City of Ottawa

South March Highlands Blanding's Turtle Conservation Needs Assessment

FINAL

January 31, 2013

On behalf of:

City of Ottawa

Land Use and Natural Systems

Project No. 12-6060

Submitted by

Dillon Consulting Limited

FORWARD

The City of Ottawa contracted Dillon Consulting Limited in March 2012 to prepare the *South March Highlands Blanding's Turtle Conservation Needs Assessment* in March 2012 (hereafter called the *Conservation Needs Assessment*). It is a planning study intended to provide the City, property owners, regulatory agencies and the public with the information necessary to make good planning and regulatory decisions. Its purpose does not differ from other technical planning studies, such as geotechnical, hydrological or transportation studies.

Although the findings of the Conservation Needs Assessment may have implications for land use planning and specific development applications, the study itself does not address questions that can only be answered through *Planning Act* or other established regulatory processes. Consequently, the name of the study has been changed from the originally proposed title, which referred to it as a "conservation plan". A conservation plan includes implementation actions. In this instance, any implementation will require further consideration and decisions by the City, property owners and agencies. Necessarily, however, the study does assess the likely impacts of planned land use changes and developments on the environment – in this case, the long-term viability of the South March Highlands population of Blanding's turtles. It also identifies and assesses the potential options for mitigating those impacts. In this way, it functions like any other planning study.

The Conservation Needs Assessment does, however, differ from more typical technical planning studies in two important ways. First, it has a greater level of uncertainty. Not only is the information on which it is based more difficult to collect and interpret, but the study attempts to predict the responses of living organisms – i.e. turtles – to a complex environment undergoing continuous natural and human-induced changes. Second, there is no officially approved methodology, no professionally-sanctioned standard, for conducting this kind of study. Best practices have been established primarily through the scientific publication and peer-review process. In response to these differences, the report discusses at length the limitations of the information and methodology. The City and Dillon Consulting Ltd believe than an explicit recognition of these limitations increases, not decreases, the credibility of the conclusions. The report also employs the "precautionary approach" in assessing the potential magnitude of the threats to the population and their potential long-term effects on the viability of the population. The Ontario *Natural Heritage Reference Manual 2010* recommends such an approach and defines it as one, "that is designed to prevent environmental degradation where there are threats of serious or irreversible damage or lack of full scientific certainty (adapted from Principle 15 – 1992 UNEP Rio Declaration on Environment and Development). Finally, the Conservation Needs Assessment includes two peer reviews by experts in the field of turtle biology and conservation. The purpose of the peer reviews is to provide the readers with an independent assessment of study methodology, and, hopefully, to provide some measure of confidence in its objectivity.

The two peer reviews, and the response by the City and Dillon Consulting Limited, form an important part of this document. They should be read in conjunction with the main Conservation

Needs Assessment. Not only do they address technical aspects of the assessment, but they also provide a broader conservation context, in which the assessment must be understood. Two related issues raised by the peer reviewers deserve particular mention. Dr. Blouin-Demers warns of the "shifting baseline syndrome" in conservation: the tendency to regard an already degraded ecosystem as "normal". In this case, he points to the likelihood that the South March Highlands population of Blanding's turtles has already been reduced through habitat loss and fragmentation. Similarly, both Dr. Blouin-Demers and Dr. Congdon clearly state their belief that the South March Highlands population of Blanding's turtles cannot be viable in the long-term without the maintenance or re-establishment of protected linkages to other populations of Blanding's turtles, in order to increase the effective habitat area and to prevent genetic isolation of the population. These are larger issues that the City, the Ministry of Natural Resources and other agencies must consider as they work with the public and property owners to manage the landscape in the future.

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PREFACE

The City of Ottawa is privileged to have an abundance of natural heritage and a diversity of flora and fauna. Some of these species are threatened or endangered because of characteristics that make them vulnerable to development and human activities. To improve the likelihood that threatened or endangered species can recover, strategies can be implemented to manage the species and their habitats in a manner that promotes wildlife population growth and threat reduction.

Conservation management plans are developed for individual species (or populations of a species) to provide guidance for wildlife management, land and resource management decisions, and protection for the species and their habitat. Conservation management plans are intended to be a resource tool for the principal stakeholder (in this case, the City of Ottawa), and they provide other stakeholders, such as the Ministry of Natural Resources and private land owners, with the necessary information to make informed regulatory, management and stewardship decisions. Conservation management plans are "living" documents and should be revised continuously as new information is collected.

