

A quarterly newsletter for Volunteers and Friends of the Patuxent Wildlife Research Center and Patuxent Research Refuge



FRIENDS OF PATUXENT

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Economics and Emotions

By Brad Knudsen, Refuge Manager

Every five years or so since 1997, the National Wildlife Refuge System has undertaken an analysis of its economic impacts to local communities. This series of studies is called “Banking on Nature,” with the most recent one being completed in Fiscal Year 2017 (October 1, 2016-September 30, 2017). Patuxent Research Refuge was part of this review in 2006, but was not included in the 162 refuges that were part of the most recent study. The highlights of the report include:

- The National Wildlife Refuge System estimated 53.6 million visitors to national wildlife refuges.
- Trip-related spending by recreational visits generated \$3.2 billion of economic output in local economies.
- As this spending flowed through the economy, it supported over 41,000 jobs and generated about \$1.1 billion in employment income.
- About 86 percent of total recreation-related expenditures are generated by non-consumptive activities on refuges. Fishing accounted for 10 percent of expenditures and hunting 4 percent.
- On average, local visitors accounted for 17 percent of expenditures while visitors traveling more than 50 miles accounted for 83 percent of expenditures.



Photo by Brad Knudsen

Patuxent has over 20 miles of hiking trails open to the public.

- Refuge recreational spending generated about \$229 million in tax revenue at the local, county, and state levels.

Circling back to the 50-plus million visitors, it is interesting to note that approximately 80 percent of those visits were for “non-consumptive” activities. *Continued on page 2*

Dr. Manuela Dal Forno Speaks About the Fascinating World of Lichens

By Evelyn Kirby, Volunteer and Debbie Phillips, Volunteer Wildlife Educator

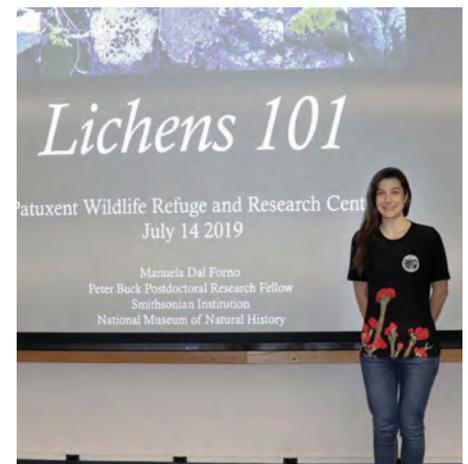


Photo by K. Cohen

Dr. Manuela Dal Forno.

On Sunday, July 14, the Friends of Patuxent was honored to have Dr. Manuela Dal Forno, a Peter Buck Postdoctoral Research Fellow at the Smithsonian Institution. *Continued on page 8*

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Economics and Emotions

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uses” (hiking, photography, auto tours, etc.), while 15 percent were for fishing, and 5 percent were for hunting. For comparison, Patuxent Research Refuge’s visitation breakdown is about 93 percent non-consumptive, 4 percent hunting, and 3 percent for fishing. There is, of course, a lot of variability among refuges how precisely they can count visitors, and at Patuxent it even varies from tract to tract. But, as Teddy Roosevelt once said, “We do the best we can with what we have at the time.”

While the economic benefits of refuges are well documented by these periodic analyses, there are all the intangible benefits the public gets from spending time on a refuge. Any one of you reading these words know exactly what I am talking about. The joy a child feels the first time he/she catches a fish or sees a great blue heron up close. The thrill a teacher experiences when her students exhibit creativity and leadership during an outdoor excursion, skills not otherwise evident in the classroom. The emotional release many of us feel from time spent



Photo by Brad Knudsen

Fishing is a popular wildlife-oriented public use on the refuge.

among the forests and fields of a national wildlife refuge. Organizations like “Wheelin’ Sportsmen” know all about the restorative powers of time spent in nature for disabled veterans. More and more doctors are prescribing “X number of hours OUTSIDE” to

address stress, attention deficit, and depression among their patients.

These kind of intangible benefits may be short term, or they can be life-changing. One of my favorite examples is one of our former Career Discovery Internship Program participants who came to Patuxent as an Interior Design Major, returned to college and switched her degree to Wildlife Biology, spent several summers on Forest Service and/or state wildfire crews, and she NOW runs her own company focused on getting inner city youth involved in nature through the visual arts. All from spending 10 weeks on a refuge, working with our Visitor Services staff, volunteering with our facilities staff on her days off, and enjoying sunrises and sunsets from her refuge quarters! Don’t ever underestimate the power of Mother Nature!!!

So – come visit Patuxent, visit Chincoteague. Heck, visit Midway Atoll NWR (clearly, a harder journey). Spend a little money, spend a lot of time – and reap the rewards that await you on a national wildlife refuge of your choice! 🐢

Friends of Patuxent is published quarterly and can be read online or mailed to our Friends upon request.

