

ASSOCIATION FOR CANADIAN
EDUCATIONAL RESOURCES

M A D E L Y N W E B B
F E B R U A R Y , 2 0 1 6

Community Mapping in Niagara



Bringing stakeholders and citizens together to report on the environmental issues and anticipated impacts of climate change in their communities.

SUMMARY

In October 2013 ACER, in conjunction with its partners, Greening Niagara and the Niagara Peninsula Conservation Authority (NPCA) invited local citizens, professionals and representatives from the municipalities, agencies, and environmental NGOs to the first of three one-day workshops that would report on the environmental issues and anticipated impacts of climate change in their communities.

Project Partners



Funded by the
Ontario Trillium
Foundation

The Purpose of the Project

The purpose of the day was to bring together members of not-for-profit organizations and agencies that have been working on forest education, policy and restoration issues in the Niagara area. We wanted to hear from experts about the anticipated impacts of climate change on the area and to obtain information from local residents on the changes they have seen in the area over the years. Based on these observations, priorities for restoration of forest canopy and habitat can be set, we can work to increase the resiliency of sensitive areas and to identify opportunities arising for environmental and recreational enhancement as a result of changes in land use.

A good deal of information had been gathered in past workshops. This time, an effort was made to add information to the 'tile' maps that had not yet been completed or to have individuals with special knowledge that had not been covered in the past, add their information to a particular tile. This year, in addition to information on forests and development, many more participants offered direct knowledge and information on various local climate impacts.

Participants had been selected for their extensive local knowledge and long-term relationship with their local area. Their task was to record their observations about how their area has changed over time and identify priorities in areas such as restoring the forest canopy and enhancing the resiliency of sensitive areas of the watershed. An overview of the data and observations recorded over the years will be found in the "Results" section of this report.



Climate scientists Don MacIver and Heather Auld at the 2015 Community Mapping Workshop in Grimsby on November 13, 2016.



Why is community mapping important?

Mr. Lapo Calamai of the Insurance Bureau of Canada (IBC) spoke at the most recent community mapping workshop about the newly developed "Flood Model for Canada". At a cost of 36 million dollars, the IBC has developed a model to better understand the risk of flooding in Canada from a regional and insurance perspective. Ecological data on permeability and vegetation cover went into the risk assessment. Some of the facts and conclusions of particular interest included:

- The level of increase in claims from floodwater damage in Canada. From 1993 to 2008, claims averaged \$400 million per year. Over the past five years, claims have skyrocketed to more than \$1 billion per year.
- Flood insurance has only been available to individuals in Canada since 2013.
- The Federal government (i.e. taxpayers) pays most of the compensation for flood damage.
- Four provinces account for 85% of flood related insurance claims. Ontario has relatively fewer properties at risk of flooding. The Prairies share the greatest risk.

- The reason for the IBC having completed this study was to have a tool to bring into the dialogue with governments about the issue. The study took two years to complete. If IBC had not found a way of completing this mapping the Federal government (Public Safety Canada) estimated it would have taken ten years at a cost of \$360 million.

Don MacIver, formerly of Environment Canada, was the second speaker. He emphasized that in the Niagara Region the climate has already changed. The Niagara Region's mean temperature has risen 2.7°C (Celsius degrees) since the 1800's. He pointed out that current flood plain mapping is not taking into consideration the effects of climate change. Ontario climate is becoming warmer and wetter, a chief reason being that warmer Great Lakes result in higher winter precipitation. Evidence for these trends are based on comparing thirty year averages. By 2050, the current climate change models predict that annual mean temperatures will have increased by 2.6 to 4 degrees Celsius and annual mean precipitation by between 6% and 15%. (Continued on the next page.)

Continued from previous page

While the overall contribution of Canadian emissions may seem low compared with the rest of the world, Ontario and Alberta have the highest emissions that are up to double those of other provinces. However, measures to reduce emissions can be put into place with effect. He cited the City of London Ontario that has calculated the potential reductions in emissions that may be had from a wide variety of measures at the individual and municipal levels.

Because of Canada's large land mass and northern latitudes, we are particularly vulnerable to emissions from other countries. He spoke about resilience having three dimensions: Health and Safety, Biodiversity (land use, climate, insects/disease) and Competitiveness.

Don MacIver acknowledged ACER's work in inventory of forests using one-hectare standard plots and ACER experimental plots at the Humber Arboretum to monitor the impacts of warmer temperatures on biodiversity.

Heather Auld emphasized the need to build resilience for a changing climate. There is a need to understand the impacts at the community level. Ms. Auld has been working for years to update the building code to stay ahead of the changes we are even now experiencing (e.g. higher winds blowing the roofs off houses; infrastructure failure during high rainfall episodes). Now that Ms. Auld has the approval to make evidence based changes. She is seeking information at the local level. ACER hopes to help with this initiative. For example, how many houses were damaged in a wind storm, how many houses were flooded due to heavy rains?

