

Conservation Master Plan

Bay Shore Blufflands State Natural Area

January 2015

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Gibraltar Fourth Grade classes identify aquatic macroinvertebrates at Bay Shore Blufflands



Picnic under the big Black Cherry at Bay Shore Blufflands discussing conservation

Foreword

This is a Conservation Master Plan for the 4200-acre Bay Shore Blufflands State Natural Area in Door County, Wisconsin. The Plan is comprised of this document, its accompanying maps, a resources document, and digital scientific data.

The Plan is a list of IDEAS. The ideas are organized within fifteen projects. The projects each have a map or two that helps guide how ideas could be implemented.

The IDEAS range from specific actions to open-ended; from straightforward to complex; from short-term to long-term. Many ideas come with notes about who might be well-suited to implement the idea, or lead its implementation, or write a grant proposal. Many IDEAS support each other, but they are designed to be implemented independently over time.

As IDEAS they might change as they are implemented. This will open up new ideas - starting conversations, not limiting what can be done. It is challenging to anticipate all of the moving parts in such a big vision and so this evolution of ideas is important.

The Bay Shore Blufflands State Natural Area comprises 4200 acres, following seven miles of Niagara Escarpment in the area between Sturgeon Bay and Egg Harbor. That is the state-designated area and the designation supports requests for state assistance to conserve and manage lands in the area. Three Preserves of the Door County Land Trust are located within this SNA. But the SNA is largely privately owned. Our goal with this Plan is to explicitly facilitate conservation in this inhabited and working landscape; our “community in a forest”. The mosaic of property ownership and land use is a crucial factor and the actions of people in this mosaic critical to conservation.

Our group of a dozen stakeholders arrived at the fifteen projects by sifting and winnowing. Projects were suggested by brainstorming desired future conditions for this place based on our experiences here and elsewhere. A project is something we should work toward. Something that fills the blank in the phrase: “Bay Shore Blufflands, in the future, is a place where ...”. Fifteen current sets of answers are given as the WHAT WE PICTURE introduction to each project. The ANTICIPATED PROGRESS lists will allow us to assess whether the ideas, individually and together, over time, make useful progress toward conservation.

As we wrote IDEAS, we did two additional things. First, we collected everything we already know about Bay Shore Blufflands - past reports, research, citizen science, surveys, and data. We organized this and are in the process of providing it digitally for graphic information systems to make it as useful as possible as the Bay Shore Blufflands Resource Guide. Second, where we saw gaps in that knowledge we began filling the gaps. We used project funding to engage scientists in 2014 at Bay Shore Blufflands to study and report hydrologic models, herpetofauna, migratory birds, breeding birds, small mammals, and aquatic macroinvertebrates. The preliminary information from these reports helped refine and expand our IDEAS. Two highlights: cave-dwelling amphipods were identified in road culverts and other surface waters, raising additional questions about the surface and groundwater connections. And the rare four-toed salamander was discovered in a wetland not yet protected.

Because of the considerable local ecology knowledge that allowed a relaxed planning framework, we could also begin testing some of the IDEAS as we worked on the plan. Four community projects begun in 2014 engaged 130 neighbors: dragonfly and bat workshops were held, native *Amelanchier* trees given free to residents for roadside planting on private lands, and neighborhood based surface water testing continued. The community projects worked pretty well. They were small steps, but small steps are important in continuing to “build the cathedral” of Bay Shore Blufflands into generations beyond our own. “Building a cathedral” is a useful analogy: a big but local vision that will be multi-generational, with parts always incomplete; steady progress which is also a bit opportune. In building our cathedral we have the chance to learn and share; we intend for each implemented idea to do useful work that moves conservation forward.

We intend for IDEAS to get implemented by YOU.

The Plan, in a nutshell, is devised to empower each of us to:

Encourage Innovation
Allow Incompleteness
Borrow Things That Work
Do Your Part
Pass It On.

The Plan is public information. It is meant for use and adaptation by YOU: conservation organizations, community service groups, local government, policy-makers, educators, citizen scientists and agency scientists, neighbors and maybe just you. The full Plan and its accompanying data are housed at the Door County Land Trust, Sturgeon Bay, WI, online at www.landscapesofplace.com/bayshoreblufflands.html and available upon request.

Find a Project that captures your imagination. Look at IDEAS to see what might match your resources and how you might share, refine or expand the idea. Use the written plan and maps in your efforts to strategize, to leverage funding and build partnerships, and to involve neighbors. Just begin, and pass it on.

Sincerely, the Bay Shore Blufflands Conservation Master Plan - Core Project Team,

Mike Grimm
Jodi Milske
Nancy Aten
Dan Collins

January 2015

1. Juneberries

WHAT WE PICTURE:

You know you're in Bay Shore Blufflands because the pink and white blossoms of native Juneberries are a visual hallmark along the roads in spring. There are "Amelanchiers at every driveway".



AND SO:

Collaborate with landowners and residents to plant and care for native fruiting Juneberry and other small native trees at driveways and along rights of way to make them emblematic in the area.

WHY: *(why this is part of a conservation future)*

Bay Shore Blufflands is a mosaic of lands owned by many, ranging from small lot homeowners to rural lands. The patchwork of ownership and addition of buildings, roads and driveways continues to change the landscape over time. Each parcel owner acts in isolation; openings are cut, fields are plowed, edges are made. The forest canopy is altered, habitat connectivity is fragmented, and hydrology is changed - all of which impact the ecology of the area. This also diminishes cohesiveness of the living landscape - something that people sense.

There are neighborhoods in the Midwest that feel they are "of the place" as residents and visitors experience them. The landscape in the neighborhood or town feels of whole cloth, it feels local, and each dwelling seems to contribute to that whole cloth. Part of the sense of whole cloth is a historical connection - this could be a working lands history, a healthy forest canopy history, a settlement history, or a year-after-year nesting birds history. If we consider the forested natural history of our neighborhood, we can imagine repeating natural patterns in the forested landscape that contributed to cohesiveness - for example, recognized tree species repeating across the landscape. Trees we find memorable, year-after-year, season to season, would have characteristics that we each relate to. Maybe it is the falling of the ripe hickory nuts; the strong sweet scent of basswood in bloom in the spring; the reds of sugar maples in fall; or the lingering of the copper beech leaves in winter.

At Bay Shore Blufflands, situated along the Niagara Escarpment, a characteristic tree that defines the area is the Juneberry. Amelanchier (**am**-e-lank-er), *A. laevis*, also known as Juneberry, Serviceberry or Shadbush, is a beautiful, local native tree with deliciously edible berries. In May, fragrant white blossoms provide an important nectar source for insects which are, in turn, a food source for newly-hatched nesting birds. In summer, the Amelanchier's attractive fruit is a favorite of songbirds. Amelanchiers host the larvae of Red-Spotted Purple and Viceroy butterflies. Summer fruits are eaten by songbirds, small mammals, and large mammals. Amelanchiers are an historic neighborhood tree for the Bay Shore Blufflands area and the Town of Egg Harbor. Ensuring these trees are planted throughout the neighborhood could re-make cohesiveness in the landscape as we perceive it, and have ecological benefits as well.

FACTORS:

Juneberries (*Amelanchier arborea*, *A. laevis*) are characteristic of escarpment habitats, particularly the cuesta and talus slopes. They are comfortable in sun and partial shade, along roads and edges, in our soils and limestone. They can, though, take some time to recover fully from transplant. Given driveways with varying sun/shade conditions, expanding the species choice to include Pagoda Dogwood (*Cornus alternifolia*), Hawthorn (*Crataegus* spp.), Ninebark (*Physocarpus*) and Buffaloberry (*Shepherdia*), would still sustain the small native flowering tree perception but support a full range of conditions, and hedge our bets on transplant survivability as well.

As a necessarily voluntary program (private landowners), a program that includes promotion, education, support/follow-up, and costs or cost sharing seems important. Planting service by professionals might also be necessary to achieve survival success. Protection from deer herbivory will be important.

Because “public” perception of landscape cohesiveness is our aim, planting sites will need to be near the public’s view, i.e. close to roads or public trails (although protected from snow plows and road salt). We will want to plant trees of a certain size for immediate impact and perceived desirability. Initially, some kind of small sign or marker that shows this tree is part of a larger project could help with momentum and perception.

Because of our ecological goals, proper ecotype of the native species will be important. This project aims to improve sense of place and also habitat, and cannot be co-opted as a ‘beautification’-only project using inappropriate species.

Different outreach strategies could reach different neighbors. Consider a range of outreach approaches to maximize the neighborhood coverage.

IDEAS:

Identify a local nursery partner, contract-growing a quantity of ecotype-appropriate trees ready each spring. The nursery might be a cost-share partner, perhaps in exchange for publicity. The nursery could also potentially provide planting assistance or oversight to ensure a good siting and beginning for the trees.

Expand the impact into protected natural areas through some sort of ratio: e.g. for every five trees given to private landowners, one is planted (consistent with Door County Land Trust land management plans) in a Preserve to improve habitat. Coordinate this with the Door County Land Trust’s reforestation and restoration plans at the public Bay Shore Blufflands Preserve.

Partner with a service/educational group; volunteers could assist writing informational materials, meeting neighbors and offering trees, supporting pickup at the nursery, delivering trees, assistance planting, watering and monitoring trees. Suggestions for groups include the Sturgeon Bay Skatepark Initiative (members wish to help counteract the environmental impact of the concrete used in the park); a local school group; a national entity like AmeriCorps NCCC (National Civilian Community Corps strengthens communities and develops leaders through direct, team-based national and community service).

Work with existing events, like Carlsville Day, Earth Day, or Arbor Day.

Include a letter of agreement with the property owner - confirming the exchange of information, the desire to care for the tree and be part of the program (maybe akin to pet adoption papers from the Humane Society).

Identify funding partners to help cover costs of trees and nursery assistance on planting. For corporate partners, this could also provide valuable employee service day opportunities. This could be an ongoing spring project, with a targeted goal of numbers of trees each year. The Towns of Egg Harbor and Seavastopol could be funding partners. Bay Shore Property Owners Association might be a funding partner.

For long-term sustainability, look into the idea of recording planted trees with the County. "Tree planting servitudes (TPS) can allow public trees to be planted on private land under contract... The servitude is granted by the voluntary contribution of the landowner to temporarily give up some rights to the use of the land. This must be a written agreement and usually extends for a limited term. Whereas utility servitudes are perpetual and exclusive grants, tree planting servitudes are voluntary and usually for the ownership of the grantor or natural life of the tree species... This is a simple servitude agreement, one to lease a spot for tree planting in effect, it does not require excessive legalese, just a simple contract between the tree planter and the tree keeper... in plain English, concise and no more than two pages. It must be recorded with the clerk of court..." (Buck Abbey, ASLA, The Green Laws Organization, New Orleans, Louisiana).

Wait a few years until the planted trees become more pronounced - and follow-up with publicity of the effort. In the intervening years, track health of the trees and make adjustments to the program.

The serviceberry was a lifetime favorite of Emma Toft, who called it the "magnolia of the North". Perhaps there is a way to capture the imagination of 'being like Emma' in this project.

DATA NEEDED:

Mapping and lists of resident contacts (locals first), correlated with priority roads.

POTENTIAL RESOURCES / PARTNERS:

Local school system / teacher / students (outreach, planting and watering)

Town of Egg Harbor

Door Landscape (native plant nursery in Town of Egg Harbor)

Door County Land Trust

Wild Ones, Door County Chapter

WDNR State Nurseries (bare-root).

ANTICIPATED PROGRESS:

2014: Project pitched in April to Town of Egg Harbor by town resident, for cost match with this WCMP grant. Unanimous approval by town residents attending the annual meeting. In Year One, 100 Juneberries were planted by town residents. We also attended Carlsville Day in July to publicize the free native tree program and speak to town residents about it.

Year Two: 100 more trees planted; all continue to be cared for; plus 10-20 in Door County Land Trust Preserves, particularly in collaboration with the Bay Shore Blufflands Preserve reforestation effort.

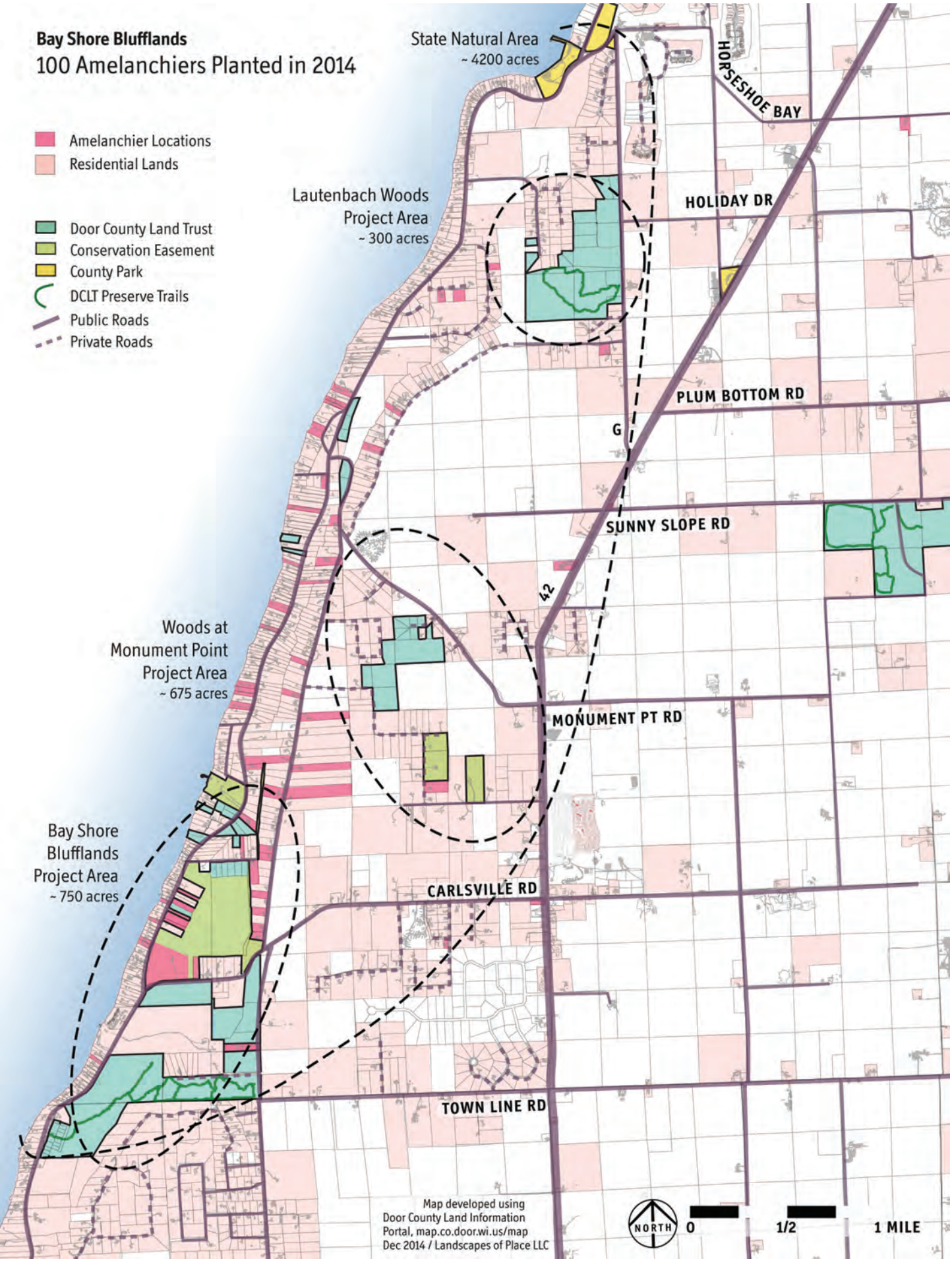
Year Five: Spring blooms of Juneberries in Bay Shore Blufflands are remarked upon in the local paper.

Year Ten: 300 trees have been planted. Local Juneberry jam is sold at Carlsville Day.

Year Twenty: There is a Juneberry event of some sort at fruit ripening time in the community. At the same time, repeated nesting bird surveys have shown positive change in which the Juneberries could be a factor.

Bay Shore Blufflands
100 Amelanchiers Planted in 2014

- Amelanchier Locations
- Residential Lands
- Door County Land Trust
- Conservation Easement
- County Park
- DCLT Preserve Trails
- Public Roads
- Private Roads



Map developed using
 Door County Land Information
 Portal, map.co.door.wi.us/map
 Dec 2014 / Landscapes of Place LLC

2. Trails

WHAT WE PICTURE:

A Bay Shore Blufflands “Rustic Trails” loop of trails and pathways.

AND SO:

Provide a modest but connected trail system through Bay Shore Blufflands. The trails connect the three existing Door County Land Trust Preserves. The trails extend the experience of hikers, bikers, and other visitors to encompass the whole State Natural Area. At the same time, use of the trail system, and where the trails *aren't*, helps protect critical habitat.

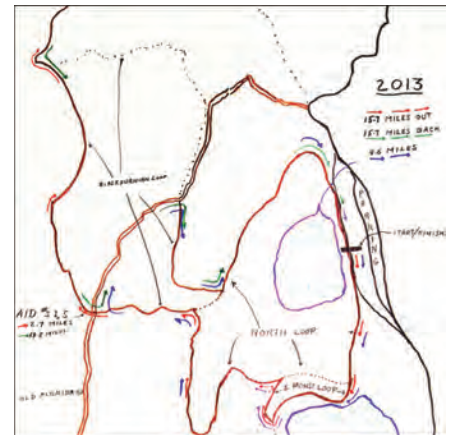
WHY: *(why this is part of a conservation future)*

The Kettle Moraine, or the Ice Age Trail, or the North Branch (Chicago), all provide examples where trail systems have successfully imprinted on trail users the larger ecological/geological/biological landscape as a “place” - almost identifying the place by the trails. And, this imprint encourages protectiveness and appreciation for the place, all of which assist in conservation work.

Trail systems have an additional well-known benefit: namely, their ability to route the trails away from particular sensitive habitats or important blocks of unbroken habitat. Good trail systems are a win-win: they improve the experience of place for people, and they protect habitat and habitat connections critical to wildlife.

At Bay Shore Blufflands, the three initial Door County Land Trust Preserves are interspersed in the larger landscape. All cross the Niagara Escarpment. In addition, the three main roads that cross the Escarpment, Carlsville Road, Monument Point Road, and County G - all traverse the three Preserves as well. There is an opportunity to use these roads as connectors in a larger loop trail system. If the trail system can include these traversing roads plus Bay Shore Drive, as well as an upper trail west of Hwy 42, we can really provide the sense of space of this SNA.

With the Niagara Escarpment threading through, and neatly separating the highlands and lowlands, we know there is human desire for views of water from the bluff. Important to balance are the desire for protection of fragile habitat, and intact habitat gradients from high to low. And so we propose ‘sharing rare views’. Selected public access leading two and from the Escarpment (providing views), but not along it. Perhaps one human accessible high spot with a view(s) for each mile of Escarpment. At the same time, our trail system, from any spot, can be designed so it is rarely out of sight of the forests of the Escarpment. One way to think of this is that trail users are always able to always see either oldfield juniper or old white cedars as they walk.



adapted from Ben Kimball

FACTORS:

From “The Niagara Escarpment: Inventory Findings 1999-2001 and Considerations for Management”, Bureau of Endangered Resources, Wisconsin Department of Natural Resources, PUBL ER-801 2002:

“As the Escarpment has increased in popularity, the demand for recreational opportunities has also increased. Increased visitation to popular public lands in the study area can result in overuse of designated trails and the development of unauthorized casual use trails. Additionally, trails can serve as conduits for the introduction of invasive species. Designing trails that lead to and from the Escarpment rather than along it would diminish some of the associated overuse problems. Re-routing certain existing trails could also limit excessive disturbance. As mentioned above, recreational demands will likely result in the construction of new piers, boat landings, parking areas, and access roads. [...] Trails directly impact sensitive areas and can provide conditions for the establishment of invasive plants and corridors for their further spread. Invasive species may inadvertently be introduced on trails not only by visitors but also by trail maintenance workers. Land managers should be aware of the potential ecological impacts of trail widening and construction.”

Protecting the sensitive Niagara Escarpment environs is a requirement. Escarpment protection buffer width is site-specific; this can be challenging. Communities that do limit disturbance tend to use a buffer of 75 feet. However (per Eric Fowle of the Niagara Escarpment Resource Network), depending on the nature of other environmental features (woodlands, exposed bedrock, sinkholes, wetlands, groundwater/spring recharge areas, etc.) the ‘sensitive’ corridor could vary from 50 to 600 feet (or more!). The best way to deal with this may be to examine these features collectively and physically map this corridor on the landscape of interest.

In addition, where there are unbroken blocks of forest, we desire to maintain them. Any trails within forested blocks should be footpaths that do not affect the canopy.

It is well-known that trails are a means of dispersal for the seeds of invasive exotic species, and therefore caution is prudent. Trail locations, education, and boot brushes are factors.

The snowmobile community asks for consideration; are there opportunities for shared use? Note that no snowmobile trails currently exist west of Hwy 42 in the north-south range of the SNA. An important note: overarching SNA rules preclude bikes and snowmobiles on WDNR- and land trust-owned lands. These might only be options on private lands or easement lands where the easement allows it. For Managed Forest Lands (MFL), the recorded plan would need to allow such uses. (See MFL maps in Projects 5 and 7).

Shall Oak Road Preserve be considered in this network of trails, extending the perception of the SNA?

The existing public trails at Bay Shore Blufflands Preserve, and the quasi-public “Stagecoach” trail, could be the initial parts of the intimate-trails network. In addition, the County bike plan, and utility corridors and reserved utility parcels might be considered. Several very thin connecting parcels exist in the Town of Egg Harbor that might facilitate trails. They seem to be utility or road right of way. They have parcel ids of 008 008L, or 008G. See the trails map for details.

We have noticed teenaged track-and-field runners using the roads, Carlsville and Reynolds, on a regular basis for practice. Can we connect the Carlton Heights neighborhood with trails for such use?

Road history might be enlightening for cultural and natural history interpretation opportunities. Historic roads provided connections at the time to ship docks for lumber, to fishing camps, etc. And, siting on gentler talus slopes along the escarpment provided traversal means; perhaps those same rocky talus slopes were unsuitable for early farming/development.

The three main transverse roads will be helpful connectors, as they navigate the Escarpment at gentler slopes.

The 45th parallel goes right through the middle Preserve. At 6725 Highway 42, between Egg Harbor and Carlsville, a stone marker denotes the geographical mid-point between the Equator and the North Pole. This is a Door County historical site. It is a County Park wayside with parking and picnic tables.

Trails are multi-purpose. They provide high-use human access that also protects habitat. Trails are a primary restoration and stewardship work route. When planned in conjunction with restoration, and planned to traverse habitat transect, they can provide a human experience of the shifting, changing, growing landscape restoration. Trail routes can then conveniently provide helpful knowledge for both land stewards and for public users.

IDEAS:

Approach trail connections in a piecemeal fashion. Consider existing land trust lands, easement lands (whose easement would allow a trail), utility rights of ways, County utility-reserved parcels (ask Tom Haight at County), County bike plan routes, horse trails, existing public trails in Preserves, and the potential for new trail easements where key connections are needed. Consider whether farm field edge/hedgerow easements are possible. Where are roadside easements possible?

Share this project with Door County Planning and ask for their comment. Where appropriate, integrate with the Door County Bicycle, Pedestrian and Recreational Facilities Master Plan approved in 2014.

Explore and integrate trail plans where appropriate with the ongoing Niagara Escarpment Greenway Plan and its eventual vision of an ‘end-to-end’ trail.

Look for collaboration opportunities with the evolving *Lake Michigan Water Trail, Wisconsin Segment* (Project Partner: Wisconsin Department of Natural Resources; National Park Service Rivers, Trails and Conservation Assistance Program, contact: Angie Tornes), and the evolving *Lake Michigan Trails Organizational Development* (Project Partner: Lake Michigan Water Trail Association; National Park Service Rivers, Trails and Conservation Assistance Program, contact: Diane Banta).

Consider having a bike trail make figure eights, utilizing Bay Shore Drive and Bluff Ledge Road.

Consider “Natural Surface Trails” (see the book by Troy Scott Parker, and see plans for such trails at High Cliff State Park for reference).

