Federal Aid in Wildlife Restoration

W-71-R-1

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Species of Greatest Conservation Need
Mammal Research and Management

Interim Report for Project Year

September 1, 2013 – August 31, 2014

NJ Department of Environmental Protection

DIVISION OF FISH AND WILDLIFE
ENDANGERED AND NONGAME SPECIES PROGRAM
P.O. BOX 420
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NEW JERSEY DIVISION OF
Fish and Wildlife

SPORT FISH & WILDLIFE RESTORATION

PERFORMANCE REPORT

STATE: New Jersey **PROJECT NUMBER:** W-71-R-1

PROJECT TYPE: Research and/or Management

PROJECT TITLE: SGCN Mammal Research and Management

STUDY NUMBER AND TITLE: 1. Mammals

PERIOD COVERED: September 1, 2013 to August 31, 2014

JOB NUMBER AND TITLE: 1A. Bobcat Conservation
Prepared by: Mick Valent

OBJECTIVE: Determine the distribution, minimum size, population and genetic structure, and habitat needs of New Jersey's bobcat population and use the information to preserve the habitat necessary to maintain a viable population.

Key Findings:

- An updated landscape level predictive habitat model has not yet been developed for bobcat. A within home range model is being developed and will help inform a landscape level model (see Job 1A., W-71-R-1). The statewide Connecting Habitat Across New Jersey working group (NJ T-1-6, Job 3F) is developing a mapping approach that will likely serve the needs for a landscape level bobcat habitat map and corridor model.
- Validation work on bobcat corridor mapping has not begun because the mapping has not been completed yet.
- Biologists within the Endangered & Nongame Species Program have been working with Bureau of Wildlife Management biologists to develop mechanisms to better understand and minimize mortality resulting from accidental capture of bobcats in snares.
    - Biologists developed a datasheet that includes details on each accidental capture, including a necropsy report, for use by the responding biologist and the veterinarian that performs the necropsy.
    - Questions were added to the annual trapper survey conducted by the Bureau of Wildlife Management to gauge how many bobcats are accidentally snared each year.
    - Edits were made to the 'Trapping Regulations' section of the 2014-15 New Jersey Hunting and Trapping Digest to make it clear that there is a closed season on bobcats and how to report any accidental captures, and an updated ad was included in the digest with a link to a web page offering recommendations on avoiding the capture of, minimizing injury to, and what to do if a bobcat is accidentally trapped.
    - A protocol is being developed for the biologists responding to bobcat calls.
    - Game code changes were recommended that included mandatory reporting of snared bobcats within 24 hours, and requiring the use of relaxing locks on snares.
- One reproductive tract (for a total of 23) and teeth from 7 animals (for a total of 45), were collected opportunistically during the sampling period. The reproductive tracts were

analyzed by a veterinarian to estimate fecundity and pregnancy rate of the population. The teeth were submitted to a laboratory to estimate the age of each animal from which teeth were extracted.

- The backlog of about 60 bobcat observations was entered into Biotics with the help of a seasonal employee.

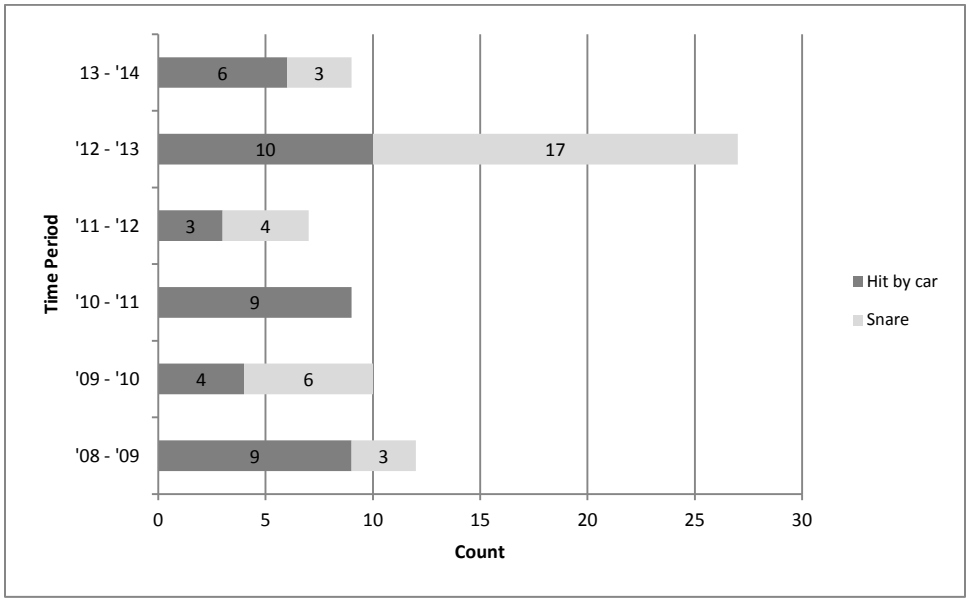

Figure 1. Number of bobcats hit by cars and snared accidentally in New Jersey over the past 6 reporting periods from September 1 to August 31 each year.

