Natural Heritage Inventory of the Great Lakes Heritage Coast: The Georgian Bay Coast Project, Phase 1 - South-Eastern Georgian Bay Coast

Jarmo V. Jalava and Wendy Cooper
The Nature Conservancy of Canada

Abstract

This paper briefly summarises the results of Phase I of the Georgian Bay Coast Project, a project being implemented as a rapid reconnaissance life science inventory of Ontario Living Legacy (OLL) sites, intervening Crown and private lands, and selected natural areas on private lands along the eastern coast of Georgian Bay. Efforts concentrate on documenting and describing the locations and viability of species and vegetation community occurrences as well as ecosystems of high conservation importance. Field studies are being integrated with existing databases of the Ontario Natural Heritage Information Centre (NHIC), and key maps and descriptive products for public lands will be web-based, accessible, and shared with the broader conservation community and the general public interested in the natural history of the coast.

A more comprehensive ecological theme study for the entire Georgian Bay coast is planned for publication in spring 2003. This thematic study will summarise and evaluate information from background literature, as well as data gathered during the 2001 and 2002 field seasons of the Georgian Bay Coast Project.

Introduction

The Georgian Bay Coast Project (GBCP) is a two-phase project initiated by the Ministry of Natural Resources (MNR) in partnership with The Nature Conservancy of Canada (NCC) and the Ontario Region of The Nature Conservancy of Canada and Georgian Bay Land Trust (GBLT) Joint Venture. The goal of the project is to complete a life science inventory of the Great Lakes Heritage Coast region, including both public and private natural areas along the eastern coast of Georgian Bay.

Phase I consists of a natural heritage inventory of Ontario Living Legacy (OLL) sites and intervening Crown lands from Severn River north to Franklin Island. Life Science Checksheets based on detailed ground inventories were completed for OLL sites and aerial surveys were used to inform brief life science reports for the

intervening Crown land areas. Aerial surveys with limited ground-truthing and draft life science checksheets for OLL sites from Franklin Island north to the French River were also compiled. In addition, life science reporting based on detailed ground inventories for selected private lands of interest to the Ontario Region NCC and GBLT Joint Venture were undertaken along the entire eastern coast of Georgian Bay.

Phase II, commencing May 2002, will complete ecological studies of the eastern coast of Georgian Bay, with surveys of remaining OLL sites and intervening Crown Lands between Franklin Island and the French River. Inventory of additional private land sites will also be undertaken. Phase II will also include site inspections of sites in the District of Muskoka as a contribution to the partnership between the GBCP and the Muskoka Wetlands Mapping Project (a collaborative project involving Ducks Unlimited, District of Muskoka and MNR). Finally, pending funding approval from Parks Canada, botanical inventories of the Georgian Bay Islands National Park will be undertaken by the GBCP field crew in 2002.

At the conclusion of Phase II, a report encompassing the findings of both Phase I and Phase II and an evaluation of the Georgian Bay Coast ecological theme area will be published. It will include a biophysical synopsis of the study area, comparative evaluations of sites on the basis of representation, species lists for the entire study area, and an assessment of site- and species-conservation priorities, and land-use and resource management considerations from a greater ecosystem perspective.

Field Results

Field Summary

The project began with a reconnaissance helicopter survey on March 26, 2001 (before the project had officially started) by MNR and NCC staff. Once the project had officially begun on May 1, 2001, the initial two weeks were spent preparing for the field season. Breeding bird surveys and vascular plant and vegetation community inventories commenced on May 23, 2001. Herpetofaunal, mammal and invertebrate observations were also recorded throughout the field season.

Vegetation Communities

A preliminary vegetation community classification was developed in May 2001 in preparation for the field season by the Georgian Bay Coast Project (GBCP) based on ecosite and vegetation type schemes in the *Forest Ecosystem Classification of Central Ontario* (Chambers *et al.*, 1997) and the *Ecological Land Classification (ELC) for Southern Ontario: A First Approximation* (Lee *et al.*, 1998), as well as supplementary lists of significant vegetation types provided by the Natural Heritage Information Centre (NHIC). This was necessary because of the absence of a comprehensive ecological land classification for the southeastern portion of the Canadian Shield in Ontario, as Chambers *et al.*, (1997) covers only terrestrial (prima-