Look for visual marking opportunities to make the connection and tell stories. Ideas include interpretive or way-finding signs, pavement marking as signage, native tree groupings as signage, use of QR codes. Look into history of the wood Niagara Escarpment interpretive sign on Monument Point road to inform this project.

Consider the “45th parallel” County wayside on highway 42 as a potential site for interpretive or trail signs.

Post official SNA markers at appropriate junctures along the trail system. This would help convey the scale, and “conservation community” aspects, of this SNA.

Interact with “Restoration in Progress” project, posting signs and making land restoration work visible.

Promote e-bird hotspots - so that hikers/bikers can report birds easily from the trail.

Consider approaching private landowners about protecting forested escarpment by voluntarily sharing a view. This could be appealing to second-home owners, who are not full-time residents, as a way to strengthen community ties.

Look for small-scale parking opportunities along trail routes to increase access.

“Hike to Plan / Plan to Hike” (American Planning Association, San Diego chapter) could inspire an approach to planning trails that incorporates group walks of existing trail segments while considering new trail connections.

Remember that trails are not just recreational but can be functional - for commutes, for errands, for track-and-field practice. Perhaps show destinations on a trails map. Or, along the trails themselves, provide directional destination distance signage (e.g. 5.5 miles to a certain place). Consider map and signs that guide trail users from both within and without (e.g. a sign in Sturgeon Bay that guides people to the nearest trail access).

The Hank Aaron State Trail and the Ice Age Trail provide examples of trails that are being developed incrementally, over a long time, piece by piece. Once one segment is ready, make an interesting/temporary terminus, so that hikers’ imagination is captured about the progress and potential future of the continued trail.

Establish a “Trail-Keepers” volunteer group that regularly walks the trail and serve as ambassadors about the trail and future potential.

DATA NEEDED:

Explore trail routing options, short-term and longer-term.

Research history of the ‘Stagecoach’ trail at the base of the escarpment (see 1919 Soils Map in “The Witness Landscape” pattern).

POTENTIAL RESOURCES / PARTNERS / FUNDERS:

Door County Land Trust

Door County Silent Sports

Bay Shore Property Owners Association (BSPOA)

Niagara Escarpment Resource Network (NERN) and Eric Fowle, including for interpretive signage

Bike shops

Town of Egg Harbor

Egg Harbor Historical Society

Door County Historical Society

Bike Federation of Wisconsin

Door County Green Fund

ANTICIPATED PROGRESS:

Year Two: A conservation organization begins planning of the first segment.

Year Five: Segments of trails exist. Visual marking/interpretation system is begun. Longer-term trails plan has been developed.

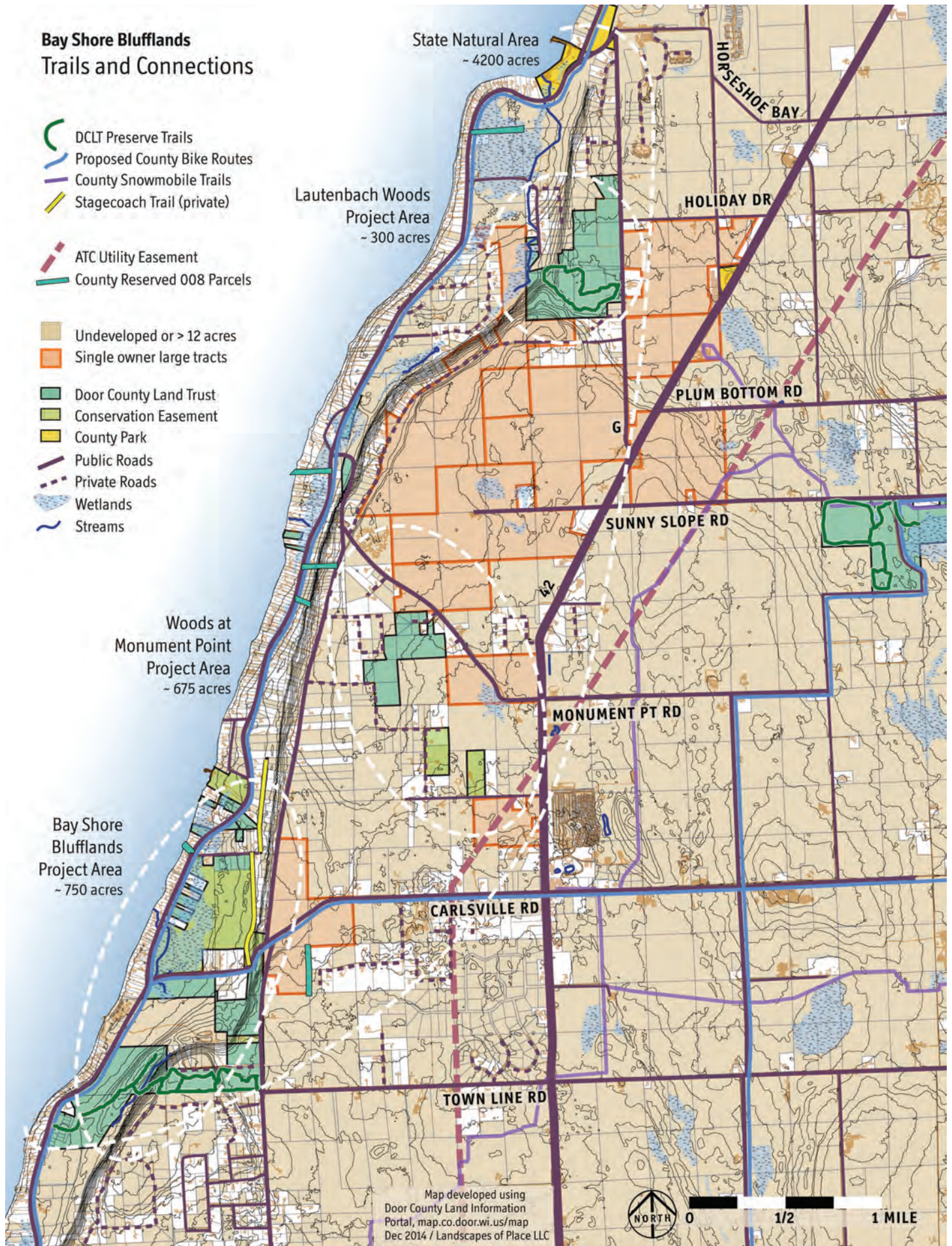
Year Ten: People experience the whole place because there is a low-impact public trail (not yet a loop) that connects the length of the SNA, and provides intimate trail connections within the three Door County Land Trust Preserves. Traversing the trail system, one can always see either oldfield juniper (on uplands, oldfields) or old white cedar. The three initial Door County Land Trust Preserves are visually linked in the public’s mind to form Bay Shore Blufflands as a natural community.

Year Twenty: The trail system incorporates loops. Sensitive wetlands and forests have land buffers protecting from the impacts of invasive exotic seed vectors, because trails are routed around.

Bay Shore Blufflands Trails and Connections

-  DCLT Preserve Trails
-  Proposed County Bike Routes
-  County Snowmobile Trails
-  Stagecoach Trail (private)
-  ATC Utility Easement
-  County Reserved 008 Parcels

-  Undeveloped or > 12 acres
-  Single owner large tracts
-  Door County Land Trust
-  Conservation Easement
-  County Park
-  Public Roads
-  Private Roads
-  Wetlands
-  Streams



Map developed using
Door County Land Information
Portal, map.co.door.wi.us/map
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3. Resident Scientists

WHAT WE PICTURE:

Residents and visitors to Bay Shore Blufflands are eyes and ears on the ground - knowing, recording and sharing wildlife sightings.

AND SO:

Citizens provide information about birds and other wildlife sighted or heard. This guides conservation work in Bay Shore Blufflands. The information is used by scientists to evaluate the roles of Bay Shore Blufflands in supporting such populations; for example, to guide the expansion or improvement of habitat.

WHY: *(why this is part of a conservation future)*

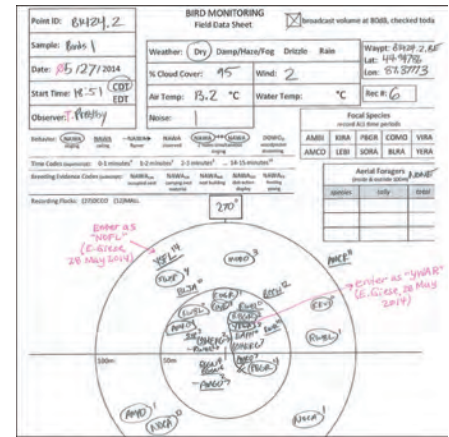
Birds captivate people. The presence of birds also informs us about the quality of habitats where they are seen, and their activities can reflect changes in habitat. E-bird is a simple way for people to report sightings, and provides verified data with a usable degree of confidence in accuracy.

Sharing of wildlife sightings is something both beginners and experts can do. Over time, it tends to increase one’s observation skill and knowledge of the animals or plants observed. It can develop citizen scientists. It can be a solitary activity or a shared activity with friends and family. Systems like e-bird also provide easy self-reporting options, for people to ask questions like, “what are all the birds people hear during May in Bay Shore Blufflands”?

Beyond birds, a number of other observations can provide useful data if a system is in place to verify and provide accurate reports. These could include mammal sightings, frog calls, snake boards, and plant bloom phenology. It could also include early detection invasive species sightings. None of these require special equipment beyond maybe a camera/phone and internet connection.

A community of citizen scientists can provide increasingly useful data. This can then increasingly interest other people from the community as data is accumulated and publicly used. A continual improvement in systems and feedback will help: for example, the use of defined neighborhood “hotspots” for easy reporting, the eventual use of QR codes supporting smart phone reporting, and further development of function and interface in reporting systems.

From the Crowd Hydrology project (crowdhydrology.geology.buffalo.edu/CrowdHydrology):
 “At the end of the day we are all scientists”.



FACTORS:

Simplicity and consistency of reporting mechanisms seem important to keep this approachable for people. E-bird is a nice place to start, having worked out many of the kinks in reporting protocols and moderating. If other taxa / data are added, consistency should be maintained through some sort of virtual clearinghouse.

Additional data would require some level of experience and knowledge from citizens, and also a commitment to carefulness in reporting. In the usual fashion, it might be helpful to enlist students first. They could be introduced to the projects in the classroom framework, be given class assignments, and report on class data in a public forum (e.g. local paper). Then they could show their family and friends how to do it.

IDEAS:

Consider creating a "Preserve Scientist" as a volunteer citizen scientist who works as colleague to the Preserve Steward. Or Preserve Wildlife Watcher. This person could coordinate and lead citizen science efforts at each Preserve: mount the wildlife camera, mount the "song meter" (to monitor frog calls and bird calls), establish repeat photography posts, etc.

Through resident scientists, develop "Species of Local Conservation Interest" (see Gary Casper project/paper), not just WDNR's "Species of Greatest Conservation Need". Define a few "Species of Local Conservation Interest" (SLCI). For example, Ovenbird, Wood Thrush, Amelanchier, Spotted Salamander, Fox Snake, Painted Turtle, Flying Squirrel. Assign local citizen scientists to each closely monitor just one of these - such focused data could help us understand local landscape needs, as well as engage community.

Create appropriate e-bird hotspots and have experts monitor sightings for the first year. Having previous sightings helps confidence in new sightings, and to see oneself as part of an ongoing community effort. In e-bird, you post your name, which is a great way of getting to know your birding neighbors.

Longer-term, find and/or develop systems to report other taxa. Focus on consistency and accuracy in reporting. (For example, from herpmapper.org: "HerpMapper is a relatively new global herp atlas and data hub project that receives 'catch and release' data from herpers, other citizen scientists, and professionals (where data-use practices allow). These data are only viewable to county-level to the public, but HerpMapper does make these data freely available to herpetologists working to conserve and research amphibians and reptiles").

Consider a Bay Shore Blufflands place-based online reporting/viewing mechanism. Perhaps this is merely a central mechanism that references other online taxa systems, but it is nice to see everything going on at Bay Shore Blufflands in one place -- to help the community connect to the place.

Consider iNaturalist.org as our citizen science reporting platform. Create Bay Shore Blufflands hotspot. Investigate its methods for data consistency, verification, and access.

Consider Google calendar as an interim citizen science reporting platform. Public calendars can be created quite simply for a taxa, or for a category ("new invasive species sighting, ranked 1, 2, or 3" - using a simple scale-of-effort metric). Interested citizen scientists can link to the calendar, and then it's a simple matter of adding a calendar entry for the date sighted. Use data fields optimizing for smart phone use: species, GPS location, condition notes, and behavior notes.

Have occasional birding walks in each of the three Door County Land Trust Preserves, led by a knowledgeable neighbor. Help each other learn.

Collaborate in some way with the Lukes' annual Door County bird watches and bird counts. Collaborate with Audubon Society bird counts. Collaborate with the Wisconsin Breeding Bird Atlas.

Wisconsin Bird Conservation Initiative is another bird posting site. They conduct ongoing species inventories of interesting groups, like owls or night-jars, and a number of specialty inventories. Connect with local citizen science interest.

Perhaps fund a project with wildlife cameras for loan to citizen scientist residents.

Establish repeat photography posts at Preserves. Use the angle bracket mechanism that The Nature Conservancy is using in Door County. Add a label identifying the post and provide a site to send photos.

Begin the effort to work out long-term data moderation, management, and storage/archival.

Regular training opportunities for residents to ensure the collecting of good data.

The citizen science movement is strong and growing. WDNR uses citizen science systematically. Our work should be cognizant of all related efforts to be additive in useful ways.

Fund local citizen scientists to attend the annual national conference (citizenscienceassociation.org/conference/).

Capture the imagination with an idea like Kate Redmond's (Cedarburg Bog): photographing one thing (a wall and its insects, a plant and its insects) throughout the year, and year after year, collecting and reporting.

Begin a plant bloom phenology project that people can do from home. Have wildflower identification workshops. This could be another good project for students / classes. Perhaps Roy Lukes could share tidbits of information from his columns. Increasing awareness of wildflowers in the local neighborhood should lead to increased appreciation.

Enlist rural mail carriers as citizen scientists. Regular route drivers can provide useful road-kill data (example at Riveredge Nature Center) as well as wildlife sightings.

DATA NEEDED:

Existing data records (e-bird, vert net, herp net)

POTENTIAL RESOURCES / PARTNERS / FUNDERS:

Door County Land Trust Preserve neighbors

Audubon Society

Local expert help with clearinghouse website hosting/development

A County intern project

Wild Ones Door County Chapter for help with plant phenology project

Scouts or a club for a snake board project at Bay Shore Blufflands South Unit

Wisconsin Citizen Based Monitoring Network (WCBM) <http://wiatri.net/cbm/invmon/>.

Bird City Wisconsin

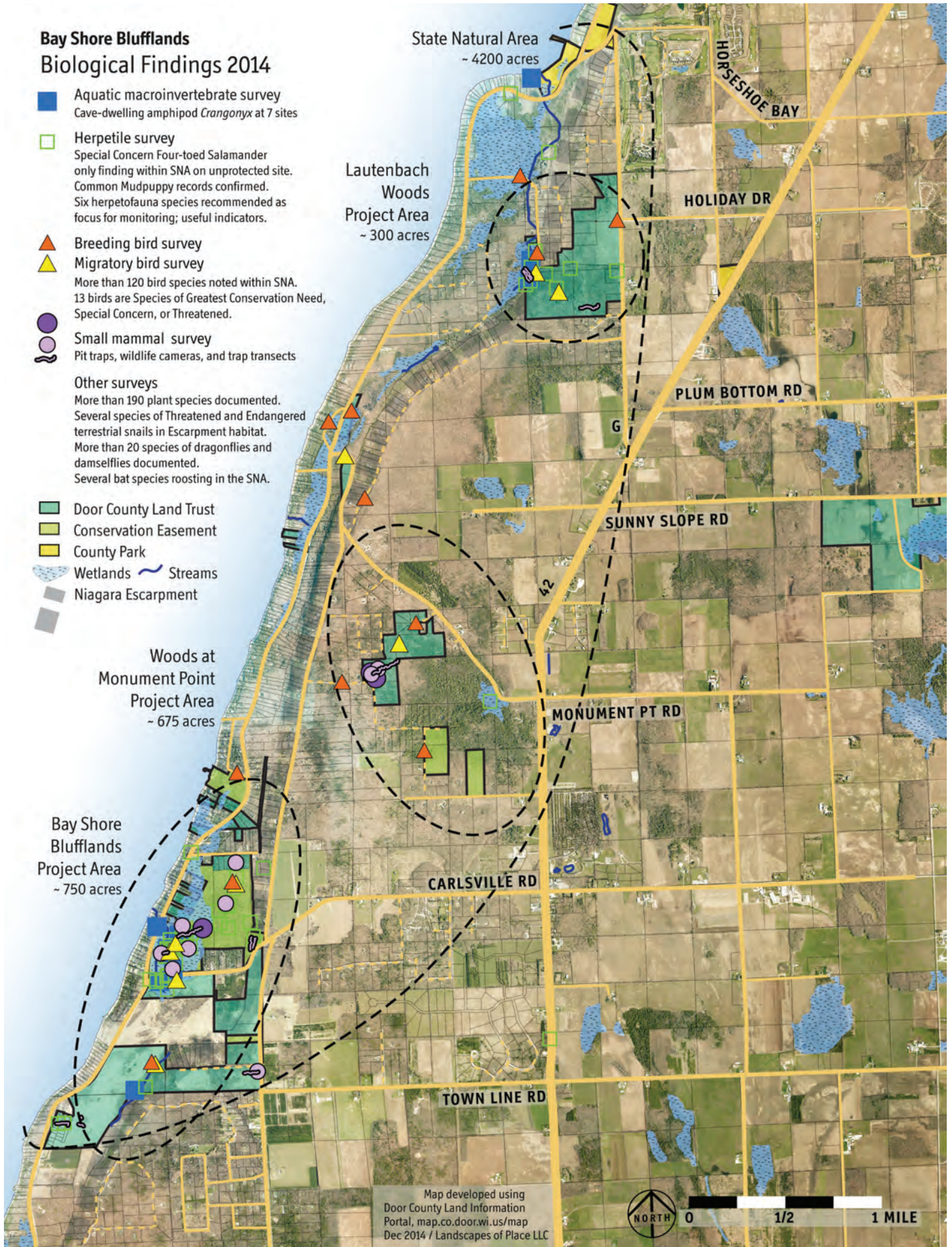
ANTICIPATED PROGRESS:

- 2014: *Migrating and Breeding bird surveys conducted by experts as part of this WCMP grant identify and establish e-bird hotspots and provide one year's data.*
- 2014: *Herpetofauna surveys conducted by experts as part of this WCMP grant identify populations and establish 30 snake boards including many on public lands.*
- 2014: *Small mammal surveys conducted by experts as part of this WCMP grant identify baseline data for mammals, and through the group's presence on the public lands of Bay Shore Blufflands Preserve, communicate their work with community members.*
- Year Two: Ten residents post several bird sightings, in five or six of the established hotspots within Bay Shore Blufflands. Citizen "anabat" bat acoustic monitoring begun, using our pool of volunteer recruits from the 2014 bat event. Citizen first-flowering of *Amelanchier* tree monitoring begun, using our pool of potential recruits from the *Amelanchier* tree giveaway.
- Year Five: A high school class uses the data to do a multi-year report of birds and changes in Bay Shore Blufflands in a public forum.
- Year Ten: Residents have a better awareness of where they live. The next big restoration project uses citizen data to secure the grant.
- Year Twenty:

Bay Shore Blufflands Biological Findings 2014

- Aquatic macroinvertebrate survey
Cave-dwelling amphipod *Crangonyx* at 7 sites
- Herpetile survey
Special Concern Four-toed Salamander only finding within SNA on unprotected site. Common Mudpuppy records confirmed. Six herpetofauna species recommended as focus for monitoring; useful indicators.
- ▲ Breeding bird survey
- ▲ Migratory bird survey
More than 120 bird species noted within SNA. 13 birds are Species of Greatest Conservation Need, Special Concern, or Threatened.
- Small mammal survey
Pit traps, wildlife cameras, and trap transects
- Other surveys**
More than 190 plant species documented. Several species of Threatened and Endangered terrestrial snails in Escarpment habitat. More than 20 species of dragonflies and damselflies documented. Several bat species roosting in the SNA.

- Door County Land Trust
- Conservation Easement
- County Park
- Wetlands
- ~ Streams
- Niagara Escarpment



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Door County Land Information
Portal, map.co.door.wi.us/map
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4. Support Network

WHAT WE PICTURE:

Land conservation and stewardship efforts in Bay Shore Blufflands are well-supported over the long-term in resources and in spirit.

AND SO:

Develop a pipeline of resources in sustainable funding, ongoing research, and people, so that the protected lands within Bay Shore Blufflands can be perpetually understood, managed, enhanced and restored.

Resources are not just dollars. This project views support broadly, increasing resources for: **conservation organizations** (dollars, members, academic research interest, strong volunteer corps); **government** (ability to effectively assign student research requests and grant opportunities, research to support policy decisions, dollars through ballot initiative); and **the neighborhood** (volunteer opportunities that are meaningful and fulfilling including citizen science and land stewardship, useful educational opportunities).

WHY: *(why this is part of a conservation future)*

Resources to support the long-term conservation vision for the protected lands in Bay Shore Blufflands are not as simple as dollars. The conservation work is necessarily data-driven; data means researchers; researchers require support and a history of data. The restoration and stewardship work is multi-year (perpetual) and labor-intensive, meaning funds for knowledgeable contractors, funds for tools and equipment. Seeing the conservation vision develop requires patience as well as engagement from the community. Any use of public-supported funds, e.g. through government grants, requires not only wise use of the public's resources but transparency and communication.

What we aspire to is a community where research leads to research; grants lead to grants; neighbors provide a steady input of help in dollars and time over generations; and the expenditures of dollars are efficient because the continuity of work has sustained local, affordable talent. Chronic uncertainty of resources is itself inefficient, and so we aim for a steady, predictable flow.

We need a functional network to enable and support regular, ongoing useful work by researchers and interns. This includes logistical needs like lodging and lab facilities, tools and equipment, lists of organizational hosts for researchers. It includes lists of potential research projects to continue and expand. It also includes quality data - a legacy of fieldwork from which researchers can build.

Through ownership or conservation easement, Door County Land Trust is the primary holder of protected lands in Bay Shore Blufflands. Therefore, resources for Door County Land Trust are key. Door County Land Trust also provides an established and effective communication system to share progress with the community and engender enthusiasm and support.

This project is to plan, develop over time, and establish, increased resources to reliably and steadily sustain the conservation work of conservation organizations, government and citizens in Bay Shore Blufflands.



adapted from Idaho Office of Performance Evaluations

FACTORS:

Income from an endowment fund could be a sustainable source of funds. There are probably further opportunities for personal estate giving to support endowment funding.

Government funding is unpredictable; however, due to climate change, coastal habitats are among those getting the most funding attention now and for the foreseeable future.

It is critical to carefully use public funds and sustain good public perception and understanding of that use.

Bay Shore Blufflands has a number of factors lending themselves to research opportunities. These include (1) the range of habitat types available within a small area, (2) the range of habitat quality available, (3) the active restoration work occurring, (4) the Niagara Escarpment itself, (5) being on a major flyway, (6) the Species of Greatest Conservation Need (SGCN) present, (7) the availability of housing, etc. We should use these strengths.

People engaged in conservation through other projects in this portfolio should be given opportunities to support the work in a variety of ways.

IDEAS:

Develop a project/research/stewardship work pipeline. This could be an organizational share between Door County Land Trust, Door County Soil and Water Conservation Department, and others. We want to be able to match student/volunteer/researcher/community group interests with useful conservation work. This portfolio of projects is itself part of that. We need organizational support to manage the pipeline. We need to make the contributed efforts provide much more value than they cost.

Fund a project to explore creative ongoing funding sources for conservation work. I.e., consider development impact fees; consider offering mitigation sites. Look at structuring a Door County Land Trust Bay Shore Blufflands 'project' that could investigate requesting modest ongoing Town (local) support.

Explore crowd sourced (kickstarter etc.) fundraising for specific projects. It may be that we can expand our Bay Shore Blufflands 'friends' network in this way (perhaps extend from our Facebook community).