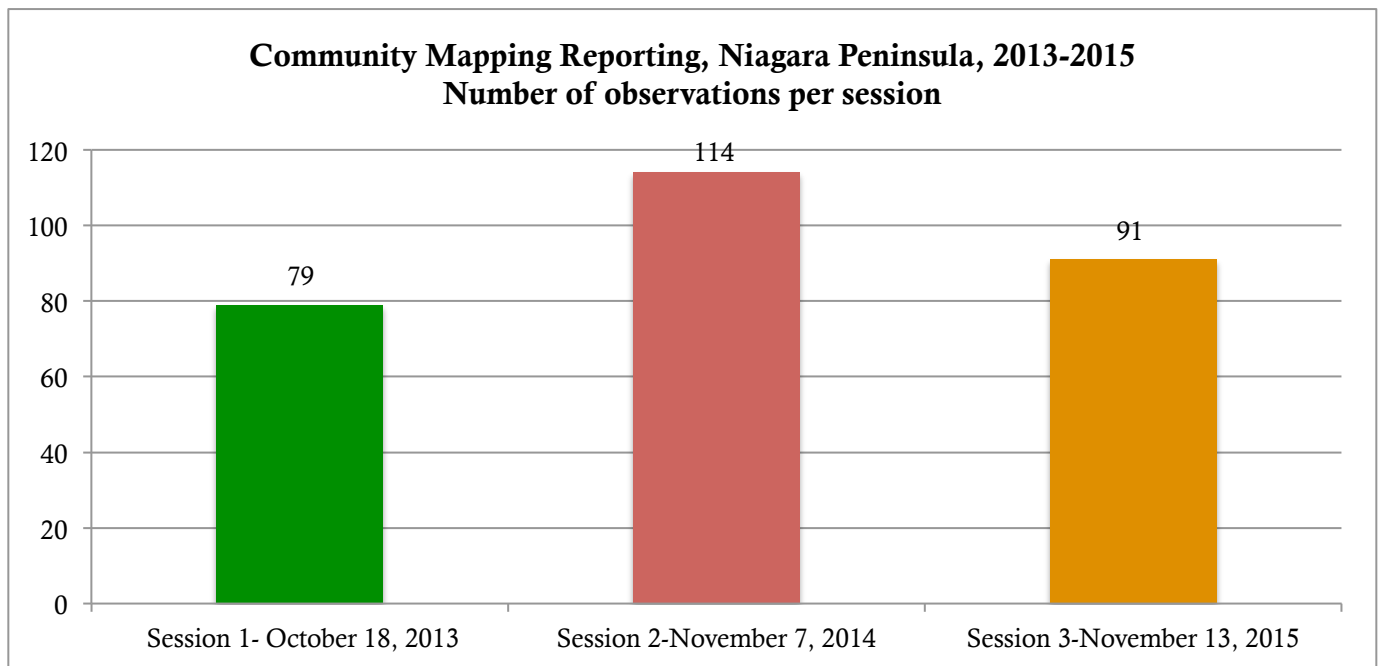
Workshop Methodology

Colour maps with a 1:10,000 scale, prepared by the Niagara Peninsula Conservation Authority, were distributed among the tables, based on the geographical area being discussed. Last year's maps, for the same areas, were provided for comparison and to avoid duplication of effort. Deanna Lindblad of the NPCA introduced the maps and how to relate the large-scale maps to the overall map of the region.

Participants wrote their observations on the maps, using arrows, circles and worded descriptions of what they have observed over the years or recently. A map of Niagara Region showing the areas (tiles) where maps were reviewed is featured on page 8. In addition, facilitators took notes of the comments for each map consulted (See raw data in Appendix 2.) The work was based on GIS mapping by Niagara Peninsula Conservation Authority (NPCA).

The area, consisting of 2870 hectares was divided into 125 'tiles' each representing an area of 25 sq. km. The community worked with maps that represented each 'tile' at a scale of 1:50,000 with GIS layers plotted, including road systems and rail systems. At each workshop, knowledgeable community members were asked to plot ecological, development and recreational information that was particular to the map area that was familiar to them.

The map information gathered over 3 years' of workshops was organized in an Excel Spreadsheet (Appendix 2). A short description of the information from the community was entered for each map. A coding for the type of information gathered was entered for each map. The information was plotted in a pie chart to show the percentage of tile areas that had similar observations or comments, e.g. forested, storm damage or flooding.