rily forested) community types. Vegetation communities were described during field surveys using standards developed by the NHIC and adapted by the GBCP for rapid-reconnaissance field inventory compatible with the provincial ecological land classification template. At the end of the field season, vegetation data were compiled into a master spreadsheet and classified. The preliminary classification was re-evaluated with the benefit of the >1100 new community records compiled by the GBCP in 2001, in collaboration with NHIC (Bakowsky, 2002 pers. comm.). Additional applicable vegetation classifications (e.g., Harris *et al.*, 1996; ABI, 2001; NHIC, 2002; Bakowsky, 2002) were used to refine the vegetation list. All of these classifications are currently being synchronized by the NHIC in collaboration with other Association for Biodiverisity Information (ABI) member agencies in order to ensure compatibility among jurisdictions. A working classification for GBCP compatible with the standard Ontario ELC is now in place, although element codes, conservation ranks and the vegetation typing (G-RANKS and S-RANKS) are still works-in-progress at the time of writing.

Approximately 1200 records of over 125 vegetation community types were documented and geo-referenced from the Phase I OLL and NCC/GBLT study areas. These community types include older growth forest stands and high quality (pristine) examples of common and uncommon communities such as rock barrens, bogs, fens and other wetland types. Globally and provincially rare communities such as Atlantic Coastal Plain meadow marshes and Great Lakes shoreline meadow marshes were also documented and geo-referenced (Table 1), as were a number of vegetation types not previously documented according to the standard Forest Ecosystem Classification and/or Ecological Land Classification schemes in south-central Ontario.

Table 1. Globally and provincially significant vegetation types of the southeastern Georgian Bay coast.

CODE	VEGETATION TYPE	G RANK	S RANK
P34	Acidic Treed Talus Ecosite	G4G5Q	S3S4
P32	Acidic Open Granite Talus Type	G4G5	S3S4
P64	Common Juniper Acidic Shrub Rock Barren Type	?	S2
T113A	Dry - Fresh Hemlock - Oak Mixed Forest	G?	S3-S3S4?

T122A	Dry - Fresh Oak - Red Maple Deciduous Forest Type	G?	S3S4
T134	Dry - Fresh Sugar Maple - Basswood Deciduous Forest Type	G3G4	?
W188	White Pine Mineral Coniferous Swamp	G3G4	S2
W196A	Red Maple - White Pine Mineral Mixed Swamp Type	G3G4	S2
W201	Red Maple - Conifer Organic Mixed Swamp Type	G3G4	S2
W226	Buttonbush Mineral Thicket Swamp Type	G4	S3
W226A	Buttonbush - Sweet Gale Mineral Thicket Swamp Type	G?	S2S3?
W235	Buttonbush Organic Thicket Swamp Type	G4	S3
W238	Winterberry Organic Thicket Swamp Type	G2Q	S3S4
W239	Mountain Holly Organic Thicket Swamp Type	G?	S3S4
W245	Twig-rush Graminoid Open Fen Type	G3G5	S3?
W248A	Cottongrass - Beak-rush / Yellow-eyed Grass Open Fen	G3G4?	S3-S3S4?
W253	Leatherleaf - Forb Deciduous Shrub Fen Type	G3G4	S3
W253A	Leatherleaf - Chain Fern / St. Johns-wort Shrub Fen	G3G4	S3

W262	Virginia Chain Fern Open Bog Type	G3	S3
W268A	Atlantic Coastal Plain Forb Bedrock Meadow Marsh Type	G?	S2?
W289A	Atlantic Coastal Plain Meadow Marsh Type	G2?	S3

Species Occurrences

In total, approximately 18,900 species occurrences were documented and geo-referenced at Phase I sites of the GBCP during the 2001 field season, and several hundred additional records were collected for Phase II OLL sites. Field surveys focused primarily on vascular plants, breeding birds, reptiles and amphibians. Incidental observations were also made of mammals and notable insect species.

To date, project staff have identified 782 vascular plant taxa for the study area, with some collected plant specimens still requiring verification. Only 10% (80 species) of these vascular plant species are considered introduced in Ontario.

One hundred and six species of breeding birds, 17 reptile species and 16 amphibian species were recorded at the study sites. Breeding bird data are being submitted to the Ontario Breeding Bird Atlas and reptile information will be passed on to the Georgian Bay Reptile Awareness Program.

Rare Species and Species at Risk

Of the species recorded, 42 are currently (as of April 2002) considered provincially or globally rare by NHIC and ABI (Table 2, Table 3). The data collected on these species is being supplied to the NHIC Element Occurrence Database to confirm and update existing records or provide information on previously undocumented element occurrences.

