

Tlowitsis Nation



Treaty Related Measures
2020-2021 Annual Report
Organization/Recipient Number 637

Report for the period
April 1st, 2020 – March 31st, 2021
Final Report



**Tlowitsis
Nation**

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Introduction:

Background:

The Tlowitsis First Nation has identified Port Neville and the Fulmore watershed as core lands for treaty settlement. These areas are of cultural importance as well as being ecologically diverse and productive. For these reasons and many more, we have identified Port Neville and Fulmore watershed as a logical place to begin the work of becoming active partners in the management of our traditional lands and waters as we move toward treaty settlement.

The area in the Fulmore watershed and near it includes two reserves: Hanatsa and Har-khom (Port Neville). Historic records have indicated that both were set aside as fishing stations in 1886. Har-khom was recorded by the Indian Reserve Commissioner, Peter O'Reilly, as having a traditional fishing weir as well as having large quantities of fish being cured, and from appearances a supply equal to the demands of the entire tribe may be taken from the Fulmore River. Tlowitsis has recently purchased a 60-acre property at Port Neville which includes a house that sleeps six, storage buildings, a workshop, and a public dock on the adjacent property that is managed by the Strathcona Regional District.

The Fulmore Lake watershed is a relatively low elevation, low relief watershed occupying the mainland coast at the head of Port Neville of Johnstone Strait. Fulmore Lake discharges through the Fulmore River into Port Neville. The Fulmore watershed is utilized by all 5 salmon species, Rainbow and Cutthroat trout, steelhead, and Dolly Varden char. Sockeye and Chum have been recorded as the dominant species and both have been indicated as historically harvested by Tlowitsis people. A productive forest environment in conjunction with the fisheries attributes make this area important for grizzly bears and other terrestrial organisms.

Fulmore Lake is managed as a conservation unit by Fisheries and Oceans Canada (DFO, 2019) and has been reported to sustain returns of 2,000 to 4,000 Sockeye salmon until the 1980s but are currently reduced to approximately 1,000 fish (PFRCC 2002); however, the Sockeye and the other fisheries have not been managed and/or monitored for about twenty years and so the more recent productivity of the system is unknown.

The marine environment within the Tlowitsis traditional territory is important to the Tlowitsis nation and has been identified in the Tlowitsis Marine Use Plan as a Special Management Zone with salmon recovery and assessment, along with restoration activities as primary goals.

During the 2019-2020 period funding from the 2019-2020 TRM application was utilized to commence numerous initiatives and programs that are actively achieving the goals of increasing Tlowitsis presence and knowledge of the Fulmore watershed and Port Neville area. This 2020-2021 TRM sought to continue the momentum established during the 2019-2020 TRM Period. Through the background research conducted in 2019-2020 several initiatives/programs were identified and preliminary ideas for field programs that would seek to achieve Tlowitsis' goals were outlined. The goal of this TRM was to continue with the projects that were initiated in 2019-2020 and to complete the design and implement the additional programs.

In conjunction with Tlowitsis' Lands Treaty Related Measures (TRM) objectives, the Communications TRM, and community consultations, this TRM for Advancing Technical Expertise in Lands and Resource Management will seek to:

- become informed of the condition of the ecosystem including the health of the terrestrial, freshwater and marine aquatic environments and the associated populations of fish and other fisheries resources and grizzly bears;
- utilize outcomes in the Fulmore Watershed to contribute to strategic planning and encourage and build local community capacity to maintain and restore fish populations and habitats;
- advance the technical expertise and knowledge of our current Guardians in lands and resource management;
- recruit other Tlowitsis people interested in skills development, education and work out in the territory.

Report Deliverables:

This TRM builds on the baseline stock and resource assessment projects in the Fulmore. In summary, the funds from the 2020-2021 TRM have been productively utilized to support and continue the programs initiated in 2019-2020 and support the development and initiation of several new projects. Continued funding is essential for the Tlowitsis to increase presence, knowledge, and science such that the Tlowitsis can make informed treaty decisions moving forward.