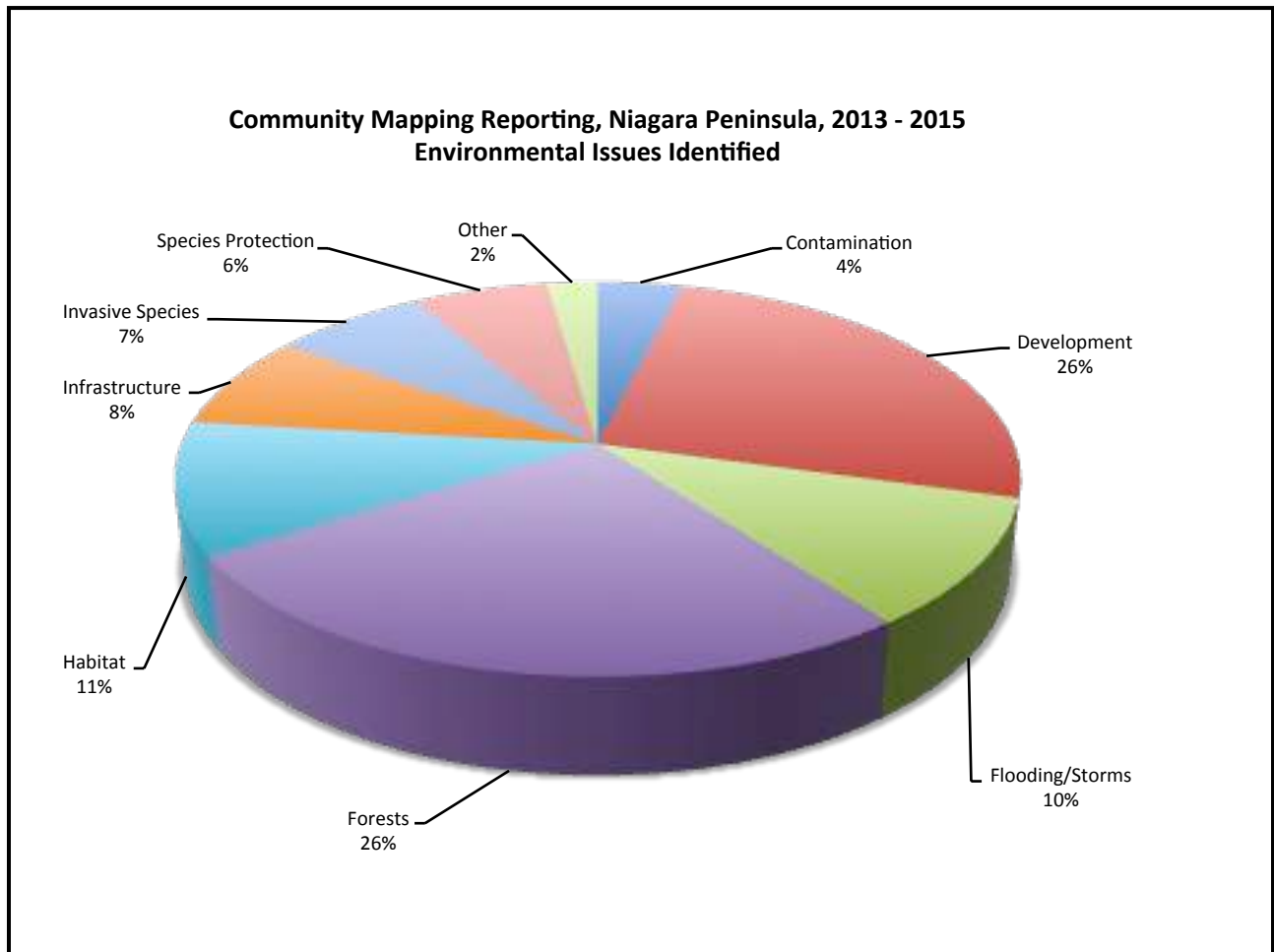


Who Participated in the Project? How were they recruited?

The partners were ACER, Greening Niagara and Niagara Peninsula Conservation Authority. Each partner helped create email lists of knowledgeable local citizens, first responders, municipal authorities and local planners. A series of emails was written to inform and invite people to the workshop. In the last year of the workshops, a web-based event registration platform was used to make registration easier.

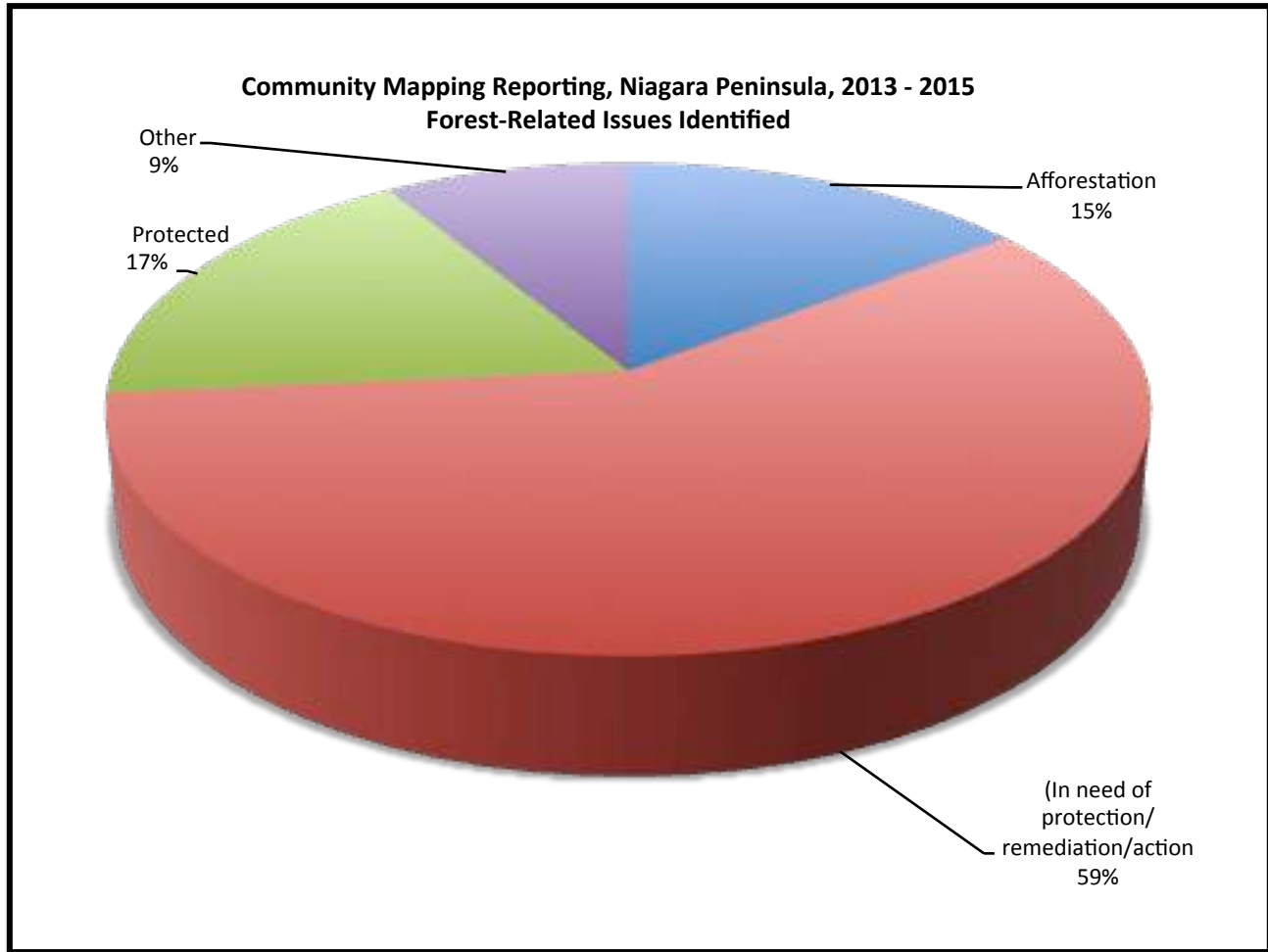
Outcomes from three years of workshops

Participants worked diligently on their maps through the rest of the morning and into the afternoon. There was an opportunity for the various group representatives to network with one another. The maps from last year's workshop were available for reference. Issues identified are reflected in the graphs below and on the next page.



Concerns around forests, flooding and development were identified as priority areas needing attention. In the following graph, you see the forestation issues broken out into categories, where 15% of identified issues were opportunities for planting trees and 59% of identified issues were related to remediation or protection action. These, too, depending on the areas are opportunities for a community-based tree planting strategy.