Many of the regular newsletter contributors and assistants are volunteers. However, we welcome and encourage all volunteers and Friends to submit items for the newsletter by sending or bringing them to:

Editor, Friends of Patuxent Newsletter
ATTN: Ross Feldner
11811 Ivanhoe Street
Wheaton, MD 20902

Or email to ross.feldner@verizon.net

All articles submitted to the Friends of Patuxent Newsletter will be reviewed by newsletter staff prior to their publication. We reserve the right to not publish submissions based on length, content or suitability.

Article submission deadlines:

Issue			Issue		
No.	Months	Deadline	No.	Months	Deadline
1	Jan-Mar	December 1	2	Apr-Jun	March 1
3	Jul-Sept	June 1	4	Oct-Dec	September 1

To become a member of the Friends of Patuxent or send a donation, please see “Membership Application” on page 19.

A Gifter's Garden, Perennial Delights

By Karen E.H. Atwood, Volunteer

It's autumn on the East Coast. Most gardens are prepping for Winter's sleep, but Friends of Patuxent's Wildlife Images bookstore "garden" is blooming for birthdays, special occasions, the holidays and more. Come "dig" our clever sweatshirts, t-shirts and caps. "Sow seed" for the future, with teaching tools like "first" binoculars and compasses. Gather "bouquets" of beautiful gifts, butterfly scarves and unusual nature jewelry, outdoor chimes, hand-crafted ornaments and art. "Pick" more, from our patch of children-and-family creative, educational and entertaining puzzles and games. Round out your "harvest" from our bountiful rows of children's



Something fishy here...!

and adult's wildlife and outdoor-enthusiast books and gifts. Leave with a wonderful feeling, knowing that your purchases "perennialize" and help support Patuxent's educational programs! Not sure what a spouse or child, grandparent, grandchild, teach-

er or friend might like? We'll show you around! We've got ideas for just about everyone -- from the fisherman, the hunter, the hiker, the birder and the "butterfly-er," to the kite-flyer, the puzzle-master, the playful puppeteer, the educator, the curious armchair naturalist and beyond. Reminder: Friends of Patuxent members can receive a 10% discount.

The Wildlife Images store is open Fridays through Wednesdays from 11 a.m. to 4 p.m. Closed Thursdays and federal holidays (when the Visitor Center is also closed). Located on Patuxent's South Tract, in the National Wildlife Visitor Center. 🐢



Harvest some American-made, and imported, hand-crafted gifts, ornaments and art.



Come pick from our children's patch of new titles, traditional favorites, finger puppets, puzzles and games.



Mark the row in your reading. "Bouquet" your gifts with slender slips of artful inspiration!



Find something for everyone!

Your purchases from the Wildlife Images Bookstore help support the work of the refuge. "Friends" receive a 10% discount

We're Likin' Lichens at Patuxent!

Karen E.H. Atwood, Volunteer

Ask Ava, age eight, what her favorite lichen is – and she can actually tell you! Ava and her family, along with about two dozen other curious visitors, came to the National Wildlife Visitor Center on Sunday, June 23rd. We joined enthusiastic Lichenologist Natalie Howe for a Lichen Discovery Walk around the building and grounds. Dr. Howe, currently a Biological Scientist with USDA's Animal and Plant Health Inspection Service (APHIS), is working with the Patuxent Refuge Lichen Team under leader Helga Matausch to survey and catalog the Refuge's lichen species as part of our ever-growing Herbarium*, a work-in-progress resource being catalogued online for researchers around the globe.

Dr. Howe told us that lichens – small, but often surprisingly beautiful organisms that we easily overlook, although they're all around us, growing on trees, logs, rocks, even on metal signs, the very ground we walk upon – are neither plant nor animal, but combinations of diverse fungi and algae or cyanobacteria that are living and working in tandem, appearing to be one organism. Intrigued, we took up our pocket-sized magnifying lenses (or used our binoculars “in reverse,” in lieu of those) and trooped over to some trees



Photo by Karen E.H. Atwood

Young Lichen Walk participant Ava and Dr. Howe look at lichens up-close-and-personal in front of the National Wildlife Visitor Center.



Photo by Karen E.H. Atwood

Candleflake Lichen (*Candelaria* genus) at the National Wildlife Visitor Center.

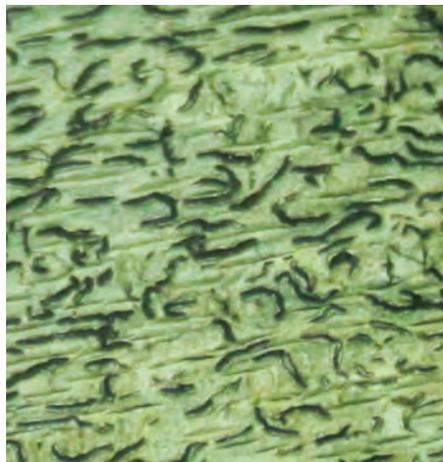


Photo by Natalie M. Howe

Script Lichen (*Graphis scripta*).

right in front of the National Wildlife Visitor Center Suddenly we were seeing lichens, instead of just tree trunks with “stuff” on them!