A number of the 28 rare plant species recorded from Phase I sites are Atlantic Coastal Plain species including Meadow-beauty (*Rhexia virginica*), Carey's Smartweed (*Polygonum careyi*) and Carolina Yellow-eyed Grass (*Xyris difformis*). The remaining species include a variety of shoreline, wetland and forest species. Multiple occurrences of the reptile species at risk associated with Georgian Bay, such as Eastern Fox Snake, Eastern Massasauga and Five-lined Skink, were documented from a variety of sites. Other notable rare taxa include Pine Imperial Moth, Elfin Skimmer, Red-shouldered Hawk, Caspian Tern and several occurrences of the provincially rare-to-uncommon Prairie Warbler. In addition to the species recorded during Phase I field work, a number of species were documented from previous

studies (e.g., Kamstra 1991 & 1992; Reid and Bergsma, 1994). A complete list of these studies is provided in the Georgian Bay Coast Project Phase I Summary Report.

Table 2. Globally and provincially rare vascular plants of the southeastern Georgian Bay Coast study areas.

SCIENTIFIC NAME	COMMON NAME	G RANK	S RANK	MUSKOKA DISTRICT STATUS	PARRY SOUND DISTRICT STATUS	5E7 STATUS
Carex folliculata L.	Long Sedge	G4G5	S3	U	N	
Carex novae-angliae Schwein.	New England Sedge	G5	S3	U	X	
Carex trisperma Dewey var. billingsii Knigh	Billing's Three-seeded Sedge	G5T?	S2S3	N	X	
Dryopteris x triploidea Wherry	Wood Fern	HYB	S3S4	C	X	
Echinochloa muricata (P. Beauv.) Fern.	Prickly Barnyard Grass	G5	S3?	?	N	
Galium brevipes Fern. & Wieg.	Short-stalked Bedstraw	G3G4	S2?	N		

Huperzia selago (L.) Bernhardi ex Schrank &	Fir Club-moss	G5	S3S4	R1		
Isoetes engelmannii	Engelmann's Quillwort	G4	S1	R		
Isoetes x eatonii Dodge	Eaton's Quillwort	HYB	S1	R	N	
Juncus acuminatus	Sharp-fruited Rush	G5	S3	R	N	
Juncus militaris Bigelow	Bayonet Rush	G4	S3S4	U		R
Linum medium (Planchon) Britton *var. medium*	Stiff Yellow Flax	G5T?	S3	U		
Najas gracillima (A. Braun ex Engelm.) *Magn*	Thread-like Najas	G5?	S2	R		
Panicum rigidulum Bosc ex Nees *var. rigidul*	Ridged Panic Grass	G5T?	S2S3	U	R	

Panicum spretum J.A. Schultes	Eaton's Panic Grass	G5	S2	U		
Platanthera blephariglottis (Willd.) Lindle	White-fringed Orchid	G4G5-T?	S3S4	C		
Polygonum arifolium L.	Halberd-leaved Tearthumb	G5	S3	R	N	
Polygonum careyi Olney	Carey's Knotweed	G4	S3S4	C		
Pterospora andromedea Nutt.	Pine-drops	G5	S2	R		
Rhexia virginica L.	Common Meadow-beauty	G5	S3S4	C		
Sagittaria cristata Engelm.	Crested Sagittaria	G4?	S2S3	U		
Saururus cernuus L.	Lizard's-tail	G5	S3	R		
Schoenoplectus smithii (A. Gray) Sojak	Smith's Club-rush	G5?	S3	R		
Sporobolus asper (Michx.) Kunth	Rough Dropseed	G5	S1S2	R		
Triadenum virginicum (L.) Raf.	Marsh St. John's-wort	G5	S3	C		

Utricularia geminiscapa Benj.	Hidden-fruited Bladderwort	G4G5	S3	R		
Viola x primulifolia L. *(V. lanceolata X V. macloskeyi)*		HYB	S1	R		
Xyris difformis Chapman var. difformis	Carolina Yellow-eyed Grass	G5T5	S3?	C		

Table 3. Globally and/or provincially rare fauna of the southeastern Georgian Bay Coast study areas.

