Otter Creek Audubon Society

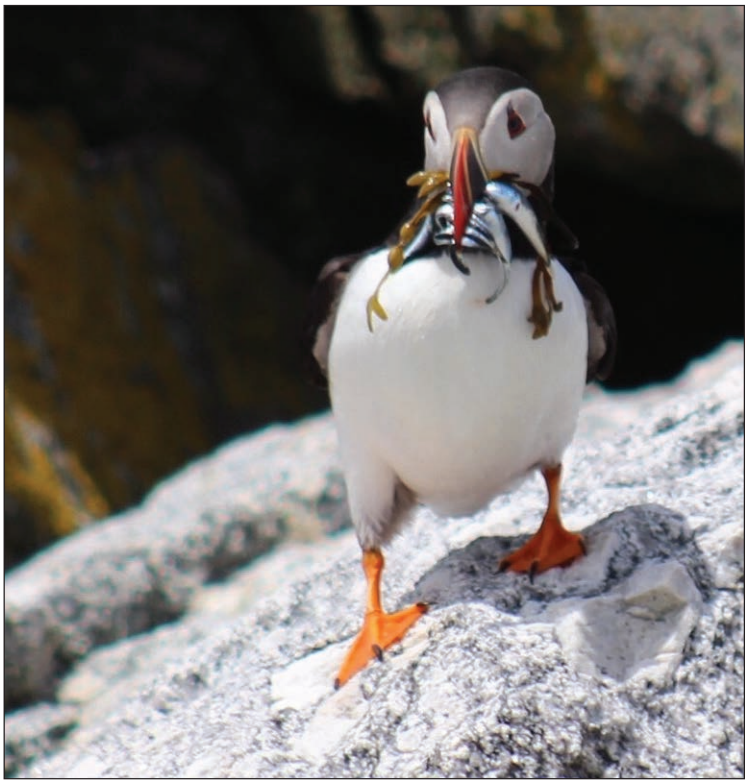
November 2020

Otter Tracks

Inside

Hog Island Audubon Camp... Summer 2021

by Carol Ramsayer



Atlantic Puffin on Eastern Egg Rock with a mouthful for its chick.
Photo by Ryley Olsen

OCAS is pleased to announce our annual $800 scholarship to the renowned Hog Island Audubon Camp, available to an Addison County educator or teen. Located off the scenic coast of Maine, the camp is run by the National Audubon Society and the Cornell Lab of Ornithology. Every summer they offer sessions for adults and teens, each lasting about 5 days. Every summer, that is, until this past summer, when camp was canceled due to the COVID-19 pandemic. Disappointed campers, including our own Jen Grilly from Bridge School, were given the option to postpone until 2021.

The summer of 2021 still poses uncertainties. Understandably, the session schedule is only tentative… and registration has been postponed from this fall to an unspecified date in early 2021. In addition to Jen's 2020 scholarship, OCAS will offer someone else the 2021 scholarship, in hopes that Hog Island can safely reopen. Any teachers or teens who wish to apply should email their name to Carol Ramsayer (cgramsmac@mac.com) by **December 20, 2020.** She will send an application to all interested teachers and teens as soon as the camp's summer plans are confirmed.

Educators will be applying for the session entitled "Sharing Nature: an Educator's Week." (https://hogisland.audubon.org/sharing-nature-educator-s-week) This unique week is especially designed for educators committed to engaging their students with nature. Previous OCAS scholarship winners can attest to the outstanding instructors and variety of experiences that the week provides. Total cost for this program is $1145 so the participant would be responsible for the remaining $345. Tentative dates are July 11–July 16.

For a teen (age 14-17) who is especially keen on birding, the session to apply for is the "Coastal Maine Bird Studies for Teens Session 2." (https://hogisland.audubon.org/bird-studies-teens). Total cost for this program is

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OCAS Mission:
To protect birds, other wildlife and their habitats by encouraging a culture of conservation within Addison County.

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PET Control: One Step Forward

Editorial by Warren King

VIEWPOINT

We have focused in *Otter Tracks* on global problems with accumulations of single-use plastic on land and at sea (*Vagrant Plastic*, February 2016, *Great Pacific Garbage Patch*, November 2017, *Living in the Plastic Age*, February 2018). This essay reports on a modest step forward in the processing of one used and discarded plastic to return it to its original components.

