Butterfly Mariposa Papillion Bee Abeja

the POLLINATOR

The *Native* Pollinator Conservation Magazine **Winter 2020** Volume 3 Issue 1

Goldenrod Gall Grand Island New York -Photo by Paul Leuchner

This Issue:

Saving Life On Earth, Half Earth, Resiliency, Restoring Relations, Best Practices, Nature Based Solutions

the POLLINATOR Volume 3 Issue 1 Winter 2020

The Native Pollinator Conservation Magazine

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The Pollinator Conservation Association is a New York State registered 501(c)(3) not for profit organization dedicated to advocating for and creating biodiversity conservation strategies through the lens of native pollinators

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In the Fall of 2019 the Niagara River was designated a Ramsar Wetland of International Significance. Jajean Rose Burney (left), and Jocelyn Baker (right), serve as the US and Canada co-chairs of the Niagara Ramsar Steering Committee.

Our Vanishing Biodiversity and Plans to Save Life on Earth

by Jay Burney

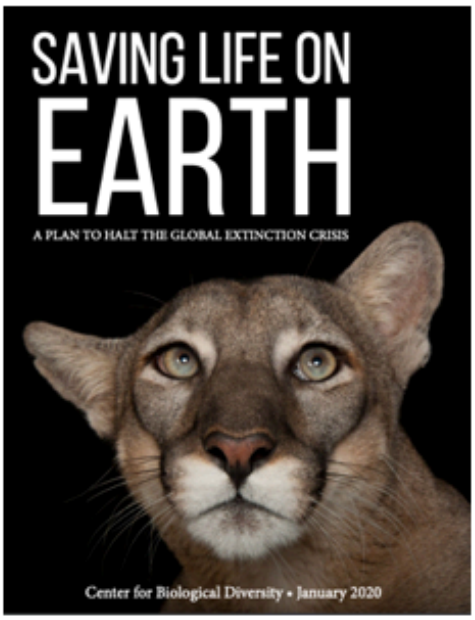
It is the winter of 2020 and it is getting late in the game of life on earth as we know it. We are in what many scientists have characterized as a major extinciton episode. In my lifetime, bird, fish, amphibian, native plant, and insect populations, representing a portion of vanishing global biodiversity, have precipitiously declined. Since 1970, North America has lost 3 billion birds, a deline of almost 30%*. Across the planet insect populations are vanishing threatening a collapse of nature*. It is horrifying that our federal government is leading a global agenda that reduces habitat protections including allowing more wildlands and waters to be exploited for development, reduces regulations that protect wildlife including birds, pollinators, fish; and so much more.
Impacts on the collapsing biodiversity that protects and nourishes life on earth is at a great threat. We have a *climate* emergency. Much of that can be characterized by a vanishing *biodiversity* emergency.

There is hope. In the Spring of 2019 edition of **the POLLINATOR*** we wrote about a UN Report chronicling the collapse of global biodiversity. Now, the United Nations Conventon on Biological Diversity and the Center for Biological Diversity has been negotiating a framework plan* to protect global biodiversity. This plan is still in its draft stages and it calls for a radical shift in how we protect our earth. While this plan represents a global perspective, it provides a significant roadmap for local communities and conservation activists. For example, it calls for a reduction of habitat loss to ZERO by the year 2030. It also calls for protection of half of the earth by the year 2050. This reflects the thinking of E.O Wilson, who authored the book Half Earth in 2016. In our region, we have been able to obtain significant protections including the Niagara River Corridor Globally Significant Important Bird Area and the Niagara River Ramsar Wetlands of International Significance. These designations help to characterize our regional biodiversity on a par with places such as the Galapagos, the Everglades, and Yellowstone National Park.

This edition of the POLLINATOR is focused on finding ways to protect, conserve, and restore our life sustaining biodiversity. Besides promoting an awareness of profound issues, we must develop a "best practices" ethic in all of our conservation work. The most profound best practices come from a perspective that relies on a wholistic conservation ethic. Everything is connected.

In this edition of the POLLINATOR we are proud to present several pieces from significant contributors that point to what we can do now to make sure that future generations have a quality of life that will be beneficial, productive, and regenerative. We need to find ways to sustain all life on earth, including human life. The good news is that we can still do it.

NOTE: ***Links to resources on our Links and Resources Page 17***



Saving Life on Earth

Goals of the United Nations Sponsored Convention on Biological Diversity

The POLLINATOR interviewed Tierra Curry, a Senior Scientist at the **Center For Biolgical Diversity***. Her work includes advocacy and support for the conservation of species and the Endangered Species Act. A difficult lift in 2020. The CBD issued a report in January 2020 **Saving Life On Earth A Plan to Halt the Global Extinction Crisis*.** We asked Tierra about this report and the work of the United Nations to protect half of the earth by 2050.

the POLLINATOR: *The Center for Biological Diversity and the United Nations are working on goals to reduce global habitat loss to ZERO by 2030, and to enact protections of half of the Earth by 2050. Can you tell us about this?*

Tierra Curry: The Convention on Biological Diversity (CBD) is a multilateral treaty created by the United Nations in 1992 at the Earth Summit in Rio de Janeiro which now has 187 member countries. The United States is not a member. The treaty was signed by President Clinton in 1993 but never ratified by Congress. The treaty is world's bedrock international agreement addressing the biodiversity crisis.

