

CONSERVATION OF BLANDING'S TURTLE AND ASSOCIATED WETLAND SGCN IN THE NORTHEAST



## Northeast Blanding's Turtle & Associated SGCN Conservation Initiative



**STATE: NEW HAMPSHIRE**

**GRANT: State Wildlife Grants Competitive Grant Program**

**GRANT TITLE: CONSERVATION OF BLANDING'S TURTLE AND ASSOCIATED WETLAND SGCN IN THE NORTHEAST.**

**GRANT OBJECTIVE:** To maintain and enhance functional wildlife habitat in New England, New York, and Pennsylvania by applying conservation principles and practices needed to support a healthy Blanding's turtle population.

**PROJECT I: BLANDING'S TURTLE AND ASSOCIATED SGCN CONSERVATION PLANNING**

**PROJECT II: GENETIC ANALYSIS OF BLANDING'S TURTLE POPULATIONS**

**PROJECT III: STANDARDIZED MONITORING PROTOCOLS FOR BLANDING'S TURTLES ACROSS THE NORTHEAST REGION**

**PROJECT IV: PRIORITY ACTION IMPLEMENTATION**

**PROJECT V: GRANT COORDINATION AND ADMINISTRATION**

The grant and associated 5 projects will occur in 5 states: ME, NH, MA, NY, and PA

Detailed project, job, and action descriptions follow.

# Northeast Blanding's Turtle & Associated SGCN Conservation Initiative

## LIST OF ACTIONS

*(Actions are also listed in narrative)*

### PROJECT I

**Job 1.1:** Develop a conservation plan for Blanding's turtle and associated SGCN in the Northeast, including identifying spatially explicit conservation priorities.

*Action 1.1.1:* Identify Blanding's turtle population units throughout the Northeast.

*Action 1.1.2:* Assign Quality Ranks to all known Blanding's turtle populations within the Northeast

*Action 1.1.3:* Identify Blanding's turtle conservation priorities within Northeast.

*Action 1.1.4:* Develop spatially explicit parcel maps for Blanding's turtle conservation priorities identified in Action 1.1.3.

*Action 1.1.5:* Develop spatially explicit management plans at one to four high priority sites in each state and at least 15 overall.

*Action 1.1.6:* Compile information from Projects I-III into a Northeast Blanding's Turtle Conservation Plan.

**Job 1.2:** Engage key partners, including state and federal transportation agencies, natural resources agencies, land trusts, municipalities, landowners, and other local stakeholders to implement priorities identified in spatially-explicit management plans.

*Action 1.2.1:* Disseminate management plans and implementation priorities and engage key partners including transportation agencies, all local stakeholders, landowners, and partnering agencies.

*Action 1.2.2:* Host at least one workshop in each state with key land conservation partners; present results, solicit feedback, and initiate next steps toward plan implementation.

### PROJECT II

**Job 2.1:** Assess genetic relationships among Blanding's turtle populations within the Northeast region.

*Action 2.1.1:* Assess the population genetic structure of Blanding's turtle populations in the Northeast and incorporate findings into conservation planning and priority area management in Maine, Massachusetts, New Hampshire, New York, and Pennsylvania.

*Action 2.1.2:* Examine isolated/outlier Blanding's turtle populations in Pennsylvania and New York to determine origin (naturally occurring or introduced).

*Action 2.1.3:* Compare the genetic structure of Blanding's turtle populations within the Northeast region to those in the Midwest region and Canada to provide a spatially explicit assessment of the discrete population groups across the species' range.

### PROJECT III

**Job 3.1:** Develop standardized monitoring protocols for Blanding's turtle in the Northeast.

*Action 3.1.1:* Develop standardized monitoring protocols for rapid site assessments.

*Action 3.1.2:* Develop standardized monitoring protocols for long-term reference sites.

**Job 3.2:** Implement standardized monitoring protocols.

*Action 3.2.1:* Select sites for rapid assessment and long-term reference monitoring.

*Action 3.2.2:* Implement rapid assessment protocols.

*Action 3.2.3:* Initiate the first year of long-term, reference site monitoring.

*Action 3.2.4:* Apply sampling results to validate conservation priorities established (Action 1.1.3) and inform management plans (Action 1.1.5).

### PROJECT IV

**Job 4.1:** Initiate on-the-ground implementation of priority actions to increase viability of Blanding's turtle populations and associated SGCN.

*Action 4.1.1:* Create and/or enhance nesting habitat for Blanding's turtles and other SGCN in at least 1 site per state and at least 5 in the region.

*Action 4.1.2:* Implement a turtle X-ing sign program in each state & install signs in at least 5 areas.

### PROJECT V

**Job 5.1:** Coordination and Administration

*Action 5.1.1:* Coordinate and Administer the Initiative

*Action 5.1.2:* Evaluate performance of grant objectives

*Action 5.1.3:* Report actions accomplished through grant.

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## EXECUTIVE SUMMARY

**GRANT TITLE:** CONSERVATION OF BLANDING'S TURTLE AND ASSOCIATED WETLAND SGCN IN THE NORTHEAST.

**APPLICANT:** New Hampshire Fish and Game Department, Concord, NH

**GRANT OBJECTIVE:** To maintain and enhance functional wildlife habitat in New England, New York, and Pennsylvania by applying conservation principles and practices needed to support a healthy Blanding's turtle population.

In the short-term, project partners will cooperate to develop a spatially-explicit conservation plan for Blanding's turtles and associated SGCN in the Northeast Region of the United States, initiate standardized monitoring of the species' status, and initiate implementation of the Plan by managing habitat to reduce road mortality and engaging key partners to prioritize land acquisition, restoration, and management activities.

In the long-term, conservation partners will apply information developed through this grant to maintain viable populations of Blanding's turtle and associated SGCN in the Northeast through cooperative land protection, restoration, and habitat management.

### PROJECT OBJECTIVES:

- I) To prevent further declines of Blanding's turtle populations in New England, New York, and Pennsylvania by developing and initiating implementation of a spatially explicit regional conservation plan for Blanding's turtles and the freshwater and upland habitats critical to their survival.
- II) To identify and protect genetic variation among the Northeast's Blanding's turtles to improve the survival of the species.
- III) To develop and implement monitoring protocols to detect status and trends in Blanding's turtle populations and to inform conservation of habitats critical to their survival.
- IV) To increase the viability of Blanding's turtle populations and associated SGCN through the creation and/or enhancement of at least 5 turtle nesting areas and installation of turtle X-ing signs at 5 or more sites in the Northeast.
- V) To coordinate conservation efforts for Blanding's turtles and associated SGCN in the Northeast, track the performance of actions for future adaptation and report successes.

**OUTPUTS** resulting from actions proposed in Projects I-V include but not limited to:

- 1) Landowner parcel data layer for entire range of Blanding's turtles in Northeast.
- 2) 15 or more spatially explicit management plans for priority Blanding's turtle landscapes in the Northeast including actions needed for critical habitats and associated SGCN.
- 3) Identification of genetically unique management units.
- 4) Completion of a Northeast Blanding's Turtle Conservation Plan.
- 5) Hosting 5 workshops with key partners to initiate implementation of spatially explicit management plans and overall Conservation Plan.

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- 6) Development of standardized rapid-assessment and long-term monitoring protocols for Blanding's turtles and their associated SGCN and habitats.
- 7) Two years of monitoring data in 5 states to assess status and trends and inform conservation actions.
- 8) Creation and/or enhancement of at least 5 nesting areas for Blanding's turtles and other SGCN turtles.
- 9) Installation of turtle X-ing signs at 5 or more sites.
- 10) Reports summarizing grant performance and actions implemented.

The proposed grant time period is **June 15, 2011 (or following announcement of awards) to June 14, 2014**. We are requesting **\$637,336 in federal funds** and we are proposing to provide **\$273,912 in non-federal matching funds (30.1%)**.

**Active Funded Partners (10):** New Hampshire Fish & Game Department, Massachusetts Division of Fisheries and Wildlife, Maine Department of Inland Fisheries and Wildlife, New York Department of Environmental Conservation, Pennsylvania Fish and Boat Commission, State University of New York, University of Massachusetts-Amherst, University of Maine-Orono, Parker River Clean Water Association, and Bryan Windmiller (private herpetological consultant). In addition to these funded partners, multiple partners not receiving funding will participate in activities identified in the grant including the United States Fish & Wildlife Service New England Field Office, New Hampshire Natural Heritage Bureau, State transportation departments (DOTs) from four participating states, Natural Resource Conservation Services (NRCS) from at least three states, members of the Northeast Blanding's turtle working group, and multiple individuals assisting with genetic sample collection.

**The initiative will address the needs of Blanding's turtles, multiple priority habitat types, and other SGCN that depend on a connected mosaic of wetlands and upland systems,** including: 7 species of birds, 4 amphibians, 4 reptiles, 3 fish, 11 invertebrates (dragonflies, mussels, beetles, etc.) and 1 species of mammal, in addition to countless species not currently listed as SGCN (Appendix D). Blanding's turtles were listed as a Species of Greatest Conservation Need (SGCN) in all five Northeast states where they occur and species-specific actions were identified in each state's Wildlife Action Plan. SGCN identified in Appendix D are known to co-occur with Blanding's turtles in the Northeast and will benefit from development of at least 15 site-specific management plans that prioritize actions for SGCN, enhanced nesting habitat for turtles, increased connectivity of landscapes by engaging state transportation agencies, and prioritization of areas for future land acquisition and restoration. In addition to those SGCN directly benefitting during the grant period, a large number of additional species will benefit from long-term actions. Because Blanding's turtles require large landscapes with integrated and diverse wetland and upland habitats, they are an important umbrella species for habitat and species protection in the Northeast, more so than species restricted to a specific habitat type.

**In summary,** implementation of actions identified in this grant is the critical and timely next step to maintain viable populations of Blanding's turtles and associated SGCN in the Northeast. No freshwater turtle has been removed from the federal Endangered Species Act list once added, an indication that unique life-history traits of turtles make their recovery extremely difficult.

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Blanding's turtles are especially vulnerable to population declines because of extreme life history traits (e.g., 15 or more years to reach maturity) and extensive overland movements. In the Northeast, much of the historic distribution of Blanding's turtles has been compromised by roads and development (Figures 2- 4). Therefore, to be effective, conservation efforts must start now to prevent the loss of this species throughout its range.

A focused effort in the Northeast both improves the species' overall health and secures the genetic contribution provided by the Northeast population. Identifying habitat complexes where populations can sustain themselves is the most cost effective and viable strategy that will have true multi-species benefits. In addition, identifying actions that improve the permeability of developed areas supporting Blanding's turtles to the point that they can provide for safe overland movements may reduce the functional fragmentation that other wildlife have experienced.

Partners identified in this grant have demonstrated a history of working together successfully through an already established Northeast Blanding's turtle working group (initiated in 2003) and the development of a Blanding's turtle status assessment for the Northeast (Compton 2007). In building upon the body of work already completed for the species in the Northeast, we are well positioned to implement several high priority actions proposed in this grant. The next priority actions to implement are the development of a regional conservation plan including an assessment of genetic variation throughout the region, development and implementation of a population monitoring protocol, and initiation of priority on-the-ground activities. Information developed through this grant will result in cooperative efforts to protect, manage, and restore habitat that is critical for Blanding's turtle in the Northeast. These actions will benefit other priority habitats and SGCN across the region. Partners in Amphibians and Reptile Conservation (PARC) and associated conservation partners have designated 2011 as 'Year of the Turtle'. Through this grant, we hope to celebrate 'Year of the Turtle' by initiating priority conservation actions for Blanding's turtles, one of the nation's most imperiled turtles that are not currently listed on the federal ESA. By proactively addressing threats and implementing conservation actions identified in this grant, conservation partners are poised to initiate recovery and reduce the need to list the species as federally endangered or threatened.

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### **OVERALL NEED STATEMENT (PROJECTS I-V):**

The range of Blanding's turtle (*Emydoidea blandingii*) occurs in the mid-continent of North America, with the majority of populations occurring in the Great Lakes region and southern Ontario. In the Northeast United States, there is a small contiguous population in Massachusetts, New Hampshire and Maine, several disjunct populations in New York, and one population in Pennsylvania of unknown status (Figure 1). Blanding's turtle populations are declining throughout their range, although the Midwest and Great Lakes region is considered the stronghold for the species.

Wildlife biologists throughout the Northeast have expressed concern for the conservation status of the Blanding's turtle and have suggested that the species warrants federal listing consideration (Therres 1999, Compton 2007). The Northeast Partners in Amphibian and Reptile Conservation (NEPARC) identified Blanding's turtle as one of the highest priority reptile and amphibian species in the Northeast and recommend the development of a species-specific conservation plan across state lines (NEPARC 2010). Blanding's turtles are state-listed as endangered in Maine and

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New Hampshire, threatened in New York and Massachusetts, and listed as a candidate for state threatened or endangered status in Pennsylvania. Blanding's turtles were listed as a Species of Greatest Conservation Need (SGCN) in all five Northeast states where it occurs and actions proposed in this grant are explicitly identified in state Wildlife Action Plans. Detailed actions/strategies identified in state WAPs are listed in Appendix C (WAP section/page references, NH WAP: Appendix A, A164-A174, Chapter 5; ME WAP: chapter 5, Table 31, pg. 113-114, Chapter 6, 7; MA WAP: 7.B, 7.C, 9.A.5, 9.B.2, 9.C.1, 4.B.1, 7.A.4, 7.A.5, 7.A.6, 7.B, 7.F, 8.A; NY WAP: pg. 71,74-86, 261, 264-265, 348, 354, 363, 370-371, 551-552, 565; PA WAP: Appendix 3: Herps-1. p. 219-220, pg. 10-74, 10-77, 10-78, 10-82).

Recently, the United States Fish & Wildlife Service (USFWS) and USGS Science Support Partnership sponsored a status assessment of the species' habitat and demographics in the Northeast, in collaboration with the University of Massachusetts (Compton 2007). Based upon findings in the status assessment, concerns expressed by the Northeastern states regarding the conservation status of Blanding's turtles are justifiable. The status assessment found that Blanding's turtle populations throughout the Northeast appear to be at extreme risk due to the species life history characteristics and the existing and predicted habitat destruction within the species range. The life history of the long-lived Blanding's turtle is comparable to those of sea turtles and desert tortoises, in that population stability and persistence are extremely sensitive to changes in adult survivorship. Blanding's turtles make frequent and relatively long (over 3 km) overland movements in an attempt to find suitable food resources, breeding opportunities, nesting habitats, and other important habitats. In the highly developed and populated landscape of the Northeast, these extensive movements expose Blanding's turtles to multiple risks including unsustainable road mortality (Gibbs and Shriver 2002, Beaudry et al. 2008, 2009). Road mortality is likely the greatest threat to the persistence of Blanding's turtle populations in the Northeast (Figures 2, 3, & 4). Therefore, permanently conserving large contiguous roadless areas within the Blanding's turtle range is a critical strategy. Currently, only a small percentage of property within the Blanding's turtle Northeast range is permanently protected (ME, 4.3%; NH 15.0%; MA 18.3%: Compton 2007) and most ownership is private. Since the status of the species is most precarious in the eastern portions of the species range, initiating a regional multi-state planning effort and initiating prioritized actions is necessary in the short-term to reduce further irreversible population declines and the need for future federal listing under the ESA. We anticipate that outcomes of this grant will also benefit the planning and prioritization of conservation actions for populations outside of the Northeast. Additionally, because Blanding's turtles require diverse interconnected wetland and terrestrial habitats across large areas, they are an important umbrella species (protection targeting one species results in protection of many). Therefore, these actions will benefit a large number of other priority habitats and SGCN across the region (Appendices D, E). SGCN that will directly benefit from this proposal include 7 species of birds, 4 amphibians, 4 reptiles, 3 fish, 11 invertebrates (dragonflies, mussels, beetles, etc.) and at least 1 species of mammal, in addition to countless species not currently listed as SGCN (see Appendix D for detailed Justification of SGCN inclusion). Identified SGCN are known to co-occur with Blanding's turtles in the Northeast and will benefit from development of at least 15 site-specific management plans that prioritize actions for SGCN, enhanced nesting habitat for turtles in at least 5 sites, increased connectivity of landscapes by engaging state transportation agencies (culvert and road upgrades, turtle X-ing signs), and prioritization of

habitats for acquisition, restoration, and management (specific SGCN benefited also listed within each Project Expected Results and Benefits section).

Biologists and other staff have recognized the importance of working across state lines to effectively develop and implement conservation plans for Blanding's turtles in the Northeast. A Northeast Blanding's turtle working group, including state wildlife agencies and natural heritage bureau offices, the USFWS, National Wildlife Refuges, the Department of Defense, several Universities, and multiple private consultants (Appendix F) have been meeting on an annual basis since 2003. In addition to meetings, an online forum has been created to facilitate communication among the Northeast Blanding's turtle working group between meetings. Having completed a status assessment in the Northeast (Compton 2007), we are well positioned to implement several high priority actions proposed in this grant. The next priority actions to implement are the development of a regional conservation plan including an assessment of genetic variation throughout the region, development and implementation of a population monitoring protocol, and initiation of priority on-the-ground activities. Information developed through this grant will result in cooperative efforts to protect, manage, and restore habitat that is critical for Blanding's turtle in the Northeast.

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## **GEOGRAPHIC LOCATION (PROJECTS I-V): ME, NH, MA, NY, PA (Figures 1-4)**

### **PROJECT I: BLANDING'S TURTLE AND ASSOCIATED SGCN CONSERVATION PLANNING**

#### **A. NEED** (see Overall Need Statement, Page 3):

Wildlife biologists throughout the Northeast have expressed concern for the conservation status of the Blanding's turtle and identified the species as one of the highest priorities in the region (Therres 1999). The status assessment found that Blanding's turtle populations throughout the Northeast appear to be at extreme risk due to the species life history characteristics and the existing and predicted habitat destruction within the species range. Permanently conserving large contiguous roadless areas within the Blanding's turtle range is a critical strategy for many SGCN but comprehensive planning is needed to inform an effective approach at maintaining the species viability in the Northeast long-term.

**B. OBJECTIVE:** To prevent further declines of Blanding's turtle populations in New England, New York, and Pennsylvania by developing and initiating implementation of a spatially explicit regional conservation plan for Blanding's turtles and the freshwater and upland habitats critical to their survival.

**Job 1.1:** Develop a conservation plan for Blanding's turtle and associated SGCN in the Northeast, including identifying spatially explicit conservation priorities. (6 Actions – See Approach).

**Job 1.2:** Engage key partners, including state and federal transportation agencies, natural resources agencies, land trusts, municipalities, landowners, and other local stakeholders to implement priorities identified in spatially-explicit management plans. (2 Actions – See Approach).

**C. EXPECTED RESULTS AND BENEFITS:**

The Northeast Blanding's turtle assessment (Compton 2007) represented one of the first multi-state cooperative projects conducted in the region for any wildlife species that is not listed under the federal ESA. It was the result of cooperation among federal and state agencies, university researchers, and independent professionals, an approach recommended by the federal State Wildlife Grants program. This collaboration resulted in the sharing of available data, information, and informed opinion. Through this grant, we propose to advance the ideas, energy and expertise of these partners to develop a multi-state conservation strategy and to determine specific areas and actions that will prevent further declines in the Blanding's turtle population and improve overall habitat connectivity for wildlife in the region.

Areas of the Northeast that are most likely to support a viable population of Blanding's turtle and maintain a suite of associated SGCN will be identified, mapped and prioritized, and detailed management plans will be developed. Importantly, this proposal directly incorporates actions to disseminate information to those in a position to implement conservation, protection, restoration, and management, ensuring increased effectiveness of the conservation plan. Currently, only a small percentage of property within the Blanding's turtle Northeast range is permanently protected (ME 4.3%; NH 15.0%; MA 18.3%: Compton 2007), most ownership is private, and most land that is protected is fragmented by roads. We are not specifically requesting funds for land acquisition or transportation upgrades (e.g., underpasses) under this grant due to substantial costs associated with protecting and restoring these areas and the availability of Competitive SWG grant funding. However, actions completed under this grant will result in on-the-ground implementation in the short and long-term. Project IV describes on-the-ground actions that will be implemented during this grant period as a result of Project I planning activities. Additionally, key partners will be engaged to increase the success of future implementation. For example, New Hampshire Fish & Game Department (hereafter NHFG) biologists participate in ranking applications for several land acquisition grants (Land and Community Heritage Investment Program, Aquatic Resource Mitigation Fund, Open Space Institute) in New Hampshire. Similar programs exist in other states. Blanding's turtle priority areas will be incorporated into these evaluations. Also, states will use this information when revising priority areas identified in state Wildlife Action Plans. These wildlife habitat maps, where available, are used by conservation partners to target conservation projects. Recently, NHFG has begun working with the Natural Resource Conservation Service (hereafter NRCS) to target Blanding's turtles for funding under Wildlife Habitat Incentive Program (WHIP) and Environmental Quality Incentives Program (EQIP) programs in New Hampshire. The NRCS has committed to assisting with implementation in other states where actions on private lands are needed (see letters of support). Therefore, habitat management and restoration actions identified in site-specific management plans (Action 1.1.5) and the conservation plan (Action 1.1.6) will be prioritized for implementation within states.

State transportation agencies are in support of this project (see letters of support). Recommended actions involving roads, including estimated costs to implement priority actions, will be developed in cooperation with transportation agency personnel and prioritized actions will be identified in site-specific management plans and the overall conservation plan and these actions

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will be provided to local, state, and federal transportation agencies for inclusion in future implementation priorities.

Similar to the Competitive SWG awarded during 2009 for the federal candidate New England Cottontail, we anticipate that actions implemented through this grant will help ensure Blanding's turtle persistence in the Northeast region, where the species is at greatest risk, and therefore reduce the need to elevate the species' federal protection status to threatened or endangered (ESA), while also improving the conservation outlook for associated SGCN.

Because Blanding's turtles require large landscapes with a mosaic of diverse wetlands (WAP Critical Habitats benefited in Appendix E: vernal pools, forested wetlands, marshes, shrub wetlands, wet meadows, peatlands, rivers and ponds) and uplands (Appendix E: various forest types, shrublands, grasslands, disturbed soils, riparian areas, floodplain forests), they have been considered an umbrella species, meaning that conservation of Blanding's turtle habitat will ensure protection of a large number of other priority species (Babbitt and Jenkins 2003). All associated SGCN (see Appendix D for list of 30 SGCN species that will benefit) will be directly incorporated into site priority ranking and site specific management plans. Notably, the range of Blanding's turtles in some states (e.g., MA, NH, ME) overlaps with the most rapidly developing portion of the state (Figure 3) and/or the area of the state that has the greatest diversity of rare wildlife, further underscoring the urgency of this project.

### **D. APPROACH:**

**Job 1.1:** To develop a conservation plan for Blanding's Turtle and associated SGCN in the Northeast, including identifying spatially explicit conservation priorities.

#### ***Action 1.1.1: Identify Blanding's turtle population units throughout the Northeast***

New Hampshire Fish & Game Department (hereafter NHFG) will develop a contract with the University of Massachusetts-Amherst USGS Cooperative Fish and Wildlife Research Unit (hereafter UMass) to lead all Actions under Project I. UMass will contact Natural Heritage offices in NH, ME, MA, NY, and PA to acquire Blanding's turtle Element Occurrence (hereafter EO) records. UMass will review NatureServe EO mapping specifications and each state's current mapping specifications and determine whether revisions to mapping methodology are necessary. UMass will use EO records, along with habitat models (Compton et al. 2007), and other relevant data layers (e.g., roads, wetlands, elevation, topography maps, aerial photographs) to map population units within each Northeast state. UMass will submit proposed mapping methodology to the Blanding's turtle working group for comment prior to finalizing. Timeline: Summer/Fall 2011

#### ***Action 1.1.2: Assign Quality Ranks to all known Blanding's turtle populations within the Northeast***

UMass will develop a methodology for assigning Quality Ranks (NatureServe methodology) to all population units (as determined in Action 1.1) in the Northeast. The methodology will be submitted to the Blanding's turtle working group for review prior to finalizing. Using EOs, existing GIS data, and habitat models (Compton et al. 2007), UMass will assign Ranks to all EO populations within the Northeast. States (e.g. Massachusetts) that have already completed EO rankings will be evaluated to ensure that previous ranking is consistent with the new

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methodology developed under this Action. UMass will submit draft Ranks to each state project coordinator for review and comment. Timeline: Fall 2011 - Fall 2012

### ***Action 1.1.3: Identify Blanding's turtle conservation priorities within the Northeast.***

UMass will develop priority Blanding's turtle population units using Quality Ranks, genetic distinctiveness (as determined by Project II), connectivity to other population units, connectivity to potential habitat where Blanding's turtle have not been documented, expert opinion, known population occurrence information, occurrences of other SGCN species, and degree of conservation land in vicinity. Also, population responses to changing land-use and climate change will be incorporated in the identification of priority areas. Connectivity models developed in New Hampshire, Maine, and regionally will be evaluated and included if appropriate. Identified priority areas will be submitted to each state's project coordinator for review. Timeline: Fall 2011 - Fall 2013

### ***Action 1.1.4: Develop spatially explicit parcel maps for Blanding's turtle conservation priorities identified in Action 1.1.3.***

UMass will acquire landowner parcel information already developed through the New England Cottontail Competitive SWG funded initiative (contact Steve Fuller, NH Fish & Game Department), as well as landowner parcel information for those towns not yet collected through the New England Cottontail grant within the known range of Blanding's turtles. Parcel data collected through the New England Cottontail Initiative was all available in digital format thus development of GIS layers from hard copy tax maps was not necessary (S. Fuller, personal communication). Parcel data will be provided to each state project coordinator as digital shapefiles compatible with GIS software. UMass will overlay parcel information with conservation priorities (Action 1.1.3). A summary report will identify priority parcels, assessed values, and total money needed (based on assessed values) to protect all conservation priorities in each state. Several alternative protection scenarios will be presented to capture priorities based on availability of land protection funding. Timeline: Fall 2012 - Winter 2013

### ***Action 1.1.5: Develop spatially explicit management plans at one to four high priority sites within each state and at least 15 total plans.***

UMass will develop site-specific management plans for one to four high priority sites within each state, and a total of at least fifteen plans. Each plan will include maps with prioritized Blanding's turtle areas delineated and parcels prioritized for protection, identify management opportunities that could improve the Rank status of the site and estimated costs to implement. Examples of management opportunities might include, but not be limited to, upgrading a culvert to a bridge or large arched tunnel in order to facilitate movement among habitats, creation or maintenance of nesting habitat where this habitat component is a limiting factor or where nesting results in turtles leaving core areas and crossing roads. Development of detailed management plans may require UMass to visit sites, where on the ground knowledge is not available. Other SGCN (30 SGCN benefited listed in Appendix D) occurring at sites will be incorporated into the evaluation and development of priority actions. UMass will submit management plans (CD with all relevant data and 1 hardcopy) directly to state project coordinators for review and as a final product. Timeline: Spring 2012 - Fall 2013

***Action 1.1.6: Compile information from Projects I-III into a Northeast Blanding's Turtle Conservation Plan.***

In consultation with the Blanding's turtle working group, UMass will develop a conservation plan for Blanding's Turtle in the Northeast states by compiling the information gathered throughout Projects I - III. The plan will include: 1) an overview of the status of habitat protection and management throughout the region and goals for additional spatially explicit protection required to protect populations throughout the region (identified in Action 1.1.3); 2) an overview of threats facing Blanding's turtle in the Northeast states (identified in Compton 2007) and proposed mitigation strategies; 3) identification of other conservation issues and needs region-wide (e.g. technical assistance, additional research, etc.) with action items for implementing solutions; 4) an overview of the effectiveness of the current regulatory framework protecting the species within each state and potential alternative regulatory strategies; 5) an overview of the site specific management plans (developed in Action 1.1.5), the other SGCN that co-occur and benefit from the plans, and the genetic distinctiveness of those areas (Project II) and dissemination methodology (proposed in Job 1.2); 6) a description of the proposed monitoring protocols (developed in Project III) including results from the first two years of monitoring; and 7) a proposed timetable for re-evaluation of status and goals. Timeline: Fall 2013-Spring 2014

**Job 1.2:** Engage key partners, including state and federal transportation agencies, natural resources agencies, land trusts, municipalities, landowners, and other local stakeholders to implement priorities identified in spatially-explicit management plans.

***Action 1.2.1: Disseminate management plans and priority implementation priorities and engage key partners including transportation agencies, all local stakeholders, landowners, and partnering agencies.***

A variety of landowners will be targeted for action implementation. The majority of acres within the core range of Blanding's turtles in Northeast states is non-conserved and privately owned (e.g., MA – 82%, ME 95%, NH – 85%, Compton 2007) and therefore actions on private lands will be much greater than 40% of the overall acres affected. Local land trusts (NH target examples listed in Appendix G) and state NRCS offices will be a key partner in implementing actions on private lands (see letters of support). Other ownerships that will be targeted for actions include: USFWS National Wildlife Refuges (at least 2), Department of Defense (e.g., New Boston Air Force Base), Army Corp of Engineers (at least 2 sites in NH), state parks (primary ownership in PA), state forests, non-profit conservation organizations (e.g., Audubon), and state transportation agencies.

UMass will develop a conservation blueprint including maps, detailed management plans, and additional pertinent resources. These materials will be distributed on a CD to participating state project coordinators, land trusts (NH examples - Appendix G), key landowners, state transportation departments and/or town road agents, and other organizations identified through Job 1.1.