Ten Objectives were outlined during this TRM period (2020-2021). The ten objectives are:

1. install a camera counting fence on the Fulmore River,
2. design and implement a lake Sockeye monitoring program,
3. design and implement a Chum salmon enumeration survey,
4. provide support for continuation of existing programs,
5. initiate a limnology study of Fulmore Lake,
6. design and implement a crab survey,
7. continue the Fulmore research strategy,
8. continuation of relationship advancement with stakeholders of the area,
9. continuation of the acoustic survey on Fulmore Lake, and
10. establishment of a data management strategy.

The following sections of this report detail each deliverable for the 2020/2021 TRM process.

Report Summary:

It is Tlowitsis' opinion that the momentum from the initial TRM was successfully built upon during this TRM period (2020-2021). Although COVID-19 proved to provide substantial challenges most programs proposed were successful with minimal work being deferred as a result. The hardest hit programs were the crab survey and the Sockeye camera counting fence; however, progress was still made on these programs and as of writing of this report both are on track for success in 2021-2022. Highlights from this TRM period were the purchase of a boat for use on the lake, initiation of the limnology study with interesting preliminary results and a preliminary plan for the remainder of the study, initiation of the chum enumeration program, and a centralized data storage program.

Objectives – Item #1 – Install a Camera Counting Fence on the Fulmore River:

Introduction:

The 2019-2020 TRM process identified that the reliability of historic fish population related data in the Fulmore system was generally uncertain and unreliable, especially in the past 20 years. Furthermore, it is Tlowitsis Nation's desire to obtain updated and accurate data on fish stocks within the Fulmore. As a result, a plan to install a counting fence on the Fulmore River was initiated. Through collaboration with DFO, A-Tlegay and Tlowitsis, it was decided that a camera counting fence was the best approach to achieve valuable information on Sockeye stocks while balancing costs and operational feasibility.

Activities:

The 2020-2021 year's activities included detailed planning for a counting fence, fence operations, and logistics. Once a plan was in place the fence components needed to be obtained for installation in the spring of 2021.

Deliverables:

DFO, A-Tlegay and the Tlowitsis guardians conducted a site visit on July 9, 2020. During the site visit a location was chosen, a fence design was chosen, measurements were taken, and future operations were discussed. This information was then utilized to fabricate fence components, purchase fence components, and develop operational guidance documents. Details of each component are presented below:

1. An aluminum picket fence design was fabricated.
2. An aluminum camera box frame was fabricated.
3. An off the grid power system to operate the camera, computer and lights was designed and obtained from a specialist in the field.
4. A camera, waterproof camera housing, and recording software were purchased.
5. Miscellaneous supplies for operation of the fence were purchased.

The following operational guidance documents were developed:

1. *Fence Set-up and Operation Guidance, and*
2. *Fence Site Visit Checklist and Video Review Data Sheet.*

All the fence components and operational guidance documents were procured prior to March 31, 2021. Fence install occurred after this TRM time period but as of May 20, 2021 the fence is operational.



Figure 1: Photos of the fence and camera box (left), power and computer components (center), and training of the Tlowitsis Guardians (right) in 2021.