In 2010 in Japan, the CBD nations set the Aichi Biodiversity Targets, 20 goals that nations were to work towards by 2020. One of the goals was for protection of 17 percent of terrestrial and 10 percent of marine areas by 2020. Currently about 16 percent of the terrestrial planet has been protected, but less than 8 percent of marine ecosystems.

In 2016 Harvard biologist E.O. Wilson published the book Half-Earth, calling for half the Earth to be protected for nature including terrestrial and marine areas.

In 2017 a group of scientists published a paper in BioScience An Ecoregion-Based Approach to Protecting Half of the Terrestrial Realm assessing the current level of protections and proposing a Global Deal for nature to reach the Half-Earth for nature goal for the terrestrial realm.

A coalition called Nature Needs Half* has now formed to unite people around the globe who are interested in working toward the goals of protecting 30 percent of the world by 2030 and 50 percent by 2050.

In the United States, in February 2020 former Interior secretaries Babbitt and Jewell joined Sen. Tom Udall (D-N.M.) in endorsing a conservation proposal billed as an effort to **"protect" 30% of the United States by 2030.*** The plan has been endorsed by candidates Buttigieg and Bloomberg.

The Center for Biological Diversity, a U.S. non-profit, has released a plan called **Saving Life on Earth*.** The Plan calls for the creation of 500 new protected terrestrial and marine areas in the U.S. to work towards the Half-Earth goal.

In preparation for the upcoming summit in October 2020, the CBD has released a **Post-2020 Global Biodiversity Framework*.** The framework has five long-term goals for 2050 related to the 2050 Vision for Biodiversity. The first goal is no net loss by 2030 in the area and integrity of freshwater, marine and terrestrial ecosystems by 2030 and increases of at least [20%] by 2050. The CBD goal for 2030 of no net loss is a weaker goal than the 30 by 30 movement is proposing.

the POLLINATOR: *How does this impact local communities? Obviously the goals set an example. Following the examples is a good idea right? How can local communiites act to protect half of the earth?*

Tierra Curry: It is imperative that local communities join in the 30 by 30 and Half-Earth efforts because they won't be realized without substantial grassroots involvement. We need the people to lead so that the leaders will follow. When the Keep It In The Ground movement to end fossil fuel development on public lands started, politicians dismissed it as a fringe, unattainable goal but now it has substantial political backing. Local groups are essential to identifying and working for the protection of natural areas.

*** Note** you can find these links on our **Links to Resources** Starting on Page 17

International Scientists Publish A Roadmap to Insect Conservation and Recovery

We Must Act Now to Curb Major Insect Threats of Climate Change, Pesticides, and Habitat Loss

By Dr. Tara Cornelisse
Center for Biological Diversity Senior Scientist, Pollinator Conservation Association Board Member

I have been studying and practicing insect conservation for over 15 years and while I've marveled at the adaptability of insects, I've also known that their specific habitat requirements make them vulnerable and susceptible to extinction. That's why I am encouraged to see that new research on insect declines is making big headlines and stirring support for insect conservation. One thing is for certain- we need to do more to conserve insects and we need to do it now.

To aid in global insect conservation efforts, I, along with 73 international scientists authored **a roadmap*** to insect conservation and recovery. The article was published in *Nature Ecology and Evolution* this past January. In the article we formally recognize the current insect extinction crisis and map out solutions, including immediate measures governments across the globe can take to stem the crisis. **This call to action*** follows recent evidence that upwards of 40% of insect species could be facing extinction. In fact, study after study continue to confirm that human activities have decimated insect abundance and diversity from **butterflies*** to **bees*** to **beetles*.**

Insects are not only victims of the current extinction crisis, but their loss also fuels further decline due to their importance in ecosystems. Insects pollinate up to 75% of crops and over 80% of flowering plants, are vital in nutrient cycling, soil aeration, decomposition, biological control, and as food for much of life on earth. We depend on insect predators like ladybugs to protect our crops while birds, bats, and fish depend on other insects as food.

Among the immediate measures we outline in the Roadmap to curb insect declines includes taking aggressive steps to reduce greenhouse gas emissions, replacing intensive agriculture with agro-ecological methods that reduce pesticide and fertilizer use, reduce local light and noise pollution, and protect, restore, and create microhabitat features for insect needs and as refuges during climatic events. Immediate measures also include implementation of policies that incentivize insect-friendly farming, provide for outreach and education, and to stimulate effective conservation strategies for vulnerable, threatened, and endangered insects.