UMass will follow up with key personnel in partner agencies to ensure they have been provided with the necessary information for successful long-term implementation of the conservation plan (e.g. technical assistance materials for landowner, land manager and conservation partners).

## Northeast Blanding's Turtle & Associated SGCN Conservation Initiative

UMass will assist with the development of a website to disseminate project information to conservation partners.

State project coordinators will meet with state transportation departments and state wetlands mitigation programs to ensure that transportation and other implementation projects identified in Blanding's turtle management plans are prioritized for funding and implementation (*see letters of support*).

State project coordinators will also engage state, federal, and non-profit partners to ensure land protection and restoration priorities identified in management plans are prioritized for funding. Specifically, state coordinators will: 1) incorporate priority Blanding's turtle populations into future revisions to state Wildlife Action Plan priority habitat maps, 2) engage regional NRCS offices to implement priority Blanding's turtle actions on private lands, and 3) incorporate Blanding's turtle priority landscapes into statewide funding priorities, and 4) integrate priority actions into other habitat or species-based management plans (e.g., New England Cottontail) where geography is overlapping. Timeline: Winter/Spring 2014

***Action 1.2.2: Host at least one workshop in each state with key land conservation partners; present results, solicit feedback, and initiate next steps toward plan implementation.***

UMass will work with state project coordinators to identify key land conservation partners and plan workshops to disseminate land conservation and management information. Workshops will be hosted by the state project coordinators and UMass will assist in workshop preparation and facilitation for at least one workshop within each state, focused on the high priority sites for which site specific management plans were developed.

Workshop content will include priority land identified for protection and/or restoration of Blanding's turtle and associated SGCN, habitat management needs (e.g., nest site enhancement), transportation upgrades that would improve wildlife and aquatic organism connectivity, and other prioritized actions identified.

Invited participants will include private landowners, managers of partner agencies and organizations that currently own habitat, and strategic parties in a position to acquire (e.g. NH land trusts, Appendix G) and/or restore land (e.g., NRCS). Current Blanding's turtle populations are known to occur within a range of ownership including USFWS refuges, Army Corp of Engineers flood control properties, State Wildlife Management Areas, State parks or forests, non-government organizations (TNC, Audubon), land trusts, and private property.

Additional meetings will also be held with interested landowners, municipalities, agencies, state transportation department staff, NRCS offices, land trusts and other conservation partners to discuss site-specific, detailed conservation priorities and management plans to increase the implementation and effectiveness of the conservation plan. Timeline: Spring 2014

**Federal compliance:** The actions proposed in Project I primarily involve in-house activities such as computer analyses, document writing, and holding meetings. There will be some in-field activities such as ground-truthing maps and site visits with partners. None of these activities

pose any federal compliance issues including National Environmental Policy Act (NEPA), the Endangered Species Act (ESA), or Historic Preservation Act (Section 106).

**E. SUPERVISORY AND TECHNICAL PERSONNEL (Appendix B – personnel bios):**

*Note: Boldface indicates a role contributory to match or recipient of grant funds*

**Michael Marchand**, New Hampshire, NHFG, Wildlife Biologist, State Grant Coordinator

Lori Erb, Massachusetts, MDFW, Turtle Conservation Biologist, State Project Coordinator

Angelena Ross, New York, NYSDEC, State Project Coordinator

Jonathan Mays, Maine, MDIFW, Wildlife Biologist, State Project Coordinator

**Chris Urban**, Pennsylvania, PA Fish and Boat Commission, State Project Coordinator

**Paul Sievert**, University of Massachusetts, Amherst

**Lisabeth Willey**, University of Massachusetts, Amherst

Pete Bowman, NH Natural Heritage Bureau

Anthony Tur, Endangered Species Specialist, USFWS, New England Field Office

Northeast Blanding's Turtle Working Group members (Appendix F) - review and edit materials

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**PROJECT II: GENETIC ANALYSIS OF BLANDING'S TURTLE POPULATIONS**

**A. NEED** (see Overall Need Statement, Page 3):

The genetic structure and relatedness of Blanding's turtle populations within the Northeast is not known. Filling this information gap will have immediate conservation benefits regionally, by helping State wildlife agencies identify unique genetic subpopulations worthy of special conservation attention (thus helping ensure comprehensive protection of Blanding's turtle genetic diversity within the region). Protecting the major genetic variation within the region will lead to better long term survival of the species.

Previous genetic research indicated that there are two genetically distinct groups of Blanding's turtles in North America that are separated by the Appalachian Mountains (Figure 1, Mockford et al. 2005, 2007). Populations in Massachusetts (n=1) and Nova Scotia (n=3) form a distinct eastern group from those in the Midwest, similar to the pattern of regional genetic differentiation found in the wood turtle (*Glyptemys insculpta*) (Rhymer, unpublished data). Recent work in the Midwest portion of the Blanding's turtle range indicate that there is considerable genetic structure within and among populations across Illinois, Iowa, Minnesota and Nebraska representing five genetically distinct groups (Sethuraman, et al. 2010). On a more local scale, Blanding's turtle populations in relatively close proximity have also been shown to be genetically distinct from one another, e.g. Nova Scotia (Mockford et al. 2007). Of interest in the Northeast is the regional genetic structure of populations in New York State. The St. Lawrence populations in northern New York are most similar to those on the Canadian side of the river in Ontario, whereas those populations in central and southern New York are genetically distinct from one another, as well as from the St. Lawrence populations (McClusky et al. 2009, unpublished data). Similar studies for populations in Maine, Massachusetts, New Hampshire and Pennsylvania are essential for informed management and conservation planning for Blanding's turtles in the Northeast.

**B. OBJECTIVE:** To identify and protect genetic variation among the Northeast's Blanding's turtles to improve the survival of the species.

**Job 2.1:** Assess genetic relationships among Blanding's turtle populations within the Northeast region (3 Actions – See Approach).

**C. EXPECTED RESULTS AND BENEFITS:**

The most important conservation measures for species such as Blanding's turtles are the preservation and restoration of habitats that support reproducing populations. Genetic analyses such as those outlined here can elucidate potential management units within and between regions that can be used to help develop local and regional conservation plans. Within and among populations, genetic analyses will provide some insights into the genetic history and patterns of divergence among Blanding's turtle populations across the species' range. In conjunction with landscape-level analyses, the effects of landscape features and anthropogenic barriers or corridors on dispersal patterns can also be inferred, thus helping to inform habitat restoration and preservation priorities. Results from these analyses are necessary to help prioritize populations based on their genetic distinctiveness (Action 1.1.3). Genetic analyses may also indicate appropriate source populations for Blanding's turtle augmentation or reintroduction projects. At least one introduction project has already been initiated in this region (at Assabet National Wildlife Refuge) and others will likely be proposed in future. Also, identification of genetic variability within the region will assist with future law enforcement efforts. Finally, identification of patterns of genetic differentiation and subsequent protection of those areas will benefit other SGCN (e.g., wood turtle) that may share similar genetic patterns.

**D. APPROACH:**

***Action 2.1.1: Assess the population genetic structure of Blanding's turtle populations in the Northeast and incorporate findings into conservation planning and priority area management in Maine, Massachusetts, New Hampshire, New York, and Pennsylvania.***

Maine Department of Inland Fisheries and Wildlife (MDIFW) will develop a contract with the University of Maine, Orono (hereafter UMO), Department of Wildlife Ecology to lead all Actions under Project II. UMO will compare the genetic structure of Blanding's turtle populations across the species' range using mitochondrial DNA sequencing and microsatellite analyses.

Twenty to thirty blood samples will be collected from unrelated individuals in populations throughout the range of the Blanding's turtle. Populations should be chosen to adequately represent the geographic range of the species within each state. A list of proposed sampling sites has been generated, including those from which DNA and/or blood samples are available from previous studies (S. Mockford, pers. comm.). Local experts in Northeast states will assist with additional sample collection (Project II, Section E below) and additional samples will be collected during monitoring efforts by state personnel (Project III, Job 3.2).

A detailed description of population sampling, DNA analysis (DNA isolation, DNA Genotyping and Sequencing, Genotyping - Microsatellite Loci, Mitochondrial DNA Sequencing), and data analysis can be found in Appendix H. Timeline: August 2011-January 2014 (genetic extraction – Year 1-2, analysis & reporting – Year 2-3)

***Action 2.1.2: Examine isolated/outlier Blanding's turtle populations in Pennsylvania and New York to determine origin (naturally occurring or introduced).***

See Acton 2.1.1 details above.

**Action 2.1.3:** *Compare the genetic structure of Blanding's turtle populations within the Northeast region to those in the Midwest region and Canada to provide a spatially explicit assessment of the discrete population groups across the species' range.*

See Acton 2.1.1 details above. Results here will be compared to previously assessed populations in Midwest and Canada.

**Federal Compliance:** The actions proposed in Project II primarily involve in-house activities with laboratory genetic analyses. Many blood samples needed for this research have already been collected in the course of other projects. Some blood collection will be done by partner States under State permit guidelines and policy (Blanding's turtles are State- but not Federally-listed). No mortality is expected using standard techniques nor will any federally listed species be affected. Further, this study has been designed in partnership with the New England Field Office of the USFWS Endangered Species Division. None of these activities pose any federal compliance issues including National Environmental Policy Act (NEPA), the Endangered Species Act (ESA), or Historic Preservation Act (Section 106).

**E. SUPERVISORY AND TECHNICAL PERSONNEL (Appendix B – personnel bios):**

*Note: Boldface indicates a role contributory to match or recipient of grant funds*

**Michael Marchand**, New Hampshire, NHFG, Wildlife Biologist, State Grant Coordinator  
Lori Erb, Massachusetts, MDFW, Turtle Conservation Biologist, State Project Coordinator  
Angelena Ross, New York, NYSDEC, State Project Coordinator

**Jonathan Mays**, Maine, MDIFW, Wildlife Biologist, State Project Coordinator

**Chris Urban**, Pennsylvania, PA Fish and Boat Commission, State Project Coordinator

**Dr. Judith M. Rhymer**, University of Maine Orono, Associate Professor of Wildlife Ecology  
Glenn Johnson, State University New York Potsdam. Assistance with sample collection.

Anthony Tur, Endangered Species Specialist, USFWS, New England Field Office

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**PROJECT III: STANDARDIZED MONITORING PROTOCOLS FOR BLANDING'S TURTLES ACROSS THE NORTHEAST REGION**

**A. NEED** (see Overall Need Statement, Page 3):

Developing a standardized monitoring protocol for Blanding's turtle was identified as one of the highest priority action items by the Northeast Blanding's turtle working group (Compton 2007). In previous years, states' monitoring efforts and protocols have varied and monitoring protocols have not been coordinated. As a result, comparing monitoring results among states has been difficult and assessing long-term trends within the region is currently not possible. Monitoring is also important for evaluating the success of management activities (Campbell et al. 2002) and the overall conservation plan.

**B. OBJECTIVE:** To develop and implement monitoring protocols to detect status and trends in Blanding's turtle populations and to inform conservation of habitats critical to their survival.

**Job 3.1:** Develop standardized monitoring protocols for Blanding's turtle in the Northeast. (2 Actions – See Approach).

**Job 3.2:** Implement standardized monitoring protocols. (4 Actions – See Approach).

**C. EXPECTED RESULTS AND BENEFITS:**

The results from the initial sampling conducted in 2012 and 2013 will allow an evaluation of sites with little previous data and baseline comparison of select populations across the region. These data will be used to further validate the conservation priorities (Action 1.1.3), inform site specific management plans (Action 1.1.5), and ground truth habitat suitability and connectivity models (e.g. Compton et al. 2007). In addition, animals captured as part of this project will, as appropriate, provide DNA samples for the genetic analysis in Project II. The subsequent long-term sampling will allow the direct assessment of population trends and evaluation of management success.

In concert, this information will be used to develop and implement appropriate long-term management strategies and more efficiently assess current and future habitat protection priorities in light of changing climate and land-use patterns. Because Blanding's turtles are an umbrella species for the protection of many others, monitoring the health (status and trends) of these populations will be a useful indicator for assessing the status of other SGCN, critical habitats that the species depends (e.g., marshes, vernal pools, shrub wetlands, disturbed areas and barrens, forests), and overall functional landscape integrity.

**D. APPROACH:**

**Job 3.1:** Develop standardized monitoring protocols for Northeast.

***Action 3.1.1: Develop standardized monitoring protocols for rapid site assessments.***

Using sampling protocols from related species (e.g. Heyer et al., 1994, USFWS 2006; USFWS 2009), Blanding's turtle protocols developed locally (Dutchess County, NY: Kiviat, personal communication), monitoring protocol guidance documents (e.g. Oakley et al. 2003; Atkinson et al. 2004, Graeter et al. 2008), and recent evaluations of monitoring protocols and sampling procedures (e.g. Campbell et al. 2002; Kery 2002; Jackson et al. 2008) as resources, UMass, under contract from NHFG, will develop a proposed methodology for standardized rapid assessment of Blanding's turtle sites throughout the Northeast states. The standardized methodology will allow a rapid assessment of habitat suitability at sites throughout the Northeast and will be used to inform conservation and management decisions in Job 1.1. The proposed protocol will be reviewed by state project coordinators and the Blanding's Turtle Working Group, and submitted as a deliverable to all Northeast states and interested conservation partners.  
Timeline: July 2011 - Feb 2012

***Action 3.1.2: Develop standardized monitoring protocols for long-term reference sites.***

Similarly, UMass will use available literature, expert opinion, and information from previous sampling efforts of Blanding's turtle and related species to develop a long-term, standardized sampling plan for reference sites throughout the Northeast. The protocol will be designed to be implemented at intervals over time and allow evaluation of long-term trends at select populations across the Northeast. The methodology will be reviewed by state project coordinators and the Blanding's turtle working group. Reference sites will be selected based on previous data available, representation throughout the region and priority ranks from Action 1.1.3. UMass will work with biologists currently conducting research at study sites throughout the Northeast to

standardize ongoing sampling at those sites. Additional long-term reference sites may be added where information is lacking. The monitoring protocol will be submitted as a deliverable to all Northeast states and interested conservation partners. Timeline: July 2011 - Feb 2012

**Job 3.2:** Implement standardized monitoring protocols.

***Action 3.2.1: Select sites for rapid assessment and long-term reference monitoring***

UMass will work with state project coordinators and the Blanding's turtle working group to identify study sites with long-term or extensive previous sampling information. Using the available data, UMass will determine the feasibility of estimating population sizes given the data available and potential to collect new data in the future. These data, in conjunction with priority rankings from Action 1.1.3 will be used to select rapid assessment and long-term reference sites throughout the Northeast. Timeline: Jan - Feb 2012

***Action 3.2.2: Implement rapid assessment protocols***

Each state will contract, delegate personnel, or use volunteers to employ the rapid assessment protocol at selected sites during the 2012 and 2013 field seasons. Working in conjunction with state project coordinators, UMass will travel to each state at least once to meet with field staff to ensure consistent implementation of protocols throughout the Northeast and will assist with surveying sites, in cooperation with State Project Coordinators, to evaluate the effectiveness of these protocols. Timeline: April 2012 - Oct 2013

***Action 3.2.3: Initiate the first year of long-term, reference site monitoring***

The long-term reference site sampling methodology will be implemented during the 2012 and 2013 field seasons. Each state will contract, delegate personnel, or use volunteers to initiate long-term standardized sampling protocols at the selected reference sites. Working in conjunction with state project coordinators, UMass will travel to each state at least once to meet with field staff to ensure consistent implementation of protocols throughout the Northeast. UMass will also intensively study two sites to evaluate the effectiveness of these protocols (locations to be determined by consulting with State Project Coordinators).

Some surveys have occurred in MA previously and population locations are better known than in other states. However, monitoring these known populations in MA and the success of actions taken previously is a priority. Massachusetts Fish & Wildlife will use a combination of contracts and staff to monitor priority sites (Appendix A). Bryan Windmiller will be contracted to assess Blanding's turtle populations in the Great Meadows National Wildlife Refuge, a site where he has extensive experience. Because some actions (e.g., nest site protection, headstarting) have already been implemented at Great Meadows NWR, monitoring will generate information about the status of the population, in addition to an assessment of action success. Parker River Clean Water Association (PRCWA) will monitor Blanding's turtles in the towns of Georgetown and Groveton, MA. PRCWA has initiated actions with these towns but needs funding to monitor the success of their actions and the status of these Blanding's turtle populations. A third site in MA, Oxbow NWR, has been actively managed for years (nest site creation, nest protection, turtle marking) and will likely be a target for monitoring in Massachusetts in order to further assess the success of these actions. Similarly, in New York, SUNY will conduct monitoring. Timeline: April 2012 - Oct 2013

**Action 3.2.4: Apply sampling results to validate conservation priorities established in Action 1.1.3 and inform site specific management plans (Action 1.1.5).**

Results from the 2012 and 2013 sampling efforts will be used to validate the priorities designated in Action 1.1.3 as well as recent habitat and connectivity models (e.g. Compton et al. 2007). Results at high priority sites will also be used to inform the site specific management plans developed in Action 1.1.5 and the overall conservation plan (Action 1.1.6). Timeline: Fall 2013

**Federal Compliance:** The actions proposed in Project III first involve in-house activities such as literature review, document writing, and holding meetings as monitoring protocols are developed. Methodology and proposed implementation sites will be reviewed by State Endangered Species staff for presence/affect of federally listed species but no compliance issues are expected (including NEPA and Section 106).

**E. SUPERVISORY AND TECHNICAL PERSONNEL (Appendix B – personnel bios):**

*Note: Boldface indicates a role contributory to match or recipient of grant funds*

**Michael Marchand**, New Hampshire, NHFG, Wildlife Biologist, State Grant Coordinator  
**Lori Erb**, Massachusetts, MDFW, Turtle Conservation Biologist, State Project Coordinator  
**Angelena Ross**, New York, NYSDEC, State Project Coordinator  
**Jonathan Mays**, Maine, MDIFW, Wildlife Biologist, State Project Coordinator  
**Chris Urban**, Pennsylvania, PA Fish and Boat Commission, State Project Coordinator  
**Paul Sievert**, University of Massachusetts, Amherst  
**Lisabeth Willey**, University of Massachusetts, Amherst  
**Glenn Johnson**, State University of New York Potsdam (SUNY)  
**Bryan Windmiller**, Herpetological Consultant  
**Mark Grgurovic**, Parker River Clean Water Association  
Anthony Tur, Endangered Species Specialist, USFWS, New England Field Office

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**PROJECT IV: PRIORITY ACTION IMPLEMENTATION**

**A. NEED** (see Overall Need Statement, Page 3):

Blanding's turtle populations are extremely vulnerable to increased mortality associated with roads due to the species' unique life history traits (e.g., > 15 years to maturity) and extensive overland movements. Much of the Blanding's turtle range in the Northeast overlaps with areas of high human population and road densities (Figures 2, 3, 4). Therefore, actions to reduce the negative effects of certain roads are critical to maintaining viable landscapes of Blanding's turtles. Because of Blanding's turtles' extreme vulnerability relative to other wildlife, the application and evaluation of the actions in this project will benefit other SCGN, especially other freshwater turtles. Evaluation of these actions will also improve their application throughout their range.

**B. OBJECTIVE:** To increase the viability of Blanding's turtle populations and associated SGCN through the creation and/or enhancement of at least 5 turtle nesting areas and installation of turtle X-ing signs at 5 or more sites in the Northeast.

**Job 4.1:** Initiate on-the-ground implementation of priority actions to increase viability of Blanding's turtle populations and associated SGCN. (2 Actions – See Approach).

**C. EXPECTED RESULTS AND BENEFITS:**

Through this grant, we will be implementing 4 actions to improve viability of populations by reducing road mortality: 1) identifying large connected landscapes (i.e., roadless) for protection and then engaging key partners to implement priorities (Project I, Job 2), 2) identifying priority upgrades to transportation systems (e.g., larger culverts, fences) and engaging state transportation agencies to implement (Project I, Job 1 & 2), 3) create and/or enhance nesting habitat within priority landscapes to reduce the need for nesting females to cross roadways and 4) implement a turtle X-ing sign program within priority landscapes. We expect that the combination of these 4 implementation actions will reduce turtle mortality, increasing the viability of priority landscapes for Blanding's turtles and other SGCN (Appendix D, e.g., spotted turtle, wood turtle, snapping turtle, ribbon snake; enhanced aquatic passage: banded sunfish, bridled shiner, redbreast pickerel).

**D. APPROACH:**

**Job 4.1:** Initiate on-the-ground implementation of priority actions to increase viability of Blanding's turtle populations and associated SGCN.

***Action 4.1.1: Create and/or enhance nesting habitat for Blanding's turtles and other SGCN in at least 1 site per state.***

Creating and enhancing nesting habitat serves two important purposes: 1) it provides critical habitat where nesting habitat is otherwise lacking or insufficient and 2) reduces the need for nesting turtles to cross roads in search of suitable nesting habitat, reducing the risk of mortality. Turtles, including Blanding's, wood, spotted, and snapping turtles (all SGCN in at least 1 state, Appendix D), are known to use nesting areas recently created by human activities (Beaudry et al. 2010a). Management plans developed under Project I will identify priority actions including the need to create and/or enhance nesting habitat for SGCN turtles. Nesting habitat enhancement and creation has been successfully completed elsewhere and these areas would be used as a model for future habitat management (e.g., Oxbow National Wildlife Refuge, MA; Coles Creek State Park, NY; Dowling et al. 2010). State project leaders will work with other state habitat management staff, NRCS offices, and private contractors to conduct site work in at least one area per state. Actions will include opening canopy in or near nesting areas (i.e., felling trees and removal of shrubs), scraping and/or tilling ground to expose soil, and/or creating low, sandy berms. Scraping soil would most likely involve dragging a heavy blade with a tractor. Tilling would likely involve the use of a rototiller. In the long-term, turtle nesting sites created or enhanced through this grant will be monitored for turtle nesting using wildlife agencies' staff and volunteers. Those projects identified under Project I but not completed during this grant period (expiring June 2014) would be priorities for future work under NRCS funding (private landowners) and existing state habitat management programs. Timeline: Manage habitat by May 2014

***Action 4.1.2: Implement a turtle X-ing sign program in each state & install signs in at least 5 areas.***

We will develop a regional approach for prioritizing road stretches where Blanding's turtle and other SGCN (e.g., spotted turtles, wood turtles) risk is high and work with state transportation agencies to place signs in high priority locations. Turtle X-ing sign programs for roadways have

been initiated in Maine and northern NY and these established programs will be used as a model for the region (Johnson and Crockett 2009, Beaudry et al., 2010b; Figure 5). Signs will be placed in at least one area per state (likely more when applicable) and the process will be established by work under this grant so additional sign placement will be easily implemented by states after the grant is completed. Requested funds for this Action vary among states based on the states' anticipated level of opportunity and need. We plan to have signs activated only during critical turtle X-ing periods (generally May – July) so that motorists are more likely to acknowledge the presence of signs. MIFWD has used a hinged sign that allows the sign/pole to remain in place (reducing labor associated with placing and removing signs) but the sign is folded closed during non-sensitive periods (Figure 5b). A suitable contractor to create the signs has been identified through previous work by the MIFWD (White Sign, Inc., Old Town ME); however, we will continue to evaluate other potential options that reduce costs. Turtle mortalities occurring within priority landscapes will be identified during monitoring (Project III) and management plan development (Project I, Job 1.1). Road fatalities of SGCN turtles occurring in road segments where signs are placed will be recorded to evaluate effectiveness of signs long-term (beyond the time period of this grant). Monitoring these road stretches will use a combination of wildlife agencies' staff, Department of transportations' staff, and volunteers. Timeline: Install signs by Spring 2014

**Federal Compliance:** State Natural Heritage and historical preservation offices in each state and U.S. Fish & Wildlife Service Ecological Services offices will be engaged prior to any habitat management activities being implemented. U.S. Fish & Wildlife Service Ecological Services (Concord NH) was engaged and supportive of this grant (Appendix A). Therefore, we will ensure that these activities do not pose any federal compliance issues including National Environmental Policy Act (NEPA), the Endangered Species Act (ESA), or Historic Preservation Act (Section 106).

**E. SUPERVISORY AND TECHNICAL PERSONNEL (Appendix B – personnel bios):**

*Note: Boldface indicates a role contributory to match or recipient of grant funds*

**Michael Marchand**, New Hampshire, NHFG, Wildlife Biologist, State Grant Coordinator  
**Lori Erb**, Massachusetts, MDFW, Turtle Conservation Biologist, State Project Coordinator  
Angelena Ross, New York, NYSDEC, State Project Coordinator  
**Glenn Johnson**, State University of New York Potsdam (SUNY)  
**Jonathan Mays**, Maine, MDIFW, Wildlife Biologist, State Project Coordinator  
**Chris Urban**, Pennsylvania, PA Fish and Boat Commission, State Project Coordinator

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**PROJECT V: GRANT COORDINATION AND ADMINISTRATION**

**A. NEED** (see Overall Need Statement, Page 3):

Project V is necessary to coordinate activities among the various partners and participating states, track performance, and prepare reports.

**B. OBJECTIVE:** To coordinate conservation efforts for Blanding's turtles and associated SGCN in the Northeast, track the performance of actions for future adaptation and report successes.

**Job 5.1:** Coordination and Administration (3 Actions – See Approach).

**C. EXPECTED RESULTS AND BENEFITS:**

The activities of participating agencies will be coordinated with respect to conservation of Blanding's turtles. Implementation of grant objectives will be monitored to ensure timely engagement by partners. The quality of grant deliverables and implemented actions will be controlled. All grant reporting requirements will be timely and organized in a consistent manner and the administrative burden of participating states will be minimized.

**D. APPROACH:**

**Job 5.1:** Coordination and Administration

**Action 5.1.1: Coordinate and Administer the Initiative**

Overall grant coordination will be conducted by the NHFG. Coordination and Administration will consist of communication with state project coordinators and contractors to ensure that Projects are on schedule and address any overall Grant administration. Communication will consist of conference calls, emails, and traveling to and participating in several Blanding's Turtle working group meetings. State Project Coordinators will work with their agency fiscal and federal aid staff to track expenses and match for activities contracted or performed in their given state. Timeline: June 2011-June 2014

**Action 5.1.2: Evaluate performance of grant objectives**

Each grant objective and action has a specific metric for measuring and evaluating performance (Appendix I). These metrics will be evaluated as Projects proceed so that data can be incorporated into adaptive management decisions. The NH Project Coordinator will communicate with all project participants to evaluate performance and report results to all grant participants. Action results are explicitly coordinated through Project approaches and overall timeline. Timeline: Dec 2011 - June 2014

**Action 5.1.3: Report actions accomplished through grant.**

A summary report of all actions completed, performance metrics evaluated, and products produced under Projects I, II, and III will be submitted at the end of the Grant period. Each State Project Coordinator will assist with preparing the final report and any required interim reports. Timeline: Jan 2014 - June 2014

Federal Compliance: The actions proposed in Project IV primarily involve in-house activities such as conference calls, data and report sharing, document writing, and holding meetings. None of these activities pose any federal compliance issues including National Environmental Policy Act (NEPA), the Endangered Species Act (ESA), or Historic Preservation Act (Section 106).

