

PARK USE PERMIT

RESEARCH

This Park Use Permit No. **VI0310074** (the "Permit") is issued under the authority of the *Park Act*

Mount Tzouhalem ER and Helliwell Park
(the "Park")

FROM
HER MAJESTY THE QUEEN IN RIGHT OF THE
PROVINCE OF BRITISH COLUMBIA, represented by the
Minister responsible for the *Park Act* (the "Province")
at the following address:

Ministry of Water Land and Air Protection
Environmental Stewardship
2080A Labieux Road
Nanaimo, BC, V9T 6J9

TO:
Jessica Hellmann

(the "Permittee") at the following address
**Centre for Biodiversity Research
University of British Columbia
(604) 822 5937
Hellmann@zoology.ubc.ca**

THE PROVINCE AND THE PERMITTEE AGREE AS FOLLOWS:

ARTICLE I - GRANT OF PERMIT

- 1.01 The Province, on the terms and conditions of this Permit, grants to the Permittee permission to enter upon and use that part of the Park (the "Permit Area") described, and for the purposes described, in the Management Plan Schedule.
- 1.02 Nothing in this Permit grants to the Permittee the right to the exclusive use and occupancy of the Permit Area.
- 1.03 The Permittee must be in possession of a copy of this Permit when undertaking activities in the Permit Area under this Permit.

ARTICLE II - DURATION

- 2.01 The duration of this Permit is for a term of two years commencing on April 1, 2003 (the "Commencement Date") and ending on March 31, 2005 (the "Expiration Date"), unless cancelled, terminated or renewed in accordance with the terms of this Permit.

ARTICLE III INDEMNITY AND INSURANCE

- 3.01 The Permittee will indemnify and save harmless the Province, its servants, employees and agents against all losses, claims, damages, actions, costs and expenses that the Province, its servants, employees and agents may sustain, incur, suffer or be put to at any time arising, directly or indirectly, from any act or omission of the Permittee, its employees, agents, contractors or licensees under this Permit, except for any liability arising from any independent, negligent act of the Province.
- 3.02 The Permittee will, during the term of this Permit, provide, maintain and pay for insurance in such form and amounts and with such deductibles, if any, as prescribed in the Insurance Schedule. NA

ARTICLE IV - TRANSFER

- 4.01 The Permittee must not assign, transfer, sublicense or grant any of the rights or privileges granted by this Permit without the prior written consent of, and on the terms and conditions determined by, the Province.

ARTICLE V - PERMITTEE'S COVENANTS

- 5.01 The Permittee must
 - (a) comply with the terms and conditions of this Permit, the *Park Act* and any regulations made under the *Park Act*;
 - (b) comply with all laws, bylaws, orders, directions, ordinances and regulations of any governmental authority that affect the Permit Area, its use and occupation or the Permittee's activities under this Permit;
 - (c) inform its employees, agents, contractors and licensees of the *Park Act*, regulations made under it, and this Permit as each of them relate to the conduct and activities of persons within the Park;
 - (d) comply with all orders and directions made verbally or in writing by a park officer (as defined in the *Park Act*) relating to the Park, this Permit or the Permit Area;
 - (e) not damage, destroy, disturb or remove plants, animals, archaeological or cultural artefacts found in or on the Permit Area, except as authorised by this Permit and only in accordance with the *Park Act* and all other applicable laws;
 - (f) not introduce plants or animals in or on the Permit Area, except as authorised by this Permit;
 - (g) not commit or permit any wilful or voluntary waste, damage or destruction in or on the Permit Area;
 - (h) not use procedures or methods which are disruptive to the natural environment in conducting research, except as authorised by this Permit;
 - (i) keep the Permit Area in a safe, clean and sanitary condition and remove from the Permit Area, to the satisfaction of the Province, all garbage, debris and effluent resulting from the Permittee's use of the Permit Area;
 - (j) not use motorised vehicles or equipment in the Permit Area, except as authorised by this Permit;
 - (k) not construct, erect, place, repair, maintain or alter any building, fixture, structure or improvement on the Permit Area, except as authorised by this Permit;
 - (l) not interfere with public access or the activities or operations of any other Permittee in the Permit Area except as authorised by this Permit;
 - (m) pay for or repair, as determined by the Province, any damage to the Permit Area or to the property of the Province caused by the Permittee, its employees, agents, contractors or licensees;
 - (n) upon expiration, cancellation or termination of this Permit:
 - (i) peaceably quit and deliver up possession of the Permit Area to the Province; and
 - (ii) restore the Permit Area to the satisfaction of the Province; and to the extent necessary, this covenant shall survive the expiration, cancellation or termination of this Permit;
 - (o) acknowledge the Province, the Park and the Permit Area in any press release, announcement, publication or report released by the Permittee in respect of its use of the Permit Area under this Permit;
 - (p) comply with all provisions of the Management Plan Schedule.