A focal priority action presented in the roadmap is to define and conserve threatened species. In the last two years the Center for Biological Diversity, where I work as a senior scientist, has launched a **Saving the Insects campaign*** under which I have petitioned to obtain endangered status for **two native bees*** and a **firefly*** under the Endangered Species Act.

The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services recently warned world governments that **1 million species are now at risk of extinction*** and that urgent actions are needed to avert mass extinction in the coming decades- and that includes conserving insects. **Germany** has recently committed funds to an insect conservation action plan that protects habitats and reduces pesticides and the United States must follow suit to save our six-legged creatures.

The key conclusion of the insect conservation Roadmap is that "we should not wait until we have addressed every key knowledge gap. We currently have enough information on some key causes of insect decline to formulate no-regret solutions…***We must act now***."

ABOUT

Dr. Tara Cornelisse is a founding member of the Pollinator Conservation Association. She is a Senior Scientist with the Center for Biological Diversity. She works on species conservation within the CBD Endangered Species Program with a focus on arthropods. Prior to joining the Center, she was an assistant professor of ecology and conservation at Canisius College. Her research has centered around the populations and habitat requirements of insects, from endangered tiger beetles to native bees and monarch butterflies. She holds a doctoral degree in environmental studies from the University of California Santa Cruz.

Twitter: *@conservationbug*

Photos

Dr. Cornelisse at Times Beach Nature Preserve in Buffalo (2016) with young conservation students and with Pollinator Conservation Association Special Projects Director Jay Burney

Restoring Friendly Relations

Ecological reconciliation encourages biodiversity in human-dominated landscapes

by Steve Olson, Olson Design

"Culture exists inside of nature; without nature, humanity wouldn't exist on this planet. In the Anthropocene, nature exists inside of culture." -William Cronon

How can the pendulum be swung back towards culture existing inside of nature? Is it possible with our species heavy foot to restore equilibrium? Reconciliation ecology can help answer these questions.

Reconciliation ecology; a term coined by Michael Rosenzweig; is defined simply: the science of inventing, establishing, and maintaining new habitats to conserve species diversity in places where people live, work, or play.

There is no questioning the importance of preserving, restoring, and rewilding large landscapes and remnant ecosystems; however, there is more than one version of nature and more than one way to help save it. Rewilding the smaller landscapes that we occupy offers up a whole new set of benefits and should be considered part of the same complex working system as traditional conservation, in the quest to restore not only our land; but to restore our relationship with nature.

Many reconciliation design methods are already standard practice in the ecological designers toolkit: urban rewilding, biofilters, habitat gardens, naturalistic plant design, green roofs, etc. Some examples that show the full potential of reconciliation are the sponge cities in China, the many High Line inspired linear parks that are currently being built, the passing of legislation to include bird-friendly glass in NYC, parks like Landschaftspark Duisburg-Nord that are remediating brownfields while creating unique habitats, the application of 'low-tech' urban design methods which takes its inspiration from indigenous people's technology; and many great examples of reconciliation found right here in Western New York.

These practices offer an opportunity for pragmatic experimentation in the field of rewilding: revealing its flexibility. Traditional conservation and restoration may not be appropriate or even possible in highly disturbed urban areas, making it necessary to bring new perspectives to the table, with participation from many disciplines: landscape architecture, urban planning, public policy, etc.

Undeniably, the most important benefit from including biodiversity in anthromes, is the deconstruction of the most dangerous threat to nature's fate: the human/nature dichotomy. A child in awe while seeing a bald eagle on Lake Erie is an important interaction for an ecologically sound future. Giving all people access to nature will raise land stewards that come from many different backgrounds, creating much needed diversity in the ecological field. Not to mention that there are many proven health benefits gained from daily exposure to nature. Proximity to nature should be a human right, and not a luxury only afforded to those who purchase the most expensive real estate or those who can take expensive vacations to wild areas. For these reasons, reconciliation should be made a top priority for urban planners, et al.

While we watch as parts of the world burn, it's understandably difficult to look at our species as having any positive role in our environment. Reconciliation ecology can help reshape the way we think about our function within ecosystems and how we can thrive with meaningful impact.

Steven Olson, Co-owner of Olson Design, works on multiple projects with the Pollinator Conservation Association. He and his partner Megan Olson run an ecologically driven landscape design studio, specializing in naturalistic plant design and urban rewilding.

