PERFORMANCE REPORT

STATE: Alaska **GRANT NO.:** F-10-33

GRANT TITLE: Sport Fish Investigations in Alaska

PERIOD COVERED: July 1, 2017- June 30, 2018

STUDY NO. AND TITLE: R-2-15 Kenai Peninsula Northern Pike Control

STUDY OBJECTIVES:

Kenai Peninsula Northern Pike Control:

1) Restore the aquatic habitat of the Soldotna Creek drainage by removing all invasive northern pike by 2017.

2) Restore the aquatic habitat of the Tote Road pike lakes by removing all invasive northern pike by 2018.

RESULTS/DISCUSSIONS:

(Objective 1)

In June 2016 this project helped support what was believed to be the final rotenone treatment of a multi-year effort to remove invasive northern pike from the entire Soldotna Creek drainage. However, a new pike population was discovered in the drainage in June 2017 at Loon Lake. In response, ADF&G enacted a quick response plan and, by August 2017, the Loon Lake pike population was removed by a rotenone treatment (Figure 1).

During July of 2017, ADFG conducted an intensive survey to assess whether the Soldotna Creek restoration project succeeded at removing pike from the entire drainage. The survey included gillnetting, minnow trapping and collecting eDNA samples. No northern pike were detected during netting or minnow trap surveys but native fish such as coho salmon, rainbow trout, Dolly Varden and stickleback were abundantly present for the first time in decades within the western branch of the drainage where pike had previously extirpated them. Similarly, all species of native fish present in Soldotna Creek prior to the 2016 rotenone treatment of the creek were detected in great abundance during minnow trap surveys in the summer of 2017 and 2018.

There were multiple positive pike eDNA detections at Derks Lake during the summer and fall of 2017 despite no northern pike being captured by nets or minnow traps. Repeated follow-up pike eDNA sampling confirmed that pike eDNA was present in Derks Lake so intensive supplemental gillnetting was done in the fall of 2017and spring of 2018. This additional netting effort also failed to

capture any northern pike. It is postulated that the positive eDNA detections resulted from carcass-derived DNA preserved for years in the lake sediment then re-suspended in the water by animal activity or water turbulence.

By June of 2018, all temporary fish barriers remaining in the drainage were removed to support the free movement of wild fish. During the spring of 2018, wild rainbow trout were observed spawning in a creek linking West Mackey Lake and East Mackey Lake and coho salmon smolt were observed by the hundreds massing by lake outlets within in the western branch of the drainage (Figure 2). Native fish restoration efforts during 2015-2017 focused on capturing native fish in the mainstem of Soldotna Creek and releasing them to the western branch of the drainage (Mackey Lake chain) resulting in the reintroduction of 91,141 native fish as follows:

- 3,513 rainbow trout
- 4,401 Dolly Varden
- 46,649 juvenile coho salmon
- 33,850 three spine stickleback
- 3,708 sculpin

In summary, multiple tasks associated with Objective 1 were successfully completed in 2017 to include: 1) the 2017 rotenone application at Loon Lake, 2) removal of all temporary fish barriers within the drainage, 3) comprehensive fish surveys using gillnets, minnow traps and eDNA sampling, 4) completion and reporting compliance for all treatment-related permits and 5) continuation of native fish restoration efforts and environmental monitoring.

(Objective 2)
In support of removing all northern pike in the Tote Road Lake area via rotenone treatment in the fall of 2018, ADF&G initiated a number of project steps in FY2018. One major task was to conduct gillnet and eDNA surveys of all waters within 1.5 miles of Hope Lake which is near the center of the known Tote Road area pike waters. This effort was conducted in August and September of 2017 and detected two new pike populations in waters known as G Lake and Leisure Lake pond. This brings the total number of pike waters in the proposed rotenone treatment area to eight - totaling just over 90 surface acres (Figure 3).

Other project-related milestones completed include the project's public scoping conducted in the winter of 2017-2018 and submission of all required project-related permits in the spring of 2018 which included an environmental assessment. To date, this project is on track to complete a rotenone treatment of the Tote Road pike lakes in October of 2018.

Other tasks:
In FY18, a follow-up gillnet survey was done to assess the status of a newly detected invasive northern pike population at an unnamed lake near S. Coho Loop Road (Kasilof). This survey revealed the pike population was completely removed by intensive gillnetting done in June 2017. Other unconfirmed reports of northern pike in a lake(s) north of the Swanson River were investigating by gillnetting and eDNA by surveying five suspect lakes in the drainage during the fall of 2017. No northern pike were detected during this survey.

