

RECOVERY OF A THREATENED BLANDING'S TURTLE POPULATION: LINKING CONSERVATION EFFORTS IN WORKING AND PROTECTED LANDSCAPES.

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SUMMARY

In 1994, COSEWIC (Committee on the Status of Endangered Wildlife in Canada) designated the Nova Scotia *E. Blandingii* population as "Threatened", based on its limited distribution and low recruitment. Since 1987, intensive research within the park has yielded detailed information on nesting ecology and adult, juvenile and hatchling distribution and movements. The RENEW (Recovery of Nationally Endangered Wildlife) Recovery Plan for this population is explicit about the need for data outside the park on seasonal habitat use, distribution and movement of adults, and on past and present distribution. Although the highest density of turtles probably occurs within the park, most of the species' range occurs outside, in working landscapes, which are sparsely populated by humans, but impacted by water level manipulation for hydroelectric generation, small and large scale timber harvesting, and limited lakeside cottage development.

In 1996, we initiated a search for turtles outside the park. We combined analysis of past records and remote sensing data with information gleaned from public response to a poster and survey campaign in western Nova Scotia. Response to the campaign was enthusiastic, with over 40 turtle sightings reported. Credible sightings of Blanding's turtles were reported from four watersheds. This information proved instrumental in locating turtles for intensive radio tracking. Due to the success of the public involvement we propose to establish a local "Turtle Network" to monitor the long-term health of this population. This work is an attempt to combine public involvement with well-grounded science to effect a conservation success story.

1. INTRODUCTION

Blanding's Turtle (*Emydoidea blandingii*) is an aquatic species with a northern distribution centered in the Great Lakes region of North America. Habitat loss has decreased the species' range in recent times. Populations of Blanding's Turtle are patchily distributed throughout the range especially in peripheral regions. The most isolated population occurs at the northeastern limit, in the southwestern interior of Nova Scotia (1).

Although there has been little monitoring of the overall viability of the population in Nova Scotia, evidence suggests that it is unstable, due to limited recruitment into the breeding population (1). Reproductive potential of this population is compromised by low seasonal temperatures and scarcity of suitable nesting habitat (2). The establishment and development of Kejimikujik National Park ironically may have decreased egg and hatchling survivorship by sustaining an elevated raccoon population, and through habitat modifications including road, beach and campground construction.

In 1993, the Nova Scotia population was designated "Threatened" by COSEWIC (Committee on the Status of Endangered Wildlife in Canada) due to its uneven age structure, low recruitment and limited distribution in the province (1). As a result, under the auspices of RENEW, a team was struck to develop a recovery plan for the species. Since then, the team, comprising provincial and federal biologists, academics and private citizens, has drafted and launched the recovery plan (3). The plan identifies a number of questions about the dynamics, population structure and habitat associations of the species, both within and outside Kejimikujik National Park. The goal of the Recovery Plan is to establish and maintain a self-sustaining population of Blanding's Turtle in both protected (Kejimikujik National Park) and working landscapes within its presumed historical range (3).

Within Kejimikujik National Park, Blanding's Turtle has become a flagship species. As a member of the "southwestern disjunct species", which feature prominently in resource conservation and interpretive programs in the park, it has received considerable attention and exposure nationally and internationally (4). Ironically, until recently it had received little attention locally.

Although the highest density of turtles probably occurs within the park, most of the species' range occurs outside, in working landscapes (4). These are sparsely populated by humans, but impacted by water level manipulations for hydroelectric generation, small and large scale timber harvesting, and lakeside cottage development.

We argue that any conservation effort for Blanding's turtles in Nova Scotia must target the species in both protected and working landscapes. The success of these efforts requires linking research and management inside and outside Kejimikujik National Park.

