



# FISHERIES NEWSLETTER

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The Taku River Tlingit (TRT) Fisheries Department is preparing for our 2021 field season. We wanted to update everyone on the Fisheries Program and provide information on the status of the Taku salmon runs. This year we have included some information to help explain to folks how salmon are managed on the Taku.

We hope you enjoy the newsletter and have a great summer!

## ***Fisheries Department Program Summary:***

The core funding for TRT Fisheries Department comes from the Aboriginal Fisheries Strategy (AFS). This is Federal funding to support TRT involvement in salmon management on the Taku River. For 2021 we have been successful in expanding the scope of projects funded under the AFS program to include construction of a new Fisheries building and TRT involvement in Tatsatua Sampling,

The Fisheries Department has also been successful at obtaining funding from the Northern Endowment Fund, through the Pacific Salmon Commission.

The TRT Fisheries Department also receives some funding from the Taku Atlin Conservancy (TAC). More information on TRT Fisheries projects is given on the following pages

## ***2021 AFS Stock Assessment Projects***

The TRT will be running its AFS (Aboriginal Fisheries Strategy) program again this summer with sockeye weirs at King Salmon and Kuthai Lakes as well as a Chinook carcass weir on the Nakina River. The Fisheries Department now uses underwater motion-activated video equipment on all our fish weirs. The advantage of using this equipment is that : 1.) it gives us a permanent record of fish moving through the weir that can be double-checked 2.) it allows the fish to pass through the weir at any time (fish are never being held up, and don't need to be handled) and 3.) reduces bear problems at weir as fish are not held in pens. The following are projects that the TRT has run for many years and intends to do so again this season.

**Kuthai Lake Weir:** This project erects a weir at the outlet of Kuthai Lake to record sockeye salmon entering the lake to spawn. The project starts on July 4th and runs until Sept 3rd. Kuthai Weir employs 2 Fisheries Technicians



**King Salmon Lake Weir:** This project erects a weir at the outlet of King Salmon Lake to record sockeye salmon entering the lake to spawn. The project starts on July 5th and runs until Sept 4th. King Salmon Weir employs 2 Fisheries Technicians

**Nakina Carcass Weir:** This project erects a weir across the Nakina River to try to sample 1000 chinook salmon carcasses for age (scales), length, sex and tags. The project starts on July 30th and ends August 26th and employs 2 Fisheries personnel.





## **Canyon Island:**

The TRT Fisheries Department provides one staff to support the Canyon Island fish wheels located just across the border in Alaska. This TRT staff person supports the Alaska Department of Fish and Game in tagging salmon for the mark-recapture program that is used to estimate salmon abundance on the Taku . More about mark-recapture to follow in this newsletter.



Photo (right): Fish wheel at Canyon Island

## ***New TRT Fisheries /Lands Department Workshop and Office Space:***

The TRTFN Fisheries Department is collaborating with other TRTFN Lands Departments to build a workshop to provide a space to store and maintain department equipment. The intention is to build office space on the second floor above the workshop. Construction of this facility is currently underway and the new building will be located directly North of the older TRTFN Administrative Building.

## ***TRTFN –TAC Scholarship Fund***

This funding was secured through the Taku Atlin Conservancy (TAC) and flows thru the TRTFN Lands and Fisheries Department. The current amount available through this scholarship is \$7,500. There may be an opportunity to supplement this scholarship funding thru contributions from other TRTFN Departments if necessary. The intention is to try to secure this funding on a yearly basis for the long-term. Priority will be given to Taku River Tlingit applicants, but citizens of other Tlingit Nations, Atlin residents and other First Nations are eligible to apply.