**E. SUPERVISORY AND TECHNICAL PERSONNEL (Appendix B – personnel bios):**

*Note: **Boldface** indicates a role contributory to match or recipient of grant funds*

**Michael Marchand**, New Hampshire, NHFG, Wildlife Biologist, State Grant Coordinator

**John Kanter**, New Hampshire, NHFG, Nongame & Endangered Wildlife Program Coordinator

Lori Erb, Massachusetts, MDFW, Turtle Conservation Biologist, State Project Coordinator

Angelena Ross, New York, NYSDEC, State Project Coordinator

Jonathan Mays, Maine, MDIFW, Wildlife Biologist, State Project Coordinator

Chris Urban, Pennsylvania, PA Fish and Boat Commission, State Project Coordinator

**RANKING CRITERIA**

**Detailed Ranking Criteria Information can be seen on Page 21.**

**1. ORGANIZATIONAL CAPACITY RANKING CRITERIA**

<b>Scoring Criteria</b>	<b>Section/Page of Proposal</b>
1. coordination	Pg 18-19 –Project V; Project I-IV approach
2. staff/contractors	Projects I-V: Section E, Appendix B-bios
3. federal compliance	Projects I-V details; pg 43 fed compliance summary
4. fed compliance timing	Projects I-V, Appendix A (USFWS letter); Pg 43
5. non-fed match	a. Pg 32-40. Budget Tables (30% overall match) b. Pg 32-40. Appendix A (letters) (85% match from partners)

**2. TECHNICAL RANKING CRITERIA**

<b>Scoring Criteria</b>	<b>Section/Page of Proposal</b>
<b><u>NEED</u></b>	
1. need in SWAP	Pg 3-5 (Overall Need); Appendices A (letters) & C (WAP references)
2. partner actions	Appendix A (letters); Projects I-V: Section E [8 state agency partners (wildlife & DOT) & 5 other non-state funded partners]
3. benefit SGCN	Projects I-V, Appendix D
4. SGCN locations	Fig 1-4; Appendix D (SGCN list & justification)
<b><u>OBJECTIVES</u></b>	
1. objectives	Projects I-V, Appendix I (performance metrics), J (timeline)
<b><u>EXPECTED RESULTS and BENEFITS</u></b>	
1. short-term benefits	Projects I-V: sections C,D, Appendix I (short-term performance metrics)
2. long-term benefits	Projects I-V: sections C,D Appendix I (long-term performance metrics)
<b><u>APPROACH</u></b>	
1. actions	Projects I-V, sections D & E; Appendix B (credentials); J (timeline)
2. partners	Appendix A (letters), Projects I-V: section E; Budget (pg. 32-40)
3. private lands	Need (pg 3-5); Action 1.2.1 (pg 9); > 40% affected area
4. other lands	Projects I-V: actions on variety of ownerships (e.g., PA – actions on State Parks)
5. monitoring	Project III & V; Appendix I (performance metrics, J (timeline)
6. performance	Projects V, Appendix I, J

**RANKING CRITERIA - DETAILED**

**1. ORGANIZATIONAL CAPACITY RANKING CRITERIA**

Scoring Criteria	Section/Page of Proposal	Summary Notes
1. Grant application describes how applicant will coordinate all aspects of work including use of common procedures, data sharing, monitoring, and reporting with partners (0-3 pts).	Pg 18-19 –Project V; Project I-IV approach	The projects proposed are already coordinated through an active working group, and are further described in the Approach of each of projects, with Project V focusing on grant coordination. Project III discusses monitoring performance of actions.
2. Grant application identifies dedicated staff or contractors readily available to implement work (0-3 pts).	Each Project (I-V) lists this information under Section E Supervisory and Technical Personnel. Appendix B provides biographical information on primary staff involved. Appendix A includes letters of commitment.	Staff and contractors have been identified and are ready to implement all actions identified in grant. Some aspects of this proposal were previously planned but inadequately funded (genetics analyses) and most actions increase the level of existing effort (multi-state coordination, monitoring, technical assistance to landowners)
3. Grant application describes specific Federal compliance issues which need to be addressed and what the State has done to address them to date (0-3 pts).	Federal Compliance – Pg 43. Each Project (I-V) provides this information at the end of the Approach section (Federal Compliance). Appendix A – Support letter from USFWS and letter from NH Natural Heritage Bureau. Standard Form 424-B included.	Each Project’s Approach section addresses compliance with NEPA, ESA, and Historic Preservation. We don’t anticipate any compliance issues and will work with state and federal agencies when on-the ground work (Project IV) is planned in each state.
4. Grant application describes how Federal compliance requirements can be addressed in a reasonable time and provides an estimated timeline (0-3 pts).	Federal Compliance – Pg 43. Each Project (I-V) provides this information at the end of the Approach section (Federal Compliance). Appendix A – Support letter from USFWS and letter from NH Natural Heritage Bureau. Standard Form 424-B included.	Compliance documentation is expected to be straightforward because the actions proposed have been reviewed by USFWS staff; actions are not likely to adversely affect the human environment (NEPA), endangered species (ESA), or historic properties (Section 106). States will consult with USFWS, heritage and historic offices prior to initiating

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		Project IV (nest habitat creation)
5. Non-federal match identified in the Budget and AFA (SF-424) is at least 25% and comes from one or more partners that is well documented through a commitment letter (0-7 pts).	Overall Budget Table and detailed state/partner budgets are provided (Page 32-40) and letters of commitment are provided in Appendix A.	a. Overall. Ten funded partners are identified in grant. Total match is 30%. Partner contribution ranges from 25 – 38%. Match identified in Budget and Letters of Commitment. b. Source; 85% of Overall Project Match comes from Partners (not NHFG). Letters of Commitment included (Appendix A)

**2. TECHNICAL RANKING CRITERIA**

Scoring Criteria	Section/Page of Proposal	Summary Notes
<u>NEED</u>		
1. Grant application clearly describes needs identified in each participating States' WAPs (0-3 pts).	Appendix C; Overall Need Statement (Pg 3-5); Project I-V (Need Statements). Appendix A –letters of support	All five participating states identified conservation needs for this species in their WAPs. Page/sections are identified in Overall Need Statement (Pg 3-5) and detailed in Appendix C. States identify WAP in letters of commitment (Appendix A)
2. Grant application implements priority conservation actions identified in participating States' WAPs (up to 15 pts).	Appendix A (letters) Appendix C (WAP references); Overall Need Statement (Pg 3-5) Project I-IV (Need Statements and Section E)	All five participating states identified priority conservation actions for this species in their WAPs. In addition to NHFG, wildlife agencies (n=4) and department of transportation agencies (n=4) will be actively participating in grant (not including 5 additional non-state partners)
3. Grant application directly targets improving status of SGCN as described in States' WAPs (0-5 pts).	Appendix D (SGCN benefitted); Project I-V Approach and Expected Results and Benefits	At least 30 SGCN (7 birds, 4 reptiles, 4 amphibians, 1 mammal, 3 fish, and 11 invertebrates) will benefit from grant actions. Appendix D details justification for including SGCN. Project Approaches and Expected Needs & Benefit sections identify how SGCN benefitted.
4. Grant application describes critical geographic locations to be improved for SGCN,	Figs. 1-4 identify the geographic area of study. Project I addresses this	Critical habitats identified in Appendix E and at least 30 SGCN have been identified in State

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<p>why they are critical, and is a substantial effort to improve these areas (0-5 pts).</p>	<p>criteria through step-by-step Actions in Job 1.1 and 1.2. SGCN benefitted (Appendix D). Habitat types for SGCN (as identified by State WAPs) to be included in conservation planning are listed in Appendix E.</p>	<p>WAPs as co-occurring with Blanding's turtles &amp; benefitting from proposed actions; the landscape planning project will identify geographic areas to parcel level for specified conservation actions. Blanding's turtle range overlaps with high SGCN diversity. Figures 2-4 illustrate impacts of roads and known populations of Blanding's turtles where actions proposed.</p>
<p><b><u>OBJECTIVES</u></b></p>		
<p>1. Objectives are distinct, obtainable, quantifiable, and verifiable (0-5 pts).</p>	<p>Each Project (I-V) lists this information under Section B Objectives. The Approach and associated Actions identifies how Objectives will be achieved &amp; assessed. Further performance measures for each objective and all actions are found in Appendix I. A timeline for proposed activities is identified in Approach and Appendix J.</p>	<p>Each Project has an Objective and multiple Actions. Actions and associated performance metrics (Appendix I) are explicitly developed to assess the Objectives. A timeline for activities is detailed in each Action Approach and in Appendix J. Project III will allow for monitoring of Objectives long-term beyond the scope of the grant.</p>
<p><b><u>EXPECTED RESULTS and BENEFITS</u></b></p>		
<p>1. Grant application describes short-term benefits for SGCN and/or habitats within ten-years, and makes clear connections between proposed actions and expected benefits (0-5 pts)</p>	<p>Each Project (I-V) lists this information under Expected Results &amp; Benefits (Section C) and Approach (Section D). Appendix I details short-term performance metrics for each Action (multiple per Objective).</p>	<p>Comprehensive conservation planning materials will be developed and disseminated to target land acquisition, restoration, and habitat management of priority sites. Blanding's turtle habitat needs overlaps with that of at least 30 SGCN. Land acquisition and management efforts will begin as information is generated (3-year grant period) and continue until priority conservation actions are effectively implemented. SGCN morality on roadways will be</p>

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		reduced by creating nesting habitat in at least 5 sites and turtle Xing signs in each state. State transportation agencies and NRCS offices will be engaged to implement actions.
2. Grant application describes long-term benefits beyond ten years and makes clear connections between proposed actions and expected benefits (0-5 pts)	Each Project (I-V) lists this information under Expected Results & Benefits (Section C) and Approach (Section D). Appendix I details short-term performance metrics for each Action (multiple per Objective).	Long-term monitoring will assess Blanding's turtle populations (Project III, Job 3.2.3). Healthy Blanding's turtle populations will indicate a healthy landscape benefiting the viability of a large number of SGCN and priority habitats. Land acquisition and restoration resulting from information developed and disseminated via this grant will benefit many species and habitats long-term. Changes in population status and trends will be monitored to assess the effectiveness of actions long-term.
<b><u>APPROACH</u></b>		
1. Grant application describes specific types of actions that the States and partners will conduct and provides adequate detail to understand how they will implement the actions (0-6 pts).	Each Project (I-V) lists this information under Section D Approach. The Approach flows directly from the listed objectives. Specific partners are highlighted under Section E and performance measures for each objective are found in Appendix I. Project Leader credentials are listed in Appendix B. Schedule of work is listed in Approach and Appendix J.	Details are provided for 22 separate Actions This proposal's 5 projects each has an Approach section (with references to supporting Appendices) that clearly describes methods/procedures used in the actions, who will implement the actions, what the credentials and training of key project personnel are, all permits needed to undertake the work, and a schedule of work.
2. Projects/actions involve at least one partner from: another State agency, another State, private landowners, nongovernmental organizations, non-USFWS Federal agency at levels ranging from simple	Partner contributions are identified for actions in each Project (I-V) under Sections D (Approach) & E (Personnel). Budget details for partners are provided on Pg 32-40. Partner credentials are identified on	Ten funded partners are identified in this grant including 5 states, 3 Universities, and 2 private consultants. Collectively, these partners (non-NHFG) make up 86% of the total costs (UMass makes up 37% of total costs). Each partner has a specific

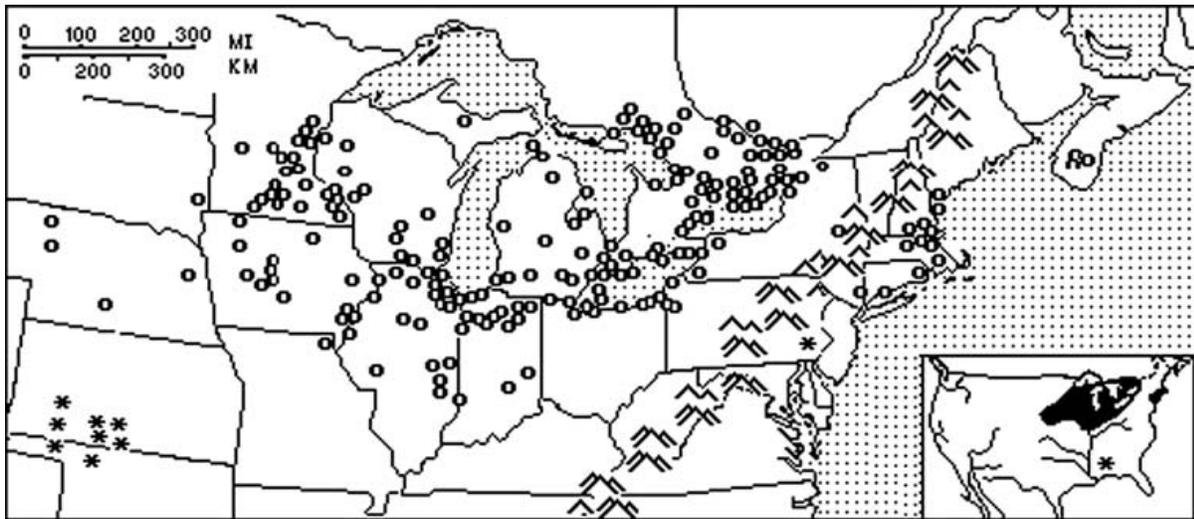
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<p>involvement to a complex and dedicated role committing over 25% of the total cost with staff committed to providing a primary role in completing the proposed actions.</p>	<p>Appendix B. Appendix A includes letters of commitment from partners.</p>	<p>dedicated role within the overall grant. Staff among each partner agency/organization have committed staff time to assist with grant objectives.</p>
<p>3. Projects/actions are accomplished, in part, on private lands (0-5 pts).</p>	<p>Overall Need Statement describes percentage of Blanding's turtle range in conservation. Project I, Section C, describes the role of private landowners. Project I (action 1.2.1, Pg 9). Approach describes the process for identifying lands (private and public) for which conservation plans will be developed and implemented.</p>	<p>The landscape mapping part of this project will determine the percentage and acreage of private lands that will be engaged in the implementation of the conservation planning part of this proposal. Given that private lands within the range of Blanding's turtles are greater than 40% of each Northeast State, private property is likely to be critical during implementation. Proposal State partners are already actively engaged in immediate conservation actions on some of these lands for this species-this grant will allow for expanded and better informed actions. NRCS will assist with implementation on private lands (Appendix A)</p>
<p>4. Project actions are conducted on lands owned or managed by other State or local agencies, non-USFWS Federal lands, or Tribes (0-4 pts).</p>	<p>Project I describes the process for identifying lands (private and public) for which conservation plans will be developed and implemented. Project IV will occur on State Parks land in PA.</p>	<p>The landscape mapping part of this project will determine priority lands for conservation actions. Proposal State partners are already actively engaged in immediate conservation actions on these lands for this species-this grant will allow for expanded and better informed actions. Current Blanding's turtle populations are known to occur within a range of ownership including USFWS refuges, Army Corp of Engineers flood control properties, State Wildlife Management Areas, State parks or forests, non-government organizations (TNC, Audubon), land trusts, and private property. Some of these lands are</p>

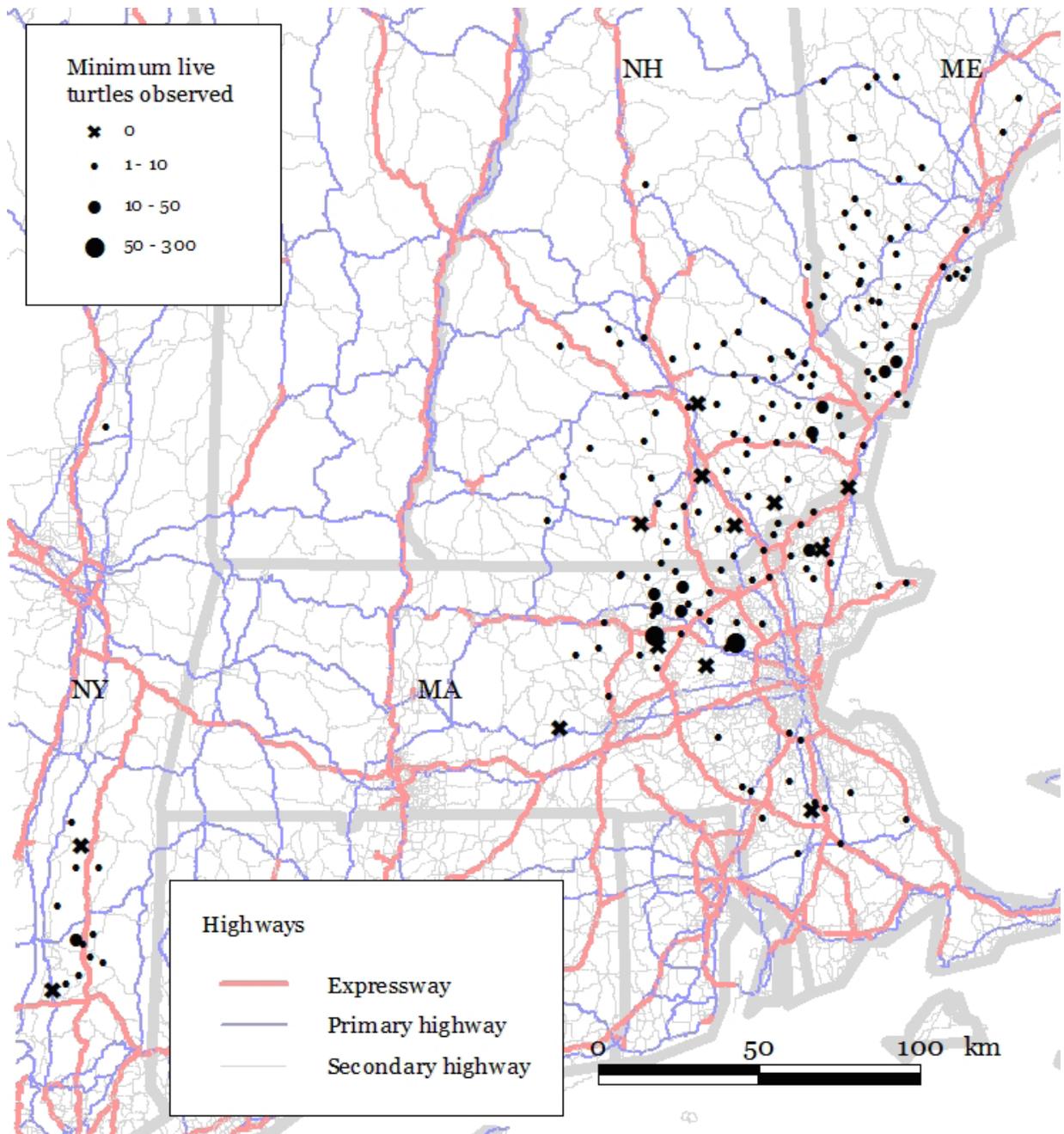
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		likely to be incorporated into management plans developed under Project I. The known population of Blanding's turtle in PA is primarily on a State Park so these lands will be involved in actions.
5. Grant application describes a monitoring plan that each participating State or partner will use to ensure SGCN and habitats are adequately monitored and evaluated to determine the effectiveness of conservation actions and provide for adaptive management (0-5 pts).	Project III describes development of short and long term protocols for species/habitat monitoring while Project V and Appendix I address project action monitoring (performance metrics). Appendix J identifies timelines (also in Project approaches). Monitoring (Project III) will establish baseline conditions for critical geographical areas and identify methodology. Projects I-V, Section E identifies personnel involved.	Project III of the proposal focuses specifically on monitoring, and clearly identifies an approach for establishing baseline conditions, developing monitoring procedures and protocols, and Project V addresses performance measures, roles and responsibilities of each partner, and a timeframe for monitoring activities. Appendices provide supporting details (Appendix B – personnel roles; I- performance metrics; J – timeline).
6. Grant application describes how performance reports will clearly document monitoring results and how they will be used for adaptive management for improving future efforts (0-4 pts).	Project V and Appendix I address project action monitoring.	Project V (with referenced Appendices) discusses performance measures relative for monitoring progress toward meeting the objectives and discusses a process that will used to incorporate data into adaptive management decisions. Workshops and targeted technical assistance under Project I, Job 1.2 will allow for exchange of ideas with private landowners, land managers, and funders to facilitate adaptive management. Appendix I identifies short and long-term performance metrics.

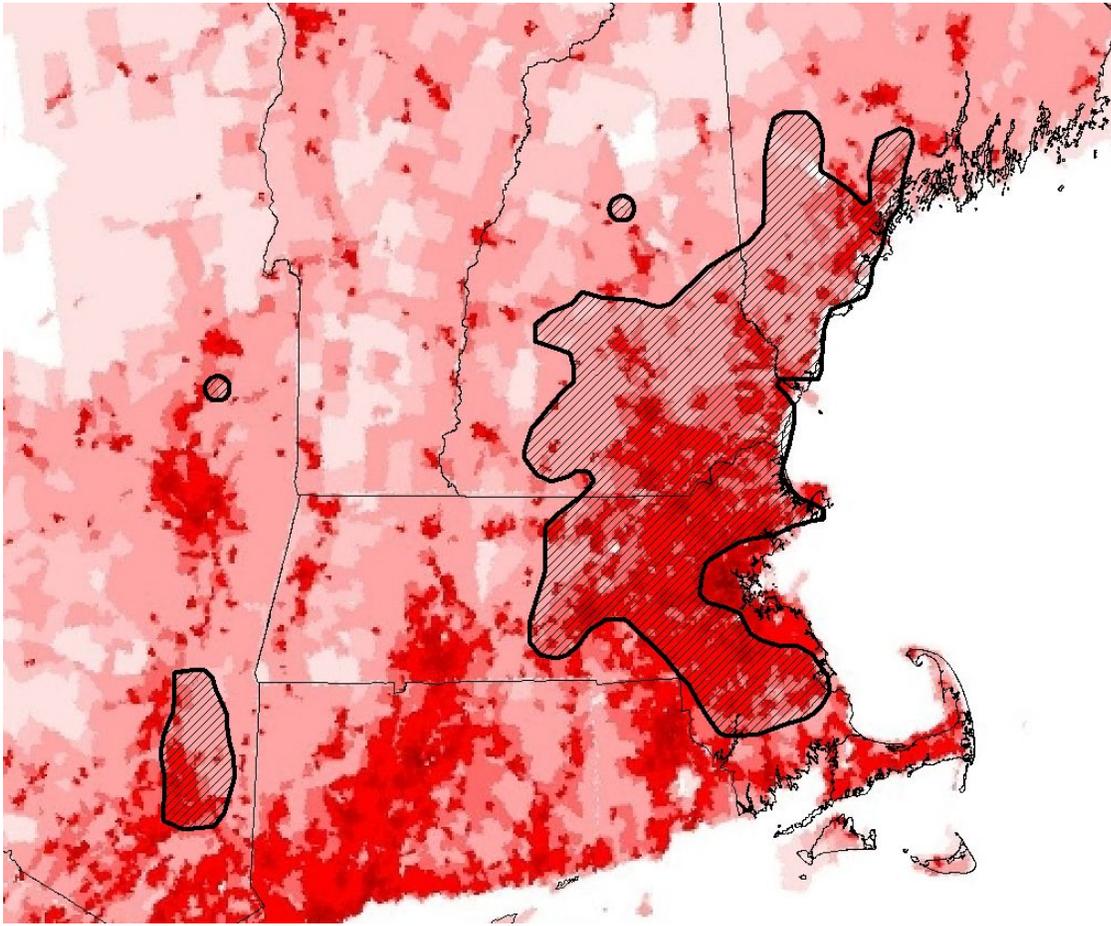
Northeast Blanding's Turtle & Associated SGCN Conservation Initiative



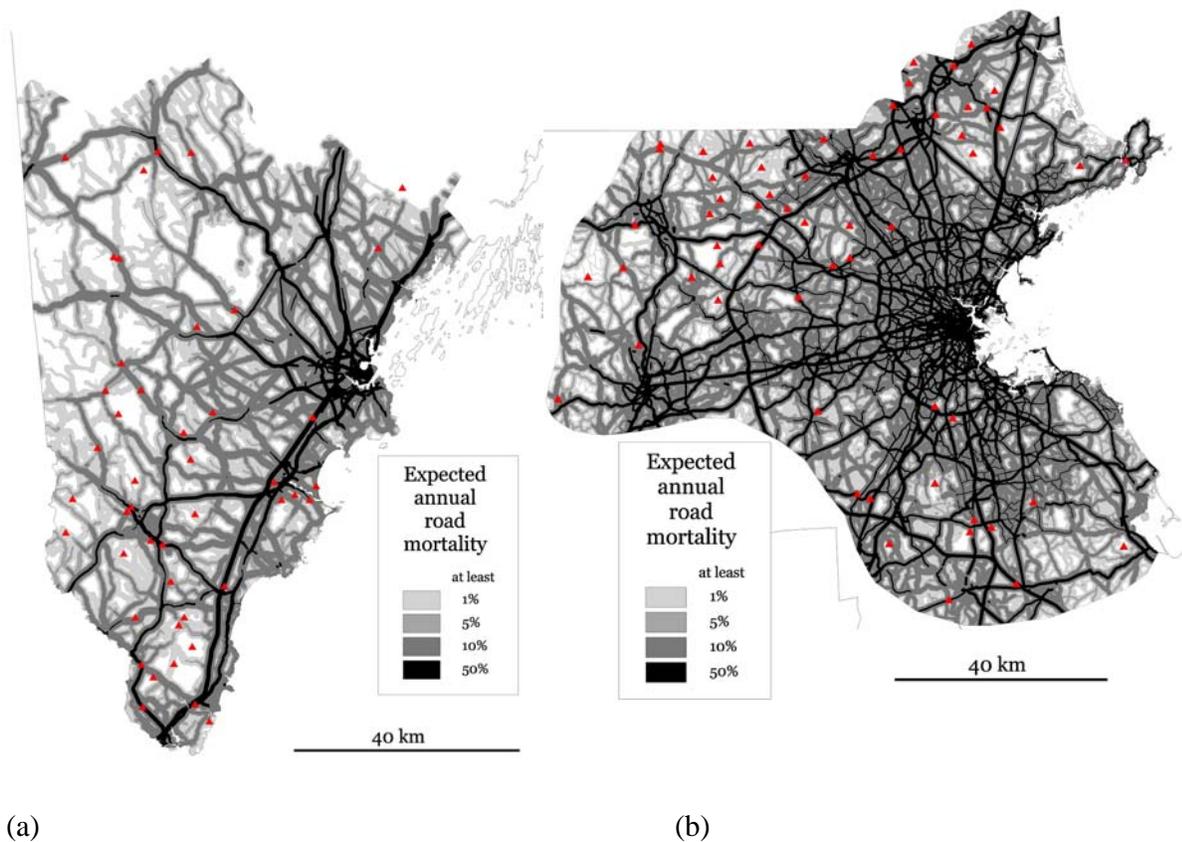
**Figure 1:** Distribution of Blanding's turtle – extant populations indicated by open circles, fossils indicated by stars (from Mockford et al. 2007).



**Figure 2.** Blanding's turtle Element Occurrences (EO) and major roads (from Compton 2007). Dot size indicates the number of Blanding's turtles documented at a site.



**Figure 3.** Eastern Blanding's turtles and human population density (darker colors represent higher human population densities; darkest color represents  $> 10,000$  people/km<sup>2</sup>). Outlines show generalized range of Blanding's turtles in New York and New England. Most Blanding's turtle populations in the Northeast overlap with areas of high human population densities, making them extremely vulnerable to population declines. Figure redrawn from Compton (2007).



**Figure 4.** Road footprints for the range of Blanding's turtles in Maine (a) and Massachusetts (b), at the 1%, 5%, 10%, and 50% levels of expected annual road mortality. Triangles denote element occurrences of Blanding's turtles. Turtles with homerange centers within each footprint are expected to face at least the specified percent additional annual mortality from traffic. Conservation actions will focus protection on those areas projected at less than 1% annual mortality and focus other conservation efforts at reducing mortality in priority areas to less than 1%. Large portions of Blanding's turtle historic range have been permanently lost and action is needed immediately to prevent the loss of the species from the region (taken from Compton 2007).



(a)



(b)

**Figure 5.** Turtle X-ING sign used by Maine Inland Fisheries and Wildlife to inform motorists that SGCN turtles could be crossing specific sections of road (i.e., hotspots). A hinged sign (b) allowed staff to easily close signs during periods that were less sensitive for SGCN turtles crossing roadways. A similar sign is planned for implementing Project IV of this grant.

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BUDGET SUMMARY SWG-COMP-FY11	TOTALS PER JOB			
	Total Costs	Federal Share	Match	% Match
<b>PROJECT I: CONSERVATION PLANNING</b>				
Job 1.1: Develop conservation plan	\$152,058	\$109,747	\$42,310	28%
Job 1.2: Engage stakeholders	\$44,791	\$32,540	\$12,251	27%
<b>PROJECT I TOTALS</b>	<b>\$196,848</b>	<b>\$142,287</b>	<b>\$54,562</b>	<b>28%</b>
<b>PROJECT II: GENETIC ANALYSIS</b>				
Job 2.1: Assess genetics	\$180,811	\$114,857	\$65,954	36%
<b>PROJECT II TOTALS</b>	<b>\$180,811</b>	<b>\$114,857</b>	<b>\$65,954</b>	<b>36%</b>
<b>PROJECT III: MONITORING</b>				
Job 3.1: Develop protocols	\$44,894	\$32,517	\$12,377	28%
Job 3.2: Implement protocols.	\$407,859	\$292,471	\$115,387	28%
<b>PROJECT III TOTALS</b>	<b>\$452,753</b>	<b>\$324,988</b>	<b>\$127,764</b>	<b>28%</b>
<b>PROJECT IV: PRIORITY ACTION IMPLEMENTATION</b>				
Job 4.1: Implement priority actions	\$50,641	\$34,943	\$15,698	31%
<b>PROJECT IV TOTALS</b>	<b>\$50,641</b>	<b>\$34,943</b>	<b>\$15,698</b>	<b>31%</b>
<b>PROJECT V: COORDINATION &amp; ADMINISTRATION</b>				
Job 4.1: Coordination and Administration	\$30,195	\$20,261	\$9,934	33%
<b>PROJECT V TOTALS</b>	<b>\$30,195</b>	<b>\$20,261</b>	<b>\$9,934</b>	<b>33%</b>
<b>GRANT TOTALS</b>	<b>\$911,248</b>	<b>\$637,336</b>	<b>\$273,912</b>	<b>30%</b>

## **State Budget Narrative**

### **New Hampshire**

New Hampshire's total projected project costs = \$466,477, including \$331,070 of requested federal funds and \$135,407 of matching non-federal funds (29% match).

New Hampshire Fish & Game Department (NHFG) will contract with UMass to conduct work under Projects I and III. Total requested federal funds to UMass = \$246,627. The federal request from UMass includes direct costs (\$214,458) plus a reduced UMass overhead (15% or \$32,169). UMass will provide 27% non-federal match for the sum of these direct and indirect costs via \$94,004 in waived overhead (from 58.5% in FY12, 59% in FY13 and FY14 to 15% in all years). Total direct costs include personnel (\$184,545), fringe benefits (\$13,643), travel (\$10,500), equipment (\$4,450), and supplies (\$1,320). UMass will be conducting work during Years 1-3.

