



STATE OF ALASKA
DEPARTMENT OF FISH AND GAME

333 Raspberry Road
ANCHORAGE, ALASKA 99518

Permit No. SF2016-106

Expires: 12/31/2016

FISH RESOURCE PERMIT
(For Scientific/Collection Purposes)

This permit authorizes:

Linda Deegan

(whose signature is required on page 3 for permit validation)

Of

Marine Biological Laboratory
7 MBL Street, Woods Hole, MA 02543
(508) 289-7487 ideegan@mbl.edu

to conduct the following activities from **April 20, 2016** to **December 31, 2016** in accordance with AS 16.05.930 and AS 16.05.340(b).

Purpose: To test scientific predictions about: 1) changes in population structure, growth, and food webs of Arctic fresh waters due to shifting climate and hydrological seasonality, and to changes in enrichment, primary and secondary production, land use, or community composition; 2) changes in movement patterns, energetics and nutrient transport associated with migration; and, 3) persistence of Arctic grayling populations by testing how watershed characteristics influence movement patterns using individual tagging, otolith microchemistry, and genomics.

Location: Lakes and streams broadly surrounding the Toolik Lake research region including (but not limited to) the locations listed in **Table 1** on page 3.

Species: Local species

Method of Capture: Backpack electrofisher, beach seine, dip net, fyke net, gill net, hook-and-line, minnow trap

Final Disposition: See **Table 2** on page 4 of this permit for primary final disposition information.
≤2 individuals of each unknown species may be killed and saved for later identification.
All unintended collection mortalities must be recorded and returned to capture site waters.
Specimens not released alive will be transported (frozen or in 95% ethanol) to the University of Connecticut or the Marine Biological Station and disposed of by approved IACUC protocols.

COLLECTION REPORT DUE January 31, 2017 and RESEARCH REPORT DUE June 30, 2017; see **Stipulations #2 and **#3** for more information. Data from such reports are considered public information. Reports must be submitted to the Alaska Department of Fish and Game, Division of Sport Fish-HQ, 333 Raspberry Rd, Anchorage, AK 99518, attention: Scott Ayers (267-2517; dfg.dsf.permitcoordinator@alaska.gov). A report is required whether or not collecting activities were undertaken.**

GENERAL CONDITIONS, EXCEPTIONS, AND RESTRICTIONS

1. This permit must be carried by person(s) specified during approved activities who shall show it on request to persons authorized to enforce Alaska's fish and game laws. This permit is nontransferable and will be revoked or renewal denied by the Commissioner of Fish and Game if the permittee violates any of its conditions, exceptions, or restrictions. No redelegation of authority may be allowed under this permit unless specifically noted.
2. No specimens taken under authority hereof may be sold, bartered, or consumed. All specimens must be deposited in a public museum or a public scientific or educational institution unless otherwise stated herein. Subpermittees shall not retain possession of live animals or other specimens.
3. The permittee shall keep records of all activities conducted under authority of this permit, available for inspection at all reasonable hours upon request of any authorized state enforcement officer.
4. Permits will not be renewed until detailed reports, as specified in the Stipulations section, have been received by the department.
5. UNLESS SPECIFICALLY STATED HEREIN, this permit does not authorize the exportation of specimens or the taking of specimens outside of existing regulations.

Permit Coordinator
Division of Sport Fish

Director
Division of Sport Fish

30 MARCH 2016

Date

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Authorized Personnel: The following persons may perform collecting activities under terms of this permit:

**Dan Ackerman, Josh Benes, Breck Bowden, Linda Deegan, Tom Glass, Heidi Golden, Greg Hill
Alex Huryn, Frances Iannucci, Cameron MacKenzie, Mark Urban**

Employees and volunteers under the direct supervision of, and in the presence of, one of the authorized personnel listed above may participate in collecting activities under terms of this permit.

Permit Stipulations:

