

FISH COLLECTION PERMIT
Research

File: 34770-20

Permit No.: MRSU16-229407

Permit Holder: University of British Columbia (Dolph Schluter)
Zoology Department
6270 University Blvd
Vancouver BC V6T 1Z4

Authorized Persons: Dolph Schluter, Dr. Marius Roesti, Dr. Robert Devlin, Dr. Jacquelin DeFaveri, Dr. Catherine Peichel, Kieran Samuk, Seth Rudman, Diana Rennison, Sara Miller, Carling Gerlinsky, Tracy Larson, Sophie Archambeault, Hilary Poore

Pursuant to section 19 of the *Wildlife Act*, RSBC 1996, Chap. 488, and section 18 of the Angling and Scientific Regulations, BC Reg. 125/90, the above named persons are hereby authorized to collect fish for scientific purposes from non-tidal waters subject to the conditions set forth in this Permit:

Permitted Sampling Period: May 4, 2016 to December 31, 2016

Permitted Waterbodies: West Coast and South Coast Regions – *See Appendix C*

Permitted Sampling Techniques: MT, SN, DN (subject to permit terms and conditions)

Potential Species: CAS, SB12, SB13, SBB, SBP, TSB (subject to permit terms and conditions)

Permitted Lethal Sampling: See Appendix D (subject to permit terms and conditions)

Provincial Conditions: (Permit holders must be aware of all terms and conditions):

See Appendix A.

Region Specific Conditions:

See Appendix A.

Authorized by:

Sean Pendergast
A/ Deputy Regional Manager
Recreational Fisheries & Wildlife Programs
West Coast Region



Date: May 4, 2016

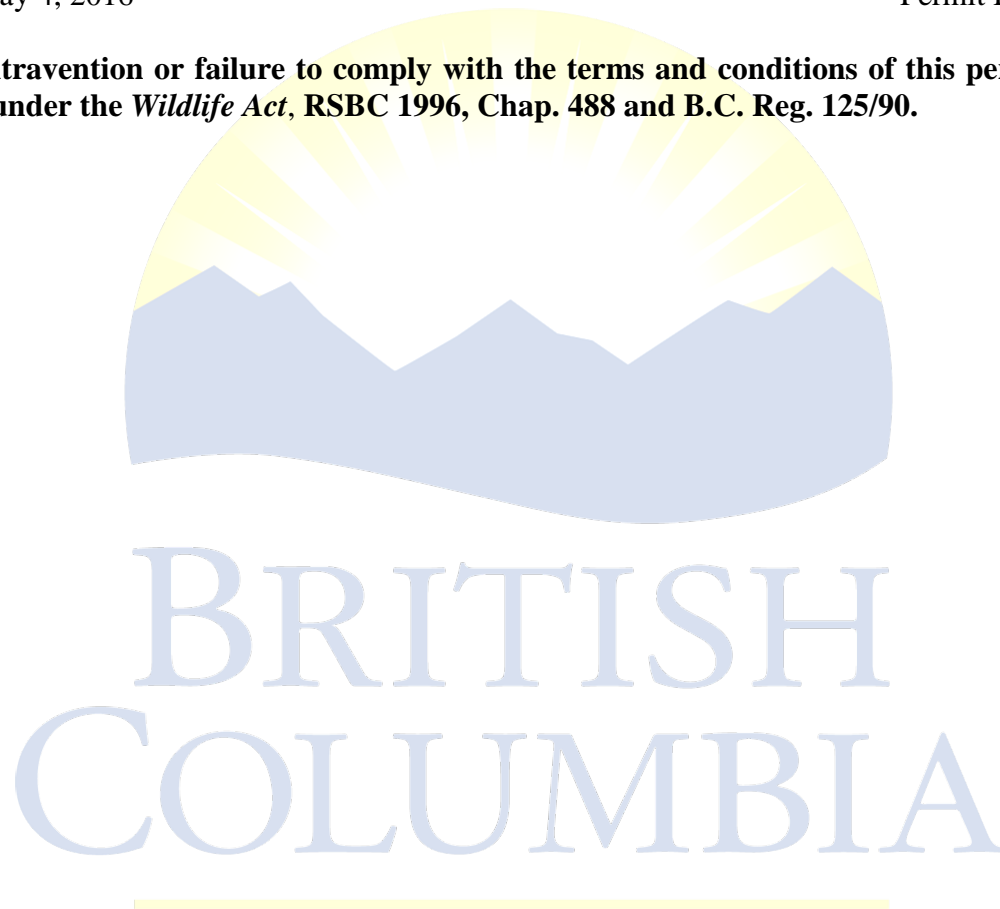
Iain Lunn, Wildlife Biologist
A Person Authorized by the Regional Manager
Recreational Fisheries & Wildlife Programs
South Coast Region



Date: May 4, 2016

Permit Fee \$25

Any contravention or failure to comply with the terms and conditions of this permit is an offense under the *Wildlife Act*, RSBC 1996, Chap. 488 and B.C. Reg. 125/90.