To make this fund accessible to the most applicants, the fund will consider a wide variety of education and training as eligible including: post secondary education, trades, art, culture, language, and personal development. The successful applicant(s) will be chosen by the TRTFN Education Committee based on eligibility, merit, and applicability to the interests of the TRTFN. All enquiries about the Taku Atlin Conservancy Scholarship should be directed to:

Susan Thorn, administrative assistant, or Dr. Jorge Llaca, Education Manager  
Address: 19 Taku Drive, PO Box 203, Atlin, BC V0W 1A0  
Phone: 250-651-7739  
Email: [education@gov.trtfn.com](mailto:education@gov.trtfn.com)

## ***Tulsequah Fish Habitat Compensation Investigations:***

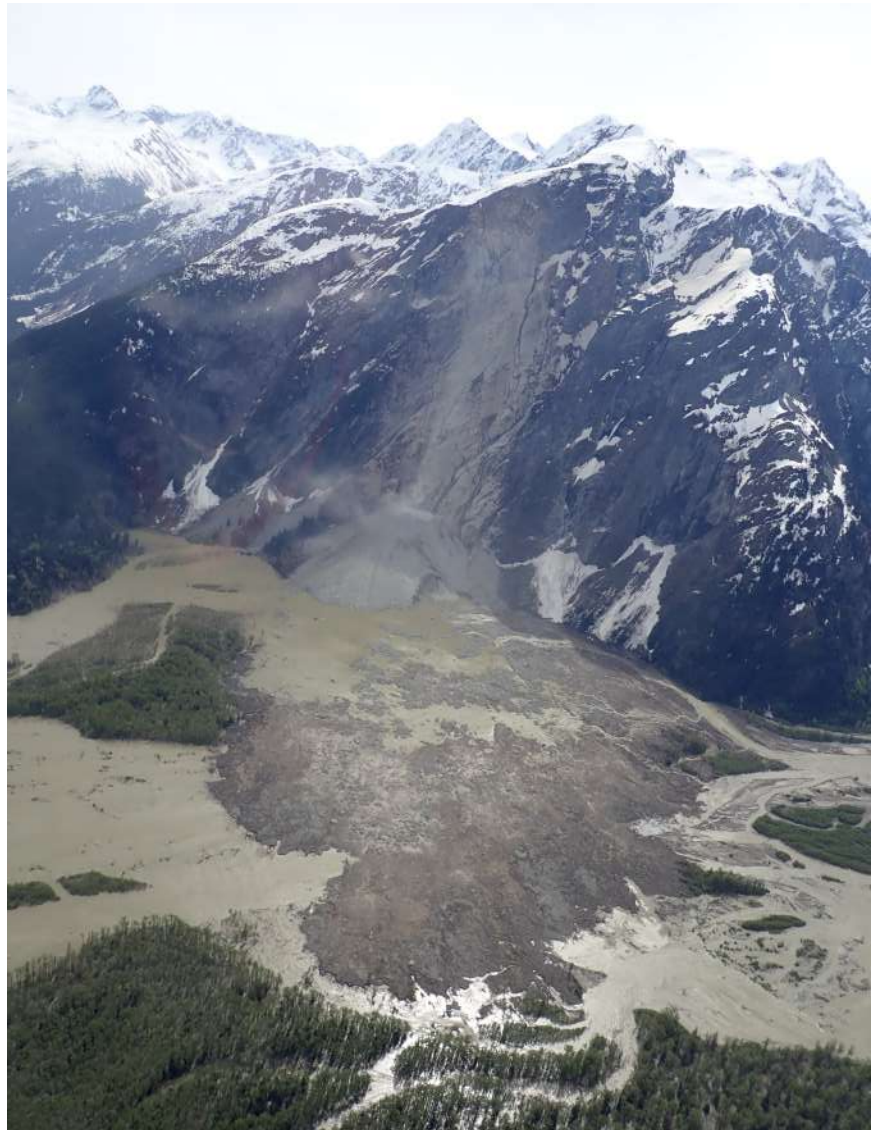
Previous attempts to re-open Tulsequah Chief Mine required a federal authorization to impact fish habitat and resulted in a compensation fund valued at approximately \$760,000.

The TRT Fisheries Department is collaborating with DFO on the development of a plan for how to use this bond to supplement current fish habitat, develop a monitoring plan for the chosen option, and conduct community outreach. Current thinking is that connecting the Tulsequah Airstrip borrow pit to Shazah Creek may create excellent and self-sustaining salmon spawning habitat.