- 1) **Brendan Scanlon** (459-7268 or 460-7567; brendan.scanlon@alaska.gov) the Arctic Area Management Biologist (AMB), must be contacted for final authorization **prior** to you engaging in any collecting activities. The time/date of this contact must be included in your collections report (using the "data submission form" furnished by ADF&G). AMBs have the right to specify methods for collecting, as well as limiting the collections of any species by number, time, and location.
- 2) **A report of collecting activities, referencing this fish resource permit, must be submitted within 30 days after the expiration of this permit.** The report (using a data submission form furnished by ADF&G), shall include all species, numbers, dates, locations of collection (datum/GPS coordinates in the decimal degrees format (dd.ddddd)), and disposition, and if applicable, sex, age, and breeding condition, and lengths and weights of fish handled. It must also include the date/time the local biologist was contacted for final authorization to carry out collecting activities.
- 3) **A report of research activities, referencing this fish resource permit, must be submitted within 6 months after the expiration of this permit.** This report should present the research conducted in a format similar to a scientific paper including the following: introduction (objective of the study plan and hypothesis), methods, and results. The report is intended to show that the specimens were used in a scientific method, and allows for the evaluation of potential cumulative effects from multiple projects in the same area. A report is required whether or not collecting activities were undertaken.
- 4) A valid Alaska sport-fishing license must be in the possession of any individual using hook-and-line gear.
- 5) An instance of >10% unintended collecting mortality requires sampling at a site to cease and the AMB contacted.
- 6) Fyke/smolt traps must be checked and emptied regularly enough to prevent significant holding pen mortality (**Stipulation #5**). Catch and mortality must be recorded each time traps are checked.
- 7) All sampling tools (punches, clippers, etc.) that are inserted into or cut animals must be placed in an iodophor bath with a 1:100 concentration between fish.
- 8) Any drug used for fish sedation or anesthesia must be FDA approved for that purpose.
- 9) Each piece of unattended sampling gear must be: 1) labeled with the permittee's name, telephone number, and permit number, 2) properly secured to ensure retrieval, 3) allowed to soak no more than twenty-four hours at a time, 4) located with GPS coordinates, and 5) accounted for and removed at the conclusion of sampling.
- 10) Salmon eggs used as bait in traps must either be sterilized commercial eggs or, if raw, disinfected prior to use. A 10-minute soak in 1/100 Betadyne solution or some other iodophor disinfectant is adequate. Commercial eggs must be placed into a container that does not allow the fish to consume them (e.g., film canister with holes punched in it or a perforated plastic bag).
- 11) Gloves, boots, and collecting gear should be disinfected between streams to reduce the potential of pathogen transmission. A wash/rinse in 1/100 Betadyne solution is adequate. Felt or absorbent soles on waders and wading boots are prohibited.
- 12) Gill nets must be constantly/closely monitored to minimize incidental fish, bird, and mammal mortalities.
- 13) Electroshocking is currently discouraged, but not prohibited. Electroshockers may not be used in anadromous waters in the presence of adult salmonids including trout or char. In areas where other means of capture are not feasible, only one pass is allowed. All electroshocked fish should be monitored before release with mortalities or injuries reported on the data submission form. Crew Leaders must have proof of attending formal class/field training as well as ten days of electroshocking experience, while crew members should have formal training.
- 14) If new anadromous fish species or previously undocumented life stages of anadromous fish are found in permitted streams, rivers, and lakes, the permit holder will work closely with ADF&G to see that information is included in the database for the *Catalog of Waters Important for Spawning, Rearing or Migration of Anadromous Fishes*. Anadromous fish include *Oncorhynchus spp.*, Arctic char, Dolly Varden, sheefish, smelts, lamprey, whitefish, and sturgeon. Please direct questions to **J Johnson** (907-267-2337; j.johnson@alaska.gov).
- 15) Contact **Tammy Davis** with the ADF&G Invasive Species Program (907-465-6183 or 1-877-INVASIV), and the nearest AMB (**Stipulation #1**) within 24 hours should you find any species suspected to be a **non-native species** during your sampling. If possible the organism should be killed, preserved by freezing or placing into 90% alcohol, and taken to the nearest ADF&G office. Please take a photo of the organism, as well as a photo of the organism in the environment in which it was observed, and note the location with a GPS or by describing it on a map with landmarks.

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- 16) This permit will fulfill the requirements of 5AAC 41.005 – 41.060 pertaining to fish transport permits (FTP's), with the condition that the transported species be released back to the same location from which they were initially collected.
- 17) A Title 16 Fish Habitat Permit is required from the Division of Habitat, Alaska Department of Fish and Game, to place structures (weir, etc.) in fish-bearing streams.
- 18) A copy of this permit, including any amendments, must be made available at all field collection sites and project sites for inspection upon request by a representative of the department or a law enforcement officer.
- 19) Issuance of this permit does not absolve the permittee from securing any other required state, federal, or local permits, including securing permissions to trespass on controlled lands.
- 20) Failure to comply with the conditions of this permit will result in the loss of future permitting privileges.
- 21) PERMIT VALIDATION requires permittee's signature agreeing to abide by permit conditions before beginning collecting activities:

Signature of Permittee

ecc: Brendan Scanlon, Division of Sport Fish, Fairbanks
 Jim Menard, Division of Commercial Fisheries, Nome
 Bonnie Borba, Division of Commercial Fisheries, Fairbanks
 Audra Brase, Division of Habitat, Fairbanks
 Michelle Morris, Commercial Fisheries Permit Coordinator, Juneau
 Colonel Bear, Alaska Wildlife Troopers
 Captain Leath, Alaska Wildlife Troopers Northern Detachment