Appendix A: Fish Collection Permit Conditions

Any Variation of the following terms and conditions will require explicit authorization by the appropriate regional Fish & Wildlife Section Head.

Provincial Conditions

1. This collecting permit is not valid
 - in national parks,
 - in provincial parks unless a Park Use Permit is also obtained,
 - in tidal waters,
 - for eulachon or for salmon* other than kokanee, or
 - for collecting fish by angling unless the permit holder and crew members possess a valid angling licence.

This collecting permit is **only** valid for species listed as threatened, endangered or extirpated under the Species at Risk Act (SARA) **in conjunction with a permit issued under Section 73 of SARA from Fisheries and Oceans Canada.**

*Contact the Department of Fisheries and Oceans for fish collecting permits for salmon, eulachon or SARA listed species (see Appendix B).

2. The permit holder (or the project supervisor) named on the application for a scientific collection permit will carry a copy of this permit while engaged in fish collecting and produce it upon request of a conservation officer, fisheries officer or constable.
3. Any specimens surplus to scientific requirements and any species not authorized for collection in this permit shall be immediately and carefully released at the point of capture.
4. Fish collected under authority of this permit shall not be used for food or any purpose other than the objectives set out in the approved application for a scientific collection permit. The permit holder shall not sell, barter, trade, or give away, or offer to sell, barter, trade or give away fish collected under authority of this permit. Dead fish shall be disposed of in a manner that will not constitute a health hazard, nuisance or a threat to wildlife.
5. No fish collected under authority of this permit shall be
 - transported alive unless authorized by this permit, or
 - transplanted unless separately authorized by the Federal/Provincial Fish Transplant Committee.
6. The permit holder shall, within 90 days of the expiry of this permit, submit a report of fish collection activities. Interim reports may also be required and shall be submitted as required by the permit issuer. All submissions must be filed electronically to: http://www.env.gov.bc.ca/fish_data_sub/index.html

Reporting specifications, information and templates are available from this website and outline the mandatory information requirements. Prior notification of submission or questions regarding data report standards can be made to: fishdatasub@gov.bc.ca

7. This collecting permit is subject to cancellation at any time and shall be surrendered to a conservation officer on demand or to the issuer upon written notice of its cancellation.
8. This permit is valid only for the activities approved on the application form and in accordance with any restrictions set out therein.
9. This permit is valid only for trained, qualified staff named in the Application. The permit holder will comply with all Worker's Compensation Board requirements and other regulatory requirements. Permit holders are responsible for ensuring staff members listed on the permit are properly certified for specific sampling methods or activities (e.g. electroshocking).

10. Any workers not listed on the permit must be supervised by the permit holder or one of the additional persons as named on the permit.
11. All sampling equipment that has been previously used outside of B.C. must be cleaned of mud and dirt and disinfected with 100mg/L chlorine bleach before using in any water course to prevent the spread of fish pathogens (e.g. Whirling disease) and / or invasive plant species. Any washed off dirt or mud must be disposed of in a manner such that it cannot enter a watercourse untreated.
12. No electrofishing is to take place in waters below five degrees C.
13. No Sampling of Fish in waters over twenty degrees C.
14. Electrofishing may not be conducted in the vicinity of spawning gravel, redds, or spawning fish, or around gravels which are capable of supporting eggs or developing embryos of any species of salmonid at a time of year when such eggs or embryos may be present.
15. Angling must only occur in accordance with the regulations specified in the current BC Freshwater Fishing Regulations Synopsis.

