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2026 Monitoring Report Unuk River Eulachon (*Thaleichthys pacificus*)



Photo by Jon Hyde



Forest Service

2026



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EXECUTIVE SUMMARY

The 2026 Unuk River run of Eulachon or Ooligan, *Thaleichthys pacificus*, arrived on the Unuk River on March 14 in small numbers, with the peak of the run observed between March 16 and 17. The run quickly diminished after March 17 with no fish seen after March 20. Based on the numbers of Ooligan observed by biologists, and reports from local subsistence users, the 2026 Unuk River Ooligan run appeared to be Moderate¹ (Figure 3).

The USDA Forest Service (USFS) has monitored the Unuk River, located in District 1, since 2001 using combinations of aerial, foot & boat surveys, satellite cameras, and on-site reports from local subsistence users and cabin owners.

District 1 historically supported subsistence, personal use, and commercial fisheries for Ooligan primarily in the Unuk River system (Figure 1 and Figure 2). In 2005 the district 1 Ooligan population collapsed, with less than 130 fish seen each year between 2005 and 2010 on the Unuk River, resulting in State and Federal closures to fishing beginning in 2005. In 2011 Ooligan began returning to the Unuk River in greater numbers. In 2018 the USFS partnered with the Ketchikan Indian Community (KIC) to increase on-the-ground monitoring efforts on the Unuk River system. Annual monitoring has documented variable returns from 2011 to present (Figure 3), though stock sizes are still at levels lower than those observed prior to the 2005 population collapse.

Because monitoring efforts have documented consistent returns of Ooligan since 2011 the Federal subsistence fishery was reopened on the Unuk River in 2021 to federally qualified subsistence users with a limited harvest and gear restrictions. This limited harvest has continued to date.

Harvest permits were issued to 29 federally qualified subsistence users during the 2026 season. Harvest was restricted to one five-gallon bucket per household and limited to cast net and dip net only methods. The State of Alaska Ooligan fishery remained closed.

Surveyors from KIC and Forest Service arrived on the Unuk River March 10 and remained onsite until March 23. Relative abundance surveys were conducted daily along multiple channels of the Unuk River. In addition to onsite relative abundance surveys, our partners at the Ketchikan Indian Community continued their partnership with the Ocean & Earth Environmental Services (OEES) to collect Environmental DNA (eDNA) to better aid our assessment and long-term management of the Unuk River Ooligan population.

LOCATION

The Unuk River is located within District 1 and drains into Burroughs Bay (Figure 1 and Figure 2) on the mainland approximately 54 miles (87 km) northeast of Ketchikan Alaska.

¹ **Relative Abundance Definitions:** Abundant = multiple large high density schools (>10,000 fish) widespread along multiple major channels and present beyond one week; Good = moderately large high density schools (1000 – 10,000) spread throughout one or more major channels and present for at least a week; Moderate = Some high density schools, small to moderate in size (500-1000 fish), spread out over multiple channels and present for at least a week; Weak = small schools of fish (<500 fish), scattered, no large high density schools, and present less than a week; Absent/Nearly Absent = Little to no fish observed, or small pockets of individuals seen throughout run.



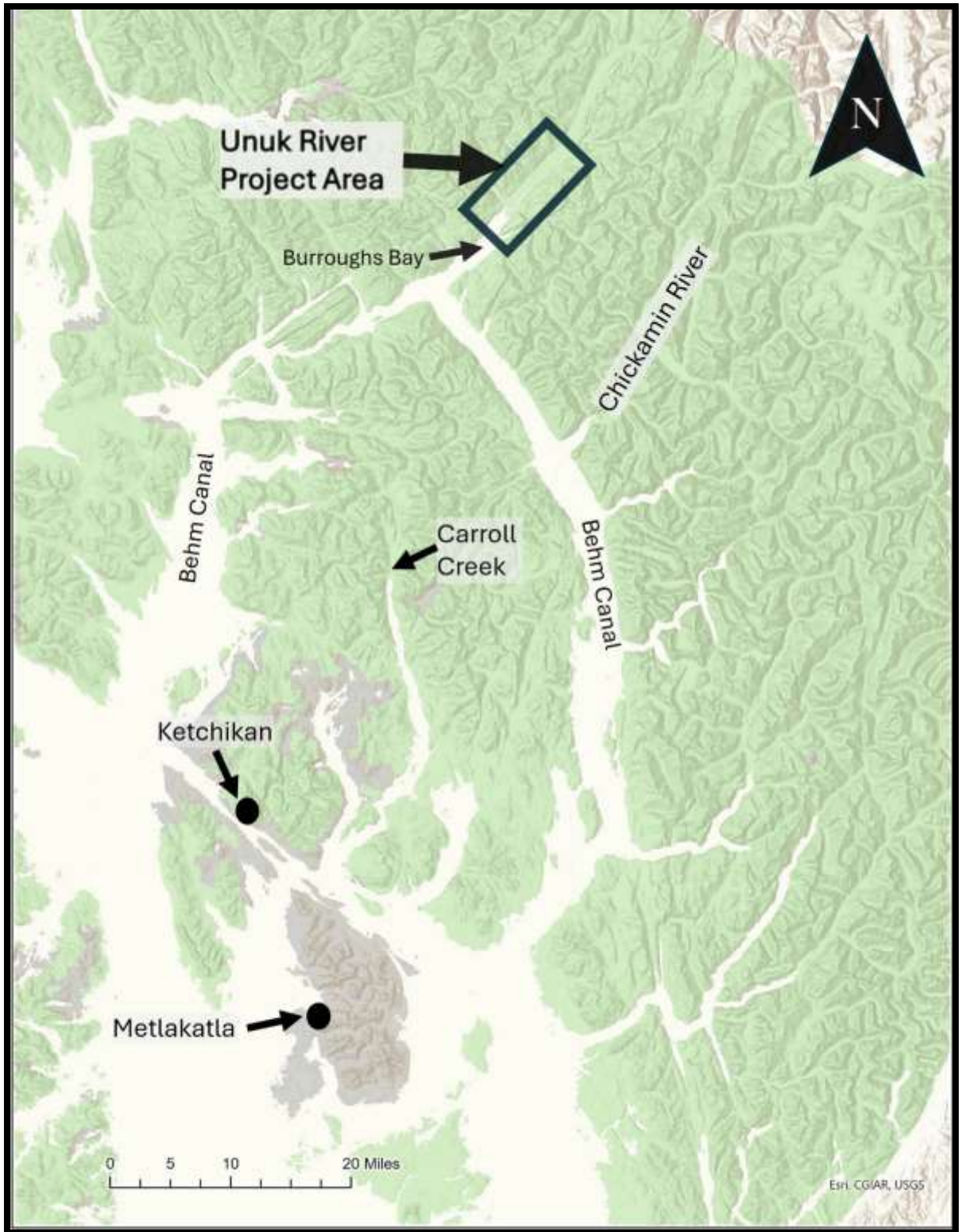


Figure 1. Project Area



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HISTORY

Monitoring efforts by the Forest Service, Alaska Department of Fish and Game, the Ketchikan Indian Community (KIC), and local subsistence users since 2001 have provided base line information that showed a decline in the populations of District 1 Eulachon (Ooligan), *Thaleichthys pacificus*.