Polyethylene terephthalate (PET) is the most abundant plastic used in bottles. Once manufactured, PET takes hundreds of years to fully break down. In 2016, a PET-eating bacterium, called PETase, was discovered in a garbage dump in Japan. Scientists thought that if it could be enhanced, it could be used commercially to recreate the oil that was originally used to make the PET. Initially PETase turned discarded bottles into opaque fibers that could be used in the manufacture of clothing or carpets. An improved version of PETase was able to break down PET in a few days, but it still didn't make oil that could be turned into a clear PET product.

A major breakthrough came through the discovery of a second enzyme, called MHETase. Whereas PETase attacks the surface of the bottle, the new enzyme attacks the plastics interior. The two enzymes were at first used together, speeding up the process.

But then a high-tech treatment was employed. The "Diamond Light Source", a synchrotron in England that utilizes x-ray beams ten billion times brighter than the sun, allowed scientists to peer into the atomic structure of the two enzymes. This showed them how the two enzymes could be strung together to function as a single structure. This structure would be fast enough to recreate the original fossil resource, theoretically eliminating the need for using new oil pumped from the ground.

While there is a lot of work to be done before the process can be used in a real world situation like the Great Pacific Garbage Patch, there is reason for optimism. Scientists have already combined other enzymes to vastly enhance their functionality; we hope PET-MHETase is on its way to operate at a scale the problem deserves.

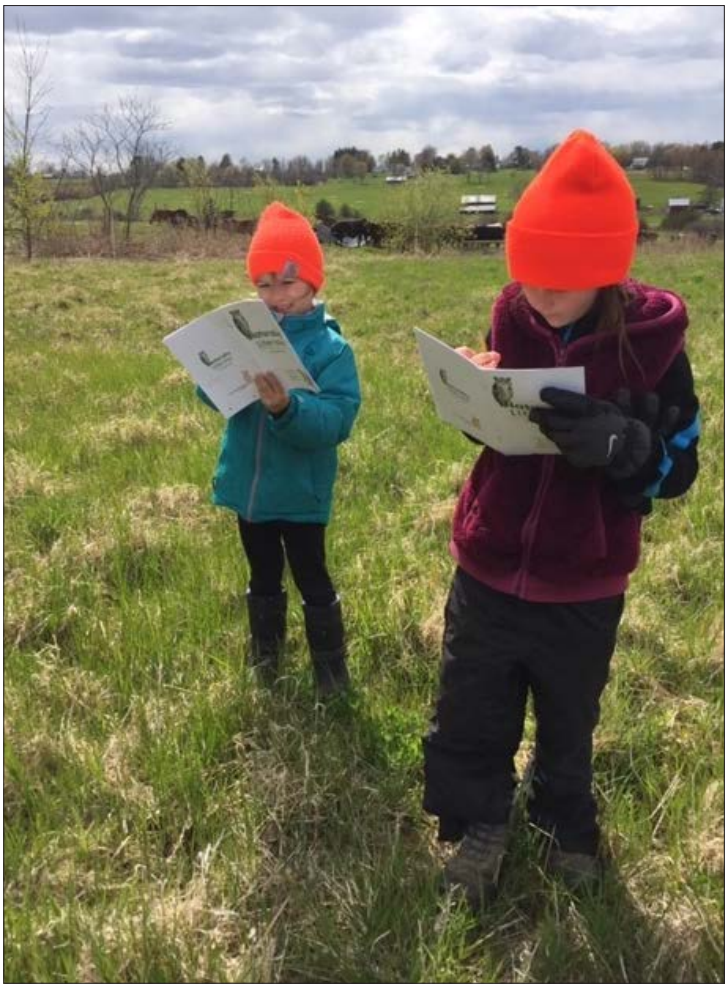
Three Environmental Bills of Interest to Audubon Members

The Vermont state legislature has drawn to a close following a unique session that continued into October. Wrap-up usually takes place in April. The legislature worked on three environmental bills of interest to Audubon members in Vermont. All three benefitted from attention and promotion by Audubon Vermont, including: Executive Director David Mears, three Audubon Policy Interns from the Vermont Law School, and several Vermont Audubon members who offered in-person testimony. Audubon Vermont has worked with the state legislature for several years as part of a coalition of conservation groups called the Forest Partnership.

The three bills of particular interest this biennium include H.683 Migratory Bird Protections, H.688 Global Warming Solutions, and H.926 Act 250 Modernization. The first bill (H.683) responds to the massive decline of migratory bird populations in Vermont and to climate change across the country by directly reinstating, at least in Vermont, the reversal of the federal Migratory Bird Treaty Act by the U.S. Department of Interior in 2017. H.683 passed both houses of the legislature, and Governor Phil Scott signed it into law in October.