## ***Landslide Monitoring***

During late December 2020, a large landslide occurred on the mainstem Taku River near Yellow Bluff, upstream of the Tulsequah River confluence. Large disturbances and natural hazards can fundamentally change ecosystems in a single event. Such natural hazards are increasing with climate change. In response, TRTFN and partners have developed a monitoring program to assess how the slide will affect fish habitat and ecosystems in the watershed. Recent visits to the slide have found that debris is still falling from the mountain. At this point it does not look like the slide will impede fish migration. As you can see in the photo here, there looks to be plenty of room for fish to get around the slide.

Photo of the Taku landslide,  
May 2021







## ***Taku Slide Time Sequence***

Photo (left) First photos of the Taku slide, December 24, 2020 (photo J. Tait)

Photo (below) Slide on May 21, 2021



Photo (left) Photo of slide on May 21, 2020. Note on-going debris fall (cloud of dust from recent debris fall)

Photo (right) Photo taken of the slide site June 3rd, 2021. It is likely that the slide site will change significantly after Taku high water. Radio telemetry on chinook salmon indicate that these fish are making it past the slide site





## ***Surprise Lake Sonar***

This project has erected a sonar unit and video camera to determine how and when grayling are moving back and forth between Surprise Lake and upper Pine Creek. This is funded by the Hydro expansion project and the information gathered will be helpful in ensuring that flow control structures at the lake outlet do not interfere with grayling migration.



## ***Kuthai Lake Access Improvement***

The purpose of this project is to address the decline of sockeye salmon in Kuthai Lake since 2006. Field assessments revealed that the decline in Kuthai sockeye is the result of access problems in the lower Silver Salmon River canyon: in years of too low water, salmon cannot make it upstream through the canyon to the lake. Another challenge for salmon trying to access Kuthai lake was the number of beaver dams in the Silver Salmon River.

Since the fall of 2018, a TRTFN Fisheries crew has been working in the canyon to improve passage for sockeye to Kuthai Lake.