- Three adult bobcats (2 males and 1 female) were live-trapped during the reporting period. Each of the bobcats were chemically immobilized using a dose of 10 mg/kg of Ketamine and 2 mg/kg of Xylazine following protocols established by Dr. Keith D. Amass and Dr. Mark Andrew of Safe Capture International, Inc. Once immobilized the bobcats were fitted with ATS store on board GPS collars with a VHF transmitter. The collars are programmed to capture location data once every hour for 350 days following deployment. The collars are scheduled to drop off on 1/15/15, 2/1/15 and 3/3/15, respectively. Each bobcat has been tracked using an ATS receiver at approximately 25 – 30 day intervals to make certain the animals are still alive and to track their movement patterns to aid in collar recovery after drop-off. The bobcats were trapped adjacent to major roadways in northern NJ to help determine whether high-volume traffic roadways pose a barrier to bobcat movements and to identify potential crossing corridors.
- Work continued on the bobcat status assessment and recovery plan.

Conclusions:

- Biologists within ENSP are collaborating with Bureau of Wildlife Management biologists to develop mechanisms to better understand the frequency and circumstances around accidental capture of bobcats in snares, so that we can provide informed

recommendations on how to avoid capture and minimize injury of bobcats when they are captured. These efforts are being made in light of the relatively high number of accidentally snared bobcats biologists responded to in 2012. Biologists are also formalizing the protocol for bobcat response because the ENSP biologist who is the program's current only respondent is retiring at the end of 2014. Formalizing the protocol will enable a standardized response by multiple responding biologists.

- There were far fewer reported accidentally snared bobcats during this reporting period (N = 3) compared to the previous reporting period (N = 17). Anecdotally, many trappers did not set snares during this reporting period due to heavy snows and icy weather during the months of January and February.
- The reproductive tracts submitted for analysis to the veterinarian did not yield any usable information related to fecundity or pregnancy rate. Biologists learned from other states that both freezing the carcass and fixing the uteri in alcohol can erase or significantly diminish the placental scarring that is used to evaluate fecundity. The recommendation was to use only fresh reproductive tracts to read the scarring most accurately.

Recommendations:

- Determine whether the mapping approach chosen by the statewide connectivity map working group will serve the needs for a landscape level bobcat habitat map and corridor model. If not, develop an updated landscape level habitat predictive map to feed into bobcat specific corridor modeling effort.
- Use data collected by the dog-handler team, cameras, and GPS collars to help validate bobcat corridor mapping when it is complete.
- Continue to work with biologists from the Bureau of Wildlife Management to finalize and implement the bobcat trap response protocol during the upcoming trapping season. Use the information gathered to inform recommendations on ways in which trappers can avoid accidental capture of, and decrease injury to, bobcats.
- Include the need to evaluate fresh reproductive tracts for placental scarring from bobcat carcasses in the trap response protocol, and work with the veterinarian to analyze any reproductive tracts from bobcats killed in snares or on roads fresh.
- Continue collecting and analyzing reproductive tracts and teeth to gain a better understanding of the age structure, fecundity, and pregnancy rates of the population, as well as scat and tissue samples to feed into the capture-recapture model for updated estimates of sex ratio, population size, and survival rates.

JOB NUMBER AND TITLE: 1B. Allegheny Woodrat Conservation
Prepared by: Mick Valent

OBJECTIVE: Annually monitor NJ's Allegheny woodrat (*Neotoma magister*) population and assess the potential exposure risk to raccoon roundworm (*Baylisascaris procyonis*). Actively manage raccoon roundworm levels in the raccoon population at New Jersey's last remaining Allegheny woodrat population through the use of medicated raccoon baits.