Practice continuation of grants! I.e., develop funder confidence that funders' resources are well-placed and worthy of long-term support. Our goal: no gaps in grant applications.

Facilitate continuation of research. I.e., stay in touch semi-annually with existing researchers to cross-publish past work and encourage ongoing future work.

Increase spirit of support through increased name/place recognition of Bay Shore Blufflands as the entire seven-mile stretch. Talk this way in articles for Bay Shore Property Owners Association, in publicity of ongoing projects, in signs or announcements, in work days, etc.

Change Bay Shore Blufflands kiosk sign to show the whole SNA community, the entire 7-mile stretch. Use language on the Door County Land Trust website and WDNR website and Wikipedia and Facebook sites that conveys the scope of the SNA.

Engage in larger scale funding opportunities - perhaps a ballot initiative (a la Minnesota 1%). Look into partnering with the Niagara Escarpment Resource Network; with The Nature Conservancy (already interested in approaches like these); at multi-organization partnerships. Identify certain high profile concepts that funding would support. Consider an approach to legislatively direct Stewardship funding for Niagara Escarpment protection initiatives (perhaps akin to Ice Age Trail allocations within Chapter 23 of state law).

Research project idea: Focus on monitoring turtles and ground-nesting birds throughout the area because of their strong association with human presence impacts. Similar projects to understand the conservation potential of our human-inhabited state natural area.

DATA NEEDED:

Need database of available work, mentors, timing, lodging, etc.

Data repository that “remembers” the work (studies, reports, data) that describes this place.

There needs to be data sufficient to guide land management: a good vegetation map; coarse structure mapped including wetlands; indicator species designated; geography of largest forested blocks.

Consider “Species of Local Conservation Interest”, not just SGCN.

POTENTIAL RESOURCES / PARTNERS / FUNDERS:

Long-term thinking foundations and individuals.

Academic institutions (UW Green Bay, UW Oshkosh, UW Milwaukee, Lawrence, etc.)

Door County Soil and Water Conservation Department

ANTICIPATED PROGRESS:

2014: *Cost share provided by this WCMP grant to Door County for portion of summer intern’s work which mapped invasive exotic plant species in all three Door County Land Trust Preserves within Bay Shore Blufflands.*

2014: *Funding provided by this WCMP grant to a graduate student and to a team of young biologists to establish inventories of aquatic invertebrates and small mammals in Bay Shore Blufflands, to begin to develop the pipeline of research. The graduate student made use of Crossroads lab facilities. Free housing provided to both teams.*

2014: *GLRI Coastal Wetlands project was engaged to include Bay Shore Blufflands Preserve wetlands in their frog call and bird call survey sites, with the hope that this helps develop a pipeline of research interest in this SNA.*

Year Two: Summer intern cost share with Door County Soil and Water Conservation Department continues.

Year Five: Two additional Great Lakes Restoration Initiative (or similar) funded projects build on past data at Bay Shore Blufflands and use research sites within the SNA, and utilize Crossroads lab facilities. Funding of stewardship and research endowments begins.

Year Ten: Stewardship and research endowments well-established.

Year Twenty: Data and project repository enables continuing work. Intern housing utilized continually.

Bay Shore Blufflands
Supported Land Stewardship Work
 (in part)

-  Door Stewardship Alliance (2002-present)
-  NRDA Tree Planting (2005)
-  Knowles-Nelson Stewardship (2007-2009)
-  Landowner Incentive Program (2007-2008)
-  State Wildlife Grant (2011-2013)
-  Bay Shore Property Owners 50/50 Match Program
-  Weed Management Area Forest Grant Program (2014)

-  Door County Land Trust
-  Conservation Easement
-  County Park
-  Wetlands
-  Streams
-  Public Roads
-  Private Roads
-  Niagara Escarpment



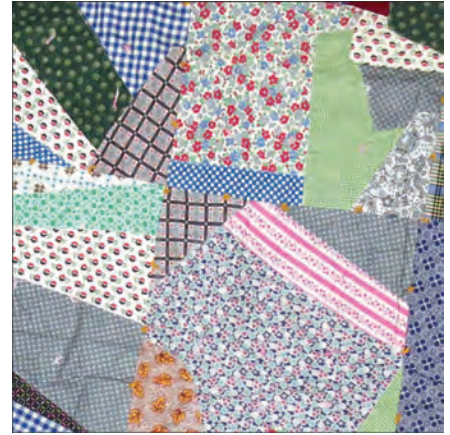
Map developed using
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 Portal, map.co.door.wi.us/map
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5. Land Succession

WHAT WE PICTURE:

In the ownership mosaic that is Bay Shore Blufflands, both conservation organizations and private landowners have good knowledge and ownership succession options to guide the conservation future of any parcel.



AND SO:

Further develop tools to: (1) evaluate the potential of any land parcel to enhance long-term conservation in the matrix of Bay Shore Blufflands lands, and (2) identify a range of land succession options that could achieve that potential. Thus this is a planning and testing project (probably conducted by a conservation organization) to *creatively expand* land succession potential options, and consider how to best match those with the potential of any land parcel to contribute to the conservation vision. It also is a project to begin testing those options.

WHY: (*why this is part of a conservation future*)

Conservation organizations and other landowners must work together, in this long-term journey of re-connecting, enhancing and protecting quality wildlife habitat within a human community (or a human community within quality wildlife habitat). Involvement by private landowners is, of course, always voluntary. *Our goal is to explore new options.*

“A common shortcoming of habitat restoration projects is [not addressing] the need for long-term protection from land conversion” (Wade Johnson, Minnesota DNR, in 2014 address). Land trusts, and their traditional tools of land ownership and conservation easement ownership, are recognized and empowered by society and government. What we think is needed is a fresh look at tools to protect from inappropriate “land conversion”. Because Bay Shore Blufflands is such a diverse matrix of land ownership, land use and parcel size, there may be unusual voluntary options not often identified.

Land protection priorities typically evaluate a set of criteria. Given our conservation community vision, re-assessing priorities that consider the long-term view and this mix of projects might result in refinement. For example, working to establish a long-term connected forest canopy might result in novel approaches to enhancing forest cover incorporating private and managed forest lands. Also, our view of the relative importance of adjacency, extension, or ‘infill’ in protected lands might change over time, and be influenced by affiliated research of corridors and patches. Tools to achieve our goals might include relatively narrow corridor easements along the edges of parcels, or a newly conceived focus within managed forest lands on habitat corridors or patches.

Next-generation rollover tools and Managed Forest rollover awareness might offer strategic acquisition approaches that benefit both Bay Shore Blufflands and landowners. With a view of long-term enhancement of the ecology of the area and maintaining rich habitats, conservation organizations can work with current owners on *next generation plans or opportunities*. We might find ways to protect land transition beyond estate gifts, and to begin testing them.

FACTORS:

Every person stewards their land differently and has different expectations of guiding the future land use. Our society agrees that with very few exceptions (conservation being one) a person cannot control the future after they're gone. It can be difficult to come to terms with this.

The primary conservation organization operating within Bay Shore Blufflands, Door County Land Trust, has long been both proactive and opportunistic in land protection priorities. However, Door County Land Trust may not have specifically evaluated the ideal 100-year future in this large, complex State Natural Area that considers the interaction of people and land.

Door County Land Trust has made estate planning an educational program. When one re-focuses with a 100-year conservation mosaic as the goal, additional land succession tools might emerge.

Any additional lands brought into the Door County Land Trust fold require resources to restore/manage/steward in perpetuity.

Ownership boundaries and wildlife habitats are not really compatible concepts. Strategies should also recognize the use of natural 'boundaries' in consideration of the future - watersheds, for example.

A relatively small percentage of landowners own a large percentage of lands. Thus land ownership changes can have a big impact on the conservation future:

All parcels evaluated:		
	4110 acres	
	664 parcels	
	382 owners	
Only parcels > 8 acres:		
	3089 acres	75%
	252 parcels	38%
	71 owners	19%
Only 20 largest landowners:		
	2249 acres	55%
	147 parcels	22%
	20 owners	5%
By land type:		
Forest Tax Assessment	571 acres	14%
Door County Land Trust	485 acres	12%
Conservation Easement estimated	200 acres	5%

IDEAS:

Land owners who are resident or local owners (“locals”) might respond to different approaches than second home owners or non-local owners, in options for future land ownership conversion. Consider different approaches and tools matched to length of land ownership and local residency.

When there is land ownership succession on managed forest lands - there might be an opportunity to work with new owners, so that when the managed forest plan renewal becomes due, new approaches that consider habitat quality and forest canopy connections could be considered.

Consider “cooperative forests” as a long term strategy to support the conservation of privately owned forests: others, organizations or individuals, can essentially buy a share in this forest, and there could be an agreement in exchange for estate transfer of the property to the conservation organization. Engage WDNR foresters (Chris Plzak) to pursue the concepts relating to Managed Forest Land options, recruitment and status within the SNA.

For land protection prioritization: consider a new model for strategic conservation priorities that incorporates varied land adjacency (patchwork) models. Review relevant research. In our diverse land ownership mosaic it may be that in some cases non-adjacent lands that increase the overall patchwork of protected lands are more important than direct adjacency or corridors.

Be able to communicate the Bay Shore Blufflands conservation priorities publicly, perhaps as blocks of habitat using fuzzy maps, or ratios of lands. Per other projects in this portfolio and our conservation vision, include working lands as part of the plan.

In the 100-year context, re-explore land succession tools to provide options for landowners and conservation organizations. Examples might include pre-assigning rights of first refusal to purchase; pre-assigning conservation easements; transfer with lifetime occupancies.

Consider a “Preserve Patron” program. For example, a present owner’s land succession wish might be a transfer with lifetime occupancy; perhaps neighborhood patrons can acquire and hold for future transfer.

Plan continuing outreach to estate planners and residents about options.

Consider tools to assist sustainable managed forest lands and management that also supports corridor and connectivity goals.

Review examples to learn from, including: Escarpment Biosphere Conservancy (EBC) in Toronto and the Bruce Trail Conservancy (both suggested by Eric Fowle of the Central Wisconsin Regional Planning Commission as creative examples of working with landowners).

Hire knowledgeable real estate/legal/estate consultant to assess property structures within Bay Shore Blufflands and identify, specifically for these conditions, a small number of methods for potential voluntary protection upon eventual natural ownership transfer. These could include legal structures and frameworks. Ideas include rights of first refusal, reverse mortgage-like programs, a conservation management program (like forestry management but managed by a conservation organization), etc.

Track real estate listings; track MFL contract expirations (potential land sale time); be proactive in anticipating potential land ownership transfers.

As part of an effort to stabilize housing density, and where there is an absence of local zoning, consider a simplified conservation easement strategy for residences in rural or forested areas on land of conservation value: straightforward easement language to essentially restrict subdivision, minimizing the oversight burden on the conservation organization.

Consider regulatory or zoning options to protect land conversion by defining groundwater protection zones.

DATA NEEDED:

Good habitat mapping that assesses quality and potential, and looks at natural patterns of patches and corridors.

Assessments of carrying capacity of Bay Shore Blufflands in terms of residents and human land use.

POTENTIAL RESOURCES / PARTNERS / FUNDERS:

Local estate planners

Wisconsin DNR Forester

Land Trust Alliance

Trust for Public Lands

Congress for New Urbanism (recognizes the continuum from wild to urban and offers models of existing communities that are on that continuum).

ANTICIPATED PROGRESS:

Year Two: New land succession options booklet is published and next round of succession planning workshops are held.

Year Five: Next phase of Door County Land Trust strategic planning incorporates new land priority models for 100-year conservation planning.

Year Ten:

Year Twenty: At least two MFL contracts, when renewed, have now incorporated forest canopy diversity and habitat quality as the key goals guiding actions.

Bay Shore Blufflands Locally Owned Lands

- Owner-Occupied Fulltime
(Improved, receives tax bill)
- Unimproved and Locally Owned
(54235, 54209)

All parcels evaluated:

4110 acres
664 parcels
382 owners

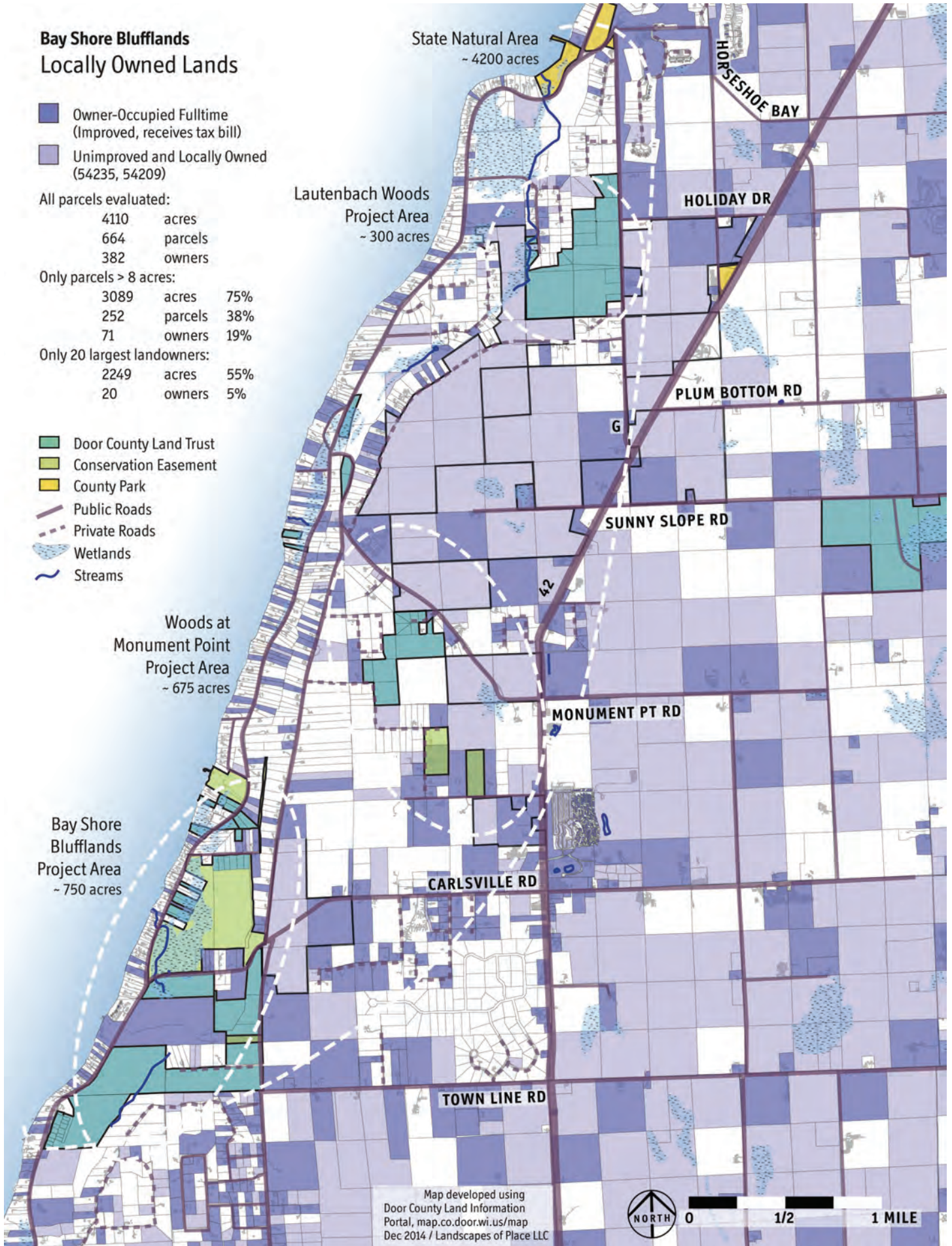
Only parcels > 8 acres:

3089 acres 75%
252 parcels 38%
71 owners 19%

Only 20 largest landowners:

2249 acres 55%
20 owners 5%

- Door County Land Trust
- Conservation Easement
- County Park
- Public Roads
- Private Roads
- Wetlands
- Streams

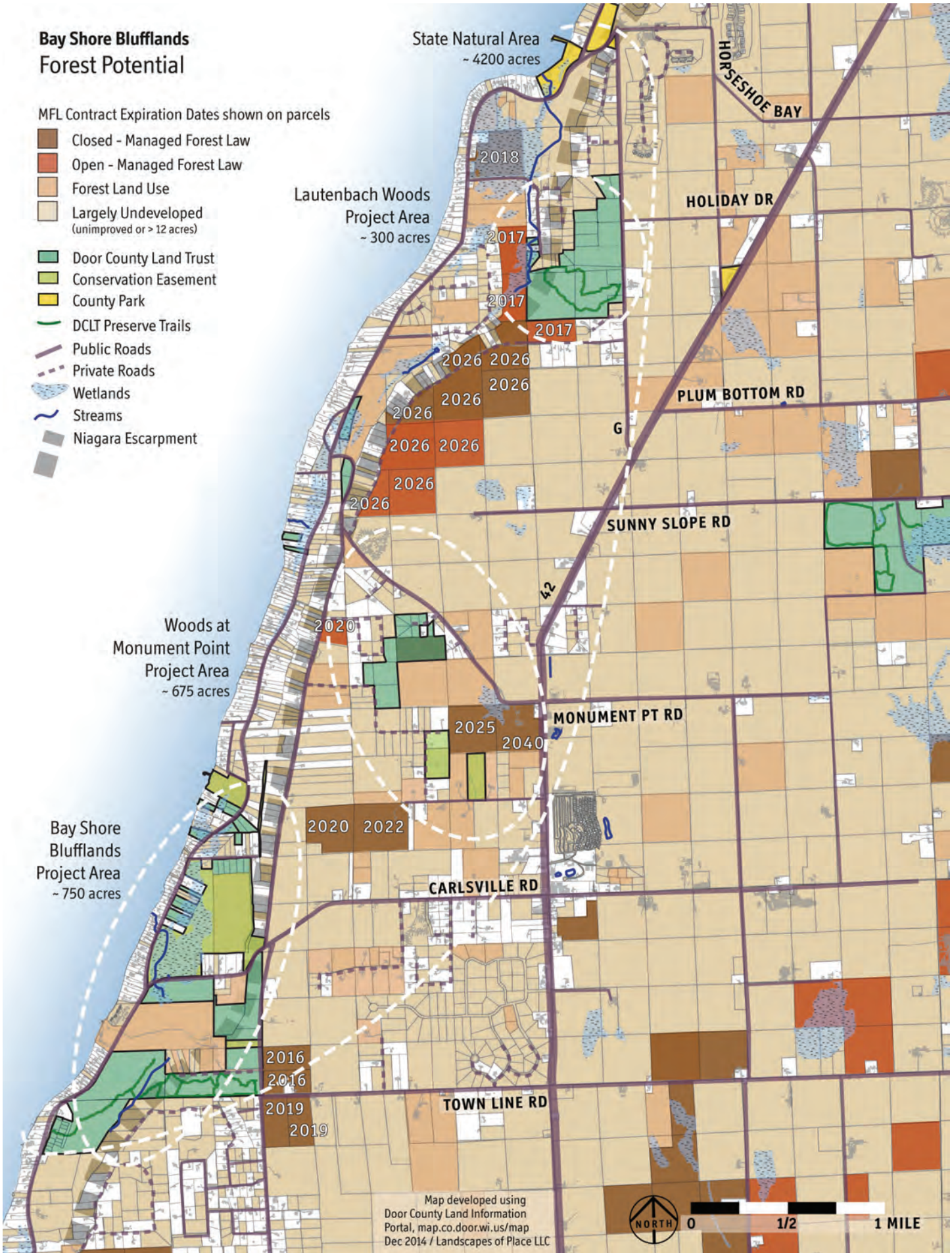


Map developed using
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Bay Shore Blufflands Forest Potential

MFL Contract Expiration Dates shown on parcels

- Closed - Managed Forest Law
- Open - Managed Forest Law
- Forest Land Use
- Largely Undeveloped (unimproved or > 12 acres)
- Door County Land Trust
- Conservation Easement
- County Park
- DCLT Preserve Trails
- Public Roads
- Private Roads
- Wetlands
- Streams
- Niagara Escarpment



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6. Drinkable Water

WHAT WE PICTURE:

Throughout Bay Shore Blufflands, groundwater is drinkable, all the time.

AND SO:

Work toward a community where groundwater samples (wells and springs) do not exceed the 10 mg/l NO₃-N nitrate drinking water standard (throughout the watershed), and this standard is actively supported by local elected officials and local policy. Nitrate level serves as a surrogate for overall water quality, although not the only indicator.



Steven Whitehead

WHY: *(why this is part of a conservation future)*

As a goal, drinkable water doesn't need much explanation. It is readily measurable with well-accepted metrics. Achieving the standard, however, is not so easy. The movement of groundwater in Door County's shallow soils and limestone is fast and invisible. Its path below the surface is not straightforward to predict, with our karst bedrock and conditions peculiar to the Niagara Escarpment. What is predictable is that what is carried by moisture on the surface will show up in water below ground.

In Bay Shore Blufflands, surface lands that contribute to the groundwater extend beyond the limits of Bay Shore Blufflands - from as far east as the Oak Road Preserve area. Thus managing the groundwater quality requires efforts throughout a much bigger area.

Achieving groundwater quality protects everyone (people and animals, human and environmental health). Nitrates are a first measure, but other water quality measures are relevant, including atrazine and bacteria. Although water quantity and water quality have interaction, this project is focused on quality independently. Groundwater quality is impacted by land use, human behavior, construction practices, and water use. It is a complex challenge to achieve the standard, requiring appropriate practices on the land. Individual knowledge and commitment to appropriate practices is needed, as well as control measures in policy and regulation.

FACTORS:

Bay Shore Blufflands is residential with natural areas and managed forests, and some agricultural lands above the escarpment. However, the contributing zone of surface area also includes further agricultural lands, historic and current orchards, and commercial lands. All lands with human activity have potential impacts to groundwater quality, but each type has different approaches to the problem. Priorities and targets are needed.

The perceived highest land value by an elected official is typically the lowest encumbrance on the land. However, thoughtful consideration of option-narrowing planning often enhances value. Homes go in one location, commercial / industrial goes in another. Groundwater data should influence planning / policy.

Concerns in non-forested agricultural lands: chemical/fertilizer discharges, erosion (affected by traditional biases in farming practices, and perception or reality of costs or loss of income).

Concerns in residential lands: chemical/fertilizer discharges, failing septic fields or holding tanks (affected by traditional lawns and their management).

Concerns in historic orchards: chemical discharges.

Concerns in commercial lands: failing septic fields or holding tanks, chemical/fertilizer discharges (affected by perceived or real costs in landscape management).

Since Bay Shore Blufflands is a community of people as well as habitat, we envision a strong working lands component. We want to preserve economically attractive working lands where appropriate and have them use practices that protect water quality.

Some contaminants are easier to identify than others. Some are easier to tackle/reduce than others. Some contaminants are dispersed; some are spots (e.g. lead). Different approaches, different strategies.

IDEAS:

Continue and expand the water quality monitoring from August 2013. This was conducted with contributed well samples by UW-Stevens Point Center for Watershed Science and Education. Contributors throughout Bay Shore Blufflands can really help us see water quality issues and spatial patterns. Door County Environmental Council has been funding/supporting property owners testing well samples (reports were published on Door County website) - perhaps that could be expanded in Bay Shore Blufflands.

Continue to develop groundwater movement patterns. Study the correspondence of sinks and fractures. Identify priority surface lands for buffering/protection. In particular, follow up Ken Bradbury's (UW Extension) study and Cal Alexander's (University of Minnesota) offer, to investigate one area in detail; perhaps the wetlands below Lautenbach Woods.

Use citizen scientists for regular monitoring of water quality in ponds in Bay Shore Blufflands with special concern for nitrates, calcium levels, herbicides and insecticides and pharmaceuticals.

Consider a groundwater protection easement: an exchange of income or tax relief for providing a groundwater protection zone - particularly agricultural or commercial. This is also an opportunity for knowledge-building from elected officials -- "spot" buffering for groundwater is a smaller step than land use planning or other regulations. Develop land acquisition / easement approaches specific to protecting groundwater quality.

Once more is known about groundwater movement or fractures, consider visible information markers (analogous to "this drains to river" on urban storm drains: "groundwater contribution map for this site" at public or retail facilities -- like a public health inspection notice).