Presque Isle, Lake Erie 2019

Nature Based Climate Solutions

by Lynda Schneekloth

Anyone who is paying attention to the Climate Crisis knows that we must immediately stop using all forms of fossil fuels and ramp up renewable energy in all sectors. What people might not be aware of is that simultaneously we must 'draw down' carbon out of the atmosphere if we are going to be able to achieve hold the level of greenhouse gases to the 1.5 C degree limit required to maintain a habitable earth. Many of the ideas about carbon drawdown are included in the movement "Nature Based Climate Solutions." The methods proposed are rooted in ecological actions that we can take right now across the globe that not only draw down carbon, but expand and improve ecologically functioning systems at the same time.

The group, Nature4Climate has outlined the cost-effective, scalable and viable solutions that are possible. They propose three major actions: Protection, Management and Restoration. First and foremost, do no harm! Stop destroying the earth systems on which life depends by protecting forests, wetlands, grasslands and water systems. We also need to use much better management systems for forestry and particularly for agriculture and grazing – the way we produce our food. And last, we have enormous work to do to restore the habitats we have appropriated since the dawn of agriculture when we began the destruction of the original forest cover of the earth to feed us, humans, without understanding the consequences of local actions.

Let's look at just one restoration action that we can do everywhere right now – plant trees! We are beginning to hear a lot about the planting of trees across the earth – governments and non-profits and citizens everywhere are interested in planting trees as a part of climate action. This is fantastic because trees over their lifetime drawn down carbon and enrich the soil. But wait! *All trees are not equal.* To be a Nature Based Climate Solution, certain criteria must be attended to, including the requirement that this action is not considered an 'instead of' stopping fossil fuels, but 'in addition to' other climate actions, nor is it the planting of a monoculture after the destruction of an intact forest! Further, there are right trees for the right places. We may see a tree as a stand alone being with roots/truck/branches, but the tree itself is a part of a community that includes many other creatures from micro-organisms in the soil, to pollinators, to birds that feed and disperse seeds. Tree do a lot of work we may not see, including pumping water from below ground into the air, something you can actually hear if you put a stethoscope on the trunk. It is critical that the trees that are planted are a

part of the regional ecology of the place because that is their 'people', that is their biodiversity home and where they can contribute to the health of the region and the base of the food chain. That is a nature-based climate solution. And one more criteria to consider specifically with tree planting is the relationship of this program to the local community. This is one climate action that everybody can do, everybody can contribute and feel the empowerment that comes from planting trees helping to prevent climate catastrophe and addressing the biodiversity crisis. So let's get planting – the right trees in the right place with the people who live there!!

Let's save existing forest and trees but build on that foundation to move us to a more sustainable planet.

About

Lynda Schneekloth is a professor emeritus at the State Univeristy of New York at Buffalo. She is a long time climate, social and environmental activist. She is one of the founders of the Buffalo-based Native Plants Collaborative, the Our Outer Harbor Coalition, and is the Chair of the Western New York Environmental Alliance. She works with Youth for Climate Justice, and is on the Board of the Pollinator Conservation Association.

Times Beach Nature Preserve, Downtown Buffalo New York 2020

BEST PRACTICES

A GUIDE TO DOING POLLINATOR CONSERVATION THE RIGHT WAY -Compiled by PCA Staff

Knowing and following **Best Practices** and designing a responsible care regimen will help make projects successful. This is true for a personal garden, a volunteer community oriented project, or a landscape scale professional installation. This guide will help to ensure that any project has long term success. Plan ahead and have a long-term regnerative context. This is true whether or not you are planting a tree, a billion trees, creating a pollinator garden, meadow, or wetland or any other ecosystem related conservation project. This article provides some important guidelines. More details can be found on our **Pollinator Conservation Association Website**

http://www.pollinatorconservationassociation.org/best-practices.html

Best Practices Can be roughly divided into the following categories: Site Selection and Analysis; Design and Installation; Maintenance; Management.

Site Selection and Analysis

Whether you have an existing site, or are searching for a site, it is important to understand the context of what exists, and what you expect of the project. Once you identify the purpose of the site, for example, a long term regenerative conservation site, an educational project, or a mixture of both, you can undertake a site search or an analysis of what you have to work with.

1. Understand the Natural History of the site. This analysis will help you to determine what pollinators might relate to the site, and will help to determine what pollinators you want to attract to the site. What are the soil conditions? Anthroprogenic soils? Historic soils types? Do you need to provide watering?

2. Take a wholistic view of conservation. What other wildlife do you want to benefit from the conservaton project? Birds, mammals, amphibians, reptiles, other insects, soil microorganisms?

3. What is the contemporary use of the site? Who owns it? What Existed prior to its most current use? What is the ecological context of the site (was this once a forest, a wetland, a meadow, etc.) What do you want to accomplish with the site. We encourage picking a site that will have a long term regenerative opportunity. Identify native plants and native pollinators that use the site now. Protect what already exists.