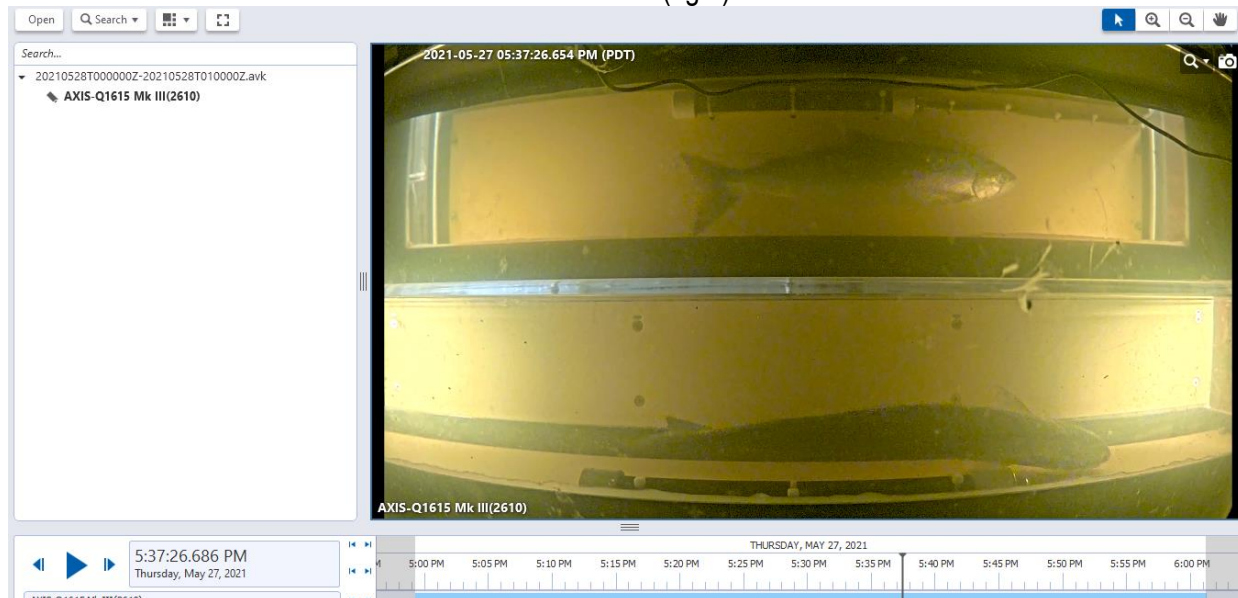


Figure 2: A photo of one of the first Sockeye through the newly installed Sockeye video counting fence.

Recommendations:

Development, procurement, and integration of all components of the fence were achieved so no recommendations are required.

Objectives – Item #2 – Lake Sockeye Monitoring Program:

Introduction:

As outlined in Objectives – Item #1, the 2019-2020 TRM process identified that the reliability of historic fish population related data in the Fulmore system was generally uncertain and unreliable especially in the past 20 years. Information specific to lake utilization of Sockeye was even more limited. Information on Sockeye utilization of the lake would be valuable in supplementing return estimates, but equally as important it will

identify high value holding and spawning habitats for which the information can be utilized in future restoration, protection, management, and study decision making.

Activities:

A visual survey methodology was required to guide the guardians in conducting visual surveys of the lake. Visual surveys to be conducted by the guardians during spawning season. The data from the visual surveys would be consolidated into a report and map.

Deliverables:

To achieve the proposed activities the following was completed:

1. Development of a methodology report by A-Tlegay titled *Fulmore Sockeye Lake Inspection Methodology*.
2. Four assessments were conducted by the Guardians.
3. The data was consolidated into a report produced by A-Tlegay titled *Fulmore Sockeye Lake Inspection – 2020*.

Recommendations:

It is suggested that surveys continue in 2021 with minimal modification to the methods. With the added data input that we will have from the counting fence in 2021 combined with a second year of lake observations will provide sufficient input to determine if this program is effective and should continue or if the methods need to be modified to improve results.



Figure 3: A photo taken of a Sockeye during one of the 2020 lake assessments.

Objectives – Item #3 – Chum Enumeration Surveys:

Introduction:

As previously presented, the reliability of historic fish population related data in the Fulmore system was generally uncertain and unreliable especially in the past 20 years. The development of an adult enumeration program would allow for more current and reliable estimates of returning salmon species to the Fulmore. In collaboration with DFO, A-Tlegay and Tlowitsis it was determined that a suitable approach would be for Tlowitsis to utilize the currently operational DFO Stream Inspection Log (SIL) program.

Activities:

Tailoring of the DFO SIL program specific to the Fulmore system was required. Training of the Tlowitsis Guardians in the SIL program methodology was also required. Trail construction and clearing is also an essential component of an enumeration program as it allows safe access to and from the stream segments that require assessment.