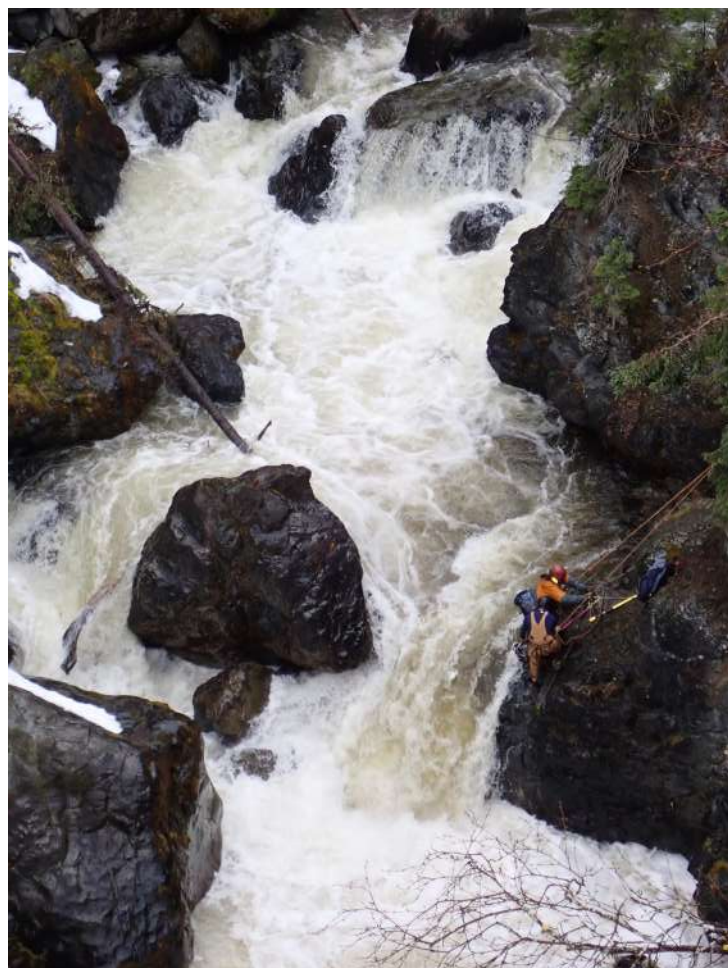


Photo of crew working on the barrier falls in the Silver Salmon Canyon, May 2021



Photos showing the rock work in the Silver Salmon Canyon that was done in May 2021. The arrows on the lower photo indicate where the rock was widened



## ***Building Taku ‘Knowledge Hubs’***

The Taku Knowledge Hub initiative seeks to bring people to the river and the river to the people. TRTFN staff are currently working with partners to create a *virtual watershed tour*, which will include 360 degree views and other digital media of the landslide, Tulsequah Chief Mine, and other key points throughout the watershed. TRTFN and TAC are co-leading a Canadian Mountain Network proposal that would result in significant funding to potentially support a research facility in the Tulsequah Valley and create broader community engagement opportunities at Inklin Camp, such as an annual food fishery. Other knowledge hub benefits might include activity centers in Juneau and Atlin to connect communities around the common connection of the Taku watershed.



## ***Continuing Concerns with Chinook Stocks in 2021***

It has been over a decade since SE Alaska has seen decent chinook salmon production.

Studies have shown that the recent downturn in Chinook production appears to be largely due to poor marine survival. Chinook are dying at higher than normal rates between the time juveniles migrate to the ocean, and before the resulting adults return to the river. In recent years marine survival for Chinook has been less than half of historical levels. The specific reasons for this reduced survival are unclear, but may include multiple factors.

As shown on page 13 of this newsletter, the Chinook escapement forecast (the number of salmon that make it to their spawning areas) for 2021 will not meet the escapement goal. The Taku Chinook forecasted run size for 2021 remains much lower than average. As a result there will once again be no directed commercial fisheries for Canada or the U.S. during the 2021 season. There will also be no retention of any Chinook in the sport fishery. The issues with Chinook are not just in the Taku and are part of a larger regional issue.





## ***Salmon Resiliency Project***

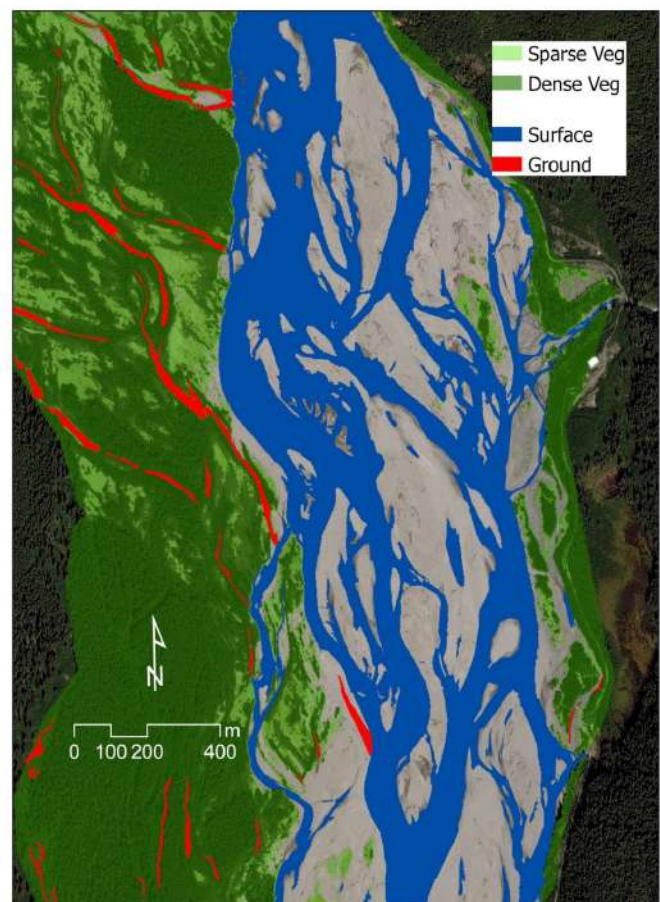
Through the TRTFN *Salmon Resiliency Project*, (funded through the Taku/Atlin Conservancy) it has been identified that developing a better understanding of how ecosystems and salmon may respond to climate change is an important component of ensuring long term salmon resiliency in TRTFN Traditional Territory.