FINAL REPORT STATUS:
An ADFG special publication report for the Soldotna Creek Restoration Project was postponed until the winter of 2018/19 so that information on the Loon Lake rotenone treatment and recent native fish restoration work could be included. A special report for the Tote Road Restoration Project is anticipated to be drafted in the winter of 2019/20.

PREPARED BY: Rob Massengill **DATE:** August 2018

Figure 1. Treating Loon lake with rotenone to remove invasive northern pike, August 2017.

Figure 2. Wild reintroduced juvenile coho salmon and rainbow trout massing at the East Mackey Lake outlet barrier prior to the removal of the barrier in June 2018.

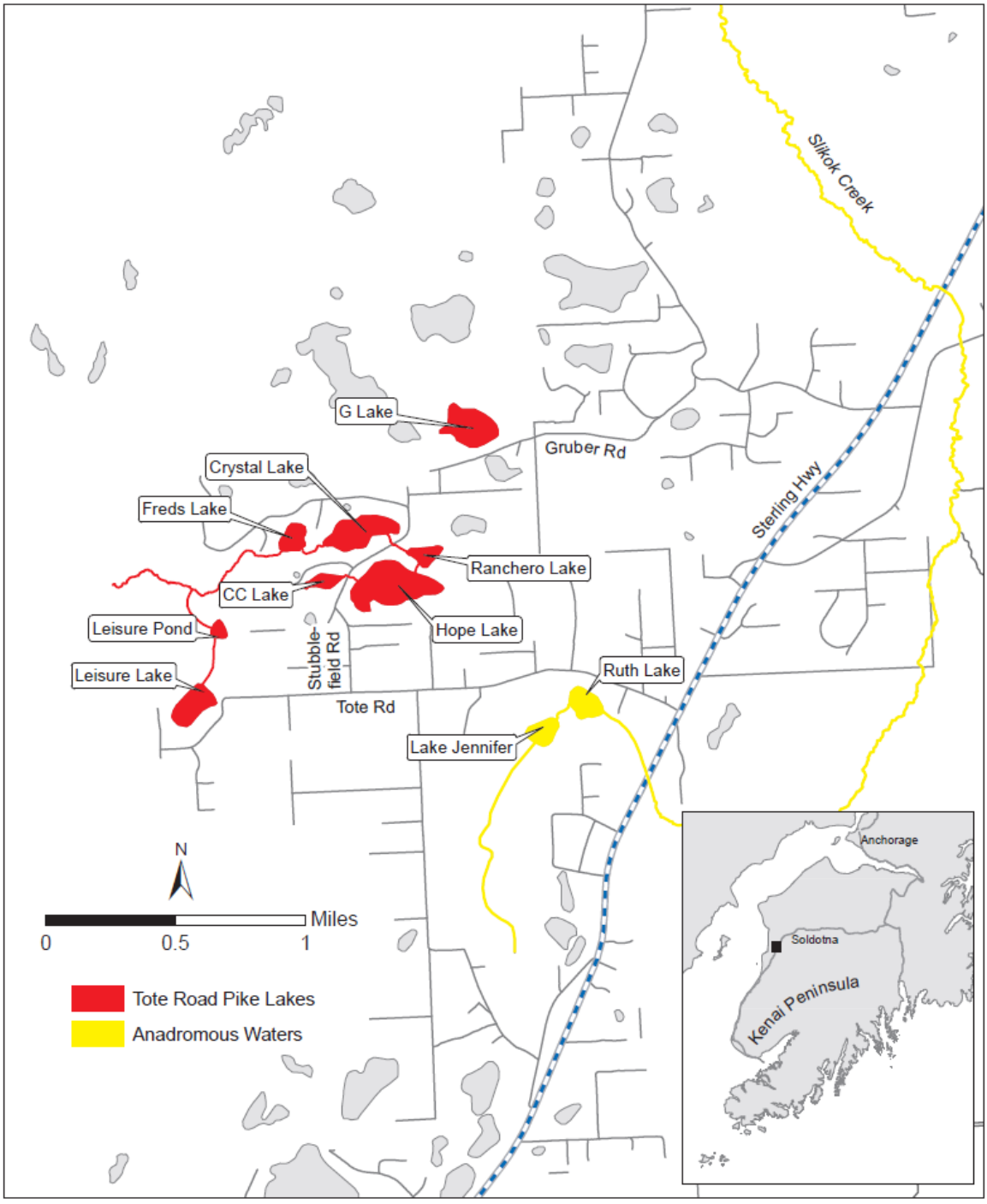

Figure 3. Map showing the invasive pike waters of the Tote Road Pike area (red shading) following gillnet and eDNA surveys in 2017.