



Bangor Land Trust

NEWS LETTER

Spring/Summer 2021

photo courtesy of Justin Poland

ECOSYSTEM SERVICES *By Grace Bartlett*

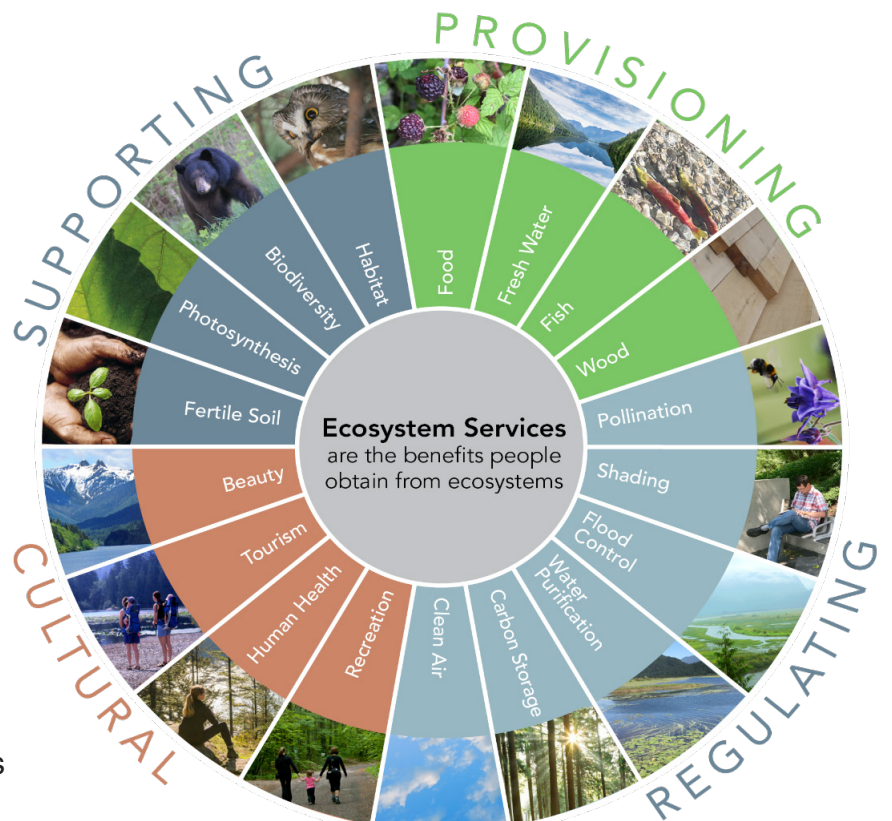
Human Populations and the Global Environment was one of the most thought-provoking courses I've had. As the name implies we covered earth's systems and how humans have affected those systems across time. One tool that was particularly helpful for me was the ecosystems services wheel. It expanded my understanding and appreciation of earth and earth's systems. Last winter the Program Committee decided to use this insightful instrument to talk about the value of Bangor Land Trust Preserves. You will find our piece further in the newsletter, but first what are ecosystem services and where did the concept come from?

An ecosystem service is a process or condition that benefits other parts of an ecosystem. For example, through the process of photosynthesis plants use the sun's energy, water, and carbon dioxide to make food for themselves. In turn the plants release oxygen which is necessary for all living beings. The plants can be food for humans and wildlife. These are services that support and provide for life within an interconnected web of life.

After Earth Day #1 (1970) there was an enhanced awareness of how humans had extracted and exploited the earth's resources. The concept of ecosystem services emerged in 1977 and developed through the 1990s. Identifying ecosystem services,

and quantifying their value, moved thinking beyond conventional market value ideas. In conventional economic thinking trees would be valued for timber. Using the ecosystem services model, controlling flooding and erosion, regulating temperature (shade-cooling), and sequestering carbon would add additional value.

~ continued on page 5



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A LETTER *from* BANGOR LAND TRUST PRESIDENT

Lucy Quimby
President



Lucie Estabrook
Vice President



James Hinds
Treasurer



Chris Dalton
Secretary



Brian Ahern
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Dave Thompson



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Dear Friends and Supporters,

With this and our fall newsletter, we're tackling an ambitious project: defining the value of undeveloped land, land that we conserve and care for in its natural state.

When European colonists came to what is now North America they established forms of ownership that treated land as a commodity that had defined boundaries and could be bought, sold, and traded. They valued land in monetary terms. Over time, the consequences of this way of thinking began to become clear; it led to the degradation of rich wilderness.