District 1 historically supported traditional use, subsistence use, personal use, and commercial fisheries for Ooligan, primarily in the Unuk River system. Annual harvest of Unuk River Ooligan from the 1980's through the 1990's averaged over 12,000 pounds (Figure 4), with some harvest years exceeding 30,000 pounds (Van Alen, 2011 unpublished).

In 2001, the U.S. Forest Service (USFS) and the Alaska Department of Fish and Game (ADFG) began a pilot study to learn more about the level of harvest, distribution, run timing, and life history characteristics of Ooligan in the Unuk River. By 2004, only 1,500 pounds of Ooligan were harvested on the Unuk River and very low numbers of returning Ooligan were observed by subsistence fisherman and Forest Service personnel. In 2005, surveys found Ooligan to be nearly absent in the Unuk River system, with only two fish seen, resulting in State and Federal closures of the Ooligan fishery on the Unuk River. Intensive onsite monitoring surveys between 2005 and 2009 documented less than 100 fish each year, and only 126 fish in 2010 (Figure 3).

This five-year absence of Ooligan alarmed managers because the Ooligan life cycle is typically only four to five years, suggesting an entire life cycle may have been lost. With the stocks at low levels, there were few options available to managers for conservation other than closure. Due to the sharp declines in Ooligan returns around District 1, along with critically low numbers returning to the Unuk River, the Unuk River and other portions of District 1 were closed to the harvest of Ooligan in 2005.

Ooligan began returning to the Unuk River in 2011, with variable returns observed each year to date. However, the stock sizes within District 1 remain at levels lower than those seen prior to the 2005 population collapse. Between 2011 and 2015 Ooligan were also documented in the Carroll Inlet area in addition to the Unuk River system. Genetic analysis of Carroll Inlet fish showed these fish to be genetically comparable to Unuk River Ooligan.

In 2021, after 10 years of variable returns, managers felt that allowing a limited harvest would aid in efforts to obtain biological data and better assess run sizes, as well as provide Federally qualified subsistence users with a harvest opportunity. The 2021 Federal fishery was opened on the Unuk River for the first time since 2004, limited to one five-gallon bucket (Approximately 50 pounds) per household using cast net and dip net only methods. The State fishery remained closed, all other waters in District 1 also remained closed. Due to the success of the 2021 season the limited opening on the Unuk River has continued to date. Data collected from harvesters' aids managers in deciding if the Ooligan population can support sustained harvest and if future harvest limits should be altered.

A partnership with the Ketchikan Indian Community has resulted in the collection of environmental-DNA (eDNA) samples on the Unuk River since 2022 which has aided our assessment of run sizes and helps with in-season management of this important fishery (Figure 5 to Figure 9).



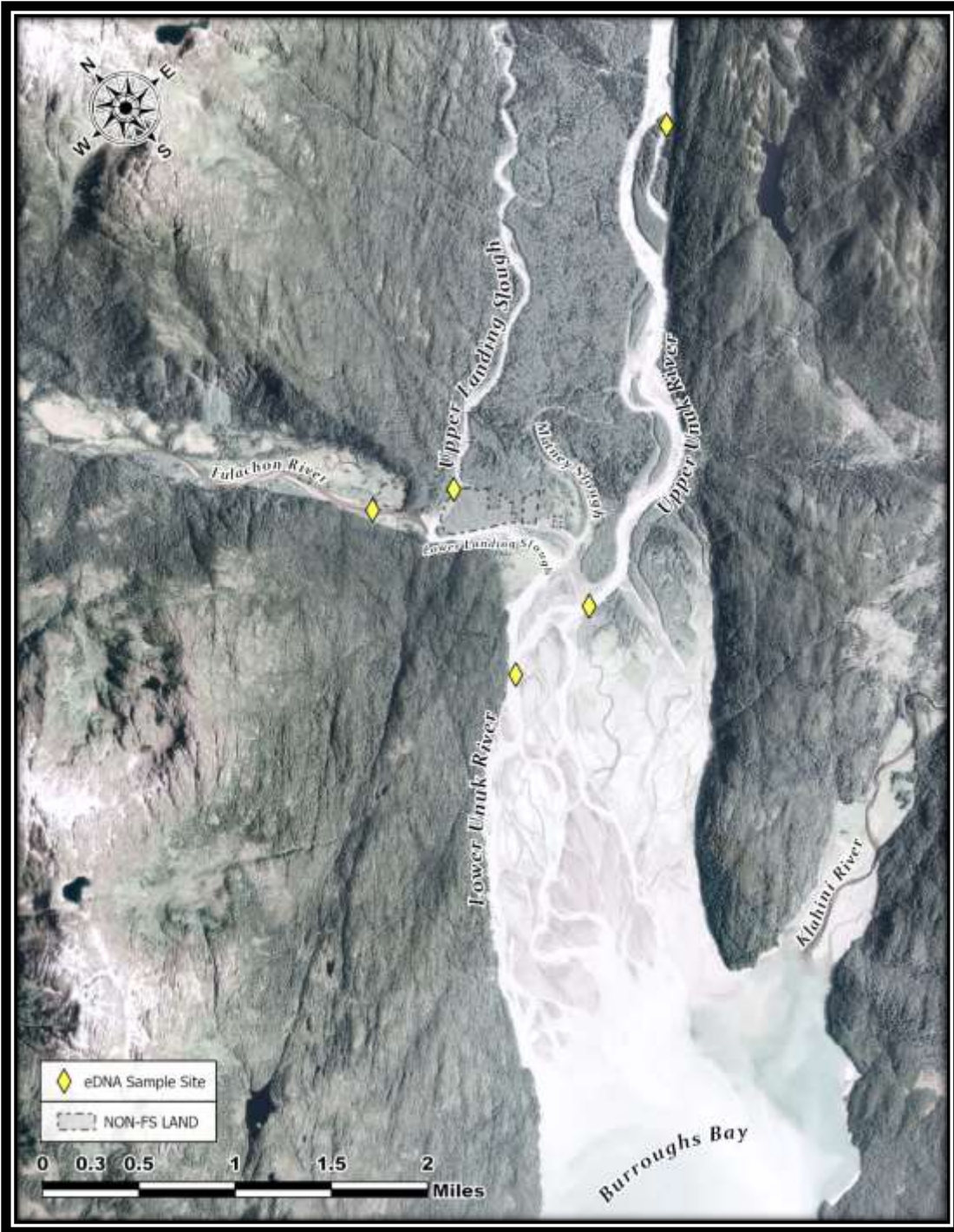


Figure 2. Lower Unuk River system, including major side channels and main tributaries.