Region Specific Conditions

West Coast Region

- Within the boundaries of Management Units 1-1 through 1-13, there shall be no electrofishing in streams above 630 meters in elevation, in anadromous waters, or in lake tributaries from January 1 to June 30.
- All sampling gear follow Association of Professional Biologists' advisory practice bulletin #5. Practice Advisory – Didymo, see: <https://www.professionalbiology.com/sites/default/files/pdfs/Didymo.pdf>
- The permit holder must advise the West Coast Region of sampling activities 48 hrs. prior to field operations. Please complete the following notification form:
http://www.env.gov.bc.ca/pasb/reports/fish/permit_notify1.html

South Coast Region

- All streams sampled, for which a watershed code does not presently exist, will require a map showing the location of the stream and sampling location with the map scale identified at time of reporting.
- Electrofishing and minnow trapping can harm or kill non-target species of management concern such as the endangered Coastal Giant Salamander (within the Chilliwack River drainage system) and Pacific Water Shrew (within the lower Fraser River Valley). Any incidental captures (alive or dead) of any red- or blue-listed wildlife species must be reported to the Ministry of Environment, Lower Mainland Region. For further information on these species or to report incidental captures, please call Kym Welstead, Species at Risk Biologist, MOE, Surrey at (604) 582-5200 or by e-mail at Kym.Welstead@gov.bc.ca.
- Please refer to the following website for the least risk in-stream work windows:
http://www.env.gov.bc.ca/wsd/water_rights/licence_application/section9/index.html
Where possible, collection should be conducted during the least risk work windows identified. The exception is seasonal or ephemeral streams where sampling may not be possible during the prescribed window due to flow conditions.
- The permit holder must refer to the following when sampling Salish Sucker, Nooksack Dace and Stickleback species.
Salish sucker sampling guidelines -
http://www.zoology.ubc.ca/~schluter/stickleback/Salish_sucker/Guidelines%20for%20collection%20of%20Salish%20sucker.pdf
Nooksack dace sampling guidelines – http://www.zoology.ubc.ca/~schluter/stickleback/Nooksack_dace/non-password%20protected%20files/Guidelines%20for%20the%20Collection%20of%20Nooksack%20Dace.pdf
Stickleback species pairs sampling guidelines -
http://www.zoology.ubc.ca/~schluter/stickleback/stickleback_species_pairs/other%20stickleback%20files/Guidelines%20for%20the%20Collection%20and%20In%20Situ%20Scientific%20Study%20of%20Stickleback%20Species%20Pairs.pdf

Appendix B: Table 1 - Species at Risk

The following are species at risk that have been listed by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) as either endangered, threatened or a species of special concern. Species also listed under the Species at Risk Act (SARA) are identified with an asterisk, and are subject to additional permitting requirements through the Federal Department of Fisheries and Oceans (DFO).

Common Name	Scientific Name
Benthic Paxton Lake Stickleback	* <i>Gasterosteus sp.</i>
Benthic Vananda Creek Stickleback	* <i>Gasterosteus sp.</i>
Limnetic Paxton Lake Stickleback	* <i>Gasterosteus sp.</i>
Limnetic Vananda Creek Stickleback	* <i>Gasterosteus sp.</i>
Nooksack Dace	* <i>Rhinichthys sp.</i>
Morrison Creek Lamprey	* <i>Lampetra richardsoni</i>
Vancouver Lamprey (Cowichan Lake Lamprey)	* <i>Lampetra macrostoma</i>
Cultus Pygmy Sculpin	* <i>Cottus sp.</i>
Shorthead Sculpin	* <i>Cottus confusus</i>
Hotwater Physa	* <i>Physella wrighti</i>
Limnetic Enos Lake Stickleback	<i>Gasterosteus sp.</i>
Benthic Enos Lake Stickleback	<i>Gasterosteus sp.</i>
Salish Sucker	<i>Catostomus sp.</i>
Speckled Dace	<i>Rhinichthys osculus</i>
Charlotte Unarmoured Stickleback	<i>Gasterosteus aculeatus</i>
Columbia Mottled Sculpin	<i>Cottus bairdi hubbsi</i>
Giant Stickleback	<i>Gasterosteus sp.</i>
Green Sturgeon	<i>Acipenser medirostris</i>
Umatilla Dace	<i>Rhinichthys umatilla</i>
West Slope Cutthroat Trout	* <i>Oncorhynchus clarki lewisi</i>
White Sturgeon	<i>Acipenser transmontanus</i>

Applications for permits to specifically collect and retain listed species must be reviewed by the appropriate provincial expert, who will screen permits to ensure that any impacts on listed species are acceptable. For white sturgeon the contact is Steve McAdam (steve.mcadam@gov.bc.ca). For listed non-game freshwater fish the contact is Jordan Rosenfeld (jordan.rosenfeld@gov.bc.ca).

