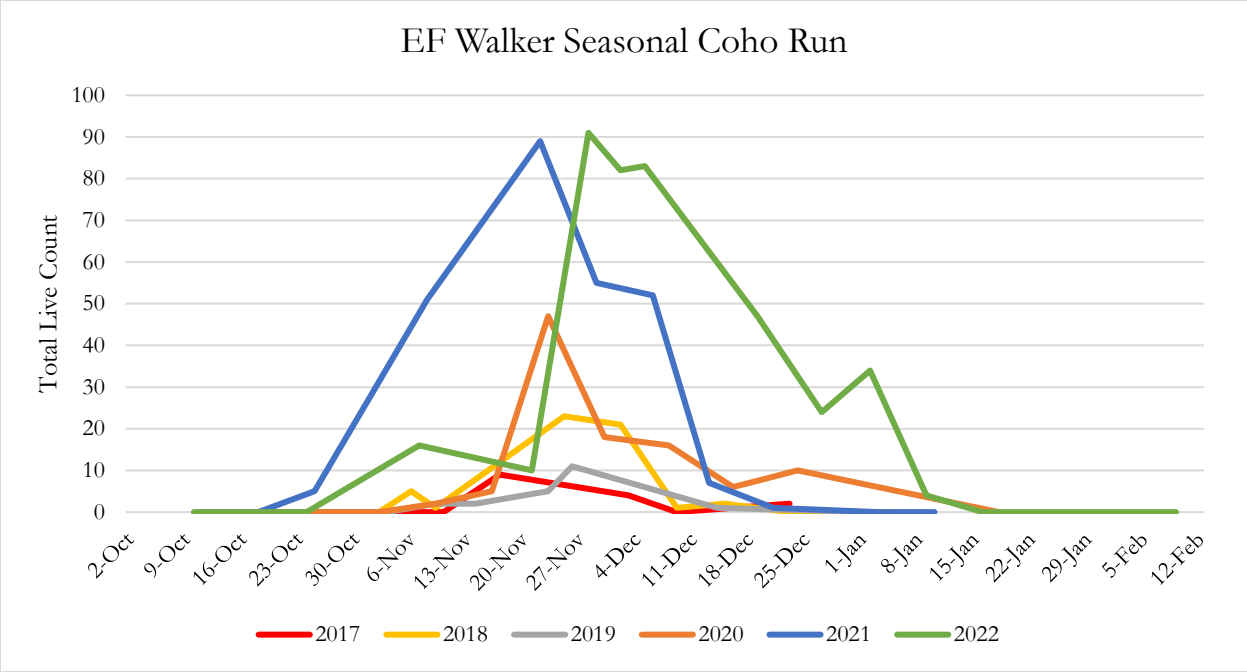

Figure 25: This year the peak of the run was on Nov. 27th when 91 coho were seen. This is slightly later, but comparable to previous years. In 2021 the peak of the run was on Nov. 21st when 89 coho were seen.