We found many lichens, among them the tiny, gorgeous and nearly glowing, yellow “candleflake” lichen, the wonderfully wiggly “script” lichen, and the delicately-tendrilled “old man’s beard” lichen. Lichens, Dr. Howe explained, are found across the planet, from hot deserts to cold Antarctica, in myriad combinations and forms, existing almost as mini-ecosystems: The algae

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* To access our Refuge Herbarium online (not yet complete), go to: <https://lichen-portal.org/cnalh/collections/misc/collprofiles.php?collid=125>, in the website of the Consortium of North American Lichen Herbaria (CNALH). Our lichens will also be catalogued in the Refuge's on-site Herbarium at North Tract, under volunteer leader Bill Harms. To access that information: <http://symbiota.org/nps/checklists/checklist.php?cl=4639&pid=118>.

Hollingsworth Exhibitors for Fall 2019

Faith Leahy-Thielke, Patuxent Volunteer

Fall's arrival is more than welcome after so many 90-degree days, and fall's exhibitors will add fabulous indoor color to the season's natural display. In October, Victoria Restrepo; November, the Prince George's County chapter of the National Audubon Society; and in December, the Southern Comforters with their amazing stitchery.

Did you know that Columbia in South America holds 10% of the earth's biodiversity? "It ranks first in bird and orchid species and second in plants, butterflies and amphibians." October's exhibitor, Victoria Restrepo informs of these facts. She grew up in Columbia and as a child spent "endless hours walking in the rainforest and camping out with her family in "solitary beaches and forests." Eventually, she studied Fine Arts in her native country, but photography in Boston. In love with the natural world since childhood, she began to create travel journals that explore nature through photography, video and painting. Her first photographic "documentary series" was "Walking among Birds." In the creation of scripts, Restrepo edits these journals and chooses music for each project. She hopes to inspire in others the delight and empathy awakened in her by natural places and thus encour-

age conservation. Today she lives and works here in Washington, D.C.

Prince George's local Audubon Society chapter was established in 1972 as an all-volunteer, non-profit – officers elected by the general membership. Together with the Patuxent Bird Club (the local chapter of the Maryland Ornithological Society), they meet monthly at the College Park Airport's Operations Building. These meetings provide opportunity to compare experiences – from walks, field trips, bird counts and other special events. Visitors and new members are always welcome at meetings and activities and participate at no charge. The groups engage in fun, bird-spotting activities on a regular basis. Join a group at the Fran Uhler Natural Area at Lemon Bridge Road in Bowie, every first Saturday of the month at 7:30 am; Lake Artemesia, every first and third Thursday at 3 pm; or Governor Bridge Road Natural Area, every third Saturday at 7:30 am. Recognizing the group is easy – "We'll be the ones with the binoculars and the big floppy hats!" Their November exhibit will showcase the winning photographs from the National Audubon Society's 2017 contest. The president adds, "please visit us at our website,

www.pgaudubon.org".

December just sounds like "snuggle" weather, so the Southern Comforters fourth quilt exhibit at Patuxent is perfectly timed. This quilting guild formed locally in 1982 with 10 members and continues to expand and flourish – now over 80 strong. On their homepage, they express their philosophy of quilts and quilting as an activity that encourages expressions of "individuality, creativity, knowledge, and enthusiasm" which they share with each other – and also with us. Long-time member, Barbara Dahlberg (2010's guild's "featured quilter") will be curating the Hollingsworth show. She describes the December exhibit as a number of wildlife and nature-themed quilts that reflect contributors' varied interests – in theme as well as form – traditional to modern to art quilting. Guild members meet twice a month (second and fourth Wednesdays at the Christian Community Presbyterian Church in Bowie) to share their work and ideas. They make quilts for charity and promote their craft with a number of activities: workshops, challenges, shows and exchanges. New members are always welcome. For more about them, check out their website at w.w.w.southerncomforters.org. See you at the Gallery. 🐢

WE INVITE YOU TO JOIN!

Your membership/contribution helps support the mission and programs at Patuxent. You also receive the following benefits:

- Quarterly newsletter (mailed on request or go to www.friendsofpatuxent.org)
- 10% discount in our Wildlife Images Bookstore and other area refuge bookstores
- Attendance at member functions
- Participation in on-site educational programs
- Sense of accomplishment in providing many opportunities for wildlife-related recreation, education and research



Ding-Darling: Creator of the Duck Stamp and Patuxent Research Refuge

By Matthew C. Perry

He was respectfully called “Ding” for the way he signed his last name as a contraction, but his whole name was Jay Norwood Darling (1876-1962). He was recognized nationally as a cartoonist and journalist when he worked for several newspapers, but his fame was most notable with the Des Moines Register and Leader. Duck numbers had dropped precipitously in the 1920-30s following the continental drought and extensive drainage of wetland marshes. Ding Darling was a waterfowl hunter, but in his cartoons, he ridiculed “game hogs,” who were shooting over the limit and conducting other non-sportsmen-like behavior. Darling also was critical of some farmers for excessive drainage of wetlands.

