



Alexander Creek, Alaska

**Purpose of the project:**

Alexander Creek Watershed, a tributary of the Susitna River, and formerly significant sport fishing area. This system includes 690 acre Alexander Lake, 40 mile long Alexander Creek and tributaries to that system that cover hundreds of square miles in the Matanuska-Susitna Borough. Approximately 50 air miles northwest of Anchorage, the Alexander Creek Watershed is a remote and slow moving meandering river system with numerous tributaries and shallow lakes and ponds. It has thousands of acres of adjacent wetlands with side-sloughs and oxbow channels.

In the late 1990s Alexander Watershed was highly productive Chinook and coho salmon habitat, and, arguably, the premier Chinook sport fishing area in the Matanuska-Susitna Valley. It supported what was likely a multi-million dollar salmon fishery with lodges, daily flight service and boat charters. Today, however, due to low returns, the Alexander drainage is closed to Chinook harvest, and is no

longer the economic driver it once was. Fishermen today are motivated to travel to the remote lake to catch invasive northern pike, rather than salmon.

While northern pike (*Esox lucius*) are native north and west of the Alaska Range in Alaska, they are an introduced species to the Susitna River Basin (thought to have been introduced illegally in the late 1950s), where they are voracious predators of juvenile salmon and other native resident fish and wildlife. Impacts of invasive northern pike predation on native fish populations are known to be devastating where their habitats overlap. Northern pike prefer cool, slow moving shallow waters that are highly vegetated, enabling them to hide and ambush prey. The potential threat of northern pike is greatest for juvenile Chinook and Coho salmon due to a preference for similar habitats. To date, pike have expanded throughout the entirety of the Alexander drainage resulting in declining native fish populations that contribute to eroding subsistence, commercial and particularly sport fishing opportunities. Northern pike have direct impacts on salmon populations, and indirect economic impacts on ecosystem health by decreasing biodiversity, diverting energy from terrestrial predators like bears and eagles, and reducing transfer of marine-derived nutrients to terrestrial ecosystems through decaying salmon carcasses.

Compounding the situation, in August of 2014, the aquatic invasive plant, Elodea, was discovered for the first time in Mat-Su waters by Alaska Department of Fish and Game crews suppressing and monitoring northern pike in Alexander Lake. The relatively small, patchy 10 acre infestation in Alexander Lake is thought to have established from a transported fragment via floatplane from Sand Lake; the only Anchorage infestation that allows floatplane traffic. Of the 19 total waterbodies with Elodea discovered in the entire state of Alaska, Alexander is one of the few recent discoveries in a remote location.

When introduced to a new waterway, Elodea grows rapidly, overtaking native plants, filling the water column, and changing the habitat conditions to which native fish are adapted. Thick mats form at or just below the water surface and can foul boat propellers and floatplane rudders, causing a hazard. In addition to impeding fishing, navigation, boat launching, and paddling, it can also reduce waterfront property values. In Alaska's environments ranging from Fairbanks to Cordova, it tolerates cold winters and photosynthesizes under ice. Should Elodea become established in Alexander Creek and spread throughout the lake, it would provide excellent habitat quality for predatory northern pike, further

exacerbating the existing impacts of pike predation on juvenile salmon and other fish.

### **Human Interest/Community Benefit:**

Partners have been working to restore Alexander Creek drainage Chinook salmon numbers in what previously was very productive habitat and one of the most vibrant Chinook sport fisheries in Southcentral Alaska. This abundant fishery attracted international, national and in-state anglers supported with lodges, daily flight service and charter boats, providing a boost to the local economy.

With the recent discovery of Elodea, there is concern over the compounded effects of pike and Elodea on salmon that, if left to expand, will not only reduce gains made in reducing pike populations by partners, but increase the challenges already faced by Chinook salmon populations returning in lower numbers to the Susitna drainage. This is particularly significant during a time of general statewide Chinook declines, where 8 of the 14 statewide stocks of concern are located in the Mat-Su Valley. Eight of these stocks – one of them being Alexander Creek, are Chinook stocks from the Susitna drainage, and one is a sockeye stock.

The greatest threats to salmon and salmon habitat in the Mat-Su are typically due to impacts from human development. Invasive aquatic species like Elodea and pike pose a threat to remote areas as well. With concurrent Chinook salmon declines across the state, the Alexander Creek drainage and the excellent salmon habitat it provides is increasingly important.

### **Project Timeline:**

Mat-Su salmon habitat partners continue to plan and implement ongoing efforts to suppress pike and survey high risk waterbodies, educate the public about these two invasive species, and eradicate Elodea in Alexander Creek drainage.

Economic Calculator results:

Jobs Added: 2.9263

Total Sales: USD 301,206.30 Value

Added: USD 181,119.21

Income: USD 140,810.35

### **Partners - Pike:**

**Given pike are too widespread, and the challenge too great in the Mat-Su to fully eradicate them, there will be ongoing suppression in target areas to maintain critical salmon habitat. Given Elodea has just been discovered, we still**

have time to eradicate and continue prevention techniques of education, detection and eradication to ensure it does not take a permanent foothold in the Mat-Su.