The remaining \$84,443 of requested federal grant funds will remain at NHFG for staff, indirect, and additional contracts. NHFG will provide \$41,404 (32.9%) in non-federal match (state conservation license plate funds, private donations to Nongame Program). NHFG will work under Projects I, II, III, IV and V including coordination of the overall grant. Project I will involve the State Project Leader's (Biologist II-Michael Marchand) time to review and coordinate with UMass. Project II involves funding for NHFG staff to assist with collecting genetic samples in NH. Project III funding request involves staff time for a Biologist II to coordinate monitoring activities and a biological technician to conduct monitoring activities during April-Oct, 2012 and 2013. The project III budget includes \$2,000 for equipment (e.g., funnel turtle traps) and supplies (e.g, sampling supplies, bait) and \$5,000 for travel. Project IV funding request involves the State Project Leader's time to coordinate with NH Department of Transportation and other partners to implement on the ground activities. Also, funds are requested to purchase Turtle X-ing signs (n = 30) for NH and contract the enhancement or development of turtle nesting habitat in at least 1 area. Creation and/or enhancement of nesting habitat on state lands will involve time from NHFG's habitat management biologists which is not charged to this grant or used as match. Project V funding request involves staff time of the Regional Grant Coordinator (Michael Marchand) and the NH Nongame Program Coordinator (John Kanter) to coordinate and administer the grant. An 18% estimated indirect cost was applied to the funding request for NHFG staff time only (not contracts). Actual costs will be based on the approved rate effective when costs are incurred.

### **Maine**

Maine's total projected project costs = \$187,261, including \$123,631 of requested federal funds and \$63,630 of matching non-federal funds (34% match).

MDIFW will contract with UMaine to work under Project II. Total project costs = \$167,261, including \$103,631 of requested federal funds and \$63,630 in non-federal match (38%) in the form of waived indirect and donated salary and supplies. Total direct costs = \$126,140 include personnel (\$54,572), fringe benefits (\$23,568), travel (\$8,000), and supplies/genetic analyses (\$40,000). Total indirect = \$ 41,121 (\$20,651 waived as match). UMaine will be conducting work during Years 1-3. UMaine's non-federal match will be used to cover the match requirement for the MDIFW portion of requested funds as well.

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Maine Department of Inland Fisheries & Wildlife (MDIFW) request \$20,000 of federal funds to remain within the Department for Projects I, II, III, and IV. A 7.5% overhead was applied to the MDIFW requested portion but not to the portion being contracted to UMaine. Project I includes a request for MDIFW's State Project Leader to assist with engaging key partners. Project II includes a request for the collection of blood samples during Year 1 for the genetic analysis. Project III includes requested funding for hiring a seasonal staff to conduct monitoring activities during April-October, 2012 and 2013. Project IV includes a request for \$500 to create or enhance turtle nesting habitat and \$1000 to purchase and install additional turtle X-ing signs in Maine. The State Project Leader will participate in Projects I (Job 1) and V using other funding sources.

### **Massachusetts**

Massachusetts' total projected project costs = \$83,851, including \$58,004 of requested federal funds and \$25,847 of matching non-federal funds (31% match). The total federal request from MA includes direct (\$43,600) and indirect (\$14,403) expenses. Of these funds, Massachusetts Division of Fisheries & Wildlife (MassWildlife) requests \$32,040 federal funds (\$42,887 total project costs) to remain within the Division. MassWildlife's requested funding will be used to hire seasonal staff and/or develop contracts to conduct monitoring activities identified under Project III during April-October 2012 and 2013. MassWildlife will provide the necessary 25% non-federal match (\$10,847). MassWildlife requests \$2,500 for nesting site creation and enhancement and \$1,500 for the purchase and installation of ~ 15 turtle X-ing signs. The State Project Leader will participate in Projects I and V using other funding sources. MassWildlife cash match will be in the form of non-federal funds, contracted services, salary, indirect, fringe, and other grant related expenses. MassWildlife may also explore additional match sources in the form of volunteer participation with monitoring efforts. If future planning efforts are successful and approved by the USFWS, the MassWildlife may request to amend in-kind contributions into the grant agreement.

The remaining funds will be used to contract Bryan Windmiller (Herpetological Consultant) and Parker River Clean Water Association for monitoring under Project III. Bryan Windmiller will be contracted (\$12,982 grant request) to monitor the Great Meadows NWR Blanding's turtle population and will provide a minimum of 44% match (\$10,000). The Parker River Association (PRCWA) will be contracted (\$12,982 grant request) to monitor Blanding's turtles in the Georgetown/Groveton area of MA and they will provide a minimum of 28% match (\$5,000).

Additional funds (not identified as match but contributing to overall efforts) will be spent on conservation work for the Blanding's turtle during this granting period. Those additional funds include \$750 from the Boxford Open Land Trust (Parker River Assoc), \$24,000 in direct and in kind funding from Bryan Windmiller, and \$4,000 from MassWildlife.

### **New York**

New York's total projected project costs = \$130,882, including \$92,549 of requested federal grant funds and \$38,334 of matching non-federal funds (29% match). New York Department of Environmental Conservation (NYDEC) will develop a MOU and contract with the State University of New York, Potsdam (SUNY) to conduct all monitoring under Project III for Years 1 – 3 and work under Project IV. SUNY will be providing the necessary non-federal match

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(29%) through waived indirect and 1 month summary salary for Glenn Johnson. Requested funds for Project III monitoring include field technician staff salary and fringe benefits (\$48,672), supplies (\$13,256), 20% indirect (\$8,320), and travel (\$6500). For Project IV, SUNY requests \$10,000 (\$4,019 match – Glenn Johnson salary) for nesting site creation and/or enhancement of 2 sites and \$5,800 (\$4,019 match – Glenn Johnson salary) for the purchase and installation of ~30 turtle X-ing signs. NYDEC is not requesting grant \$ for Projects I, II, and V. NYDEC biologists will participate as State Project Leader through other funding sources.

### **Pennsylvania**

Pennsylvania's total projected project costs = \$42,776, including \$32,082 of requested federal funds and \$10,694 of matching non-federal funds (25% match). Pennsylvania Fish and Boat Commission requested funding for Projects I, II, III, and IV. Project I will involve the State Project Leader's time to review and coordinate with UMass. Project II will involve staff time to acquire Pennsylvania blood samples during Year 1 for the genetic analysis. Project III funding request involves staff time for the State Project Leader to coordinate monitoring activities and a biological technician to conduct monitoring activities during April-October 2012 and 2013. Project IV request involves funding for the creation/enhancement of nesting habitat at one site and purchase and installation of signs along one stretch of road. Pennsylvania Fish and Boat Commission match will be comprised of unreimbursed indirect and direct costs as necessary to meet match requirements.

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Project Budget Detail Estimated Costs	IH Fish & Game			University of Massachusetts		
	Federal	Match	Total	Federal	Match	Total
<b>PROJECT I: CONSERVATION PLANNING</b>						
<b>JOB 1.1: Develop conservation plan</b>						
Action 1.1.1: ID population units	567	278	845	5,887	2,227	8,114
Action 1.1.2: Assign quality ranks	567	278	845	8,872	3,360	12,232
Action 1.1.3: ID conservation priorities	567	278	845	8,872	3,375	12,248
Action 1.1.4: Develop parcel maps	567	278	845	9,102	3,483	12,585
Action 1.1.5: Develop mgmt plans	1,417	695	2,112	46,225	17,686	63,912
Action 1.1.6: NE Conservation Plan	567	278	845	25,927	9,892	35,819
<b>JOB 1.2: Engage stakeholders</b>						
Action 1.2.1: Disseminate cons priorities	1,134	556	1,690	10,682	4,087	14,769
Action 1.2.2: Host workshop(s)	850	417	1,267	18,266	6,989	25,254
<b>PROJECT I TOTALS</b>	<b>\$6,237</b>	<b>\$3,058</b>	<b>\$9,295</b>	<b>\$133,835</b>	<b>\$51,099</b>	<b>\$184,933</b>
<b>PROJECT II: GENETIC ANALYSIS</b>						
<b>JOB 2.1: Assess genetics</b>						
Action 2.1.1: Assess genetics	2,644	1,296	3,940	0	0	0
Action 2.1.2: isolated/outlier in PA/NY	0	0	0	0	0	0
Action 2.1.3: compare with Midwest/CA	0	0	0	0	0	0
<b>PROJECT II TOTALS</b>	<b>\$2,644</b>	<b>\$1,296</b>	<b>\$3,940</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>PROJECT III: MONITORING</b>						
<b>JOB 3.1: develop protocols</b>						
Action 3.1.1: rapid site assessments	283	139	422	15,975	6,050	22,024
Action 3.1.2: long-term reference sites	283	139	422	15,975	6,050	22,024
<b>JOB 3.2: Implement protocols.</b>						
Action 3.2.1: Select sites	567	278	845	3,704	1,405	5,109
Action 3.2.2: rapid assessments	21,952	10,763	32,716	35,368	13,475	48,843
Action 3.2.3: long-term reference sites	21,952	10,763	32,716	35,368	13,475	48,843
Action 3.2.4: Apply results	0	0	0	6,403	2,450	8,853
<b>PROJECT III TOTALS</b>	<b>\$45,038</b>	<b>\$22,083</b>	<b>\$67,121</b>	<b>\$112,792</b>	<b>\$42,905</b>	<b>\$155,697</b>
<b>PROJECT IV: ACTION IMPLEMENT</b>						
<b>JOB 4.1: implement priority actions</b>						
Action 4.1.1: Create nesting habitat	4,205	2,062	6,267	0	0	0
Action 4.1.2: turtle x-ing signs	6,059	2,971	9,029	0	0	0
<b>PROJECT IV TOTALS</b>	<b>\$10,264</b>	<b>\$5,033</b>	<b>\$15,296</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>PROJECT V: COORDINATION &amp; ADMIN</b>						
<b>JOB 4.1: Coordination and Administration</b>						
Action 4.1.1: Coordinate and Admin	15,725	7,710	23,435	0	0	0
Action 4.1.2: Evaluate performance	1,701	834	2,535	0	0	0
Action 4.1.3: Report actions	2,835	1,390	4,225	0	0	0
<b>PROJECT V TOTALS</b>	<b>\$20,261</b>	<b>\$9,934</b>	<b>\$30,195</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>GRANT TOTALS</b>	<b>\$84,443</b>	<b>\$41,404</b>	<b>\$125,847</b>	<b>\$246,627</b>	<b>\$94,004</b>	<b>\$340,631</b>
<b>Partner Match %</b>		<b>32.9%</b>			<b>27.6%</b>	
			<b>IH Request \$ Total</b>			<b>\$331,070</b>
			<b>IH Match Total</b>			<b>\$135,407</b>
			<b>IH Match %</b>			<b>29.0%</b>

Northeast Blanding's Turtle & Associated SGCN Conservation Initiative

Project Budget Detail Estimated Costs	Maine Inland Fish & Wildlife			University of Maine		
	Federal	Match	Total	Federal	Match	Total
<b>PROJECT I: CONS PLANNING</b>						
<b>JOB 1.1:</b> Develop conservation plan						
Action 1.1.1: ID population units	0	0	0	0	0	0
Action 1.1.2: Assign quality ranks	0	0	0	0	0	0
Action 1.1.3: ID conservation priorities	0	0	0	0	0	0
Action 1.1.4: Develop parcel maps	0	0	0	0	0	0
Action 1.1.5: Develop mgmt plans	0	0	0	0	0	0
Action 1.1.6: NE Conservation Plan	0	0	0	0	0	0
<b>JOB 1.2:</b> Engage stakeholders						
Action 1.2.1: Disseminate cons priorities	500	0	500	0	0	0
Action 1.2.2: Host workshop(s)	500	0	500	0	0	0
<b>PROJECT I TOTALS</b>	<b>\$1,000</b>	<b>\$0</b>	<b>\$1,000</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>PROJECT II: GENETIC ANALYSIS</b>						
<b>Job 2.1:</b> Assess genetics						
Action 2.1.1: Assess genetics	5,500	0	5,500	72,542	44,541	117,083
Action 2.1.2: isolated/outlier in PA/NY	0	0	0	10,363	6,363	16,726
Action 2.1.3: compare with Midwest/CA	0	0	0	20,726	12,726	33,452
<b>PROJECT II TOTALS</b>	<b>\$5,500</b>	<b>\$0</b>	<b>\$5,500</b>	<b>\$103,631</b>	<b>\$63,630</b>	<b>\$167,261</b>
<b>PROJECT III: MONITORING</b>						
<b>Job 3.1:</b> develop protocols						
Action 3.1.1: rapid site assessments	0	0	0	0	0	0
Action 3.1.2: long-term reference sites	0	0	0	0	0	0
<b>Job 3.2:</b> Implement protocols.						
Action 3.2.1: Select sites	0	0	0	0	0	0
Action 3.2.2: rapid assessments	12,000	0	12,000	0	0	0
Action 3.2.3: long-term reference sites	0	0	0	0	0	0
Action 3.2.4: Apply results	0	0	0	0	0	0
<b>PROJECT III TOTALS</b>	<b>\$12,000</b>	<b>\$0</b>	<b>\$12,000</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>PROJECT IV: ACTION IMPLEMENT</b>						
<b>Job 4.1:</b> implement priority actions						
Action 4.1.1: Create nesting habitat	500	0	500	0	0	0
Action 4.1.2: turtle x-ing signs	1,000	0	1,000	0	0	0
<b>PROJECT IV TOTALS</b>	<b>\$1,500</b>	<b>\$0</b>	<b>\$1,500</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>PROJECT V: COORDINATION &amp; ADMIN</b>						
<b>Job 4.1:</b> Coordination and Administration						
Action 4.1.1: Coordinate and Admin	0	0	0	0	0	0
Action 4.1.2: Evaluate performance	0	0	0	0	0	0
Action 4.1.3: Report actions	0	0	0	0	0	0
<b>PROJECT V TOTALS</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>GRANT TOTALS</b>	<b>\$20,000</b>	<b>\$0</b>	<b>\$20,000</b>	<b>\$103,631</b>	<b>\$63,630</b>	<b>\$167,261</b>
<b>Partner Match %</b>		<b>0%</b>			<b>38%</b>	
	<b>Maine Request \$ Total</b>		<b>\$123,631</b>			
	<b>Maine Match Total</b>		<b>\$63,630</b>			
	<b>Maine Match %</b>		<b>34.0%</b>			

Northeast Blanding's Turtle & Associated SGCN Conservation Initiative

Project Budget Detail Estimated Costs	MA Fish & Wildlife			Windmiller (Consultant)			Parker River		
	Federal	Match	Total	Federal	Match	Total	Federal	Match	Total
<b>PROJECT I: COIS PLANNING</b>									
<b>JOB 1.1: Develop conservation plan</b>									
Action 1.1.1: ID population units	0	0	0	0	0	0	0	0	0
Action 1.1.2: Assign quality ranks	0	0	0	0	0	0	0	0	0
Action 1.1.3: ID conservation priorities	0	0	0	0	0	0	0	0	0
Action 1.1.4: Develop parcel maps	0	0	0	0	0	0	0	0	0
Action 1.1.5: Develop mgmt plans	0	0	0	0	0	0	0	0	0
Action 1.1.6: NE Conservation Plan	0	0	0	0	0	0	0	0	0
<b>JOB 1.2: Engage stakeholders</b>									
Action 1.2.1: Disseminate cons priorities	0	0	0	0	0	0	0	0	0
Action 1.2.2: Host workshop(s)	0	0	0	0	0	0	0	0	0
<b>PROJECT I TOTALS</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>PROJECT II: GENETIC ANALYSIS</b>									
<b>JOB 2.1: Assess genetics</b>									
Action 2.1.1: Assess genetics	0	0	0	0	0	0	0	0	0
Action 2.1.2: isolated/outlier in PA/NY	0	0	0	0	0	0	0	0	0
Action 2.1.3: compare with Midwest/CA	0	0	0	0	0	0	0	0	0
<b>PROJECT II TOTALS</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>PROJECT III: MONITORING</b>									
<b>JOB 3.1: develop protocols</b>									
Action 3.1.1: rapid site assessments	0	0	0	0	0	0	0	0	0
Action 3.1.2: long-term reference sites	0	0	0	0	0	0	0	0	0
<b>JOB 3.2: Implement protocols.</b>									
Action 3.2.1: Select sites	0	0	0	0	0	0	0	0	0
Action 3.2.2: rapid assessments	11,342	3,781	15,123	0	0	0	0	0	0
Action 3.2.3: long-term reference sites	16,398	5,466	21,864	12,982	10,000	22,982	12,982	5,000	17,982
Action 3.2.4: Apply results	0	0	0	0	0	0	0	0	0
<b>PROJECT III TOTALS</b>	<b>\$27,740</b>	<b>\$9,247</b>	<b>\$36,987</b>	<b>\$12,982</b>	<b>\$10,000</b>	<b>\$22,982</b>	<b>\$12,982</b>	<b>\$5,000</b>	<b>\$17,982</b>
<b>PROJECT IV: ACTION IMPLEMENT</b>									
<b>JOB 4.1: implement priority actions</b>									
Action 4.1.1: Create nesting habitat	2,500	1,000	3,500	0	0	0	0	0	0
Action 4.1.2: turtle x-ing signs	1,800	600	2,400	0	0	0	0	0	0
<b>PROJECT IV TOTALS</b>	<b>\$4,300</b>	<b>\$1,600</b>	<b>\$5,900</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>PROJECT V: COORDINATION &amp; ADMIN</b>									
<b>JOB 4.1: Coordination and Administration</b>									
Action 4.1.1: Coordinate and Admin	0	0	0	0	0	0	0	0	0
Action 4.1.2: Evaluate performance	0	0	0	0	0	0	0	0	0
Action 4.1.3: Report actions	0	0	0	0	0	0	0	0	0
<b>PROJECT V TOTALS</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>GRANT TOTALS</b>	<b>\$32,040</b>	<b>\$10,847</b>	<b>\$42,887</b>	<b>\$12,982</b>	<b>\$10,000</b>	<b>\$22,982</b>	<b>\$12,982</b>	<b>\$5,000</b>	<b>\$17,982</b>
<b>Partner Match %</b>		25%			44%			28%	
		<b>MA Request \$ Total</b>		<b>\$58,004</b>					
		<b>MA Match Total</b>		<b>\$25,847</b>					
		<b>MA Match %</b>		<b>30.8%</b>					

Northeast Blanding's Turtle & Associated SGCN Conservation Initiative

Project Budget Detail Estimated Costs	New York DEC			SUNY Potsdam		
	Federal	Match	Total	Federal	Match	Total
<b>PROJECT I: CONSERVATION PLANNING</b>						
<b>JOB 1.1:</b> Develop conservation plan						
Action 1.1.1: ID population units	0	0	0	0	0	0
Action 1.1.2: Assign quality ranks	0	0	0	0	0	0
Action 1.1.3: ID conservation priorities	0	0	0	0	0	0
Action 1.1.4: Develop parcel maps	0	0	0	0	0	0
Action 1.1.5: Develop mgmt plans	0	0	0	0	0	0
Action 1.1.6: NE Conservation Plan	0	0	0	0	0	0
<b>JOB 1.2:</b> Engage stakeholders						
Action 1.2.1: Disseminate cons priorities	0	0	0	0	0	0
Action 1.2.2: Host workshop(s)	0	0	0	0	0	0
<b>PROJECT I TOTALS</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>PROJECT II: GENETIC ANALYSIS</b>						
<b>JOB 2.1:</b> Assess genetics						
Action 2.1.1: Assess genetics	0	0	0	0	0	0
Action 2.1.2: isolated/outlier in PA/NY	0	0	0	0	0	0
Action 2.1.3: compare with Midwest/CA	0	0	0	0	0	0
<b>PROJECT II TOTALS</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>PROJECT III: MONITORING</b>						
<b>JOB 3.1:</b> develop protocols						
Action 3.1.1: rapid site assessments	0	0	0	0	0	0
Action 3.1.2: long-term reference sites	0	0	0	0	0	0
<b>JOB 3.2:</b> Implement protocols.						
Action 3.2.1: Select sites	0	0	0	0	0	0
Action 3.2.2: rapid assessments	0	0	0	38,374	15,147	53,522
Action 3.2.3: long-term reference sites	0	0	0	38,374	15,147	53,522
Action 3.2.4: Apply results	0	0	0	0	0	0
<b>PROJECT III TOTALS</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$76,749</b>	<b>\$30,295</b>	<b>\$107,044</b>
<b>PROJECT IV: ACTION IMPLEMENT</b>						
<b>JOB 4.1:</b> Implement priority actions						
Action 4.1.1: Create nesting habitat	0	0	0	10,000	4,019	14,019
Action 4.1.2: turtle x-ing signs	0	0	0	5,800	4,019	9,819
<b>PROJECT IV TOTALS</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$15,800</b>	<b>\$8,039</b>	<b>\$23,839</b>
<b>PROJECT V: COORDINATION &amp; ADMIN</b>						
<b>JOB 4.1:</b> Coordination and Administration						
Action 4.1.1: Coordinate and Admin	0	0	0	0	0	0
Action 4.1.2: Evaluate performance	0	0	0	0	0	0
Action 4.1.3: Report actions	0	0	0	0	0	0
<b>PROJECT V TOTALS</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>GRANT TOTALS</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$92,549</b>	<b>\$38,334</b>	<b>\$130,882</b>
<b>Partner Match %</b>		0%			29%	
			<b>NY Request \$ Total</b>	<b>\$92,549</b>		
			<b>NY Match Total</b>	<b>\$38,334</b>		
			<b>NY Match %</b>	<b>29.3%</b>		

Northeast Blanding's Turtle & Associated SGCN Conservation Initiative

Project Budget Detail Estimated Costs	Pennsylvania Fish and Boat Commission		
	Grant	Match	Total
<b>PROJECT I: CONS PLANNING</b>			
<b>JOB 1.1:</b> Develop conservation plan			
Action 1.1.1: ID population units	0	0	0
Action 1.1.2: Assign quality ranks	0	0	0
Action 1.1.3: ID conservation priorities	0	0	0
Action 1.1.4: Develop parcel maps	0	0	0
Action 1.1.5: Develop mgmt plans	304	101	405
Action 1.1.6: NE Conservation Plan	304	101	405
<b>JOB 1.2:</b> Engage stakeholders			
Action 1.2.1: Disseminate cons priorities	0	0	0
Action 1.2.2: Host workshop(s)	608	203	810
<b>PROJECT I TOTALS</b>	<b>\$1,215</b>	<b>\$405</b>	<b>\$1,620</b>
<b>PROJECT II: GENETIC ANALYSIS</b>			
<b>Job 2.1:</b> Assess genetics			
Action 2.1.1: Assess genetics	0	0	0
Action 2.1.2: isolated/outlier in PA/NY	3,083	1,028	4,110
Action 2.1.3: compare with Midwest/CA	0	0	0
<b>PROJECT II TOTALS</b>	<b>\$3,083</b>	<b>\$1,028</b>	<b>\$4,110</b>
<b>PROJECT III: MONITORING</b>			
<b>Job 3.1:</b> develop protocols			
Action 3.1.1: rapid site assessments	0	0	0
Action 3.1.2: long-term reference sites	0	0	0
<b>Job 3.2:</b> Implement protocols.			
Action 3.2.1: Select sites	0	0	0
Action 3.2.2: rapid assessments	12,353	4,118	16,470
Action 3.2.3: long-term reference sites	12,353	4,118	16,470
Action 3.2.4: Apply results	0	0	0
<b>PROJECT III TOTALS</b>	<b>\$24,705</b>	<b>\$8,235</b>	<b>\$32,940</b>
<b>PROJECT IV: ACTION IMPLEMENT</b>			
<b>Job 4.1:</b> implement priority actions			
Action 4.1.1: Create nesting habitat	2,453	818	3,270
Action 4.1.2: turtle x-ing signs	627	209	836
<b>PROJECT IV TOTALS</b>	<b>\$3,080</b>	<b>\$1,027</b>	<b>\$4,106</b>
<b>PROJECT V: COORDINATION &amp; ADMIN</b>			
<b>Job 4.1:</b> Coordination and Administration			
Action 4.1.1: Coordinate and Admin	0	0	0
Action 4.1.2: Evaluate performance	0	0	0
Action 4.1.3: Report actions	0	0	0
<b>PROJECT V TOTALS</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>GRANT TOTALS</b>	<b>\$32,082</b>	<b>\$10,694</b>	<b>\$42,776</b>
<b>Partner Match %</b>		25%	

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## FEDERAL COMPLIANCE DOCUMENTATION

### SF 424B Assurances – Non-Construction Programs Attached to Application

The following is duplicate text from the each Project Approach in the Narrative:

**Project I Federal compliance:** The actions proposed in Project I primarily involve in-house activities such as computer analyses, document writing, and holding meetings. There will be some in-field activities such as ground-truthing maps and site visits with partners. None of these activities pose any federal compliance issues including National Environmental Policy Act (NEPA), the Endangered Species Act (ESA), or Historic Preservation Act (Section 106).

**Project II Federal Compliance:** The actions proposed in Project II primarily involve in-house activities with laboratory genetic analyses. Many blood samples needed for this research have already been collected in the course of other projects. Some blood collection will be done by partner States under State permit guidelines and policy (Blanding's turtles are State- but not Federal-listed). No mortality is expected using standard techniques nor will any federal listed species be affected. Further, this study has been designed in partnership with the New England Field Office of the USFWS Endangered Species Division. None of these activities pose any federal compliance issues including National Environmental Policy Act (NEPA), the Endangered Species Act (ESA), or Historic Preservation Act (Section 106).

**Project III Federal Compliance:** The actions proposed in Project III first involve in-house activities such as literature review, document writing, and holding meetings as monitoring protocols are developed. Methodology and proposed implementation sites will be reviewed by State Endangered Species staff for presence/affect of federally listed species but no compliance issues are expected (including NEPA and Section 106).

**Project IV Federal Compliance:** State Natural Heritage and historical preservation offices in each state and U.S. Fish & Wildlife Service Ecological Services offices will be engaged prior to any habitat management activities being implemented. U.S. Fish & Wildlife Service Ecological Services (Concord NH) was engaged and supportive of this grant (Appendix A). Therefore, we will ensure that these activities do not pose any federal compliance issues including National Environmental Policy Act (NEPA), the Endangered Species Act (ESA), or Historic Preservation Act (Section 106).

**Project V Federal Compliance:** The actions proposed in Project IV primarily involve in-house activities such as conference calls, data and report sharing, document writing, and holding meetings. None of these activities pose any federal compliance issues including National Environmental Policy Act (NEPA), the Endangered Species Act (ESA), or Historic Preservation Act (Section 106).

## **LIST OF APPENDICES**

**APPENDIX A.** Letters of Support

**APPENDIX B:** Project Leaders

**APPENDIX C.** Summary of Proposed Activity Relevance to State Wildlife Action Plans.

**APPENDIX D:** SGCN that will benefit from proposed grant. Species were included by state project coordinators if species was listed in their state WAP as a SGCN, the range of the species overlapped with Blanding's turtles in their state, and the SGCN will benefit from actions resulting from this grant.

**APPENDIX E:** Habitat types listed in state Wildlife Action Plans that will benefit from actions proposed in this grant.

**APPENDIX F.** Members of the Northeast Blanding's turtle working group.

**APPENDIX G.** Example list of candidate land trusts to target in Project I, Job 1.2 in NH.

**APPENDIX H.** Detailed methodologies for Project II – Genetic Analysis of Blanding's Turtle Populations

**APPENDIX I.** Performance Evaluation Metrics for each Objective.

**APPENDIX J.** Schedule of Work

**APPENDIX A. LETTERS OF SUPPORT**

*(in order of state participation)*

United States Fish & Wildlife Service, New England Field Office  
New Hampshire Fish & Game Department (applicant)  
University of Massachusetts, Amherst, Massachusetts Cooperative Fish and Wildlife Research Unit (*contracted via NH Fish & Game*)  
University of Massachusetts, Amherst, Office of Grant and Contract Administration  
New Hampshire Department of Transportation  
Natural Resources Conservation Services (NRCS) - New Hampshire  
New Hampshire Natural Heritage Bureau – Section 7 Letter  
Massachusetts Division of Fisheries & Wildlife  
Bryan Windmiller, Consulting Herpetologist  
Parker River Clean Water Association  
Massachusetts Department of Transportation  
Natural Resources Conservation Services (NRCS) - Massachusetts  
Maine Department of Inland Fisheries and Wildlife  
University of Maine, Orono – Department of Wildlife Ecology  
University of Maine, Orono – Office of Research and Sponsored Programs  
Maine Department of Transportation  
Natural Resources Conservation Services (NRCS) - Maine  
New York Department of Environmental Conservation (NYDEC)  
State University of New York – Research and Sponsored Programs  
New York Department of Transportation  
Pennsylvania Fish and Boat Commission

# Northeast Blanding's Turtle & Associated SGCN Conservation Initiative



## United States Department of the Interior



FISH AND WILDLIFE SERVICE  
New England Field Office  
70 Commercial Street, Suite 300  
Concord, New Hampshire 03301-5087  
<http://www.fws.gov/northeast/newenglandfieldoffice>

December 9, 2010

Mr. Michael Marchand  
New Hampshire Department of Fish and Game  
11 Hazen Drive  
Concord, NH 03301

Dear Mr. Marchand:

This responds to your recent request for a letter supporting the 2011 State Wildlife Grant (SWG) Application that proposes several activities that are intended to initiate conservation efforts for the Blanding's turtle (*Emydoidea blandingii*) in the northeastern portion of the species range, including Maine, New Hampshire, Massachusetts, New York and Pennsylvania. You also requested a determination as to the potential for the projects to result in effects to federally listed and/or proposed endangered or threatened species or adverse modification of critical habitat.

