



PERMIT ISSUED UNDER SECTION 73 OF THE SPECIES AT RISK ACT

Permit Number: SARA 197

Permit Authority:

This permit is issued to the person(s) listed below under the authority of the Minister of Fisheries and Oceans pursuant to section 73 of the Species at Risk Act (SARA), and authorizes them, subject to the following terms and conditions, to engage in scientific research activities (described below) that relate to the conservation of the affected species identified below or benefit the said species or are required to enhance its (their) chance of survival in the wild. This permit is granted as a privilege, not property, and is issued at the Minister's discretion and may be revoked or amended to ensure the survival or recovery of a species.

Authorized Person:

Dolph Schluter
University Of British Columbia Dept Of Zoology
6270 University Blvd.
Vancouver BC V6T 1Z4

Assistant(s):

Patrick Tamkee, Dr. Matt Arnegard, Dr. Kerry Marchinko, Gina Conte, Laura Southcott, UBC undergraduate students trained by Dr. Schluter or staff.

Species and Catch Limits:

Species / Population	Limit / Comment	
STICKLEBACK - BENTHIC PAXTON LAKE (GASTEROSTEUS)	50 Count	female mature adult (2+ year old)
STICKLEBACK - BENTHIC PAXTON LAKE (GASTEROSTEUS)	50 Count	juvenile - (1 year old)
STICKLEBACK - LIMNETIC PAXTON LAKE (GASTEROSTEUS)	150 Count	female - mature adult (1 year old)
STICKLEBACK - BENTHIC PAXTON LAKE (GASTEROSTEUS)	150 Count	male - mature adult (2+ year old)
STICKLEBACK - LIMNETIC PAXTON LAKE (GASTEROSTEUS)	200 Count	male - mature adult (1 year old)

STICKLEBACK - BENTHIC PRIEST LAKE/VANANDA CREEK WATERSHED (GASTEROSTEUS) - 50 count - juvenile (1 year old)

STICKLEBACK - BENTHIC PRIEST LAKE/VANANDA CREEK WATERSHED (GASTEROSTEUS) - 50 count - males - mature adult (2 + year old)

STICKLEBACK - LIMNETIC PRIEST LAKE/VANANDA CREEK Watershed (GASTEROSTEUS) - 100 count - males - mature adult (1 year old)

STICKLEBACK - LIMNETIC PRIEST LAKE/VANANDA CREEK WATERSHED (GASTEROSTEUS) - 50 count - females - mature adult (1 year old)

STICKLEBACK - HYBRID ENOS LAKE (GASTEROSTEUS) - 300 count - females - mature adult (1+ year old)

STICKLEBACK - HYBRID ENOS LAKE (GASTEROSTEUS) - 300 count - males - mature adult (1+ year old)

Retention of specimens collected Authorized



Area of Activity:

South Coast

Collections will be made at Priest Lake and Paxton Lake on Texada Island, BC, from Enos Lake on Vancouver Island, BC.

Watershed Codes:

920440400

920354500

90514500008500

9051260006600097900

Authorized Activities:

Capture Technique: Minnow traps, as well seine and dip nets, will be used to capture the fish. Traps will be set for a maximum of 12 hours.

Method of Handling: The fish will be gently decanted from the minnow trap or net into a bucket of aerated, fresh lake water. No more than 20 fish will be placed into a single pail at the same time.

Maintaining fish in the lab: Fish are raised and kept in stand-alone 100-litre aquariums with filtration and aeration. Fish are fed twice daily with live and frozen food.

Maintaining fish in the outdoor ponds and stock tanks: Fish are transferred from the lab to the pond or stock tank. Ponds and tanks have been seeded with aquatic vegetation and invertebrates previously, and this is sufficient to sustain fish for the duration of the experiments.

Method of Euthanasia and Disposal: Fish are killed with MS222 (1 part MS222 per 20 000 part water, buffered using sodium bicarbonate). In the rare event of animal injury, the fish will be immediately euthanized with an overdose of MS222 and preserved in pure ethanol. Fish are preserved in ethanol for laboratory analysis.

All fish will be held temporarily in the Biosciences aquatic facilities of the Zoology Department on the campus of the University of BC. They will then be used in behavioural and ecological experiments in ponds and large stock tanks in the UBC experimental pond facility.

Live specimens collected from the field will be kept in aquaria (in the Biosciences building) or in the experimental ponds facility on the campus of the University of BC.

Any individuals from Enos Lake that appear particularly like the original benthic or limnetic form will not be sampled as part of the authorized research activities.

The purpose of the project is to collect Paxton Lake and Enos Lake stickleback from Priest Lake, Paxton Lake, Enos Lake between February 1, 2011- July 31, 2011 to better understand the causes of the origin and persistence of species.

The overall research program involves multiple components including observations and experiments on foraging, growth, survival, predator evasion, parasite resistance, cues used in mating, natural selection pressures, and genetics. Research activities in 2011 will focus on the causes of reproductive isolation (evolved barriers to gene flow) between coexisting limnetic and benthic species, and on the wider ecosystem impacts of the stickleback species pairs.

See also attached research proposal.



Terms and Conditions:

Pursuant to subsection 73(6) of SARA, the following terms and conditions apply to this permit:

- 1) This permit is only valid for the activities described above. It (or a copy) must be carried by a member of the field crew and be made available to a Fishery or Conservation Officer upon request.
- 2) This permit does not replace any other permits required under provincial or federal legislation.
- 3) A valid license pursuant to Section 56 of the Fisheries (General) Regulation, SOR/93-53 must accompany this permit for any intentional transfer or introduction of fish and/or aquatic invertebrates between any fish habitat and/or any fish rearing facility. The application form and additional information can be found here:
<http://www.dfo-mpo.gc.ca/aquaculture/regions/pac/introduction-eng.htm>
- 4) By December 31, 2011, a report must be filed detailing any activity, authorized by this permit, which results in killing, harming, harassing, capturing or taking of any individuals of the affected species above. The report detail is to include the dates and locations of collections, the number of each species collected, and the names of all persons and/or vessels taking part on each date. If the individuals were captured and are being held then you must also indicate where they are being held and what is planned for these captured individuals (death, release, etc.). The completed reports shall be sent to:

Eric Chiang
Species At Risk Recovery Planner
Fisheries & Oceans Canada
200 - 401 Burrard St. Vancouver, BC
Tel: 604-666-0017
Fax: 604-666-0417
Email: SARA@pac.dfo-mpo.gc.ca



Duration of Permit: This permit is valid from Mar 4, 2011 until Jul 31, 2011.

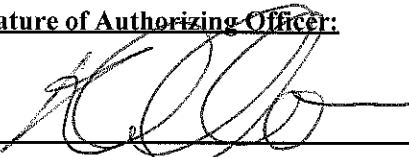
Date of issue: Mar 9, 2011

This permit is not valid until read and signed by the authorized person, signifying agreement with the conditions of permit:

I hereby certify that I am the authorized person named above (Dolph Schluter) and that I have read and understand the conditions of this permit,

Dolph Schluter		17/03/2011
Print Name	Signature	Date

Signature of Authorizing Officer:

	09/03/2011
Authorizing Officer	Date

Karen Calla
SARA Regional Manager

Fisheries & Oceans Canada, Pacific Region
#200-401 Burrard St.
Vancouver, BC V6C 3S4
on behalf of the Minister of Fisheries & Oceans Canada

Further Information about this permit is available from the above authorizing officer or from SARA@pac.dfo-mpo.gc.ca