Trees and Forests are a Big Concern

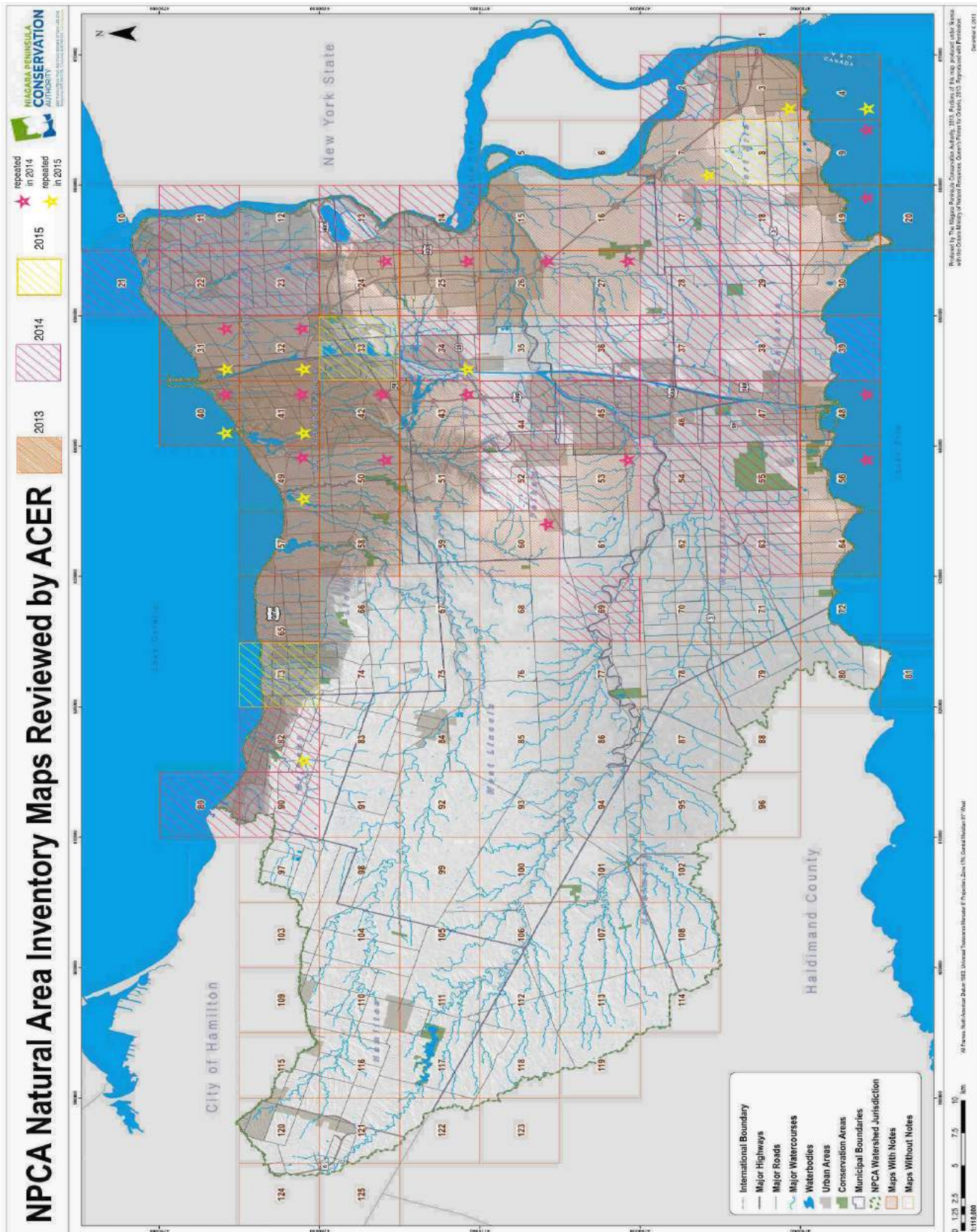


Invasive Species

The following species were identified as being invasive.

- Asian Lady Bugs
- Black Locust
- Cormorants
- Emerald Ash Borer
- English Ivy
- Garlic Mustard
- Grackles
- Housecats Outdoors
- House Sparrows
- Japanese Beetle
- Norway Maple
- Periwinkle
- Phragmites
- Starlings

The Project was able to report on 70% of the populated areas of the Niagara Peninsula



Evaluation and Reflection

Based on the evaluations, the feedback indicated that the workshop was an unqualified success and that the participants would welcome workshops and training in the future. Participants gained a greater understanding of the local issues and the people working to address them. As hosts, we experienced the energy and commitment of local participants and the potential for 'in the ground' projects to improve the local environment and the resilience of Niagara's infrastructure. The results of the evaluation are available on request.

Overall Conclusion

The results of the mapping again demonstrated the depth of knowledge of participants and the value of capturing their information, some of which reflects observations over several decades. The fact that representation from local groups allowed participants to work in more depth on identifying priorities shows the commitment to the vision of protecting the watershed and restoring the canopy. With priorities having been set for several local areas, the table is set for discussions among the community and implementers/funders to come to consensus on the follow-up actions to be taken.

APPENDIX 1

What is Asset Based Community Development (ABCD)?

Asset Based Community Development (ABCD) is a *strategy* for sustainable community- driven development. Beyond the mobilization of a particular community, ABCD is concerned with how to link micro-assets to the macro-environment. The appeal of ABCD lies in its premise that communities can drive the development process themselves by identifying and mobilizing existing, but often unrecognized assets, and thereby responding to and creating local economic opportunity.

The first strength of ABCD is building on the assets that are already found in the community and mobilizes individuals, associations, and institutions to come together to build on their assets-- not concentrate on their needs. An extensive period of time is spent in identifying the assets of individuals, associations, and then institutions before they are mobilized to work together to build on the identified assets of all involved. The identified assets from an individual are matched with people or groups who have an interest or need in that asset. The key is to begin to use what is already in the community.

