

## **Alaska Sustainable Salmon Fund Statement of Work**

**I. Project Title:** Mobile Northern Pike Suppression Crew – 2024-2026

**II. Project Number:** 57003

**III. Principal Investigator**

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**IV. Project Period:** 3/1/24 – 11/30/26

**V. AKSSF Objective:** Invasive species

**PCSRF Objective:** HP&R

**VI. Project Description**

1. Synopsis

Cook Inlet Aquaculture Association (CIAA) will remove invasive northern pike (*Esox lucius*) from Whiskey, Hewitt, and Shell lakes, which support significant populations of sockeye salmon (*Oncorhynchus nerka*) as well as coho (*O. kisutch*), chum (*O. keta*), and pink (*O. gorbuscha*) salmon. A crew will conduct suppression by gillnetting and hook and line fishing. During the open water season the crew will spend some time at each lake, rotating between them from approximately mid-May to mid-September. CIAA will also monitor sockeye salmon smolt and adult populations at Shell Lake to assess northern pike suppression efforts. While the crew is in the field, they will also annually conduct surveys for the invasive waterweed elodea (*Elodea spp.*) at Whiskey, Hewitt, and Shell lakes.

2. Introduction

Invasive species within Alaska are a serious threat to native salmon populations, salmon habitats, economies, and livelihoods. Northern pike and elodea are harmful invasive species that have expanded their reach into the Susitna River drainage.

The introduction of northern pike outside of their native range in Alaska in the 1950s has led to their populations expanding to take over whole lake systems and colonizing new areas as they move throughout the Susitna River basin. Outside their native range northern pike have the potential to interfere with ecosystem function and destroy economically important fisheries. Due to many factors, complete eradication of northern pike in the Susitna drainage has been deemed infeasible. Thus, suppression using gillnet and hook and line fishing are utilized as effective tools for reducing northern pike impact on salmon and other native fish species.

CIAA has targeted investigations of northern pike distribution, abundance, and removal in Susitna River watershed lakes through CIAA funds and AKSSF grants for some times (see AKSSF projects 45927, 44629, 44172, 51003, and 54006). Additionally, because of the almost complete loss of Shell Lake sockeye salmon, CIAA initiated efforts to maintain the genetic lineage of this sockeye population through the collection of broodstock and gametes and back stocking to Shell Lake beginning in 2012.

More recently (2018–2020), CIAA partnered with ADF&G (AKSSF project 51003) to expand the pike evaluation at Hewitt Lake. In the fall of each year of that project, ADF&G conducted an estimate of juvenile salmon rearing in Hewitt Lake. From 2018 to 2020, the juvenile sockeye salmon population increased approximately 80,000 fish for a total of about 440,000 fish. Between 2021-2023, CIAA intensively harvested northern pike at Whiskey (all years), Hewitt (all years), Shell (2023), and Chelatna (2021–2022) lakes (AKSSF project 54006). This work also included elodea surveys at all lakes and an estimation of smolt abundance at Shell Lake in 2023.

Under this project, CIAA will employ a targeted suppression strategy to maintain the previous efforts towards increasing juvenile salmon through suppressing harmful invasive pike at Whiskey, Hewitt, and Shell lakes from 2024 to 2026. CIAA will also monitor sockeye salmon smolt and adult populations at Shell Lake to assess northern pike suppression efforts.

Elodea, Alaska’s first invasive submersed freshwater plant, is also negatively impacting native fish species. Elodea is recognized as a major threat throughout Alaska, but particularly in the Matanuska-Susitna Basin. Under this project, CIAA will perform elodea surveys on Whiskey, Hewitt, and Shell lakes annually.

### 3. Locations

- Whiskey Lake: 61.984648, -151.398457
- Hewitt Lake: 62.000052, -151.378724
- Shell Lake: 61.9321527, -151.507808

### 4. Related Projects 54006

## **VII. Objectives**

- Suppress invasive northern pike populations in Whiskey, Hewitt, and Shell lakes
- Evaluate the smolt out and adult return at Shell Lake
- Conduct annual elodea surveys in Whiskey, Hewitt, and Shell lakes

## **VIII. Methods**

This project will suppress northern pike populations by gillnetting in targeted preferred pike habitat locations. Removal of northern pike from Whiskey, Hewitt, and Shell lakes will occur during the open water season (May–September) throughout each year of the project. Northern pike removed from the system will be donated to local residents for

consumption or they will be completely cut in half and disposed of in the deepest portions of the lake in accordance with ADF&G permitting. When logistically feasible, harvested northern pike will be donated to the Alaska Native Medical Center.