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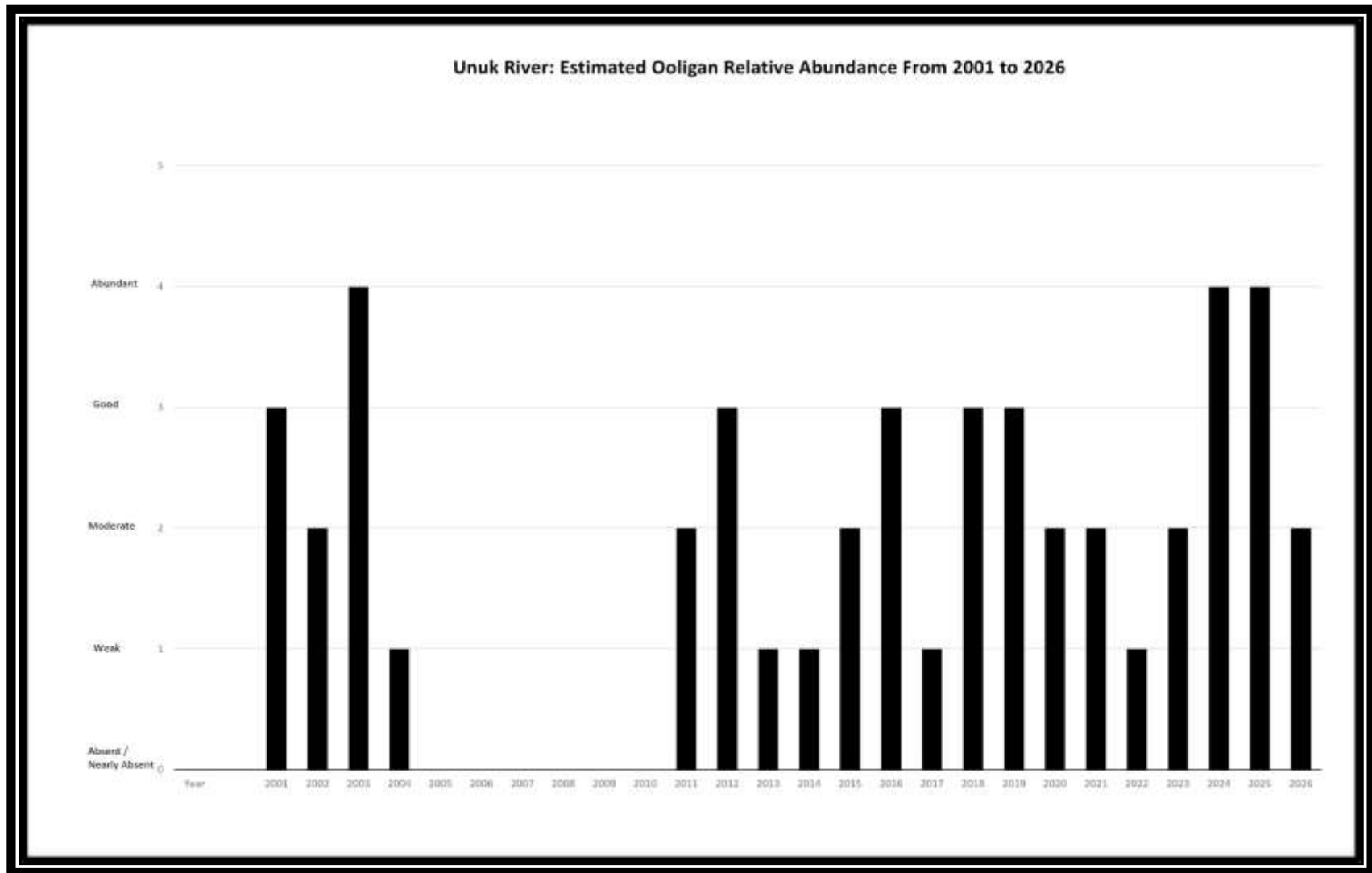


Figure 3. Estimated relative abundance from visual observations of Ooligan in the Unuk River between 2001 to 2026.

DEFINITION: Abundant = large high density schools (>10,000 fish) widespread along multiple major channels and present beyond one week; Good = moderately large high density schools (1000 – 10,000) spread throughout one or more major channels and present for at least a week; Moderate = Some high density schools, small to moderate in size (500-1000 fish), spread out over multiple channels and present for at least a week; Weak = small schools of fish (<500 fish), scattered, no large high density schools, and present less than a week; Absent/Nearly Absent = Little to no fish observed, or small pockets of individuals seen throughout run.



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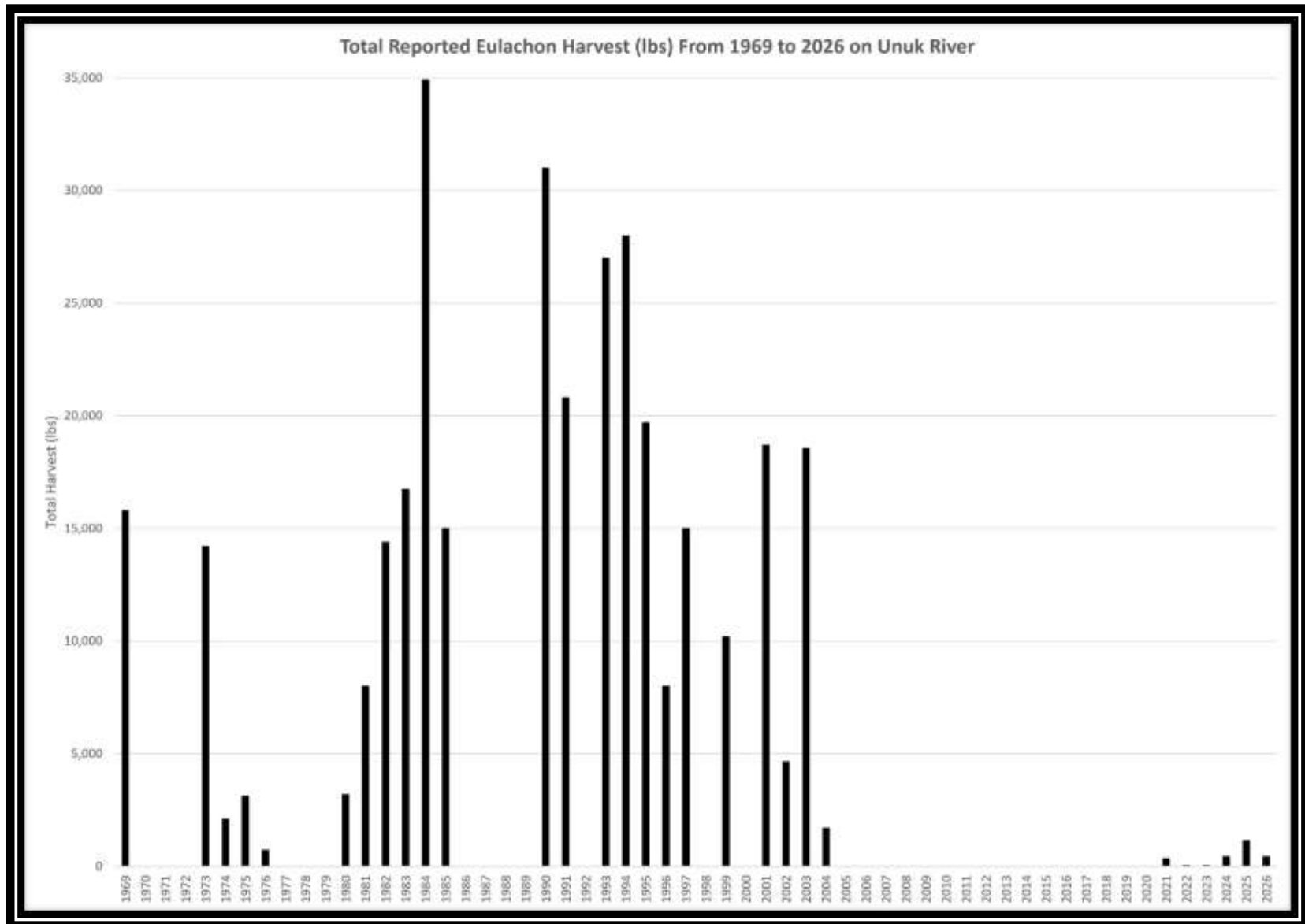