In the past when a person had a need they went to their neighborhood for assistance. But this has shifted today to the belief that the neighbor does not have the skills to help them, therefore we must go to professionals for assistance. The Welfare system today works in such a way that professionals have made clients and recipients of the poor, robbing them of the support from their neighbors who now think that they are not skilled enough to help. This leads to isolation of the individuals. The poor begin to see themselves as people with special needs that can only be met by outsiders, but this can be changed through the ABCD process.

A second strength of ABCD is found in the local associations who should drive the community development process and leverage additional support and entitlements. These associations are the vehicles through which all a community's assets can be identified and then connected to another in ways that multiply their power and effectiveness. Users of the ABCD approach are deliberate in their intentions to lead by stepping back. Existing associations and networks (whether formal or informal) are assumed to be the source of constructive energy in the community. Development is driven by community rather than by external agencies. ABCD draws out strengths and successes in a community's shared history as its starting point for change. Among all the assets that exist in the community, ABCD pays particular attention to the assets inherent in social relationships, as evident in formal and informal associations and networks.

ABCD's community-driven approach is in keeping with the principles and practices of *participatory approaches development*, where active participation and empowerment (and the prevention of disempowerment) are the basis of practice. It is a strategy directed towards sustainable, economic development that is community-driven.

Guiding Principles for ABCD

Most communities address social and economic problems with only a small amount of their total capacity. Much of the community capacity is not used and is needed! This is the challenge and opportunity of community engagement. Everyone in a community has something to offer. There is no one we don't need.

- Everyone Has Gifts; with rare exception, people can contribute and want to contribute. Gifts must be discovered.
- Relationships Build a Community; see them, make them, and utilize them. An intentional effort to build and nourish relationships is the core of ABCD and of all community building.
- Citizens at the Center; it is essential to engage the wider community as actors (citizens) not just as recipients of services (clients).
- Leaders Involve Others as Active Members of the Community; leaders from the wider community of voluntary associations, congregations, neighborhoods, and local business, can engage others from their sector. This "following" is based on trust, influence, and relationship.
- People Care About Something; agencies and neighborhood groups often complain about apathy. Apathy is a sign of bad listening. People in communities are motivated to act. The challenge is to discover what their motivation is.
- Motivation to Act; must be identified. People act on certain themes they feel strongly about, such as; concerns to address, dreams to realize, and personal talents to contribute. Every community is filled with invisible "motivation for action". Listen for it.
- Listening Conversation; one-on-one dialogue or small group conversations are ways of discovering motivation and invite participation. Forms, surveys and asset maps can be useful to guide intentional listening and relationship building.
- Ask, Ask, Ask; asking and inviting are key community-building actions. "Join us. We need you." This is the song of community.
- Asking Questions Rather Than Giving Answers Invites Stronger Participation; people in communities are usually asked to follow outside expert's answers for their community problems. A more powerful way to engage people is to invite communities to address 'questions' and finding their own answer-- with agencies following up to help.
- A Citizen-Centered "Inside-Out" Organization is the Key to Community Engagement; a "citizen-centered" organization is one where local people control the organization and set the organization's agenda.
- Institutions Have Reached Their Limits in Problem-Solving; all institutions such as government, non-profits, and businesses are stretched thin in their ability to solve community problems. They cannot be successful without engaging the rest of the community in solutions.
- Institutions as Servants; people are better than programs in engaging the wider community. Leaders in institutions have an essential role in community-building as they lead by "stepping back," creating opportunities for citizenship, care, and real democracy.

Five Key Assets in ABCD

Communities can no longer be thought of as complex masses of needs and problems, but rather diverse and potent webs of gifts and assets. Each community has a unique set of skills and capacities to channel for community development. ABCD categorizes asset inventories into five groups:

- Individuals:** At the center of ABCD are residents of the community that have gifts and skills. Everyone has assets and gifts. Individual gifts and assets need to be recognized and identified. In community development you cannot do anything with people's needs, only their assets. Deficits or needs are only useful to institutions.
- Associations:** Small informal groups of people, such as clubs, working with a common interest as volunteers are called associations in ABCD and are critical to community mobilization. They don't control anything; they are just coming together around a common interest by their individual choice.
- Institutions:** Paid groups of people who are generally professionals who are structurally organized are called institutions. They include government agencies and private business, as well as schools, etc. They can all be valuable resources. The assets of these institutions help the community capture valuable resources and establish a sense of civic responsibility.
- Physical Assets:** Physical assets such as land, buildings, space, and funds are other assets that can be used.
- Connections:** There must be an exchange between people sharing their assets by bartering, etc. These connections are made by people who are connectors. It takes time to find out about individuals; this is normally done through building relationships with individual by individual.

Comparison of Associations and Institutions

While institutions are both important to ABCD, they are different. Consider the following comparison of the characteristics of institutions and associations:

	Associations	Institutions
How Governed	Power by consent	Controlled environment
How Decisions Made	Choice of members	Involuntary; powered by \$
Who Designed	Designed for and by each other	Designed for production
Who Decides What To Do	Members	Needs of client or customer
Who Runs	Citizen volunteers	Service/not a servant
Who Are Beneficiaries	Citizen members	Consumer/client
Function	Freedom	Produces services
What Drives	Capacity of members	Drive to meet needs
Amount of Control	Outcomes evolve during the process	Tight hierarchical control

The gifts of institutions are important, but they must be steered in support of what the citizens want and need, not what the institution wants and needs. Typically poor communities are inundated with social service organizations that exist to do a particular job or provide a particular service, but they need a client.

What is Social Capital?

Social Capital refers to features of social organizations such as networks, norms, and trust, which increase a society's productive potential. It is built on a web of relationships that exist within any given community that allows people to succeed or advance through associating together. Social capital is present in the networks, norms, and social trust inherent in associations whose members work together in concerted collaborative action. In a literal sense, social capital is the store of good-will and obligations generated by social relations.