In order to potentially support a future conservation management plan for Blanding's turtle in Ottawa, the following needs assessment provides information on Blanding's turtle biology and habitat needs, identifies threats to the species and their habitat, and analyzes available data associated with the species population demographics and habitat. The assessment targets specific objectives for promoting the conservation of the species (or population) in question and makes recommendations for implementation of the objectives.

Although conservation management plans and needs assessments are often prepared by government biologists who are part of the teams that designate species, occasionally reports can be written by other qualified persons. In the case of the South March Highlands Blanding's Turtle Conservation Needs Assessment, the plan has been written at the request of the City of Ottawa by biologists working with Dillon Consulting Limited. Dillon has been assessing the South March Highlands Blanding's turtle population for several years as part of the Terry Fox Drive Extension environmental assessment, contract administration and post-construction monitoring. To ensure the integrity of the needs assessment and the ideas and analyses presented, the report has been peer-reviewed by two experts. One is a conservation biology expert, Professor Gabriel Blouin-Demers of the University of Ottawa, and the other an internationally recognized Blanding's turtle expert, Professor Emeritus Justin D. Congdon of the Savannah River Ecology Laboratory.

Abstract

A small population of Blanding's turtle inhabits the South March Highlands (SMH) Conservation Forest, part of a larger population in the surrounding areas of northwest Ottawa. Parts of the surrounding lands have been and are being developed for residential uses, and this imposes an immediate threat on the already at-risk animal. It appears that, due to a variety of historic, current, and future stressors, the SMH population is at high risk of decline and eventual extirpation. Several specific actions, such as measures to reduce adult turtle road mortalities, increase hatchling success, and limiting urban development in sensitive areas, may curtail the expected population decline. Suitable habitat is abundant in the area, though improved connectivity linkages to other habitats and populations should be investigated to support the SMH population. Blanding's turtle conservation and management in the SMH must remain a priority of the City of Ottawa and other stakeholders to help preserve this threatened, unique species. Should the objectives, targets and recommendations of the Conservation Needs Assessment not be implemented, the Blanding's turtle in the SMH will continue to face threats to their core habitats, survivability and population abundance. Approaches to the successful implementation of the Conservation Needs Assessment must consider the outlined species, habitat, research, education, awareness, collaboration and legislative aspects. In addition, the recommendations made to curtail habitat degradation and other threats to the SMH Blanding's turtle should be explored prior to any further urban development in the area. The protection of species at risk requires collaboration and enforcement by government, landowners, researchers, non-governmental organizations and the public.

Executive Summary

Blanding's turtle (*Emydoidea blandingii*) is a species at risk found in the South March Highlands (SMH) of North Kanata, in the City of Ottawa. The species is long-lived and associated with wetland and upland habitats. Nesting occurs in the late spring/early summer and typically involves movements of varying lengths, often through upland forests, to sandy nesting areas. The species is sensitive to urban development, primarily from increased risk of road mortality, but also from loss and fragmentation of habitat. The species is also targeted frequently for poaching as part of the exotic pet trade. Blanding's turtle is thought to be abundant in the Ottawa region, with several populations identified throughout Ottawa and Gatineau. The field research reported herein represents one of the first in-depth studies conducted on an individual population in the urbanized area of the Ottawa and Gatineau region.

In 2011, an extension of Terry Fox Drive was completed through the South March Highlands, along the municipal urban boundary. Residential land development and municipal infrastructure work is already on-going on the urban side of Terry Fox Drive, and more is planned over the next five to ten years. As part of the permitting requirements for the Terry Fox Drive extension, the City has undertaken a 4-year mark-recapture population estimate and range study of the SMH Blanding's turtles. The first year, 2010 should be considered as organizational, with the most relevant mark: recapture and radio telemetry data having been collected during 2011 and 2012. Field work, analysis, and reporting is being conducted by Dillon Consulting Limited and currently will continue for 1 more field season until the end of 2013. To date, 97 turtles have been identified and several key areas have been determined to be important for life processes such as overwintering and nesting. The data from 2013 will be added to this baseline, but the data set is now rich enough to begin drawing conclusions on the important habitats and distribution of Blanding's turtle in the South March Highlands.

The City of Ottawa has contracted Dillon Consulting Limited to prepare a Conservation Needs Assessment based on the data collected to date. The assessment consists of a review of turtle biology, a threat assessment, a population viability analytical model, a characterization of suitable habitats, potential and observed movement corridors, and specific objectives and recommendations to manage Blanding's turtle conservation in the SMH.