Reforestation where consistent with goals of forested blocks and to protect forested and ephemeral wetlands. Include financial assistance to help with reforestation along with incentives for long term tenure.

For agricultural lands: one option is the approach of incentive funds for installation of best management practices. Another approach would have a conservation organization partner with managed grazing or Community Supported Agriculture organizations to purchase farm land. Following evaluation, farms could be resold, with a "working farm" conservation easement, to other producers willing to adapt water compatible practices. This is being done in central Wisconsin.

For agricultural and managed forest lands: promote environmentally compatible and economically viable land uses for resource extractive activities in the landscape surrounding the core Blufflands SNA lands. For example: low density organic managed grazing; production of high value veneer hardwoods; naturalized black walnut ‘plantations’; organic CSA fields, organic orchards. A conservation organization might assist with this transition by working with conservation organizations to provide a land base for such activities through acquisition and resale with appropriately worded easements.

Monitor the soil and ground water testing already performed for high nutrient loading. (See the UW-Stevens Point maps provided by Ken Bradbury and contact the Door County Soil and Water Conservation Department for current data). Consider a regular soil and groundwater testing project, every five years, in the Bay Shore Blufflands groundwater contribution area. Couple this with review of nutrient management plans and soil phosphorus levels. Incorporate knowledge of legacy phosphorus levels.

DATA NEEDED:

Groundwater mapping

Impacts of sinks and fractures

Ongoing well and pond monitoring. Sources include UW Stevens Point and WDNR.

POTENTIAL RESOURCES / PARTNERS / FUNDERS:

Door County Land Trust

Door County Environmental Council

Door County Soil and Water Conservation Department

Calvin Alexander, emeritus, University of Minnesota karst hydrology lab: interested in providing the dye and analyzing the samples for well-defined dye trace or other karst work in the area. (Jodi Milske contact).

Wisconsin Geologic and Natural History Survey (WGNHS)

UW-Stevens Point, UW-Oshkosh

Bay Shore Property Owners Association

Town boards

Community Supported Agriculture / grazing organizations

ANTICIPATED PROGRESS:

2014: *Groundwater studies performed as part of this WCMP grant by Ken Bradbury.*

2014: *Dan Collins was volunteer coordinator for ongoing citizen-supported Bay Shore Property Owners Association water quality testing.*

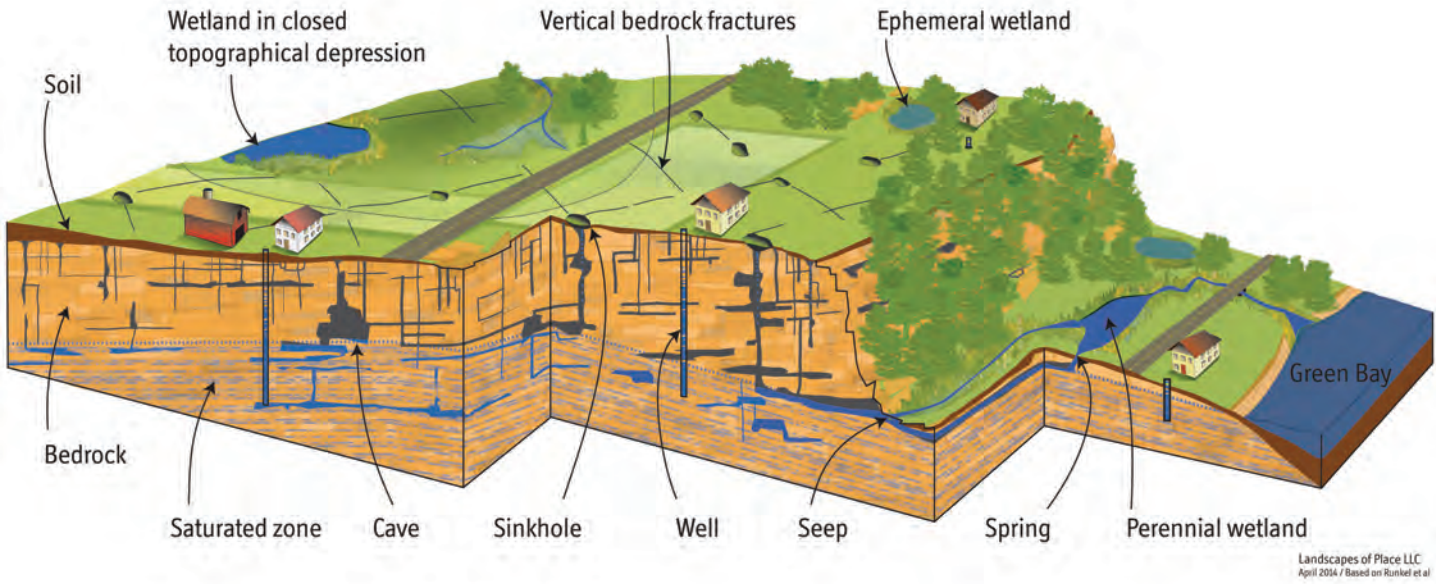
Year Two: Double the contribution of well samples for the UWSP study.

Year Five: Follow up Ken Bradbury’s study and Cal Alexander’s offer, to investigate one area’s groundwater movement in detail, perhaps the wetlands below Lautenbach Woods. Incorporate field-verified sinks and fractures. Identify priority surface lands for buffering/protection.

Year Ten:

Year Twenty:

Our Karst Landscape:



Bay Shore Blufflands Surface / Groundwater Connections

- Crevices
- Sinkholes - Open
- Sinkholes - Filled
- Caves
- Springs
- ▨ Wetlands
- Streams

- Private Wells
- High Capacity Wells
- Groundwater Contamination Sites
- ▭ Orchard Sites
- Orchard Mixing Sites
- ▭ Gravel Pits
- Municipal Dumps

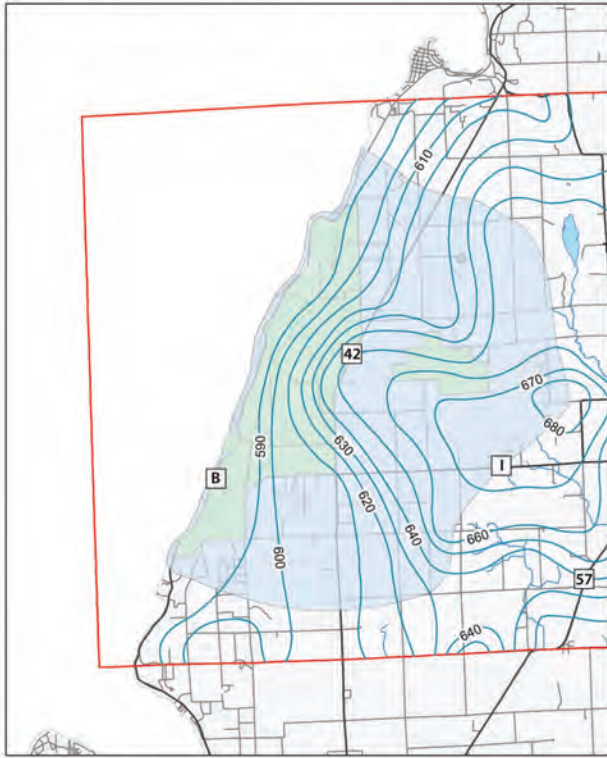
- ▭ Door County Land Trust
- ▭ Conservation Easement
- ▭ County Park



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Bay Shore Blufflands **Plate 1**
Door County, Wisconsin **Water table and groundwater contributing area**

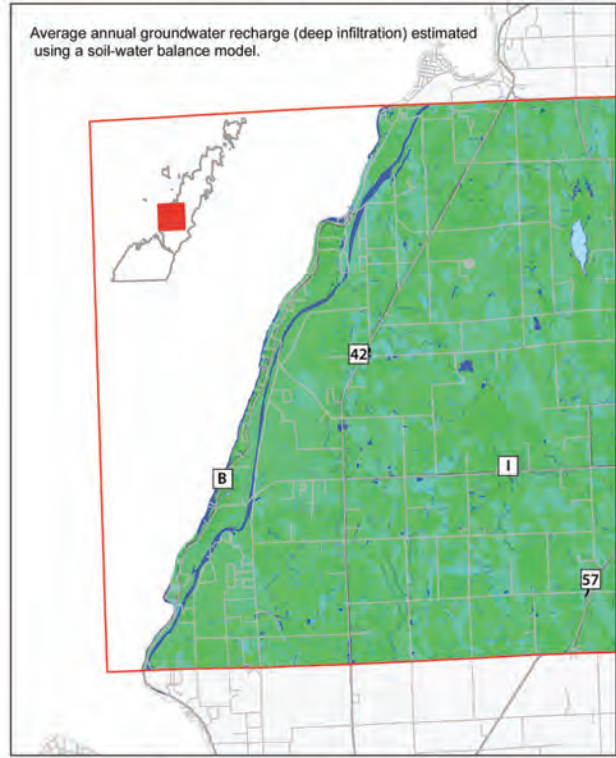


— water table elevation, feet above msl
 ■ groundwater contributing area
 ■ State Natural Areas
 ■ Study Area Boundary

Scale 1:100,000

0 1 2
Miles

Bay Shore Blufflands **Plate 11**
Door County, Wisconsin **Groundwater Recharge (WGNHS, 2008)**



Average annual groundwater recharge (deep infiltration) estimated using a soil-water balance model.

■ Study Area Boundary
 ■ Door County
 ■ Lake

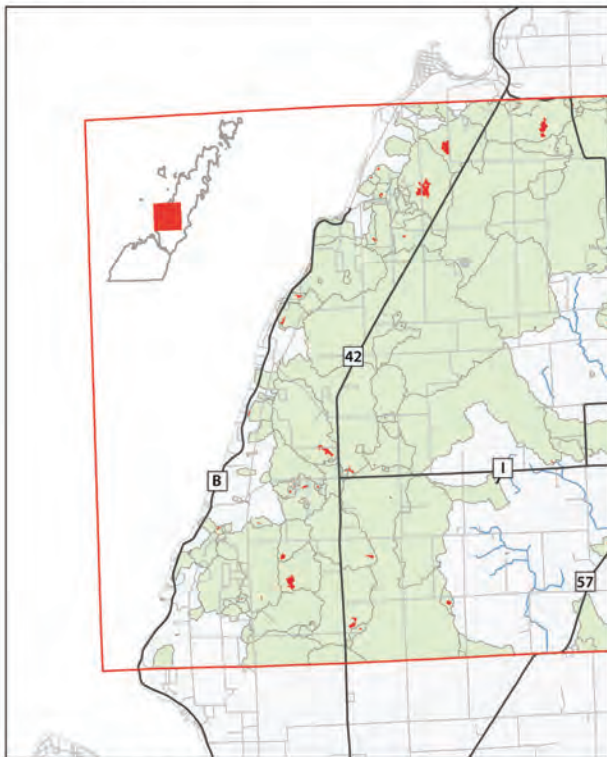
Scale 1:100,000

0 1 2
Miles

Recharge
 ■ 15 in per year
 ■ 2.5 in per year

Extension
 Wisconsin Geological and Natural History Survey
 June 2014

Bay Shore Blufflands **Plate 4**
Door County, Wisconsin **Modeled Closed Depression (WGNHS, 2014)**
Derived From 10-foot DEM



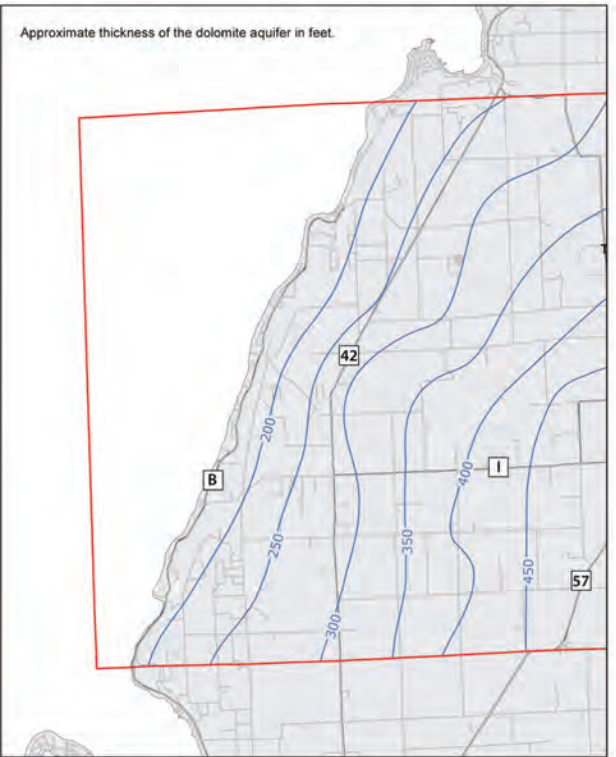
■ Study Area Boundary
 ■ Door County

Scale 1:100,000

0 1 2
Miles

■ Closed Depressions
 ■ Contributing Areas

Bay Shore Blufflands **Plate 7**
Door County, Wisconsin **Aquifer Thickness (WGNHS, 2014)**



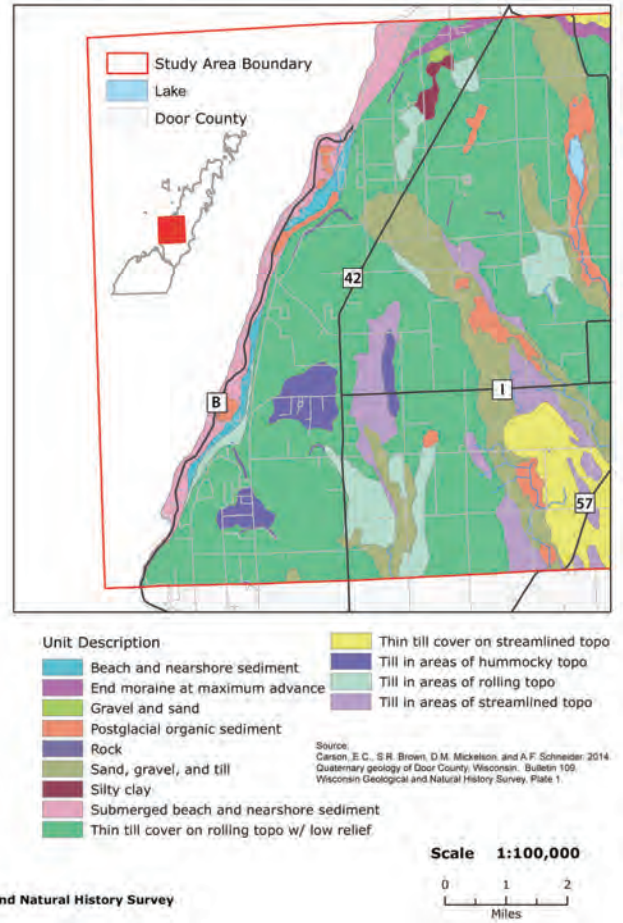
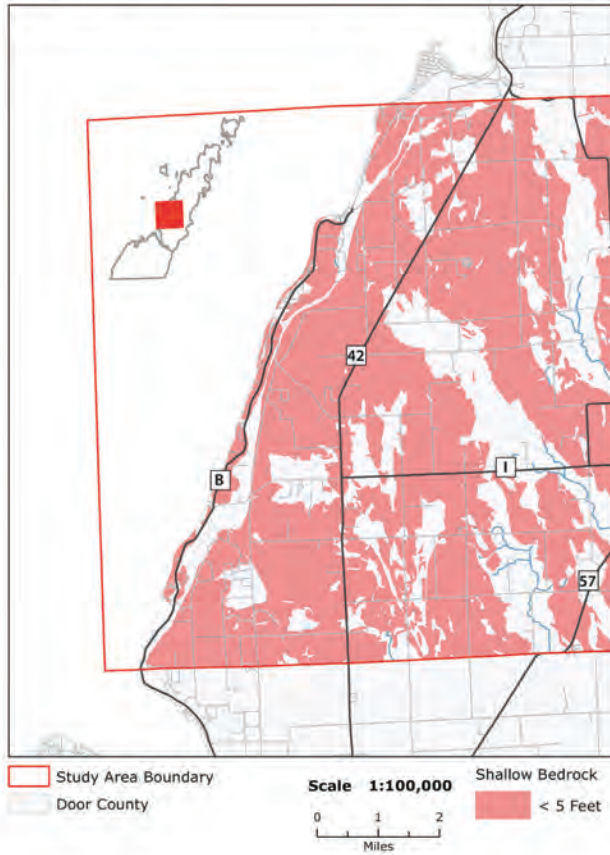
Approximate thickness of the dolomite aquifer in feet.

■ Study Area Boundary
 ■ Door County

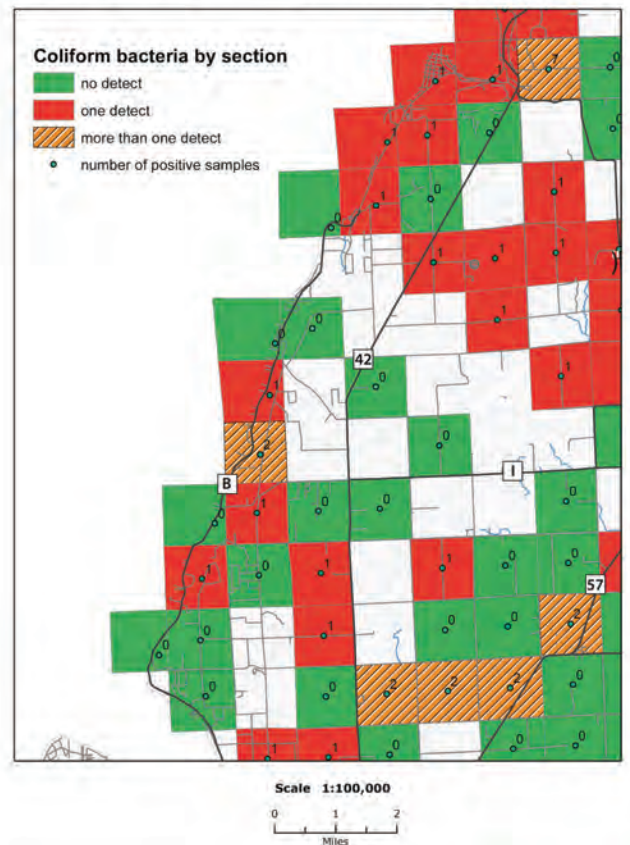
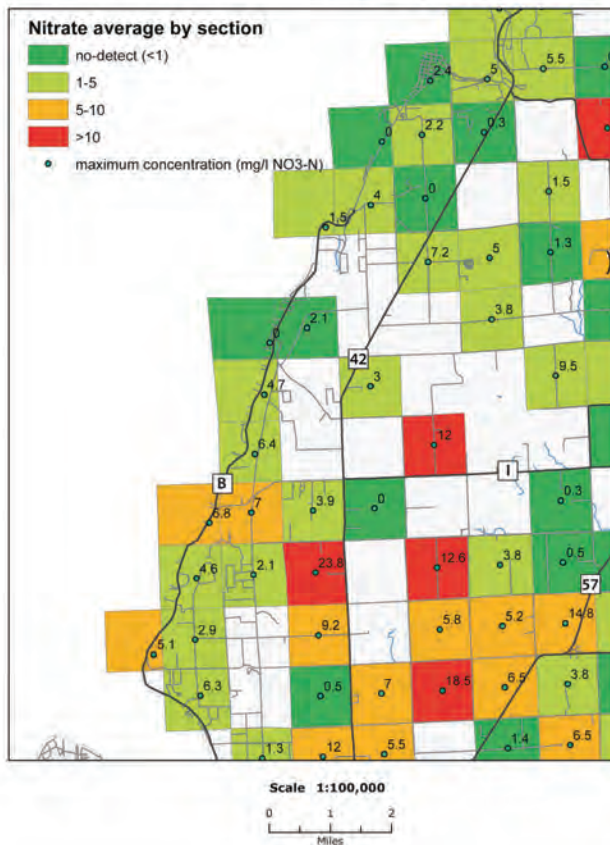
Scale 1:100,000

0 1 2
Miles

— Aquifer Thickness in Feet



Extension
Wisconsin Geological and Natural History Survey
June 2014



7. More Forest – Less Edge

WHAT WE PICTURE:

In Bay Shore Blufflands, healthy substantial forests support nesting wood thrushes, woodpeckers and owls. Red-shouldered hawks are regularly spotted.

AND SO:

We envision forests that can be largely self-sustaining, which means they are ‘big enough’; they are buffered from invasive weed vectors (including trails); they are bio-diverse, structurally diverse, and age-diverse; the trees and plants regenerate and survive to maturity. With this long-term vision of restored forest as a substantial component of Bay Shore Blufflands, we can work to connect forest patches, diversify forest structure, preserve and increase contiguous canopy, and buffer forested lands.

WHY: *(why this is part of a conservation future)*

Bay Shore Blufflands and most of northern Door County was once a contiguous forest. Few places in Door County are current candidates for conservation and restoration of such a landscape. Quality upland forests, in particular, have low representation in Door County. The Bay Shore Blufflands may provide a good location to attempt restoring a substantial portion of continuously forested landscape.

Such a forest is within our imagination: forests quiet enough to hear the ethereal flute of the wood thrush, singing two notes at once. Forests where the tapping of the woodpeckers is a regular accompaniment. At night in winter, you might hear the distant call of a great horned owl. For those birds to be present, the structure is diverse - there are very big trees, standing snags, and understory trees. Spring wildflowers and leaf litter. An absence of buckthorn.

There are two distinct aspects to this project: conversion of some currently non-forested lands to forest (to increase patches and to connect patches); and improving habitat quality within forested lands. Since we don’t want to perpetuate biological sinks within the forested patches, de-fragmentation might be a priority.

We start from the perspective that Bay Shore Blufflands is a place of both people and forests, and working lands too. A residential forest. Still, we can repair fragmented forests, make them substantial with connected corridors, and give back homes to the birds. We know wood thrushes have been here. We have appropriate upland mesic forest type - northern conifer hardwood. Given declining populations, we can’t control their whole habitat range -- but we could provide attractive summer nesting habitat. We do have big trees and snags in the protected interior of forest patches, good for cavity nesters, and our ongoing forest management and forest restoration should sustain and improve this condition.

We can also use time and patience to our advantage, in forest succession strategies. Shrubland as an intermediate forest trajectory from oldfield is an ecologically effective transition strategy, while also providing good habitat for birds (and others) during the decades-long reforestation process (Gómez-Aparicio, *Journal of Ecology*, 2009). Diversity of successional stages can help diversity of habitat over time.



Steve Maslowski, US Fish and Wildlife Service, Item ID WO-4548-17

FACTORS:

Challenges to habitat quality include: deer browse, invasive species, dogs off-leash, and outdoor cats. Challenges also include degraded species diversity and structural diversity. And, they include nests parasitized by cowbirds, emerald ash borer, climate change, beech bark disease, hemlock woolly adelgid. Most of these are exacerbated by too-small forests with too-much edge.

Current and near-term forest management activities throughout the area might not all be consistent with our long-term vision of forest. At the same time, managed forest (MFL) programs provide attractive tax benefits, and good opportunities to contribute to the reconnected forest we imagine.

Many forest lands have been subdivided and roads built, although numbers of parcels are not yet developed and canopy could be repaired. Land use planning could potentially prevent new roads or new clearing that would worsen the fragmentation.

Oldfields might be the biggest fragmentation challenge, given the time and resources needed in reforestation.

All three Door County Land Trust Preserves contain substantial forest. Bay Shore Blufflands South Unit and Lautenbach Woods also contain old fields ripe for reforestation activity.

In Bay Shore Blufflands South Unit in particular, views over the oldfields to the Bay were an important factor in acquisition of those lands by Door County Land Trust, and remain an important consideration, especially from the public trail along the hogback. Reforestation should carefully consider approaches that will continue to provide beloved, if changing, long views. Incremental approaches to reforestation might more easily enable the continuation of views.

IDEAS:

For oldfields, consider a strategy of conversion to CRP. (“The Conservation Reserve Program, CRP, is a land conservation program administered by the Farm Service Agency, FSA. In exchange for a yearly rental payment, farmers enrolled in the program agree to remove environmentally sensitive land from agricultural production and plant species that will improve environmental health and quality. Contracts for land enrolled in CRP are 10-15 years in length. The long-term goal of the program is to re-establish valuable land cover to help improve water quality, prevent soil erosion, and reduce loss of wildlife habitat”). This would enable dollars for trees and tree planting, with eventual conversion to managed forest lands.