Figure 4. Total harvest (Commercial, State Personal Use / Subsistence, Federal Subsistence) reported from 1969 to 2026 District 1 (Van Alen 2011 – Unpublished).



2026 FIELD INVESTIGATION METHODS and FINDINGS

Surveyors arrived on the Unuk March 10 and stayed onsite until March 23. Daily surveys included a combination of foot surveys and jet-boat surveys on multiple channels within the Unuk drainage (Figure 1 and Figure 2), with jet-boat surveys being the most common. Reports from local fisherman & cabin owners on the Unuk River were also used to assess run size.

Fish counts used visual methods to estimate relative abundance which can be highly subjective, and we acknowledge that our accuracy likely diminishes as the density of fish increases and/or visibility decreases. All reported counts should be taken generally. Methods for estimating numbers include counting a percentage of fish in an area and using that area as a guide to estimate numbers of remaining fish in a similar sized area, recounting again as density changes, until the entire school is estimated.

Personnel from Ketchikan Indian Community (KIC) accompanied Forest Service staff during the ground surveys again in 2026 to help assess the run size and implement environmental DNA sampling (eDNA).

Environmental DNA

Environmental DNA (eDNA) samples have been collected on the Unuk River since 2022 at five established sites. Site locations include the Upper and Lower Unuk River, Unuk River Upper Landing & Lower Landing and Matney (Will's) Sloughs, and the Eulachon River (Figure 2).

The eDNA sample results largely correspond with visual relative abundance estimates (Figure 3) and have proven to be a valuable tool in aiding our efforts to manage this population. For example, the 2023 eDNA results confirmed suspicions of a larger run than observed (Figure 5 through Figure 9). The heavy ice buildup on the river in 2023 prevented accurate visual surveys so a conservative estimate of Moderate¹ was used, while eDNA results show heavy concentrations of DNA suggesting the run was Abundant¹ (Figure 5 to Figure 9).

Figure 5 through Figure 9 display mean copies of eDNA per liter over time at each of the five sample sites for all survey years, 2022 to 2026. Gaps in data depict no samples collected or no DNA detected in samples. The number of samples collected per season varied between seasons due to weather, river conditions, and crew availability (Figure 5 through Figure 9). For example, during the 2022 to 2025 seasons surveyors missed the beginning of the run by 1-5 days due to weather preventing access and in the case of the 2023 season the fish arrived a week earlier than predicted. The 2025 season was restricted to only three separate day trips to the Unuk due to budget constraints preventing overnight travel. In some years extreme tidal or weather conditions, such as blizzard conditions in 2026, prevented access to some sample sites on certain days of the sample season. There were also changes in the eDNA laboratory analysis methods between sample seasons due to changes in laboratory equipment. The 2022 and 2023 seasons used the digital droplet polymerase chain reaction (PCR) method, and the 2024 to 2026 samples used quantitative PCR methods (Figure 5).





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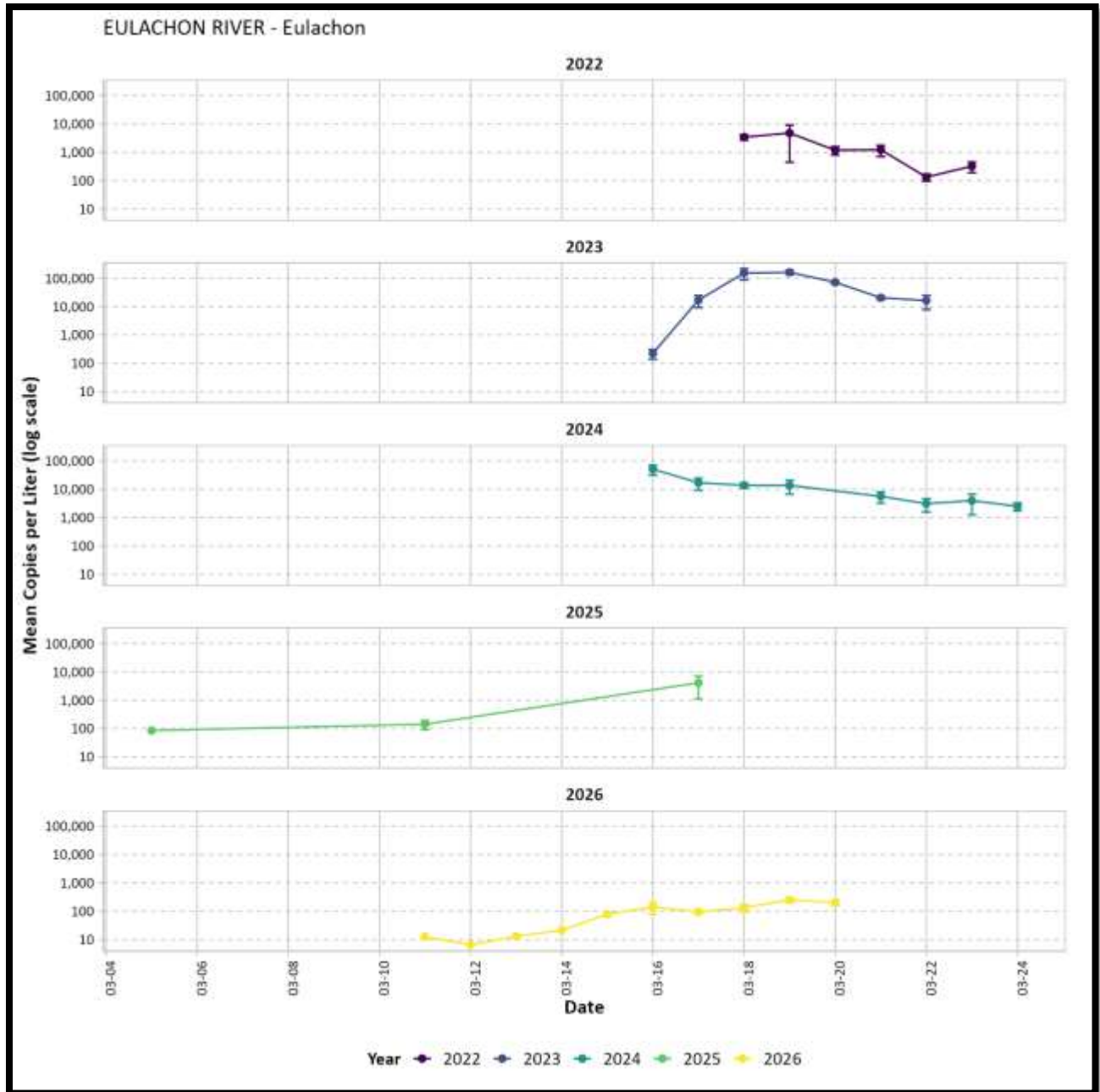