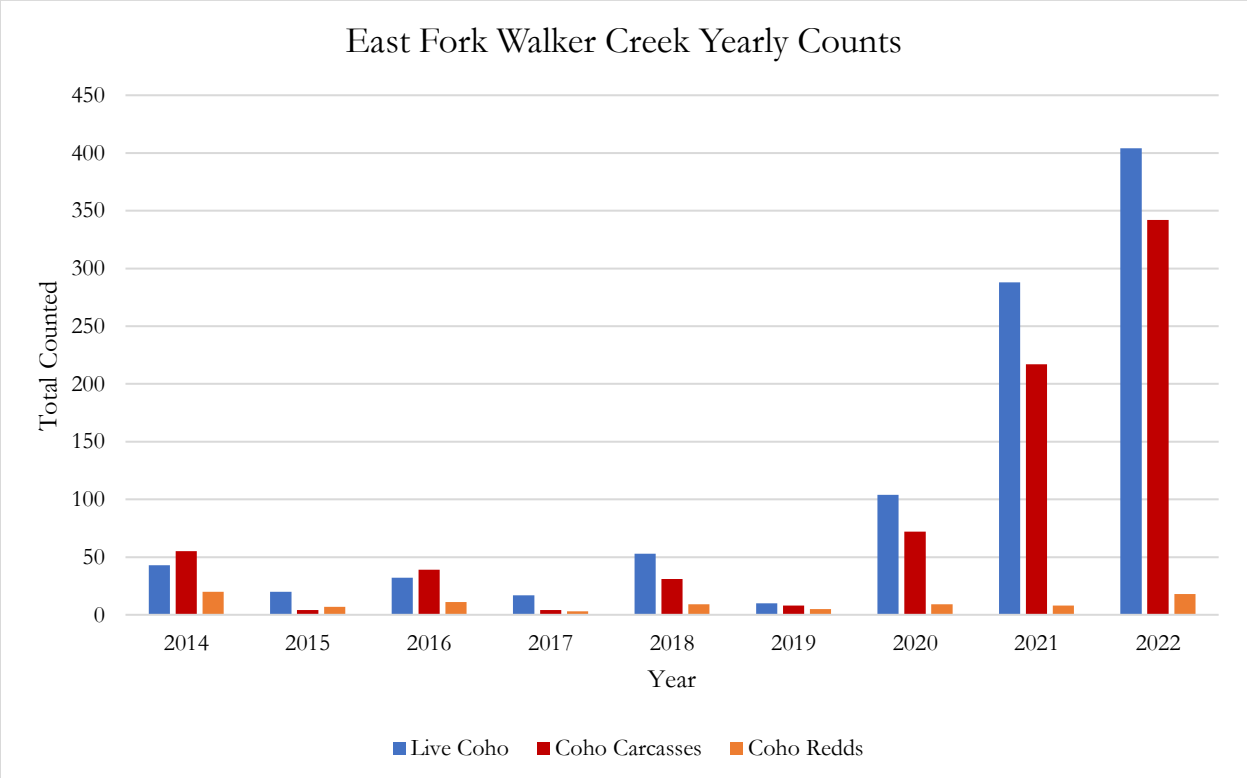

Figure 25: This year the peak of the run was on Nov. 27th when 91 coho were seen. This is slightly later, but comparable to previous years. In 2021 the peak of the run was on Nov. 21st when 89 coho were seen.

Carpenter & English

Carpenter Creek is a tributary of the Skagit River, joining with the Fisher Creek system just south of Conway before dumping into the Skagit River estuarine floodplain and then Skagit Bay just a mile further downstream. Carpenter Creek is unique, similar to Maddox Creek, in that it is a more rural stream with improved habitat on its upper portion however, the lower six-mile stretch flows through Hill Ditch, hemmed in on either side by agricultural land before entering the Skagit Bay. Carpenter Creek has been monitored since 2019 after SFEG completed the first of two fish passage barrier removal projects with FFFPP funding. The second barrier culvert was removed in 2020 and in both cases, large bridges were installed, opening up habitat upstream for spawning and rearing. There is still, however, a problematic culvert about 0.3-miles downstream that is restricting nearly all fish passage. Coho, residential cutthroat trout, and spring and winter steelhead have been documented on Carpenter Creek, however SFEG surveyors have not recorded any salmon sightings since we began surveying this creek.

English Creek is a tributary to Carpenter Creek and enters about 0.3-miles downstream of the Carpenter Creek reach. English Creek is mapped incorrectly on most maps and enters Carpenter immediately downstream of the fish passage barrier and the landowner reports seeing coho access the stream each year. The survey reach focuses on an undersized culvert that represents a partial barrier and that we are hoping to upgrade in 2024. English Creek is well-forested reach that drains from Devil's Mountain and Lake Creek to the southeast. Coho and residential cutthroat trout have been documented in English Creek in past years.