Darling gained more national prominence in 1934, when President Roosevelt appointed this Hoover Republican to a committee, along with notable wildlife conservationist Aldo Leopold, to determine ways to restore waterfowl populations. The committee proposed several management techniques, including the restoration of duck nesting marshes along the northern border of the country and more restrictive hunting regulations.

When the committee disbanded, Darling stayed in Washington and became the Chief of the Bureau of Biological Survey to oversee the agency responsible for wildlife management. Darling was aware that the well-respected Senator Peter Norbeck from North Dakota, had successfully sponsored the 1929 law providing federal funding for the purchase of land as waterfowl refuges. Together the two men proposed a bill in 1934 to establish the Federal Duck Stamp program requiring hunters to buy a duck stamp for one dollar.



Ding Darling the cartoonist.



Mr. Jay N. “Ding” Darling.



Cartoon by Ding Darling promoting a Conservation Clearing House where all organizations joined forces.

Darling enjoyed telling the story of Senator Norbeck adding a rider to the duck stamp bill just before approval.

Norbeck apparently had not inserted his false teeth before reading the new bill because of a gum problem he



First duck stamp drawn by Ding Darling, 1934.

had. Despite not understanding their esteemed colleague, the Senate approved the bill, which was then sent on to the White House. There it was signed by the President without anyone realizing the popular Duck Stamp Act included the Norbeck rider, boldly transferring 6 million dollars for an emergency duck rescue program.

Ding Darling was the artist for the first duck stamp in 1934 that all waterfowl hunters purchased that year and since. The stamp featured a pair of mallards and Ding was pleased to purchase the first one. Other artists were asked to draw the stamp in subsequent years until 1949, when the stamp design was selected following a national contest. On September 28, 2019, the annual contest will be held at the National Wildlife Visitor Center of Patuxent Research Refuge. Mr. Tom Milligan, a Ding Darling impersonator, will be a special guest for this year's contest.

Darling did not always see eye-to-eye with the President especially over funding matters. Sometimes when Darling asked the President for funds, he would receive an IOU for a million dollars that was never forthcoming. Darling pressured Roosevelt to have a national conference on wildlife, which was successfully conducted in 1936 and continues annually today. The establishment of the National Wildlife Federation and the Wildlife Management Institute at the time of the first conference are credited to Darling. Darling also is credited with the formation of the Cooperative Fish and Wildlife Research Units Program in many



Ding Darling buying first duck stamp that he designed for one dollar, 1934

universities in the United States. After 20 months as Chief of the Biological Survey, Darling resigned and returned to Iowa to draw cartoons.

During the period (1934-35) when Darling was Chief of the Biological Survey, Mr. J. Clark Salyer (1902-1966) was head of the Division of Wildlife Refuges. Despite Darling's flamboyant behavior he was a modest man and recognized others who worked for him. He once stated, "Clark Salyer was the salvation of the Duck Restoration Pro-



Dr. Gabrielson presenting Mr. Darling with new shotgun as retirement present. 1935.

gram of 1934-36. He did most of the work for which I was given credit and awarded medals."

Another person working closely with Darling was long-termed federal biologist, Dr. Ira Noel Gabrielson (1889-1977). Darling called Gabrielson to Washington to head the new Division of Wildlife Research and together they promoted a wildlife research program. The formation of the nation's first wildlife research facility was one of many wildlife conservation activities taking place in the mid-1930s. On December 16, 1936, President Franklin D. Roosevelt signed Executive Order 7514, which transferred 2670 acres of land that had been acquired (or would be acquired) by the United States, to the Department of Agriculture as a wildlife experiment and research refuge. The area delineated in the Order was located in Maryland and was created "to effectuate further the purposes of the Migratory Bird Conservation Act." By order of the President the area was to be known as "the Patuxent Research Refuge."

Secretary of Agriculture Henry A. Wallace dedicated the Refuge on June 3, 1939, and stated, "the chief purpose

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Dr. Manuela Dal Forno Speaks About the Fascinating World of Lichens

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National Museum of Natural History, give a comprehensive, informative presentation entitled “Lichens 101: What are lichens and why are they important to you – to everyone.” Lichens are everywhere but are so ubiquitous and small that most of us don’t notice them. They are one of the most overlooked parts of the landscape. However, the number and the enthusiasm of those attending the presentation are evidence of their fascination.