Don Jones

ARTICLE VI - RIGHTS OF THE PROVINCE

- 6.01 Nothing in this Permit diminishes from the rights of the Province in the Permit Area and the Permittee acknowledges that the Province's rights in the Permit Area include the right to
- use and uninterrupted access for the Province, its employees, agents, licensees and invitees in or through the Permit Area;
 - manage, protect, develop, construct, repair, alter and maintain all buildings, structures, equipment, improvements and natural resources (as that term is defined in the Park Act) in or on the Permit Area;
 - limit or suspend the use authorised under this Permit, if the Province determines in its sole opinion, that such use causes environmental damage to the Permit Area; and
 - grant to any person the right to enter upon and use the Permit Area, or any part of it, for any purpose.

ARTICLE VII - APPLICATION FOR RENEWAL

- 7.01 Not later than 30 days prior to the Expiration Date, the Permittee may, by notice in writing delivered to the Province, apply to the Province for a renewal of this Permit.
- 7.02 Provided that the Permittee is not in default under this Permit and subject to the Park Act, the Province may renew this Permit upon the terms and conditions determined by the Province.
- 7.03 The Permittee acknowledges and agrees that nothing in this Permit obliges the Province to renew this Permit and the Province's decision in that respect is completely within its discretion.

ARTICLE VIII - CANCELLATION OF PERMIT

- 8.01 The Province may cancel this Permit on the happening of any one or more of the following events:
- the Permittee fails to observe, perform or keep any of its covenants or agreements under this Permit and that failure is not rectified within the number of days set out in a written notice delivered to the Permittee requiring the Permittee's failure to be rectified;
 - the Permit Area is damaged or destroyed by any cause whatsoever;
 - the Permittee has wilfully misrepresented information:
 - on the application form which led to the granting of this Permit; or
 - required to be provided under the terms and conditions of this Permit;
 - the Park is closed by the Province; or
 - the Permittee ceases to use the Permit Area for the purposes set out in this Permit.

ARTICLE IX - NOTICE

- 9.01 Any notice required to be given by either party to the other will be deemed to be given if it is in writing and is delivered by hand or prepaid registered mail to the address first written above or any other address that may be specified in writing by a party and a notice will be deemed to be delivered, if mailed, 8 days after the time of mailing except, in the case of a postal interruption, actual receipt is required.

ARTICLE X - MISCELLANEOUS

- 10.01 This Permit may be inspected by the public at any time.
- 10.02 Time is of the essence in this Permit.
- 10.03 Nothing in this Permit will be deemed to be waived by the Province unless the waiver is in writing.
- 10.04 Nothing in this Permit constitutes the Permittee as the employee, agent or partner of the Province or gives the Permittee any power or authority to bind the Province in any way.
- 10.05 Nothing in this Permit, expressed or implied, obliges the Province to assume any liability, monetary or otherwise, for any loss, damage, cost or expense incurred by the Permittee for an interruption of the Permittee's activity under this Permit resulting from, among other things, a strike, lockout, labour dispute, act of God, fire, flood or other natural disaster.