Deliverables:

To achieve the proposed activities the following was completed:

1. Development of a methodology report by A-Tlegay, with support from DFO, titled *Fulmore Stream Inspection Guidance Methodology*.
2. Six stream inspections were conducted: September 10th, October 16th, October 29th, November 12th, November 19th, and December 3rd.
3. Trail construction by guardians occurred when time allowed.
4. The data was consolidated into a report produced by A-Tlegay titled *Fulmore Stream Inspection Report – 2020*.

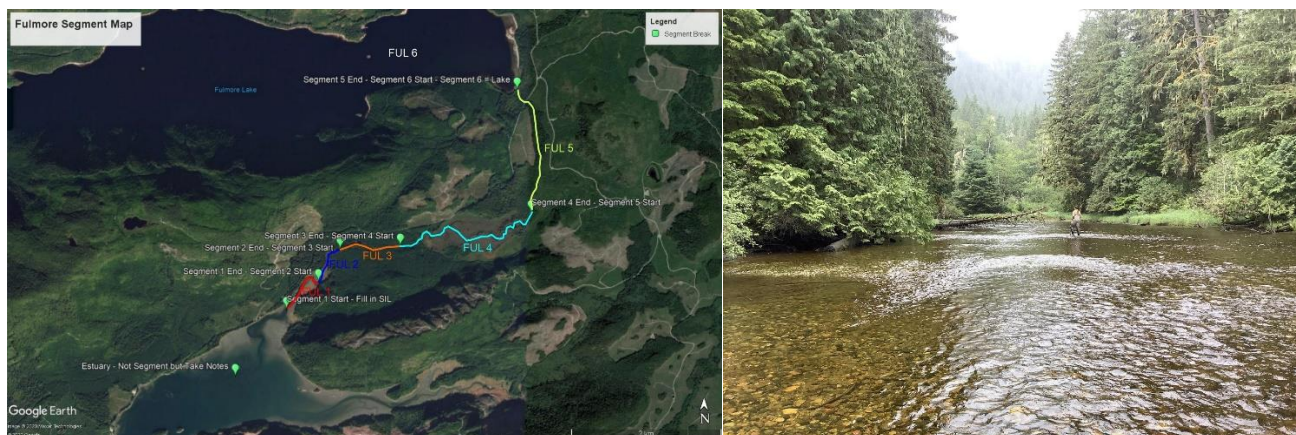


Figure 4: The map showing the Fulmore River segments (left) and a photo showing Segment 1 (right).

Recommendations:

The program was successfully implemented with valuable data obtained and it is recommended that this continue in 2021. Improvements would be for an additional survey to be conducted around the peak spawning time, incorporation of a snorkel swim utilizing A-Tlegay crews may prove beneficial to assessing the upper portion of Segment 1 and Segment 2, and trail improvement in Segment 2 would allow a more complete assessment to be conducted.

Objectives – Item #4 – Support for Continuation of Existing Programs:

Introduction:

Outside of this TRM, Tlowitsis has initiated, established, and carried out several other research projects within the Port Neville area and Fulmore watershed. These projects include an estuary study, water study, grizzly bear monitoring (drone and cameras), and a marine plankton survey. These projects are funded and conducted outside of support from this TRM but at the same time overlap with the goal of this TRM. As a result, Tlowitsis sought support funding to ensure all projects could be completed. Funding would assist coordination, planning, logistics, and crew support and could result in efficiencies to the TRM and the other projects.

Activities:

Update and adapt the yearly work plan as well as maintain weekly schedules and field logistics. An additional crew member to support the lead guardian conducting drone surveys, game-camera checks, plankton surveys, water monitoring equipment checks and more.

Deliverables:

To achieve the proposed activities the following was completed:

1. The workplan that was developed for the 2019-2020 TRM was followed for 2020 and a work plan was developed for 2021 (Figure 4).
2. A guardian member participated in several of the other surveys as required.