We learned what lichens are, where they live, how they are named, how many species exist, how they function, how they are studied and how they reproduce. Dr. Dal Forno’s talk supported an ongoing effort by Patuxent Research Refuge volunteers, initiated in December 2017 and led by Helga Matausch, to look for, collect, and identify lichens on the Refuge. Information collected is shared with the New York Botanic Garden and the Smithsonian Institution and included in the herbarium project, led by Bill Harms, which



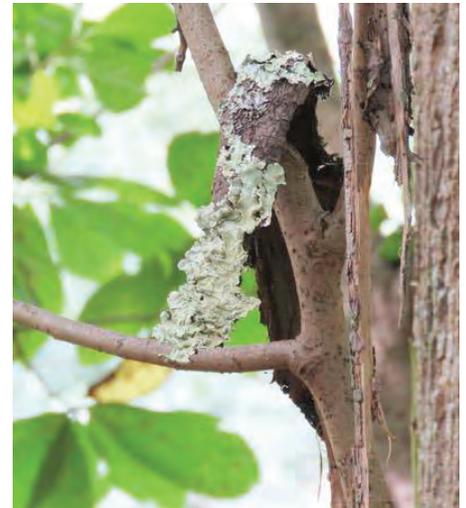
Dr. Manuela Dal Forno.

Photo by K. Cohen



Three growth forms of Lichen on a tree.

Photo by M. Dal Forno



Lichen Bridge at North Tract. How did it do that?

Photo by T. Kirby



Lichens are commonly divided into three growth forms.

Photo by M. Dal Forno

includes over 5,000 vascular plant specimens collected since the 1940s.

Dr. Dal Forno has been working since October 2018 with Patuxent’s Lichen Team. She has taught the team about the characteristics and nature of lichens, participated in collection field trips, demonstrated techniques used to identify lichens, and identified several lichens collected to date. Lichens are a symbiotic relationship between a fungi and photosynthesizing organisms, such as green algae and/or cyanobacteria. Fungus and algae plus a unique microbiome form what we see in nature as the lichen thallus, the resulting structure of this symbiosis. The fungus protects the algae, which in turn provide sugars as food. Lichens can live everywhere, deciduous wood-

lands, deserts, urban areas, etc. Substrate is the place where lichen grows. The nomenclature (name) is based on the lichenized fungus species. Fungi and algae put together can’t make a lichen in the lab - It only grows in nature.

There are over 20,000 known species of lichens. Lichens are commonly divided into three growth forms based on their features: Crustose lichens are flat and without lobes, and can be difficult to remove from the rock or tree on which they grow.

Fruticose lichens are bushy or shrubby growths. Some branches are erect while others have a hanging growth pattern. Foliose lichens have a leaf-like structure with lobes. The func-

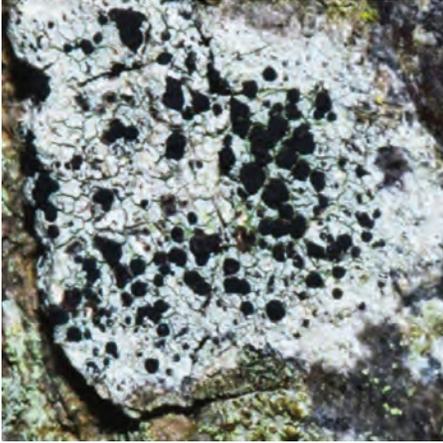


Photo by Graeme Simpson

Crustose lichen on tree bark.



Photo by Graeme Simpson

Lecanora sp.



Photo by Graeme Simpson

Lichens growing on a wood bench (Note: the red is not a different lichen, but a damaged/dying specimen).



Photo by M. Dal Forno

Lichen carpet in a cemetery in the Refuge.



Photo by M. Dal Forno

Sue Priftis and Helga Mataush searching for lichens in a Refuge cemetery.

tions of lichens are photosynthesis, nitrogen fixing and rock weathering. They can be colonizers and engage in mimicry with several animals. Dr. Dal Forno showed some very challenging lichen slides with camouflaged insects. Participants also found examples of this on the trail afterward.

The audience learned that lichens can be found growing almost anywhere — on rocks, trees, leaves, and even cars. They live in different environments from rainforests to deserts, and even in urban areas. Lichens are important in a number of ways. They are a significant food for animals such as squirrels, birds and caribou among others, and are a potential food and medicinal source for humans. Lichens provide a place where other plants and animals can live, thus continuing the ecosystem. Over 50 species of birds, including hummingbirds, use lichens to line their nests. Lichens provide excellent camouflage for insects. Lichens help break down rocks to form soil. Some

lichens can capture nitrogen from the air and fix it in the soil to be used by plants. Lichens are bio-indicators of air quality. The spread of air pollution can be monitored by mapping lichen diversity. Lichens disappear when the air quality is bad and reappear when it improves.