The TRTFN is currently working with associates of the U of Montana and Simon Fraser University (SFU) to explore potential for long term research in the Taku drainage. Long term research and monitoring objectives may include:

- Using predictions of climate change and glacier retreat, to examine the trajectory of salmon habitat quality and quantity in the region. This work could help inform forward-looking salmon fisheries management and habitat conservation.
  - A key step for this research theme is to assess fish use of different habitats. TRTFN plans to begin assessing juvenile salmon rearing locations to overlap with these habitat analyses. The summer of 2022 was identified as potential target for initiating this fish research.
  - A forward-looking climate vulnerability assessment of sub-watersheds within the Taku, integrating the results from the above analyses.
- 
- Diane Whited with the University of Montana's Flathead Lake Biological Station is conducting an analysis of habitat change in the Tulsequah River, which includes things like measuring the amount of surface and ground water sources along with area of sparse or dense vegetation. Preliminary analyses suggest that the Tulsequah River floodplain has become more stable and more vegetated over the past decade.

This work links to the 'Knowledge Hub' initiative described on page 8

Photo (right) Analysis of a portion on the Tulsequah River mapping vegetation cover and water source



## ***Sockeye Enhancement***

In recent years, the TRT Fisheries Department has been active in working to address concerns regarding the enhancement of Taku sockeye. Engagement and actions have been conducted at political, management, community and project levels. In this regard, we have been mindful of long-standing (but still relevant) TRT mandates that include:

- Continuing to support the development and use of a comprehensive planning, assessment and review process for enhancement projects;
- Having TRTFN clearly involved in the decision-making process, including the consideration of social and cultural values;
- Helping to specify timelines, thresholds and guidelines for major decisions on projects.

Thru previous international negotiations, the TRT interests listed above have been acknowledged in provisions of the Pacific Salmon Treaty. Now we are seeking to put them into practice and utilization. The TRT Community Enhancement Workshop conducted in late 2019 provided key input to move forward with. It demonstrated that cultural values cannot be simply listed out, rather they are engrained in how TRT members respect, treat and interact with salmon in our Territory. It also confirmed that in general, TRT citizens have a:

- High level of support for access improvement projects (like Kuthai Lake/Silver Salmon);
- Comfort level of enhancement for stock restoration purposes (like King Salmon Lake);
- Consistent discomfort for enhancement which is only conducted for production purposes.

### **King Salmon Lake**

Under the Northern Endowment Fund of the Pacific Salmon Commission, we have secured funding to “potentially” conduct a small egg take at King Salmon Lake this fall. We say “potentially” because TRT Fisheries managed to incorporate another jointly agreed upon project threshold or guideline. Therefore, this enhancement project will only proceed if the adult sockeye escapement is between 600 and 4,000 fish. Such is reflective of a conservation-based approach with focus on strategic intervention to ‘bump up’ or ‘boost’ a recurring low brood year.

### **Trapper Lake Assessment**

The TRT Fisheries Department is working with DFO to undertake a comprehensive review and risk assessment for the proposed sockeye enhancement project in Trapper Lake. The basis of the proposal is to introduce sockeye (obtained from Little Trapper Lake broodstock) into Trapper Lake. However, there is an existing barrier in between which makes providing for future salmon access a key issue to resolve. Overall, our Fisheries Department engagement with DFO will be done consistent with the direction received from TRT citizens at the 2019 Enhancement Workshop. Such will include relation of cultural values for consideration in the review process.