Design and Installation

1. Once you have determined what you want to accomplish with the site, you can design a project that meets expectations. Consider the long term regenerative habitat contexts including "plant

community" associations. These communities contribute to habitat stability, which is a primary conservation goal. What will the site look like in 5 years, 10 years, 50 years or longer? Plan for this.

2. Select native plants that have been produced with locally sourced, genetically appropriate history. Make sure to include habitat considerations that include all seasons. This could mean plants that flower in different seasons, and if you are in a winter zone, that continue to provide habitat resources throughout the cold weather. Sites should provide food, forage, and nesting and hibernation or overwintering protection. Consider all season habitat for the other wildlife that you are helping to conserve. Different plants require different planting schedules.

3. Avoid site and soil disturbance as much as you can. If you are using existing soil, any disturbance may contribute to inviting unwanted invasive plants and the disruption of native pollinator lifecycles that are on the site. If you are introducing soil media or compost, make every effort to ensure that it is clean and free of unwanted seeds.

4. Avoid chemicals. Using pesticides or herbacides at any stage of the project, but especially when the initial installation takes place, will disrupt native pollinator lifecyles. You are working to encourage and protect. It is important to make every effort not to poison them.

Maintenance

1. Maintenace Best Practices can be as varied as the individual sites. In general it is important to use few if any chemicals and to focus work on seasonal cycles. Native Pollinators and other wildlife will use sites 12 months a year. Understanding how they use the site is critical. This will affect things such as mowing, weeding, schedules, additional planting schedules, etc. This means understanding how native pollinators use sites.

2. In general, in a properly designed site, the maintenance will be higher in the first several seasons then in future seasons. Plan for that. it is important to give the site at least 3 years, longer if possible, to establish itself and turn into a naturally regenerative site.

3. Regularly monitor the site for all issues including waterering needs, plant and site health, and invasives. This will be more intesne in the first season and the next few. Long term monitoring strategies (at least once a month for several years) can only help maintain the sites health, capacity, and survival.

Management

A crucial aspect of long term success involves practices including ownership committment to the site (sites should be designed to last for decades) Long term maintenance committments, and when appropriate training for contractors, subcontractors and employees. It is important to make sure than anyone that provides services to the site, especially incuding mowing, understand that the site is a conservation site and that there are certain best practices including seasonal strategies, least toxic strategies, and monitoring.

For More information on Best Practices visit our website:
www.pollinatorconservationassociation.org/best-practices.html

A Master Naturalist Minute

A Check List of Best Practices for Pollinators

by Michelle Vanstrom

Because of the close association between native pollinators and the native plants they've co-evolved with, it's important to learn which plants are considered native to your specific location as well as the native plants that naturally occur together, the various native plant communities. Many native bees and insects do not range more than a few hundred feet. Here, native plant refers to true species and native plant communities are plants that were found growing togethes r pre-European settlement. The eco or bio region for the suggestions below are for the Carolinian Forest, an eastern broadleaf deciduous forest that extends into Ontario, Canada. It's rare in Niagara and Erie Counties because we are at it extreme edge. "The Carolinian Zone is also known as ecological site region (ecoregion) 7E[2,3]. It covers approximately 22,000 km^2 in extreme southern Ontario, extending northeast from the United States border to Toronto, and northwest to Grand Bend on Lake Huron. It is bounded by four major lakes (Huron, St. Clair, Erie and Ontario), and the St. Clair, Detroit and Niagara rivers. Climatically and biophysically it shares more with the "hot continental (broadleaved forests)"[4] of the north-central United States than with the "warm continental (mixed deciduous-coniferous forests)" division farther north[3]."

Use Locally Sourced Native Seeds

-Priority should be given to identifying, collecting, and using seeds from local native forbs, grasses, and other beneficial pollinator plants
-Develop local native seed inventories:
-Consult a botanist familiar with local plant species
-Collect seeds when they naturally fall from the plant
-Monitor seed maturation, insect damage, and other damage levels before collection
-Document seed collection with standardized location data and herbarium specimens
-Collect a seed sample from more than 50 individuals within a single large population equally and randomly while maintaining a record of the number of individuals sampled. This maximizes the genetic diversity.
-Limit collection to no more than 20% of the viable seed on any plant
-Ensure seeds don't overheat. Don't leave in vehicle
-Ventilation should be maintained around seeds
-Use paper or cloth bags, avoid plastic
-Spread moist seeds on newspaper to dry naturally, either outside in shade or a well-ventilated room
-Clean seed, place in proper storage facility to maintain viability
-Test seeds for germination prior to use
-Work with native plant growers to increase seed availability.