#### Pike Reduction

Gillnets and hook and line fishing will be used to capture and remove northern pike in Whiskey, Hewitt, and Shell lakes and the Whiskey-Hewitt Creek outlet that connects these lakes to the Yentna River. Northern pike will be removed from this system from May through September 2024–2026. Pike removal efforts will begin immediately after ice melts. Each day, up to 10 gillnets will be deployed at 10 different shallow and vegetated sites that typically provide optimal northern pike habitat. Gillnets will be 15.2 m long x 2.4 m deep and constructed of monofilament line with a one inch bar mesh size. The top line will be a floating core line and the bottom line will be lead-weighted to sink.

Northern pike catch per hour rates will be calculated and recorded for net harvesting. Captured pike will be quickly dispatched using a fish bat. The catch of species other than northern pike will be recorded and the fish will be removed and released immediately.

Northern pike fork length will be measured to the nearest mm, weighed to the nearest gram, and sex will be determined. Cleithra will be taken from each fish for later age determination in the laboratory.

#### Pike Composition

Age composition, sex ratio, and length at age will also be compared among years to evaluate whether northern pike population characteristics have changed over time in response to the northern pike suppression effort.

#### Elodea Surveys

The survey crew will complete elodea surveys on the northern pike suppression lakes. Elodea surveys will be full lake surveys and will follow standard protocols. The lake survey will begin with collecting general water body and weather information—water body name and location, secchi depth, light conditions, weather during survey, water level, surface conditions, and viewing method. Information will be recorded in a weatherproof notebook and shared with the Alaska Exotic Plants Information Clearinghouse.

Full shoreline surveys will be conducted on each lake visited. The crew will complete rake throws at each designated point and identify all vegetation. If elodea is found at any site, the survey will switch to determining the extent of the infestation. The appropriate agencies (Alaska Department of Natural Resources and Alaska Department of Fish and Game) will be notified as soon as possible. All data collected during the surveys will be recorded in the Alaska Exotic Plants Information Clearinghouse Database.

#### Smolt Monitoring

Crews will use a smolt weir to enumerate the migrating smolt population. The weir is composed of a modified fyke net and a two-compartment live box. A portion of the smolt

may be collected and sampled for age, weight, and length characteristics before being released downstream. The smolt will be collected in proportion to the daily migration.

#### Adult Enumeration

Crews will erect an adult salmon weir when the first adults typically start showing up in July. The weir is erected to direct salmon through a video camera chute where fish will be later counted via video footage. A portion of the adult return may be sampled for age, sex, and length characteristics.

### **IX. Benefits**

This project will benefit sockeye, coho, chum, and pink salmon as well as resident fish species in Whiskey, Hewitt, and Shell lakes through reduction in northern pike predation. Increased salmon runs into Whiskey, Hewitt, and Shell lakes will also benefit terrestrial species (e.g., brown bear), avian species (e.g., bald eagle, glaucous gull, Arctic tern), and marine mammal species (e.g., harbor seal, beluga whale) that feed on salmon and will increase the transfer of marine-derived nutrients through decaying salmon carcasses to further boost the productivity of the ecosystem. Early detection surveys for elodea will drastically reduce the eradication expense of this deleterious submersed aquatic invasive, if it is detected.

### **X. Products, Milestones, and Timelines**

- March–April 2024, 2025, and 2026: Purchase field equipment; recruit and hire crew; obtain required permits
- ~May 11–15, 2024, 2025, and 2026: Train field crew and deploy Shell field camp
- ~May 16–September 3, 2024, 2025, and 2026: Conduct pike suppression efforts and elodea surveys at Whiskey, Hewitt, and Shell lakes
- Mid-May–early June 2024, 2025, and 2026: Enumerate smolt out migration at Shell Lake
- Mid-July–early September 2024, 2025, and 2026: Conduct adult salmon enumeration at Shell Lake via video weir
- September 2024, 2025, and 2026: Clean and repair gear; prep gear for storage and use in future years
- October–November 2024, 2025, and 2026: Analyze data and write annual project report; submit elodea survey data to the Alaska Exotic Plants Information Clearinghouse
- November 2026: Present results at the Mat-Su Salmon Science & Conservation Symposium

### **XI. Project Budget**

| <b>CIAA Budget</b> | <b>Total</b> |
|--------------------|--------------|
| 100 Personnel      | \$85,410     |
| 200 Travel         | \$890        |
| 300 Contractual    | \$87,632     |
| 400 Supplies       | \$28,716     |
| 500 Equipment      | \$0          |
| Subtotal           | \$202,648    |

|              |           |
|--------------|-----------|
| 600 Indirect | \$20,265  |
| Total        | \$222,913 |

#### CIAA Budget Narrative:

##### Line 100: Personnel (\$85,410)

- Emily Heale, Biologist II, will oversee the project and complete all hiring, permitting, and reporting requirements: 48 days @ \$380/day = \$18,240.
- Lisa Ka'aihue, Special Projects Manager, will oversee project administration: 5 days @ \$450/day = \$2,250.
- Peter Toggwiler, Fisheries Technician III, will assist with camp deployment, equipment maintenance, and camp demobilization: 21 days @ \$310/day = \$6,510.
- Trent Schipper, Fisheries Technician II, will assist with camp deployment, equipment maintenance, and camp demobilization: 15 days @ \$310 = \$4,650.
- A Fisheries Technician I (TBD) will lead camp set up and maintenance, northern pike harvesting, elodea surveys, smolt and adult salmon enumeration, and data collection: 336 days @ \$160/day = \$53,760.