Lichens also provide a number of practical uses. They can fixate the smell in cosmetics, be used as natural dyes,



Photo by K. Cohen

Participants gathering for walk to look for lichens.

and can be eaten (after specific treatment). They are a main component of some cough drops and Icelandic Schnapps. Lichens can be utilized as bioindicators because some species are sensitive to air quality, especially sulfur dioxide, metals and ozone. Lichens have quite an interesting chemistry - over a thousand different compounds have been found in lichens, some are thought to have sunscreen properties. These substances can also be utilized in medical treatment, therefore opening new possibilities in medicine. Applied Researchers are studying lichen acids for cancer treatment and for pesticides. Some of these chemicals may fluoresce under UV light. Three spot tests are commonly used to test for chemicals present in lichens: potassium hydroxide, sodium hypochlorite (household bleach) and para-phenylenediamine. They are positive or negative and may help identifying different lichen species. Patuxent volunteer Helga Matausch oversees a project here on lichens and ensures that the species are included in the Patuxent herbarium.

Dr. Dal Forno says, "The way I see it, [there are] 1,000 new ways to cure or treat diseases, agriculture, etc." She left us with a challenge: "To open your eyes to see things one usually overlooks.... Learn about lichens. Have fun."

She ended by thanking Helga, the Lichen Team, and the Patuxent Staff.

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The Big Trees at Patuxent

By Matthew C. Perry

The trees stand tall at Patuxent - and indeed they should. Protected for over 80 years from lumbering and growing in one of the most fertile floodplains of North America, they've done okay for themselves. In the floodplain area there are trees that are approximately 150 years old. Their age is known because 80 years ago when the Government constructed a road through the floodplain many of the cut trees were aged at 70 years old, based on counting annual growth rings.

Some areas of Patuxent have small stands of trees that are probably over 200 years old, because these areas were never cut. They exist in remote areas on small islands within the multi-branched Patuxent River. These so-called "virgin forests" or old-growth forests contain some of the largest trees - the granddaddies of the forest.

The largest tree ever measured at Patuxent was on one of these islands (Beech Island). It was a yellow poplar (tulip-tree) with a trunk circumference of over 18 feet and a diameter of almost 6 feet. Unfortunately, this mammoth tree died in 1986, and only its rotten trunk remains. But don't despair, for within a stone's throw is another yellow poplar only a few inches less in circumference and diameter. Folks, we're talking big!

Beech Island, as you might expect, also has some large beech trees. The second largest beech tree (diameter 52") in the state stands proudly on the upstream end of this island, and has provided support for a red-shouldered hawk's nest for many years. The state's largest pignut hickory with a diameter of 33" and Patuxent's largest sweetgum with a 46" diameter, are also on the island.

Over the years Patuxent has claimed some U.S. record-sized trees based



Largest beech tree on Beech Island Patuxent Research Refuge being officially measured.

on official measurement rules of foresters. Botanist Neil Hotchkiss and his colleagues conducted the first big tree survey in the 1950s and re-surveyed many trees in the 1960s. An overcup oak with a 5-foot diameter was the largest tree for its species for the whole United States. Unfortunately, this tree fell over in 1972 shortly after leafing out in the spring and for many years later was observed slowly rotting on the forest floor. Several large overcups are within a short distance of the old champion and one is 4 feet 7 inches in diameter. In 1999, the largest overcup oak tree located in Maryland, which was in Cambridge, died, and so now Patuxent most likely has the largest for the state, and who

knows maybe someday it will be the largest in the United States, setting another U.S. record for Patuxent.

Another old U.S. record was a river birch that measured almost 4 feet in diameter in the 1960s. This tree has not been found in recent decades and probably has died and already returned to the forest soil. Many river birches are located along Cash Branch and the Patuxent River so new records are being developed all the time. Patuxent Research Refuge biologist, Sandy Spencer, is currently looking for a large overcup oak and other biologists are searching with County foresters in Prince George's and Anne Arundel Counties for new record trees.



Patuxent Volunteer Ken Lavish measuring circumference of second largest red cedar in Maryland.



Dignitaries at the dedication of Patuxent Research Refuge in 1939 standing under the snake tree.

Patuxent also has several State record trees and many Prince George's County record trees in upland sites. A pitch pine with a diameter of 30 inches was the largest in Maryland until it fell to the ground in 2002. Another pitch pine was found in 2015 on the North Tract by Bill Harms and Jeff Bolden that measures 27 inches in diameter. Bill and Jeff also measured a white pine on the North Tract that was 44 inches in diameter.

The northern catalpa at the old Endangered Species Research Area near the Crane Chick Building is the third largest for the state and raises eyebrows with its 14.5-foot circumference and 4.5-foot diameter. One of Patuxent's red cedar trees is the second largest in the State with an 11.5-foot circumference and 3.5-foot diameter. Two state-record trees growing not far from the historic Snowden Hall are a sweetbay magnolia (diameter 10") and an exotic Japanese pagoda tree (diameter 37") and were measured in 2015 by the MD state forester.