SCIENTIFIC NAME	COMMON NAME	G RANK	S RANK	COSEWIC	MNR
Cordulegaster maculata	Twin-spotted Spiketail	G5	S3		
Eacles imperialis pini	Pine Imperial Moth	G5T3	S3?		
Nannothemis bella	Elfin Skimmer	G4	S3		
Nehalennia gracilis	Sphagnum Sprite	G5	S3		
Buteo lineatus	Red-shouldered Hawk	G5	S4B,SZN	SC	VUL
Larus marinus	Great Black-backed Gull	G5	S2B, SZN		
Sterna caspia	Caspian Tern	G5	S3B, SZN	NAR	
Dendroica discolor	Prairie Warbler	G5	S3S4B, SZN	NAR	NIAC

Clemmys guttata	Spotted Turtle	G5	S3	SC	VUL
Emydoidea blandingii	Blanding's Turtle	G4	S3?		
Eumeces fasciatus	Five-lined Skink	G5	S3	SC	VUL
Elaphe gloydi	Eastern Fox Snake	G3	S3	THR	THR
Heterodon platirhinos	Eastern Hognose Snake	G5	S3	SC	VUL
Sistrurus catenatus catenatus	Eastern Massasauga	G3G4T3-T4	S3	THR	THR

More than 200 locally significant species were also documented at the study areas. Species are considered locally significant if they are rare (R) or new (N) for the District of Parry Sound or the District of Muskoka according to a preliminary checklist for these municipalities (Oldham, 2001) and/or rare (R) or new (N) for Ecodistrict 5E-7 (Crins, 1997). Of the previously undocumented species for the districts of Parry Sound and/or Muskoka, five are currently considered provincially rare.

Applications of the Georgian Bay Coast Project

The applications of the Georgian Bay Coast Project extend beyond the completion of its stated deliverables. The eastern Georgian Bay coast is likely to be nominated as a World Biosphere Reserve and this project will help in providing some of the information needed to support that nomination. In addition, the data obtained from this project will provide valuable information to assist in updating the ranges and statuses of common and rare species along the eastern coast of Georgian Bay, most significantly the northern portion of the coast where little natural heritage information has been collected in the past.

Beyond these general applications of good resource data, this project also contributes to improved public communication along the coast through direct contact, presentations and media coverage. In addition, the project is involved in extensive partnership building among groups such as the Ministry of Natural Resources, national, provincial and local land trusts, cottager associations, municipalities and

other interest groups in the area.

References

Association for Biodiversity Information (ABI). 2001. *Plant Communities of the Midwest: Classification in an Ecological Context.* Nature Serve, D. Faber-Langendoen (Ed.). Association for Biodiversity Information, Arlington, Virginia. [online]. www.natureserve.org/publications/midwest/index.htm#toc.

Bakowsky, W.D. Personal communications and vegetation lists, January and February 2002. Community Ecologist, Natural Heritage Information Centre, Ontario Ministry of Natural Resources, Peterborough.

Chambers, B. A., B.J. Naylor, J. Nieppola, B. Merchant and P. Uhlig. 1997. *Field Guide to Forest Ecosystems of Central Ontario; SCSS Field Guide FG-01.* Ontario Ministry of Natural Resources, Peterborough.

Harris, A.G., S.C.McMurray, P.W.C.Uhlig, J.K.Jeglum, R.F.Foster and G.D. Racey. 1996. *Field Guide to the Wetland Ecosystem Classification for Northwestern Ontario.* Ontario Ministry of Natural Resources, Northwest Science and Technology. Thunder Bay, Ontario Field Guide FG-01. 74 pp. + Appendix.

Kamstra, J. 1991. Species lists from draft report *Identification of Natural Heritage Areas along the Severn River Corridor.* Muskoka Heritage Areas Program. Gartner Lee, Ltd. Toronto.

Kamstra, J. 1992. *Identification of Natural Heritage Areas along the Severn River Corridor.* Prepared for Muskoka Heritage Areas Program. Gartner Lee, Ltd. GLL 91-188. Toronto. 81 pp.

Lee, H., W. Bakowsky, J. Riley, J. Bowles, M. Puddister, P. Uhlig and S. McMurray. 1998. *Ecological Land Classification for Southern Ontario: First Approximation and Its Application.* SCSS Field Guide FG-02. Ontario Ministry of Natural Resources, Peterborough. 225 pp.

Natural Heritage Information Centre (NHIC). 2002. Element occurrence database. Ontario Ministry of Natural Resources, Peterborough.

Reid, R. and B. Bergsma. 1994. *Natural Heritage Evaluation of Muskoka.* Muskoka Heritage Areas Program, Bracebridge, Ontario. 266 pp.