Carpenter and English Creek did not have a fruitful 2022-2023 salmon spawning season. Spawner survey volunteers Brianna Mafrici and Elizabeth Drozda began surveying both creeks October 18, 2022 and ended the season December 17, 2022. They did not see any fish on either creek all season, however in early December they did spot a few coho lining up on the downstream side of the fish passage barrier on Carpenter Creek (Figure 27). Additionally, in October and November 2022, surveyors observed many juveniles in the English Creek on multiple occasions. During the 2021-2022 spawning season, 36 coho, 1 Chinook and 4 sockeye were documented in the English Creek survey reach (Figure 26). No adults have since been recorded, however observing juveniles gives hope that future runs will make it to the spawning habitat further upstream from the English-Carpenter Creek confluence.

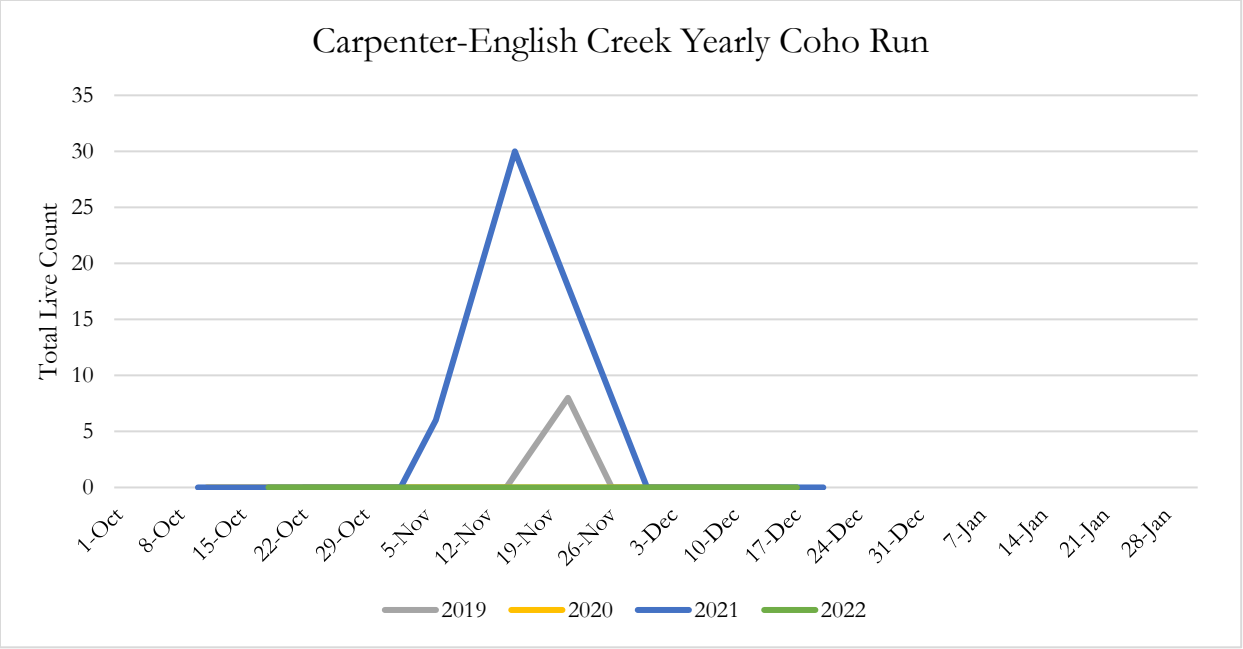

Figure 26: No adult salmonids were observed this 2022 season, but the peak of the coho run in 2021 was on Nov. 15th when 30 coho were observed.