## ***Some Background on How Salmon are Managed in the Taku***

Salmon from the Taku River drainage are caught by US and Canadian fishers. Sockeye are the primary commercial species. The number of fish each country is allowed to catch is set out in the international Pacific Salmon Treaty. Right now Canada gets about 20% of Taku sockeye and Alaska gets 80%.

Commercial salmon fishing in the Taku is managed by determining how many salmon above the 'escapement' can be harvested. Escapement refers to the number of salmon that 'escape' predators (including humans) to make it back to the spawning areas. The 'escapement goal' refers to the number of salmon that are needed to return to the spawning areas to ensure the salmon population is sustained.

The amount of commercial fishing allowed is determined based on an estimate of how many salmon are returning to the river. One of the major ways biologists use to determine how many fish are returning is with the 'mark/recapture' method.



### ***Mark/recapture:***

Salmon are captured in a 'fish wheel' located just across the Canadian border in Alaska. The current of the river turns the wheel and salmon are captured in the baskets. Salmon are tagged, measured and sexed. The fish are then released back into the river to continue their upstream migration to the spawning areas. The number of tags recaptured in the commercial fishery and weirs is used to calculate the salmon run size.

In simple terms, the mark recapture method uses the proportion of tags collected relative to the number of tags put on salmon to determine the population of salmon. For example, let's say the fish wheel puts out 100 tags and the commercial fishery captures 200 fish total, 50 of which have tags. So this means the fishery has caught half the tags ( $100 \text{ tags put out}, 50 \text{ recovered} = 1/2$ ). Therefore we estimate the fishery has captured half the fish in the river. Since the total number of fish caught by the commercial fishery was 200, we estimate that the total run size during that time was 400 fish ( $200 \times 2 = 400$ ). This is a simplistic presentation, in reality things like drop-out rate (number of fish who die after being tagged) needs to be factored in. This estimate is done every week during the commercial fishery and is used to determine how much fishing can be done. The amount of fishing is regulated by the length of 'Openings'. An Opening is a period of time a fisher is allowed to fish. So a 2 day Opening means you can fish for 2 days.

This in-season adjustment to the catch (openings) is why we want to know every week from our camps how many tags have been recovered at the weirs.

In many regions sockeye salmon spawn only in lakes. However, in the Taku we have some sockeye that spawn in lakes and other populations that spawn in rivers (mainstem spawners). There are 4 main sockeye spawning lakes in the Taku drainage (Tatsamine, Little Trapper, Kuthai and King Salmon). All the 4 sockeye lakes have weirs. The purpose of these weirs is to:

- Collect precise information on the number of returning salmon
- Count the number of tags in the returning population of salmon (part of the mark/recapture work)
- Sample some of the returning salmon for sex and length
- Collect scales for aging the fish sampled
- Use this information to get a picture (reconstruct) the run characteristics (ages, sex ratio, numbers)

Fish scales are collected for aging the salmon. Salmon grow at different rates during the year (slower in winter) and this shows up on their scales as rings (Annuli). You can count the annuli and age the fish much like you can age trees by counting their rings. The reason we want to know the age of fish is to determine the age composition of the run because this helps us predict what future run sizes will be.

Salmon return to spawn at different ages, but the proportion of the run that returns in any year stays about the same. Therefore if you know what the age composition of the run is in any year it helps you predict what future run sizes will be.