Key Findings:

- Standard trapping protocol was conducted at six separate talus slope sites at the base of the Palisades Interstate Park from September 30 through October 2, 2013. Tomahawk TM Model 201 (5"x5"x16") Collapsible and Standard Single-door Live Traps were used for sampling. The traps were baited with apple slices and peanut butter.
- Forty traps were set for two consecutive days (September 30 and October 1) for a total of 80 trap-nights of sampling effort.
- Trapping success in 2013 increased slightly from 2012 with the capture of just 15 unique individuals. Woodrat numbers (based on capture index) had been declining at the Palisades site from 2006 to 2009 but then began a gradual increase in 2010. The capture index (# of individuals captured/10 trap nights) in 2013 increased to 1.87, up from 1.50 in the previous year and comparable to 2010 and 2011.
- Captured animals consisted of seven adult males, seven adult females and one sub-adult female.
- Four animals (2 males and 2 females) were recaptures from 2011and one male was initially captured in 2009.
- All captured animals were held for several minutes prior to their release to determine if they exhibited any symptoms of infection by *B. procyonis*. No animals displayed any symptoms. All animals were sexed, weighed and ear-tagged at the point of capture.
- Piperazine-treated fishmeal/polymer baits were not distributed in the areas surrounding the active woodrat sites during the project period.
- Supplemental feeding was not conducted during the fall of 2013 due to low mast production in northern NJ.
- No fall raccoon scat searches were conducted at the Palisades during the project year as we have already documented that the use of anthelminthic-treated baits is effective at reducing *B. procyonis* egg loads in raccoon scat.
- Some progress was made on the Allegheny woodrat management plan for the Palisades Interstate Park. Completion of the plan is scheduled for December of 2014.

Conclusions:

- Allegheny woodrat captures have remained relatively low but constant over the past four years and may be cause for concern due to the findings that the population is suffering from low heterozygosity due to inbreeding depression and possibly genetic drift.
- Additional DNA sampling has supported the initial results that indicate that the Palisades woodrat population is suffering from inbreeding depression. The Palisades population is totally isolated from any other extant population of Allegheny woodrats.
- Several individuals were recaptured from previous years suggesting that adult animals within the population are surviving to their full life expectancy and not succumbing to *B.*

procyonis infection or other factors. During more than 25 years of monitoring the Palisades population only one captured animal has exhibited symptoms of infection by *B. procyonis*.

Recommendations:

- Research suggests that *B. procyonis* infection in Allegheny woodrat populations is a serious mortality factor and can result in rapid population declines for the intermediate host (LoGuidice 2000, McGowan 1993). Therefore, woodrat/raccoon population monitoring at the Palisades Interstate Park site should continue. Periodic searches for raccoon evidence should continue and should include scat analysis for *B. procyonis* egg prevalence.
- The number of raccoons documented at feeding stations by motion-sensitive cameras again suggests that a healthy raccoon population exists at the Palisades. In 2008 we documented a decline in the percentage of raccoon scats that tested positive for *B. procyonis* eggs after putting out treated baits. This suggested that treatment of the population with medicated baits can successfully reduce *B. procyonis* egg loads in the environment. Therefore, it is recommended that fishmeal/polymer baits, treated with the anthelminthic drug piperazine, be distributed at regularly scheduled time intervals throughout the year in an effort to interrupt the egg-shedding cycle. The use of polyvinyl chloride bait stations has replaced the use of broadcast baiting as they have proved to be more effective at targeting the raccoon population. Piperazine was chosen as the treatment drug due to its high efficacy in clearing roundworms and its low toxicity (LoGuidice 2000). However, we plan to alternate the use of piperazine and pyrantel pamoate to prevent the possibility of developing anthelminthic resistant *B. procyonis*.
- Genetic testing has indicated that inbreeding depression is a serious threat to the population. Therefore, we have begun planning to acquire animals from another population to release at the Palisades site. We have contacted biologists from PA and WV in an effort to secure individuals for release at the Palisades site. Animals will be selected based on genetic test results from other populations. We tentatively propose to release animals into the Palisades population during 2015.
- We will continue to consult with other experts in the field to determine the appropriate next steps to take to improve the health of the woodrat population at the Palisades.
- Complete the Allegheny woodrat management plan for the Palisades Interstate Park by the end of 2014.

Literature Cited

Boulanger, J. R., L. L. Bigler, P. D. Curtis, D. H. Lein and A. J. Lembo Jr. 2006. A polyvinyl chloride bait station for dispensing rabies vaccine to raccoons in suburban landscapes. Wildlife Society Bulletin 34:1206-1211.