Figure 5. Environmental DNA (eDNA) concentrations from 2022 and 2026 at the Eulachon River site (Figure 2).





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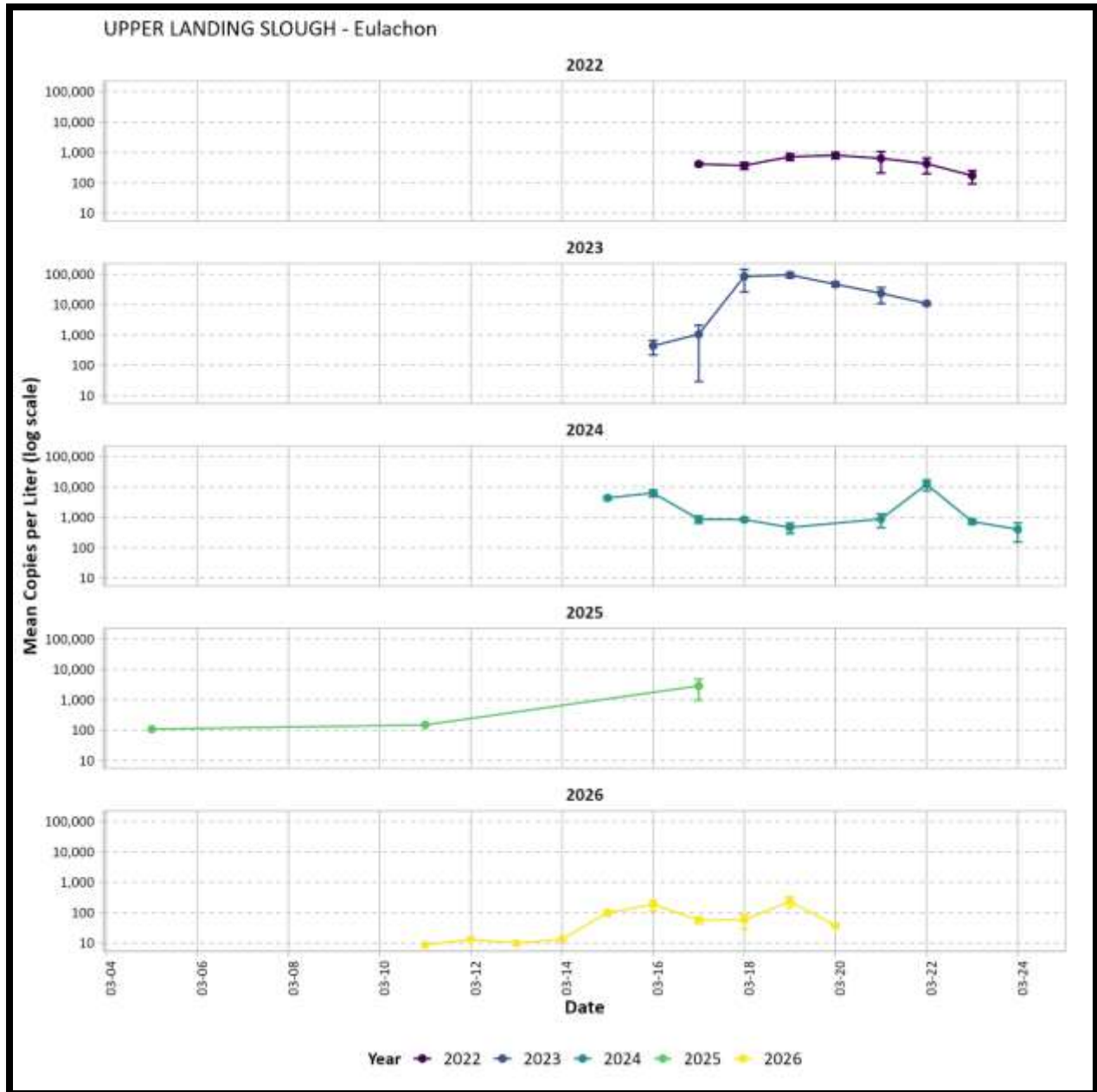


Figure 6. Environmental DNA (eDNA) concentrations from 2022 and 2026 at the Upper Landing Slough – Unuk River site (Figure 2).