Best Practices - Foraging
-Provide Food – Nectar and pollen sources. Pollinators require both.
-Choose plants that provide food sources from early spring to late fall.
-Provide a variety of flower shapes and sizes. Avoid double flowering plants, which are generally horticulturally cultivated plants.
-If you must use annuals, select old fashioned, heirloom varieties.
-Incorporate pollinator friendly native plants.
-Plant in drifts, a minimum of three. Monarchs require a minimum of ten plants.
-Rewild Your Yard.
-Plant at least FOUR native trees and shrubs, any combination. The following are not complete lists.

INCLUDE AT LEAST 9 DIFFERENT SPECIES OF NATIVE PERENNIAL FLOWERS
Must include at least 3 from each season grouping. Please make sure that the plant you have corresponds to the Latin name.
-Plants in groups of 3 or more.
-Caterpillar Food Sources.
-Minimum: 2 host plants are required.

Best Practices – Provide Water Sources
-Bird bath or shallow water source
-Butterfly puddling area
-Water garden / pond
-Stream
-Spring

Best Practices - Shelter for over wintering and nests
-Bare ground spaces - untilled, unmulched, well drained
-Rock pile / wall
-Dead wood and dried stands of grass
-Manmade boxes
-Leave garden clean up until spring
-Leave leaf litter

Best Practices - Safeguarding Pollinator Habitat
-Practice Integrated Pest Management
-Avoid pesticides / insecticides
-Identify / Remove Invasive Plants Including:

Autumn olive, Burning Bush, Bush Honeysuckle, Butterfly Bush,Callary Pear, English Ivy, Himalayan Balsam*, Japanese Angelica Tree*, Japanese Barberry, Japanese Honeysuckle, Japanese Stiltgrass*, Japanese Knotweed, Mile A Minute Vine*, Multiflora Rose, Norway Maple, Oriental Bittersweet, Privet, Porcelain Berry*, Purple Loosestrife, Scotch Broom*, Slender False Brome*, Tree of Heaven, Water Hyacinth*, Water Lettuce*, Wavyleaf Basket Grass*, Yellow Floating Heart*
*Western NY early detection priority

Best Practices – Reproduction
-For specific butterfly and moths appropriate larval host plants should be used.
-For native bees sufficient ground nesting areas, snags, or bee blocks should be available.
-Ground nests should face south so they have sun for most of the day.
-Nest blocks need sun on the holes in the morning and not the afternoon
-Bumblebees prefer partial shade for nesting
-For hummingbirds and doves, nesting habitat (native plants) should be present
-Provide nesting materials – leaves, petals, plant down, mud, water

Best Practices Connectivity – Bees
-nesting and foraging habitat should be close together to benefit the most species and provide optimum conditions
-Bumblebees nest in small cavities – rodent holes, under thick grasses, in brush piles, or in stone walls

Best Practices – Lawns
-Raise mower height to 2.5 inches
-High traffic areas – mow every 2 weeks, every 3 weeks in low traffic areas
-Develop a mowing rotation plan to ensure lawn flowers persist through the growing season
-Reduce the size of the lawn
-Minimize insecticide and fertilizer use
-Leave bare soil patches for nesting
- Add information benefits sign(s)

Best Practices – Monitoring
-Seasonal surveys of insects
-NABA Counts
-Photo documentation
-Certify your yard

Sources
-NAPPC (North American Pollinator Protection Campaign)
-Penn State College of Agricultural Sciences
-www.fs.fed.us/wildflowers/pollinators
-Xerces Society
-National Wildlife Federation
-WNY PRISM
-Pollinator Friendly Best Management Practices for Federal Lands
-[2,3,4] https://caroliniancanda.ca/

Niagara River Greenway may be the key to our resilient future.

By Jay Burney

November 2019. Times Beach Nature Preserve, meet your natural mother -Lake Erie. Historic high water levels and intense storms, some with Hurricane force winds created seiches that destroyed protective breakwalls around the City of Buffalo harbors, washed away much of the protective dike around Times Beach which is located in downtown Buffalo New York. There is now just water washing back and forth. Much of our local shorelines and harbor breakwalls have been compromised. The city of Buffalo is at risk as more intense storms are predicted. It is time to address the future with bold plans that include the creation of resiliency zones.

The Niagara River Greenway from Lake Ontario to Buffalo's Outer Harbor is a brilliant designation that can continue to be a very important part of the future of our international region. Today the Greenway has significant protections and designations including the Niagara River Globally Significant Important Bird Area, and the Ramsar Wetland of International Importance designation. These designations help to characterize our region as frontline biodiversity places and offer protections for a whole lot of clean, fresh water. Fresh potable drinking water is on a fast track to becoming the most valuable asset on Earth. How we treat this area will help to determine our future.

There is a lot of talk these days of establishing colonies in space so that the future of the human race is secured. Although there is no doubt that our species benefits greatly from the science that comes from exploration, let's not forget that we can, and perhaps we must, apply that technology and data, and all the money that is being talked about, on creating protected Earth sites such as the Niagara River Corridor.