ARTICLE XI - INTERPRETATION

- 11.01 In this Permit, unless the context otherwise requires, the singular includes the plural and the masculine includes the feminine, a corporation and body politic.
- 11.02 The captions and headings contained in the Permit are for convenience only and are not to be construed as defining or in any way limiting the scope or intent of the provisions of this Permit.
- 11.03 In this Permit, a reference to an enactment of the Province of British Columbia or of Canada includes a reference to any subsequent enactment of like effect, and unless the context otherwise requires, all statutes referred to in this Permit are enactments of the Province of British Columbia.
- 11.04 If any part of this Permit is found to be illegal or unenforceable, that part will be considered separate and severable and the remaining parts will be enforceable to the fullest extent permitted by law.
- 11.05 If all or part of the Permit Area is in a recreation area established or continued under the Park Act, this Permit is deemed to be a resource use permit as that term is defined in the Park Act.
- 11.06 All schedules to this Permit form an integral part of this Permit.

IN WITNESS WHEREOF the parties have duly executed this Permit.

SIGNED and DELIVERED on behalf of the Province
by a duly authorised representative of the Province.


Duly Authorised Representative

Date

April 1, 03

SIGNED and DELIVERED on behalf of the Permittee
(or by an authorised signatory of the Permittee if a Corporation)


Signature of Permittee or Authorised Signatory

Date

19 March, 2003

MANAGEMENT PLAN SCHEDULE

PERMIT AREA DESCRIPTION

The Permittee is authorised to enter the Permit Area described below and outlined in red on the attached map.

Portions of the Park as approved by the Area Supervisor

PURPOSE

This Permit is issued to the Permittee for the purpose of **conducting research on the abundance and adaptation of butterflies in Garry oak meadows using methodologies described in the attached "*Information for BC Parks Research Permit*"**

SPECIAL PROVISIONS

- 1 The Permittee shall meet with the Area Supervisor and discuss field activities prior to entering the Park. Mt. Tzouhalem Don Closson 391 2319 Helliwell Dennis Fraser 954 4607**
- 2 The location of all structures shall be approved by the Area Supervisor. The Permittee shall supply a map showing the approved location**
- 3 The Permittee shall supply three copies of all reports maps and publications resulting from data collected under this [permit to each Area Supervisor**
- 4 All instruments and other equipment shall be removed from the Park upon completion of the work.**
- 5 The Permittee shall have a copy of this permit in their possession while in the Park.**
- 6 The Permittee shall respond to all questions from the public while in the Park**
- 7 Specimen collection shall be kept to a minimum and in case shall the number exceed 2. Every effort shall be made to collect site specimens from areas adjacent to the Park**
- 8 No permanent marking of study sites is permitted and all temporary marking shall be removed at the end of each field session unless approved by the Area Supervisor.**

INFORMATION FOR BC PARKS RESEARCH PERMIT

Name: Jessica Hellmann

Address: 6270 University Blvd.
Centre for Biodiversity Research
University of British Columbia
Vancouver, BC V6T 1Z4

Phone #: (604) 822-5937

Fax #: (604) 822-0653

E-mail: hellmann@zoology.ubc.ca

Date: December 20, 2002

Project Title: Abundance and adaptation of butterflies in Garry oak meadows

Project Activities:

Observation	Installation of Physical Structures
Non-intrusive Survey	Specimen Collection
Tagging	Temporary Translocation

(tagging involves writing on butterfly wings; physical structures are larval enclosures and are temporary; see methods regarding specimen collection and translocation)

Anticipated Start Date: March 1, 2003

Anticipated Completion Date: Dec. 31, 2004

Study Overview and Rationale:

The studies in this application are part of a larger project that addresses the factors limiting the distribution and abundance of organisms in nature. Specifically, the project examines butterfly species at the limit of their geographic distribution in Garry oak meadows of southern BC. The project examines patterns of habitat occupancy as one approaches the edge of a species' range and tests the degree of local adaptation displayed by northern populations. The project also collects important information on the ecology of several species at risk and species of interest to the Garry Oak Ecosystem Recovery Team, a group charged with gathering information on the status of BC's remaining oak-meadows.