Look also at anticipated dates of managed forest lands (MFL) contract maturity and re-evaluation timelines for opportunities to amend for habitat and forest canopy goals. Additionally, when there is land ownership succession on managed forest lands - there may be an additional opportunity to work with new owners, so that when the managed forest plan renewal becomes due, these approaches can be prioritized.

Target MFL candidate lands that could be started on the progression from oldfield, through shrubland / aspen to productive wood lot.

Consider roadside and farm easements to allow development of corridor connections. Develop into planting projects that use a native shrubland trajectory - essentially planting native shrub and tree hedgerows now, and when conditions are right, expand with native trees. How wide do such connections need to be? Use established knowledge of herpetofauna needs and small mammal needs.

Offer the public an opportunity to invest in preservation of a forest tract. Plan a reforestation project as a Door County Land Trust program, the 'Legacy Forest'. Such a project could capture the imagination of the community, as well as resources.

Offer landowners and the public an opportunity to "Re-plant Witness Trees". The 1830s government land surveys recorded trees along every square mile. This way of looking at the landscape history can also capture the community's imagination, linking the past and future forests with a straightforward planting project shared across the community.

Consider a private landowner 'forest buffer' project. Partner with local native tree/shrub nursery. Consider a field-edge and yard-edge community planting project. Or a 'reconnect the canopy' project. Or a public rights of way County- or Town-based tree and shrub planting project. Encouragement in the community of leaving deadwood. Named snags :) in public forests.

Consider an outreach program -- build from the "My healthy forest" booklet from Gathering Waters. Provide helpful information to improve forest quality. Consider land designation a la Century Farm for forest-supporting landscapes: "I'm part of the Forest Community". Include training offered by the Aldo Leopold Foundation under their Land Ethic Leaders program.

When there is land ownership succession on managed forest lands - there may be an opportunity to work with new owners, so that when the MFL managed forest plan renewal becomes due, new approaches that incorporate or prioritize habitat quality and forest canopy connections could be considered.

Development of financial incentive package e.g., combine managed forest lands, MFL, with conservation easements with possible lease payments, and harvest schedule. Create a specific program to attract larger tract forest owners to maintain land in forest under appropriate management scenario. Support this program with tracking real estate listings, tracking MFL contracts and potentially providing input to contract terms, and landowner mentoring / training.

Look into potential funding for reforestation work from the Pittman-Robertson Wildlife Restoration Act ("focuses on fish and wildlife management, scientific study, species and habitat restoration, habitat protection, land acquisition, population monitoring and hunter education and safety").

The community is starting to see more use of up-lighting and lighting overnight. Residential neighbors might not be aware of impacts. A little outreach in conjunction with the Bay Shore Property Owners Association and support of the "Dark Skies Initiative" could help. Hold neighborhood star walks. Write about good star-gazing spots in public spaces. Initiate a night sky photo series in the newspaper. Publicize community "lights out" nights when the moon is full.

Evaluate non-forested lands of potential risk for groundwater protection -- as candidates for acquisition or easement, with planned forest restoration. This could mean a simple easement on the interior of otherwise agricultural lands, and not a whole parcel. Financial assistance/incentives to help with reforestation and management.

Consider evaluating forest pests - impediments or challenges to forest quality or forest restoration, including EAB, gypsy moth, etc. Consider citizen science monitoring.

Assess roads' potential to be vacated. If there is one parcel at the end of the road that is the reason for the road, we could work with the landowner for acquisition at natural ownership conversion, or sooner, and with the reason for the road gone, see if it can be vacated. The Nature Conservancy has an example of this working at Shivering Sands. (Note another historic local example, a significant road in 1919 connecting to Oak Road was abandoned and reforested).

Look at examples in Michigan by conservation organizations providing incentives to landowners to create wildlife corridors. This might be a model for forest connectivity corridors.

WDNR might consider reinstating the lease of hunting lands program. Perhaps there is some kind of bundled requirement that would assist in the connecting of forest canopy.

A relatively small percentage of landowners own a large percentage of lands. Changeovers in managed forest lands and other large landholdings could have a big impact on the forested future. Communication with neighbors toward a shared forest conservation vision is important.

All parcels evaluated:		
	4110 acres	
	664 parcels	
	382 owners	
Only parcels > 8 acres:		
	3089 acres	75%
	252 parcels	38%
	71 owners	19%
Only 20 largest landowners:		
	2249 acres	55%
	147 parcels	22%
	20 owners	5%
By land type:		
Forest Tax Assessment	571 acres	14%
Door County Land Trust	485 acres	12%
Conservation Easement estimated	200 acres	5%

DATA NEEDED:

Evaluate quality of forested patches in the entire SNA.

More specific mapping of forest cover and forest type needed. May be able to use LIDAR, manipulated to strictly measure ‘tree canopy’. A base measurement would be good for future monitoring of changes in the landscape. Include non-forested edge filling candidate MFL tracts in the criteria for the search. Consider using / adapting the new Wisconsin Statewide Land Cover Map from the Wisconsin State Cartographer’s Office to include candidate lands for forest restoration.

Obtain ongoing and updated real-estate listings of local forested lands or edge-land candidates.

Use breeding bird survey, flora surveys, and invasive species surveys to contribute.

Prioritize restoration / reforestation zones.

Good habitat mapping that assesses quality and potential, and looks at natural patterns of patches and corridors.

Consider metrics for edge/area ratios and sizes of corridor connections.

Escarpment canopy corridor width critical to habitat.

Additional snail data (cuesta).

POTENTIAL RESOURCES / PARTNERS / FUNDERS:

US Fish and Wildlife Department
Door County Land Trust
Gathering Waters
Local native tree and shrub nursery
Aldo Leopold Foundation and community forest management programs as examples
Bay Shore Property Owners Association
Door County Green Fund
Wisconsin State Cartographers Office
UW Forest Ecology Lab
Wisconsin DNR Ecologists and Foresters

ANTICIPATED PROGRESS:

2014: *Breeding bird, herpetofauna, and small mammal surveys performed as part of this WCMP grant.*

Year Two: ‘Legacy Forest’ identified and begun. US Fish and Wildlife-supported reforestation at Bay Shore Blufflands South Unit is begun through Door County Land Trust, and serves as a prototype for other reforestation efforts.

Campaign is launched to attract larger tract forested land owners to the “Forest Community” of the Bay Shore Blufflands through helping evaluate future MFL goals, providing forest enhancement assistance, other land management assistance. A “Welcome to the Forest” booklet is created and provided to landowners with the 4200 acre SNA.

Year Five: First two connecting-corridor easements are established with private landowners.

Year Ten:

Year Twenty:

Bay Shore Blufflands Forested Landscape

-  Door County Land Trust, Conservation Easement, or County Park
-  Wetlands
-  Streams
-  Niagara Escarpment



Map developed using
Door County Land Information
Portal, map.co.door.wi.us/map
Dec 2014 / Landscapes of Place LLC

Bay Shore Blufflands 1836 Survey Trees

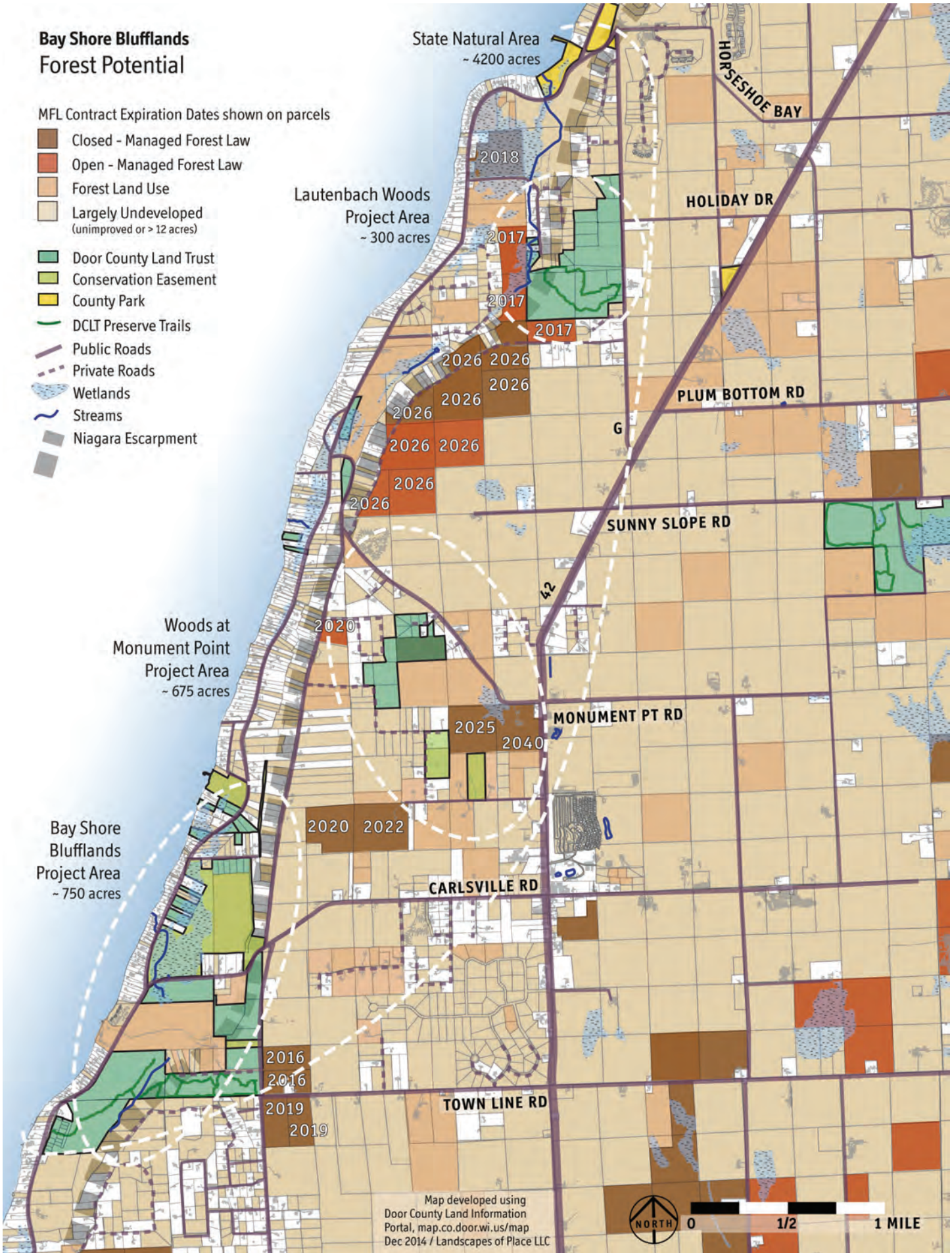
- | | |
|--------------|------------------|
| ● White Pine | ● White Ash |
| ● Red Pine | ● Black Ash |
| ● Pine | ● Basswood |
| ● Fir | ● Maple |
| ● Spruce | ● Sugar Maple |
| ● Hemlock | ● Beech |
| ● Cedar | ● Ironwood |
| ● Tamarack | ● Butternut |
| ○ Birch | ● White Oak |
| ○ Aspen | ● Bur Oak |
| ○ Cottonwood | ● Black Oak |
| ○ Willow | ● Red Oak |
| ● Elm | ○ < 16" diameter |
| | ○ ≥ 16" diameter |
-
- Swamp Conifers Zone (Finley 1976)
 - Door County Land Trust
 - Conservation Easement
 - County Park
 - Public Roads
 - - Private Roads
 - DCLT Preserve Trails
 - Wetlands
 - Streams
 - Niagara Escarpment



Bay Shore Blufflands Forest Potential

MFL Contract Expiration Dates shown on parcels

- Closed - Managed Forest Law
- Open - Managed Forest Law
- Forest Land Use
- Largely Undeveloped (unimproved or > 12 acres)
- Door County Land Trust
- Conservation Easement
- County Park
- DCLT Preserve Trails
- Public Roads
- Private Roads
- Wetlands
- Streams
- Niagara Escarpment



Map developed using Door County Land Information Portal, map.co.door.wi.us/map Dec 2014 / Landscapes of Place LLC



8. Bats

WHAT WE PICTURE:

Bats of the Bay Shore Blufflands have healthy and protected populations, that have survived the impact of white nose syndrome.

AND SO:

Expand identification and protection of cave habitats. At the same time, help people to value bats through bat houses and echolocation monitoring. Healthy bat populations mean we are doing things right in their forest habitats. Keep bat populations as large and healthy as possible to increase the likelihood that some individuals will survive white nose syndrome (WNS).



Merlin D. Tuttle
Bat Conservation International

WHY: *(why this is part of a conservation future)*

Wisconsin has seven species of summer resident bats: four hibernate here and three migrate. All Wisconsin bats are insectivorous - they are the primary predators of night-flying insects that include human, forestry and crop pests. USGS recently calculated the value of bats to Wisconsin agriculture as between \$658 million to \$1.5 billion annually. All hibernating bats in Wisconsin are currently threatened by the disease white nose syndrome (WNS).

Bats are also strongly associated with Bay Shore Blufflands, which provides both forest habitat and karst features (including caves) necessary for fall mating (swarm) and winter hibernation. The caves at Horseshoe Bay and Lautenbach Woods are three of only 140 hibernation sites known state-wide. Caves are important and worthy of protection in their own right, offering a window into karst aquifers that can help scientists and resource managers determine movement of and impacts to groundwater. Cave ecosystems are very fragile, nutrient-limited, and may contain rare or unique cave-endemic species. Little is known about the use of bluff crevices for bat hibernation and locating those could provide information useful in understanding disease dynamics and why some bats appear to survive WNS. Bats may also serve as one of the surrogates for healthy forests - forests that have sufficient and appropriate summer roosting habitat.

Since 2007 WNS has reduced populations in affected caves in the eastern US more than 95% in many cases. It was first detected in SW Wisconsin in 2014. Bat populations may be affected by WNS may be increasingly vulnerable to other stressors that they may have previously had the ability to withstand (such as disturbance during the hibernation period). These impacts could potentially be seen on two levels. First, individual cave bats sickened or struggling with infection by WNS may be less able to survive other stressors. Second, cave bat populations impacted by WNS, with smaller numbers and reduced fitness among individuals, may be less able to recover making them more prone to extirpation. The status and potential for these impacts will vary across the range of the species but may lead to changes in cave management recommendations and requirements in the future. Migratory bat species are unaffected by WNS and will benefit from appropriate forest management for tree bats and appropriate siting and curtailment at wind farms.

Bats provide a useful dichotomy for our conservation future: we want people to stay away from caves to prevent bat disturbance and to ensure they do not transmit the WNS fungus into caves on their clothing, footwear, or gear. This is an opportunity to care for something by staying away, a theme that also applies to the siting of trails in Preserves to protect sensitive habitats elsewhere.

At the same time, people can engage with bats by monitoring their nighttime flying using acoustic detectors, and can help bats by building and installing summer roost houses. People can also locate new roosts, count known bat roosts and report their findings. Although bats might prefer hollows in trees, until we have more forest habitat with bigger trees, bat houses help.

From the Door County Advocate, 29 June 2014: "...the Door County Board passed a management plan for the county-owned Horseshoe Bay Cave, which is located on the Niagara Escarpment in the town of Egg Harbor. The cave runs under the Horseshoe Bay Golf Course, owner of most of its estimated 3,000 feet length. Door County owns the entrance and first 75 feet. The management plan calls for controlled access and little modification. Several cave enthusiasts – members of the Wisconsin Speleological Society – urged supervisors to make changes in the plan developed by the county's Parks and Soil and Water Conservation departments and the Wisconsin Department of Natural Resources, with input from a cross-section of scientific and educational interests. While the DNR wants to protect the more than 1,200 bats that hibernate in the cave, the enthusiasts called for excavating the cave floor to allow visitors to walk upright inside the cavern. DNR officials are concerned a fungal infection that has killed more than 6 million bats in the United States in the last several years. While the white nose syndrome hasn't yet appeared at the Horseshoe Bay cave, it was found in a cave in Southwestern Wisconsin this spring. An estimated two to three feet of silt dating from glacial times has accumulated over the millennia. The cavers argue removing the silt would improve the environment for the bats while allowing freer access by visitors. ... Mike Toney, a Nasewaupsee resident, appeared at Tuesday's meeting 'to speak for the bats.' Toney said the board should approve the plan 'as it is written. I urge you to go slow.' ...The County Board approved the plan as presented."

FACTORS:

White nose syndrome (WNS) impacts.

Loss of breeding/wintering locations. Identification of sites.

Vulnerability of bats to human disturbance in summer and winter habitat.

Quality of cave/groundwater resources.

Need abundant summer roosts in forests.

Difficulty in protecting caves from human disturbance and WNS.

IDEAS:

Use WDNR bat route mapping to identify priority sites for roosts.

Identifying summer roosts by soliciting information from general public. Posting "Bats Wanted" posters and offering guidance for those who would like to exclude bats or provide alternative roosting structures.

Project to build and distribute bat houses. Perhaps a local source of materials and local builder. Host a BYOB (Build-your-own-bat-house) workshop where pre-cut materials are available for families and individuals to quickly construct their own bat house.

Encourage citizen bat acoustic monitoring (e.g. Bay Shore Property owners). Owners group or a conservation organization could purchase an anabat detection system (Wildlife Acoustics cost for Echo meter touch \$500, IDing software \$150), train and coordinate volunteers. Training and protocols are already available from WDNR. Look into the ‘walk-around’ detectors that are without data logging, perhaps more cost effective - can increase the number used in the community.

WDNR-recommended signs at lower entry of cave pits (not visible to casual hikers; clear information to those who climb down). Door County Land Trust Preserve Managers install and monitor.

Consider gates over the tops of bigger caves.

Bumper stickers: “Farmers for Bats”.

Maintain forest edges and landscape connectivity for foraging and migrating bats.

For the high protection priority big and little pit caves at Lautenbach Woods, gate them, and add interpretive signs to explain why.

Solicit citizen scientists to help with WDNR bat swarm monitoring.

Northern long-eared bat is being considered for federal listing. This is a forest-inhabiting bat, and such protection may increase priorities and available resources to protect its forest habitat.

The community is starting to see more use of up-lighting and lighting overnight. Residential neighbors might not be aware of impacts. A little outreach in conjunction with the Bay Shore Property Owners Association and support of the “Dark Skies initiative” could help. Hold neighborhood star walks. Write about star-gazing spots in public spaces. Initiate night sky photo series in the newspaper. Publicize community “lights out” nights when the moon is full.

DATA NEEDED:

Information about distribution and relative abundance of bats of the Bay Shore Blufflands project area.

Information about location, species and numbers of bat roosts.

Mapping/survey of potential breeding/wintering locations in karst features (crevices in bluff faces). See the “Surface / Groundwater Connections” map in Projects 6 and 9. Note the identified cave locations.

POTENTIAL RESOURCES / PARTNERS / FUNDERS:

Door County Land Trust Preserve Managers

WDNR

Town of Egg Harbor

School class / teacher for bat houses project

Bay Shore Property Owners Association for organizing acoustic monitoring and a BYOB workshop.

ANTICIPATED PROGRESS:

2014: *“Batty for Bats” project 50% funded by this WCMP grant in Town of Egg Harbor. Unanimously supported by residents present at annual Town meeting. Bat-houses were constructed by Dan Mathein of Bay Shore Property Owners Association and distributed. Bob Bultman led a 20-person Anabat (ultrasonic bat detector) bat monitoring walk with those residents in July 2014 to educate about bats in the area.*

2014: *Aquatic macroinvertebrate survey this summer identified the cave-dwelling amphipod Crangonyctidae crangonyx at a number of sampling sites in Bay Shore Blufflands. WDNR has indicated interest in inventorying resurgence points (springs) near to caves for unique cave-dwelling amphipods.*

2014: WDNR signs posted at bases of existing known caves.

Year Two: Thirty more bat-houses installed. Citizen “anabat” acoustic monitoring begun, using our pool of volunteer recruits from the 2014 bat event.

Year Five:

Year Ten:

Year Twenty:

9. Dragonflies and Water

WHAT WE PICTURE:

Waters flow freely and cleanly in Bay Shore Blufflands; mayflies, damselflies and dragonflies abound.

AND SO:

The role of key wetlands and springs in the local ecology becomes understood and long-term water levels and flows is documented and monitored. Identify and address surface water flow impediments, and improve understanding of connections. Use insects as indicator to track the condition of surface waters.



WHY: *(why this is part of a conservation future)*

Bay Shore Blufflands is threaded by waters, on the surface and below ground. Tiny and larger ephemeral forested wetlands, springs, hardwood swamps, sedge meadows, shrub carrs, streams, and coastal Lake Michigan habitats are part of the matrix. Free flowing and good quality surface waters are essential to all wildlife. Many of our insects develop in these waters, need adequate floral diversity for their life cycles, and provide the base of the food pyramids. Insects and insect larvae are the primary food for the young of our nesting birds. The habitat and wildlife diversity of Bay Shore Blufflands reflect the quality of the water that flows through it.

Dragonfly larvae are good indicators of water quality. Watching and monitoring adult dragonflies can engage neighbors and provide useful data, especially coupled with regular monitoring of water quality with special concern for nitrates, calcium levels, herbicides and insecticides.

Development has negatively impacted water flows by fragmenting its flow. Examples include: pinching flows through inadequate culverts or culverts that have failed over time, by roads that have filled wetlands, by erosion and by chemical discharges from adjoining land use, by wells that draw water and send the resulting wastewater elsewhere, impacting water recharge.

It is time to more closely monitor and detail our records of flow and quality so that we can fix problems and prevent more problems. This is a data collection project leading to actions.

FACTORS:

Land use in the watershed, including land cover and chemical discharges. Need best land use practices to ensure water quality and quantity.

Must consider spatial relationship of wetlands and forests for herpetofauna. Consider land connectivity to nearby habitats necessary for all life cycle needs, and for immigration/emigration necessary for persistence of local dragonfly and insect populations.

Need more information on life cycles of insects in the area. And, how are populations changing?

IDEAS:

Citizen (crowd-source) hydrologic monitoring, where passers-by can text water levels: create a project to set these up within Bay Shore Blufflands. See <http://crowdhydrology.geology.buffalo.edu/CrowdHydrology/Home.html> . Could monitor at road culverts, open waters - not that many within Bay Shore Blufflands - and extend to upland waters like Oak Road.

Supplement with more rigorous and systematic water quality monitoring.

Offer a dragonfly identification workshop with Paul Burton. Free nets and books to participants. Work on developing an awareness of dragonflies in the area. Some citizens might learn to identify and report species sightings. Find or develop an online reporting mechanism.

Expand water quality monitoring (UW-Stevens Point) to include surface waters.

Identify culverts in Bay Shore Blufflands. Develop projects to assess and repair all culverts at road/stream crossings so they are adequately sized and positioned to: (a) allow stream flow passage without road/driveway damage; (b) passage for in-stream or migratory aquatic organisms (fish, northern pike, mayflies, etc.); (c) passage for riparian migration of terrestrial species. Cooperate with County Public Works, look for correspondence with scheduled road maintenance. An advantage of piecemeal, incremental projects is that we can do one culvert at a time.

Fishing clinic for kids that uses mayflies. Discuss importance of mayflies as indicator species.

Facilitate further study on water flow and balance in the area. For example, if we think the wetlands just below the base of the bluff are critical areas then we might investigate their water balance and try to understand their water source and hydro period. If flows in the springs are critical for fish habitat (or other species) then we could focus on understanding particular springs.

School groups study wetlands and invertebrates: build and continue relationships with groups like Friends of Gibraltar.

Correlate aquatic macro-invertebrate species richness with water quality and outside factors such as nutrient loads.

Erect "Slow down, Hines Emerald Dragonfly crossing" signs, along Bay Shore Drive, Spring Lane. Put up seasonally - that's important. (Example: Cedarburg Bog, where this has been effective functionally and in community awareness).

Implement Land Management Recommendations from Kurt Quamme in his 2014 Quantitative Macroinvertebrate Survey (recommendations are given below in prioritized order, and Site #s are described in the Quamme Report):

1) Identify nearby pumping wells at the Spring Lane wetland complex (Sites #7 and 8), which may have contributed to rapid drawdown throughout the month of June.