BRITISH
COLUMBIA

Appendix C: Table 2 – Sampling Locations

ACTIVITY	MOE REGION	WATERBODY	WATERSHED CODE
Research	1	AMOR LAKE	920-700700-84700
Research	1	ANTLER LAKE	120-246600-29600-43300-3300
Research	1	BEAVER LAKE	920-257700-60800
Research	1	BEAVERTAIL LAKE	920-627900-25400
Research	1	BLACK LAKE	930-081200
Research	1	BLACKBURN LAKE	925-258500-75600
Research	1	BLACKWATER LAKE	920-700700-84700
Research	1	BOOT LAKE	920-627900-35700-05100
Research	1	BULLOCKS LAKE	925-258500-65900
Research	1	CEDAR LAKE	920-700700-84700-22300
Research	1	COTTLE LAKE	920-427000
Research	1	DRUM LAKES	920-627900-55200-43300
Research	1	FAIRY LAKE	930-053800-12100
Research	1	FORBUSH LAKE	920-553200-94200
Research	1	FROG LAKE	920-700700-84700-01700
Research	1	FROST LAKE	920-825900-66400
Research	1	FRY LAKE	920-627900-35700
Research	1	GOSLING LAKE	920-627900-29500
Research	1	HOGGAN LAKE	925-380000-26400
Research	1	JOES LAKE	920-896200-47600
Research	1	KENNEDY LAKE	930-306400
Research	1	KEOGH LAKE	920-866900
Research	1	KISSINGER LAKE	930-071700-56800-34100
Research	1	LAMBERT LAKE	905-119500-09100-70100
Research	1	LOWER STELLA LAKE	920-686300-26500
Research	1	MACKIE LAKE	920-686300
Research	1	WILDWOOD CREEK	930-017600
Research	1	LAKE MAXWELL	925-258500-20000
Research	1	MAY LAKE	930-115100
Research	1	MCCOY LAKE	930-137400-50300
Research	1	MCNAIR LAKE	920-700700-58100-54900
Research	1	MERRILL LAKE	920-627900-35700-05100
Research	1	MORTON LAKE	920-643100
Research	1	MUKWILLA LAKE	920-825900-38600
Research	1	NITINAT LAKE	930-071700
Research	1	OGDEN LAKE	905-119500-09100
Research	1	ORMOND LAKE	920-700700-84700-70700
Research	1	PACHENA LAKE	930-085500
Research	1	POIRIER LAKE	930-022100-02800-37100
Research	1	PYE LAKE	920-686300
Research	1	QUATSE LAKE	920-896200
Research	1	ROBERTS LAKE	920-700700-58100
Research	1	ROSELLE LAKE	920-824200-79400
Research	1	ROSSEAU LAKE	930-085500-39200
Research	1	SHERWOOD POND	920-021600
Research	1	SHUSHARTIE LAKE	920-940400
Research	1	LAKE STOWELL	925-258500-90300
Research	1	THIEMER LAKE	920-824200
Research	1	TUCK LAKE	231-336900-95700
Research	1	TWIN LAKE	920-643100-73788-97484
Research	1	LAKE WESTON	925-258500-90000
Research	1	WILLEMAR LAKE	920-553200-94200
Research	1	YOUNG LAKE	930-022100-02800
Research	2	ALICE LAKE	900-097600-07500
Research	2	AMBROSE LAKE	900-147300-93700

Research	2	BROWN LAKE	900-154100
Research	2	BRUCE LAKE	905-145000-30700
Research	2	CRANBY LAKE	905-126000-31000
Research	2	DAISY LAKE	900-097600-12900
Research	2	FRASER RIVER	100
Research	2	GARDEN BAY LAKE	900-147300-18900
Research	2	KIRK LAKE	905-126000-61600-75600
Research	2	KLEIN LAKE	900-147300-79800
Research	2	CAMPBELL RIVER	900-000500
Research	2	LITTLE QUARRY LAKE	905-145000-08500
Research	2	MCNEILL LAKE	900-135300
Research	2	MIKE LAKE	100-026700-06000-38500
Research	2	Murdo-Frazer Park	900-069300
Research	2	NORTH LAKE	900-152008
Research	2	LILY LAKE	900-141100
Research	2	PAXTON LAKE	905-126000-66000-97900
Research	2	PRIEST LAKE	905-126000-61600
Research	2	SALMON RIVER	100-038800
Research	2	SASAMAT LAKE	900-050500
Research	2	TOM LAKE	905-323000-55100
Research	2	TROUT LAKE	900-126800
Research	2	WEST CREEK	100-041600