As you know, the New England Field Office of the U.S. Fish and Wildlife Service (USFWS) has shared a concern for the conservation status of northeastern Blanding's turtle populations with our state partners for several years. These turtles are demographically similar to sea turtles and tortoises in that they are long lived, take several years to mature, and experience low levels of reproduction. Blanding's turtle populations in the Northeast experience high adult mortality because they frequently encounter roads in their overland movements. This mortality is believed to be the dominant threat to the species and populations are experiencing significant declines throughout the Northeast.

As an active partner in the evaluation of northeast Blanding's turtle populations, we appreciate the opportunity to work with you in the development of this proposal and fully support the objectives identified in the grant application. The products generated as a result of the landscape genetics work will provide valuable information that can be utilized in the development of an informed conservation effort. In addition, the other projects will allow all the state wildlife resource agencies located in the Northeast to develop and implement conservation actions that are intended to address the threats to the species. As a result, nomination of this grant for funding will establish a coordinated conservation effort among the various agencies and partners involved, possibly eliminating the need for the USFWS to become more involved in the conservation of this species.

## Northeast Blanding's Turtle & Associated SGCN Conservation Initiative

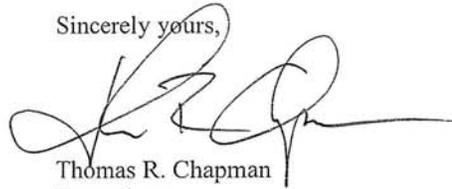
Mr. Michael Marchand  
December 9, 2010

2

A preliminary assessment suggests that the activities associated with this project are not likely to adversely affect any federally listed threatened or endangered species in Massachusetts and New Hampshire. In addition, adverse modification to critical habitat is not expected because none of the projects occur in areas identified as critical habitat. However, this office intends to stay engaged with this conservation effort to ensure that this determination remains valid. Projects located in Pennsylvania, New York and Maine should be reviewed by the USFWS Field Office located in those states.

The New England Field Office supports and commends the efforts of the project partners in establishing a leadership role in addressing the conservation of this species. Thank you for your coordination. Please contact Mr. Anthony Tur of this office at 603-223-2541 if we can be of further assistance.

Sincerely yours,

A handwritten signature in black ink, appearing to read 'T. Chapman', with a long horizontal flourish extending to the right.

Thomas R. Chapman  
Supervisor  
New England Field Office



Glenn Normandeau  
Executive Director

## New Hampshire Fish and Game Department

11 Hazen Drive, Concord, NH 03301-6500  
Headquarters: (603) 271-3421  
Web site: [www.WildNH.com](http://www.WildNH.com)

TDD Access: Relay NH 1-800-735-2964  
FAX (603) 271-1438  
E-mail: [info@wildlife.nh.gov](mailto:info@wildlife.nh.gov)

December 7, 2010

Rowan W. Gould, Acting Director  
U.S. Fish and Wildlife Service  
Main Interior Building - MIB3258  
1849 C Street, NW  
Washington, D.C. 20240

Dear Mr. Gould,

On behalf of the New Hampshire Fish and Game Department (NHFG), I am pleased to submit a proposal and letter of support for a Competitive State Wildlife Grant titled '**Conservation of Blanding's Turtles and Associated Wetland SGCN in the Northeast**'. Blanding's turtles and the interconnected wetland/upland habitat mosaic that is critical for their survival are among the highest conservation priorities in New Hampshire and the region. Blanding's turtle populations in NH are extremely imperiled and are appropriately listed as 'State Endangered' under New Hampshire's Endangered Wildlife Conservation Act (RSA 212-A, FIS 1000). New Hampshire's Wildlife Action Plan identifies this species as a 'Species of Greatest Conservation Need' and identifies actions proposed under this grant.

Funding provided by this grant will enable New Hampshire and its state partners to identify the region's most important species conservation areas and develop management plans to maintain viable populations of Blanding's turtles in the Northeast. This project also provides a much needed systematic monitoring protocol that will allow comparisons of population trends across the region thereby monitoring the success of our multi-state efforts. Additionally, this project will help identify potentially unique subpopulations of Blanding's turtles throughout the Northeast by comparing the genetics of semi-isolated populations within the region and across the species' range that will be directly applicable to development of management units in the region. Finally, NHFG and state partners will engage key partners such as transportation agencies, municipalities, land trusts, and NRCS offices to implement priority actions. A turtle X-ing sign program will be implemented for roadways, in cooperation with the NH Department of Transportation and nesting habitat will be created for Blanding's turtles and other SGCN turtles. Habitat will be identified and prioritized for acquisition, restoration, and management, and opportunities to increase landscape connectivity will be identified. We will work with those key partners to ensure successful implementation.

By continuing to work with the Northeast Blanding's Turtle Working Group and with other governmental agencies, land trusts, and private landowners towards a common goal of Blanding's turtle conservation, we seek to reduce the future need for federal endangered or threatened listing protections for one of the nation's most vulnerable wildlife species not currently protected by the federal ESA. As detailed in the enclosed proposal, we believe that this multi-state and partner initiative is well positioned to advance the recovery of Blanding's turtles. We recognize that it will not be possible to develop and implement detailed conservation strategies for all SGCN. Blanding's turtles, however, are not only extremely imperiled in the Northeast, but they represent a model

## Northeast Blanding's Turtle & Associated SGCN Conservation Initiative

organism to target conservation efforts in southern New Hampshire because of their complex habitat requirements, wide-ranging movement patterns, and overlap with the distribution of many other SGCN wildlife. In other words, we believe that by targeting Blanding's turtle habitat for protection, we will be benefiting countless other wildlife and plant species, including many that are rare.

NHFG will be actively involved in all 5 projects proposed under this grant including coordination of the overall grant. NHFG requests \$331,070 of federal grant funds and will provide \$135,407 of matching funds (29%). Of these funds, NHFG will contract \$246,627 of federal grant funds to the University of Massachusetts to conduct work under Projects I and III. UMass will provide \$94,004 of matching funds through waived indirect. The remaining \$84,443 of the federal grant request will remain with the NHFG to conduct work under Projects I, II, III, IV, and V and NHFG will provide \$41,404 (32.9%) of non-federal match (state conservation license plate funds, private donations).

I'm sure a number of worthy proposals have been submitted, including continuation of the New England Cottontail initiative that I provided a letter of support for. However, for the reasons outlined here, the Blanding's turtle proposal is our highest priority for this grant round. We are excited to continue priority recovery efforts for Blanding's turtles and the many SGCN that share critical habitats in NH. Thank you for your consideration and please contact our Department if you have any questions.

Sincerely,

A handwritten signature in black ink, appearing to read 'G. Normandeau', with a long horizontal flourish extending to the right.

Glenn Normandeau  
Executive Director

# Northeast Blanding's Turtle & Associated SGCN Conservation Initiative



## United States Department of the Interior

U.S. GEOLOGICAL SURVEY  
Biological Resources Division

### MASSACHUSETTS COOPERATIVE FISH AND WILDLIFE RESEARCH UNIT

#### COOPERATING AGENCIES

University of Massachusetts  
U.S. Geological Survey  
Massachusetts Division of Fisheries and Wildlife  
Massachusetts Division of Marine Fisheries  
Wildlife Management Institute

Dr. Paul R. Sievert, Assistant Unit Leader  
Dept. of Environmental Conservation  
Holdsworth Hall, 160 Holdsworth Way  
University of Massachusetts Amherst  
Amherst, MA 01003-9285  
Phone: 413-545-4888  
Fax: 413-545-4358  
E-mail: psievert@eco.umass.edu

9 December 2010

Rowan W. Gould, Acting Director  
U.S. Fish and Wildlife Service  
Main Interior Building - MIB 3258  
1849 C Street, NW  
Washington, D.C. 20240

**Re: FY2011 State Wildlife Grants Competitive Grants Program – Letter of Collaboration:  
Conservation of Blanding's Turtle and Associated Wetland SGCN in the Northeast**

Dear Mr. Gould:

This letter is to confirm that the U.S. Geological Survey, Massachusetts Cooperative Fish and Wildlife Research Unit, located at the University of Massachusetts Amherst, enthusiastically supports the proposal entitled "Conservation of Blanding's Turtle and Associated Wetland SGCN in the Northeast", and is willing to collaborate on this project. Our Unit has conducted research on Blanding's turtles, and other freshwater turtles, over the past 10 years and has produced a conservation plan for Blanding's turtles in Massachusetts. We have expertise in population modeling, habitat selection, and application of ecological findings to on-the-ground conservation efforts. If the grant proposal is funded, our Unit is willing to play a central role in development of a Blanding's turtle conservation plan for the Northeast (Project I) and a standardized monitoring protocol for Blanding's turtles in the Northeast (Project III).

To assist in providing the required matching funds for this study, the University of Massachusetts Amherst has agreed to reduce their indirect cost rate to 15%, from 58.5% in FY12 and 59% in FY13 and FY14. This reduction allows for a match of \$94,004 (27.6%) on the total cost of the work conducted at the University of Massachusetts Amherst.

Thank you for considering our proposal entitled "Conservation of Blanding's Turtle and Associated Wetland SGCN in the Northeast" for funding through the State Wildlife Grants Competitive Grants Program.

Sincerely,



Dr. Paul R. Sievert

Northeast Blanding's Turtle & Associated SGCN Conservation Initiative



UNIVERSITY OF MASSACHUSETTS  
AMHERST

Research Administration Building  
70 Butterfield Terrace  
Amherst, MA 01003-9242

Office of Grant and  
Contract Administration

voice: 413.545.0698  
fax: 413.545.1202

December 9, 2010

Rowan W. Gould, Ph.D.  
Acting Director  
U.S. Fish and Wildlife Service  
Main Interior Building, MIB 3258  
1849 C Street

Dear Dr. Gould,

The Vice Chancellor for Research at the University of Massachusetts Amherst (UMASS) approved a reduction in the indirect cost rate that the University would recover on Dr. Paul Sievert's work on Blanding's Turtles for the U.S. Fish and Wildlife Service through a subcontract to the New Hampshire Fish and Game Department.

The approved reduced rate is 15%. The negotiated UMASS rate on Federal projects is 58.5% from 7/1/11 to 6/30/12 and 59% thereafter.

UMASS agrees to use reduced indirect as a contribution to cost share requirements. This conforms with the principles of OMB circular A-21.

If you have any questions, please contact me at your convenience.

Kind regards,

A handwritten signature in black ink, appearing to read "Carol P. Sprague".

Carol P. Sprague, Director  
Office of Grant & Contract Administration

Northeast Blanding's Turtle & Associated SGCN Conservation Initiative



**THE STATE OF NEW HAMPSHIRE**  
**DEPARTMENT OF TRANSPORTATION**



**GEORGE N. CAMPBELL, JR.**  
**COMMISSIONER**

**JEFF BRILLHART, P.E.**  
**ASSISTANT COMMISSIONER**

Rowan W. Gould, Acting Director

November 30, 2010

U.S. Fish and Wildlife Service  
Main Interior Building - MIB3258  
1849 C Street, NW  
Washington, D.C. 20240

Dear Mr. Gould,

On behalf of the NH Department of Transportation (NHDOT), I am pleased to write this letter of support for a Competitive State Wildlife Grant targeting the conservation needs of Blanding's turtles and associated Species of Greatest Conservation Need (SGCN) in the Northeast.

NHDOT is committed to working with the NH Fish & Game Department (NHFG) on evaluating priorities identified in the grant application. Specifically, NHDOT will be actively involved in Project I (Blanding's turtle and associated SGCN conservation planning) and Project IV (priority project implementation).

Site-specific management plans developed under Project I will identify specific implementation actions for high-priority landscapes known to provide habitat for Blanding's turtles and other SGCN in NH. We anticipate that some of these prioritized actions could involve recommended alterations to existing or future transportation infrastructure. Our staff will work with NHFG to evaluate the feasibility of prioritized actions and incorporate priorities into our operations implementation process, if appropriate. For example, priority transportation actions identified in the management plans could be candidates for implementation by directing mitigation funds from other transportation projects or when upgrading existing roadways.

The NHDOT will also assist with the evaluation of a turtle crossing sign program (Project IV). We have included turtle signing in a future project as part of the mitigation package. If this grant is awarded to NHFG, it would help both the NHDOT and NHFG coordinate similar actions with other road projects. Our staff will work with NHFG to identify suitable areas to place signs and assist with placement and maintenance of signs if appropriate.

The NHDOT has an established relationship of working with the NHFG and other natural resource agencies. Monthly Natural Resource Agency meetings, hosted by the NHDOT, are held to get input on various transportation projects and associated mitigation early in the planning process and NHFG has been an active participant in this process. Also, staff from

JOHN O. MORTON BUILDING • 7 HAZEN DRIVE • P.O. BOX 483 • CONCORD, NEW HAMPSHIRE 03302-0483  
TELEPHONE: 603-271-3734 • FAX: 603-271-3914 • TDD: RELAY NH 1-800-735-2964 • INTERNET: WWW.NHDOT.COM

## Northeast Blanding's Turtle & Associated SGCN Conservation Initiative

the NHDOT and NHFG jointly planned and participated in several Northeastern Transportation & Wildlife Conferences in recent years. We are confident that our previous relationship will result in continued success in meeting the goals of the proposed Blanding's turtle grant application. Our assistance with this grant could contribute to non-federal match requirements and we will work with NHFG to track this information. Thank you for your consideration and please contact our office if you have any questions.

Sincerely,

A handwritten signature in cursive script that reads "William J. Cass". The signature is written in black ink and is positioned above the printed name and title.

William J. Cass  
Director of Project Development

# Northeast Blanding's Turtle & Associated SGCN Conservation Initiative

United States Department of Agriculture



Natural Resources Conservation Service  
Federal Building, 2 Madbury Road  
Durham, NH 03824-2043

(603) 868-7581 Fax: (603) 868-5301

[www.nh.nrcs.usda.gov](http://www.nh.nrcs.usda.gov)

Rowan W. Gould, Acting Director  
U.S. Fish and Wildlife Service  
Main Interior Building - MIB3258  
1849 C Street, NW  
Washington, D.C. 20240

Dear Mr. Gould,

The United States Department of Agriculture – Natural Resources Conservation Service (NRCS) has demonstrated a commitment to supporting recovery efforts for wildlife populations. We recognize that Blanding's turtles are a priority species in the Northeast for conservation and management activities. Site-specific management plans to be developed under the '*Conservation of Blanding's turtles and associated SGCN in the Northeast*' proposal will identify specific implementation actions for priority landscapes. Through our various Farm Bill Programs, we will be able to assist with implementation of those projects on private lands. Examples of potential implementation projects eligible for funding under Farm Bill programs include: wetland protection and restoration, nesting habitat creation, and protection of sensitive areas through use of gates and fences.

In New Hampshire, Blanding's turtle have been identified as a priority for funding under the Wildlife Habitat Incentive Program (WHIP). In addition to WHIP, 5 Wetland Reserve Program (WRP) projects were funded last year that will benefit Blanding's turtles in New Hampshire. It has been a pleasure to work with the New Hampshire Fish & Game Department on cost-share programs; and we look forward to continued cooperation. Thank you for your consideration and please contact our office if you have any questions.

Sincerely,

A handwritten signature in blue ink, appearing to read "R.P. Ellsmore".

RICHARD P. ELLSMORE  
State Conservationist – New Hampshire

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NEW HAMPSHIRE NATURAL HERITAGE BUREAU  
DRED - DIVISION OF FORESTS & LANDS  
PO BOX 1856 -- 172 PEMBROKE ROAD, CONCORD, NH 03302-1856  
(603) 271-2214

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**To:** Michael Marchand, NHFG Nongame & Endangered Wildlife Program  
**From:** Melissa Coppola, NHB-Environmental Information Specialist  
**Date:** December 1, 2010  
**Subject:** Section 7 Review  
State Wildlife Grants Competitive Grant Program

The Natural Heritage Bureau (NHB) has reviewed the State Wildlife Grant Competitive Grant proposal for the "Conservation of Blanding's turtle and associated wetland SGCN in the northeast." Based on the information provided, it is unlikely that there will be any adverse affect on federally listed, proposed and candidate species, since much of the project proposal involves planning, administration and monitoring.

Since Project IV involves creating and enhancing turtle nesting habitat, you will need to contact NHB with specific location information so that we may check for the presence of listed species that might occur in the area. If listed species are present you will need to coordinate with the appropriate agency (US Fish and Wildlife Service or NHB) to avoid any potential impacts to that species.

Should you have any further questions do not hesitate to contact me at either [mcoppola@dred.state.nh.us](mailto:mcoppola@dred.state.nh.us) or 603-271-2215 ext. 323.



Commonwealth of Massachusetts

# Division of Fisheries & Wildlife

MassWildlife

Wayne F. MacCallum, *Director*

6 December, 2010

Mr. Rowan W. Gould, Acting Director  
U.S. Fish and Wildlife Service  
Main Interior Building - MIB3258  
1849 C Street, NW  
Washington, D.C. 20240

Dear Mr. Gould,

I am pleased to write this letter of support for a State Wildlife Grant entitled **Conservation of Blanding's turtle and associated wetland SGCN in the northeast**. Blanding's turtles and their associated wetland SGCN are high conservation priorities in Massachusetts. Massachusetts' Wildlife Action Plan identifies this species as a 'Species of Greatest Conservation Need' and it is listed 'State Threatened' under Massachusetts' Endangered Species Act. Funding provided by this grant will enable Massachusetts and its state partners to address needs identified in our Wildlife Action Plan. We will identify the region's most important species conservation areas and develop management plans to maintain viable populations of Blanding's turtles in the Northeast. This project also provides a much needed systematic monitoring protocol that will allow comparisons of population trends across the region thereby monitoring the success of our multi-state efforts. Finally, this project will help identify potentially unique subpopulations of Blanding's turtles throughout the Northeast by comparing the genetics of semi-isolated populations within the region and across the species' range.

By continuing to work with the Northeast Blanding's Turtle Working Group and with other governmental agencies, land trusts, and private landowners towards a common goal of Blanding's turtle conservation, we seek to avoid the need for federal endangered or threatened listing protections for one of the Northeast's most vulnerable wildlife species. As detailed in the enclosed proposal, I believe that this multi-state and partner initiative is well positioned to advance the recovery of Blanding's turtles.

MDFW will provide the minimum 25% match requirement for \$32,039.95 of Job 3.2 and 4.1 (\$10,846.65 in match). Bryan Windmiller will provide a minimum of 43% match requirement for \$12,982 (\$10,000 in match) for Job 3.2 and Parker River Association will provide a minimum of 27% on the remaining \$12,982 (\$5,000 in match) for Job 3.2. The combined federal request from MA (Total \$58,003.95) includes direct (\$43,600) and indirect (\$14,403.45) expenses. Additional funds (non-match funds) will be spent on conservation work for the Blanding's turtle during this granting period. Those additional funds include \$750 from the Boxford Open Land Trust (Parker River Assoc), \$24,000 in direct and in kind funding from Bryan Windmiller, and \$4,000 from MDFW.

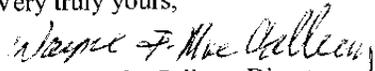
[www.masswildlife.org](http://www.masswildlife.org)

Division of Fisheries and Wildlife  
Field Headquarters, One Rabbit Hill Road, Westborough, MA 01581 (508) 389-6300 Fax (508) 389-7890  
*An Agency of the Department of Fish and Game*

## Northeast Blanding's Turtle & Associated SGCN Conservation Initiative

Thank you for your consideration and please contact our Division if you have any questions.

Very truly yours,



Wayne F. MacCallum, Director  
Massachusetts Division of Fisheries and Wildlife

Northeast Blanding's Turtle & Associated SGCN Conservation Initiative

30 November 2010

Mr. Rowan W. Gould, Acting Director  
U.S. Fish and Wildlife Service  
Main Interior Building - MIB3258  
1849 C Street, NW  
Washington, D.C. 20240

Dear Mr. Gould,

I am pleased to write this letter of support for a State Wildlife Grant entitled **Conservation of Blanding's turtle and associated wetland SGCN in the northeast**. Blanding's turtles and their associated wetland-dependent species of greatest conservation need are particularly high conservation priorities in Massachusetts, where these species are threatened by habitat destruction and fragmentation and other impacts associated with high human land use intensity. Funding provided by this grant will enable Massachusetts and its state partners to address needs identified in our Wildlife Action Plan. Specifically, we will identify the region's most important Blanding's turtle conservation areas and develop management plans to maintain viable populations of Blanding's turtles in the Northeast. Funds from this grant will be used to develop and refine a systematic monitoring protocol that will allow comparisons of long-term population trends across the region thereby enabling us to evaluate the success of our multi-state efforts. Finally, this project will help identify potentially unique subpopulations of Blanding's turtles throughout the Northeast by comparing the genetics of semi-isolated populations within the region and across the species' range.

I am an independent consulting ecologist and have developed and administered a program intended to reverse a long-term population decline in one of New England's largest Blanding's turtle populations, which occupy the area of Great Meadows National Wildlife Refuge in Concord, Massachusetts. Over the past eight years, along with my project partners, I have worked on methods for locating and tracking Blanding's turtles and for locating and protecting nests and headstarting hatchlings. I am committing \$10,000 in direct non-Federal match funds over the two-year project period to support conducting the protocols outlined in this grant (as per Job 3.2.3 in the Long Term Reference Site Monitoring of the proposal) in the area of Great Meadows NWR. In addition, these efforts will also be aided by more than \$24,000 during the granting period of direct and in-kind funding for supplemental conservation efforts, such as radio-telemetry and headstarting. My partners in the conservation of Blanding's turtles in the Great Meadows area include two municipalities, a local land trust, Zoo New England, the New England Aquarium, and a number of regional public and private schools.

Thank you for your consideration of this letter. I welcome any questions that you may have and would be happy to supply you with additional information if needed.

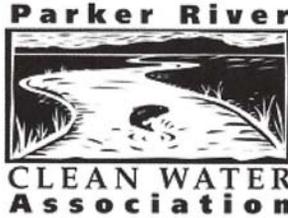
Very truly yours,



Bryan Windmiller, Ph.D.  
Consulting Herpetologist  
65/Arrowhead Road, Concord, MA 01742  
email: [bwindmiller@gmail.com](mailto:bwindmiller@gmail.com), phone: 617-538-4914

Northeast Blanding's Turtle & Associated SGCN Conservation Initiative

PO Box 798 • Byfield, MA 01922



www.Parker-River.org • 978-462-2551

December 4, 2010

Mr. Rowan W. Gould, Acting Director  
U.S. Fish and Wildlife Service  
Main Interior Building - MIB3258  
1849 C Street, NW  
Washington, D.C. 20240

Dear Mr. Gould,

The Parker River Clean Water Association (PRCWA) is pleased to write this letter of support for a State Wildlife Grant entitled **Conservation of Blanding's turtle and associated wetland SGCN in the northeast**. Blanding's turtles and their associated wetland SGCN are high conservation priorities in Massachusetts. Massachusetts' Wildlife Action Plan identifies this species as a 'Species of Greatest Conservation Need' and it is listed 'State Threatened' under Massachusetts' Endangered Species Act. Funding provided by this grant will enable Massachusetts and its state partners to address needs identified in our Wildlife Action Plan.

UMass will identify the region's most important species conservation areas and develop long term monitoring protocols. Our staff will implement the protocol (under Job 3.213) at one site in the Georgetown/Groveland area. This much needed long-term and systematic reference site monitoring that will allow comparisons of population trends across the region thereby monitoring the success of our multi-state efforts.

By continuing to work with the Northeast Blanding's Turtle Working Group and with other governmental agencies, land trusts, and private landowners towards a common goal of Blanding's turtle conservation, we seek to avoid the need for federal endangered or threatened listing protections for one of the Northeast's most vulnerable wildlife species. As detailed in the enclosed proposal, I believe that this multi-state and partner initiative is well positioned to advance the recovery of Blanding's turtles.

PRCWA is committing at least \$5,000 non-federal match funds through the Massachusetts Environmental Trust for Blanding's Turtle research. In addition, approximately \$750 funds from the Boxford Open Land Trust (above and beyond the match funds) will also be spent on related Blanding's turtle research during the granting period.

Thank you for your consideration and please contact me if you have any questions.

Very truly yours,

George Comiskey  
Vice President, PRCWA

Northeast Blanding's Turtle & Associated SGCN Conservation Initiative



DEVAL L. PATRICK  
GOVERNOR  
TIMOTHY P. MURRAY  
LT. GOVERNOR  
JEFFREY B. MULLAN  
SECRETARY & CEO



December 7, 2010

Rowan W. Gould, Acting Director  
U.S. Fish and Wildlife Service  
Main Interior Building - MIB3258  
1849 C Street, NW  
Washington, D.C. 20240

Dear Mr. Gould,

On behalf of the Massachusetts Department of Transportation Highway Division (MassDOT), I am pleased to write this letter of support for a Competitive State Wildlife Grant targeting the conservation needs of Blanding's turtles and other Species of Greatest Conservation Need (SGCN) in the Northeast.

MassDOT recognizes the need for effective environmental management and sustainability as part of operating a statewide transportation system. To put this concept into practice, effective June 2010, MassDOT Secretary & CEO Jeffrey B. Mullan initiated the GreenDOT Policy Directive to reduce greenhouse gas emissions, promote healthy transportation options, and support smart growth development. The directive also extends to initiatives to mitigate the effects of transportation infrastructure on terrestrial and aquatic wildlife, which includes priority species such as the Blanding's turtle.

MassDOT has been committed to mitigate the effects of transportation infrastructure on turtles through developing the Linking Landscapes initiative with the Massachusetts Division of Fisheries and Wildlife (DFW). The Blanding's Turtle Conservation Plan will improve our ability to protect this species during the planning and implementation of MassDOT transportation infrastructure improvement projects. In addition, the Blanding's Turtle Conservation plan will complement MassDOT and DFW efforts to develop creative mitigation strategies (e.g., the Turtle Crossing Sign Program) that address long-term conservation goals of the MA Natural Heritage and Endangered Species Program.

Thank you for considering this worthy grant proposal, and please contact me at (617) 973-7484 if you have any questions.

Sincerely,

A handwritten signature in blue ink, appearing to read "Kevin Walsh".

Kevin Walsh  
Director of Environmental Services  
Highway Division  
Massachusetts Department of Transportation

[www.mass.gov/massdot](http://www.mass.gov/massdot)

TEN PARK PLAZA • BOSTON, MA 02116-3969 • PHONE: 617.973.7000 • FAX: 617.973.8031 • TDD: 617.973.7306

Northeast Blanding's Turtle & Associated SGCN Conservation Initiative



Natural Resources Conservation Service  
451 West Street  
Amherst, MA 01002

United States Department of Agriculture

413-253-4350  
fax 413-253-4375  
www.ma.nrcs.usda.gov

Rowan W. Gould, Acting Director  
U.S. Fish and Wildlife Service  
Main Interior Building - MIB3258  
1849 C Street, NW  
Washington, D.C. 20240

November 30, 2010

Dear Mr. Gould,

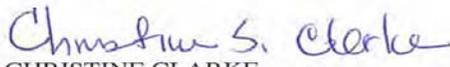
On behalf of the United States Department of Agriculture – Natural Resources Conservation Service (NRCS) in Massachusetts, I am pleased to write this letter of support for a Competitive State Wildlife Grant targeting the conservation needs of Blanding's turtles and associated Species of Greatest Conservation Need (SGCN) in the Northeast.

We recognize that Blanding's turtles are a priority species in the Northeast for conservation and management activities. Site-specific management plans developed under this grant will identify specific implementation actions for high-priority landscapes known to provide habitat for Blanding's turtles and other SGCN in Massachusetts. Through our various Farm Bill programs, we anticipate that we will be able to assist with implementation of those projects on public lands.

Massachusetts NRCS has demonstrated a commitment to assisting with implementation of projects for declining wildlife species in Massachusetts. For example, funding for projects benefiting species identified in the Massachusetts Division of Fisheries and Wildlife (DFW) Comprehensive Wildlife Conservation Strategy (CWCS) are prioritized in the Wildlife Habitat Incentives Program (WHIP). In addition, we have a Memorandum of Understanding (MOU) with DFW whereby Massachusetts NRCS agrees to annually allocate \$500,000 of program financial assistance dollars to eligible Farm Bill program participants for the sole purpose of implementing practices which match the goals and objectives of the DFW Biodiversity Initiative and the CWCS. Blanding's turtles are identified as a SGCN in the Massachusetts CWCS and examples of potential implementation projects eligible for funding under Farm Bill programs could include: wetland protection and restoration, nesting habitat creation, and protection of sensitive areas through the use of fences.

Thank you for your consideration and please contact our office if you have any questions.