- 2) Consider nutrient sources for Aten-Collins Spring Pond (Site #3), and develop a nutrient management plan for this water body. Such a plan may restore sediment and vegetative habitat in this pond, restore community evenness, and further strengthen the invertebrate community at Aten-Collins wetland at Bay Shore Drive culvert (Site #5).
- 3) Identify likely sources of nutrients contaminating the Spring Land wetland complex (Sites #7 and 8) via groundwater spring.
- 4) Work with local agriculture to develop nutrient management plans and continue to communicate the incredibly strong connection between shallow groundwater tables, nutrient / bacterial transport, and surrounding wetland habitats.
- 5) Maintain buffer strips (to minimize road salt impacts?) along Carlsville Road (Sites #1 and 2) to encourage good water quality and development of odonata nymphs.
- 6) Consider continued water quality, invertebrate and herpetology surveys in these wetlands to understand community dynamics of vernal pools following initiation of land management plans.
- 7) Continue to examine seasonality of the outflow to Green Bay, to identify any fish that may use this creek as spawning, and to identify any macroinvertebrates which may enter Green Bay from the escarpment.
- 8) Communicate to land owners (especially along Green Bay at Bay Shore Drive) the importance of these wetland complexes, sensitivity to groundwater withdrawals, nutrient inputs, and buffer strips from roads and yard space.
- 9) Continued habitat management at Aten-Collins Ephemeral Pond (Site #4) which harbors a number of indicator species, strong diversity and richness.

The cave-dwelling amphipod discovered in 2014 aquatic macroinvertebrate surveys at culverts and other surface waters seems to be “offering itself up as a dye trace”. Understanding the life cycle and further monitoring for these animals could lead to further understanding of surface and groundwater connections.

UW-Green Bay (professor Patrick Forsythe) is conducting research and fish surveys of tributaries and wetlands connected to Lake Michigan including northern pike surveys. Perhaps there is collaboration potential.

DATA NEEDED:

Inventory of culverts, public and private.
 Mapping of sites for crowd-source monitoring.
 Farm nutrient records for past years
 More Murphy Creek water levels information
 More Spring Lane water levels information


POTENTIAL RESOURCES / PARTNERS / FUNDERS:

UWSP Center for Water Science and Education
 Door County Soil and Water Conservation Department
 US Fish and Wildlife Service
 Town of Egg Harbor
 Wisconsin Odonata Survey (Wisconsin Dragonfly Survey)




ANTICIPATED PROGRESS:

- 2014: *“Camp Dragonfly” Project 50% funded by this WCMP grant; unanimously supported by residents present at Town of Egg Harbor annual meeting. Paul Burton hosted workshop in July 2014 for residents -- who received nets and Paul’s dragonfly book and Wisconsin Dragonfly Society memberships.*
- 2014: *Funding provided by this WCMP grant to a graduate student to repeat 1999 sites and continue inventories of aquatic invertebrates in Bay Shore Blufflands, to begin to develop the pipeline of research. The graduate student will make use of Crossroads lab facilities and interact with the water quality testing group. Biotic indices of water quality will be determined.*
- Year Two: Repeat “Camp Dragonfly” for youth in July 2015.
Invite Wisconsin Odonata Society members to attend.
- Perform Microbial Source Tracking (DNA) testing on E. coli samples from the Aten-Collins culvert at Bay Shore Drive to help narrow the source of contamination and nutrient loading.
- Crowd-hydrology (www.crowdhydrology.org) sites established at four sites and data collection begins.
- Year Five: Crowd-hydrology sites established at ten sites and data collection begins.
- Year Ten: Key culverts are repaired/replaced.
- Year Twenty:

Bay Shore Blufflands Habitat Richness

 Door County Land Trust,
Conservation Easement,
or County Park

Habitat Richness (Greenprint Model):

-  Moderate to High
-  Moderate
-  Moderate to Low

-  Public Roads
-  Private Roads

-  Wetlands
-  Streams
-  Niagara Escarpment



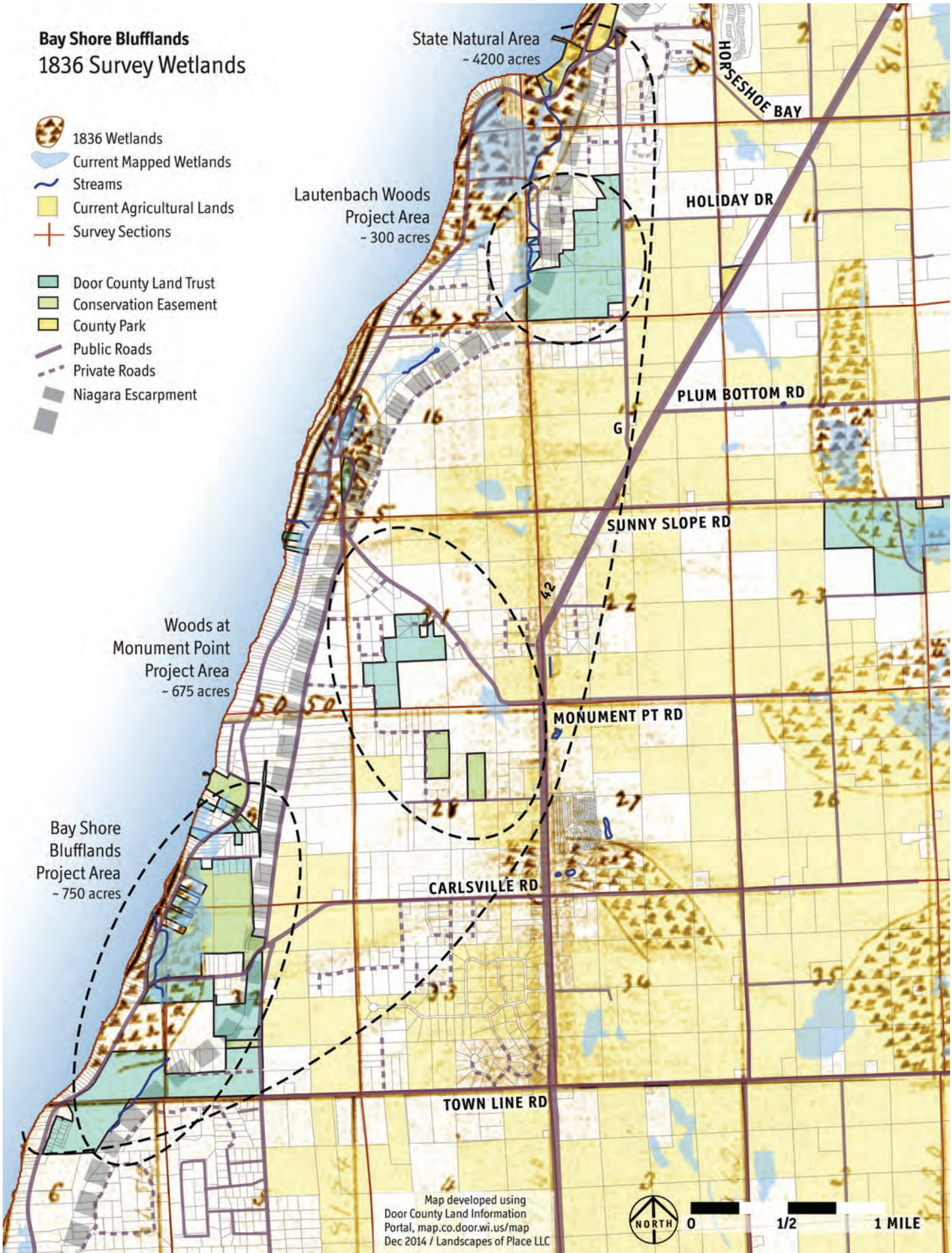
Map developed using
Door County Land Information
Portal, map.co.door.wi.us/map
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Bay Shore Blufflands 1836 Survey Wetlands

-  1836 Wetlands
-  Current Mapped Wetlands
-  Streams
-  Current Agricultural Lands
-  Survey Sections

-  Door County Land Trust
-  Conservation Easement
-  County Park
-  Public Roads
-  Private Roads
-  Niagara Escarpment



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Bay Shore Blufflands Surface / Groundwater Connections

- Crevices
- Sinkholes - Open
- Sinkholes - Filled
- Caves
- Springs
- ▨ Wetlands
- Streams

- Private Wells
- High Capacity Wells
- Groundwater Contamination Sites
- ▭ Orchard Sites
- Orchard Mixing Sites
- ▭ Gravel Pits
- Municipal Dumps

- ▭ Door County Land Trust
- ▭ Conservation Easement
- ▭ County Park



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10. Working Lands

WHAT WE PICTURE:

Bay Shore Blufflands includes productive working lands and small enterprises that economically support residents, provide food for local people, and contribute to environmental quality.

AND SO:

Thinking long term, working lands are transitioned to practices compatible with the land and supporting the conservation future. Along the way, smaller opportunities for harvests from the land supporting the local community are established through training and example.

WHY: *(why this is part of a conservation future)*

Bay Shore Blufflands as a conservation community is an engaging idea because it seeks the advantages and opportunities of people inhabiting a valued natural landscape, rather than simple segregation of conserved land and inhabited parcels.

Spatially, visually, and in function, we hope through this process to actually increase both the quality and quantity of wild habitat within the overall SNA. We propose doing this over time by increasing the compatibility of human-occupied land practices with environmental quality and habitat conservation, and by buffering the edges between human activity and protected habitat.

This is perhaps reminiscent of Leopold's work at Coon Valley. Leopold, from *The Land Ethic*: "By 1930 it had become clear to all except the ecologically blind that southwestern Wisconsin's topsoil was slipping seaward. In 1933 the farmers were told that if they would adopt certain remedial practices for five years, the public would donate CCC labor to install them, plus the necessary machinery and materials."

From the Aldo Leopold Foundation: "In 1933, Coon Valley became the nation's first watershed conservation project. Spearheaded by the Soil Conservation Service, the Coon Valley project employed experts in agriculture, soil erosion, forestry, and engineering, as well as hundreds of young men via the Civilian Conservation Corps. Aldo Leopold was brought onto the team to advise about restoration of wildlife habitat in the watershed. [...]"

"Independent farmers were wary of government intervention, hesitantly signing up for incentive programs and grants that gave hope of saving the soil they depended on. In return for cooperation, the federal government offered supplies and services for free. Experts classified farmland for different uses based on slope—crops would be grown on flat or gently sloping land, then pasture on mid-slopes, and woodland on the steepest slopes. New fences, grass and alfalfa seed, and tree seedlings were provided for free. Bulldozers carved terraces to redirect the flow of water. Farmers learned to plow across the slope rather than up and down. In the rush to get the demonstration going, the project employed 200 young men at a time through the CCC. In the first year and a half, 418 participating farmers enrolled 40,000 acres of land.



Hannah Gaines Day, Entomology
University of Wisconsin

“At times during the rush, experts in different disciplines sometimes worked at cross purposes; Leopold noted that the big picture was hard to grasp, and that coordination and communication were key. [...] Contour plowing and fenced woodlots are the norm rather than the exception today, and the residents of Coon Valley are enjoying many of the benefits of stabilizing the soils and restoring health to the damaged landscape. [...] Watershed conservation projects include efforts in and along the streams themselves—replanting eroding banks and creating habitat for fish—to the soil and forest conservation measures that slow runoff. Water now seeps down into the soil, feeding countless springs.”

We aspire for the local human community to maintain land ownership and residency, for this to be a place where one can live and work, as part of the conservation community in synergy with the natural place.

FACTORS:

Below-bluff residents and above-bluff residents experience quite different landscapes and both might not be fully aware of the ecological functions of the entire SNA. (Groundwater might be an opportunity to illustrate connections).

Economics. Can income be made from the land in a way that improves the soil, forest and water quality on those lands surrounding the core SNA lands? I.e., so that the cost of those practices that degrade the system are not externalized spatially or temporally -- rather, practices that degrade are replaced with others that both build quality and are economically attractive to the producer / land owner.

Evaluate the long-term site-appropriate goal within Bay Shore Blufflands for ratio of forest cover and active farmland. Weight *contiguous* forest canopy so that its value is appropriately considered.

Currently, there are only very limited links between land production and the community through Community Supported Agriculture. There could be much opportunity to strengthen these links.

How many homes are heated with firewood, and is there a local sustainable forestry option to support this?

A perhaps useful idea, but one challenging to convey, is that everyone does and should contribute working lands - whether working as a farm, as part of the forest or wetland, working to produce human needs, even from a vacation home.

IDEAS:

Grown food that is shared food for wildlife and people. Consider a project to establish permaculture ‘corners’ or ‘hedgerows’ using native plants, particularly woody species with food harvest opportunities. Collaborate with the Peninsular Agricultural Research Station. Develop a cost share program.

Write the story of the place to capture imaginations, even before the future happens. The story that defines the new era. From historic forest harvests, to fishing harvests, to rural tourism, to the present day era of the commons. The land and water now are a source of learning and collaborating, providing food from the land for people and for wildlife; the conservation community era. Include how-to examples of things that could be small enterprises: honey, preserves, maple syrup, etc.

Maybe a series of workshops at Town of Egg Harbor hall, involving FFA students, locals: how to do bees, how to do permaculture, how to establish walnuts, how to go organic, etc.

Pursue collaborations with the proposed vision of Horseshoe Bay Farms as a sustainable food production education center.

Promote environmentally compatible and economically viable land uses for resource extractive activities in the landscape surrounding the core Blufflands SNA lands. For example, low density organic managed grazing, production of high value veneer hardwoods, naturalized black walnut ‘plantations’, organic Community Supported Agriculture fields. A conservation organization might assist with this transition by working with agricultural organizations to provide a land base for such activities through acquisition and resale with appropriately worded easements.

Consider “cooperative forests” as a long term strategy to support the conservation of privately owned forests: others can essentially buy a share in this forest. People invest in the land, and in exchange receive firewood, or hunting privileges, or maple sugar. Engage WDNR foresters (Chris Plzak) to pursue the concepts.

Fine art furniture makers participate in a woods network that uses local woods cut for utility lines. Perhaps a source of income for forest landowners is to selectively harvest out high quality woods for woodworkers. See fall 2014 Peninsula Pulse article. Local furniture maker Michael Doerr might be able to provide information.

A project that maps out economics and distribution of current farm operations in the area - could lead to useful revelations about how to improve the connections between production and community. Also might be a good opportunity for an atypical conservation grant partner.

Research project to compare impacts of grazing dairy vs. row-cropping dairy.

DATA NEEDED:

Survey SNA residents for numbers of households, retired and working people, and land-based workers

POTENTIAL RESOURCES / PARTNERS / FUNDERS:

Peninsular Agricultural Research Station

Door County Co-op

Write On, Door County

Door County Land Trust

Community Supported Agriculture (CSA) partner organization

Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP)

ANTICIPATED PROGRESS:

Year Two: First three workshops in Town series on living with the land and producing value.

Year Five: Book published, led by Write On! Door County, that captures the imagination of a sustainable future.

Year Five: 50% of non-forested lands owned here by Door County Land Trust are planted to forest.

Year Ten: First farm transition easement agreement in place.

Year Twenty: 50% of entire Bay Shore Blufflands forested or forest-planted.

Bay Shore Blufflands Working Lands

- Agriculture Land Use
- Agriculture/Forest Land Use
- Forest Land Use
- Managed Forest Law - Open
- Managed Forest Law - Closed
- Commercial Land Use
- Manufacturing Land Use

All parcels evaluated:

4110	acres	
664	parcels	
382	owners	

Only parcels > 8 acres:

3089	acres	75%
252	parcels	38%
71	owners	19%

Only 20 largest landowners:

2249	acres	55%
20	owners	5%

By land type:

Forest	571	acres	14%
Door County Land Trust	485	acres	12%
Conservation Easement (estimated)	200	acres	5%

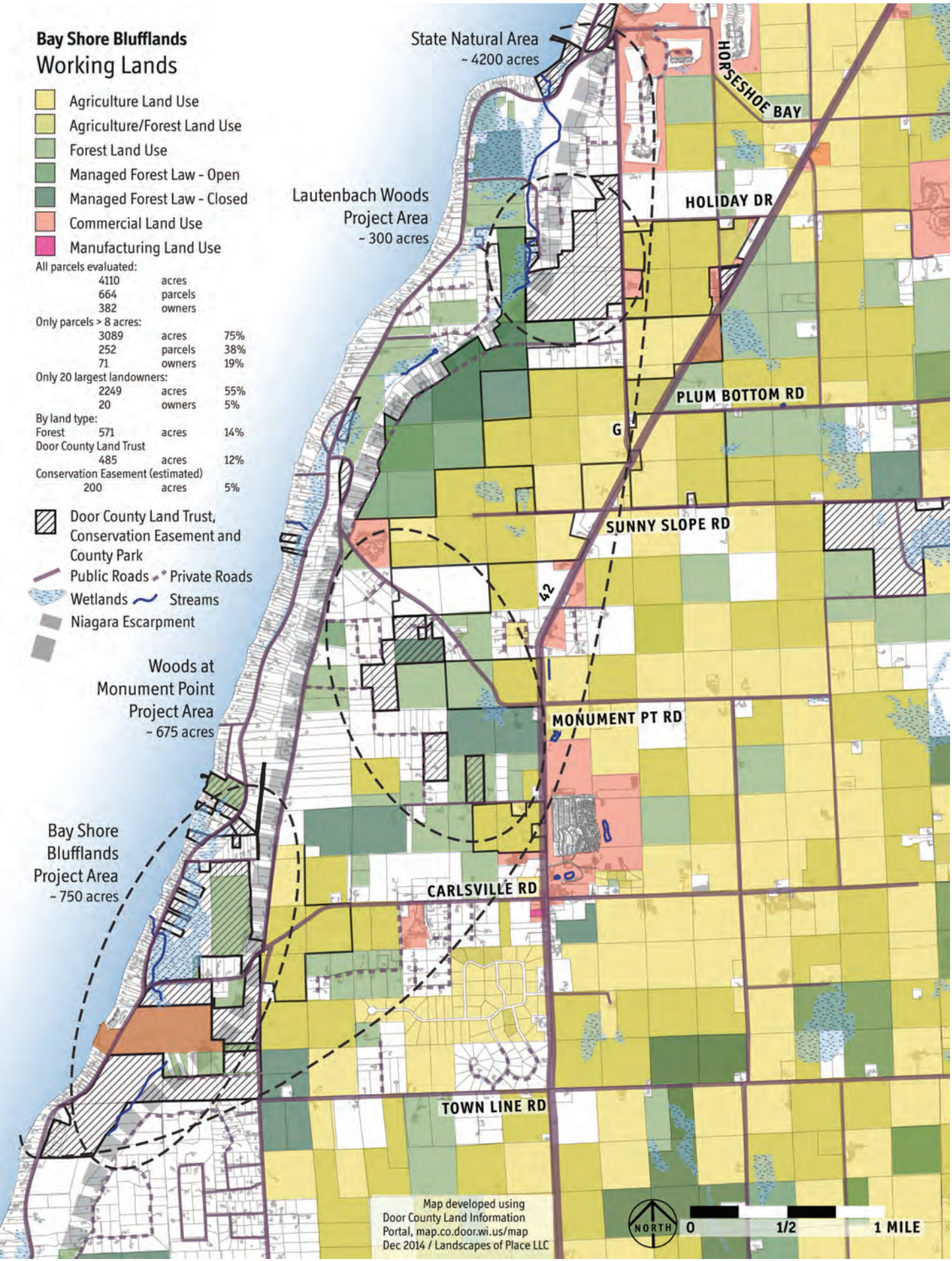
- Door County Land Trust, Conservation Easement and County Park
- Public Roads Private Roads
- Wetlands Streams
- Niagara Escarpment

State Natural Area
~ 4200 acres

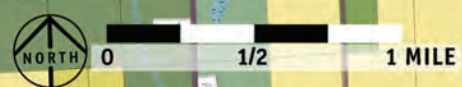
Lautenbach Woods
Project Area
~ 300 acres

Woods at
Monument Point
Project Area
~ 675 acres

Bay Shore
Blufflands
Project Area
~ 750 acres



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11. Restoration in Progress

WHAT WE PICTURE:

Ecological restoration progress is perpetually *visible* and community-supported in Bay Shore Blufflands, and residents know and control invasive species.

AND SO:

For the time being, in parallel with working to increase and buffer protected habitat, the control of invasive exotic species continues to be important work. Elimination of sources from private lands could dramatically improve effectiveness of this work and set a better stage for the long term viability of habitats.

WHY: *(why this is part of a conservation future)*

Ecological land restoration and stewardship is an important priority for Door County Land Trust, to improve and perpetuate the health of the lands it has undertaken to protect for the benefit of future generations. Currently, the lands under protection are fragments. Too much edge and not enough land buffer provide abundant vectors for invasive species. Their control takes much attention. The long-term goal of strategic acquisition or protection strives to reduce this edge effect and increase habitat patch size. In the meantime, the actions of people, volunteers and contractors, to control invasive species, has engaged local residents and begun to make visible to the community the work of restoration.

Expanding community support for the control of invasive species on private lands would be a dramatic boost. By coupling this with the planting of native species, those with particular wildlife value, we might engage a larger portion of the community.

We have realized an important factor in the current “Amelanchiers at every driveway” project - that it is much easier to have 100 native trees each watched over by one of 100 residents - than 100 native trees in a Preserve requiring a small volunteer team. Distributed land stewardship is helpful!

There is a distinct advantage to making the work of restoration publicly, continually *visible* - it conveys intent, commitment, and effort on the public behalf. It is work by hand, so what the public sees are people working on the land - Preserve Stewards, local professionals and local volunteers - neighbors. In addition, there is an educational component to visible ongoing restoration work: the community can see succession -- multiple stages and kinds of succession at work simultaneously; watching it happen, at all stages. Bay Shore Blufflands can, by virtue of restoration and stewardship planning, serve as a restoration chrono-sequence -- valuable for adaptive management and valuable in giving a thorough window into the future to the community. Watch a forest grow from seedlings (e.g. at Oak Road). Notice that you can see into the woods (elimination of buckthorn). Coupling the effort seen with the change seen, means that landscapes in transition/succession toward health can be seen as landscapes of value.



adapted from Jon Meyer

FACTORS:

Plants are not easy to learn. The identification hurdle is a real one. Lack of interest is a challenge too.

Concern about new invading species going undetected.

Land management prioritization with too-limited resources can feel like a constant game of catch-up. There needs to be data sufficient to guide land management.

The infusion of capital to include professional contractors to supplement volunteers can be as important to morale as it is to results.

Grants for restoration are sometimes structured to only allow one-time work at any place. This is counter to the ongoing needs and a challenge to manage.

IDEAS:

Door County Land Trust plans stewardship work to include a diversity and range of restoration projects -- to publicly show this range to the community. It is helpful from a community learning perspective to have several ongoing restoration projects that can be easily seen (marked on site and from roads), and have guided walks or interpretive signs - projects of different kinds. A young reforestation project. A mid-age reforestation project. Both young and a more mature oldfield restoration projects. Both beginning and advanced forest woody invasive control projects. Publicly showing such a range at any time can help communicate effectively.

Continue an ongoing project for early detection of NR-40 species presence -- mapping of invasive species throughout Door County Land Trust lands and from rights of way. Make use of summer interns, perhaps in collaboration with DCIST or Door County Soil and Water Conservation Department. Make maps public - website or other means. Provide media coverage of mapping work.

With Preserve Stewards, develop a 'Friends' group to structure the programs to engage residents in control of invasive species and planting of native species. Use an existing or develop a local "Replace this with this" plant booklet, especially for shrubs. Consider funded plant exchanges: native plant giveaway day - bring photos of your work controlling invasives, receive native species to plant. Or an Arbor Day native shrub giveaway: receive a shrub in exchange for agreement to remove fruiting honeysuckle or buckthorn. Could do share-with-each-other native plant swaps. Friends group could work to bridge highland/lowland resident landscape perception gaps.

As someone recently said on a hike, "I think you need to meet the plants in person to get to know them", i.e. books aren't enough. Sponsor regular wildflower hikes (which can also point out invasive species).