Recommendations:

Allowing integration between funding sources and general support provides a level of efficiency that benefits all parties involved. It is suggested that this continues in the future.

Project	Date/ Frequency	January	February	March	April	May	June	July	August	September	October	November	December
eDNA	Monthly												
Maestro	Monthly												
		x1	x2	x1	x1	x2	x1	x1	x2	x1	x1	x2	x1
Bear Cameras	Yearly	Video Evaluations			Install	Check	Check	Check	Check	Check	Check	Check	Remove
Plankton	Spring												
Prawn Surveys	Weekly												
Post Harvest	7 more												
Pre/Post Harvest	?												
TL-EG01 Baresides Bay	June												
TL-EG02 Port Harvey	June												
TL-EG03 Lagoon Cove	June												
TL-EG04 Bones Bay	June												
TL-EG05 Potts Lagoon	June												
TL-EG06 Back end of Port Neville	June												
TL-KB01 Broken Islands	August												
TL-KB02 Port Harvey	August												
TL-KB03 July Point	August												
TL-KB04 Beware Passage	August												
TL-KB05 Potts Lagoon	August												
TL-KB06 Blow Hole	August												
TL-KB07 Sophie Islands	August												
TL-KB08 Chatham Channel	August												
Crab surveys	Monthly		strings into singles.										
Fulmore TRM Fish Fence	Weekly					Installed May 19th & 20th	x4	x4	x4	x4			
Upload River Data	Quarterly												
Upload Oceanographic Data	Quarterly												
Archaeology	Anytime												
Water/Plankton Monitoring	Weekly												

Figure 5: 2021 work plan.



Figure 6: A photo of the Fulmore estuary from a drone.



Figure 7: A photo of a grizzly bear from one of the trail cameras in Fulmore.

Objectives – Item #5 – Limnology Study:

Introduction:

During the 2019-2020 TRM program it was identified that a limnological study of the Fulmore Lake would help Tlowitsis achieve several of their objectives. A limnological study would assist Tlowitsis develop an Ecosystem or Watershed based management approach. More specifically the limnological study would contribute greatly to answering some of the salmon population data gaps and assist with future management decision making.

Activities:

Tlowitsis was to utilize the funding from this TRM to hire a consultant to implement a limnological study that took into consideration the objectives of the Tlowitsis Nation. A boat and the required safety gear was to be purchased to not only carry out the limnology program but also any other works that are or will occur on the lake, such as the sockeye lake spawning assessments. The guardians were to participate, be trained, and assist during the field portions of the limnological study.

Deliverables:

To achieve the proposed activities the following was completed:

1. Northwest Hydraulics Consultants Ltd. (NHC) was hired to develop and conduct a limnological survey.

2. A welded aluminum boat and motor were purchased.
3. NHC conducted field assessment from September 28th through September 30th, 2020 with the assistance of the Tlowitsis Guardians. Bathymetric mapping, physical, chemical, and plankton monitoring, sediment core sampling, and water level monitoring-station installations occurred during the field program.
4. An interim report was produced titled *Fulmore Lake Limnology Study 2020 Work Summary*
5. A 2021 work plan and budget proposal were developed by NHC for submission with the 2021-2022 TRM application to ensure that the limnological study continues.

Recommendations:

It is strongly recommended that the limnological study continues as this work on its own provides the foundation for reaching the objectives of this study. Future works are required to reach usable conclusions and guidance.