At the core of ABCD is its focus on social relationships. Formal and informal associations, networks, and extended families are treated as assets and also as the means to mobilize other assets of the community. By treating relationships as assets, ABCD is a practical application of the concept of social capital.

Appendix 2: Raw Data

Data Collected	Map Title Number	OBM (Ontario Base Map) Number	Location	Comment	Code	Protected	In need of protection/restoration/function	Micro-restoration	Shelter	Qualitative Information	Reporters
07-Nov-14	1	OBM 17670047500	Shallow area of Lake Erie	Needs a tree inventory, especially Ash trees	IS						
07-Nov-14	2	OBM *****50	Miller Creek	no comments							
18-Oct-13	3	OBM *****500	SE quadrant – along lake "old Fort" historic site; rectangular pond	Area blasted out hoping to create a harbour for a new homes project was stopped 1970	D						
18-Oct-13	3	OBM *****500	Cohen property, south of Edgmore and Rose Ave intersection at bottom of a lane, on the lake	Heritage Tree	F		Heritage Tree				
18-Oct-13	3	OBM *****500	Hwy3/Domewood Rd	I skated on Kraft Pond in 50's-area excavated to provide fill to build Hwy3/Domewood Rd. All Orangestown now.	D						
18-Oct-13	3	OBM *****500	H20 Old Erie Park and Fowler Road	now a birdwatcher's paradise - several walkways and interpretive panels-example of restoring natural beauty	F	Protected					
07-Nov-14	3	OBM *****500	Fort Erie	storm events- erosion of beach/grass	STORM						
13-Nov-15	3	OBM *****500	Fort Erie	algae build up previously	H						
13-Nov-15	3	OBM *****500	Fort Erie	high Fowlers toad population	SP						
13-Nov-15	3	OBM *****500	Fort Erie	currently no algae	H						
13-Nov-15	3	OBM *****500	Kraft and Dominion	new sewage pumping station	IN						
13-Nov-15	3	OBM *****500	Kraft and Dominion	until 2013-2014? Dumping sewage into lake	CONTAM						
13-Nov-15	3	OBM *****500	Kraft and Dominion	currently no algae	H						
13-Nov-15	3	OBM *****500	Kraft and Dominion	Storm surges: all along the beach; breaching storm wall	STORM						
13-Nov-15	3	OBM *****500	Kraft and Dominion	4 day power outage in Fort Erie in 2006 led to melting and flooding of highway (QEW)	FLOOD						
13-Nov-15	3	OBM *****500	Kraft and Dominion	non-native trees held leaves - led to fallen limbs	IS						
13-Nov-15	3	OBM *****500	Kraft and Dominion	power outage November 12 2015 for 9 hours (due to high winds, causing dead fish to break c	IN						
18-Oct-13	4	OBM *****450	Crescent Park Rd @ Beach	Most westerly beach, attempt to re-establish natural grasses attempted 2 years ago - some vandalism within first year. Bert Miller - nature club, sponsor	D						
18-Oct-13	4	OBM *****450	Fowler Road area	Reefs protect the bay; Beach cleanup at Fowler Road by community organization	D						
18-Oct-13	4	OBM *****450	Old Erie Beach Park	Restored and birders' paradise							
13-Nov-15	4	OBM *****450	Entire Fort Erie Area	Majority Ash Trees (approximately 80%)	IS						
13-Nov-15	4	OBM *****450	Corner of Bertie and Thompson	Old race track going to be developed	D						
13-Nov-15	4	OBM *****450	Helena St near Garrison	Solvent spill: Cleaning in progress for 8 months; possible river leakage- fish dying, noticed shortly after spill; had winter led to cracking of buried barrels, numbered company	CONTAM						
13-Nov-15	4	OBM *****450	Garrison and Spears	New housing development							
13-Nov-15	4	OBM *****450	QEW and Thompson	Buschogged area: Cleared it	D						
13-Nov-15	4	OBM *****450	QEW and Thompson	All wet basements: built on a wetland	F		In need of protection/restoration/function				
13-Nov-15	4	OBM *****450	Erie/ Waverly Beach Park	In about the last 5 years migratory hotspots in the Spring	FLOOD						
13-Nov-15	4	OBM *****450	Erie/ Waverly Beach Park	historical artifacts from 1800	SP						
13-Nov-15	4	OBM *****450	Waverly beach and Old Fort Erie	Potential corridor	OTHER						
18-Oct-13	7	OBM *****450	SE quadrant – Bowen Road	365 day a year auto racetrack, partially OK'd by Ft Erie nature clubs have lobbied against using vast area of sensitive land for such a use that not only destroys the flora and fauna, but will also cause large amount of noise, detrimental to humans and animals. FTYI	D						
				Numbered Speedway of Hwy 3 – Port Colborne- that noise is clearly audible in mid-town Port Colborne- Elm Street.							