Official measurements have not been conducted on many trees, however, so there could be some interesting surprises. Many of Patuxent's big trees occur in the dense forest and, therefore, don't reach the diameter or canopy of those found growing in the open, where they get more sun and less competition from other trees. To

account for this bias from growing conditions, foresters use three measurements (diameter, height, and canopy cover) to score the big trees. By using this scoring system, a numerical value can be obtained that clearly shows what is the largest tree, but not necessarily the oldest.

Other trees at Patuxent that are of interest to foresters and naturalists include a sycamore (6 feet in diameter) growing in a damp site not far from the Little Patuxent River and a swamp white oak (3.5 feet in diameter), a swamp chestnut oak (4 feet in diameter), and a willow oak (5 feet in diameter). All these trees are survivors of disease, lightning, fire, flood, and drought.

But the trees of Patuxent are more than just records in a County of State Record Book, they are living stories that have witnessed many events. There once was a willow oak at Snowden Hall that probably witnessed the most. The party of dignitaries for the dedication of Patuxent Research Refuge gathered under its branches in June 1939. Many employees have picnicked under its branches on warm days. The employees witnessed the emergence of black rat snakes from the tree every spring as the warmer temperature stimulated their bodies for another mating season. On one occasion a large black rat snake fell

out of the tree and landed on a picnic table in the middle of a startled group of employees enjoying their lunch. On another occasion the staff observed a pair of black rat snakes as they carried on a very excited act of copulation. To the surprise of the onlookers the activity was so intense that the snakes lost their hold on the tree and came crashing to the ground. Lucille and Bill Stickel captured and marked many of the snakes from this tree over the years. Although the snake tree died in 1988 after the top fell down in a storm, Gary Heinz found a seedling of this tree and planted it at its base in 1989 as part of Patuxent's 50th anniversary celebration.

For many years there was a white mulberry tree at Gabrielson Laboratory that shaded many employees on hot summer days as they walked to and from work. In the summer of 2005, several employees noticed that one of the tree's biggest branches, about a foot in diameter, was hanging very close to the sidewalk. The leaves brushed against staff as they hurried to and from work. The idea of trimming the branch back so it no longer was a nuisance entered many minds, but soon was forgotten and no action taken. What the staff did not realize was that the branch was not just extending its growth, but was slowly falling to the ground. This fact became quite evident

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Ding-Darling: Creator of the Duck Stamp and Patuxent Research Refuge

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of this refuge is to assist in the restoration of wildlife--one of our greatest natural resources." Secretary Wallace recognized "the vision and foresight of Dr. Ira N. Gabrielson, Chief of the Biological Survey." He further stated that the nation's first wildlife research station was "the manifestation of a nation-



Cartoon entitled "Sportsmen" depicting crippled duck checking definitions.

al determination and a national ability to conserve and administer wisely the organic resources and products of the soil--a priceless heritage to the generations of Americans yet to come."

Although Mr. Jay N. "Ding" Darling, former Chief of the Bureau of Biological Survey, was not mentioned in Secre-



Cartoon "Starting a Fire" by Ding Darling depicting the genesis of new conservation programs.



Cartoon by Ding Darling depicting poor land management and good game management.



Ding Darling's last cartoon.

tary Wallace's address, many persons also credit his interest and support for the formation of the Patuxent Research Refuge and his support of research in general. Darling also is remembered for his strong leadership and tough decisions. During his leadership hunting days and bag limits were reduced, live decoys and baiting were prohibited, sinkboxes and batteries were made illegal, and shotgun capacity was reduced to three shells. The last cartoon he drew was placed in a sealed envelope to be seen at his death, which occurred in Iowa on February 12, 1962. The cartoon reflects his life with a scene of him fleeing a cluttered office of cartoons and hunting items, and the caption "Bye now - It's been wonderful knowing you." 🦆

Friends of Patuxent Wildlife Holiday Bazaar



**Saturday, November 2 • 9AM to 3PM
National Wildlife Visitor Center.**

DONATE: Donations for Baldy's Bargains Thrift Shop may be left at the Visitor Center until October 15. Clean out that closet and donate what you can't use to Friends of Patuxent. **Don't forget to fill out a donation form.** Please - NO posters, flat art (framed or unframed photos, originals, or prints), or bed linens. NO large items. Books, CDs, and DVDs are always popular.

VENDORS: We're still looking for vendors. Spaces available at \$15/space plus 15% of sales. We provide a table and chairs. If you would like to be a vendor or know someone who would, contact Mary Ann Hartnett at 2ufrommah@gmail.com or leave a message at 301-497-5789.

BAKE: Don't forget the Bake Sale. Donations for the Bake Sale may be left at the Visitor Center starting Friday, November 1. Cookies, bars, snack mix, quick breads, and coffee cakes are most popular - doesn't have to be fancy, just homemade and delicious.