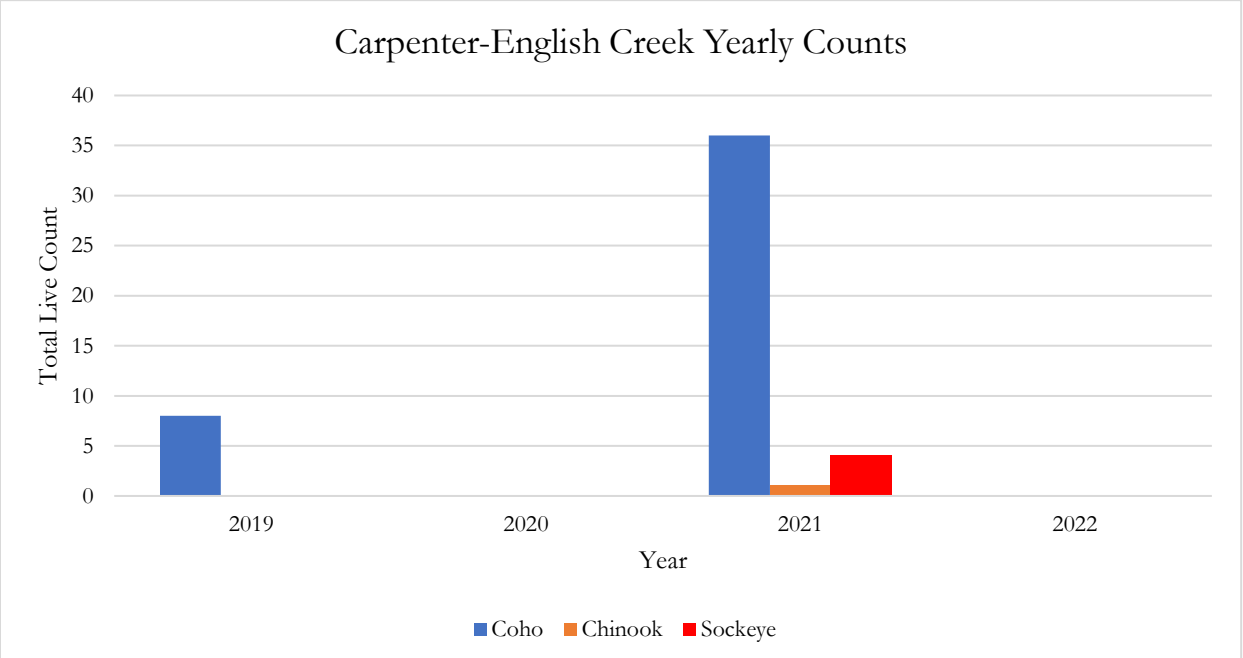

Figure 27: This year no adult salmonids were observed on the Carpenter-English reaches. In 2021 36 coho, 1 Chinook, and 4 sockeye salmon were seen.

Cumberland Creek

Cumberland Creek drains from Coal and Iron Mountain, and is a tributary of the Skagit River, entering just south of Hamilton. Cumberland Creek flows through the Cumberland Conservation Area, a 211-acre property owned by the Skagit Land Trust. The conservation area is composed mostly of deciduous floodplain forest surrounded on three sides by the Skagit River. The predominant tree species are alder, cottonwood, and big leaf maple, and the area provides habitat for many species of mammals, birds, and amphibians. The creek flows through five acres of healthy riparian forest, paralleling the South Skagit Highway. In 2014, the Cumberland Creek was rerouted and restored to its original channel opening up over 4,000-feet of spawning habitat to a number of salmonids. This project was completed by a joint effort by the Skagit Land Trust, the Army Corps of Engineers, Skagit River System Cooperative (SRSC), Skagit County, and Seattle City Light. SFEG began monitoring this creek in 2014 after the bridge construction and channel restoration were completed. Since completion, there have been hundreds of pinks observed in the channel, as well as many chum, coho, Chinook, steelhead and residential cutthroat trout.