Naturalists, conservationists, and scholars sought new ways to define the value of land. They began to talk about "ecosystem services." They divided the ecosystem into sectors and described how each sector serves all of the other sectors, including humans, within a complete network of life. The front page and pages 4-5 explain this concept and how it has evolved. When you look at an acre of mature forest, do you think about future house lots and board feet of lumber? Or, do you see trees taking carbon out of the atmosphere, helping rain soak into the underground water table, and serving as homes for birds and other animals? Discussions about how to define this value have of course changed over time in response to concerns over the impact of human activities on the natural world.

As a charitable organization in Maine, Bangor Land Trust is committed to bringing value to our community. Like other charitable organizations we are exempt from property taxes. We take seriously our obligation to return value to our community. In these months of COVID, when so many of us have needed to stay close to home, what value have you found in Bangor Land Trust preserves? Have you had a deeper experience of these values?

The concept of an interconnected ecosystem, with all parts both serving and influencing each other, helps us to think more accurately about both human responsibilities and the benefits to humans of a healthy ecosystem.

In the fall newsletter we will turn to a culture that inhabited this part of North America long before the arrival of any Europeans. We will explore the Native American understanding of the place of humans in nature, and how to think about value.












Best wishes for good health and thank you for supporting Bangor Land Trust!

Lucy Quimby

Bangor Land Trust Nature Bingo Game

Spring Wildflowers in Walden-Parke

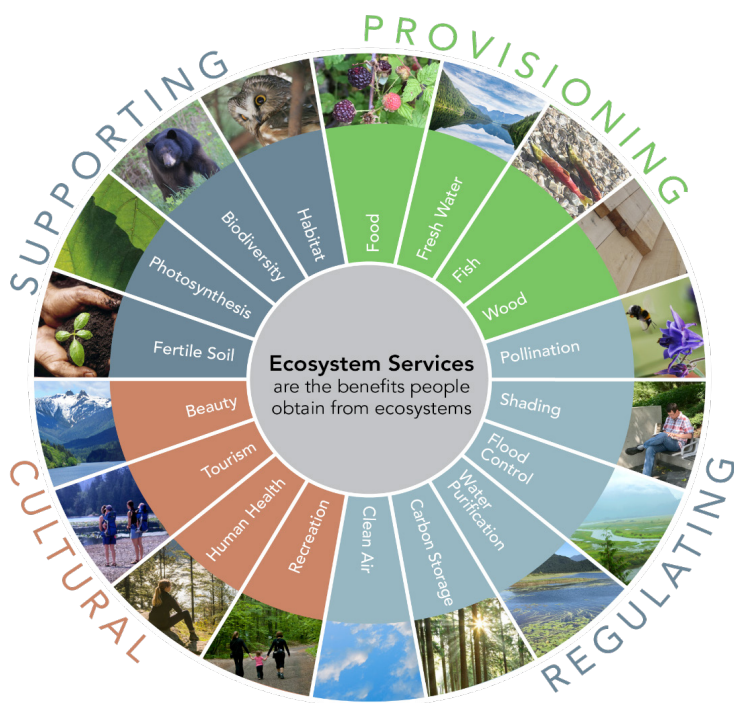
How to play: Look for the flowers in Walden-Parke preserve; when you find one, enter the date in the box below its picture. When you find 4, all in a row, a column, or on one of the two diagonals of 4 boxes, you have completed the game. Send a copy of the completed card to info@bangorlandtrust.org or postal mail a copy to Bangor Land Trust, PO. Box 288, Bangor, ME 04401 and make arrangement to receive a Bangor Land Trust water bottle prize.

			
Canada Mayflower	Northern Blue Violet	Painted Trillium	Yellow Clintonia
Date:	Date:	Date:	Date:
			
Starflower	Fringed polygala	Red Maple	Pussy Willows
Date:	Date:	Date:	Date:
			
Bunchberry	Rhodora	Trailing Arbutus	Pink Lady's Slipper
Date:	Date:	Date:	Date:
			
Blue Flag	Red Trillium	Jack-in-the-Pulpit	Foamflower
Date:	Date:	Date:	Date:

ECOSYSTEM WHEEL

Land values have historically been expressed in dollars as related to development potential. As a result, undeveloped land, especially wetlands, have been under appreciated. Ecosystem services shows us that all land, including Bangor Land Trust acreage and wetlands, is valuable.

Here is how.



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I. Supporting: These services underpin all other ecosystem services.

A. Fertile Soil: As plants, trees, and animals die and decompose, nutrients are released and enrich the soil that supports new growth.

B. Photosynthesis: Green plants use the sun's energy, water, and carbon dioxide to make food for themselves and us. The plants release oxygen that we need to breathe.

C. Biodiversity: The air we breathe, water we drink, and food we eat ultimately relies on the biological diversity of life. The greater the variety of life forms (species richness), the greater the health and resilience of an ecosystem.