The Global Warming Solutions Act (H.688) passed both Vermont legislative houses, but Governor Scott vetoed it on September 15, 2020. The veto was overridden by the Vermont House on September 18 and by the Vermont Senate on September 22. H.688 sets carbon pollution reduction targets, requires the development of a state plan to achieve those goals, and creates an enforcement provision for the public to sue the state for non-compliance with implementing that plan, according to Alec Bolinsky, a Policy Intern with Audubon VT.

The intent of the third bill, H.926 was to revise Act 250 on its 50th anniversary. Proposals for Act 250 revision were numerous and extensive, having to do with large forest block protection, rural economic development, environmental stewardship, promotion of carbon storage and sequestration, and trail support, including best management practices. The final version of the bill focused on protection of large forest blocks and development of trails. Governor Scott vetoed the bill on October 5, 2020. Representative Amy Sheldon of East Middlebury and Senator Chris Bray of Bristol led the work on this bill and will doubtless continue their work on it in the next biennium. We thank them for their leadership and on-going efforts. And we thank David Mears and Audubon Vermont for continuing *to* lead the Forest Partnership in working toward a more comprehensive legislative package that incorporates reasonable new language into existing Act 250.



Field work: Two young naturalists have already identified 25 items in their *Naturally Literate* booklets. Photo by Cheryl Cesario

Wrapping Up an OCAS Environmental Education Grant

By Amy Clapp, Salisbury Community School

Last March, the grant from OCAS that was originally written for a visit from the Southern Vermont Natural History Museum was repurposed to provide all K-6 students in Addison County School District (ACSD) with a copy of the *Naturally Literate* booklet. The district was looking for a way to engage entire families to spend time outside learning together. As the books were distributed, classroom teachers started using them in new and creative ways, including scavenger hunts, measuring activities, and writing exercises. The books were used as a springboard for a continuity of learning in uncertain times. Along with classroom teachers using the books as they wanted, a weekly video was created, called Nature's Moment, to highlight different organisms in *Naturally Literate* and to help students know what to look for during different times of the year. Due to popular demand by several ACSD families, a web page was produced to hold the videos as well as community observations. (https://sites.google.com/addisoncentralsu.org/naturally-literate/home) The video production has continued about once a week since last spring to help kids and teachers stay connected to nature. Some teachers are using the videos as part of their morning messages on the days that kids are doing their at-home learning. Many families in ACSD as well as other folks from outside the district are "subscribers". Due to this grant, and others in the past from OCAS and other organizations, *Naturally Literate* has been distributed to over 7000 people from California to Maine but mostly in Vermont!

Plants Battle Climate Change with Added Pigment

Plants adapt to changing ozone levels and increasing temperatures by changing the ultra-violet absorbing pigments in their flowers. Whether they increase or decrease these pigments depends mainly on the flower's shape and thus where its pollen lies. Plants like buttercups are shaped like saucers and their pollen is exposed to the sun and its effects. Others, like gentians, aren't open to the elements; their pollen is stashed inside their petals so the pollen is somewhat protected.

In a study whose results were recently published in *Current Biology*, plant ecologists at Clemson University looked at plant specimens from 1941-2017 to see how flowers' UV-absorbing pigments changed over time. These pigments help protect plants and animals from the harmful rays of the sun. Scientists had previously found that flowers growing at high altitudes or low latitudes, places where there is less ozone protection, had more UV-absorbing pigments than those in more protected areas.

In this study, they found that saucer-shaped flowers increased their UV pigment when or where ozone levels went up and had less pigmentation when the levels were low, regardless of increasing temperatures. For these flowers, temperature wasn't as critical as the harmful effect of thinning ozone was so they protected themselves by increasing their UV-absorbing pigments.

By contrast, the main factor for flowers that aren't saucer-shaped seemed to be temperature. With their pollen hidden inside the flower, the risk of overheating pollen was stronger than the need to protect against UV light. These flowers decreased their UV-absorbing pigment as the temperature of their climate increased, regardless of ozone levels. Cooked pollen won't produce a new plant.

People can't see the UV pigment changes but pollinators can. Pollinators seem to be most attracted to flowers that have a bull's-eye pattern: petal tips reflecting UV light and a center that absorbs more. Although it isn't known why that's true, it's possible that the flower's more reflective areas form a contrast with the rest of the plant's darker background and serve as a necessary beacon for pollinators. If that beacon dims because the flower has increased its UV protective pigment, the strategy may fail. It's possible that pollinators might, in the words of the lead researcher, "miss the flowers entirely."