The specific threats to the Blanding's turtle population in the SMH were evaluated, with vehicle collisions and habitat loss due to urbanization being most significant. Other potential threats included poaching, natural predation, disease and parasites, climate change, plastic floatables, and bioaccumulation.

A population viability analysis (PVA) was completed using life-history information collected over the span of an almost 50-year study in Michigan, and with SMH-specific data collected during the population estimate and range study. The PVA was used to identify threats to which the population is most sensitive, and to identify effective management strategies. A key finding of the PVA is that

the SMH Blanding's turtle population is already vulnerable to decline and extirpation, and that planned development will exacerbate the risks. The analysis shows that adult survivorship is the most important factor for viability and should be the main focus of conservation actions. However, variables such as fecundity, hatchling survivorship, and juvenile survival are also important factors in determining long-term population viability and should not be overlooked.

Identification of habitat is important for conservation management. Habitat quality was determined using desktop GIS methods and on the ground knowledge of the SMH. Trapping and radio telemetry movement data allowed us to identify some areas in the SMH as being key to the life processes of Blanding's turtles. Furthermore, we also conducted a GIS linkage analysis to determine suitable areas for movement corridors and made comparisons with radio telemetry-derived movements.

In general, the conservation needs assessment makes recommendations to support a productive, viable Blanding's turtle population in the SMH. Specifically, the assessment establishes seven objectives for discussion, ranging from rather simple mitigation measures to broader collaborative and potentially costly actions. The objectives are listed below (detailed examples are provided in the report):

Objective 1- Reduce the direct and indirect causes of Blanding's turtle mortality.

Objective 2- Continue to improve local and global knowledge and an understanding of the SMH Blanding's turtle population through research and monitoring.

Objective 3- Protect, conserve and manage Blanding's turtle habitat.

Objective 4- Improve understanding of Blanding's turtle habitats through research and monitoring.

Objective 5- Raise public awareness of the Blanding's turtle and the need for conservation.

Objective 6- Enhance cooperation between municipal, provincial, federal, international agencies and non-governmental organizations.

Objective 7- Promote lawful protection of the Blanding's turtle.

In addition to these objectives, recommendations have been made to handle the current issues surrounding land development and Blanding's turtle conservation in the SMH, including, but not limited to, residential development, stormwater management, road restructuring, emulating the Terry Fox Drive Wildlife Guide System, adult turtle protection and hatchling enhancement programs.

Within the study area, a large residential subdivision is draft-plan approved, the potential effects of which were evaluated for this Assessment. In the absence of planned mitigation measures and/or compensation, it is assumed that Blanding's turtle habitat in the development area would be lost.

Similarly, a review of the proposed use of the Kizell Wetland for stormwater servicing of the new development suggests that it would have substantial implications for the protection of Blanding's turtle in the wetland.

Blanding's turtle conservation and management in the SMH should remain a priority of the City of Ottawa and other stakeholders to help preserve this threatened, unique species. Should the objectives, targets and recommendations of the conservation needs assessment not be implemented, the Blanding's turtle population of the SMH will continue to face threats to its core habitats, recruitment success and population abundance. Approaches to successfully implement the conservation needs assessment must consider the outlined species, habitat, research, education, awareness, collaboration and legislative aspects. In addition, the recommendations made to curtail habitat degradation and other threats to the SMH Blanding's turtle should be explored prior to further urban development in the area. The protection of species at risk requires collaboration, research, awareness and enforcement by government, landowners, researchers, non-governmental organizations, interest groups and the public. At the same time, it can inspire our youth, through educational field programs, hands-on involvement and participation in the conservation process.

DATA PAGE

Project Title:	South March Highlands Blanding's Turtle Conservation Needs Assessment
Project Area:	City of Ottawa, South March Highlands Provincially Significant Wetland Complex, Carp River, and the Kizell Wetland Provincially Significant Wetland Complex
Proponent:	City of Ottawa, Construction Services Division and Planning Division, Land Use and Natural Systems
Respondent:	Nick Stow, Ph.D.
Ministry of Natural Resources (MNR):	Kemptville District
Permits:	Endangered Species Act; Scientific Collectors Permit; Animal Health Protection Protocols.
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Peer Reviewer 2:	Justin Congdon, Ph.D.
Prime Consultant:	Dillon Consulting Limited
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