Objectives:

To examine the local and regional factors that limit butterfly distributions, field assistants and I will pursue four studies in a number of sites on Vancouver Island, BC, including Mount Tzouhalem and Helliwell Park. Study sites lie along a north-south gradient to uncover spatial patterns of populations near the northern limit of oak-grassland ecosystems.

- 1) Measure the density and abundance of all butterflies and their plant resources in each study site.
- 2) Record environmental variables (temp, precipitation) in each site.
- 3) Study the local adaptation of two species, *Erynnis propertius* and *Papilio zelicaon*, with larval growth experiments.
- 4) Collect DNA samples from these two species for analysis of the genetic similarity among sites.

Studies will be executed in the spring and summer of 2003 and repeated in 2004.

Methodology:

1) Repeatedly survey the abundance of butterflies with mark-recapture and on-the-wing population estimation. Mark-recapture requires catching, handling, marking, and releasing butterflies during several days (~10-15) spread over the flight season, March 1-July 31, 2003 and 2004. On-the-wing studies involve walking transects across a study site and recording butterflies seen during these walks. Walks will be repeated multiple times (~10-15 days) over the season. To measure plant resources, random samples of 1 x 1 m areas will be taken throughout the study site. The number of stems and state of plants (e.g., flowering or not) in each area is recorded. Quadrat surveys will take place over the same period as butterfly surveys with approximately the same frequency.

2) Temporary digital recording devices will be placed in the site from March 1 through August 31 in 2003 and 2004 to measure temperature, precipitation, and solar radiation. These items are inconspicuous and will be visited regularly (approximately one time per week) for data downloading. Devices will be removed in the off-season.

3) Adult females of *E. propertius* and *P. zelicaon* will be captured and temporarily held for one or two days on site for egg collection (sometime between March 1 and July 31, 2003 and 2004). Larvae hatching from these eggs will be used in larval growth experiments. One-third of the collected larvae will be reared in mesh enclosures on their larval food plant on site. Two-thirds of the collected larvae will be temporarily translocated to other sites on Vancouver Island for rearing in enclosures. Larvae that are temporarily removed will be returned to the native site at the end of August, 2003 and 2004. In addition, larvae from other sites will be temporarily brought to each site for rearing in enclosures. At the end of August, these individuals will be removed. No novel species will be introduced to the site, and accidental introductions of already-present species will be prevented by the enclosures. Enclosure equipment will be removed during the off-season (Sept. 1, 2003 to March 1, 2004) and at the end of studies in 2004 (Sept. 1, 2004).

4) One leg from approximately 25 adult *E. propertius* and *P. zelicaon* butterflies will be collected and stored for subsequent genetic analysis. Collection will take place between March 1 and July 31 in 2003 and 2004. Studies suggest that leg removal has a minimal effect on butterfly survivorship or reproduction. In addition, up to two individuals of *E. propertius* and *P. zelicaon* may be collected from each site as site specimens. These specimens will be housed at the University of British Columbia until further notice.

End Products:

Publication in scientific research journals; summary of results to Garry Oak Ecosystem Recovery Team and BC Parks; presentation at public and scientific meetings

Access Dates: (2003 and 2004)

March 1 – March 31: site visits to plan for field studies; 2-3 visits, specific dates to be determined
April 1 – Sept. 1: regular visits for butterfly and plant surveys, establishment of larval enclosures, monitoring of larvae, downloading of data from weather recording devices, and DNA collection; 2-3 days of consecutive visits with 4-5 day breaks between visits; exact dates not known, dependent on site conditions and availability staff support