2020 Status of Rare Vermont Birds

Common Loon (delisted): The population continued to grow in 2020, surpassing 2019's 101 nests.

Spruce Grouse (endangered): Not monitored in 2020 due to COVID-19. Monitoring may be attempted in 2021.

Bald Eagle (endangered): A record 40 pairs fledged 65 young in 2020. Five new nests were found. The species has met its delisting threshold.

Peregrine Falcon (delisted): At least 55 territorial pairs were monitored. 77 young fledged. 11 nests failed. Addison County pairs that raised at least one young included Deer Leap and Lost Pond in Bristol, Mt. Horrid in Goshen, and Rattlesnake Point in Salisbury.

Osprey (delisted): The population continued to increase slowly in 2020.

Upland Sandpiper (endangered): Birds were observed in Cornwall, South Hero and Highgate Springs. The last-named site had 4 birds and may have involved breeding.

Black Tern (endangered): 57 pairs bred at Missisquoi National Wildlife Refuge, but this number was likely an underestimate. Dry conditions made some refuge wetlands inaccessible for counters. 18 fledglings were observed, also probably an underestimate.

Common Tern (endangered): A record 230 Common Terns fledged from two Lake Champlain islands. Solar powered walkway lighting, used this year for the second time, may be discouraging nocturnal predators on Popasquash and Rock islands.

Eastern Whippoorwill (threatened): The 2020 surveys concentrated on several Rutland County towns where volunteers detected 97 whippoorwills at 133 individual survey points in Fairhaven, Poultney and Castleton. The species appeared to be more numerous this year than previous years.

Common Nighthawk (endangered): 4 birds were observed during the breeding season. No birds were known to have bred in Vermont in 2020.

Sedge Wren (endangered): Two birds were reported this year. No evidence of breeding.

Rusty Blackbird (endangered): A monitoring program may develop for Vermont and New Hampshire. No other action.

Grasshopper Sparrow (threatened): At Franklin County Airport 13 birds were counted, the same as last year. Seven were observed at Camp Johnson, compared to 8 last year.

Eastern Meadowlark (proposed): The Vermont Endangered Species Committee has proposed this species for listing as threatened. The proposal awaits approval of the Vermont Secretary of Natural Resources and the Vermont Legislature.

Melanistic Tufted Titmouse
Photo by Gary Starr

Minimizing Motion Smear

A small Norwegian study involving wind turbine rotor blades and bird mortality may have interesting implications for wind turbines in the future. Painting one of the three wind turbine rotor blades of four wind turbines black produced a 72 percent decline in avian fatality compared with turbines with uncolored blades. The Smola wind farm's 68 wind turbines killed almost 500 birds over a ten-year span. In the three years following painting black a rotor blade of each of four turbines, the turbines with a black rotor blade killed six birds while four nearby turbines without black blades killed 18 birds. Having one blade of three painted black apparently permits birds, and presumably bats, to perceive the individual rotor blades rather than a smear of blades that may render them less visible.

The study noted that because the turbines had already been erected and were functioning when the study started, the four turbines had to be stopped and the blades dismounted before they could be painted. This was an expensive proposition. It is also worth noting that birds, and possibly bats, fly mostly at night on migration, when rotor blades are not visible regardless of their color.

Compared to other causes of mortality, the U.S. Fish and Wildlife Service notes that wind tower strikes are a relatively modest cause of avian and bat mortality. Cats kill nearly 10,000 times more birds/bats than do wind towers. Here is a summary of data in the U.S that the USFWS compiled in 2017, the most recent such survey, on the extent of human-caused bird mortality:

Cats	2,400 million
Collisions: building glass	599.0 million
Collisions: communications towers	6.6 million
Collisions: electric lines	25.5 million
Collisions: vehicles	214.5 million
Collisions: wind turbines	0.25 million
Electrocution	5.6 million
Oil pits	0.75 million
Poison	72.0 million
Total:	3,300 million

OCAS Calendar of Events
November 2020 – January 2021

Thursday, November 19 7 pm **OCAS Annual Meeting.** The annual meeting of OCAS will take place via Zoom on Thurs., Nov. 19 at 7 pm. The annual meeting normally is part of the annual dinner, but the dinner will not happen this year as a consequence of the COVID-19 pandemic. The meeting is open to all members; to request the Zoom link, contact Ron Payne at OCASVT@gmail.com.