Climate change brings with it both unstable and often unpredictable weather patterns and consequences. Natural areas – areas that promote biodiversity, clean water and clean air – are critical resources when it comes to helping to stabilize the atmosphere, and help this beautiful planet to sustain life, including our own.

Recent and historic high water levels in the Great Lakes, and increasingly intense storms, have impacted this region and have created property damage and contribute to life threatening scenarios. These new and troubling realities are here to stay. We have to transform how

we design and develop our shorelines and our communities. Today the United Nations and the Center for Bioligical Diversity are developing global goals to reduce habitat loss to ZERO by 2030, and to protect half of the earth by 2050. The Niagara River Greenway, the Buffalo Outer Harbor, and the watersheds that feed these areas are perfect opportunities to create a local contributions to the global plan. If we create "resiliency zones", they will serve as quality of life preservers for future generations.

We have to have a plan, and not just a small plan. Our region has become great because we dare to dream big. What is our plan? New York's Governor Cuomo declared a state of emergency after this region faced the forces of several storms from Halloween until Thanksgiving in 2019. Our regions shorelines from Buffalo's Outer Harbor and throughout the Greenway suffered enormous damage. This January the Governor announced a $3 billion bond act "Restoring Mother Nature" designed to stem the tide of high waters that are increasingly characterizing climate change. It is time that our region create a plan to capure a portion of that investment, and resiliency zone's provide perfect opportunities to characterize how that investment would work.

The best news is that there is still plenty of time to save our Earth. A few years back, E.O. Wilson, the famed Harvard scientist wrote a book called "Half-Earth" in which he postulated that it would take a concentrated effort to protect fully one-half of the earth's natural resources, including habitats such as forests, lakes, grasslands and shorelines by putting them off limits to anarchistic human development. Today the United Nations and the Center for Bioligical Diversity are taking up the fight.

Historic high water levels are effecting communities all over the Great Lakes. Creating resiliency zones that address sustainability contexts including economy and social justice, with the bottom line being the environment, is the right direction in which to be going. The Niagara Greenway is a substantial natural and cultural place. Waters of the Great Lakes (20% of Earth's fresh surface water) pass through here. This increasingly rare asset supports plant and animal biodiversity that is fundamental to the way our region affects and contributes to hemispheric and global health. The ongoing and continued greening of the Niagara River Corridor is an opportunity that the Greenway can help us to design a better future. For example we should start thinking of places like Buffalo's Outer harbor as a "barrier island" that will help to reduce storm and flooding threats to the City of Buffalo. Currently there are plans to develop sprawl in this fragile area that should be used to protect the city of Buffalo. Imagine a continuos green zone, even a park, stretching from downtown Buffalo to the City borders along Lake Erie and beyond. In the good times this green area, kept public, will be an important contributor to the quality of life for people and biodiversity and will have a tremendously positive economic impact on the local economy. In the bad times, including the sure to come increasingly powerful storms and high water levels, this barrier island, the anchor of resiliency for the city of Buffalo, could save lives.

This is the plan we should be investing in. This can help to ensure that future generations have a quality of life that will support them. How we design plans to protect this will make all of the difference to the next generations. I propose that we create a declaration that the Niagara River Greenway, including the Buffalo Outer Harbor and its associated watersheds, become the first North American Resiliency Zone. Protecting ecology and people is a peaceful, just, and verdant goal that we can attain.

Earth is a rare paradise. We can create a place here that is responsible, resilient and regenerative. We can plan for a brilliant future. The good news is that we have already started.

Links and Resources

*** Asterisk in Articles Refer to the Following Links.**

Front Cover: *Goldenrod Gall*
http://www.naturenorth.com/winter/gallfly/gallfly1.html
https://wimastergardener.org/article/goldenrod-gall-fly-eurosta-solidagnis/

EDITORIAL: *Our Vanishing Biodiversity and Plans to Save Life on Earth*/Jay Burney

Ramsar Wetlands
http://www.birdsontheniagara.org/ramsar.html

North America has lost 3 Billion Birds Since 1970/Cornell Lab of Ornithology
https://www.birds.cornell.edu/home/bring-birds-back/

Insect Populations are Vanishing/The Guardian
https://www.theguardian.com/environment/2019/feb/10/plummeting-insect-numbers-threaten-collapse-of-nature

Spring 2019 **The POLLINATOR**
http://www.pollinatorconservationassociation.org/the-pollinator.html

Convention on Biological Diversity **Framework Plan**
https://www.cbd.int/doc/c/efb0/1f84/a892b98d2982a829962b6371/wg2020-02-03-en.pdf

INTERVIEW: *Tierra Curry: Saving Life on Earth*

Center for Biological Diversity
https://biologicaldiversity.org/

Report: Plan for Saving life on Earth/Center for Biological Diversity/January 2020
https://www.biologicaldiversity.org/programs/biodiversity/elements_of_biodiversity/extinction_crisis/pdfs/Saving-Life-On-Earth.pdf