Cumberland Creek was monitored by spawner survey volunteers Mike Oras and Phil Latendresse from October 29, 2022, to February 13, 2023, making Cumberland Creek season extend the longest amongst all other creeks in the Spawner Survey Program. The first fish were seen November 28, when 4 live coho were spotted, and the last live fish were seen January 16 when 6 coho were seen in a riffle just upstream of the bridge (Figure 28). Only 2 carcasses were seen all season, however it was noted by surveyors and other community members that visit the conservation area that they saw bits and pieces of salmon carcasses on several trails that were away from the creek channel. This indicates a good amount of predation occurred. Compared to last year, the total fish count was significantly reduced, however this was not a "pink year" (pinks are known to only spawn in Washington on numerically odd years), and last year the vast majority of fish counted were pinks (aka humpies) (Figure 29).

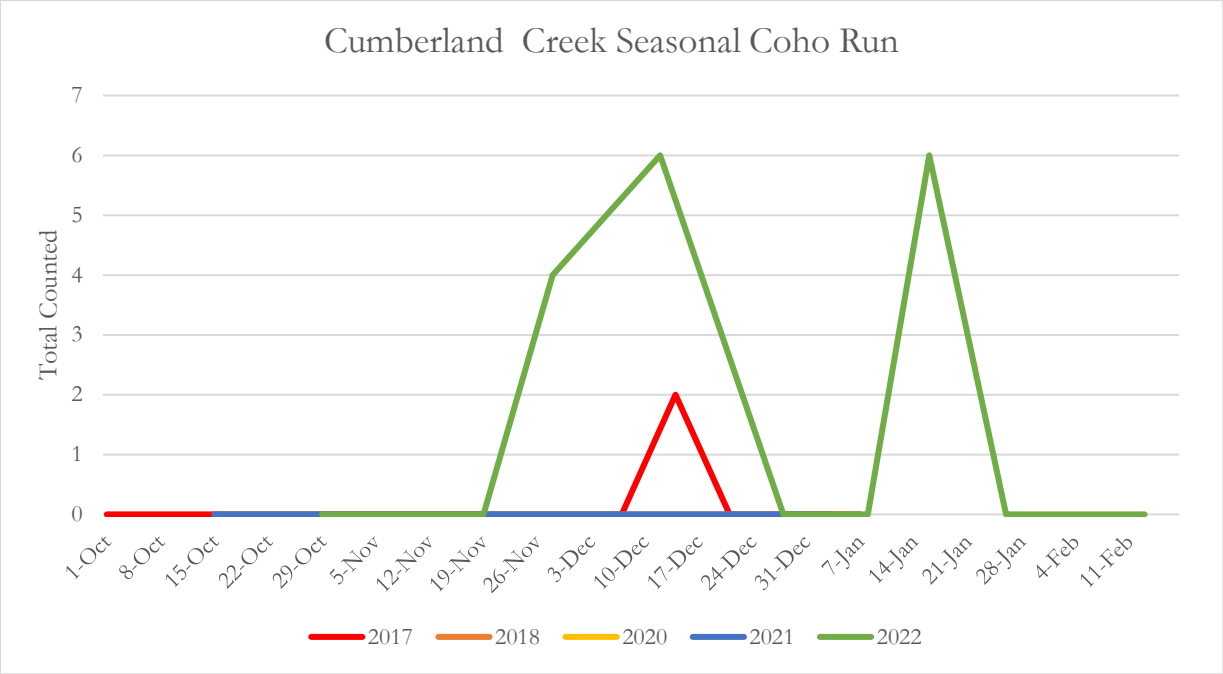

Figure 28: Cumberland Creek saw more coho this year than it has in the last 5 years. 2019 is omitted from this graph because no survey was done that year. Cumberland had two main peaks this season, the first December 12th when 6 were seen and again January 16th when 6 more coho were recorded.