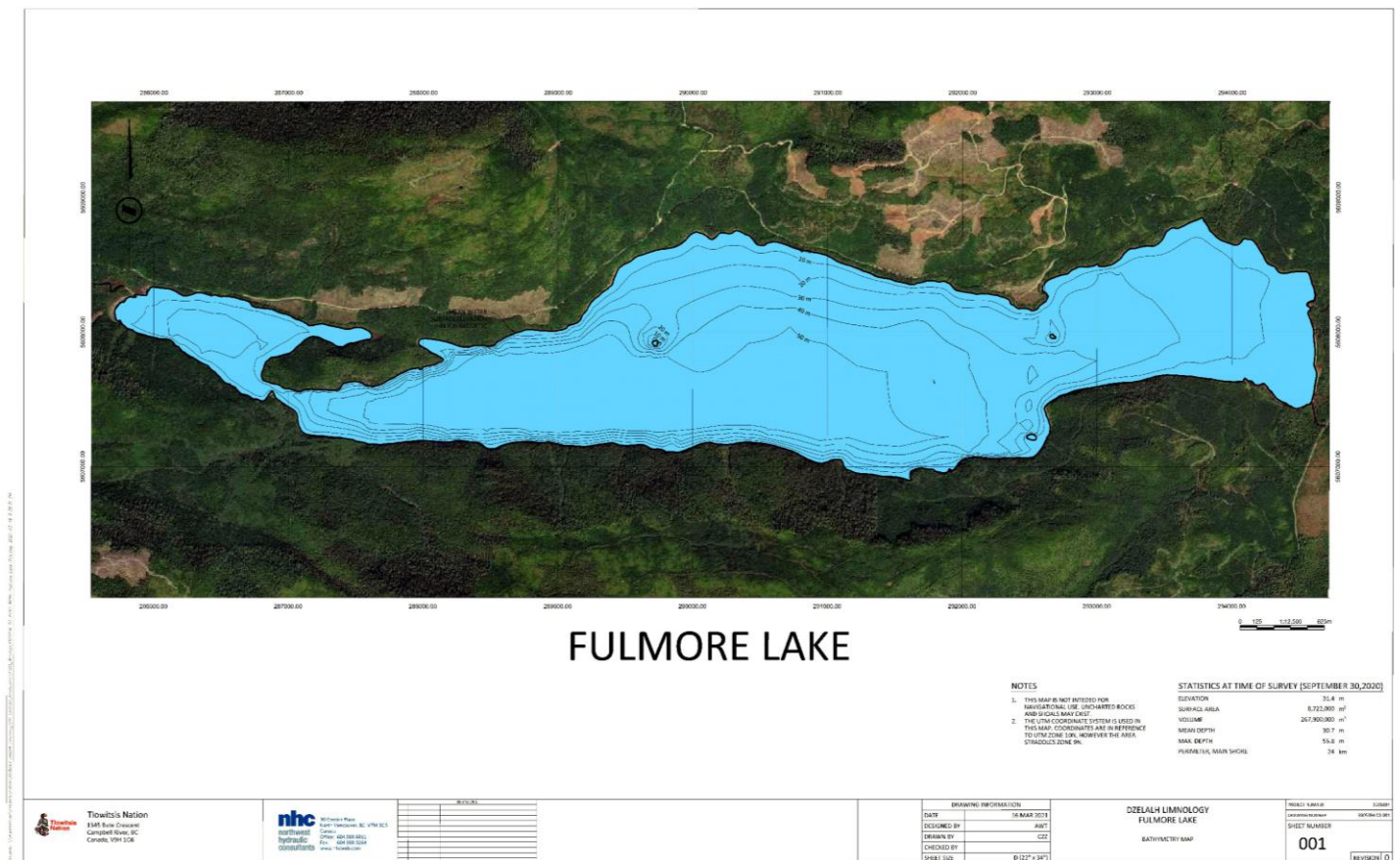


Figure 8: The bathymetric map produced by NHC during the 2020 TRM limnology study.

Objectives – Item #6 – Crab Surveys:

Introduction:

A crab survey program was developed during the 2019-2020 TRM for which three locations were determined to be the focus of assessments and a written methodology was produced to guide the surveys. Some traps and gear were purchased in 2019-2020 in preparation for surveys to commence in 2020-2021. This year objectives were to locate additional data about historic and current crab fishing, become engaged in the crab fishery meetings, and conduct crab surveys.

Activities:

An A-Tlegay biologist was to provide guidance and training to the guardians to initiate and carry out the crab surveys as outlined in the 2019-2020 TRM Crab Survey document. Additional gear purchases were required prior to survey initiation. One of the main objectives was for Tlowitsis to become included, informed, and engaged in the crab fishery management.

