Application for a Research Permit for The BNP

Name (Last, First, MI): Petruzzi, Erin E. Date: 4/10/04

Affiliation: The University of Akron, Department of Biology, Graduate Student (Advisors: Francisco Moore and Peter Niewiarowski)

Email address: eep2@uakron.edu

MailingAddress: 214 N.Portage Path, #212 Akron, OH 44303

Title of Research: Examination of temperature-related mechanisms of color polymorphism maintenance in the salamander *Plethodon cinereus*

Briefly describe the research to be conducted at the BNP in non-technical language (this paragraph will be used in describing your research to the public).

Censuses will be made at one 1.0 km^2 site. The site will be searched for the presence of *P. cinereus* a total of 10 hours per week for 4 weeks. Individuals will be marked via toe clipping, with each day having a different toe identification mark. This will ensure that I am not counting the same individual multiple times per census and will provide mark-recapture data for population density measurements. Data collected will be analyzed in order to determine if a correlation between surface temperature and morph frequency exists. A total of 30 salamanders will be taken into the laboratory to determine if temperature-dependent metabolic response varies between morphs in a manner that allows coexistence. They will be returned upon completion of these metabolic measurements (1 week).

Briefly describe the goals of the proposed research.

Theories in population genetics suggest that the existence of polymorphisms, two or more morphological types of the same species,

should be rare. However, a color polymorphism occurs in the salamander *Plethodon cinereus*. None of the existing hypotheses explaining the maintenance of the polymorphism in this species accounts for the advantages enjoyed by the striped morph (1 of 3 morphological types), which allow it to remain in *P. cinereus* populations. The purpose of this study is to find out if a correlation exists between morphological type and surface temperature. The data collected in the field will be coupled with laboratory data on metabolic rates to determine if temperature-related differences in metabolic responses play a role in maintaining the different morphological types.

What are the GPS coordinates or locations of your proposed research?

Most research will take place in Steiner Woods and land adjacent to Windhover Bog. South Woods will be a secondary site if Steiner Woods lacks large numbers of *P. cinereus*.

What is the expected duration of your proposed research? May 2004-October 2004

What is the Web address of your research outline? http:// N/A

Briefly outline of methods to be used. Be sure to include outlines of the equipment to be used (if any) in the research.

I propose to sample *P.cinereus* by searching a 1.0 km^2 plot for 10 hours per week for 4 weeks. This consists of looking under logs, rocks, and leaf litter. Animals will be toe clipped upon discovery, and all animals, logs, rocks, and leaf litter will be placed in their original positions before moving to the next object. A total of 30 animals will be collected over the course of 7 weeks. The first week's group will consist of 6 individuals, and the later 6 groups will consist of 4 individuals. They will be transported to the laboratory at the University of

Akron for subsequent metabolic rate measures. All individuals will be returned after one week.

Outline the use of markers/cages/fences/etc. for your research. Note: in receiving a research permit, you must agree to remove all such research tools at the completion of your study.

Flags might be used to mark the boundaries of the 1.0 km^2 search plot, but all markers will be removed at the end of the study.

What is the potential impact of your research on nature preserve?

My research should have a minimal impact on the environment at the Bath Nature Preserve. Care will be taken to minimize disturbances to the habitat by avoiding excessive sampling in wet periods and by leaving the search plot as close to its original conditions as possible.

Have you looked at the listings and web sites of the research being conducted at BNP?

http://www3.uakron.edu/biology/bath/active.html Yes X___ No____

Are there any potential conflicts of your research with others at BNP? Yes ____ No__X__

Explain:_____

To be granted a research permit for work at the BNP, you must agree to the following terms:

- Researchers are responsible for obtaining the appropriate state or federal permits for the conduct of their research on the BNP (e.g., when working with regulated species).
- Researchers are responsible for removing all markers, etc. from their research plots when the research is completed.
- Researchers must build a web site (immediately after being granted a permit) outlining their research at the BNP so that other researchers can avoid the proposed research site(s). Therefore, the web site must clearly outline, using one or more maps, the exact location(s) of the proposed research.
- Researchers will file an annual (due in yearly increments based on the date of the permit) and final report. Such reports will include: user days on the BNP, a summary of results of the project(s), a list of data generated and contact information for those interested in the data, and a list of publications resulting from the project(s).
- Any publications resulting from research conducted at the BNP must acknowledge the use of the preserve by referencing the BNP permit number. A copy of any such publication should be filed with the BNP committee.
- To abide by the rules and regulations of the BNP in any and all conduct of research at the BNP.

By signing the request for a BNP research permit below, I agree to the above terms and state that all of the above information is correct to the best of my knowledge. I also agree to amend my above permit request if my

research plans change such that they are no longer well represented in the information supplied in this permit request. If I fail to notify the BNP oversight committee of significant changes in my research, or if I do not follow the rules of the BNP, I realize that the BNP oversight committee can revoke my research permit, and disallow any further work by me, research or otherwise, at the BNP.

Signature:_____ Date:_____

Print Name: Erin E. Petruzzi_____

Approval:

Approved by Bath Township 25 May 2004

Approved by University of Akron 18 May 2004