Alaska Department of Fish and Game (ADF&G) – ADF&G has completed the fourth year of a long-term and large scale annual gillnetting project to control northern pike on Alexander Creek. The intent is to replenish depleted anadromous and resident fish populations and restoring sport fishing opportunities to this once very popular and productive system. Funding extends from 2011 – 2016. As part of this project, ADF&G also conducted a radio telemetry study to investigate movement patterns between Alexander Lake and the mainstem of the creek, is looking at diet, and testing effective control and detection methods such as eDNA. Directed by the Management Plan for Invasive Northern Pike and prioritized through a strategic planning process, the northern pike suppression project in Alexander Creek is the largest of its kind ever attempted in Alaska, and preliminary findings from the first four years of this project are encouraging.

Project goals are to create an annual, large scale pike removal protocol on side channel sloughs to remove 80% of pike, track spatial and temporal movement trends of pike to and from Alexander Lake, and measure success through monitoring adult salmon returns, resident fish production and juvenile production and movement.

As of spring 2015, results have been very successful. With each year of pike suppression, Chinook fry are found further up the creek. 2014 was the first year both juvenile and adult Chinook salmon were observed all the way up to the lake outlet. Chinook salmon returns the last two years have also been highest observed in a decade.

Cook Inlet Aquaculture Association (CIAA) – Continuing long term pike suppression efforts in 2015 on adjacent watersheds on the Susitna River that additionally includes examination of seasonal movement patterns, population estimates, and field testing of electronic fish barriers.

Tyonek Tribal Conservation District (TTCD) surveying for Reed Canary Grass in the Alexander Creek drainage summer 2015.

Partner Highlights – Elodea

Although the Mat-Su is the fastest growing region in Alaska, putting increased pressure on the spread of Elodea, much of the Mat-Su is remote and in many cases most readily accessed only by boat or float plane. Alaska's biggest population center - Anchorage is adjacent and regularly utilizes Mat-Su's rich resources to fish, hunt and recreate. Many Alaskan's fly private aircraft, and there are three lakes currently infested with Elodea that see significant floatplane and motorboat use, vectors that could easily lead to further spread of Elodea. Even a tiny fragment that hitchhikes on boats, trailers, float plane rudders or other gear can establish a new infestation in another waterbody. The Alexander Lake Elodea was very likely spread by floatplane from one of the Anchorage infested lakes. For this reason Elodea outreach, detection, and eradication efforts are broader and more regional in scale and by necessity extend outside the Alexander Creek and Mat-Su Basins.

In 2015 & 2016 partners will be working on an eradication plan for Alexander Lake and a rapid response protocol for future infestations, and in 2016, the plan will be implemented (due to NEPA process, takes significant time and effort to process). Partners will be sampling high priority areas in the Mat-Su, educating priority audiences like pilots, residents of infested lakes, fishermen and guides and will be providing training to help build awareness and create a growing body of residents, recreationalists and practitioners who all can recognize Elodea and know what to do if they do see it. The Mat-Su Salmon Partnership is working with DNR to develop and help support further future training opportunities as well as an Elodea statewide management plan.

Alaska Department of Natural Resources (ADNR) (NFHP FY15 funding) – lead agency and currently working with partners on an eradication plan. Anchorage infestations are scheduled to be treated in the spring of 2015. Meanwhile, ADNR is progressing with writing appropriate environmental assessments and exploring permits for action. Because the only known infestation in the Mat-Su is localized, and would require only a partial lake eradication effort, ADNR along with other collaborating partners, are hopeful that Mat-Su Elodea eradication is possible!

Tyonek Tribal Conservation District (TTCD) – August 2014 TTCD completed district wide invasive plant survey covering Alexander Creek, Beluga, and Skwentna as well as rivers and roads not previously surveyed.



Palmer Soil and Water Conservation District (PSWC) – Summers 2012 and 2013, surveyed 29 Mat-Su lakes and streams and completed assessment of high priority waterbodies (i.e. locality to roads, structures, and float plane bases).

Cook Inlet Aquaculture Association (CIAA) (NFHP funded) – surveyed 11 Susitna River watershed lakes and provided outreach in residential/high traffic boat areas for Elodea in 2014. Returning in 2015 to resample.

Wasilla Soil and Water Conservation District (WSWCD) – Summer 2012 surveyed 24 waterbodies, including areas with overpasses and boat launches.

U.S. Fish & Wildlife Service (FWS) - Providing outreach, funding, and technical support for Elodea early detection and rapid response efforts in Mat-Su, Kenai, Anchorage, and Fairbanks.

ADF&G – Several field staff crew and project managers have taken Aquatic Invasive Species training that includes information on how to identify, survey for, and recognize habitat for elodea. Alexander pike suppression field staff are collaborating with ADNR for sample taking and logistics for Elodea eradication project.