Appendix 2: Raw Data

13-Nov-15	7	OBM *****450	Overall Title	Niagara Municipal Sewage Ponds	IN						
13-Nov-15	7	OBM *****450	Overall Title	An important waterbird migratory staging area	H						
13-Nov-15	7	OBM *****450	Overall Title	Potential shorebird habitat							
13-Nov-15	8	?	Fort Erie Off Gilmore Road	motorcar speedway complex holds 60 000; working on development funding / plan in place, not yet started	H						
13-Nov-15	8	?	Laura rd	Bobolink (species at risk) in area off Laura rd	D						
13-Nov-15	8	?	Shagbark Hickory Trail	Restored by Bert Miller Nature Club	SP						
13-Nov-15	8	?	Shagbark Hickory Trail	Fields flooded this past Spring (2015) used by Migratory Wetland birds for the first time	F						
13-Nov-15	8	?	Shagbark Hickory Trail	coming along nicely; Friendship bike path potential	FLOOD						
13-Nov-15	8	?	Shagbark Hickory Trail	corridor	F						
18-Oct-13	9	OBM *****450	Thunder Bay Colony	Flora and fauna study done in the '90's (difficult to read, could be '50's) for Thunder Bay Colony – call author's son at Hollands 716-868-5487.	H						
07-Nov-14	9	OBM *****450	Sk Mile Creek	Drain: originally wetland, residents built, increased flooding, created drainage	FLOOD						
07-Nov-14	11	OBM *****850	Niagara River from Youngstown, NY	Toxic waste site being released into Niagara River from Youngstown, NY. Proposal to be expanded by Chemical Waste Management, Inc. On a fault line.	CONTAM						
07-Nov-14	13	OBM *****750	Whole area	Small restoration areas completed, need to be expanded	F						
07-Nov-14	14	OBM *****550	Whole area	Pollinator corridor establishing itself downstream of the falls since ceasing mowing	SP						
18-Oct-13	15	OBM *****450	Along Lyons Parkway	Subdivision is being built, forest has been removed; remaining forest is isolated – contains Black Gum, lg Pin Oak, vernal pools	F						
18-Oct-13	16	OBM 17655047600	East side of map, Bayers Creek flows out of it to the South West	One of the largest areas of natural land in Niagara (old growth swamp forest); ownership and protection needs to be clarified	F						
07-Nov-14	17	OBM *****550	Black Creek	Spring flooding on Black Creek	FLOOD						
07-Nov-14	18	OBM *****500	Beaver Creek	Beaver Creek drainage experiment (successful)	FLOOD						
07-Nov-14	18	OBM *****500	Beaver Creek	Large area wind, drainage. Huge trees ripped off unstable soil or wind. Something damaging took?	F						
07-Nov-14	18	OBM *****500	Beaver Creek	Area to re-naturalize, decreased maintenance, slower water	F						
18-Oct-13	19	OBM *****450	Crystal Beach Bay	0-12 storey condo on beach front @ Crystal Beach Bay beach. This beach will wash away and undermine the building	D						
07-Nov-14	19	OBM *****450	Whole area	Flood mitigation	FLOOD						
18-Oct-13	20	OBM *****400	Mostly lake area	No notes							
07-Nov-14	21	OBM *****900	Department of National Defence	Needs EA and species inventory. Significance for native community	F						
07-Nov-14	21	OBM *****900	Niagara Shores Park	Bluffs have Bank Swallows at Niagara Shores Park. Asiatic Bittersweet is killing trees	IS						
07-Nov-14	22	OBM *****850	Whole area	Significant Wildlife Corridor. Increase riparian buffer	F						
07-Nov-14	22	OBM *****850	Whole area	Vineyards and agriculture is number one reason no reforestation. Plant windbreak to create corridors	D						
07-Nov-14	23	OBM *****800	Old Virgil landfill at headwaters of 4 Mile Creek	Toxic waste buried in old Virgil landfill at headwaters of 4 Mile Creek	CONTAM						
07-Nov-14	23	OBM *****800	Whole area	Potential for wildlife corridor if plantings can be done to connect current forest	F						

Appendix 2: Raw Data

07-Nov-14	23	OBM ****800	Whole area	Would be helpful to show restoration areas and updated with imagery	OTHER				
07-Nov-14	23	OBM ****800	Whole area	Farm ponds for irrigation	D				
07-Nov-14	23	OBM ****800	Whole area	House development	D				
18-Oct-13	24	OBM ****750	SW quadrant	Endangered by expansion of urban boundary needs protection	D				
18-Oct-13	24	OBM ****750	Centre	Pointer to area along creek "to be developed for housing" – protect watercourse with sufficient buffer and floodplain"	FLOOD				
18-Oct-13	24	OBM ****750	Old City Dump, Fireman's Park, Walker Park	Some old growth	F			Unclear	
18-Oct-13	24	OBM ****750	Walker greenspace	Some old growth	F				
07-Nov-14	24	OBM ****750	Firemen's Park	Firemen's Park purchased by city and is protected. This area has some old growth trees (Butternut, Flowering Dogwood).	F				
07-Nov-14	24	OBM ****750	Walker Greenspace and Walker Park	Purchased by city and is protected. This area has some old growth trees (Butternut, Flowering Dogwood)	F	Protected			
07-Nov-14	24	OBM ****750	Mountain Road/Kalar to Garner Area west to Taylor Road	Mountain Road/Kalar to Garner Area west to Taylor Road losing to expansion of urban boundary and development	D	Protected			
07-Nov-14	24	OBM ****750	Shinner's Creek C.A	Needs expanded protection along creek	F				Instead of private land/immobilized/lost
18-Oct-13	25	OBM ****700	Entire area	Forest areas contain species at risk but are isolated and need corridors to connect them	D				Instead of private land/immobilized/lost
18-Oct-13	25	OBM ****700	NW quadrant	Protection needed along stream course before development moves west: Fernwood Park (green brier) subdivision being built	D				
18-Oct-13	25	OBM ****700	SW quadrant –Deerfield Park	Edgewood Park contains **green brier	D				
07-Nov-14	25	OBM ****700	Edgewood Park, Greenbriar	Wetland forest, Beaver dams	F				Instead of private land/immobilized/lost
07-Nov-14	25	OBM ****700	Fernwood Greenbriar	Needs buffers	F				Instead of private land/immobilized/lost
18-Oct-13	26	OBM ****650	NE quadrant of map – Ramsey Rd forest identified	This swamp forest should be purchased by government agency.	F				Instead of private land/immobilized/lost
18-Oct-13	26	OBM ****650	NW quadrant of map – Warden Woods subdivision	contains some areas planned to be protected	F				Instead of private land/immobilized/lost
18-Oct-13	26	OBM ****650	South of this area	NF City business maintenance Centre					New information
18-Oct-13	26	OBM ****650	South of this area	Phragmites (invasive reed) invasion	IS				Instead of private land/immobilized/lost
18-Oct-13	26	OBM ****650	West of this area	Hearland Forest 93 acres P54		Protected			
18-Oct-13	26	OBM ****650	SW quadrant of map	Bobolink (small New World blackbird) habitat – work with farmers	F				Instead of private land/immobilized/lost
07-Nov-14	26	OBM ****600	City Bus maintenance centre	City Bus maintenance centre (cleared)	D				
07-Nov-14	26	OBM ****600	Unspecified area	Phragmites infestation	IS				
07-Nov-14	26	OBM ****600	Baden Powell Park (Niagara Falls)	Flying squirrel nest	SP				
07-Nov-14	26	OBM ****600	Ramsey Road forest	Ramsey Road forest needs to be purchased	F				Instead of private land/immobilized/lost
07-Nov-14	26	OBM ****600	SW corner	2013-2014 area cleared with Bobolink in southwest corner	SP				
18-Oct-13	27	OBM ****600	Large areas near Lyons Creek	Potential for afforestation could be encouraged by combination tax programs (Agreement Forests) and phosphorus trading	F			Afforestation	
07-Nov-14	27	OBM ****600	Tee Creek	Bobolink habitat; Talk/info to farmer's for Bobolink habitat (bluebird boxes up for monitoring)	SP				
07-Nov-14	28	OBM ****550	Smith-mess CA	Opportunities for corridors and to create interior forests	F				Instead of private land/immobilized/lost
07-Nov-14	28	OBM ****550	Whole area	Wonderful in this area	F	Protected			