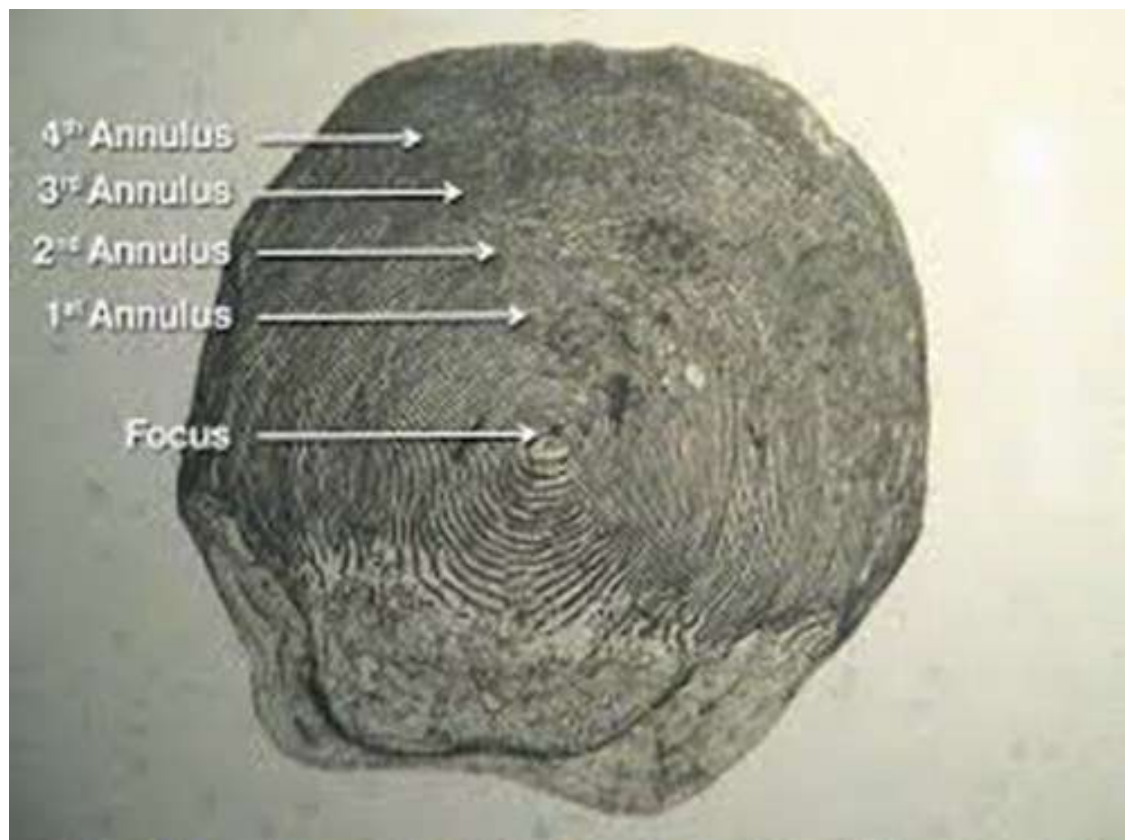


Photo (right) Example showing annuli of a fish scale



## ***Summary of 2020 Taku River Salmon Run:***

The following tables summarize last season's 2020 Taku River salmon run :

2020 Taku salmon escapement\* :

	Chinook	Sockeye	Coho
Escapement estimate	15,593	100,897	52,309
Escapement goal range	19,000-36,000	40,000-70,000	50,000-90,000

\* The escapement is the number of fish that 'escape' to make it back to the spawning grounds

Of particular interest in 2020 was the relatively high returns of sockeye at both Kuthai (over 4,000 fish) and King Salmon (over 17,000 fish) lakes. Lets hope this trend continues!

## ***Taku River Salmon Run Forecasts 2021***

Here are the forecasts for the 2020 Taku River salmon terminal runs:

Species	Run Forecast	Average run size (over last 10 years –large)	Escapement Goal (range)
Chinook	10,300	17,400	19,000-36,000
Sockeye (wild)	140,000	144,000	40,000-75,000
Sockeye (enhanced)	6,000	8,000	n/a
Coho	94,000	97,000	50,000 –90,000

## **Gunalchéesh !**

Thanks for taking the time to read up on what the TRT Fisheries Department is up to these days. If you have any questions, concerns or information you would like to see presented in our next newsletter please don't hesitate to contact us:

Jason Williams (Fisheries Supervisor):