2. RESEARCH

Blanding's turtles within Kejimikujik National Park have been well studied. Since 1969, extensive capture histories and morphological measurements of individually marked turtles have been accumulated. Seasonal movements and distribution, habitat associations, and nesting ecology of adults (nest site selection, productivity and survivorship) have been studied (1,2,5). Protection of nests from predators, which began in the early 1970s, was formalized in 1988. We have recently gained insight into hatchling behaviour and movements (6,7) and juvenile distribution, movements and habitat affinities (8). An initial examination of the genetic structure of the population revealed appar-

ently and surprisingly high diversity within the park (9). In 1996, a three-year study of raccoon-turtle interactions was initiated at the major turtle nesting centres within the park (10).

Historical information on Blanding's turtles outside the park is limited. Past turtle sightings and nesting records reported by the public were recorded by park staff. Any captured turtles were given an individual identification mark and all pertinent information was recorded on the park's data base (11). In 1996, a search for turtles outside the park was initiated to determine seasonal habitat use, distribution and movement in working landscapes. The overall intention is to determine the present distribution of the species in Nova Scotia. Information on Blanding's Turtle habitat within the park was initially combined with past records, remote sensing data and local information to locate turtles and suitable habitat. Through systematic trapping combined with incidental captures by members of the public, nine turtles were captured. Eight were outfitted with radio transmitters; six of these were followed to their overwintering sites.

Five of the nine turtles were captured on McGowan Lake. This site contains abundant critical habitat and may support a significant population. As a model, this lake contains most of the potential threats to Blanding's Turtle conservation outside protected areas. Water levels are manipulated for power generation, shorelines have been modified by limited cottage development, adjacent forest lands are under commercial management, and the lake supports an active fish hatchery.

The search for turtles outside the park is being refined by development of a predictive model that incorporates key habitat parameters identified during intensive studies within the park to identify probable turtles location outside the park. These parameters include: nesting substrate, nest orientation, proximity of pre-nesting basking areas for females, hatching movements and overwintering sites, juvenile spatial ecology and water color (productivity).

3. EDUCATION

The park's public awareness program has highlighted the plight of the turtle and the research and management activities within the park. The program is directed primarily to park visitors. Although many of these visitors are local, many more local residents do not visit the park or, if they do, do not avail themselves of the interpretive programs in which they would encounter the information. This provides an educational challenge, since those individuals who are best placed to contribute to local conservation efforts are least likely to be exposed to critical information. This results in the ironic but common phenomenon that the best informed individuals are often those most distant from the issue. To overcome this educational challenge, researchers have made a concerted effort to take interpretive programs into the local community, beyond park boundaries.

For the Recovery Plan to succeed, the status of the population outside the park must be determined (3). Size and remoteness of the area outside the

park and limited professional staff available make it impossible to achieve this goal quickly without public assistance. In addition the public's indigenous knowledge of natural history is invaluable.

In 1996, a poster and survey campaign was initiated to inform the public of the status of the turtle and to seek public knowledge and assistance in locating turtles outside the park. Recently, this approach was used successfully to assess the distribution and status of Wood turtles in Nova Scotia (12). Approximately 250 posters were distributed throughout six counties in southwestern Nova Scotia. Posters were placed in public areas, including post offices, corner stores, grocery stores, outdoor shops, campgrounds and cottage areas. As well, posters were distributed to various naturalist, sport and outdoor recreation organizations throughout the province. The poster portrayed the species and briefly described its morphology and life history. As well, the poster identified individuals to contact to report possible sightings of the turtle.

Over 300 surveys were mailed to naturalist, sport and outdoor recreation groups and distributed at local community events throughout the province. The survey was designed to document locations and descriptions of turtles seen by the public.

Numerous other tools were used to convey information to the public. A display was exhibited at a community fair, a forestry exhibition and an annual meeting of naturalists. Presentations were given at a local school, a wildlife association meeting and a herpetological meeting. Blanding's turtles were featured in a display on Rare and Endangered Species that was circulated throughout the province by the Nova Scotia Museum. Media coverage included radio interviews and articles in local newspapers. As well, the species was profiled on a t-shirt that was sold at liquor outlets throughout the province.

Public response was excellent, with over 36 putative sightings of Blanding's turtles. Twenty of these from four watersheds were determined to be credible, based on subsequent interviews. Most sightings were near Kejimikujik National Park; however, several occurred considerable distances from the park. Most people were enthusiastic and eager to help by continuing to record further turtle sightings and by providing access to their land.