Make restoration/stewardship continually visible from roads and trails: see Preserve Stewards, volunteers, and contractors too, working in some recognizable way. Caps? Signs? Day-of-work large roadside signboards? Dated markers of zones worked? Newspaper photos/articles.

Consider use of an iconic plant or animal image to represent restoration projects in public communications - not necessarily something rare, but a memorable visual icon for a project. A key tree for a reforestation planting. A forest bird for a connecting corridor project or a woody species control project. Etc.

Include as a priority the edges on trails and roads, the most public opportunities to notice change. (Trails at Bay Shore Blufflands South Unit are a good example, where public trail users have been heard a number of times to comment on the visible change of the buckthorn and honeysuckle removals).

Design, through the involvement of a landscape architect, can be an important component of land restoration in order to jump-start the natural patterns of a healthy landscape and to deliberately incorporate memorable places. Visual patterns in an evolving landscape, and remembered trees or details help compel community engagement with the landscape. Door County's renowned Jens Jensen created these experiences on the land very effectively and his teachings can serve as inspiration. His favorite compliment was when people loved a place without knowing his hand, through design, had influenced their experience of a healthy native landscape.

Continue grant-supported local contractors for restoration work. Helps with the local news network, too.

Involve groups of school students in helping to preserve the Blufflands area. Especially on areas along well-traveled public rights-of-way. Use the Bay Shore Blufflands area as an ecological classroom and involve teachers as participants in the overall effort.

Pursue options like the town of Nasewaupée, "which adopted a noxious weed ordinance that includes phragmites with authority to order private landowners to remove the weed". Efforts like this can be effective in raising community awareness of the invasive species control economic burden. Support the efforts of the Door County Soil and Water Conservation department to control invasive plant species.

DATA NEEDED:

There needs to be data sufficient to guide land management: need a good vegetation map; coarse structure mapped including wetlands; indicator species designated; geography of largest forested blocks.

POTENTIAL RESOURCES / PARTNERS / FUNDERS:

Local school class / teachers

Door County Land Trust

Door County Soil and Water Conservation Department

Door County Invasive Species Team (DCIST)

Wisconsin Department of Natural Resources

Book designer / graphic designer for local native plant 'replace exotics' guide

Graphic designer for visibility markers / signs

Wild Ones Door County chapter

Door County Land Trust Preserve Stewards

Bay Shore Property Owners Association

ANTICIPATED PROGRESS:

2014: *Door County funded invasive exotic control efforts at Bay Shore Blufflands through the Weed Management Area - Private Forest Grant Program of the WDNR. Local professionals hired.*

Year Two: Cost share provided by Door County Land Trust to Door County for portion of summer intern's work to map invasive exotic plant species in all three Door County Land Trust Preserves within Bay Shore Blufflands. Signboards posted trail-side and roadside during periods of restoration/stewardship work.

Year Five: No fruiting buckthorn or honeysuckle visible from Preserve trails or adjacent roads.

Year Five: Signage or public recognition program for private landowners who are engaged in long-term land stewardship.

Year Ten:

Year Twenty:

Bay Shore Blufflands
Supported Land Stewardship Work
 (in part)

-  Door Stewardship Alliance (2002-present)
-  NRDA Tree Planting (2005)
-  Knowles-Nelson Stewardship (2007-2009)
-  Landowner Incentive Program (2007-2008)
-  State Wildlife Grant (2011-2013)
-  Bay Shore Property Owners 50/50 Match Program
-  Weed Management Area Forest Grant Program (2014)

-  Door County Land Trust
-  Conservation Easement
-  County Park
-  Wetlands
-  Streams
-  Public Roads
-  Private Roads
-  Niagara Escarpment



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12. No Browse Line

WHAT WE PICTURE:

Robust Hemlocks and resurgence of Canada Yew indicate a deer herd at a balanced level in the Bay Shore Blufflands.

AND SO:

Continue to support and develop appropriate deer hunt access so that the deer herd can be managed and provide local food, while at the same time working to reduce edge conditions and lessen habitat fragmentation.



Bob Dunlap,
Gustavus Adolphus College Arboretum

WHY: *(why this is part of a conservation future)*

Overabundance of deer degrades the forest habitat quality. Hemlock regeneration is lost, Canada yews that were once common are now rare in the area. Deer also preferentially browse young woody seedlings and saplings, which is a challenge to new planting efforts. Deer also reduce the abundance of herbaceous plants, some of the lily-family woods flora in particular (Trillium, Trout Lily, Solomon's Seal, etc.).

Over time, the fragmentation of forest and development of residences and farms within Bay Shore Blufflands has served to reduce deer hunting access, and also increase the deer herd by providing deer-preferred edge conditions.

A condition where deer hunters could potentially walk the seven-mile length of Bay Shore Blufflands does not have the same criteria as a trail system or a habitat-corridor network, and so it is useful to independently consider the improvement of hunting access where appropriate.

At the same, it is not our intent to increase deer herd -- our intent is the opposite. Rather than increasing edge habitat to attract deer, we will decrease edge habitat and decrease the deer herd. We see a small deer population in balance with a small population of local hunters.

FACTORS:

Supporting hunting where it is compatible with conservation community. Not all residents support it, and not all lands, even large acreage parcels, would be appropriate.

Hunting with radio controlled dogs is counter to our plans for small herd and a few local hunters.

Stewardship Funded acquisitions require hunting access. This could be an opportunity to connect those lands and make for a more effective deer hunt.

There are opinion and perception differences among locals and non-locals, and among lowland and upland residents.

IDEAS:

Map potentially appropriate hunting zones and accesses. Collaborate with the “More Forest” project to not be at cross-purposes.

Reforestation parcels will be attractive to deer given the young saplings; it would make sense to support deer hunt access to control herds in these zones.

Deer exclosures do double duty - protect special zones from browse, and can also be a useful educational tool.

Pursue support to recent WDNR program for deer tag system on private lands. Outreach to conservation easement holders.

Consider dedicating portions of lands, especially Bay Shore Blufflands South Unit portions, for disabled hunters, or for vets - in support of WDNR program priorities.

Consider WDNR’s DMAP program, as a way to attract more hunters for both private and public lands. This could help landowners lower the deer herd on their property. A WDNR wildlife manager comes to your land; problems such as lack of tree regeneration due excessive deer pressure are discussed. WDNR may provide additional antlerless deer tags for you to give away or sell. Helpful video on WDNR website. Available for both gun and bow hunting.

Look into potential funding for reforestation work from the Pittman-Robertson Wildlife Restoration Act (“focuses on fish and wildlife management, scientific study, species and habitat restoration, habitat protection, land acquisition, population monitoring and hunter education and safety”).

DATA NEEDED:

Annual deer harvest for the SNA

POTENTIAL RESOURCES / PARTNERS / FUNDERS:

Whitetails Unlimited

Wisconsin Conservation Congress - Door County

RESULTING CONDITION:

Year Two:

Year Five: Five or more deer exclosures with signage are installed by Preserve Stewards at Monument Point Woods, Lautenbach Woods, and Bay Shore Blufflands near public trails, especially where Hemlock or Canada Yew is present. Signs should explain the value of managing deer browse to continue support for deer hunts on the Preserves.

Year Ten:

Year Twenty:

13. Orchid Affection



WHAT WE PICTURE:

We envision lands where a variety of native orchids are enjoyed for their beauty; *and* they are understood within the context of the natural systems needed to support their vitality.

AND SO:

Expand understanding of orchid presence and habitat needs within our landscape. Develop the idea of unique flora and fauna protection as a way to engender love of the lands and expand understanding of the supporting natural systems. This is an educational and communication effort.

WHY: (*why this is part of a conservation future*)

Orchids are a charismatic species; there is a North American Orchid Conservation Center and an annual conference, which met in Green Bay in 2007 and took field trips to Door County to see *Cypripedium arietatum*, among others, at Bay Shore Blufflands. Orchids are also a surrogate for a kind of community support network for habitat conservation that becomes energized on behalf of such a charismatic species. Given the breadth, scope and complexity of protecting threatened habitat, and the financial burden involved in preservation, a single party solution is typically not feasible. Rather, the coordinated efforts of many individuals taking on different functional roles in a social network can be an answer. The individual acting within or separate from an official entity is both powerful and necessary. In sustaining habitat the ongoing actions of individuals matters greatly.

A true story from Bay Shore Blufflands can illustrate a community support network inspired by an orchid.

Preservation of a threatened habitat often begins with a champion, having both knowledge and a willingness to act. Many years ago, our “champion” was interested in buying land adjacent to their home in Bay Shore Blufflands, but the owner wanted to sell all 300 acres to a single buyer. The land was sold to a developer. The developer then divided the land into parcels and subsequently sold the land in five parcel allotments to each of several wholly owned subsidiaries, to circumvent the real-estate subdivision laws of Wisconsin. Lots were listed for sale, therefore, without the full process of Wisconsin law. Local zoning laws may be inconsistent and weak. They can also suffer from limited enforcement capacity that prevails in some smaller townships. Our champion decided to take action to preserve this habitat. She contacted the office of the Public Intervenor of Wisconsin. The Public Intervenor gave ordinary citizens a place to call for technical and legal advice when they faced complicated environmental problems. They said that normally they would have helped, but the governor had just dissolved the office and they were packing boxes. Our champion then turned to The Nature Conservancy (TNC). They said that they would like to protect the land but there is no law available in Wisconsin to help. There are limited laws available in Wisconsin to protect plants and no law to prevent incidental takings of plants on private lands in Wisconsin (Wisconsin State Statute 29.604). TNC suggested that she look for something interesting on the land that might help garner support for some type of protection. So our champion went on extensive hikes through the woods looking for something interesting.

She found something interesting. She had just been reading Virginia Eifert's Door County book "Journey in Green Places" which describes field presentation of *Cypripedium arietinum*, "...the small and rare ram's-head lady's Slipper. This is one of the uncommon and most sought orchids in America and, true to the orchid traditions of elusiveness, has the quality of being invisible while at the same time it is in full view" (Eifert, 1963). At that time our champion did not know a lot about native plants. (To demonstrate the impact that can result from a significant experience in conservation it must be noted that in the intervening years, our champion has been awarded a grant from the Academy of Sciences to survey *C. arietinum* populations in Door County; she has participated in field studies to determine genetic diversity, pollination mechanism and tracking individual members of populations. She is a key resource in Door County for the identification, preservation and stewardship of native plants and habitat, consulted on books and offered her assistance to many local conservation groups). Our champion invited TNC to see for themselves. TNC was astounded; this species was not known to be on the Green Bay side of Door County. TNC properly documented the finding with the state. But as we mentioned, there are no laws to prevent the taking of plants on private lands in Wisconsin.

Our champion was not dissuaded. In our case, just as in the Gull Lake Wetlands in Manitoba (Ames, 2001), the orchid became the key to sustaining public involvement. Our champion contacted the Door County Land Trust (DCLT). She subsequently joined the board of DCLT and proposed that they buy one specific parcel of 1.5 acres containing *C. arietinum*. At that time DCLT was a small land trust and even this modest purchase was controversial. However, they were able to complete that first stewardship purchase in the Bay Shore Blufflands. (DCLT now owns or protects more than 6000 acres in Door County and more than 500 acres within the Bay Shore Blufflands). Registration of the Bay Shore Blufflands as a State Natural Area with the Wisconsin Department of Natural Resources (WDNR) had also begun. This designation is important as it permits the engagement of special assistance in the conservation of land or development rights. During this activity the developer continued working. A road 36 feet wide and a half-mile long was cut through the habitat without the benefit of a permit. The developer claimed that none was needed. Subsequent findings show that this road was cut within one or two meters of *C. arietinum* specimens. Most certainly some of the population was lost to this road cut. The local township was troubled by the road construction and stopped the work. This stoppage was not before the entire road was cut and a quarter-mile had been fitted with an underlayment barrier and two feet of gravel. While this was occurring our champion contacted WDNR to investigate what, if anything, could be done within the law to stop or slow the destruction of this orchid habitat. More specimens of *C. arietinum* continued to be found within the developer-owned properties. WDNR could not stop the project, but it could and did request a species inventory and a wetland assessment on the developer's property. The wetland assessment found ephemeral ponds, which reduced the project to 19 lots, from the proposed 29 buildable vacation home lots. Notably the *C. arietinum* populations on this parcel are localized to less than six of the planned lots. DCLT with our champion invited prospective conservation buyers from out of the area to visit the land. The conservation buyers were seeking a project that was part of a network of like-minded land stewards. Based on the findings of the wetland survey, the species survey and the road work stoppage the developer was open-minded to finding an alternative to constructing a subdivision. DCLT helped to facilitate a lengthy negotiation ultimately resulting in the sale of 50 acres to the conservation buyers along with their granting a conservation easement. Our champion also granted a conservation easement on 16 acres to DCLT.

The developed social network began with our champion, added the Public Intervenor, TNC, DCLT, WDNR, the Town of Egg Harbor, and the conservation buyers, in its early stages. The network used three existing regulations in preventing inappropriate development, another law to designate State Natural Area, and another to protect lands with a conservation easement. Prior to coordinated effort of a social network the Bay Shore Blufflands did not exist and the orchid habitat within its bounds was under imminent threat of destruction. DCLT has been instrumental in fostering the protection and preservation of the Bay Shore Blufflands which was designated a State Natural Area in 2002. The social network now includes the Door Stewardship Alliance, the Bay Shore Property Owners Association, the Niagara Escarpment Resource Network, and others, and has attracted funding. Collectively these groups have tallied thousands of hours in land stewardship and restoration efforts. Network members have new roles, and implement new efforts (e.g., 50% funding from Bay Shore Property Owners for help managing invasive species on private property).

One can say that this began, in Bay Shore Blufflands, with one orchid. And so we suggest that in building the Cathedral of Bay Shore Blufflands, we continue to expand the orchid network. At the same time, we should be sensitive to finding the next 'orchid' and its champion, to inspire new connections in our network.

FACTORS:

We recognize that passion for an orchid is not an easily repeatable impetus for strengthening a community support network. But perhaps we can continue to strengthen network ties using the orchid.

Need to engage broader understanding of habitat protection and the whole ecological system.

A rare species is not a universally loved thing. We should be sensitive to not dissuade parts of our community that might see it differently.

IDEAS:

Consider how to publicize and/or continue the research on Ram's Head Lady Slipper orchids. Amy Wolfe found a native moth pollinating at night. Look for ways to engage citizen scientists. Have annual native orchid walks to understand habitat needs and observe changes.

Orchids could be a good "Species of Local Conservation Interest" (see "Resident Scientists") - monitoring first blooms and seed viability of Yellow Lady Slippers, for example. Could present at North American Orchid Conference, draw local publicity.

Consider use of orchids as iconic imagery in forest habitat improvement or protection projects. (Note that the Door County Green Fund uses an orchid as logo).

Design and produce paper-folded (origami) versions of our local orchids - this idea came from the North American Orchid Conference. Find a local artist to design. Include text about the local orchids and important habitat needs.

Locally share the printed Orchid Lifecycle Poster from the North American Orchid Conservation Center.

Learn from the memorableness of Emma Toft's handwritten wildflower sign ("[Wild]flowers are loveliest where they grow. Love them, enjoy them, but leave them so"). Perhaps interpretive signage at Preserve kiosks that asks people to watch for certain plants, and this changes weekly (Preserve Steward help).

Consider other opportunities to draw in champions. Dwarf Lake Iris, occurring throughout Bay Shore Blufflands, is not well known or documented here. It could capture the imagination of the neighborhood, as well - and there is interesting work being done to correlate soil types or other factors with successful populations. From WDNR: "Dwarf Lake Iris (*Iris lacustris*), a State Threatened and Federally Threatened plant, is found near Lake Michigan on beach ridges, stabilized dunes, limestone ridges, forest gaps and edges, and ditches. Blooming occurs early May through early July; fruiting occurs late June through late July. The optimal identification period for this species is late May through early July."

DATA NEEDED:

Periodic orchid surveys of the SNA

POTENTIAL RESOURCES / PARTNERS / FUNDERS:

Native Orchid Conference

Door County Green Fund

RESULTING CONDITION:


Year Two: Annual orchid walks are begun to help people understand their presence and habitat needs.

Year Five: Orchid-related citizen science presentation at North American Orchid Conference.




Year Ten:

Year Twenty:

Bay Shore Blufflands Habitat Richness

 Door County Land Trust,
Conservation Easement,
or County Park

Habitat Richness (Greenprint Model):

-  Moderate to High
-  Moderate
-  Moderate to Low

-  Public Roads
-  Private Roads

-  Wetlands
-  Streams
-  Niagara Escarpment



Map developed using
Door County Land Information
Portal, map.co.door.wi.us/map
Dec 2014 / Landscapes of Place LLC



14. The Witness Landscape, once called Podunk

WHAT WE PICTURE:

Each of our 4200 acres has a story to tell. Grinding ice, stout timber, fishing nets and settlers' hands form the clues written on the land in this place, first called Podunk. Let the landscape witness our "community in the forest" and the next stories in the land that embody conservation value.



Door County Historical Society

AND SO:

We shall share stories to draw community together in Bay Shore Blufflands. What ties people to land is knowing what came before, what is now, and what can be. During our own lifetimes, as we work on the Cathedral of Bay Shore Blufflands, we also create stories. And, most importantly, we share stories from the perspective of the land, as best we can. The land survives us, and the land reflects our behavior over time.

WHY: *(why this is part of a conservation future)*

We desire to enable more effective behavior and actions by any entity or person. By this we mean participation that is more encompassing, knowledgeable or satisfying than bird-feeders in backyards; and also more proactive, inclusive, creative or engaging than enforcement of regulations like shoreland zoning rules.

To enable this we see shared stories as an important factor - past and present, with ideas for the future.

We see that we are part of "building the cathedral" of Bay Shore Blufflands, into generations beyond our own. "Building a cathedral" is a useful analogy: a big but local vision that will be multi-generational, with parts always incomplete, and progress steady but a bit opportune. In building our cathedral we have the chance to learn and share; we intend for each implemented idea to do useful work that moves conservation forward.

A key part of this analogy is that we each do a small part, and pass it on. Sharing stories is a way to do this. Telling them well strengthens their impact.

A researcher on native oak hybridization answered a question by saying "We don't really have enough data yet; it's only been a hundred generations of oaks since the glaciers". A woman on a hike in the prairie at Oak Road said, "If you were a kid you'd just be out here catching bugs like crazy". An early and prominent settler at Bay Shore Blufflands was George Marsh; it turns out he has natural science roots and is a fifth cousin of the famous O. C. Marsh, the preeminent Yale paleontologist with "the discovery of dozens of new species and theories on the origins of birds among his legacies". These little stories are memorable. We need stories that help convey both the grandness of our cathedral and also each stone placed.

The Bay Shore Road

Jennie Coleman (Mrs. Robert) Templeton, circa 1925, age 78

An Indian tall and straight I see / In the day of long ago,
Tracing the trail with patient feet, / His steps now swift, now slow, / And this was the Bay Shore Road.

The settler comes, his axe is heard, / The clearing it is small,
But the hopes are big in the sturdy breast / As the giant monarchs fall / On the Bay Shore Road.

Not all his days are spent in toil, / This hardy worker here;
With ox teams goes o'er stumps and stones / To Laurie's for good cheer; / On the Bay Shore Road.

The frosts have come, the early snow; / The hunters now appear,
Down to Joe Elliott's straight they go / To chase the wily deer / On the Bay Shore Road.

And now the autos swiftly glide, / Filled with tourists fair
Who come to view our joy and pride / The cherry orchards there - / On the Bay Shore Road.

With reverent steps we go / To the City of the Dead
Where the setting sun its last beams throw / Over each sleeping head - / On the Bay Shore Road.

The winding road, the shading trees, / The rocky cliff, the shelving shore -
Good Mother Nature gave us these, / How could we ask for more? / On the Bay Shore Road.

FACTORS:

Many of the landowners, full-time and part-time residents do not know the history of the Bay Shore Blufflands. As a result, current landowners miss the opportunity to learn from the past. A lack of historical context makes our current activities and plans seem like the only conservation work that has ever been tried, when in reality, it is simply our part of the story. The natural capacity of the lands, timber, fish, farms and homes are all factors in the story of this landscape spanning centuries. We need to know our impact, the carrying capacity of the land and how we fit in the history of prior land use.

IDEAS:

Begin by broadly sharing this flexible, open plan with the 300-some residents of Bay Shore Blufflands.

Write the story of the place to capture imaginations, even before the future happens. The story that defines the new era. We had the era of historic forest harvests, lumber camps - then the era of fishing harvests, fishing camps - an era of living on the land - an era of visitors, camping. Now, perhaps, an era of the commons, the land and water as a source of learning and collaborating in the conservation community.

The area near the south end of the Bay Shore Blufflands was once called Podunk, then Thayerport and then Graceport. Each period had its champions working with the land in different ways. Write the Graceport - Thayerport - Podunk book, self-publish, and share.

Lead regular Government Land Office (GLO) survey reenactment hikes, especially at Bay Shore Blufflands South Unit which straddles a township line traversing the Escarpment. Tell the stories of 'the imposition of the rectangle', the English vs. French surveys.

Consider means of making 1830s GLO survey lines perceptible in some way on the landscape today, to help tell that story.

Offer landowners and the public an opportunity to “Re-plant Witness Trees”. The 1830s government land surveys recorded trees along every square mile. This way of looking at the landscape history can also capture the community’s imagination, linking the past and future forests with a straightforward planting project shared across the community.

Enable an intuitive handoff of stories (the "book" might be written in the land) - post field journals in different places, rainproof, with pencils; use canvas satchels on a post.

Write a “Welcome to the neighborhood” booklet about the conservation qualities of Bay Shore Blufflands using the example of botanist May Theilgaard Watts (Reading the Landscape of America) in Ravinia, Illinois. Personally deliver it to new/recent landowners and residents. Another good example is the art-covered “Save Fairy Chasm story” booklet as part of a 1970s Nature Conservancy effort in Milwaukee.

Collaborate with Write On, Door County in a continuing series of story-telling workshops about Bay Shore Blufflands.

Fund local writers to research and write ongoing essays. Republish some of the past stories found in the Bay Shore Property Owners Association newsletters.

Consider a Bay Shore Blufflands place-based online reporting/viewing mechanism. This could allow seeing everything going on at Bay Shore Blufflands in one place -- help connect to place. (See “Resident Scientists”).

From the Egg Harbor Historical Society, November 2014: “The Door County Bookmobile was a door to another world for Door County children and adults for generations. Now the Egg Harbor Historical Society (EHHS) is rescuing the bookmobile to breathe new life into this piece of local history as a vessel to help tell our community’s stories.”. Perhaps this will be a venue to help share Bay Shore Blufflands stories.

The Joseph Elliott home (mentioned in the poem above) was located right at the lower trailhead and parking area for DCLT’s Bay Shore Blufflands trails. This could be a great place for interpretation to share historical stories.

DATA NEEDED:

POTENTIAL RESOURCES / PARTNERS / FUNDERS:

Egg Harbor Historical Society
Door County Historical Society
Door County Library
Write On, Door County
Bay Shore Property Owners Association

RESULTING CONDITION:

Year Two: Write the Graceport / Thayerport / Podunk book and self-publish, share.