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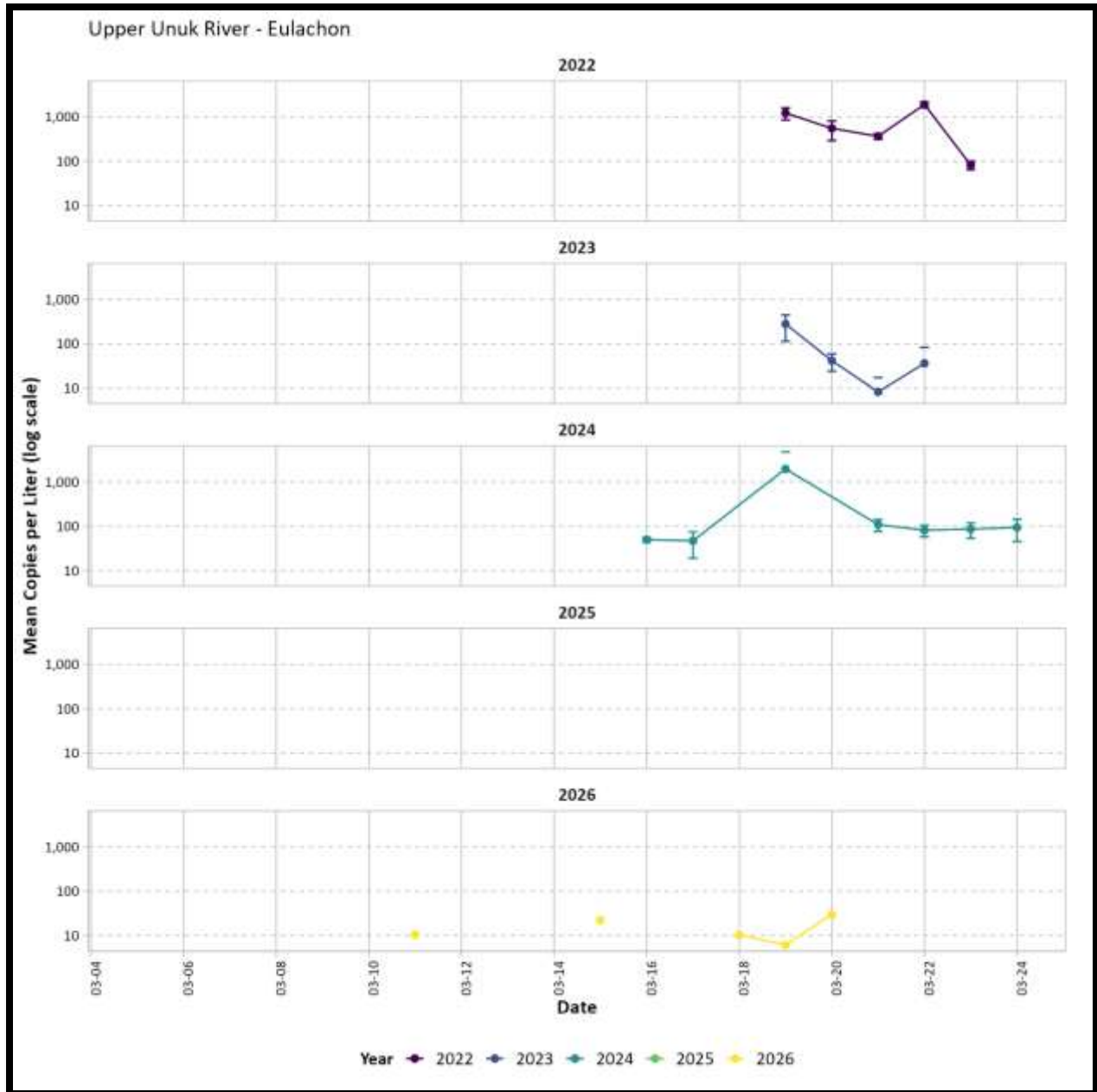


Figure 7. Environmental DNA (eDNA) concentrations from 2022 and 2026 at the Upper Unuk River site (Figure 2).





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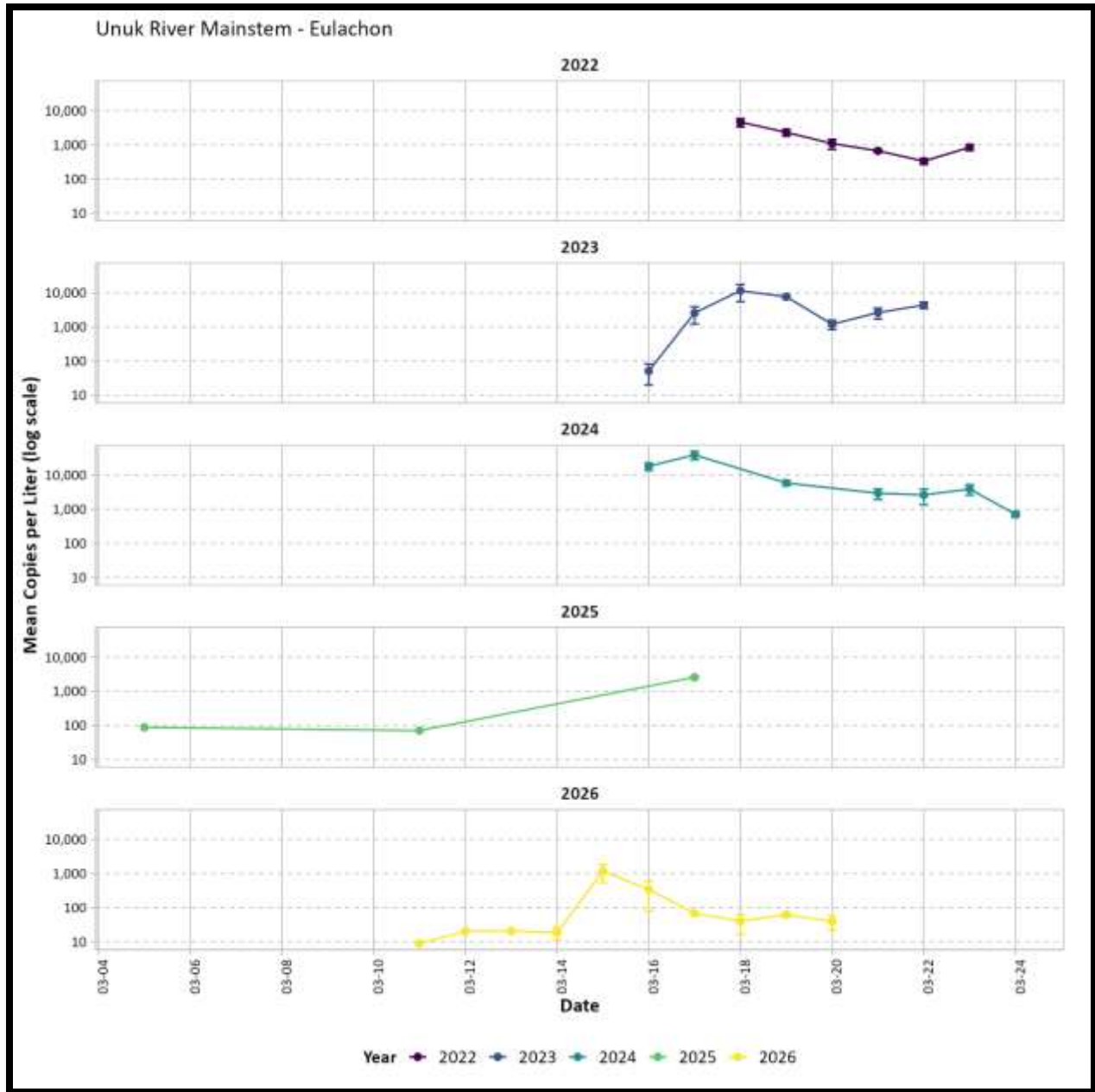


Figure 8. Environmental DNA (eDNA) concentrations from 2022 and 2026 at the Unuk River Mainstem site (Figure 2).