Table 1. Primary locations where sampling under this permit will be conducted

| Drainage | Site | °N | °W |
|--------------------------|----------------------------|-------------|-------------|
| Kuparuk River | Toolik Lake | 68.632940 | -149.604080 |
| | S3 | 68.628403 | -149.624837 |
| | NE12 | 68.661663 | -149.623333 |
| | TOAS1 | 68.729940 | -149.645240 |
| | Green Cabin Lake (GCL) | 68.537360 | -149.234619 |
| | Kuparuk River | 68.645780 | -149.405243 |
| | GTH86 | 68.631670 | -149.418315 |
| | GTH91 | 68.623333 | -149.470000 |
| | Toolik Inlet Stream | 68.625999 | -149.593140 |
| | Hershey Creek | 68.629043 | -149.441818 |
| | Inlet Series Streams | 68.592659 | -149.581345 |
| | Imnaviat Creek | 68.649986 | -149.346146 |
| | Kuparuk Aufeis (lower) | 68.979606 | -149.712836 |
| | Kup8 | 69.021330 | -149.810840 |
| Okrukuyik Creek | GTH68 (Campsite Lake) | 68.597018 | -149.181961 |
| | Oksrukuyik Creek | 68.673190 | -149.122406 |
| | Wolverine Lake | 68.620989 | -149.152938 |
| | Sagavanirktok River | 68.802300 | -148.829000 |
| | Zev Lake | 68.618340 | -149.186190 |
| | Upper Zev Lake | 68.613880 | -149.201920 |
| I-Minus Watershed | Golden Pond | 68.613883 | -149.201916 |
| | I-minus 1 Lake | 68.555767 | -149.566748 |
| | I-minus stream | 68.632718 | -149.777157 |
| | Itkillik River | 68.632718 | -149.777157 |
| | Jane Creek | 68.582070 | -149.725540 |
| | Jane Lake | 68.564562 | -149.763421 |
| Additional Sites | Long Lake | 68.611981 | -149.806533 |
| | Toolik River | 68.652893 | -149.320938 |
| | Atigun River | 68.451657 | -149.371559 |
| | Happy Valley (East) Stream | 69.147933 | -148.466917 |
| | Dan Creek | 69.098810 | -148.833506 |
| | Pump 4 West Lakes | 68.426158 | -149.407413 |
| | Pump 4 Lake (Tea Lake) | 68.425855 | -149.369227 |
| | Lupine Stream | 69.052381 | -148.595911 |
| | Galbraith Lake | 68.461558 | -149.421422 |
| | G2 | 68.461650 | -149.393088 |
| Mosquito Lake | 68.447437 | -149.368196 | |

SF2016-106 continued (page 4 of 4)**Table 2.** Species to be handled under this permit, and quantity of allowed catch by disposition

| Species | Scientific Name | Life Stage | Number | Disposition |
|-----------------|-------------------------------|-------------------|---------------|--|
| Arctic char | <i>Salvelinus alpinus</i> | Juvenile & Adult | 300 | Tagged, adipose fin clipped, & released alive |
| Arctic grayling | <i>Thymallus arcticus</i> | Juvenile & Adult | 8,000 | Tagged, adipose fin clipped, & released alive |
| | <i>Thymallus arcticus</i> | Adult | 200 | Gastric lavaged & release alive |
| | <i>Thymallus arcticus</i> | Juvenile & Adult | 300 | Sacrificed for later analyses (age, lipid, gonad, genetic, stable isotope) |
| | <i>Thymallus arcticus</i> | Age 0+ YOY | 1,500 | Measured at research station, weighed, & released alive at capture site |
| | <i>Thymallus arcticus</i> | Age 0+ YOY | 600 | Sacrificed for later analyses (age, lipid, genetic, stable isotope) |
| Burbot | <i>Lota lota</i> | Juvenile & Adult | 300 | Tagged, adipose fin clipped, & released alive |
| Dolly Varden | <i>Salvelinus malma</i> | Juvenile & Adult | 300 | Tagged, adipose fin clipped, & released alive |
| Lake Trout | <i>Salvelinus namaycush</i> | Juvenile & Adult | 300 | Tagged, adipose fin clipped, & released alive |
| Round whitefish | <i>Prosopium cylindraceum</i> | Juvenile & Adult | 300 | Tagged, adipose fin clipped, & released alive |
| Sculpin | <i>Cottus sp.</i> | Juvenile & Adult | 300 | Identify and release |