The first year of the poster and survey campaign was a success. The campaign will continue in 1997; in addition, a local "Turtle Network" of volunteers, including respondents who wanted to continue to help, will be established to monitor the long-term health of the population.

4. DATA MANAGEMENT

The success of this program is in part due to coordinated data management and communication among researchers. The Park's Data Management Specialist is consulted at the beginning of each study. Standardized parameters and protocols are used in all studies dealing with the species' recovery. Any new parameters and protocols are additions to, rather than substitutes for, existing ones. This allows for easy and accurate data collection and analysis. Kejimikujik National Park, in cooperation with the Acadia Centre for Wildlife

Have you seen this Turtle?



Blanding's turtles face an uncertain future!

In Nova Scotia, Blanding's turtles live in and around Kejimikook National Park. Although turtles in the park are well known, those outside the park are not. We need your help to find Blanding's turtles outside the park.

Why are they threatened in Nova Scotia?

- the population is small, isolated, and genetically distinct
- individuals do not reproduce until they reach age 20
- nest eggs and young are eaten by predators, especially raccoons

Where are they found?

- adult Blanding's turtles live on peats, slow flowing streams, generally near lakes
- to find, turtles nest on embank, lakeshore beaches and gravel roadbeds, or on concrete turtles may wander across roads

What do they look like?

- shell up to 25cm (10in) long, shaped like a German army helmet
- upper shell dark grey with yellow flecks
- lower shell has dark grey and yellow patches
- bright yellow throat and chin

We acknowledge the assistance of The World Wildlife Fund-Canada, Eastern Wildlife Joint Venture and US Forest

What can you do to help?

- Do not disturb the turtles!
- if you see a Blanding's turtle outside the park, please report the sighting as soon as possible to:
Liz Morrison
Kejimikook National Park
PO Box 25798
Toronto, ON M2N 6L9
- if you have seen Blanding's turtles in the past please report these sightings to one of the above numbers or write us at:
Sue Hux
C/O Acadia Centre for Wildlife
Acadia University
Wolfville, NS
P0P 1X0

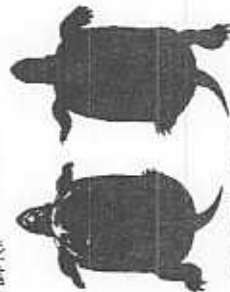


Photo: American Museum of Natural History, The Center for the Study of Amphibians and Reptiles, and the American Museum of Natural History, New York, NY, USA

and Conservation Biology, has assumed responsibility for storage and dissemination of the Blanding's Turtle Database for the Nova Scotia Population. This allows other researchers and interest groups to easily access the data.

5. CONCLUSION

Future studies on Nova Scotia's Blanding's turtle will focus on increasing our knowledge of distribution, density and habitat associations of turtles outside the park. The collection of these data will be achieved in part through the development of a local "Turtle Network". Efforts within the park will be directed towards the completion of the predation study and the continuation of the existing turtle monitoring program. Assessment of the genetic structure of the Nova Scotia population will continue both inside and outside the park (3).

The most direct goal of the recovery effort is the conservation of the turtle in Nova Scotia. Protection of habitat critical to the species also affords protection to other rare reptile, insect and herbaceous plant species with known disjunct ranges in southwestern Nova Scotia. These habitats, which have been poorly inventoried, may also support additional rare yet undiscovered species. The recovery effort also contributes to general understanding of Blanding's Turtle biology, which is applicable to conservation of the turtle elsewhere in its range. Finally, the results of our genetic analysis may challenge the conventional wisdom that peripheral populations contribute little to genetic biodiversity.

This work is an attempt to combine public involvement with well-grounded science to effect a conservation success story. It illustrates the importance of linking efforts and resources among jurisdictions and landscapes to insure the well being of a species which recognizes neither.

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Figure 1. Poster circulated throughout Nova Scotia during the 1996 Turtle Watch poster campaign.

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CHAPTER 5 FIRST NATION APPROACHES