LoGuidice, K. 2000. *Baylisascaris procyonis* and the decline of the Allegheny woodrat (*Neotoma magister*). Ph.D. dissertation, Rutgers, The State University of New Jersey, 101pp.

McGowan, E. 1993. Experimental release and fate study of the Allegheny woodrat (*Neotoma magister*). Unpublished report of New York State Department of Environmental Conservation, Endangered Species Unit. 15 pp.

JOB NUMBER AND TITLE: 1C. Small Mammal Survey
Prepared by: Mick Valent

OBJECTIVE: To develop survey and habitat sampling protocols for several species of terrestrial small mammal that can be used for sampling statewide.

Key Findings:

- ENSP biologists completed the status review of native mammal species and made recommendations to the ENSP's advisory committee. No further action occurred to formalize any species status changes.

Recommendations:

- ENSP biologists need to develop more information on many small mammal species to help prioritize SWAP actions. However, with reductions in staff, we don't anticipate having the capacity or funding to accomplish the broad surveys that are needed. This job will be very dependent on adequate funding and staffing.

JOB NUMBER AND TITLE: 2A. Bat Conservation and Management
Prepared by: Mick Valent

OBJECTIVE 1: To identify, characterize and monitor summer bat colonies roosting within man-made structures and to provide guidance for proper management of those sites, especially where the federal endangered Indiana bats roost or maternity colonies exist.

OBJECTIVE 2: To identify, characterize, and monitor important winter habitats of New Jersey's bat species, including the federal endangered Indiana bat; and to gather Indiana bat winter population counts to contribute to USFWS database.

Key Findings:

- ENSP worked cooperatively with Rutgers University (RU) and Conserve Wildlife Foundation of New Jersey (CWFNJ) to provide information and assistance to property owners who had bats roosting in their buildings.
- ENSP developed a Fact Sheet for homeowners and nuisance wildlife control companies that explains NJ's bat protection guidelines and timing restrictions for evicting bats from structures.
- Bat boxes were offered to anyone evicting a bat colony that wanted to erect a bat box in an effort to provide the evicted colony with a new roost site. ENSP, CWFNJ and RU provided guidance on the appropriate location for mounting the bat boxes.
- Biologists sampled an Indiana bat maternity colony located in a bat box at a private residence. The colony was first identified in 2004 when bats were roosting in the soffits, entering the structure through cracks in the fascia boards. The colony abandoned the

structure in 2006. In the fall of 2012 new homeowners installed a “rocket” box supplied by CWFNJ. A colony of Indiana bats occupied the box during the summer of 2013 and the results of the initial monitoring were included in the 2013-2014 final report for the White-nose Syndrome Grants to States (E-10-TW-1). On July 21, 2014, biologists captured six Indiana bats as they emerged from the box. Two of the adult females had been banded the previous summer when the colony was first sampled. The captured bats included 5 adult females (all post-lactating) and one juvenile male. All unbanded bats were banded with Porzana 2.4 mm narrow bands. One of the banded adult female bats from this colony was recaptured during pre-hibernation sampling at the Mt. Hope Mine during 2014.

- One little brown bat colony was sampled on 7/28/14. Twenty-one bats were captured as they emerged from two bat boxes on the side of a house. The captured bats consisted of 20 adult females (2 previously banded in 2013) and one juvenile male. Sixteen of the 20 adult females were observed to be post-lactating.
- One big brown bat colony was sampled on 7/22/14. Sixteen bats were captured as they emerged from a bat box affixed to the side of a private residence. The captured bats consisted of six adult females (5 banded in previous years), seven juvenile males and three juvenile females.

Conclusions:

- The majority of people who contacted ENSP, RU or CWFNJ to inquire about evicting bat colonies from buildings/homes requested bat boxes to provide evicted bats with an alternate roost site.
- Little brown bat summer maternity colonies remain increasingly difficult to locate. Most reports of new summer bat colonies turn out to be big brown bat colonies. Big brown bats are increasingly found to be occupying roosts formerly occupied by little brown bats.
- The number of Indiana bats occupying the rocket box was considerably lower than last year. However, Indiana bats have a propensity for using alternate roost sites and we believe that the majority of the colony was using alternate roosting sites at the time of sampling. This was determined because several bats were observed flying around and attempting to enter the sealed rocket box at the time of sampling.

Recommendations:

- Continue to try to locate new little brown bat nursery colonies and attempt to determine reproductive success and band all unbanded bats as part of the little brown bat survival project.
- Continue little brown bat survival project (formerly funded under WNS Grants to States, E-10-TW-1) under W-71-R-1.