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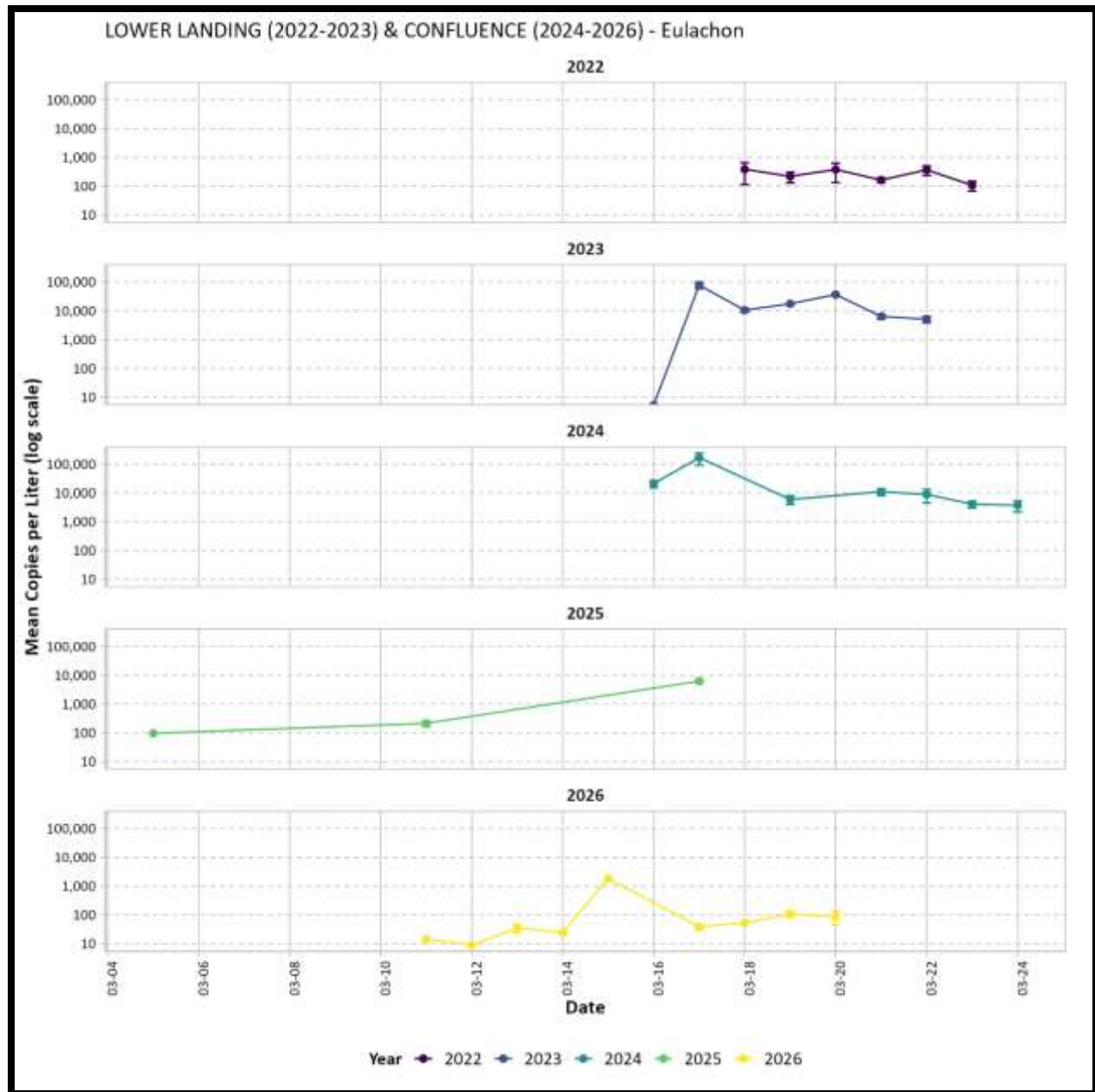


Figure 9. Environmental DNA (eDNA) concentrations from 2022 and 2026 at the Lower Unuk River - Lower Landing/Confluence site (Figure 2).

An Alaska Department of Fish and Game (ADFG) Fisheries Resource Permit for collections was issued to Forest Service in 2026, with intentions to collect samples to assess genetics, length, and weight of Ooligan. One hundred and eleven samples were collected for age analysis in 2026.

During the 2026 monitoring season 29 harvest permits were issued to Federally qualified subsistence users for the sixth time since 2004. Five of the 29 permittees reported successful harvest in 2026.





Figure 10. Large numbers of dead spawned out Ooligan observed in tidal pools of lower Upper Unuk channel on March 18.

Daily Log

All surveys were performed daily by jet boat or on foot. Refer to Figure 2 for site location references.

- March 10 – Survey crew arrived on Unuk River. No signs of fish were observed. Only two seals and one sea lion were seen in Burroughs Bay, and some porpoises were observed in North Behm Canal.
- March 11 – Surveyors collected environmental DNA (eDNA) at all five established sites (Figure 2 and Figure 11). No fish were observed. River was free of ice. About four seals observed in Upper Landing Slough and about six seals observed in Lower Unuk searching for fish.



Figure 11. Emily Halsell (KIC) and Mark Eldridge are getting ready to collect eDNA samples from Upper Unuk River site.

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- March 12 – Surveyors collected eDNA at all sites. Water was low and clear and no fish were seen. Very cold temperatures. A few seals and eagles were seen along river channels.
- March 13 – No fish observed but more seals and eagles showed up in river and gulls were starting to show up in greater numbers. Water was very clear and cold. Seals were observed searching all channels, no feeding activity observed. Collected eDNA at all sites.



Figure 12. Mark Eldridge about to survey for Ooligan on the Unuk River.

- March 14- Fish arrived! Seven Ooligan were observed in Upper Landing Slough. Collected eDNA at all sites. More seals and eagles showed up. Eulachon River was too low to boat up but foot surveys observed no fish.
- March 15—Blizzard conditions in afternoon, about 18-inch new snow accumulated. More fish arrived. About 500 + in Upper Landing Slough, about 2,000+ in Upper Unuk, spread out down to confluence with Lower Landing Slough. Significantly more seals and eagles were present along the river. Collected eDNA at all sites. Two fishermen showed up late.