Sincerely,

  
CHRISTINE CLARKE  
State Conservationist, Massachusetts

*Helping People Help the Land*  
An Equal Opportunity Provider and Employer

Northeast Blanding's Turtle & Associated SGCN Conservation Initiative



JOHN BALDACCI  
GOVERNOR

STATE OF MAINE  
DEPARTMENT OF INLAND FISHERIES & WILDLIFE  
STATE HOUSE STATION 41  
AUGUSTA, MAINE 04333



ROLAND MARTIN  
COMMISSIONER

15 November 2010

Rowan W. Gould, Acting Director  
U.S. Fish and Wildlife Service  
Main Interior Building - MIB 3258  
1849 C Street, NW  
Washington, D.C. 20240

Dear Mr. Gould,

On behalf of the Maine Department of Inland Fisheries and Wildlife (MDIFW), I am pleased to write this letter of support for a State Wildlife Grant entitled **CONSERVATION OF BLANDING'S TURTLE AND ASSOCIATED WETLAND SGCN IN THE NORTHEAST**. Blanding's turtles and their wetland/upland habitat mosaic are high conservation priorities in Maine. Maine's Wildlife Action Plan identifies this species as a 'Species of Greatest Conservation Need' (Priority 1) and it is listed 'State Endangered' under Maine's Endangered Species Act. Funding provided by this grant will enable Maine and its state partners to identify the region's most important species conservation areas and develop management plans to maintain viable populations of Blanding's turtles in the Northeast. This project also provides a much needed systematic monitoring protocol that will allow comparisons of population trends across the region thereby monitoring the success of our multi-state efforts. Finally, this project will help identify potentially unique subpopulations of Blanding's turtles throughout the Northeast by comparing the genetics of semi-isolated populations within the region and across the species' range.

By continuing to work with the Northeast Blanding's Turtle Working Group and with other governmental agencies, land trusts, and private landowners towards a common goal of Blanding's turtle conservation, we seek to avoid the need for federal endangered or threatened listing protections for one of the Northeast's most vulnerable wildlife species. As detailed in the enclosed proposal, we believe that this multi-state and partner initiative is well positioned to advance the recovery of Blanding's turtles.

Working cooperatively with the University of Maine, MDIFW is committing non-federal match and staff time in support of this important initiative. Thank you for your consideration and please contact our Department if you have any questions.

Sincerely,

G. Mark Stadler, Director  
MDIFW Wildlife Division

Phone: 207-287-5252

Email: [mark.stadler@maine.gov](mailto:mark.stadler@maine.gov)

Fax: 207-287-6395

# Northeast Blanding's Turtle & Associated SGCN Conservation Initiative

Department of Wildlife Ecology



5755 Nutting Hall  
Orono, Maine 04469-5755  
Tel: 207-581-2862  
Fax: 207-581-2858  
[www.wle.umaine.edu](http://www.wle.umaine.edu)

29 November 2010

Rowan W. Gould, Acting Director  
U.S. Fish and Wildlife Service  
Main Interior Building - MIB 3258  
1849 C Street, NW  
Washington, D.C. 20240

Dear Mr. Gould,

On behalf of the University of Maine, Department of Wildlife Ecology, I am writing this letter in support of the multi-state application for a State Wildlife Grant entitled **Northeast Blanding's Turtle Conservation Initiative**. As a Conservation Geneticist, I will be participating as a partner through a contract with the Maine Department of Inland Fisheries & Wildlife to help identify genetic relationships among subpopulations of Blanding's turtles throughout the Northeast region (Project II). By comparing the genetic structure of populations within the region with those across the species' range, we will be able to identify management units in the Northeast that will be essential for effective conservation planning for the endangered Blanding's turtle.

As match, I will be committing 1 month/year of my salary, a fully equipped genetics laboratory with some funding for supplies, and assistance towards travel costs for field work and meetings. In addition, the current indirect rate charged to grants awarded to researchers at the University of Maine is 49.5% with half of that amount (24.75%) being charged to grants coming from state agencies such as the Maine Department of Inland Fisheries & Wildlife. The remaining half, (24.75%) is waived and is considered match by the University of Maine (please see attached letter from the University of Maine, Office of Research and Sponsored Programs). For the genetic analysis component of this grant, the total request is for \$103,631 and the total match from the University of Maine is \$63,630 (38%), of which \$20,560 represents half of the indirect costs and \$43,070 represents direct costs.

Thank you for your consideration of this timely research.

Sincerely yours,

A handwritten signature in cursive script that reads 'Judith M. Rhymer'.

Judith M. Rhymer  
Associate Professor  
(207) 581-2863  
[Judith.rhymer@umit.maine.edu](mailto:Judith.rhymer@umit.maine.edu)

MAINE'S LAND GRANT AND SEA GRANT UNIVERSITY  
*A Member of the University of Maine System*

Northeast Blanding's Turtle & Associated SGCN Conservation Initiative

Office of Research and  
Sponsored Programs



5717 Corbett Hall  
Orono, Maine 04469-5717  
Tel: 581-1484  
Fax: 581-1446  
[www.orsp.umesp.maine.edu](http://www.orsp.umesp.maine.edu)  
[www.umaine.edu](http://www.umaine.edu)

November 17, 2010

Judith M. Rhymer  
Department of Wildlife Ecology  
5755 Nutting Hall  
Orono, ME 04469-5755

Re: **Genetic Analysis of Blandings Turtle Populations**

Dear Professor Rhymer:

This letter is in response to your recent request for a facilities and administration (F&A) rate determination, for a proposal to be submitted through the State of Maine, Department of Inland Fisheries and Wildlife.

The (F&A) rate for this project is 49.5% of modified total direct costs, of which the proposed State award will be charged 24.75% of modified total direct costs, and the University will contribute the remaining 24.75%.

Please contact me or Charlene Kimball if you need additional information or documentation. Thank you.

Sincerely,

A handwritten signature in blue ink, appearing to read 'M. Hastings'.

Michael M. Hastings  
Director

Maine's Land Grant and Sea Grant University  
*A Member of the University of Maine System*

# Northeast Blanding's Turtle & Associated SGCN Conservation Initiative



JOHN ELIAS BALDACCI  
GOVERNOR

STATE OF MAINE  
DEPARTMENT OF TRANSPORTATION  
16 STATE HOUSE STATION  
AUGUSTA, MAINE  
04333-0016

DAVID A. COLE  
COMMISSIONER

November 22, 2010

Rowan W. Gould, Acting Director  
U.S. Fish and Wildlife Service  
Main Interior Building - MIB 3258  
1849 C Street, NW  
Washington, D.C. 20240

Dear Mr Gould:

On behalf of the Maine Department of Transportation (MaineDOT) I express strong support for work proposed by the Maine Department of Inland Fisheries and Wildlife (MDIFW), entitled "**CONSERVATION OF BLANDING'S TURTLE AND ASSOCIATED WETLAND SGCN IN THE NORTHEAST.**" If selected for funding, this effort by MDIFW will establish and foster on a regional scale a similar relationship to that MaineDOT and MDIFW have shared for many years. MaineDOT and MDIFW have successfully collaborated on similar joint research projects on a limited geographic scale that have resulted in concrete actions furthering habitat conservation and species preservation for Blanding's turtles. Information provided through these efforts is used by MaineDOT in its planning and environmental evaluation processes to screen projects for the presence of Blanding's turtles, habitat, and connectivity. This screening allows early and proactive avoidance of adverse impacts as well as identifies opportunities to mitigate historic impacts of existing infrastructure. Aside from this cooperative regional perspective, Maine will also benefit from population specific site plans and information on the genetic uniqueness of our turtles to be gathered via the proposed research project.

Respectfully,

Judy C. Gates, Director  
MaineDOT Environmental Office  
16 State House Station  
Augusta, ME 04330  
(207) 624-3097/3100



PRINTED ON RECYCLED PAPER

THE MAINE DEPARTMENT OF TRANSPORTATION IS AN AFFIRMATIVE ACTION - EQUAL OPPORTUNITY EMPLOYER

# Northeast Blanding's Turtle & Associated SGCN Conservation Initiative

United States Department of Agriculture



Natural Resources Conservation Service  
967 Illinois Avenue, Suite #3  
Bangor, ME 04401  
(207)990-9100, ext. 3; Fax (207)990-9599

FILE

November 5, 2010

Rowan W. Gould, Acting Director  
U.S. Fish and Wildlife Service  
Main Interior Building - MIB3258  
1849 C Street, NW  
Washington, D.C. 20240

Dear Mr. Gould:

On behalf of the United States Department of Agriculture–Natural Resources Conservation Service (NRCS) in Maine, I am pleased to write this letter of support for a Competitive State Wildlife Grant targeting the conservation needs of Blanding's turtles and associated Species of Greatest Conservation Need (SGCN) in the Northeast.

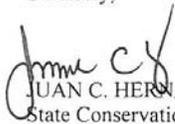
We recognize that Blanding's turtles are a priority species in the Northeast for conservation and management activities. NRCS has demonstrated a commitment to assisting with implementation projects for other highly imperiled wildlife species in the Northeast such as New England cottontail and we anticipate that NRCS will be a key partner in implementing actions developed for Blanding's turtles on private lands.

Site-specific management plans developed under this grant will identify specific implementation actions for high-priority landscapes known to provide habitat for Blanding's turtles in Maine. Through our various Farm Bill Programs, we will be able to assist with implementation of those projects on private lands. Examples of potential implementation projects eligible for funding under Farm Bill programs include: wetland protection and restoration, nesting habitat creation, and protection of sensitive areas through use of gates and fences.

Blanding's turtles and the wetland/upland habitat mosaic that they inhabit are high conservation priorities in Maine. It will not be possible for NRCS to develop and implement detailed conservation strategies for all SGCN. Blanding's turtles, however, represent a model organism to target conservation efforts in Maine because of their complex habitat requirements, wide-ranging movement patterns, and overlap with the distribution of many other SGCN wildlife. In other words, we believe that by targeting Blanding's turtle habitat for protection, we will be benefiting countless other wildlife and plant species, including many that are rare.

Thank you for your consideration and please contact our office if you have any questions.

Sincerely,

  
JUAN C. HERNANDEZ  
State Conservationist

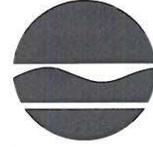
cc:  
Jeff Norment, Biologist, NRCS, Bangor, Maine

*Helping People Help the Land*

An Equal Opportunity Provider and Employer

# Northeast Blanding's Turtle & Associated SGCN Conservation Initiative

**NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION**  
**Division of Fish, Wildlife & Marine Resources**  
625 Broadway, 5<sup>th</sup> Floor, Albany, New York 12233-4750  
**Phone:** (518) 402-8924 • **Fax:** (518) 402-8925  
**Website:** [www.dec.ny.gov](http://www.dec.ny.gov)



Peter M. Iwanowicz  
Acting Commissioner

December 14, 2010

Dr. Rowan W. Gould  
Acting Director  
U.S. Fish and Wildlife Service  
Main Interior Building - MIB3258  
1849 C Street, NW  
Washington, D.C. 20240

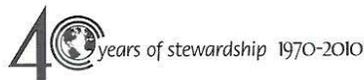
Dear Dr. Gould:

On behalf of the New York State Department of Environmental Conservation (DEC), I am writing in support of a Competitive State Wildlife Grant entitled, *Conservation of Blanding's Turtle and Associated Wetland SGCN in the Northeast*.

Conservation of Blanding's turtles and their associated wetland and upland habitat mosaic are high priorities in New York. New York's Comprehensive Wildlife Conservation Strategy lists the Blanding's turtle as a Species of Greatest Conservation Need (SGCN) and it is listed as a threatened species under the New York State Endangered Species Act. Funding provided by this grant will enable New York State and our partners to develop management plans to maintain viable populations of the species in the Northeast. The project will also provide a much-needed systematic monitoring protocol that will enable comparisons of population trends across the region, thereby allowing New York and other states to monitor success of our multi-state conservation efforts. The project also incorporates mitigation measures for road mortality by implementing a turtle crossing sign program and enhancing nesting areas near wetlands to reduce the need for road crossings by turtles. In addition, information gathered from this project will help New York prioritize sites for land acquisition to benefit the Blanding's turtle and associated SGCN.

This project will directly contribute to addressing two statewide conservation priorities, as identified in New York's State Wildlife Action Plan:

- (1) Determining the threats to rare herpetofauna species, and
- (2) Developing standardized survey protocols for all herpetofauna identified as a species of greatest conservation need.

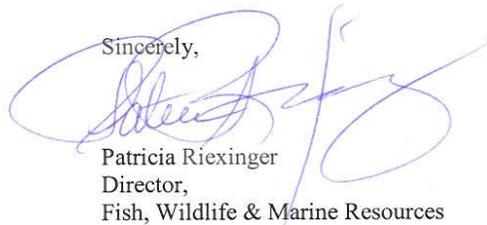


## Northeast Blanding's Turtle & Associated SGCN Conservation Initiative

By engaging with partners such as the Northeast Blanding's Turtle Working Group, governmental partners, land trusts and private landowners, we are working toward a common goal of Blanding's turtle conservation at a regional level, thereby seeking to avoid the need for federal listing protections for one of the Northeast's most vulnerable wildlife species. This multi-state initiative will help advance the conservation of Blanding's turtles in New York State, and more broadly in the Northeast Region.

Thank you for your consideration of this important initiative. Please contact me if you have any questions.

Sincerely,



Patricia Riexinger  
Director,  
Fish, Wildlife & Marine Resources

c: Gordon Batcheller  
Glenn Normandeau

Northeast Blanding's Turtle & Associated SGCN Conservation Initiative



THE RESEARCH FOUNDATION

*The State University of New York*

*SUNY Potsdam*

December 7, 2010

*Research and  
Sponsored Program* Rowan W. Gould, Acting Director  
510 Raymond Hall U.S. Fish and Wildlife Service  
44 Pierrepoint Ave. Main Interior Building - MIB3258  
Potsdam, NY 13676 1849 C Street, NW  
Washington, D.C. 20240

Phone (315) 267-2132  
FAX (315) 267-3120  
[www.potsdam.edu/FSG/](http://www.potsdam.edu/FSG/)  
[FSGhome.html](#)

Dear Mr. Gould

On behalf of the Research Foundation of SUNY on behalf of SUNY Potsdam, I am pleased to write this letter of support for a Competitive State Wildlife Grant entitled, **Conservation Of Blanding's Turtle And Associated Wetland SCGN In The Northeast**. Conservation of Blanding's Turtles and their associated wetland/upland habitat mosaic are high priorities in New York and has been research focus on SUNY Potsdam's Dr. Glenn Johnson since 1998. New York's Comprehensive Wildlife Conservation Strategy lists the Blanding's turtles as a Species of Greatest Conservation Need and it is listed as a 'Threatened' species under the New York State Endangered Species Act. Funding provided by this grant will enable New York State Department of Environmental Conservation (NYSDEC), SUNY Potsdam and other partners to indentify and prioritize the state's most important areas for land acquisition to benefit the Blanding's turtle and it will allow for development of management plans to maintain viable populations of the species in the Northeast. This project also provides a much-needed systematic monitoring protocol that will enable comparisons of population trends across the region, thereby allowing New York and other states to monitor success of our multi-state efforts. This project will address and implement several on-the-ground actions that are designed to benefit specific Blanding's turtle populations across the northeast. Finally, this project will help indentify potentially unique subpopulations of Blanding's turtles throughout the Northeast by comparing the genetics of semi-isolated populations within the region and across the species' range.

SUNY Potsdam will work collaboratively with partners on two of the five projects identified in the grant proposal. Specific work proposed by SUNY Potsdam for each of these, including total request, total match, percent match for each job title, is outlined below.

- 1) Project III, Standardized monitoring protocols for Blanding's turtles across the Northeast Region:

**Job 3.2.2** (Implement standardized monitoring protocols; SUNY Potsdam will utilize the monitoring protocols developed by this grant at multiple sites in northern New York (Jefferson, St. Lawrence, Saratoga, Dutchess and Erie counties; funds will be used primarily for student salaries and fringe benefits, to support travel and to purchase supplies)

Total Budget (grant+match)	Total Match	% Match
\$53,521	\$15,147	28.30

Northeast Blanding's Turtle & Associated SGCN Conservation Initiative

**Job 3.2.3** (Initiate the first year of long-term monitoring reference site monitoring; SUNY Potsdam will establish 2-3 sites in St. Lawrence County, NY for long-term monitoring utilizing standardized protocols; funds will be used primarily for student salaries and fringe benefits, to support travel and to purchase supplies)

Total Budget	Total Match	% Match
\$53,521	\$15,147	28.30

- 2) Project IV, Priority action implementation, Jobs 4.1 Initiate on-the-ground implementation of priority actions to increase viability of Blanding's turtle populations and associated SGCN.

**Job 4.2.1** (Create and/or enhance nesting habitat for Blanding's and other SGCN in one site; SUNY Potsdam will utilize funds will be used to subcontract to perform land clearing, rototilling and sand berm establishment, if needed, at 1 - 2 sites in St. Lawrence County)

Total Budget	Total Match	% Match
\$14,019	\$ 4,019	28.67

**Job 4.2.2** (Implement a turtle X-ing sign program for Blanding's turtles and other SGCN in one site; SUNY Potsdam will funds will to purchase supplies to make 30 signs and associated hardware and install these signs at 15 sites in St. Lawrence and Jefferson counties).

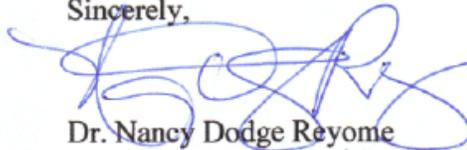
Total Budget	Total Match	% Match
\$ 9,819	\$ 4,019	40.93

<b>Total Budget (all tasks)</b>	<b>Total Match</b>	<b>Total % Match</b>
<b>\$130,880</b>	<b>\$38,332</b>	<b>29.29</b>

In all cases, match is derived from the difference between our federally approved indirect cost rate of 73.5 % and the 20% requested AND the value of two months of Dr. Johnson's salary during the summer.

Working cooperatively with the NYSDEC, SUNY Potsdam will be committing non-federal match through a Memorandum of Understanding. Thank you for your time and consideration in this important initiative and please contact me if you have any questions.

Sincerely,



Dr. Nancy Dodge Reyome  
Director, Research and Sponsored Programs

Northeast Blanding's Turtle & Associated SGCN Conservation Initiative



STATE OF NEW YORK  
DEPARTMENT OF TRANSPORTATION  
ALBANY, N.Y. 12232  
www.nysdot.gov

STANLEY GEE  
ACTING COMMISSIONER

DAVID A. PATERSON  
GOVERNOR

Rowan W. Gould  
Acting Director, US Fish and Wildlife Service  
Main Interior Building – MIB3258  
1849 C Street NW  
Washington, DC 20240

December 7, 2010

Dear Mr. Gould,

As a multibillion dollar public works agency responsible for the design, construction, operation and maintenance of a 15,000 mile highway system, the New York State Department of Transportation (NYSDOT) welcomes this opportunity to encourage research activities that contribute to responsible environmental stewardship of the natural resources of New York State.

The outcomes of the Competitive State Wildlife Grant project titled "Conservation of Blanding's Turtle and Associated Wetland SGCN in the Northeast" could better equip NYSDOT to address biological resource concerns proactively, particularly when undertaking highway crossing structure projects or planned routine maintenance.

NYSDOT applauds the effort to integrate conservation planning at the eco-regional and state scales. The proposed project is consistent with ongoing research efforts supported by NYSDOT to address habitat connectivity and biological needs of Species of Greatest Conservation Need (SGCN).

This effort is compatible with the Department's involvement on the NYS Oceans and Great Lakes Ecosystem Conservation Council and leadership of the Interagency Aquatic Connections Team (InterACT). This effort would also serve to further implement FHWA's Eco-Logical approach, which encourages an ecosystem approach to developing infrastructure projects.

Sincerely,

A handwritten signature in blue ink that reads "Debra A. Nelson".

Debra A. Nelson  
Associate Environmental Specialist  
New York State Department of Transportation

# Northeast Blanding's Turtle & Associated SGCN Conservation Initiative



## Pennsylvania Fish & Boat Commission

EXECUTIVE OFFICE  
P.O. BOX 67000  
HARRISBURG, PA 17106-7000  
717-705-7801 – 717-705-7802 (FAX)  
E-MAIL: [JARWAY@STATE.PA.US](mailto:JARWAY@STATE.PA.US)

December 9, 2010

Mr. Rowan W. Gould, Acting Director  
U.S. Fish and Wildlife Service  
Main Interior Building - MIB3258  
1849 C Street, NW  
Washington, D.C. 20240

Dear Mr. Gould:

On behalf of the Pennsylvania Fish and Boat Commission (PFBC), I am pleased to write this letter of support for a Competitive State Wildlife Grant titled **Conservation of Blanding's Turtles and Associated SGCN Wetland in the Northeast**. Blanding's turtles and a number of associated Species of Greatest Conservation Need (SGCN) and their wetland/upland habitat mosaic are high conservation priorities in Pennsylvania. Pennsylvania's Wildlife Action Plan identifies this species as a 'Species of Greatest Conservation Need' (Priority 1). Funding provided by this grant will enable Pennsylvania and its state partners to identify the region's most important species conservation areas and develop management plans to maintain viable populations of Blanding's turtles in the Northeast. This project provides a much needed systematic monitoring protocol that will allow comparisons of population trends across the region thereby monitoring the success of our multi-state efforts. It also allows us to work with fellow state partners to implement proactive yet applied conservation strategies, such as installation of a road crossing sign program, and creation of nesting habitat for Blanding's Turtles. Finally, this project will help identify potentially unique subpopulations of Blanding's turtles throughout the Northeast by comparing the genetics of semi-isolated populations within the region and across the species' range.

By continuing to work with the Northeast Blanding's Turtle Working Group and with other governmental agencies, land trusts, and private landowners towards a common goal of Blanding's turtle conservation, we seek to avoid the need for federal endangered or threatened listing protections for one of the Northeast's most vulnerable wildlife species. As detailed in the enclosed proposal, this multi-state and multi-partner initiative is well positioned to advance the recovery of Blanding's turtles.

The New Hampshire Fish and Game Department is coordinating this multi-state effort. The PFBC will be actively involved in 4 of the 5 projects proposed under this grant, and requests \$32,082 of federal grant funds and will provide \$10,694 of matching funds (25%). We are excited to continue priority recovery efforts for Blanding's turtles and the many SGCN that share critical habitats in Pennsylvania. Thank you for your consideration and please contact us if you have any questions.

Sincerely,

  
for John A. Arway  
Executive Director

### Our Mission:

[www.fish.state.pa.us](http://www.fish.state.pa.us)

*To protect, conserve and enhance the Commonwealth's aquatic resources and provide fishing and boating opportunities.*

## **APPENDIX B: PROJECT LEADERS**

### **Regional Grant Coordinators**

#### **Michael Marchand, New Hampshire Fish & Game Department**

Michael is a wildlife biologist for the Nongame & Endangered Species Program at New Hampshire Fish & Game. Michael helped write, compile, and coordinate portions of New Hampshire's Wildlife Action Plan. Michael is now implementing high priority actions identified in the NH Wildlife Action Plan, including species recovery for freshwater mussels, raptors, marbled salamander, timber rattlesnake, eastern hognose snake, black racer, Blanding's turtle, and other highly imperiled species. Michael helped initiate the Northeast Blanding's turtle working group in 2003 and continues to coordinate communication among the group. He also works with other resource agencies, consultants, and developers while reviewing projects for potential impacts to rare wildlife, coordinates the NH Reptile and Amphibian Reporting Program (RAARP), and is the NH representative for the Northeast Partners for Amphibian and Reptile Conservation (NEPARC). Prior to joining NH Fish & Game, Michael studied the effects of fragmentation and development on turtles as part of his graduate work at the University of New Hampshire.

#### **John Kanter, New Hampshire Fish & Game Department**

John Kanter is the Nongame & Endangered Wildlife Program Coordinator at the NH Fish & Game Department and has served as chair for the Northeast Association of Fish & Wildlife Agencies Wildlife Diversity Technical Committee. Before joining NH Fish & Game, he earned a M.S. from the University of New Hampshire and worked as the Wildlife Specialist for UNH Cooperative Extension. John coordinated NH's Wildlife Action Plan and has subsequently coordinated NH's State Wildlife Grant Program. He has also assisted with the coordination and administration of the New England Cottontail Competitive State Wildlife Grant awarded during 2009.

### **State Project Coordinators**

#### **Michael Marchand, New Hampshire**

See Regional Grant Coordinator

#### **Lori Erb, Massachusetts**

Lori has been the State Turtle Conservation Biologist with the Natural Heritage and Endangered Species Program, Massachusetts Division of Fisheries and Wildlife for the past five years. Lori received her M.S. in Biology from Towson University. She has 10+ years experience with conservation biology and herpetofauna. Lori has extensive experience with survey and monitoring techniques with a variety of natural resources and taxon including: stream quality, reptiles, amphibians, fish, macroinvertebrate, and plants. In her current position she has been developing and implementing conservation strategies for several protected turtle species. She currently manages a variety of reptile research projects, sits on the steering committee for the Northeastern Partners in Amphibian and Reptile Conservation, and has serves on USFWS recovery team for the bog turtle.

#### **Angelena M. Ross, New York**

## Northeast Blanding's Turtle & Associated SGCN Conservation Initiative

Angelena M. Ross is a Biologist at the New York State Department of Environmental Conservation and an adjunct instructor at the State University of New York College at Potsdam. She received an M.S. degree at the SUNY College of Environmental Science and Forestry, where she worked on spruce grouse conservation. Currently, her work focuses on conservation of threatened and endangered species such as the Blanding's turtle, the short-eared owl and the spruce grouse.

### **Jonathan Mays, Maine**

Jonathan Mays is a wildlife biologist for Maine's Department of Inland Fisheries and Wildlife where he is part of the Reptile, Amphibian, and Invertebrate Group and serves as the department's specialist on snakes, turtles, beetles, spiders, and snails. Before moving to Maine in 2006, Jonathan worked for North Carolina's Wildlife Resources Commission on non-game species projects including bog turtles and state rare snakes and salamanders. Jonathan holds a B.S. in Wildlife & Fisheries Science from Tennessee Technological University and a M.S. from Western Carolina University where he studied cave arthropod assemblages and ecosystems.

### **Chris Urban, Pennsylvania**

Chris is a Herpetologist, and Chief of the Pennsylvania Fish and Boat Commission's Natural Diversity Section, and holds degrees in Biology (B.S) and Ecology (M.S.) from Penn State University. As a field biologist, Chris has worked extensively with numerous state and federally listed reptiles and amphibians, including the bog turtle, redbelly turtle, timber rattlesnake, and eastern massasauga. As Chief of the Natural Diversity Section, Chris manages a nongame and endangered species program that has jurisdictional responsibility for all reptiles, amphibians, nongame fish, and aquatic invertebrates in Pennsylvania and has responsibility for the conservation and management of those species. Chris also is responsible for three statewide permit programs, is a liaison for PFBC with various advisory groups of the Pennsylvania Biological Survey, and PA's Natural Heritage Program. Chris is the PFBC coordinator for the Wild Resource Conservation Program, and is a project leader on approximately 20 active State Wildlife Grants.

### **Technical Staff**

#### **Judith Rhymer, University of Maine, Orono**

Phone: (207) 581-2863; [judith.rhymer@umit.maine.edu](mailto:judith.rhymer@umit.maine.edu)

Dr. Rhymer is an Assistant Professor of Wildlife Ecology at the University of Maine, Orono, ME. Prior to joining the faculty of the University of Maine, she worked at Clemson University and the Smithsonian Institution on conservation genetics research, following her graduate work at Florida State University. Her research and that of her students has focused primarily on the application of molecular population genetics to questions of ecological and conservation significance for threatened and endangered species, including freshwater turtles (wood turtles), freshwater mussels, small mammals (voles, shrews), birds (passerines, waterfowl), and butterflies. Much of this work has been in collaboration with the Maine Department of Inland Fisheries & Wildlife, The Nature Conservancy, USGS, and the US Fish & Wildlife Service to address management and conservation needs of these agencies with regards to rare species.

#### **Paul Sievert, University of Massachusetts, Amherst**

## Northeast Blanding's Turtle & Associated SGCN Conservation Initiative

Paul is the Assistant Unit Leader for Wildlife at the USGS Massachusetts Cooperative Fish and Wildlife Research Unit, located at the University of Massachusetts Amherst. He has supervised 13 graduate students and 2 postdoctoral fellows over the past 9 years, and authored or co-authored 28 peer-reviewed publications. His area of research expertise is conservation biology, physiological ecology, and biostatistics. His research group studies populations of threatened and endangered species (freshwater turtles, salamanders, butterflies and moths, short-tailed albatross, Sumatran tigers) to better understand, and hopefully reverse, their declines. He has collaborated with graduate students, research associates, and biologists throughout the Northeast on studies of Blanding's turtles and their conservation.

### **Lisabeth Willey, University of Massachusetts, Amherst**

Lisabeth is a postdoctoral research associate in the Department of Environmental Conservation at the University of Massachusetts Amherst. She received her Ph.D. at UMass in Organismic and Evolutionary Biology and Wildlife and Fisheries Conservation. She has worked with turtles throughout New England and her dissertation research focused on the spatial ecology and conservation of eastern box turtle, a close relative of Blanding's turtle. The four-year box turtle project involved close coordination with MassWildlife, other land holding agencies and private land-owners. She has also worked as an independent contractor for MassWildlife, NGOs, municipalities, and private companies offering conservation planning services and conducting vernal pool and rare species surveys.