Deliverables:

To achieve the proposed activities the following was completed:

1. Additional traps, floats, lines, bait boxes, and bait were purchased.
2. Gear was prepared for surveys by putting lines and buoys on traps.
3. DFO was informed and engaged regarding Tlowitsis interest in participation of crab meetings and fishery discussions.
4. The Area G crab meeting was attended by an A-Tlegay biologist, the lead guardian, and a representative member of the Tlowitsis Nation.
5. Historic crab fishing information was obtained and analyzed.
6. Crab surveys were initiated. Due to the challenges related to COVID fewer surveys were conducted this year than originally planned. One trial survey was conducted to familiarize the crew with the gear and fishing methods, one survey cut short due to equipment malfunction and one survey was completed in March 2020. Guidance was provided remotely by A-Tlegay but unfortunately due to COVID and bad weather the biologist couldn't complete a field training session.
7. As a result of fewer surveys being conducted a report on the surveys has been withheld until sufficient data has been collected. The report completed for the 2021-2022 TRM period will incorporate the 4 surveys from this TRM period.

Recommendations:

The crab surveys proved to be a challenge to conduct this year due to COVID-19. It is recommended that training, guidance, and surveys continue in 2021 to get this program running effectively. Great progress

was made by obtaining historic fishing data and becoming involved in the Area G meetings. It is recommended that continued involvement in the fishery management continue.

Objectives – Item #7 – Continuation of the Research Strategy:

Introduction:

The 2019-2020 research strategy spanned into the 2020-2021 year with the completion of data collection, analysis, and recommendations outlined in the report titled *Fulmore River Historic Salmon Stock Assessment*. This report was completed in July 2020.

Activities:

Tlowitsis engaged with DFO, A-Tlegay, Nanwakolas, and First Nation fishers to locate existing data on the area of interest. Government and public databases were also searched for relevant documents. All data was reviewed, organized, and analyzed to provide insight into the resources in the Fulmore River and to provide guidance to design field and research initiatives to provide insight into any existing data gaps.

Deliverables:

To achieve the proposed activities the following was completed:

1. Report titled *Fulmore River Historic Salmon Stock Assessment*.
2. Guidance that assisted choosing and designing field surveys for the 2020-2021 and 2021-2022 TRM Objectives.
3. All data gathered has been relocated from A-Tlegay's server to the Tlowitsis' cloud-based storage that was established as a deliverable in this years TRM and described in Item 10.

Recommendations:

With two years of searching, compiling, and analyzing historic data for the Fulmore River it has been determined that the majority of the information has been located and analyzed. As such, the level of effort required moving forward on this objective can decrease substantially. The goal for moving forward is to have a biologist provide maintenance of these records and to analyze them on an as needed basis. Also, to utilize the records to provide guidance or input on a present subject matter that would assist the Tlowitsis Nation. An opportunistic approach will be taken to locate any additional data that may not have already been collected.

Objectives – Item #8 – Relationship Advancement:

Introduction:

An integral aspect for advancing Tlowitsis' treaty negotiations is through relationship building with other parties that have interest in the Port Neville and the Fulmore Watershed, but also other parties that can assist Tlowitsis in the implementation and furthering of scientific knowledge of the land and resources.

Activities:

Continue relationship development with the stakeholders that was initiated during the 2019-2020 TRM. Throughout the year the lead negotiator, chief, and guardians engaged with other stakeholders.

Deliverables:

A) Timberwest (Mosaic)

Timberwest currently has the largest stake in the area of interest as they are the holder of TFL 47. To date there have not been any substantive discussions with Mosaic. Forestry negotiations are scheduled to recommence in the summer/fall of 2021 for which Mosaic is to be present.

B) Provincial Government

Tlowitsis and the Province negotiations have resulted in the signing on February 12, 2021 of a Stage 5 Memorandum of Understanding agreement. The MoA identifies co-management of the Fulmore Watershed as a priority commitment. Discussions are ongoing.