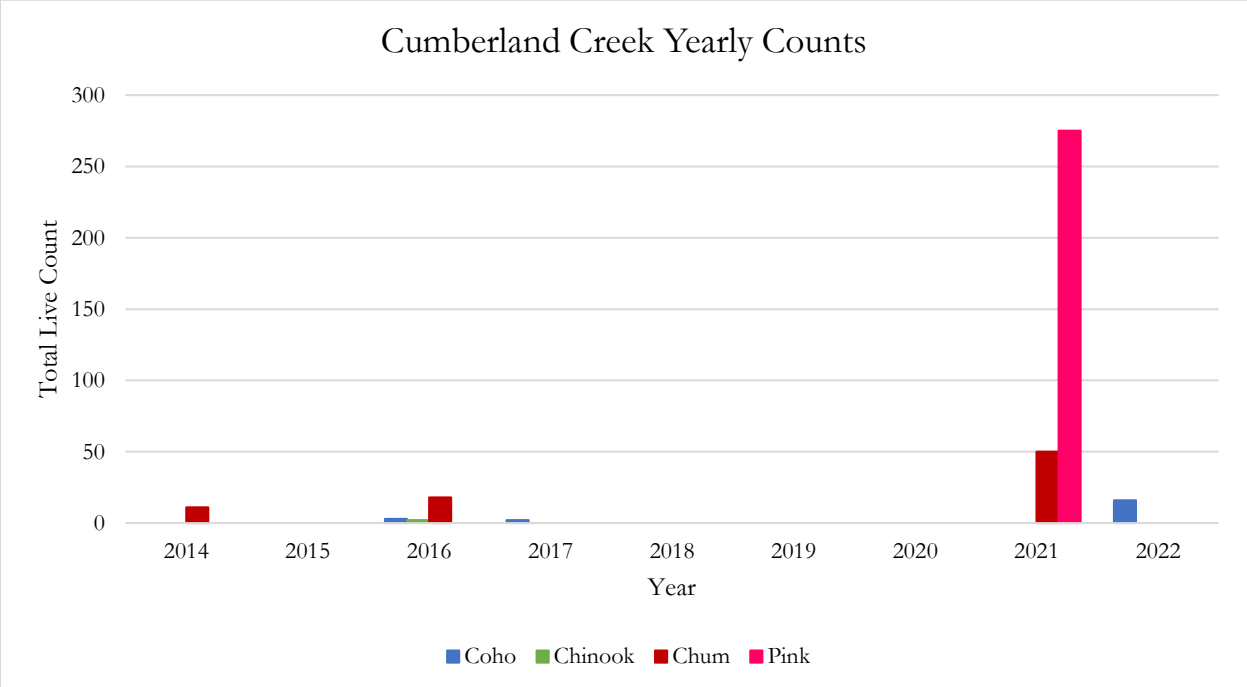

Figure 29: This year 16 coho were observed on Cumberland Creek. This is an improvement over previous years, as no coho were seen in 2021. However, that year there were 50 chum and 275 pink salmon seen. Pink salmon run every other year, so the lack of pink salmon this survey season is to be expected.

Pressentin Side Channel

The Pressentin Side Channel is a result of a very large scale restoration project completed by SFEG in 2021. A 0.5-mile Skagit River side channel was constructed along a relic side channel that had historically been modified and dewatered. This habitat type is severely lacking in the upper Skagit River. Pre-project surveys of the existing side channel (located South of the newly constructed channel) found high usage of this habitat by multiple species of adult and juvenile salmonids, including Chinook, chum, coho and steelhead. Pressentin Park is part of the Skagit County Parks system and is largely undeveloped, containing open space and hiking trails for local residents. Following the construction phase SFEG staff and volunteers completed 10 acres of native plantings in areas disturbed by construction which was previously occupied by invasive species. Just a few short months after construction was finished a few hundred pinks were counted in the side channel! However, in November 2021, the Skagit River experienced historic rainfall and flooding, during which much of the newly planted natives within the 10-acre planting site were washed away. At one point during the floods the entire constructed channel and planting area was submerged in several feet of water. This severely changed the sediment distribution in the recently established channel restricting water from flowing into the channel. The side channel habitat was replanted in the fall and winter of 2022 by Washington Conservation Corps, SFEG staff and Concrete Elementary 3rd Graders; however, it remains to be seen how the shift in sediment will affect the ability of salmon to use the channel. This was only the second year that the channel has been monitored, so time will tell.