250-651-7927 extension 223

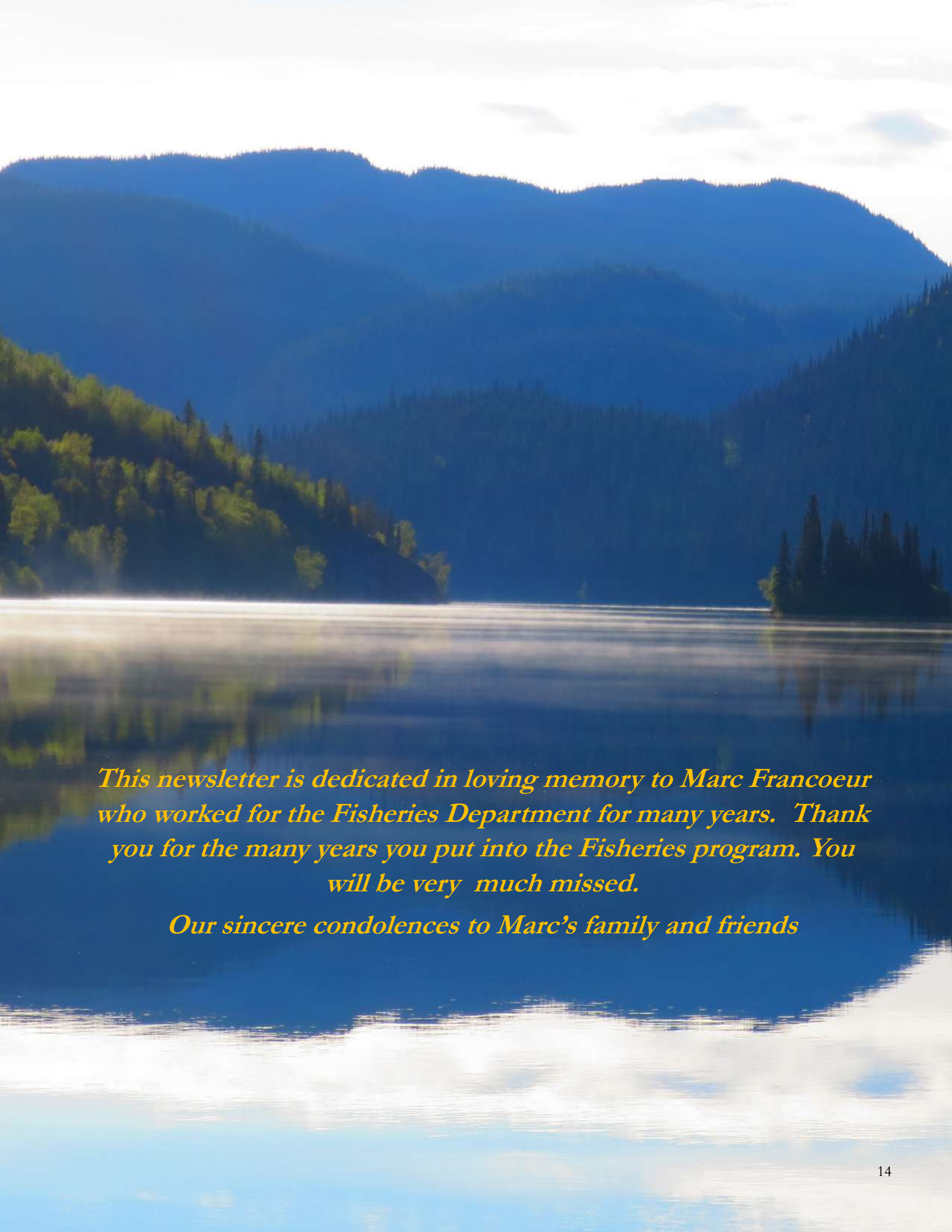
Mark Connor (Fisheries Coordinator):

250-651-7900 extension 320



**Taku River Tlingit  
Fisheries**





*This newsletter is dedicated in loving memory to Marc Francoeur who worked for the Fisheries Department for many years. Thank you for the many years you put into the Fisheries program. You will be very much missed.*

*Our sincere condolences to Marc's family and friends*