C) Strathcona Regional District

The Strathcona RD has not found a replacement TAC for the Tlowitsis table. Discussions continue internally with the province and at the treaty table.

D) Mount Waddington Regional District

Tlowitsis met with the Mount Waddington Regional District and provided a presentation on the status of treaty negotiations including potential Treaty Settlement Land selections and a discussion on mutual interests in the territory within the MWRD. The discussion was valuable - shared interests including support for salmon aquaculture, tourism, and shared opportunities in regional economic development. The relationship continues to build.

E) Partnerships

Partnerships include:

- The Hakai Institute is assisting Tlowitsis with eDNA studies of the Fulmore, water sampling of the Fulmore, and has provided technical training and support in drone use. Future opportunities include the potential use of the drone to collect Lidar.

- Nature Trust British Columbia is assisting Tlowitsis study the Fulmore estuary with several research programs.
- A-Tlegay Fisheries Society and Nanwakolas are already established partners with Tlowitsis and have assisted on numerous aspects of implementing this TRM.
- DFO has proven to be an essential partner. They have provided expertise, guidance and of future fish enumeration projects, provided resources and equipment, and have conducted acoustic assessments. Tlowitsis will continue to rely on DFO for assistance in the future.
- The Tlowitsis work with the Centre for Aquatic Health Science (CAHS) in the collection and processing of plankton samples every Spring.
- The Tlowitsis work with several independent biologists as well as BC government biologists (Rebecca Martone) to conduct surveys on kelp and eelgrass throughout the entire traditional territory. We concentrate much of the work in the Port Neville area.
- The Tlowitsis are involved with a long-term study with Vancouver Aquarium called "Pollution Tracker". Every three years, we collect mud and mussel samples from a site in Port Neville. This past year the sample collection included filtered water to test for microplastics.
- The Tlowitsis work with Melanie Clapham from UVIC on the long-term bear camera project throughout the Fulmore Watershed.
- The guardians have and continue to meet the local residents who have provided local knowledge as well as added safety aspects.

Recommendations:

Relationships, open dialogue and partnerships are considered key aspects as Tlowitsis progresses through the treaty negotiations process. It is essential that the progress and momentum is carried forward. Funding has been applied for to assist Tlowitsis members and representatives to attend meetings, continue dialogue with stakeholders and partners, and to conduct additional outreach to smaller stakeholders.

Objectives – Item #9 – Continuation of the Acoustic Survey:

Introduction:

An acoustic survey was completed by DFO in 2019. Due to COVID no acoustic surveys were completed.

Activities:

DFO was to conduct an acoustic survey on Fulmore Lake in 2021.

Deliverables:

1. The acoustic survey did not occur in 2021. This was an in-kind contribution and did not affect any of the funding requested in this TRM.

Recommendations:

If an acoustic survey can be completed in the future it would be beneficial, however with the initiation of other more intensive surveys focused on Sockeye salmon the acoustic survey is of less urgency.

Objectives – Item #10 – Data Management Strategy:

Introduction:

Prior to this year's TRM period, Tlowitsis' digital data was contained in multiple locations like personal computers, Nanwakolas, and A-Tlegay. The goal of this Item was to establish a central location where all data would be organized, stored, secure, and backed up.

Activities:

Tlowitsis was to utilize the funding from this TRM to employ a Tlowitsis member or hire a consultant to establish a data management strategy which could involve purchasing hardware or establishing a cloud-based system.

Deliverables:

1. Barefoot Planning and Design was hired to establish a data management system that would best suit Tlowitsis' needs.
2. Sync.com was chosen as the cloud-based data storage provider and an account was established.
3. Barefoot coordinated establishing user specific permissions to manage the data.
4. Barefoot coordinated with each user to ensure the existing data was uploaded.

Recommendations:

Continued oversight, support, coordination, and yearly operational fees will be required for this strategy to continue. Funding for this has been applied for in the 2021-2022 TRM.