Appendix D: Table 3 – Lethal Sampling

TARGET SPECIES	# OF FISH	SAMPLE WATERBODY	CODE
Prickly Sculpin	40	ALICE LAKE	900-097600-07500
Threespine Stickleback	60	AMBROSE LAKE	900-147300-93700
Prickly Sculpin	40	AMBROSE LAKE	900-147300-93700
Threespine Stickleback	60	AMOR LAKE	920-700700-84700
Prickly Sculpin	40	AMOR LAKE	920-700700-84700
Prickly Sculpin	40	ANTLER LAKE	120-246600-29600-43200-3290
Threespine Stickleback	60	BEAVER LAKE	920-257700-60800
Prickly Sculpin	40	BEAVER LAKE	920-257700-60800
Prickly Sculpin	40	BEAVERTAIL LAKE	920-627900-25400
Threespine Stickleback	60	BLACK LAKE	930-081200
Prickly Sculpin	40	BLACK LAKE	930-081200
Threespine Stickleback	60	BLACKBURN LAKE	925-258500-75600
Threespine Stickleback	80	BLACKWATER LAKE	920-700700-84700
Prickly Sculpin	40	BLACKWATER LAKE	920-700700-84700
Threespine Stickleback	160	BOOT LAKE	920-627900-35700-05100
Prickly Sculpin	40	BOOT LAKE	920-627900-35700-05100
Threespine Stickleback	60	BROWN LAKE	900-154100
Prickly Sculpin	40	BROWN LAKE	900-154100
Threespine Stickleback	60	BRUCE LAKE	905-145000-30700
Threespine Stickleback	60	BULLOCKS LAKE	925-258500-65900
Threespine Stickleback	300	CAMPBELL RIVER	900-000500
Threespine Stickleback	60	CEDAR LAKE	920-700700-84700-22300
Prickly Sculpin	40	CEDAR LAKE	920-700700-84700-22300
Threespine Stickleback	60	COTTLE LAKE	920-427000
Threespine Stickleback	60	CRANBY LAKE	905-126000-31000
Threespine Stickleback	60	DAISY LAKE	900-097600-12900
Prickly Sculpin	40	DAISY LAKE	900-097600-12900
Prickly Sculpin	40	DRUM LAKES	920-627900-55200-43300
Threespine Stickleback	80	FAIRY LAKE	930-053800-12100
Prickly Sculpin	40	FAIRY LAKE	930-053800-12100
Threespine Stickleback	60	FORBUSH LAKE	920-553200-94200
Prickly Sculpin	40	FORBUSH LAKE	920-553200-94200
Threespine Stickleback	400	FRASER RIVER	100
Threespine Stickleback	60	FROG LAKE	920-700700-84700-01700
Prickly Sculpin	40	FROG LAKE	920-700700-84700-01700
Prickly Sculpin	40	FROST LAKE	920-825900-66400
Threespine Stickleback	60	FRY LAKE	920-627900-35700
Prickly Sculpin	40	FRY LAKE	920-627900-35700
Threespine Stickleback	60	GARDEN BAY LAKE	900-147300-18900
Prickly Sculpin	40	GARDEN BAY LAKE	900-147300-18900
Threespine Stickleback	60	GOSLING LAKE	920-627900-29500
Prickly Sculpin	40	GOSLING LAKE	920-627900-29500
Threespine Stickleback	60	HOGGAN LAKE	925-380000-26400
Threespine Stickleback	180	JOES LAKE	920-896200-47600
Prickly Sculpin	40	JOES LAKE	920-896200-47600
Threespine Stickleback	80	KENNEDY LAKE	930-306400
Prickly Sculpin	40	KEOGH LAKE	920-866900
Threespine Stickleback	60	KIRK LAKE	905-126000-61600-75600
Prickly Sculpin	40	KISSINGER LAKE	930-071700-56800-34100
Threespine Stickleback	60	KLEIN LAKE	900-147300-79800
Threespine Stickleback	60	LAKE MAXWELL	925-258500-20000
Threespine Stickleback	60	LAKE STOWELL	925-258500-90300
Threespine Stickleback	85	LAKE WESTON	925-258500-90000
Threespine Stickleback	60	LAMBERT LAKE	905-119500-09100-70100
Prickly Sculpin	40	LAMBERT LAKE	905-119500-09100-70100