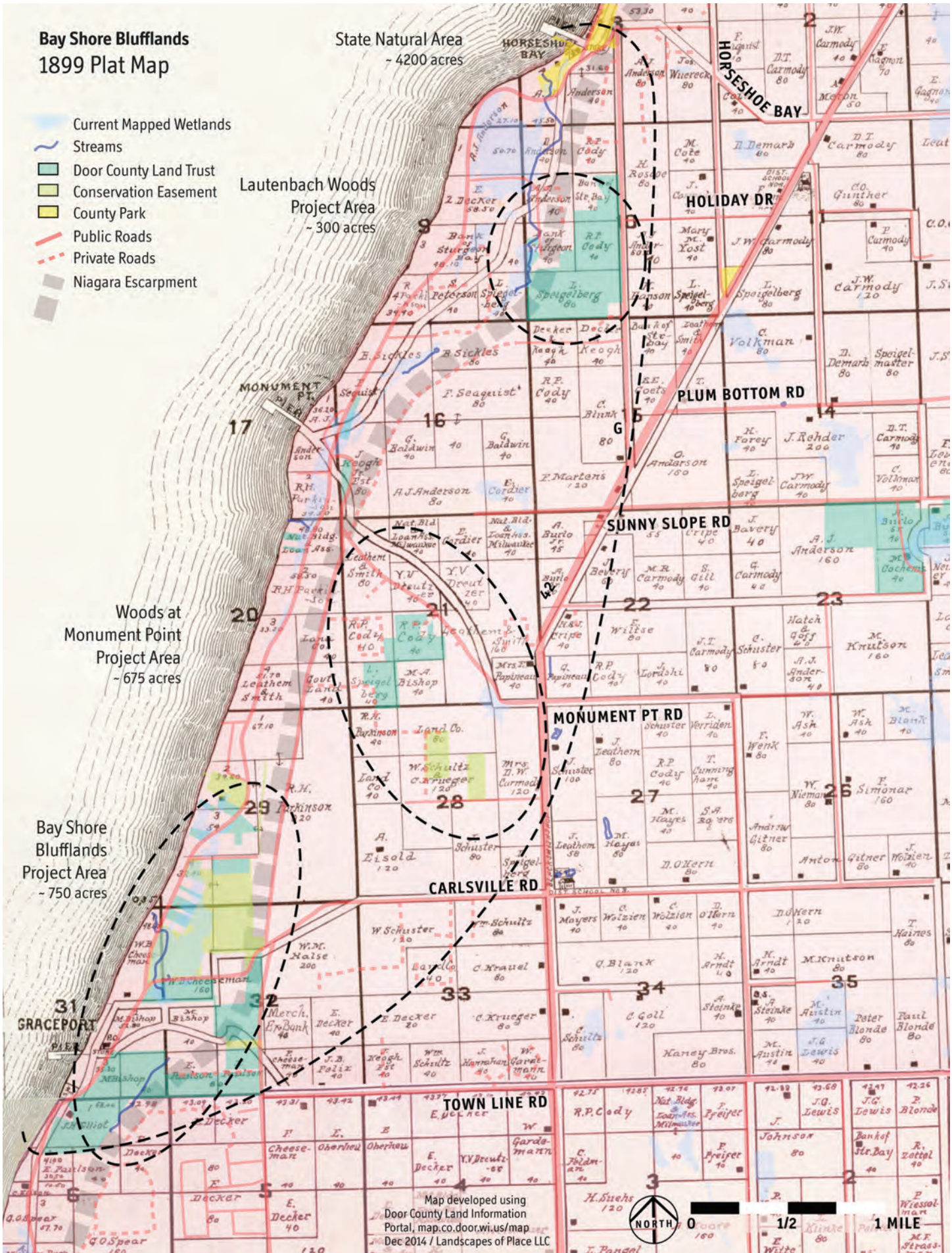
Year Five: “Welcome to the neighborhood” booklet published, distributed to recent and new neighbors.

Year Ten:

Year Twenty:

Bay Shore Blufflands 1899 Plat Map

-  Current Mapped Wetlands
-  Streams
-  Door County Land Trust
-  Conservation Easement
-  County Park
-  Public Roads
-  Private Roads
-  Niagara Escarpment



Map developed using
Door County Land Information
Portal, map.co.door.wi.us/map
Dec 2014 / Landscapes of Place LLC

Bay Shore Blufflands 1919 Soil Map

Soil survey of Door County, Wisconsin
(Bulletin No. 52--D, Soil Series No. 19)
<http://digital.library.wisc.edu/1711.d1/EcoNatRes.WGB52dSoil19>

- Door County Land Trust
- Conservation Easement
- County Park
- Public Roads

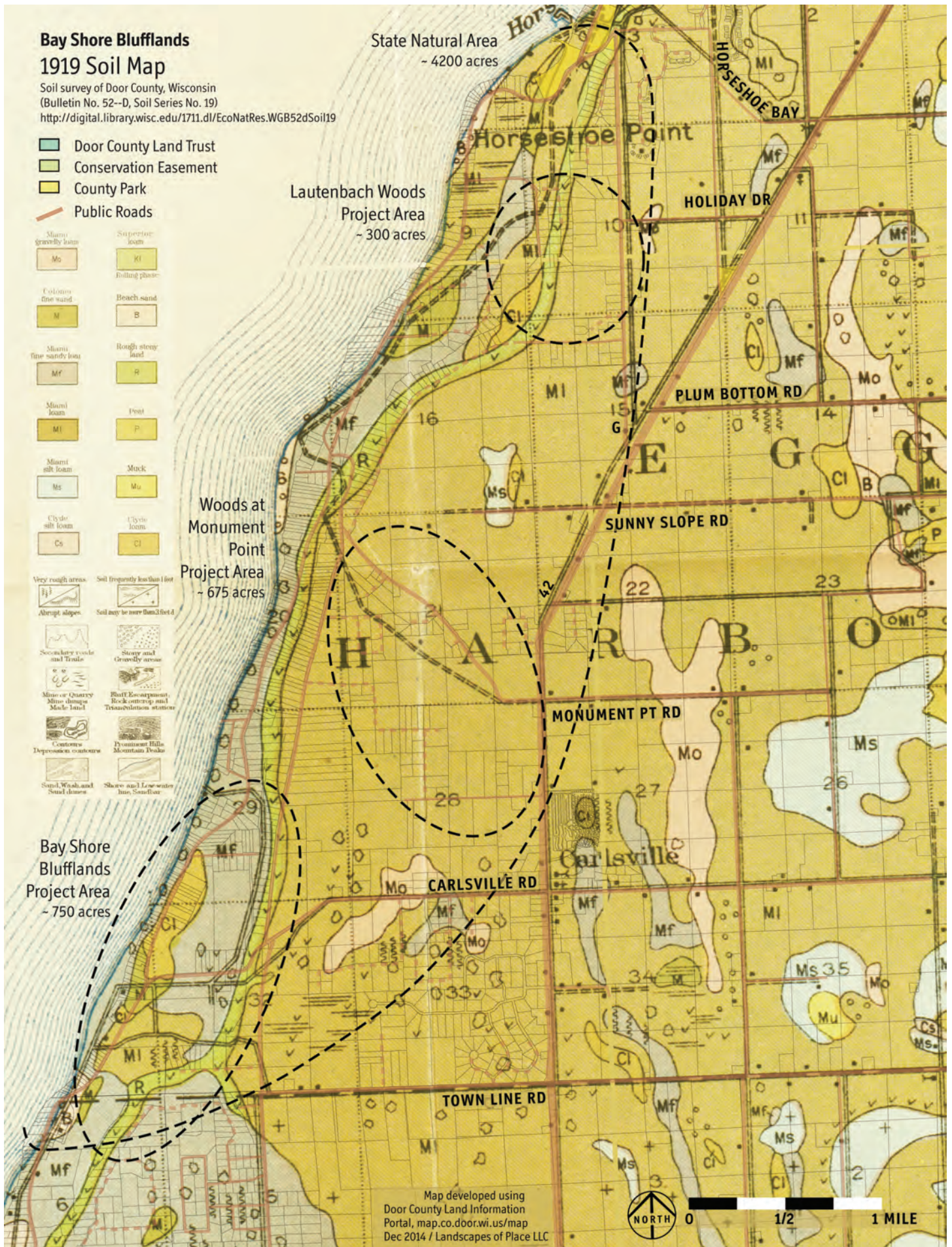
Miami gravelly loam Mo	Superior loam Kl
Columb fine sand M	Beach sand B
Miami fine sandy loam Mf	Rough stony land R
Miami loam Mi	Pont P
Miami silt loam Ms	Muck Mu
Clyde silt loam Cs	Clyde loam Cl
Very rough areas	Soil frequently less than 1 foot
Abrupt slopes	Soil may be more than 3 feet d
Secondary roads and Trails	Stony and Gravelly areas
Mine or Quarry Mine dumps Mule land	Rust Encampment, Rock outcrop, and Transportation station
Contours	Prominent Hills Mountain Peaks
Sand Wash and Sand dunes	Shore and Low-water line, Sand-flour

State Natural Area
~ 4200 acres

Lautenbach Woods
Project Area
~ 300 acres

Woods at
Monument
Point
Project Area
~ 675 acres

Bay Shore
Blufflands
Project Area
~ 750 acres

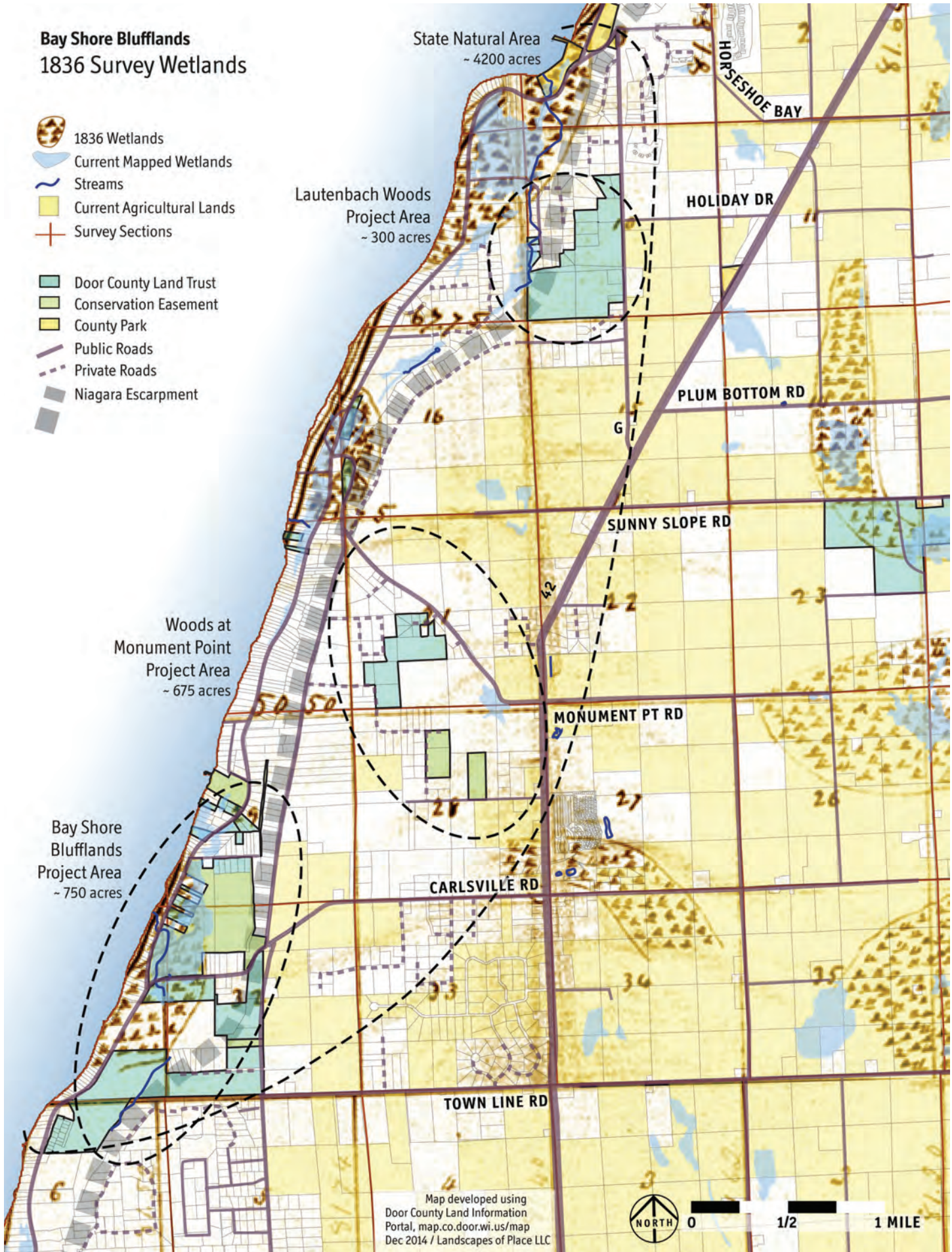


Map developed using
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Portal, map.co.door.wi.us/map
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Bay Shore Blufflands 1836 Survey Wetlands

-  1836 Wetlands
-  Current Mapped Wetlands
-  Streams
-  Current Agricultural Lands
-  Survey Sections

-  Door County Land Trust
-  Conservation Easement
-  County Park
-  Public Roads
-  Private Roads
-  Niagara Escarpment



Map developed using
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Bay Shore Blufflands 1836 Survey Trees

- | | |
|--------------|------------------|
| ● White Pine | ● White Ash |
| ● Red Pine | ● Black Ash |
| ● Pine | ● Basswood |
| ● Fir | ● Maple |
| ● Spruce | ● Sugar Maple |
| ● Hemlock | ● Beech |
| ● Cedar | ● Ironwood |
| ● Tamarack | ● Butternut |
| ○ Birch | ● White Oak |
| ○ Aspen | ● Bur Oak |
| ○ Cottonwood | ● Black Oak |
| ○ Willow | ● Red Oak |
| ● Elm | ○ < 16" diameter |
| | ○ ≥ 16" diameter |
-
- Swamp Conifers Zone (Finley 1976)
 - Door County Land Trust
 - Conservation Easement
 - County Park
 - Public Roads
 - - Private Roads
 - DCLT Preserve Trails
 - Wetlands
 - Streams
 - Niagara Escarpment



15. Iconic Escarpment

WHAT WE PICTURE:

The Niagara Escarpment is the healthy, protected, unmistakable backbone of the Bay Shore Blufflands. Our seven-mile stretch is a model of escarpment protection in an inhabited landscape.



AND SO:

We collaborate with and support efforts to foster protection of the Niagara Escarpment “and its geological, ecological, and cultural wonders” regionally and internationally.

WHY: *(why this is part of a conservation future)*

A dominant landform can provide continuity of place for both wildlife and people. The Kettle Moraine is a local example; the geology defines the place and helps enable protection. Our dominant landform, the Niagara Escarpment, can do the same. It can provide a perception of wholeness so that when the Escarpment is in sight, neither hawks and owls nor people perceive property boundaries as fragmentation.

We have noted before that while we want the community to love the Escarpment, we also want to protect it from too much love in the form of disturbance, building, etc. Carefully considered public access is important for both protection and for richness of human experience that will engender careful stewardship. Another way to describe this effort is: Don’t waste the escarpment. Sense the escarpment throughout Bay Shore Blufflands. Share the *rare* views.

Per the “Site Conservation Plan for the Carlsville Bluff Site”, Wisconsin Chapter TNC, 2000, “[this site contains] one of the most outstanding occurrences in the Great Lakes ecoregion for the Maple Ash Elm Swamp community type. [...] The site is considered irreplaceable in the Great Lakes ecoregion because it provides an opportunity to protect a matrix of Great Lakes communities including Tussock Sedge Wet Meadow, Great Lakes Alkaline Open Bluff Cliff, White Pine-Red Oak Forest, White Cedar-Boreal Conifer Mesic Forest, and Great Lakes Hemlock-Beech-Hardwood Forest. The Carlsville site represents the last long stretch of pristine escarpment remaining in Door County.”

Town of Egg Harbor 20-Year Comprehensive Plan, adopted July 2009, “Sensitive natural areas within the town should remain in their natural state or be minimally modified for possible recreational uses. These areas include the Niagara Escarpment...”.

Geo-tourism is promoted by the Niagara Escarpment Resource Network (NERN) and by Greater Escarpment Organization of Door County (GEO-DC), in part as an economic driver for the region which can also serve to protect the Escarpment habitat. This is a strategy that continues to be used extensively for environmental protection by highlighting environmental qualities that provide economic opportunity. One example is the effort (nearly complete) to achieve federal designation as an American Viticultural Area - the Wisconsin Ledge AVA. “Such a designation would help to propel the local grape growing and wine making industry in a 2.4 million acre portion of northeastern Wisconsin” (NERN).

NERN is developing a Niagara Escarpment Greenway Plan along with its Niagara Escarpment Overlay Zoning Guide that seek to define the environmental protection, while providing people with opportunities to experience the place that are compatible with its protection.

From GEO-DC: “The mission of the Greater Escarpment Organization-Door County is to cultivate knowledge and stewardship of the Niagara Escarpment and its geological, ecological, and cultural wonders through raising awareness in people of all ages and from all walks of life... Visitors become advocates, students become teachers, drinking water becomes safer, Pleistocene snails live on, and our community thrives within our resources.”

Bay Shore Blufflands can be a significant component of NERN and GEO-DC efforts.

FACTORS:

Escarpment corridor protection has been difficult, in part because of site-specific variation in defining the ecologically sensitive zones, in part because of minimal local zoning regulation, in part from lack of awareness in the community.

It is also difficult to figure out how to reach the audience for escarpment protection. And how to communicate effectively the ideas of limiting access and disturbance to what is the most prominent landscape feature of Door County besides the shoreline.

Local planning professionals acknowledge the difficulty in approving ordinances which could aid in Escarpment protection, or in regulating Best Management Practices for activities within an Escarpment protection zone. Often an approach that focuses on voluntary measures is recommended.

IDEAS:

Consider ordinances that may preserve, protect, buffer or enable expansion of the lands within the SNA. “Door Peninsula Environmental Corridors: A Coastal Resource Identification Project”, 2005, Bay Lake Regional Planning Commission (WCMP-funded), identified challenges and opportunities for protective ordinances and overlays. It notes that Door County has “no regulations to specifically delineate and protect environmental corridors, [but] it does delineate and protect certain environmental features as required by federal and state laws”; this includes some shoreland protection within 1000 feet of Green Bay. Of particular relevance to this SNA, the Town of Egg Harbor has no zoning; its Master Development Plan, 1998, “does not define environmental corridors”, and only “recommends the protection of such natural features as wetlands and the escarpment”. The Niagara Escarpment Overlay Zoning guide prepared by the Bay Lake Regional Planning Commission (WCMP-funded), could be put forward for consideration by the Town of Egg Harbor and Door County. Evaluate and include any recommendations for improvement in ordinances for either the Town of Egg Harbor or Door County.

Find funding to engage geology expert Roger Kuhns to do a Door County escarpment overlay assessment with specificity using his sustainability metrics.

Outreach to builders and new property purchasers about the sensitivity of the landscape. (Monitor the land purchases of escarpment-vicinity lands).

Work with local conservation organizations on the concepts of “no cut” or “escarpment buffer” easements. This could incorporate a purchase-of-rights component.

Consider an approach to legislatively direct Stewardship funding for Niagara Escarpment protection initiatives (perhaps akin to Ice Age Trail allocations within Chapter 23 of state law).

Use the snails as escarpment icon. “The Podunk Snail-Pace Race” (walk). “Everybody’s going to want that t-shirt!”. An event to raise funds for trail work perhaps, and many educational opportunities, as the trail stays away from the sensitive escarpment, but you can see it the whole route.

Considering the globally valued resource of the Niagara Escarpment, research condemnation as a potential and rare land protection strategy, and the situations in which it might be helpful. From the National Park Service: “Condemnation is generally considered as a last resort. However, acquisition by condemnation is sometimes necessary to establish just compensation, to clear title, or to prevent imminent damage or unacceptable threats to park resources”. (From the “Director’s Order #25: Land Protection”).

Work with a conservation organization to consider a Conservation Buyer program, working with realtors and focusing on the escarpment vicinity. A purchase coupled with escarpment buffer easement protection and (partial) compensation?

Consider the “45th parallel” County wayside on highway 42 as a potential site for Niagara Escarpment history interpretive information.

DATA NEEDED:

Inventory and assessment of undeveloped lots that could be considered for acquisition.

POTENTIAL RESOURCES / PARTNERS / FUNDERS:

Roger Kuhns
Greater Escarpment Organization-Door County (GEO-DC)
Niagara Escarpment Resource Network (NERN)
Door County Land Trust
Door County Planning (tree protection zone)

RESULTING CONDITION:

Year Two: Assessment of land protection status / opportunity for each parcel along the seven mile stretch of the Niagara Escarpment with the Bay Shore Blufflands.

Year Five:

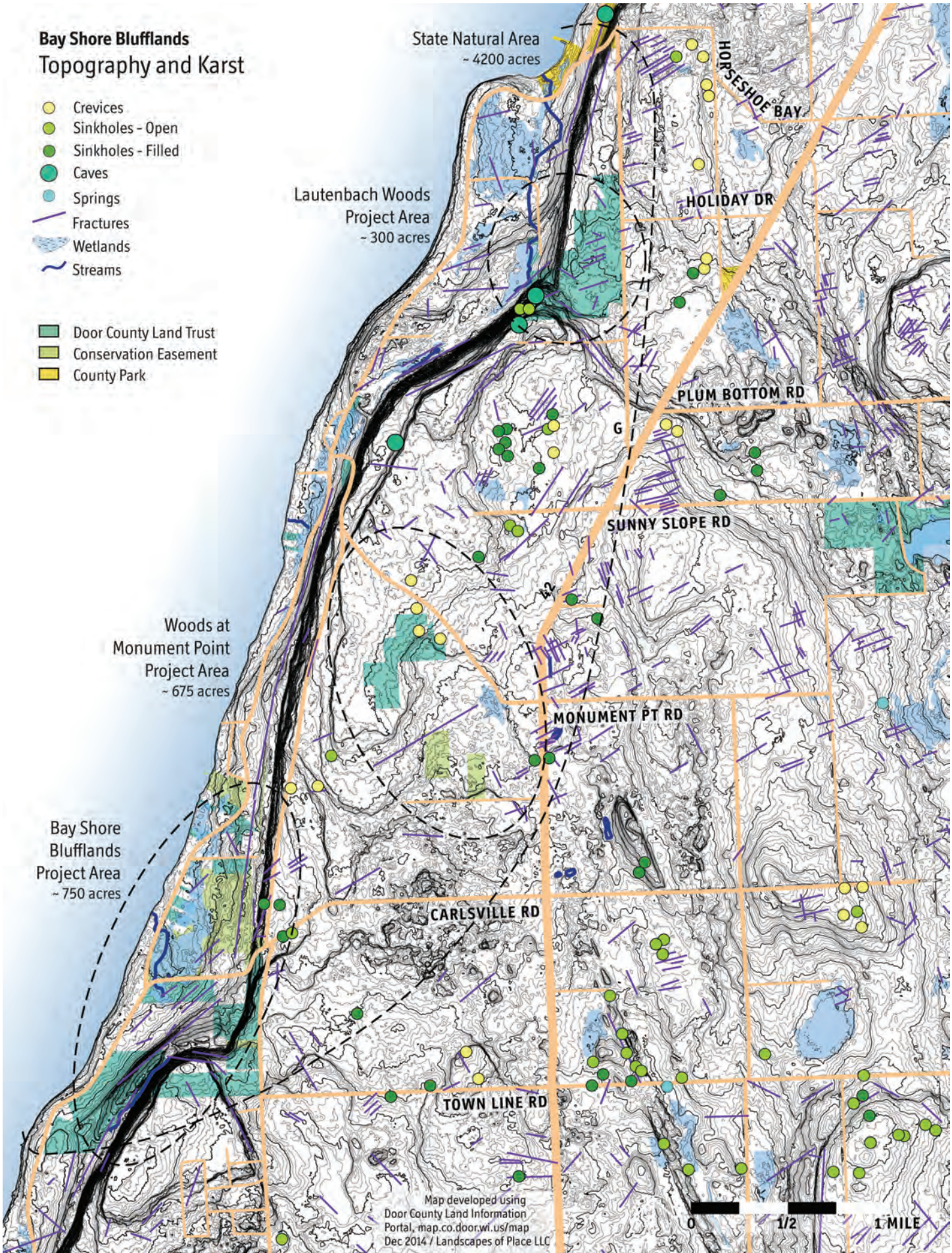
Year Ten:

Year Twenty:


Bay Shore Blufflands Topography and Karst

- Crevices
- Sinkholes - Open
- Sinkholes - Filled
- Caves
- Springs
- Fractures
- Wetlands
- Streams




- Door County Land Trust
- Conservation Easement
- County Park



Bay Shore Blufflands Habitat Richness

 Door County Land Trust,
Conservation Easement,
or County Park

Habitat Richness (Greenprint Model):

-  Moderate to High
-  Moderate
-  Moderate to Low

-  Public Roads
-  Private Roads

-  Wetlands
-  Streams
-  Niagara Escarpment



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Volunteer winter work day, Bay Shore Blufflands



Local expert Bob Bultman discusses karst landscapes and hydrology

Conservation Master Plan
Bay Shore Blufflands State Natural Area
January 2015

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