Figure 13. Iphigenia (Jen) Arvanitis (KIC) collects water samples from the Eulachon River.

- March 16 – More fish arrived, with multiple moderate size schools observed. Due to heavy ice/slush build up on river surveyors were unable to accurately estimate size of each school (Figure 16). Temperature dropped, with heavy blizzard and white out conditions. Very poor visibility and treacherous boating conditions. Collected eDNA only at three sites, Upper Landing, Eulachon, and lower portion of Upper Unuk, due to ice buildup. Five additional fishermen showed up and stated they observed a large school of Ooligan in the lower river, near Burroughs Bay. Our Ketchikan Indian Community (KIC) partners cancelled their crew change due to weather conditions. Snowfall changed to sleet and rain around midday then back to heavy snowfall late. Several dead, spawned out, male Ooligan observed in Upper Landing Slough.
- March 17- Fish run peaked! Surveyors saw 10,000+ in Upper Landing Slough, 10,000+ in Lower Landing Slough, and 2,000+ in Upper Unuk River down to confluence of Lower Landing Slough. Over 30 seals were seen at confluence of Upper Unuk and Lower Landing Slough, sea lions were also seen in the area. All eDNA samples were collected.



Figure 14. Jon Hyde looking for Ooligan along the Upper Unuk River.

- March 18 –Notably less fish were observed! Surveyors saw about 6,000 fish in Upper Landing Slough, 1,000 fish in Lower Landing Slough, and a small number of Ooligan in the Eulachon River. Foot surveys of the tidal flats along the Upper Unuk channel down to the confluence with Lower Landing Slough noted over 5,000 dead, spawned out, Ooligan in dry tidal pools (Figure 10) and small amounts of spawn observed on gravel bars (Figure 15). Surveyors also noted the bigger tides were moving a lot of substrate and likely burying fish and eggs. Local fisherman reported seeing over 1,000 dead Ooligan in the side channel of Lower Landing Slough.
- March 19 – Run size diminishing significantly from previous days. Very few fish remained in Unuk River. Surveyors estimated about 2,500 to 3,000 Ooligan in upper Eulachon River about 1.5 miles upstream.



Figure 15. Ooligan eggs along rocky shore of Upper Landing Slough March 18.

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- March 20 – Only one fish observed in Upper Landing Slough and two fish in Eulachon River. Fish run appears to be nearly over. Gulls were observed diving in lower part of Upper Unuk near confluence, but surveyors floating the river and observed no fish. Water was low and clear. Seals were still present but appeared to be searching for fish and not feeding. Large numbers of seals were observed in Burroughs Bay resting on beaches and logs. No new fish observed and no new spawn observed.
- March 21 – Surveyors floated Upper Landing, Lower Landing, Eulachon River, Upper Unuk, and Lower Unuk River. No fish observed. Surveyors walked Lower Landing Slough, Matney Slough, and Lower Unuk River and observed no fish. About 15 seals and one sealion observed in Lower Landing and Upper Landing slough searching for fish after high tide. Temperature was very cold with more snowfall, about 5-6 inches of new snow.
- March 22 – Marine mammals were absent from Unuk River system and Burroughs Bay. No fish and no bird activity observed. Run appears over. No indicators of a second run of fish.
- March 23 – End of Survey! No marine mammal activity observed in the river or bay. No fish were observed. All surveyors departed Unuk River.



Figure 16. Icy slush on the Upper Landing Slough impeding visibility and boat access March 16.



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Figure 17. Small number of Ooligan remain in Upper Landing Slough on March 19.

Other Ooligan Monitoring

Our partners at KIC flew 12 miles of the Chickamin River on March 20 and noted no signs of fish or marine mammal activity (Figure 18).



Figure 18. Photo by Iphigenia Arvanitis from KIC of the Chickamin River March 20, 2026.





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CONCLUSION & RECOMMENDATIONS

Based on the numbers of live and dead Ooligan observed by Forest Service and KIC biologists, and reports from local subsistence users, the 2026 Ooligan run appears to be Moderate² in size and sufficient to continue allowing limited harvest on the Unuk River with gear restrictions.

Future surveys should continue to work with our partners at the Ketchikan Indian Community to collect environmental DNA (eDNA) on the Unuk River to aid our long-term efforts to manage the Unuk River fishery; and continue to use partners and local fisherman to aid in real time management of the Unuk River fishery and maximize survey efforts within the Unuk River system.

The small size of Ooligan, their schooling behavior and their wide and variable distribution within the Unuk River system makes enumeration difficult. Use of a limited test fishery with feedback and reporting from local users combined with onsite surveys by biologists appears to be the most successful methods in obtaining real time biological information on the Unuk River system needed for in-season management of this fishery. With the fish run duration on the Unuk River being shorter than on larger rivers, in combination with the presence of multiple tidally influenced channels, it is highly doubtful that other methods of monitoring, such as mark/recapture estimates, would be successful. The eDNA collection appears to be a valuable tool to aid in run size estimates, especially when ice buildup or weather prevents visual observation. However, the delay in laboratory analysis of eDNA samples prevents use for real time in-season management of this fishery.

Bias between observers will continue to be an issue as visual surveys can be affected by light and weather conditions, tide levels, ice buildup, river turbidity, observer turnover, and the variation of the observation methods (e.g., boat vs foot surveys). Larger numbers of fish are also harder to quantify than smaller numbers resulting in higher error with estimates of larger schools of fish.

With limited ideal tidal conditions, areas such as the Eulachon River, Matney Slough, and portions of the Mainstem Unuk cannot be surveyed easily or at times not at all because of the aggressive tidal fluctuations during ebbs and floods that limit time in these areas. Ice buildup also restricts access and visibility at times.

Although further improvement of monitoring is desired, current survey methods are believed to provide valuable information to managers about the current distribution and relative abundance within the system.

² *Relative Abundance Definitions:* **Abundant** = large high density schools (>10,000 fish) widespread along multiple major channels and present beyond one week; **Good** = moderately large high density schools (1000 – 10,000) spread throughout one or more major channels and present for at least a week; **Moderate** = Some high density schools, small to moderate in size (500-1000 fish), spread out over multiple channels and present for at least a week; **Weak** = small schools of fish (<500 fish), scattered, no large high density schools, and present less than a week; **Absent/Nearly Absent** = Little to no fish observed, or small pockets of individuals seen throughout run.



LITERATURE CITED

U.S. Geological Survey. "USGS 15015595 UNUK R BL BLUE R NR WRANGELL AK". [USGS Unuk River Water Data](#) . March 01 to March 31, 2025.

Van Alen, B. W. 2011 Unpublished. Unuk River Eulachon Stock Assessment, 2001 to 2010. U.S. Fish and Wildlife Service, Office of Subsistence Management, Fisheries Resource Monitoring Program, Final Report Study No. 08-607. Anchorage, Alaska.