During this years' spawner survey season, the Pressentin Side Channel hardly saw any fish. Spawner survey volunteers Mark Nihart, Ray Lewis, and Rebecca Pratt monitored the side channel from October 2, 2022, to February 4, 2023. During this period of time, surveyors saw one live chum, two chum carcasses and one live coho (Figure 30). Each of the surveys in which live fish were seen, it was thought that the fish did not enter the full extent of the channel because they were seen at the mouth or at the upstream entrance. Due to sediment shifts, it was found that the channel did not experience water flow unless the Marblemount USGS gage showed streamflow to be above 5200 cubic feet per second (cfs), and that stream conditions for spawning salmon were likely better between 5600-6000 cfs. This data is very helpful, and complements physical observations of side channel conditions, turbidity and presence of salmon. Continued monitoring of this project will inform us on how to proceed with future work done at the Pressentin Side Channel, as well as other restoration sites.

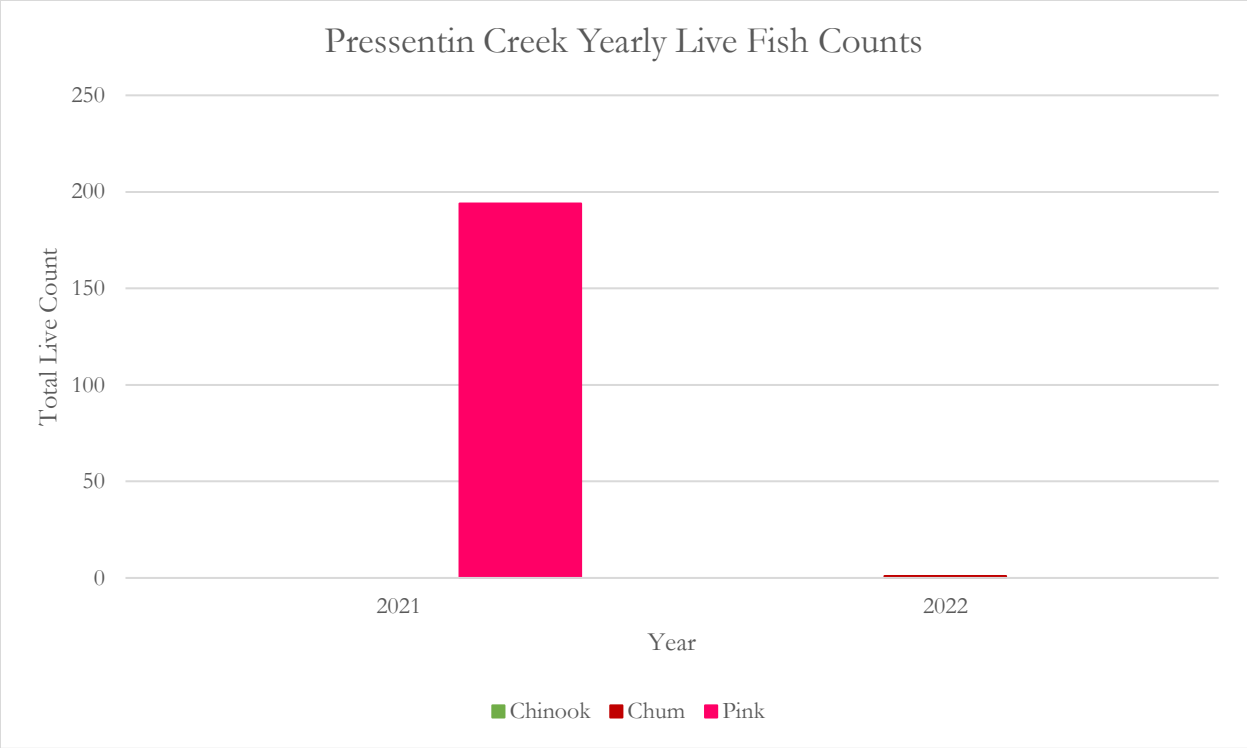

Figure 30: This year 1 chum salmon was seen on Pressentin Creek. In 2021 there were no chum and 194 pink salmon observed. The lack of pink salmon observed this year is to be expected because pinks run every other year.