Addison County Christmas Bird Counts

National Audubon has advised us:

- Cancel all in-person compilation gatherings.
- Social distancing and/or masking are required at all times in the field.
- Carpooling may only occur within existing familiar or social "pod" groups.
- Activities must comply with all current state and municipal COVID-19 guidelines

Confirm date and territory assignment with Christmas Bird Count Compiler

Sat, December 19 Ferrisburgh Christmas Bird Count.
Compiler: Mike Winslow, 877-6586
mikekira@myfairpoint.net

Sun, December 20 Middlebury Christmas Bird Count.
Compiler: Jim Andrews, 352-4734
jandrews@vtherpatlas.org

Sat, January 2, 2021 Mt. Abe Christmas Bird Count.
Compilers: Randy and Cathy Durand, 453-4370
durand@gmavt.net

Mudpuppies
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Adult mudpuppy Photo courtesy of Vermont Herp Atlas

of which died and the remainder were released upstream of the treatment area. An official survey of mudpuppy mortality in 5 percent of the area treated with lampricide has been undertaken by USFWS but the results are not yet public.

A similar fate has met mudpuppies on other VT rivers treated with lampricide. As the treatments went on, decreasing numbers of dead mudpuppies were found following lampricide use on the Winooski, the Missisquoi, and Lewis Creek. There just weren't any mudpuppies found, dead or alive, after the last treatments. The Poultney River did not follow the same pattern. It's first three treatments showed increases of dead mudpuppies from 8 to 24 to 52 and then a drop to 15 when a lower dose lampricide was used.

The Vermont Endangered Species Committee, an advisory group set up by the ANR has recommended three times over a 20-year period that permits to use lampricide not be granted to the U.S. Fish and Wildlife Service. The ANR has not agreed with the Endangered Species Committee thus far and has already granted a permit to treat the Lamoille River again in 2024.

Hog Island
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Teens land on Eastern Egg Rock during their "Coastal Maine Bird Studies" week. Photo by Ryley Olsen

$1395. The participant would be responsible for the $595 not covered by the OCAS scholarship. Tentative dates are June 20–June 25.

Successful applicants should plan to share their camp experiences through either a presentation to the OCAS board, an article in the Addison Independent or the OCAS newsletter or in some other public way. This should include pictures so the audience gets a good sense of the Hog Island week.

Additional scholarships to both sessions may be available from National Audubon Society. Applications for these Ambassador Scholarships must be submitted by March 15, 2021. (See https://hogisland.audubon.org/programs/scholarships for details and an application.)

Please refer to the Hog Island website at https://hogisland.audubon.org for spectacular photos and more details about the camp programs. Most importantly, we urge OCAS members to share this scholarship information with any students or educators passionate about birds and the natural world. It is an exceptionally unique and enriching opportunity!

On behalf of mudpuppies, 30 people protested lampricide treatment of the Lamoille River on October 27 Photo by Isa Demarco

Lamoille River Sea Lampreys and Mudpuppies

On October 27 the U.S. Fish and Wildlife Service treated the Lamoille River with a lampricide to control sea lamprey populations in Lake Champlain. Sea lampreys spawn in some of the rivers entering Lake Champlain and annually migrate as larvae to the lake. There they become parasitic on several large fish species, including lake trout, land-locked salmon, walleye and lake sturgeon, killing some fish and making others less attractive to fishermen. The U.S. Fish and Wildlife Service (USFWS) has received a permit from the Vermont Agency of Natural Resources (ANR) to treat the Lamoille River again in 2024.

The Lamoille River also has an important population of mudpuppies, Vermont's largest amphibian, which grows up to 14" long. The first lampricide treatment of the Lamoille River, in October 2009, killed 508 mudpuppies in five percent of the area treated in addition to killing most of the sea lamprey larvae in the river. In the 2013 Lamoille River treatment no mudpuppies were killed; 9 were rescued. Herpetologists believe this decrease is due mostly to a major decrease in the mudpuppy population caused by the initial lampricide use.

The Vermont ANR removed the conditions to require the U.S. Fish and Wildlife Service to conduct a comprehensive population study of Lamoille River mudpuppies in 2020 because it would have prevented the lampricide treatment this year. As a consequence, a petition with 1052 signatures asking a halt to lampricide treatment was sent to Julie Moore, Secretary of ANR. The petition was not heeded. Subsequently, on the day of the treatment, a group of about 30 volunteers rallied peacefully on the banks of the Lamoille River, most of whom later paddled along the Lamoille in the dark to gather whatever mudpuppies they could find. They found 30 stunned young mudpuppies, 10

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