### **Glenn Johnson, State University of New York Potsdam (SUNY)**

Dr. Johnson is Professor and Chair of the Biology Department at SUNY Potsdam where he teaches ecology, conservation biology and vertebrate zoology. He received his advanced degrees from SUNY College of Environmental Science and Forestry, where he worked on conservation issues with rare vertebrates including red-shouldered hawks and massasauga rattlesnakes. Currently, his research focuses on threatened and endangered species in northern New York, including spruce grouse and Blanding's turtles. He is co-author of a new book entitled "Amphibians and Reptiles of New York State: Identification, Natural History and Conservation."

### **Bryan Windmiller, Herpetological Consultant**

Bryan Windmiller holds a PhD in biology and a Master's degree in Environmental Policy, both from Tufts University. He has worked as a consulting wildlife ecologist since 1987. Bryan was the founder of an independent ecological consulting firm, Hyla Ecological Services, Inc. In 2006 – 2007, Bryan was a visiting scholar at James Cook University in Australia, where he studied the epidemiology of a fungal disease that has caused the extinction of amphibian species worldwide. Since then, he has worked as an independent consulting ecologist, specializing in rare species conservation management and citizen outreach and education projects related to wildlife conservation.

### **Parker River Association:**

#### **Mark Grgurovic, Swampwalkers Wetland Ecosystem Specialists**

Mark has a B.S. and a M.S. in Wildlife and Fisheries Conservation from the University of Massachusetts. He earned *Summa cum laude* status during his graduate work and received a 25K grant from the Massachusetts Environmental Trust. Mark has worked as an amphibian and reptile consultant on many projects for the Massachusetts Division of Fisheries and Wildlife. He is

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President and Founder of Swampwalkers Wetland Ecosystem Specialists and has been the primary contract researcher working for the Parker River Association since 2006.

### **Pete Bowman, New Hampshire Natural Heritage Bureau**

Pete Bowman has a B.S. in environmental science from Rutgers University and a Masters of Forestry from Duke University. He served as the state community ecologist for the Delaware Natural Heritage Program for five years before taking the position of state lands ecologist with the New Hampshire Natural Heritage Bureau. He now serves as the wildlife specialist for NH Natural Heritage. Pete works on maintenance and enhancements to the wildlife Element Occurrence records under an existing MOU with NH Fish & Game Department. Pete will be assisting with Element Occurrence data components of Project I for New Hampshire.

**Anthony Tur**, Endangered Species Specialist, U.S. Fish and Wildlife Service, New England Field Office, 70 Commercial Street, Suite 300, Concord, NH 03301; Phone: (603) 223-2541 extension 24; Email: [Anthony\\_Tur@fws.gov](mailto:Anthony_Tur@fws.gov) Role: Work with the principal investigator on Project II in the development of a study plan to identify population units of northeastern Blanding's turtles, assist in the collection of genetic samples, coordinate with State partners, and make recommendations for U.S. Fish and Wildlife Service (Service) involvement in addressing the conservation needs of northeastern Blanding's turtles.

**Blanding's Turtle Working Group** – See Appendix F

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**APPENDIX C.** Summary of proposed activity relevance to state Wildlife Action Plans.

	<u>NH</u>	<u>ME</u>	<u>MA</u>	<u>NY</u>	<u>PA</u>	<u>Status Assessment</u>
<b>PROJECT I:</b>						
<b>Job 1.1:</b> To develop a Blanding's Turtle conservation plan for the Northeast, including identifying spatially explicit conservation priorities.	X	X	X	X	X	X
<b>Job 1.2:</b> Disseminate management plans and priority conservation priorities to local stakeholders and partnering agencies and organizations.	X	X	X	X	X	X
<b>PROJECT II:</b>						
<b>Job 2.1:</b> Assess the genetic relationship among Blanding's turtle populations within the Northeast and across the species' range.	X				X	X
<b>PROJECT III:</b>						
<b>Job 3.1:</b> Develop standardized monitoring protocols for Northeast Region.			X	X	X	X
<b>Job 3.2:</b> Implement standardized monitoring protocols.	X	X	X	X	X	X
<b>PROJECT IV:</b>						
<b>Job 4.1:</b> Initiate on-the-ground implementation of priority actions to increase viability of Blanding's turtle populations and associated SGCN.	X	X	X	X	X	X

**Summary:**

All proposed Jobs are explicitly identified in at least two of the five state Wildlife Action Plans. For the two Jobs where only two states explicitly identified a Job (Job 2.1, 3.1), these actions were identified as priorities in the Blanding's Turtle Status Assessment (Compton et al. 2007), which was completed after states submitted Wildlife Action Plans. Also, New Hampshire, Massachusetts, and Maine explicitly identified the Blanding's turtle working group and multi-state partnerships as important strategies in conserving the Blanding's turtles. New York has

also been an active participant on the Blanding's turtle working group. Pennsylvania will be a new participant. Through the Blanding's turtle working group coordination, development of standardized monitoring protocols and regional genetics studies were identified as high priorities. Developing population conservation plans and using those plans to manage and conserve habitats was a priority in all 5 state WAP and the status assessment. Detailed strategies identified in each state plan to follow:

### **New Hampshire**

#### **Blanding's Turtle Profile (NH WAP Appendix A, A164-A174)**

1.9 - Conduct Distribution Surveys

2.9.3 - Identify viable populations and assess demographics (This was the highest ranking research item identified by the New England Blanding's Turtle Working Group (August 2004 survey)).

2.9.4- Assess population viability and habitat use on conservation land, in especially state parks and wildlife management areas. Short visual (e.g., basking and nesting) and trapping surveys should be used to assess relative condition of populations. Because multiple land uses in protected areas may threaten populations, longer surveys should be conducted at a sample of conservation lands to assess effects of land use.

2.9.5 -Assess isolation of populations in New England via genetics studies.

3.4.2 - Populations that are isolated by anthropogenic barriers (e.g., high-traffic roads) should be identified, and options for increasing safe passage of traveling turtles should be considered

4.0 -Protect large blocks of unfragmented habitat with a diversity of wetland complexes

4.0 -Work with towns to protect critical habitat through land acquisition, prime wetland designation, and wetland buffer regulations

4.0-Maintain beaver flowages and their function in the landscape (see Marsh and Shrub Wetland Profile).

4.0 - Design and place roads and other transportation networks (e.g., railways, bike trails, sidewalks) to reduce threats to Blanding's turtles and other rare wildlife (see Roads strategies).

4.1.1- Identify Blanding's turtle habitat that will be crucial for protection through acquisition, easement, development restrictions, and mitigation

4.1.3 Coordinate a regional Blanding's turtle working group

4.2 Conservation Action Research: Work with the New England Blanding's Turtle Working Group to update and prioritize areas for protection based on models and results of ongoing Blanding's turtle research.

#### **General Strategies relevant to Blanding's turtle Objectives (NH WAP, Chapter 5)**

200. Conservation Planning

201. Model validation and refinement

203. Assess threats to wildlife health

202. Maintain wildlife database

204. Map landscape potential for wildlife habitat

205. Map potential wildlife corridors and buffers

206. Produce and deliver planning maps

207. Prioritize and refine strategies to conserve wildlife

300. Education and Technical Assistance

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- 301. Identify actions to address through education, information, and technical guidance
- 306. Advise town conservation commissions and planning boards
- 307. Educate recreational users regarding threats to wildlife and natural communities
- 500. Habitat Management
- 505. Restore rare habitats and natural communities
- 507. Restore or maintain natural flow regimes
- 508. Restore and maintain watershed continuity
- 700. Land Protection
- 701. Protect riparian/shoreland habitat and other wildlife corridors
- 702. Protect unfragmented blocks and other key habitats
- 900. Monitoring
- 901. Conduct surveys to describe distribution
- 902. Detect changes in the condition of wildlife and habitat
- 903. Monitor population trends for threatened and endangered species
- 1000. Population Management
- 1001. Evaluate the viability of wildlife populations
- 1002. Augment rare and declining populations
- 1100. Regional Coordination
- 1101. Develop and implement existing regional conservation planning
- 1102. Regional conservation planning for species and habitats at risk
- 1300. Local Regulation and Policy
- 1301. Incorporate habitat conservation into local land planning
- 1302. Advise conservation commissions and open space committees
- 1303. Promote role of the regional planning commissions in landscape-scale conservation

### **Maine**

#### **Blanding's Turtle Profile (ME's WAP, chapter 5, Table 31, pg. 113-114)**

- 5.1 - Develop regulatory habitat protection provisions for projects subject to review under the Maine Endangered Species Act (MESA).
- 5.1 - Consider implementing Essential Habitat (MESA) provisions for high-value wetland occurrences.
- 5.1 - Distribute existing habitat management guidelines to landowners, towns, landtrusts, and others.
- 5.1 - Cooperate with The Nature Conservancy, local landtrusts, municipalities and other partners to conserve habitat within 6 key focus areas.
- 5.1 - Increase public awareness of threats and concerns using posters, factsheets, press releases, and public talks.
- 5.1 - Coordinate research objectives with state (TNC, MDOT, USFWS) and regional (PARC, Northeast Blanding's Turtle Working Group) partners.
- 5.1 - Investigate extent and significance of road mortality and options for mitigation.
- 5.1 - Develop a spatially-explicit statewide population viability analysis incorporating recent data on road mortality and movement ecology.
- 5.1 - Establish baseline wetlands for monitoring population trends using intensive binocular survey and trapping techniques

## Northeast Blanding's Turtle & Associated SGCN Conservation Initiative

5.1 - Continue de novo and historical surveys of wetlands across southern Maine. Correlate presence and relative abundance with patterns of landscape development and habitat loss. ME's WAP, chapter 6, Table 38, pg. 7, 6.1 - The two highest program components identified for Blanding's turtles are Research & Habitat Conservation (ME's WAP assumes that all species need and will benefit from landscape level habitat conservation as a high priority. Habitat Conservation in this instance refers to species-specific habitat conservation actions when habitat could be a limiting factor for a species.)

### **General Strategies relevant to Blanding's turtle Objectives (ME WAP, Chapter 6, 7)**

#### 6.0 Conservation Actions

6.1 Synthesis of conservation strategies [Chapter 6, pg. 1]

6.2.1 Comprehensive species planning (Species Assessment, Public Working Group, Goals and Objectives, Species Management System) [Chapter 6, pg. 13]

6.2.2 Beginning With Habitat: A landscape approach to habitat conservation in Maine [Chapter 6, pg. 26]

6.3 Prioritizing conservation efforts [chapter 6, pg. 32]

#### 7.0 Monitoring

7.1 Monitoring species-specific population conservation [Chapter 7, pg. 2]

7.2 Monitoring species-specific habitat conservation [Chapter 7, pg. 32]

7.3.1 Monitoring landscape conservation actions [Chapter 7, pg. 37]

7.3.2 Monitoring statewide habitat changes [Chapter 7, pg. 37]

### **Massachusetts**

#### **Blanding's Turtle Profile**

7.B - Blanding's Turtle: Research needs include full extent of distribution, acreage necessary for viable populations, efficacy of remediation attempts (tunnels, drift fences, created nest sites, etc.), age structure of existing populations, long-term (5-10 years) monitoring of populations, and coordination with New Hampshire researchers, at least.

7.C - Species Conservation Plans - NHESP proposes to create conservation plans for Blanding's turtles. These plans will summarize species biology, habitat, ecology, threats, distribution and status (globally and within Massachusetts), and current conservation efforts. Occurrences in Massachusetts will be discussed in detail and any gaps in essential knowledge will be identified. Measurable thresholds for each step in a potential down-listing or de-listing process will be proposed. These thresholds may include such criteria as number of protected populations, rate of survival to breeding age, necessary management actions, and distribution of populations across historic range, among many other possible items. Once a conservation plan for a species is drafted and approved, MDFW will devote resources as available to conducting any needed research and inventory, protecting documented occurrences, managing occurrences appropriately, and completing any other actions necessary to meet the threshold for down-listing or de-listing the species in question.

9.A.5 - Researching large landscape mosaics and their ability to support residency of species with large home ranges and sexually selected dispersal patterns, as well as supporting other wildlife populations within Massachusetts;

9.A.5 - Examining the sensitivity of focal species populations to fragmentation from roads, development, and changing land-use patterns;

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- 9.A.5 - Determining the minimum land area and habitat features needed to protect meta-populations of landscape mosaic species, for use in conservation planning;
- 9.A.5 ) - Prioritizing large unfragmented landscape mosaics across the state as targets for survey and conservation efforts;
- 9.A.5 - Synthesis of research and survey findings, with subsequent production of conservation guidelines;
- 9.A.5 - Identifying and prioritizing large landscape mosaics that are critical to the conservation of focal species and biodiversity within the state;
- 9.A.5 - Cultivate government and private partnerships focused on large-scale natural area protection, particularly in areas west of the Connecticut River, for mammals; in northeastern Massachusetts, for Blanding's Turtles
- 9.B.2 - Determining Species Habitat Polygons for each current occurrence of a state-listed shrub swamp animal;
- 9.B.2 - Locating large shrub swamps state-wide via aerial photo-interpretation, and field-surveying a selected percentage of these swamps for rare and uncommon animals;
- 9.B.2 - Protecting land in and around shrub swamps supporting populations of rare and uncommon animals
- 9.C.1 - Determining site-specific Species Habitat Polygons for each current occurrence of a state-listed vernal pool animal, to inform land protection and regulatory priorities and actions;
- 9.C.1 - Conducting research into the impacts of development and habitat fragmentation on vernal pool species, particularly for the reptiles and amphibians which use vernal pools;
- 9.C.1 - Prioritizing clusters of vernal pools across the state as targets for survey and conservation efforts;
- 9.C.1 - Protecting land around vernal pools supporting populations of rare and uncommon animals;
- 9.C.1 - Synthesis of research and survey findings, with subsequent production of conservation guidelines;
- 9.C.1 - Producing conservation and recovery plans for suites of rare vernal pool animals;

### **General Strategies relevant to Blanding's turtle Objectives**

- 4.B.1 - The overall goal of the NHESP is the protection of the state's wide range of native biological diversity. Progress towards this goal is accomplished through the following: Biological Field Surveys, Research and Monitoring, Data Management, Environmental Impact Review, Rare Species Recovery, Ecological Restoration of Key Habitats, Land Protection Protecting Habitat
- 4.B - Rare species in Massachusetts are threatened primarily by habitat loss and degradation. The NHESP identifies the habitats critical to rare species and helps prioritize the Division's land acquisition efforts. NHESP staff also helps other state and federal agencies, land conservation groups, and municipalities to set biodiversity conservation priorities and helps them protect and manage land for rare species
- 7.A.4 - Prioritization of protection efforts. This element involves making what can only be described as judgment calls. For example, all things being equal, what species should be targeted for immediate protection? It is easy to see that different conservationists might answer differently: protect all the occurrences of the very rare species first; or protect first the most viable populations of those species judged most likely to persist if properly conserved; protect first order streams, or protect wildlife corridors first; or protect large, contiguous landscapes of

natural habitats first; or protect first what our human constituency at large wants protected – the glamorous and showy rare species, the beautiful landscapes, and their favorite hunting and fishing spots.

7.A.5 - Identification of land for protection, based on stated priorities. Once priorities for land protection are established, these priorities should be applied to the existing knowledge of the biological resources of the state, to identify precise areas for immediate protection efforts. A map of these areas will be developed, with information attached to each recommended area as to the particular conservation targets therein. It can be expected that, as a result of this step in the process, along with the preceding steps, gaps in our knowledge will be identified, which can then be filled in the next cycle of this whole process.

7.A.6 - Dissemination of conservation priorities to conservation partners. Providing GIS or paper maps and supporting information to state, Federal, municipal, and private conservation groups is the first step in implementing proactive habitat protection. Beyond that, it is likely that a detailed examination of the map of areas to be protected will reveal which organizations are most suited to protect each area, because of proximity to land already protected, or the particular priorities of the organization, or some other such factor. A list of unprotected areas suitable for protection by each active conservation group should be compiled and distributed, wherever possible in whatever venue is appropriate. Meetings between MDFW staff and staff from these other groups are likely to be particularly fruitful. An agency database of contact/ mailing information of all identified conservation partners needs to be developed to aid in mass postal and electronic communications. Currently, lists exist in various forms but not in any centrally organized fashion that is easily accessible.

7.B - State-Listed and Other Rare Species. In addition to state-listed species, the Natural Heritage and Endangered Program of DFW tracks other plants and animals for which the conservation status in the state is unclear. However, some of the globally rare species in greatest need of conservation, listed in this Strategy, have not been tracked by any section or program of MDFW, and the current distribution and abundance of a number of state-listed species have not been surveyed systematically in recent years. The Natural Heritage Program will continue to track rare species, as it does now, but given sufficient funding and staffing, there are additional species to be monitored and types of surveys to be conducted, as detailed below.

#### Coordination and Partnership

7.F - Key partners in conducting biological inventory and research for rare and endangered vertebrate and invertebrate wildlife species are universities such as UMass-Amherst and the Harvard Forest. Through its Small Research Contracts Program, Natural Heritage contracts with dozens of diverse partners, such as the Athol Bird & Nature Club, to conduct species censuses or biodiversity inventories.

7.F - In land protection planning, Natural Heritage works closely with statewide conservation organizations such as MassAudubon, The Nature Conservancy, and the Trustees of Reservations, regional land trusts such as the Wildlands Trust of Southeastern Massachusetts, and local open space committees and land trusts and such, as the Dartmouth Natural Resources Council, to provide information that they can use in their conservation planning activities or to help raise interest and funds in protecting the identified parcels.

#### Biological Monitoring of Species and Habitats

8.A. - Vernal Pool species, including Blanding's Turtles: Along with the ten-year cycle of monitoring vernal pools as a habitat, MassWildlife and its cooperators (PARC, volunteers, scientists from the University of Massachusetts) will target known sites of these vernal pool

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species and survey for them specifically, to determine presence/absence/non-detection at vernal pools and to assess population/breeding status.

8.A. - Habitat generalists, including Blanding's Turtles. Monitoring these will involve more than monitoring the status of their habitats. At a minimum, MassWildlife and its cooperators will inventory known sites for these species every ten years, to determine presence/absence/non-detection. In addition, Mass Wildlife and its cooperators will, over the next ten years, determine the location of all populations and, especially, over-wintering dens, of these species in the state.

8.A.3 - Species with long life spans, including all turtles and possibly the snakes: Here, MassWildlife and its cooperators will need to establish marked populations of these species, covering the range of small-to-large population numbers, urban-to-rural contexts, large-to-small available habitat acreage, etc., and monitor these marked individuals over long periods, probably a minimum of 20 years. MassWildlife will work with PARC and other experts to determine how best to set up such long-term surveys.

### New York

#### **Blanding's Turtle Profile**

- Develop standardized habitat and population survey protocols to document the character, quality and extent of occupied habitat (p.261).
- Determine significance of specific threats to populations of uncommon turtles of wetlands and develop management recommendations to address significant threats (p. 261)
- Periodically resurvey areas of known occurrence to detect population trends (p. 261)
- Develop a management plan that includes land acquisition and management targets for all wetland and grassland-dependent SGCN (p. 264)
- Acquisition of forested and grassland upland tracts adjacent to wetland properties is critical to protection and restoration of amphibian, reptile and marsh nesting birds. Identification of these parcels should occur immediately (p. 265).
- Maintain knowledge of species and their habitats in sufficient detail to recognize long-term population shifts (p. 348).
- Identify, manage, protect, maintain and restore habitat/natural communities over as broad a spatial scale as possible. Work to keep large forest, wetlands and grassland complexes unfragmented, and to restore fragmented habitats where feasible to increase patch size and connectivity (p. 348).
- Conduct surveys to determine the status of Blanding's turtles and Spotted turtles in this [Northeastern Lake Ontario-St. Lawrence] basin. Re-survey occupied sites to detect population trends over time (p. 354).
- Develop standardized populations survey protocols and implement protocols at all known and potentially suitable sites to document the extent of occupied habitat (p. 354)
- Secure habitats critical to species survival by acquisition of easements or by other land protection mechanisms (p. 370).
- Secure habitats critical to the species survival by acquisition of easements or by other land-protection mechanisms (p. 370).
- Secure habitat critical to the species survival by acquisition of conservation easements for wetlands and adjacent uplands (p. 371)

#### **General Strategies relevant to Blanding's turtle Objectives**

## Northeast Blanding's Turtle & Associated SGCN Conservation Initiative

- Ensure that no at-risk (threatened/endorsed) species becomes extirpated in the basin (mentioned in each watershed).

### Data Collection

- Understanding the abundance and distribution of SGCN is perhaps the single most important factor in their effective protection and management (p. 71)
- Develop a standard set of protocols for all herpetofauna SGCN within the next 10 years (p. 74).
- Improve mapping and understanding of habitat distribution and condition in New York State (p. 75)
- Identify and map large blocks of unfragmented habitat cover types (p.76).
- Identify spatially explicit critical habitat maps for SGCN statewide and determine their protective status. Use this information to inform the Open Space Conservation Plan and other land protection and acquisition programs (p. 76).
- Use above information to identify the publicly-owned lands that support SGCN and provide that information to land managers (p. 76).
- Document the use of wetland habitats by SGCN in wetlands smaller than 12.4 acres and not currently protected under Article 24 (p. 77).

### Planning

- Build on the existing "fine-filter" draft of the CWCS to generate "coarse filter" recommendations for identification of priority habitats and threat assessments. Work with conservation partners and existing GAP project information to generate these new products (p. 78).
- Develop a statewide, standardized GIS layer of all protected lands in New York. This should include information on all levels of protection including easements (p. 78).
- Update state land unit management plans, state park master plans, national wildlife refuge comprehensive plans, and other appropriate planning documents to include information and management needs of SGCN statewide (p. 79).
- Coordinate the diverse array of stakeholder groups that will need to be involved in land-use planning for SGCN (p. 363).
- Use data collected for SGCN through the SWG funding stream to update appropriate New York Natural Heritage Records (p. 81).

### Land Protection

- Secure habitat critical to the species survival by acquisition of conservation easements for wetlands and adjacent uplands (p. 371)
- Improve mapping accuracy and availability for sensitive habitats like wetlands and riparian zones. Use this information to identify buffer parcels and inform landowners and local planning and zoning boards of their value (p. 80).
- Implement the Landowner Incentive Program and support existing private lands cooperative management programs to improve habitat for SGCN on private lands (p. 80).

### Management and Restoration

- Incorporate tabular and spatial data collected for SGCN and their habitats into DEC's Master Habitat Data Bank and the Natural Heritage program Database, as appropriate (p. 81).
- Develop a monitoring program outlined in the monitoring chapter and develop data standards for research projects funded by SWG (p. 81).

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- Institute peer review of monitoring protocols for SGCN
- Expand the capacity of agencies and non-governmental organizations to work with private landowners who have habitat for SGCN on their property to manage it for the benefit of SGCN (p. 81).
- Update and maintain the CWCS planning database in anticipation of the redrafting of the CWCS in five years (p. 82).

### Information Dissemination

- Develop fact sheets regarding all SGCN for distribution to the public. Include steps that the public can take to protect and enhance wildlife (p. 83).
- Develop an outreach program for public and private land managers to increase awareness of the benefits of managing the land with wildlife-friendly agricultural practices (p. 83).
- Develop and outreach and education tool to highlight the possible detrimental effects of human disturbance on wetland-dependent wildlife, especially SGCN (p. 83).
- Share information on lands that provide critical habitat for SGCN with county and town planning boards to assist them in steering development and growth away from critical areas (p. 84)

### Incentives

- Develop other incentives for private landowners to incorporate protections of SGCN into their land management (p. 86).
- Work with local governments to develop effective zoning statutes, technical and financial assistance to watershed protection and development planning, and effective enforcement techniques for existing statutes (p. 86).
- Explore the development of state incentives for local government to undertake Quality Community of Smart Growth initiatives and create local open space conservation plans (p. 86).

### Monitoring

- Collaboration with existing monitoring efforts at universities, government agencies, and not-for-profit partners (p. 551).
- Development of efficient information sharing among partners to maximize the benefits of limited funding (p. 551).
- Development of minimum standards across these [monitoring] programs wherever possible (p. 551).
- Long-term stewardship of these data sets, and technological and practical accessibility of these data sets (p. 552).
- Develop a comprehensive analysis of the status and distribution of SGCN and their habitats (p. 565).

## **Pennsylvania**

### **Blanding's Turtle Profile**

#### *Research and Survey Priorities*

Little is known concerning the biology or distribution of Blanding's turtle in Pennsylvania. The following should be initiated as soon as possible: 1- Institute programs to survey appropriate habitat both for the presence of Blanding's turtles and for the size of the populations on Presque Isle. Determine extent of suitable habitat where turtles are located. 2-Resurvey historic locations

and their vicinity for Blanding's turtles. 3- Obtain DNA samples from all habitats surveyed for genetic analysis. 4- Implant all individuals found with PIT tags for future monitoring. Level 2. 1- Continue all items in Level 1 as needed and begin long-term monitoring of any populations that are found, continuing to implant PIT tags as necessary. (Appendix 3: Herps-1. p. 215).

*Conservation, Management, Implementation Priorities*

The major priority is to maintain adequate habitat for Blanding's turtles if and when they are located in the state. Joyal et al., 2001. Suggest that the best strategy is to protect small wetlands and conserving them in groups rather than as isolated entities is the best approach. Also based on the extensive use of upland habitat by Blanding's turtles that terrestrial buffer zones be maintained around the identified wetland groups. Based on their study a buffer zone of at least 500 meters should be established around the perimeter of the wetlands utilized by the turtles. (Appendix 3: Herps-1. p. 219).

*Monitoring and Adaptive Management*

Once the location of populations is established through surveys the populations should be subjected to intensive long-term monitoring. The sites designated for long-term monitoring should, whenever possible, be situated on public lands. Long-term studies should include mark-recapture procedures and should specifically target population size and structure as well as reproductive activity and success within the populations. Appropriate resource managers at all sites where populations are discovered should be made aware of the existence of the populations. Whenever possible management for Blanding's turtles should be incorporated into the appropriate resource management plans. (Appendix 3: Herps-1. p. 220).

**General Strategies relevant to Blanding's turtle Objectives**

**Conduct Species' Status Assessments**

Desired Outcome: Establish basic information regarding PA population size, structure, viability and management/recovery needs of WAP-Priority species that are identified as Species of Greatest Conservation Concern. Emphasis on Immediate Concern and High-Level Concern species would also be appropriate.

- Survey and identify extant and historical sites throughout species' ranges.
- Survey other sites of potential habitat throughout their ranges to detect new population occurrences
- Estimate population size and age structure and assess population health
- Identify life history requirements and optimum habitat characteristics
- Identify key characteristics of successfully breeding populations
- Identify extant threats that may jeopardize remaining populations
- Implement management and recovery actions.
- Survey areas between known sites to assess for suitability as dispersal corridors.
- Develop a monitoring protocol to record breeding and evaluate population changes at known sites. (p. 10.74)

**Population Monitoring**

Desired Outcome: To gather long-term information on population demographics, status, distribution and abundance and to detect population trend information in a timely manner in order to proactively manage target species and habitats. (p. 10-82)

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### Habitat Assessment and Protection

Desired Outcome: Establish specific habitat information for WAP-Priority species that are identified as Species of Greatest Conservation Need. Emphasis on Immediate Concern, High-Level Concern, and PA Vulnerable species would also be appropriate.

#### Strategies:

- Inventory and assess historic and extant population. In order to determine the current size and range of target populations, surveys should revisit extant and historic records and search for new locations around and between disjunct populations, as appropriate.
- Determine habitat requirements and characteristics of optimum habitats
- Assess the condition of occupied habitat and identify threats
- Identify high-quality sites
- Information is needed regarding the habitat requirements, dispersal distances, home range, and distance traveled to breeding/nesting/roosting/ denning sites.
- Assess barriers to migration/dispersal, habitat corridors to other potential breeding populations. (p.10.77)

### Clarification of Genetic Issues

Desired Outcome: Build capacity to identify genetically-distinct populations in order to prioritize conservation efforts most efficiently. Efforts would be aimed primarily at WAP-Priority species that are identified as PA Vulnerable – i.e. are rare/peripheral in PA but not in trouble in the rest of their range. Emphasis on Immediate Concern and High Level Concern specie may also be appropriate.

#### Strategies:

- Identify genetic issues and species targets for which resolution of genetics issues are relevant to species management in Pennsylvania.
- Design genetic research protocols for target species/issues
- Employ practical methods for assessing genetic diversity of target populations/species using DNA sequence data
- Refine protocols for interpretation of genetic data
- Assess the genetic status of disjunct, isolated, fragmented, and peripheral populations of high-priority species
- Develop management recommendations that integrate information on genetic diversity with data on population density and distribution
- Develop/document “best practices” for genetics field research and laboratory analysis of target species. (10-77, 78)

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**APPENDIX D:** SGCN that will benefit from this project. Species were included by state project coordinators if species was listed in their state WAP as a SGCN, the range of the species overlapped with Blanding's turtles in their state, and the SGCN will benefit from actions resulting from this grant.

	<b>ME<sup>1</sup></b>	<b>NH<sup>2</sup></b>	<b>MA<sup>3</sup></b>	<b>NY<sup>4</sup></b>	<b>PA<sup>5</sup></b>
<u>Birds</u>					
American Bittern	X	X	X	X	X
American Black Duck	X	X	X	X	X
American Woodcock	X	X	X	X	X
Great Blue Heron	X	X		X	X
Northern Harrier		X		X	
Osprey		X		X	X
Pied-Billed Grebe	X	X	X	X	X

Justification for inclusion: All species listed are known to share wetland habitats within the states that they are identified as SGCN. Management plans developed for Blanding's turtles (Actions 1.1.4 and 1.1.5, Job 1.2) will incorporate any habitat concerns for these species as well. Lands will be prioritized for protection and wetlands needing restoration will be identified.