D. Habitat: Habitat loss is the greatest threat to biodiversity and life as we know it. Bangor Land Trust Preserves provide a variety of habitats for a

variety of plants, animals, and organisms. Habitats include grasslands, mixed hardwood and conifer forests, marshlands, and stream side riparian zones.

II. Provisioning: These services provide material and energy outputs: food, fresh water, raw materials.

A. Food: Bangor Land Trust Preserves provide food and shelter for resident deer, bear, and other large mammals. The BLT Edible Landscape Project plantings are increasing food accessibility for humans.

B. Fresh water: Wetlands filter water, returning purified water to the water table. Water on the Preserves provide a nursery for fish and other aquatic species.

C. Fish: Fish and aquatic invertebrates in BLT Preserves provide food for birds and small mammals. They in turn provide food throughout the entire food web. This augments biodiversity.

D. Wood: Trees provide cavity nests for birds and homes for insects and spiders, which in turn help feed birds. Trees also sequester carbon, provide cooling, and oxygen - all essential for our wellbeing.

III. Cultural: These are non-material services that enhance human wellbeing.

A. Recreation: BLT Preserves provide miles of trails to walk, run, mountain bike, and snowshoe. Birdwatchers come to see local and migrating birds. Some come to learn about the outdoors for BLT is a great field laboratory. These enjoyable activities aid our health.

B. Human health: Studies indicate that being in nature helps decrease high blood pressure and high blood sugar, while adding to a sense of calm and balance. Access to green space decreases mortality and increases mental health and wellbeing.

C. Tourism: Birdwatchers, entomologists, those wanting to learn about and experience nature come to BLT Preserves, as do people looking to exercise. This brings economic expenditures to the Bangor area.

D. Beauty: Photographers visit the Preserves, as well as people who enjoy solitude. For many people being in nature is spiritual and meditative.

IV. Regulating: These are services of processing and assimilating pollution, stabilizing water flow and soil erosion, controlling local climates, and storing or sequestering carbon.

A. Clean air: BLT's forested lands absorb pollutants (nitrogen oxides, ammonia, sulfur dioxide, and ozone) and filter particulates out of the air trapping them on leaves and bark.

B. Carbon storage: Trees absorb carbon dioxide and remove excess carbon from the atmosphere, thus helping to fight climate change. Oxygen is released into the air.

C. Water purification: Toxins in groundwater bind with inorganic material in the wetlands. The toxins are filtered out as the water returns to the water cycle.

D. Flood control: Wetlands hold excess water in times of flood and in drought conditions they empty that water into the watershed, limiting the drought.

E. Shading: BLT leafy tree cover cools our city in hot summer months and helps reduce our energy usage.

F. Pollination: BLT Preserves are home to birds, bees and other insects that pollinate our crops and flowers.

Whether forests, grasslands, or wetlands, undeveloped land, such as BLT Preserves, are very valuable because of the ecosystem services they offer. We rely on these services for the staples of life: the air we breathe, the water we drink, the food we eat, and the places we go for solitude, beauty, and exercise. Please help us to continue to protect these vital lands, as they continue to benefit us and all creatures.

In 1995 a group of 13 conservation and environmental scholars held a meeting regarding publication of scholarship on ecosystem services. Robert Constanza suggested that perhaps they could quantify the global ecosystem services. The group agreed. They used existing academic literature to assign values across 16 biomes. They calculated global ecosystem services to be worth US\$16-54 trillion per year with an average of US\$33 trillion per year (Constanza, et al., 2017)

An article about the results was published in the journal *Nature*, and later ran in news publications like the *New York Times*, *Newsweek*, and *BBC*. The response was hugely positive and controversial. Some felt it was inappropriate to assign a price tag to nature. Others thought the value was too high. They reasoned, how could the dollar figure be more than the Global Domestic Product (GDP)? Still others thought it was too low, given that nature was priceless. Most, however, understood that ecosystem services were more valuable than conventional market value alone.

Ecosystem services began where many people were with dollars and cents. It then nudged people to look beyond current thinking and beyond current development policies. It was a starting place, not an end point. Ecosystem services moved humans out of the center of creation to a place of being one species among other species in a complex interdependent web of life. Robert Constanza summed it up. "...rather than implying humans are the only thing that matters, the concept of ecosystem services makes it clear that the whole system matters, both humans and the other species, we are interdependent with." (Constanza, et al., 2017)

Over the course of last year the BLT program committee fashioned a tool to provide an ecosystem services analysis of our preserves. We did not assign monetary value, but did want to show how mixed forests, vernal pools, and the marsh are valuable in and of themselves. We invite you to ponder our ideas and perhaps, come up with your own for places near and dear to you.