##### Line 200: Travel (\$890)

- Emily Heale will travel to Palmer to present project results at the Mat-Su Salmon Science & Conservation Symposium meeting in the fall of 2026:
  - Lodging: 3 nights @ \$200/night = \$600
  - Meals per diem: 3 days @ \$60/day = \$180
  - Transportation fuel for CIAA truck (400 miles roundtrip): 22 gallons @ \$5/gallon = \$110

##### Line 300: Contracts (\$87,632)

- Garmin inReach service during field season for communication between camp and headquarters (safety backup): 12 months @ \$65/month = \$780
- Verizon Cell usage during field season for communication between camp and headquarters: 12 months @ \$39/month = \$468
- Shell Lake Land Use Permit fee paid to the Alaska Department of Natural Resources to allow the camp, salmon trap, and weir installations and storage of equipment: 3 years @ \$1,000/year = \$3,000
- Short-term cabin rental at Whiskey Lake for staging of crew for Whiskey-Hewitt lake pike suppression: 56 days at \$150/day = \$8,400
- Student Conservation Association (SCA) fees (including travel, recruitment fees, and insurance) to support one student intern each year (interns will assist with camp set up, maintenance, northern pike harvesting, elodea surveys, smolt and adult salmon enumeration, and data collection): 3 years @ \$8,512/year = \$25,536
- Snowshoe Gun Club Fee to secure gun range time for safety orientation: 3 years @ 116/year = \$348
- Aviation charters:
  - Beaver: 26 hours @ \$735/hour = \$19,110
  - Cessna 206: 24 hours @ \$630/hour = \$15,120
  - R44 helicopter: 6 hours @ \$1,070/hour = \$6,420

- Tecnam Traveller P2012 (Kenai Aviation Charter): 3 hours @ \$2,800/hour = \$8,400
- Mat-Su Salmon Science & Conservation Symposium: 1 registration @ \$50/registration = \$50

Line 400: Supplies (\$28,716)

- Groceries for the Fisheries Technician I and intern: 336 days/person @ \$22.50/day x 2 people = \$15,120
- Groceries for Emily Heale, Peter Toggwiler, and Trent Schipper: 8 days/person @ \$22.50/day x 3 people = \$540
- Safety gear (6 waders, bear spray, ammunition for the CIAA-provided shotgun, 3 camp first aid kits, 3 boat safety kits): \$2,450
- GPS device: \$400
- Fish capture supplies (gillnets, rods, reels, lures, line, fillet knives): \$1,504
- Sample kit (pike scales, length board, cleithra envelopes, ziplock bags): \$312
- Camp supplies and equipment (camp chairs, water filters, shovels, pop up shelters, bug spray, mosquito coils, batteries): \$1,040
- Video weir supplies (lithium batteries, video camera and associated cables, DVR, solar panel, hardware): \$3,000
- Gas for boat: 350 gallons @ \$5/gallon = \$1,750
- Gas for truck: 340 gallons @ \$5/gallon = \$1,700
- Propane: 150 gallons @ \$6/gallon = \$900

Line 600: Indirect (\$20,265)

CIAA will use the de minimis indirect rate of 10% (as described in 2 CFR 200) which excludes, among other items, subaward amounts over \$25,000, capital expenditures, and equipment.

## XII. Match Budget

| CIAA Match Budget | Total    |
|-------------------|----------|
| 100 Personnel     | \$70,627 |
| 200 Travel        | \$0      |
| 300 Contractual   | \$300    |
| 400 Supplies      | \$0      |
| 500 Equipment     | \$0      |
| Subtotal          | \$70,927 |
| 600 Indirect      | \$7,093  |
| Total             | \$78,020 |

Line 100: Personnel (\$70,627)

- An SCA intern will assist the Fisheries Technician I with camp set up, maintenance, northern pike harvesting, elodea surveys, smolt and adult salmon enumeration, and data collection: 3,024 hours @ \$31.80/hour = \$96,163 minus \$25,536 (SCA contract) = \$70,627.

Line 300: Contracts (\$300)

- Fishing license: 3 licenses @ \$100/license = \$300

Line 600: Indirect (\$7,093)

CIAA will use the de minimis indirect rate of 10% (as described in 2 CFR 200) which excludes, among other items, subaward amounts over \$25,000, capital expenditures, and equipment.