NORTHEAST REGIONAL CONSERVATION NEED GRANT QUARTERLY REPORT

Grant Number: **2010-01**
Grant Title: ***"Laboratory and Field Testing of Treatments for White Nose Syndrome: Immediate Funding Need for the Northeast Region"***
Grant Receipt**: Bucknell University**
Grant Contact Name: **DeeAnn M. Reeder, Department of Biology**

This project is in support of RCN topic#12 "Identify and Address Factors Contributing to the Regional Decline of Populations of SGCN". Hibernating bats in the NE USA have experienced sudden and dramatic declines over the past three winters due to an emerging infectious disease dubbed "White Nose Syndrome" (WNS). An estimated one million bats have died thus far, and the causative agent has now been definitively shown to be the newly described cold-loving fungus *Geomyces destructans* (Gd). This proposal aims to address these declines by developing and implementing methodologies to combat WNS, which was specifically referenced in the call for proposals. Specific goals include: (1) testing potential treatments for efficacy against cultured Gd (the fungal pathogen associated with WNS) under laboratory conditions, (2) testing potential treatments for safety in healthy bats, and (3) testing potential treatments for efficacy against Gd in hibernating bats. Trials will primarily be conducted under strictly controlled conditions in a captive setting, in which microclimate is tightly controlled and in which each bat's behavior can be tracked. Limited, highly selective field trials will also be conducted. Studies of the anti-Gd activity of terbinafine, voriconazole, and other anti-fungal compounds are ongoing and will be completed to the point in which compounds are tested on bats beginning in November, 2011, with final analyses completed by December, 2012. During the 2011-2012 hibernation season (November to March), both safety and efficacy trials of selected compounds will be performed on control and Gd-infected bats under controlled laboratory conditions. This will work be completed by April 2012, with analyses of results (including immunological assays) completed by December, 2012. Field testing of candidate treatments (as determined by the captive bat treatment trial) will take place in the hibernation season of 2012-2013, with completion by April, 2013.

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Report #- **3rd quarter (July 1, 2011 to September 30, 2011)**

Were planned goals/objectives achieved last quarter? **For the quarter, yes.**

Regional Conservation Need Addressed:

Priority RCN Topic number 12 " Identify and Address Factors Contributing to the Regional Decline of Populations of SGCN". Hibernating bats in the NE USA have experienced sudden and dramatic declines over the past three winters due to an emerging infectious disease dubbed "White Nose Syndrome" (WNS). An estimated one million bats have died thus far, with the most likely pathogen being the newly described cold-loving fungus *Geomyces destructans* (Gd). This proposal seeks to address these declines by developing and implementing methodologies to combat WNS, which was specifically referenced in the call for proposals.

Progress Achieved: (For each Goal/Objective, list Planned and Actual Accomplishments)

The overall goal of this project is to develop and test potential treatments for WNS and, if possible, to optimize field treatment protocols. Tasks include:

1. **Testing potential treatments for efficacy against cultured Gd (the fungal pathogen associated with WNS) under laboratory conditions.**
2. **Testing potential treatments for safety in healthy bats.**
3. **Testing potential treatments for efficacy against Gd in hibernating bats. Trials will primarily be conducted under strictly controlled conditions in a captive setting, in which microclimate is tightly controlled and in which each bat's behavior can be tracked. Limited, highly selective field trials will also be conducted.**

Planned and Actual Accomplishments:

1. **Formulations of terbinafine and other anti-fungal compounds are being tested for activity against Gd in the Ghannoum and Barton laboratories**
2. **Safety testing of treatments in healthy bats will occur during the 2011-2012 hibernation season (beginning in November, 2011), using bats from the Reeder lab captive colony.**
3. **Efficacy and safety testing of treatments in bats either naturally infected with Gd or inoculated with a known dose of Gd (using methods developed by the National Wildlife Heath Center) will occur during the 2011-2012 hibernation season (beginning in November, 2011), using bats collected from the wild (most likely from TN). Field trials will occur in 2012-2013. Development of assays that will be used to assess overall health in control and treated bats is ongoing.**

Difficulties Encountered:

Obtaining bats for drug treatment trials (and any other kind of study) is becoming increasingly difficult. Thankfully, with the assistance of the technical coordinator for this project and other US FWS personnel (including the regional WNS coordinators), we made significant progress in securing commitments for free-ranging bats for the study. *State bat biologists in TN have agreed to obtain up to 100 bats (from both a WNS-infected site and an unaffected site).*

Activities Anticipated Next Quarter:

During the next quarter we will begin our captive drug efficacy and safety trials, obtaining bats in November and inoculating them with Gd (that we have been growing in the laboratory). We will finalize all study details, including dosages and drug formulations and IACUC approvals. Assay development is also ongoing.

Costs:

Are you within the approved budget plan? **Yes – although we are underspent to date on supply money and some of the funds budgeted for 2011 will likely be spent in early 2012.**

Are you within approved budget categories? **yes**

Signature:

Date: 12/15/2011