Bioscience Paper: An Ecoregion-Based Approach to Protecting Half of the Terrestrial Realm
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5451287/

Nature Needs Half Coalition
https://natureneedshalf.org/

Senate Bill: by Udall, Bennett, Durbin, Harris, Booker to protect 30% by 2030
https://www.tomudall.senate.gov/imo/media/doc/2019-10-15%20Udall%20Bennet%2030X30%20resolution,%20FOR%20INTRO.pdf

Report: Convention on Biological Diversity Post 2020 Framework
https://www.cbd.int/doc/c/da8c/9e95/9e9db02aaf68c018c758ff14/wg2020-02-03-en.pdf

More on **Tierra Curry**
https://www.biohabitats.com/newsletter/threatened-and-endangered-species/expert-qa-tierra-curry-threatened-and-endangered-species/

ARTICLE: *International Scientists Publish A Roadmap to Insect Conservation and Recovery*/Dr. Tara Cornelisse/ Center for Biological Diversity/Pollinator Conservaton Association

Report Roadmap to insect conservation and recovery/Nature, Ecology, and Evolution
https://www.nature.com/articles/s41559-019-1079-8

Press Release: Center for biologival Diversity February 2019 "New analysis: Curbing Pesticides Key to Reversing Insect Apocalypse"
https://www.biologicaldiversity.org/news/press_releases/2019/pesticides-02-01-2019.php

Butterflies: Abundance declinew over 20 years of systematic monitoring in Ohio/PLOS ONE/July 2019
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0216270

Bees: Patterns of Widespread Decline in North American Bumblebees/PNAS 2010
https://www.pnas.org/content/108/2/662.short

Beetles: Decline in beetle abundance and diversity in an intact temeprate forest linked to climare warming December 2019 Science Direct
https://www.sciencedirect.com/science/article/abs/pii/S0006320719310572

Saving the Insects Campaign, Center for Bioligicial Diversity
https://www.biologicaldiversity.org/campaigns/saving-the-insects/index.html

Two Native Bees: https://www.biologicaldiversity.org/campaigns/saving-the-insects/native-bees.html

Firefly: https://www.biologicaldiversity.org/campaigns/saving-the-insects/fireflies.html

Summary for Policymakers:Global Assessment Report "1 million species now at risk of extinction"
https://www.biologicaldiversity.org/programs/biodiversity/pdfs/Summary-for-Policymakers-IPBES-Global-Assessment.pdf

Germany: Insect Protection Plan/Science/September 2019
https://www.sciencemag.org/news/2019/09/100-million-german-insect-protection-plan-will-protect-habitats-restrict-weed-killers

ARTICLE: *Resiliency Zones in the Niagara Region*/Jay Burney

Niagara River Greenway Commisison
https://www.niagararivergreenway.com/nrgc-plan

The Niagara River Corridor Globally Significant Important Bird Area
http://www.friendsoftimesbeachnp.org/niagara-river-corridor-globally-significant-important-bird-area.html?fbclid=IwAR0VPnx2Kf_gCSo-6o_N2AzqnDCARxqvJRPswH_V38XkpawrakzqUmPnmEQ

Ramsar Wetland of International Importance/UB Law
https://www.law.buffalo.edu/beyond/clinics/environmental-law/niagara-river-corridor.html?fbclid=IwAR2Kx6Yo3aEKQKzCaaaOwJF7grreCnu33kMA4mhB5tn2cs4uuOJg-dAfgck

BACKPAGE

THE VISIONARY DEVELOPER DECIPHERS THE COMPLEXITIES OF THE CITY'S GREEN CODE FOR THE DIMWITS WHO JUST DON'T UNDERSTAND

Today, the people of Western New York are engaged in broad ranging discussions, with private developers, elected officials, outdoor enthusiasts, the media, and conservationists about the best and highest uses of Buffalo's Outer Harbor. The Outer Harbor is located at the confluence of Lake Erie, the Niagara River, and the Buffalo River. It is just adjacent to downtown Buffalo, but not easiy acceible by auto. Bikes and pedestrians can get a quick ferry ride from canalside to near the Times Beach Nature Preserve. Recent historic high water levels, and storms incuding powerful seiches and hurican force winds have brought tremendous flooding and damage to Canalside, and to virtually all locations along Buffalo's Outer Harbor. Incrediibly, plans to develop condo's and other mixed use developments on the most sensitive and dangeorus areas continue to grab the headlines. The developers also have a hand reaching deep into the public pockets as public investments will be required to make this sprawl happen. We are on the case!

THE VISIONARY DEVELOPER ADMIRES HIS OUTER HARBOR LOCATION