Appendix 2: Raw Data

07-Nov-14	28	OBM *****50	Willoughby C.A.	Wonderful in this area	F	Protected				
07-Nov-14	29	OBM *****500	Whole area	Some nice contiguous forest and existing corridors	F					
18-Oct-13	31	OBM *****850	Two areas marked, large area of seaway land.	"A" Some of this could be afforested if soil improved. Seaway should be asked to consciously encourage biodiversity as part of its mandate	F			Reforestation		
18-Oct-13	31	OBM *****850		"B" Who owns this area? It is part of superlock scheme - ownership should be transferred to CA.	D					
07-Nov-14	31	OBM *****850	Farming areas	Most growers in N.O.T.L use roundup type herbicide to control orchard and roadside weeds. With all the under drains much herbicide and pesticide gets flushed into ditches and streams after rainfall.	CONTAM					
07-Nov-14	31	OBM *****850	Roadsides	NOTL Hydro contracts out roadside tree trimmers to lowest bidder in spring during nesting times for birds, etc.	SP					
07-Nov-14	31	OBM *****850	Farm farm	naturalized	OTHER					
07-Nov-14	31	OBM *****850	Niagara Shores Conservation Area	Niagara Shores Conservation Area. Virgil Dam have been gated limiting public access	OTHER					
07-Nov-14	31	OBM *****850	Townline ditch	Townline ditch is "cleaned" all vegetation chopped back along creek. Under draining tiles in farmland cause changes in water level.	CONTAM					
07-Nov-14	31	OBM *****850	Townline ditch	Bank are severely cropped, all creatures washed to lake because banks of creek have no vegetation. Drainage causes "flushes" with fertilizer, etc. into lake.	FLOOD					
13-Nov-15	31	?	Overall Tile	Lands owned seaway plan to be transferred ownership cancellation Fifth canal. Opportunities to reforest successional lands and put them in conservation ownership	H					
13-Nov-15	31	?	Eight mile creek	largest successional property should be investigated i.e. owner by seaway (eight mile creek)	H					
13-Nov-15	31	?	Haulage road	Seaway owned successional lands along Haulage road will retain in ownership could be reforested	F			Reforestation		
13-Nov-15	31	?	Overall Tile	Successional habitat on seaway land to be sold on unnamed water source. Should be reforested before sale	H					
13-Nov-15	31	?	Overall Tile	Potential planting bare soil material seaway lands projecting to lake.	H					
13-Nov-15	31	?	Overall Tile	Bald eagles seen here. Bird watching here.	SP					
18-Oct-13	32	OBM *****800	Two areas marked along the Welland canal	"A" area is at risk from proposed new Welland Canal superlock. This scheme would do a lot of ecological damage to Great Lakes. Scheme should be abandoned and land turned over to Conservation Auth and afforested.	D			Reforestation		
18-Oct-13	32	OBM *****800		"B" Area owned by Seaway suitable for afforestation.	F			Reforestation		
18-Oct-13	32	OBM *****800	SW quadrant	area marked as "future park"	F	Protected				
07-Nov-14	32	OBM *****800	Overall Tile	All drains built for dealing with farm runoff and to provide irrigation during the growing season	FLOOD					
07-Nov-14	32	OBM *****800		Could be better maintained to create habitat.	F			Reforestation		
07-Nov-14	32	OBM *****800	Canal	Along the canal they cut all the vegetation down between locks 2 and 3	FLOOD					
07-Nov-14	32	OBM *****700	Overall Tile	Areas circled on map but no description or names						
13-Nov-15	32	?	Seaway land north	Potential restoration before sale	F			Reforestation		
13-Nov-15	32	?	Airport lands	Airport lands succession opportunities perhaps low shrubs in partnership. Plantings to prevent hazards and mowing	F			Reforestation		
13-Nov-15	32	?	Seaway area	Huge seaway area potential conservation area, trail lands was assembled for cancelled fifth canal	F			Reforestation		
13-Nov-15	32	?		Seaway land near Haulage road could be reforested	H					
13-Nov-15	32	?			F			Reforestation		
13-Nov-15	32	?	St. Catherine's land along parkway	St. Catherine's land along parkway, should be naturalized, not removed	H					
13-Nov-15	32	?	St. Catherine's land along parkway	Bio-restoration attenuated possible. Contaminated site in need of restoration.	H					
13-Nov-15	33	?	Overall Tile	Successional habitat and forests could be part of larger park also in map 32	H					
13-Nov-15	33	?	St. Catherine's land south of cemetery	St. Catherine's land south of cemetery hydro land suitable for low shrubs	H					