Threespine Stickleback	60	LILY LAKE	900-141100
Prickly Sculpin	40	LILY LAKE	900-141100
Threespine Stickleback	100	LITTLE QUARRY LAKE	905-145000-08500
Threespine Stickleback	60	LOWER STELLA LAKE	920-686300-26500
Prickly Sculpin	40	LOWER STELLA LAKE	920-686300-26500
Threespine Stickleback	60	MACKIE LAKE	920-686300
Prickly Sculpin	40	MACKIE LAKE	920-686300
Threespine Stickleback	60	MAY LAKE	930-115100
Threespine Stickleback	60	MCCOY LAKE	930-137400-50300
Prickly Sculpin	40	MCCOY LAKE	930-137400-50300
Threespine Stickleback	60	MCNAIR LAKE	920-700700-58100-54900
Prickly Sculpin	40	MCNAIR LAKE	920-700700-58100-54900
Threespine Stickleback	60	MCNEILL LAKE	900-135300
Prickly Sculpin	40	MCNEILL LAKE	900-135300
Threespine Stickleback	60	MERRILL LAKE	920-627900-35700-05100
Prickly Sculpin	40	MERRILL LAKE	920-627900-35700-05100
Threespine Stickleback	60	MIKE LAKE	100-026700-06000-38500
Threespine Stickleback	100	MORTON LAKE	920-643100
Prickly Sculpin	40	MUKWILLA LAKE	920-825900-38600
Threespine Stickleback	25	Murdo-Frazer Park pond	900-069300
Threespine Stickleback	80	NITINAT LAKE	930-071700
Threespine Stickleback	60	NORTH LAKE	900-152008
Prickly Sculpin	40	NORTH LAKE	900-152008
Threespine Stickleback	60	OGDEN LAKE	905-119500-09100
Prickly Sculpin	40	OGDEN LAKE	905-119500-09100
Threespine Stickleback	60	ORMOND LAKE	920-700700-84700-70700
Prickly Sculpin	40	ORMOND LAKE	920-700700-84700-70700
Threespine Stickleback	60	PACHENA LAKE	930-085500
Prickly Sculpin	40	PACHENA LAKE	930-085500
Paxton Lake Limnetic Stickleback	63	PAXTON LAKE	905-126000-66000-97900
Paxton Lake Benthic Stickleback	63	PAXTON LAKE	905-126000-66000-97900
Prickly Sculpin	40	POIRIER LAKE	930-022100-02800-37100
Priest Lake Limnetic Stickleback	7	PRIEST LAKE	905-126000-61600
Priest Lake Benthic Stickleback	7	PRIEST LAKE	905-126000-61600
Threespine Stickleback	80	PYE LAKE	920-686300
Prickly Sculpin	40	PYE LAKE	920-686300
Threespine Stickleback	60	QUATSE LAKE	920-896200
Prickly Sculpin	40	QUATSE LAKE	920-896200
Threespine Stickleback	100	ROBERTS LAKE	920-700700-58100
Threespine Stickleback	60	ROSELLE LAKE	920-824200-79400
Prickly Sculpin	40	ROSELLE LAKE	920-824200-79400
Threespine Stickleback	60	ROSSEAU LAKE	930-085500-39200
Prickly Sculpin	40	ROSSEAU LAKE	930-085500-39200
Threespine Stickleback	300	SALMON RIVER	100-038800
Threespine Stickleback	80	SASAMAT LAKE	900-050500
Prickly Sculpin	40	SASAMAT LAKE	900-050500
Threespine Stickleback	60	SHERWOOD POND	920-021600
Threespine Stickleback	40	SHUSHARTIE LAKE	920-940400
Threespine Stickleback	60	THIEMER LAKE	920-824200
Prickly Sculpin	40	THIEMER LAKE	920-824200
Threespine Stickleback	80	TOM LAKE	905-323000-55100
Threespine Stickleback	60	TROUT LAKE	900-126800
Prickly Sculpin	40	TUCK LAKE	231-336900-95700
Threespine Stickleback	60	TWIN LAKE	920-643100-73788-97484
Prickly Sculpin	40	TWIN LAKE	920-643100-73788-97484
Threespine Stickleback	300	WEST CREEK	100-041600
Threespine Stickleback	80	WILDWOOD CREEK	930-017600
Prickly Sculpin	40	WILDWOOD CREEK	930-017600

Threespine Stickleback	60	WILLEMAR LAKE	920-553200-94200
Prickly Sculpin	40	WILLEMAR LAKE	920-553200-94200
Threespine Stickleback	60	YOUNG LAKE	930-022100-02800
Prickly Sculpin	40	YOUNG LAKE	930-022100-02800