Kennedy Creek

Kennedy Creek is a tributary of East Fork Nookachamps Creek, flowing in about a half mile before the East Fork Nookachamps-Turner Creek confluence. Kennedy Creek is the site of a 1999 SFEG restoration project in which 12 log weirs were installed to provide access to upstream habitat. Upstream of the weirs is an undersized culvert with 67% passability by adult salmonids, however in 2021 the landowner said she has seen coho and pink try to swim through it (burst swim). Juveniles have been observed in the pools between weirs. SFEG is currently working with an engineer and has design plans to remove the culvert and replace it with a box culvert that is 100% passable by adult spawning salmon. Native plants will also be installed in the construction area and surrounding wetland and a pond will be corrected to enhance salmon spawning and rearing habitat. This was the first season that Kennedy Creek was surveyed; surveys will continue after construction and plantings are completed to indicate the success of the restoration project.

Kennedy Creek saw very few salmon this year, and due to the nature of waterflow in the area, Kennedy Creek moved a lot throughout the season. The creek turns into a wetland during high amounts of rainfall and can cause the spawning adult salmon to stray from the mainstream and try to navigate through the water. Unfortunately, some may get stranded in these events. Spawner survey volunteers Catherine Houck and Doug Davidson surveyed from October 17, 2022, to January 19, 2023. During this time surveyors counted a total of 4 live coho, 13 coho carcasses and 3 coho redds. Several of the coho carcasses were found in the reed canary grass, thought to have been swept downstream during high flow, however most fish were spawned out. The tenacity of coho to make it upstream and spawn is proven at Kennedy Creek, and it will be very informative to watch the results of the coho population on this creek once the creek is 100% passable and the pond is corrected. No graphs were included for this creek because it was the first year of monitoring.

Crescent Harbor Creek

Crescent Harbor Creek is located on the Naval Air Station (NAS) Whidbey Seaplane Base, in Oak Harbor, Whidbey Island. In 2021, a restoration project implemented by SRSC, and NAS Whidbey Island relocated Crescent Harbor Creek with the goal of improving two fundamental stream habitat conditions linked to juvenile salmon rearing habitat: increased length and decreased gradient. SRSC completed fish monitoring in 2022 and multiple fish species were found to be utilizing the entirety of the newly restored creek, from the mouth up to the road. Species found included juvenile Chinook, chum and coho, and rainbow trout/steelhead whose life history (age) was unknown. As stated by SRSC, "Coho and Chum Salmon are known to spawn in small independent streams throughout Puget Sound, including the Whidbey Basin. In contrast to Chinook or Pink Salmon, the late fall and winter spawn timing of Coho and Chum Salmon allows access to these small rain-dominated hydrograph streams. Coho and Chum Salmon are also known to exhibit the non-natal "nomad" life history too. To our knowledge it is unknown whether Crescent Harbor Creek has natal populations of Coho and Chum Salmon, thus the presence of these two species in Crescent Harbor Creek could be from either natal or non-natal sources." Due to on-base entry restrictions, only active military or persons with authorized clearance can enter these premises to survey the stream.

By request of SRSC, Crescent Harbor Creek was monitored this fall-winter season for the first time by SFEG volunteers. Spawner survey volunteers Brianna Mafrici and Chad Verbitsky monitored Crescent Creek November 14, 202,2 to December 16, 2022. During this time no spawning or juvenile salmon were seen, however surveyors did observe dozens of three-spined stickleback, a small fish native coastal streams and estuarine environments. No graphs were included for this creek because it was the first year of monitoring.