Resource:

Costanza, R., de Groot, R., Bratt, L., Kubiszewski, I., Fioramonti, L., Sutton, P., Farber, S., & Grasso, M. (2017). Twenty years of ecosystem services: How far have we come and how far do we still need to go? *Ecosystem Services*, 28, 1-16.

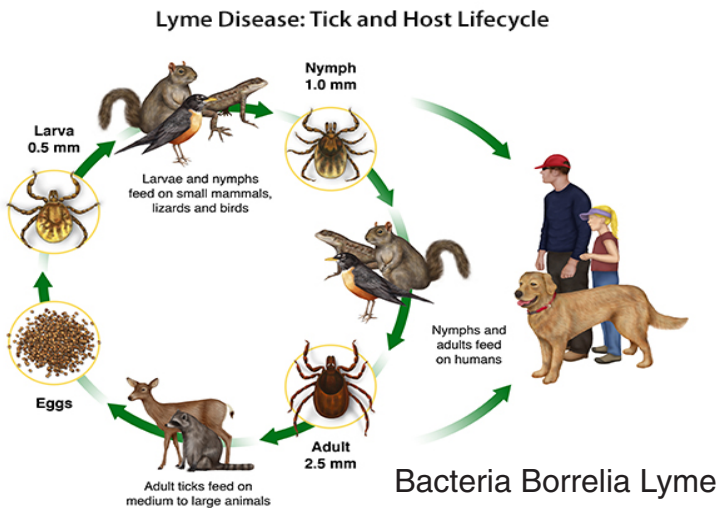
SAFETY FOR EVERYONE ON BANGOR LAND TRUST PRESERVES

As the poet Gary Snyder wrote, "Nature is not a place to visit, it is home." It is indeed our home. It is where human beings evolved over millennia. That is why a walk in the woods, looking for birds, photographing flowers, or just sitting under a tree is such a good way to calm our minds and reduce stress. In these difficult times, beset by COVID, we want to be sure that everyone seeking wellbeing in our preserves is safe there.

Two major threats to our health are bacteria carried by deer ticks that cause Lyme and other diseases, and the COVID virus. Safety requires taking precautions against both.

To avoid tick-born diseases, dress defensively with pants tucked into socks and shirt tucked into trousers, wear light-colored clothing to make it easier to see ticks that may have climbed aboard, and do a thorough tick check when you get home. Treating your clothes with permethrin is a good way to repel ticks. The Maine CDC website has excellent information on ticks.

Having BLT preserves be safe in the time of COVID requires that each of us be thoughtful of others that we may meet. The COVID virus spreads through aerosols – from the lungs of someone breathing deeply. People who are not yet showing symptoms and unaware that they are sick can and do spread COVID. Please stay at least 6 feet from everyone not masked or fully vaccinated. If you are moving fast along a trail, please yield to more slow-moving walkers. If you are on a bike, please stop and figure out with the person you are passing how you can maintain physical distancing in a way that is comfortable for both parties.



The Bangor Land Trust newsletter is available to view in full color on our website www.bangorlandtrust.org (use your phone's QR code reader to bring you to the website!)

Bangor Land Trust can also be found on facebook, follow us for updates

H

ave you been thinking about a way to make a difference that will last even after you're gone? You can give an enduring gift of Bangor's wild back yard to future generations by making a bequest to Bangor Land Trust in your will.

For more information call 942-1010 or send a message to info@bangorlandtrust.org.

"Nature is not a place to visit, it is home."

Gary Snyder



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Thank You to Everyone!

We couldn't do what we do without your generous support!

If you would like to learn how to sponsor Bangor Land Trust please visit our website or call



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The accreditation seal is awarded to land trusts meeting the highest national standards for excellence and conservation permanence.



Bangor Land Trust received wonderful gifts this spring from Professor Connie Albertson's Art as Activism class at UMaine: Lovely illustrated recipe cards – watch for one when you get a thank you note from BLT!

Artwork to illustrate bilingual Penobscot/English signage for the Edible Landscape Brochures describing the Edible Landscape Project.

100 gorgeous cotton T-shirts featuring the Edible Landscape. The students competed to create a design that was to be chosen by Bangor Land Trust. They have given us the copyright to the design, so that we can use it in the future. We thank the talented artist, Jessica Hamilton-Jones, whose design we chose!



Online identification sites:

- <https://bugguide.net/node/view/15740>
- <https://gobotany.nativeplanttrust.org>

- <https://www.birds.cornell.edu/home/>
- <https://www.realtimerendering.com/flowers/flowers.html>
- iNaturalist app and website