	<b>ME<sup>1</sup></b>	<b>NH<sup>2</sup></b>	<b>MA<sup>3</sup></b>	<b>NY<sup>4</sup></b>	<b>PA<sup>5</sup></b>
<u>Reptiles</u>					
<i>Blanding's Turtle</i>	X	X	X	X	X
Snapping Turtle				X	X
Ribbon snake		X	X	X	X
Spotted Turtle	X	X	X	X	X
Wood Turtle	X	X	X	X	X

Justification for inclusion: All species listed are known to share wetland habitats within the states that they are identified as SGCN. Management plans developed for Blanding's turtles (Actions 1.1.4 and 1.1.5, Job 1.2) will incorporate any habitat concerns for these species as well. Spotted turtles, wood turtles, and snapping turtles would likely benefit from nesting habitat enhancement (Action 4.1.1), turtle road crossing signs (Action 4.1.2), and road upgrades associated with management plan development (Job 1.2). All species will benefit from the protection of connected landscapes and wetland restoration efforts (Job 1.2).

	<b>ME<sup>1</sup></b>	<b>NH<sup>2</sup></b>	<b>MA<sup>3</sup></b>	<b>NY<sup>4</sup></b>	<b>PA<sup>5</sup></b>
<u>Amphibians</u>					
Blue-Spotted Salamander	X	X	X	X	
Four-Toed Salamander			X		
Jefferson Salamander		X		X	X
Western chorus frog				X	

Justification for inclusion: All species listed are known to share wetland habitats within the states that they are identified as SGCN. Management plans developed for Blanding's turtles (Actions 1.1.4 and 1.1.5, Job 1.2) will incorporate any habitat concerns for these species as well. Landscapes needed to maintain viable populations of Blanding's turtles are similar to those

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needed to maintain metapopulations of vernal pool obligates such as blue-spotted salamanders. In fact, Blanding's turtles often use these same vernal pools.

Mammals

New England Cottontail

ME <sup>1</sup>	NH <sup>2</sup>	MA <sup>3</sup>	NY <sup>4</sup>	PA <sup>5</sup>
	X			

Justification for inclusion: New England cottontails (NEC) are known to share habitats in NH. Management plans developed for Blanding's turtles (Actions 1.1.4 and 1.1.5, Job 1.2) will incorporate any habitat concerns for NEC as well. In NH, management has been coordinated for several sites where NEC and Blanding's turtle both exist. Management for NEC often focuses on maintaining high shrub densities at edges of wetlands occupied by Blanding's. Protection and restoration of large landscapes required by Blanding's turtles will benefit the management of New England cottontail populations.

Fish

Banded sunfish

Bridle Shiner

Redfin pickerel

ME <sup>1</sup>	NH <sup>2</sup>	MA <sup>3</sup>	NY <sup>4</sup>	PA <sup>5</sup>
	X			X
	X	X		X
	X			

Justification for inclusion: All species listed are known to share wetland/aquatic habitats within the states that they are identified as SGCN. Management plans developed for Blanding's turtles (Actions 1.1.4 and 1.1.5, Job 1.2) will incorporate any habitat concerns for these species as well. Road crossing upgrades (e.g., enlarging culverts) will benefit aquatic organism connectivity and passage (Job 1.2).

Invertebrates

Arrow Clubtail

Brook Snaketail

Citrine Forktail

Hessel's Hairstreak

Rambur's Forktail

Ringed Boghaunter

Spatterdock Darner

Spicebush Swallowtail

Swamp Darner

Triangle Floater

Umber Shadowdragon

ME <sup>1</sup>	NH <sup>2</sup>	MA <sup>3</sup>	NY <sup>4</sup>	PA <sup>5</sup>
		X		
		X		
X				
X		X		
X				
X	X	X		
X		X	X	X
X				
X				
		X		X
		X		

Justification for inclusion: All species listed are known to share wetland habitats within the states that they are identified as SGCN. Management plans developed for Blanding's turtles (Actions 1.1.4 and 1.1.5, Job 1.2) will incorporate any habitat concerns for these species as well.

<sup>1</sup>ME WAP - Chapter 4, Table 29

<sup>2</sup>NH WAP, Appendix A, Appendix D

<sup>3</sup>MA WAP, Chapter 9, pgs 260, 280, and 327

<sup>4</sup>NY WAP, Appendix D1

<sup>5</sup>PA WAP, Part 1, Section 10

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**APPENDIX E:** Habitat types listed in state Wildlife Action Plans that would benefit from actions proposed in this grant.

**Habitats**

**ME<sup>1</sup> NH<sup>2</sup> MA<sup>3</sup> NY<sup>4</sup> PA<sup>5</sup>**

**Wetland/Aquatic**

Marsh, Wet Meadow, & Shrub Wetlands  
 Peatlands  
 Vernal Pools  
 Floodplain Forests  
 Watershed Units (multiple) - include  
 Aquatic Habitats  
 Lakes & Ponds  
 Forested Wetland  
 Rivers & Streams

	ME <sup>1</sup>	NH <sup>2</sup>	MA <sup>3</sup>	NY <sup>4</sup>	PA <sup>5</sup>
Marsh, Wet Meadow, & Shrub Wetlands	X	X	X	X	X
Peatlands		X		X	
Vernal Pools		X	X	X	X
Floodplain Forests		X		X	X
Watershed Units (multiple) - include Aquatic Habitats		X		X	X
Lakes & Ponds	X			X	X
Forested Wetland	X			X	X
Rivers & Streams	X		X		

**Terrestrial**

Appalachian Oak-Pine Forests  
 Hemlock-hardwood pine forest  
 Deciduous & Mixed Forest  
 Coniferous Forest  
 Dry Woodland & Barrens  
 Shrub / Early Successional  
 Grassland / Agriculture / Old Field  
 Large Unfragmented Landscape Mosaics  
 Upland Forest  
 Riparian Forest

	ME <sup>1</sup>	NH <sup>2</sup>	MA <sup>3</sup>	NY <sup>4</sup>	PA <sup>5</sup>
Appalachian Oak-Pine Forests		X			
Hemlock-hardwood pine forest		X		X	X
Deciduous & Mixed Forest	X			X	X
Coniferous Forest	X				X
Dry Woodland & Barrens	X				
Shrub / Early Successional	X	X		X	X
Grassland / Agriculture / Old Field	X	X		X	X
Large Unfragmented Landscape Mosaics			X		
Upland Forest			X		
Riparian Forest			X		X

<sup>1</sup> ME WAP, Chapter 4, Table 29, pg. 37-51

<sup>2</sup> NH WAP, Appendix B, Appendix D

<sup>3</sup> MA WAP, Chapter 9, pgs 260, 280, and 327, Chapter 10 pg 419

<sup>4</sup> NY WAP

<sup>5</sup> PA WAP, Part 2, Section 1-9

**APPENDIX F. Members of the Northeast Blanding's turtle working group.**

<b>Name</b>	<b>Affiliation</b>
Mike Marchand	NH Fish & Game
John Kanter	NH Fish & Game
Brendan Clifford	NH Fish & Game
Kim Babbitt	University of New Hampshire
Steve Najjar	New Boston Air Force Base
Brad Compton	University of Massachusetts-Amherst
Paul Sievert	University of Massachusetts-Amherst, USGS Office
Phillip deMaynadier	Maine Inland Fisheries and Wildlife Department
Jonathan Mays	Maine Inland Fisheries and Wildlife Department
Fred Beaudry	University of Maine, Orono alumni
Lori Erb	Massachusetts Division of Fisheries and Wildlife
Scott Smyers	Oxbow Associations, Inc. (MA)
Brian Butler	Oxbow Associations, Inc. (MA)
Tony Tur	USFWS, Endangered Species Specialist, New England Field Office
Alison Whitlock	USFWS, Federal Aid Coordinator, Northeast Regional Office
Stephanie Koch	USFWS Refuges, Assabet NWR, MA
Angelena Ross	NY DEC
Marc McCollough	USFWS, Endangered Species Specialist, Maine Field Office
Erik Kiviat	Hudsonia (non-profit NY)
Dan Nein	Stantec Consulting (ME)
Tanessa Hartwig	Bard College, NY
Jesse Jaycox	NY Parks, Recreation, and Preservation
Glenn Johnson	State University of New York
Kurt Buhlmann	independent researcher
Lisabeth Willey	University of Massachusetts – Amherst
Chris Urban	Pennsylvania Fish and Boat Commission

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### APPENDIX G. Example list of candidate land trusts to target in Project I, Job 1.2 in NH.

(L) Amherst Land Trust  
George Bower - President  
183 Mack Hill Road  
Amherst, NH 03031  
(603) 673-5732  
Bower1@verizon.net

(S) Audubon Society of NH  
Vanessa Jones  
3 Silk Farm Road  
Concord, NH 03301  
(603) 224-9909  
Vjones@nhaudubon.org

(R) Ausbon Sargent Land Preser. Trust  
Deborah Stanley - Executive Dir.  
PO Box 2040  
New London, NH 03257  
(603) 526-6555  
aslpt@tds.net

(R) Bear-Paw Regional Greenways  
Dan Kern - Executive Dir.  
PO Box 19  
Deerfield, NH 03037  
(603) 463-9400  
info@bear-paw.org

(L) Bow Open Spaces  
Robert Dawkins - Treasurer  
41 South Bow Road  
Bow, NH 03304  
(603) 225-3678  
radnhcpa@comcast.net

(R) Five Rivers Conservation Trust  
Chuck Knox - Executive Dir.  
54 Portsmouth Street  
Concord, NH 03301  
(603) 225-7225  
director@5rct.org

(R) Nashua River Watershed Association  
Al Futterman - Land Programs Dir.  
592 Main Street  
Groton, MA 01450  
(978) 448-0299  
alf@nashuariverwatershed.org  
CLCA envisions

(L) Nichols-Smith Conservation Land Trust  
Gerald Coffey - President  
PO Box 266  
Hollis, NH 03049  
(603) 465-6144  
gerrycoffey@tds.net

(L) Nissitissit River Land Trust  
Peter Smith - President  
40 Nartoff Road  
Hollis, NH 03049  
(603) 882-1431  
[psmith@beaverbrook.org](mailto:psmith@beaverbrook.org)

(S) Society for the Protect. of NH Forests  
Paul Doscher - Sr.Dir.of Land Prot.  
54 Portsmouth Street  
Concord, NH 03301  
(603) 224-9945  
pdoscher@forestsociety.org

(R) Southeast Land Trust of N.H.  
Brian Hart - Executive Dir.  
PO Box 675  
Exeter, NH 03833  
(603) 778-6088  
bhart@seltnh.org

(R) Strafford Rivers Conservancy  
Anna Boudreau - Executive Dir.  
2 Washington St., Suite 312  
Dover, NH 03821-0623  
(603) 516-0772  
annaboudreau@comcast.net

(S) The Nature Conservancy  
Mark Zankel - Dir. of Cons. Programs  
22 Bridge Street, 4th Floor  
Concord, NH 03301  
(603) 224-5853  
mzankel@tnc.org

(N) Trust for Public Land  
Dennis Shaffer  
3 Shipman Place  
Montpelier, VT 05602

**S = State-wide**  
**R = Regional (multi-town)**  
**L = Local (one town)**  
**N = National**

## **APPENDIX H. DETAILED METHODOLOGIES FOR PROJECT II-GENETIC ANALYSIS OF BLANDING'S TURTLE POPULATIONS**

### Population Sampling

Ideally, 20-30 blood samples will be collected from unrelated individuals in populations throughout the Northeast range of the Blanding's turtle. For a rare species such as Blanding's turtle, this may not always be feasible, but every effort will be made to sample as thoroughly as possible. Populations should be chosen to adequately represent the geographic range of the species within each state. Proposed sampling sites are listed, including those from which DNA samples are already available (S. Mockford, pers. comm.). Local experts in the Northeast and will offer advice and assist in additional sampling.

### DNA Analysis

#### DNA isolation:

Genomic DNA will be isolated from each sample using a QIAamp DNA Mini Kit (Qiagen Inc., Valencia, CA) following the manufacturer's instructions for the spin procedure. DNA will be resuspended in 100µl of sterile water and stored at -20° C.

#### DNA Genotyping and Sequencing:

Genotyping will be done by Ecogenics using microsatellite loci (nuclear DNA) used in previous analyses of populations in the Midwest and Canada. If time and funding permit, mitochondrial DNA (mtDNA) control region sequences will also be compared to further assess the range-wide population genetic structure in Blanding's turtles.

#### Genotyping - Microsatellite Loci:

Recent studies on the genetic structure of Blanding's turtles across their North American range used different genetic markers: five microsatellite loci (Mockford et al. 2007); eight microsatellite loci (Sethuraman et al. 2010). Previous work on Blanding's turtles in the Northeast only one population from Massachusetts and one from New York state. We propose to analyze additional northeastern populations using these same 15 loci for eventual comparison with all previous studies. A list of all loci is available upon request. Amplification conditions will be optimized by researchers at Ecogenics to provide the most efficient methods For analyzing several hundred samples. Microsatellite alleles will be sized and visualized using software and a detailed report of methods and findings will be available for analysis and future work.

Data analysis: Data will be analyzed by J. Rhymer at the University of Maine. Within-population genetic diversity will be estimated using the software GENEPOP (Raymond and Rousset 1995) and FSTAT (Goudet 1995). Observed ( $H_o$ ) and expected ( $H_e$ ) heterozygosity, test of linkage disequilibrium and departure from Hardy-Weinberg equilibrium (HWE) will be calculated for each microsatellite locus, as well as across all loci, and significance levels will be tested with the Markov chain method implemented in GENEPOP. Microsatellite data will be analyzed using the software MICROCHECKER (van Oosterhout et al. 2004) to detect genotyping artifacts that could interfere with the analysis of genetic parameters, e.g., null alleles,

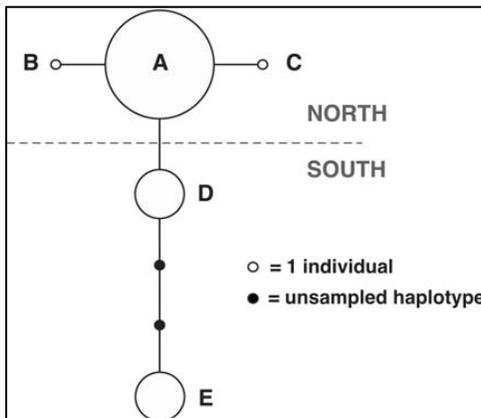
large allele dropout and stutter bands. If null alleles are detected, we will estimate their frequency with the maximum likelihood method of Kalinowski and Taper (2006).

To assess among-population variability, we will perform Fisher's exact tests for pair-wise comparisons of allele frequencies at each locus. Genetic differentiation among populations will be evaluated by estimating  $F_{ST}$  using the programs FSTAT and ARLEQUIN (Schneider et al. 2000). The Bonferroni correction will be used to reduce error introduced when computing multiple comparisons. Genetic structure will also be analyzed using the program STRUCTURE (Pritchard et al. 2000) to determine the most likely number of genetically distinct populations, and assignments of individuals to populations will be done using a Bayesian algorithm in the program GENECLASS2 (Piry et al. 2004). Indirect estimates of gene flow will be calculated using the program IMA (Nielsen and Wakeley 2001; Hey and Nielsen 2004, 2007) to determine if differentiation among populations is due to recent divergence (post-glaciation) or ongoing, recurrent migration among populations. Potential barriers to dispersal among populations can also be estimated with the program GENELAND, by using geo-referenced individual multilocus genotypes to infer the number of populations and the spatial location of genetic discontinuities among those populations (Guillot et al. 2005).

#### Mitochondrial DNA Sequencing

If additional analyses are necessary in addition to microsatellite analyses, DNA sequences of the mitochondrial DNA 5' segment of the control region will be compared among populations to assess range-wide and phylogeographic relationships among Blanding's turtle populations in the Midwest and Northeast regions of their range. Sequences will be edited and aligned using the Clustal algorithm in SEQUENCE NAVIGATOR™ (Applied Biosystems), as well as by eye. The model of evolution that best fits the data will be selected using MODELTEST software (Posada and Crandall 1998). Once the appropriate model is selected, phylogenetic relationships will be estimated using maximum likelihood (ML) in the program PAUP 4.0b10 (Swofford 2003).

Genealogical relationships among control region haplotypes will be estimated using the software TCS (Clement et al. 2000) (see example figure below). This parsimony network method estimates spatial relationships among populations across broad geographic ranges.



**TCS haplotype network showing the geographic north-south split between populations of the bog turtle (*Glyptemys muhlenbergii*) in the eastern United States. Size of circles is proportional to number of individuals with that haplotype (from Rosenbaum et al. 2007).**

Population genetic structure will also be inferred by analysis of molecular variance (AMOVA) provided within the program ARLEQUIN (Schneider et al. 2000). This analysis will be based on

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mtDNA lineages grouped by region (Midwest and Northeast) and populations within regions. The null distributions to test significance of the variance components and the pairwise F-statistic ( $F_{ST}$ ) equivalents ( $\phi_{ST}$ ) will be constructed from 10,000 permutations of the data. Gene flow among populations, expressed as estimated number of migrants per generation ( $N_e m$ ) will be estimated using the method of Slatkin (1991). Effective population size and maximum likelihood and Bayesian estimates of asymmetric dispersal rates among populations between regions will also be calculated, using the program MIGRATE (Beerli and Felsenstein 2001).

### Contacts Assisting with Sample Collection (in addition to project partners listed under Project II):

Steve Najjar, New Boston Air Force Station; Phone: (603)471-2346; Email: [Stephen.Najjar@NEWBOSTON.AF.mil](mailto:Stephen.Najjar@NEWBOSTON.AF.mil) Role: Assist with sample collection.

Brian Butler, Wildlife Consultant, Oxbow Assoc., Acton, MA 01718; Phone: (978) 929-9058; Email: [butler@oxbowassociates.com](mailto:butler@oxbowassociates.com) Role: Assist with sample collection.

Fred Janzen, Professor of Ecology, Evolution, and Organismal Biology; Phone: (515) 294-4230; Email: [fjanzen@iastate.edu](mailto:fjanzen@iastate.edu) Role: Added expertise, assist with sample collection.

Steve Mockford, Department Biology, Acadia University, Nova Scotia; Phone: (902) 585-1870; Email: [stephen.mockford@acadiau.ca](mailto:stephen.mockford@acadiau.ca) Role: Subject matter expert, assist with sample collection..

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**APPENDIX I.** Performance Evaluation Metrics for each Objective.

**PROJECT I: BLANDING'S TURTLE AND ASSOCIATED SGCN CONSERVATION PLANNING**

<b>Performance Evaluation Metrics</b>	
<i>Action 1.1.1: Identify Blanding's turtle population units throughout the Northeast.</i>	<u>Short-term:</u> a shapefile will be produced with an attribute table that identified all of the population units.
<i>Action 1.1.2: Assign quality ranks to all known Blanding's turtle populations within the Northeast</i>	<u>Short-term:</u> shapefile described in Obj 1.1.1 will have attribute that describes quality rank for each population unit.
<i>Action 1.1.3: Identify Blanding's turtle conservation priorities within Northeast.</i>	<u>Short-term:</u> Blanding's turtle population units will be mapped and priority population units will be identified and provided to State Project Coordinators.
<i>Action 1.1.4: Develop spatially explicit parcel maps for Blanding's turtle conservation priorities identified in Action 1.1.3.</i>	<u>Short-term:</u> parcel maps will be combined for the entire Blanding's turtle distribution in the Northeast and made available as a GIS shapefile to individual states.
<i>Action 1.1.5: Develop spatially explicit management plans for high priority sites.</i>	<u>Short-term:</u> One-four spatially explicit management plan will be developed for each state (MA, NH, ME, NY, PA) for a total of at least 15. Management plans will identify the number of acres needing protection, restoration, and management.
<i>Action 1.1.6: Compile information from Projects I-IV into a Northeast Blanding's Turtle Conservation Plan.</i>	<u>Short-term:</u> A comprehensive conservation plan will be developed and distributed to the Northeast Blanding's turtle working group for review. <u>Long-term:</u> actions identified in the plan are implemented and representative Blanding's turtle populations are protected with stable and/or increasing numbers.
<i>Action 1.2.1: Disseminate mgmt plans and implementation priorities and engage key partners including transportation agencies, all local stakeholders, landowners, and partnering agencies.</i>	<u>Short-term:</u> The number and identity of stakeholders that information was distributed to will be identified. <u>Long-term:</u> Future actions that partners help implement will be tracked. Metrics include # of acres protected, # acres of habitat managed or restored, # of transportation projects implemented.
<i>Action 1.2.2: Host at least one workshop in each state with key land conservation partners; present results, solicit feedback, and initiate next steps toward plan implementation</i>	<u>Short-term:</u> The number of participants per state and identity of participants will be identified. Future actions that partners help implement will be tracked. <u>Long-term:</u> Future actions that partners help implement will be tracked. Metrics include # of acres protected, # acres of habitat managed or restored, # of transportation projects implemented.

**PROJECT II: GENETIC ANALYSIS OF BLANDING'S TURTLE POPULATIONS**

**Performance Evaluation Metrics**

<p><i>Action 2.1.1: Assess the population genetics of Blanding's turtles in the northeast and incorporate findings into conservation planning/priority management in ME, MA, NH, NY, and PA.</i></p>	<p><u>Short-term</u>: a report will be produced that describes the results of the genetic analyses. Information will lead to informed conservation priorities. Management units are developed and included in Northeast Blanding's turtle plan. <u>Long-term</u>: Results will be incorporated into priority implementation actions and representative population units are stable or increasing.</p>
<p><i>Action 2.1.2: Examine isolated/outlier Blanding's turtle populations in PA and NY to determine origin (naturally occurring or introduced).</i></p>	<p><u>Short-term</u>: a report will be produced that describes the results of the genetic analyses. Pennsylvania and New York will have more information about the origin and genetic distinctiveness of their populations. <u>Long-term</u>: Results will be incorporated into priority implementation actions and representative population units are stable or increasing.</p>
<p><i>Action 2.1.3: Compare the genetic structure of Blanding's turtle populations within the NE region to those in the MW region and Canada to provide a spatially explicit assessment of the discrete population groups across the species' range.</i></p>	<p><u>Short-term</u>: a report will be produced that describes the results of the genetic analyses. <u>Long-term</u>: Results will be incorporated into priority implementation actions and representative population units are stable or increasing.</p>

**PROJECT III: STANDARDIZED MONITORING PROTOCOLS FOR BLANDING'S TURTLES ACROSS THE NORTHEAST REGION**

**Performance Evaluation Metrics**

<p><i>Action 3.1.1: Develop standardized monitoring protocols for rapid site assessments.</i></p>	<p><u>Short-term</u>: a monitoring protocol will be developed and reviewed by the Northeast Blanding's turtle working group.</p>
<p><i>Action 3.1.2: Develop standardized monitoring protocols for long-term reference sites.</i></p>	<p><u>Short-term</u>: a monitoring protocol will be developed and reviewed by the Northeast Blanding's turtle working group.</p>
<p><i>Action 3.2.1: Select sites for rapid assessment and long-term reference monitoring.</i></p>	<p><u>Short-term</u>: sites will be selected throughout the Northeast region and identified in reports.</p>
<p><i>Action 3.2.2: Implement rapid assessment protocols.</i></p>	<p><u>Short-term</u>: a report summarizing sites visited and summarized evaluation of each site will be produced. Monitoring results will inform management plans and prioritization of actions. <u>Long-term</u>: changes in</p>

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	species occupation will be detected and used to assess trends and success of actions.
<i>Action 3.2.3: Initiate the first year of long-term, reference site monitoring.</i>	<u>Short term</u> : a report summarizing sites visited and summarized evaluation of each site will be produced. Initial assessment of action success will be reported, if applicable. An estimate of turtle abundance and viability will be reported for sites. <u>Long-term</u> : Population status and trends will be determined and used to inform future actions.
<i>Action 3.2.4: Apply sampling results to validate conservation priorities established in 1.1.3 and inform management plans (Action 1.1.5).</i>	<u>Short term</u> : at least one management plan per state, and a total of at least 15, will be developed that includes known monitoring information.

**PROJECT IV: IMPLEMENTATION OF PRIORITY ACTIONS**

**Performance Evaluation Metrics**

<i>Action 4.1.1: Create and/or enhance nesting habitat for Blanding's turtles and other SGCN in at least 1 site per state and at least 5 total in the region.</i>	<u>Short-term</u> : Number of sites in each state and total in which nesting habitat is enhanced and/or created. <u>Long-term</u> : documented nesting of SGCN turtles in enhanced/created nesting habitat.
<i>Action 4.1.2: Implement a turtle X-ing sign program in each state &amp; install signs in at least 5 areas.</i>	<u>Short-term</u> : Number of signs installed within each state. <u>Long-term</u> : reduced incidents of road-killed SGCN turtles in areas where signs implemented.

**PROJECT V: COORDINATION AND ADMINISTRATION**

**Performance Evaluation Metrics**

<i>Action 5.1.1: Coordinate and Administer the Initiative</i>	<u>Short term</u> : Number of conference calls, Number of Northeast Blanding's turtle working group meetings. Number of hours spent coordinating grant.
<i>Action 5.1.2: Evaluate performance of grant Actions</i>	<u>Short term</u> : Number and description Report of Performance Evaluation Metrics met during study.
<i>Action 5.1.3: Report actions accomplished through grant.</i>	<u>Short term</u> : A final report submitted that includes relevant summary of all actions identified in this grant request.

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**APPENDIX J. Schedule of Work for Projects I-V.**

<b>Grant Period: June 2011 - June 2014</b>	
Summer/Fall 2011	<i>Action 1.1.1: Identify Blanding's turtle population units throughout the Northeast.</i>
Fall 2011 - Fall 2012	<i>Action 1.1.2: Assign Quality Ranks to all known Blanding's turtle populations within the Northeast</i>
Fall 2011 - Fall 2013	<i>Action 1.1.3: Identify Blanding's turtle conservation priorities within Northeast.</i>
Fall 2012 -Winter 2013	<i>Action 1.1.4: Develop spatially explicit parcel maps for Blanding's turtle conservation priorities identified in Action 1.1.3.</i>
Spring 2012 - Fall 2013	<i>Action 1.1.5: Develop spatially explicit management plans for at 1-4 high priority sites within each state and at least 15 total plans.</i>
Fall 2013-Spring 2014	<i>Action 1.1.6: Compile information from Projects I-III into a Northeast Blanding's Turtle Conservation Plan.</i>
Winter/Spring 2014	<i>Action 1.2.1: Disseminate management plans and implementation priorities and engage key partners including transportation agencies, all local stakeholders, landowners, and partnering agencies.</i>
Spring 2014	<i>Action 1.2.2: Disseminate management plans and implementation priorities and engage key partners including transportation agencies, all local stakeholders, landowners, and partnering agencies.</i>
August 2011-January 2014 (genetic extraction – Year 1-2, analysis & reporting – Year 2-3)	<i>Action 2.1.1: Assess the population genetics of Blanding's turtles in the Northeast and incorporate findings into conservation planning and priority area management in Maine, Massachusetts, New Hampshire, New York, and Pennsylvania.</i>
August 2011-January 2014 (genetic extraction – Year 1-2, analysis & reporting – Year 2-3)	<i>Action 2.1.2: Examine isolated/outlier Blanding's turtle populations in Pennsylvania and New York to determine origin (naturally occurring or introduced).</i>
August 2011-January 2014 (genetic extraction – Year 1-2, analysis & reporting – Year 2-3)	<i>Action 2.1.3: Compare the genetic structure of Blanding's turtle populations within the Northeast region to those in the Midwest region and Canada to provide a spatially explicit assessment of the discrete population groups across the species' range.</i>
July 2011 - Feb 2012	<i>Action 3.1.1: Develop standardized monitoring protocols for rapid site assessments.</i>
July 2011 - Feb 2012	<i>Action 3.1.2: Develop standardized monitoring protocols for long-term reference sites.</i>
Jan - Feb 2012	<i>Action 3.2.1: Select sites for rapid assessment and long-term reference monitoring.</i>
April 2012 - Oct 2013	<i>Action 3.2.2: Implement rapid assessment protocols.</i>
April 2012 - Oct 2013	<i>Action 3.2.3: Initiate the first year of long-term, reference site monitoring.</i>
Fall 2013	<i>Action 3.2.4: Apply sampling results to validate conservation priorities established (Action 1.1.3) and inform management plans (Action 1.1.5).</i>
Manage habitat by May 2014	<i>Action 4.1.2: Create and/or enhance nesting habitat for Blanding's turtles and other SGCN in at least 1 site per state and a total of at least 5 in the region.</i>
Install signs by Spring 2014	<i>Action 4.1.3: Implement a turtle X-ing sign program in each state &amp; install signs in at least 5 areas.</i>
June 2011-June 2014	<i>Action 5.1.1: Coordinate and Administer the Initiative</i>
Dec 2011 - June 2014	<i>Action 5.1.2: Evaluate performance of grant objectives.</i>
Jan 2014 - June 2014	<i>Action 5.1.3: Report actions accomplished through grant.</i>