VOLUNTEER: Come and join us as a volunteer on Friday, November 1 as we get set up for the Bazaar and on Saturday, November 2. We have a lot of fun and there are plenty of chances to shop. To volunteer: contact Jeanne Latham at jelatham@verizon.net. Refuge volunteers and Friends of Patuxent members welcome.

SHOP: Be sure to come by Saturday, November 2 to start your holiday shopping. We will have more than 30 vendors selling everything from birdseed to fine jewelry. You're sure to find that unique gift for that special someone. This is the perfect time to introduce your family and friends to the Refuge.

Lunch available at the Crane Café

MEET LIVE ANIMALS

DOOR PRIZES EVERY HOUR

TRAM RIDES (*weather permitting*)



Around the Refuge

North Tract photos by Jerry Herman except Great Blue Skimmer by Tony Van Schoor



Great Blue Skimmer Dragonfly



Monarch Butterfly



Fox Kit



Ruby-throated Hummingbird



Doe and fawns



Great Egret

Photos by Matt Beziat



Common Snapping Turtle (North Tract)



Red Bellied Turtle (South Tract)



Southern Leopard Frog (South Tract)



Bumble Bee (South Tract)



Golden Winged Skimmer (North Tract)



Swift River Skimmer (North Tract)

Otterly Fun Visitor at Patuxent!

Photos by Jennifer Chin, Outreach and Conference Coordinator, Recreation Assistant



Federal Duck Stamp Contest

Lowell W. Adams, Ph.D., CWB®, Secretary, Friends of Patuxent



This year's Federal Duck Stamp Contest will be held at Patuxent's National Wildlife Visitor Center, Laurel, Maryland, September 27 and 28, 2019. The first Federal Duck Stamp was designed in 1934 by Jay "Ding" Darling, a political cartoonist from Des Moines, Iowa, who later became chief of the Bureau of Biological Survey, the predecessor to the U. S. Fish and Wildlife Service. Darling's stamp was designed in response to the Migratory Bird Hunting Stamp Act (or Duck Stamp Act) signed by President Roosevelt in 1934. Under the act, all waterfowl hunters 16 years of age and over must annually buy and carry a Migratory Bird Hunting and Conservation Stamp (a Federal Duck Stamp). Money from sale of duck stamps goes directly into the Migratory Bird Conservation Fund. Since 1934, some \$1.1 billion dollars has gone into that fund and leveraged to conserve over 14 million acres of habitat.

A special presentation by Tom Milligan, who does a fantastic job of impersonating Darling, is scheduled for Saturday, September 28, at 2:30 pm.

For more information and possible updates on the Duck Stamp Contest, please visit:

<https://www.fws.gov/nwrs/threecolumn.aspx?id=6442456057> 🦆

SAVE THE DATE!

Saturday, November 2nd



Annual Wildlife Holiday Bazaar
COME SHOP, EAT & SUPPORT THE REFUGE

The Buzz on Honey Bees

By Ross Feldner, Volunteer and Friends Newsletter Editor

Honey bees are one of the hardest working insects in the world. A honey bee colony is comprised of three distinct members:

Queen - mother to all the bees in the colony; she is a fertile female.

Worker - an infertile female that performs the labor tasks of the colony, including feed preparation, guarding the hive, feeding the queen, drones and brood, and heating and cooling the hive. Workers live about 6 weeks

Drone - the male that starts out as an unfertilized egg. Its only purpose in the colony is to mate with a virgin queen. They live to mate with the queen, but not more than one in a thousand get the opportunity to mate. Drones live no more than about two months

Bees maintain a temperature of 92-93° Fahrenheit in their central brood nest regardless of whether the outside temperature is 110° or -40°.

On average, a worker bee in the summer lives six to eight weeks. Their most common cause of death is wearing their wings out. During that six to eight-week period, their average honey production is 1/12 of a teaspoon. In that short lifetime, they fly the equivalent of 1 1/2 times the circumference of the earth. The peak population of a colony of honeybees is usually at mid-summer (after spring buildup) and results in 60,000 to 80,000 bees per colony.

A prolific queen can lay up to 3,000 eggs per day. A honeycomb cell has six sides because the bees can fill the space without gaps, thus requiring the least amount of wax and offering the most storage space. To make one pound of honey, the bees in the colony must visit 2 million flowers, fly over 55,000 miles and will be the lifetime work of approximately 768 bees. A single honey bee will visit 50-100 flowers on a single trip out of the hive. A bee hive may be home to as many as 60,000 bees. Bees produce honey



as food stores for the hive during the long months of winter when flowers aren't blooming and therefore little or no nectar is available to them.

Honey is the ONLY food that includes all the substances necessary to sustain life, including water. A typical beehive can make up to 400 pounds of honey per year. Honey never spoils. It would take about 1 ounce of honey to fuel a honeybee's flight around the world. Flowers and other blossoming-plants have nectarines that produce sugary nectar. Worker bees suck up the nectar and water and store it in a special honey stomach. When the stomach is full the bee returns to the hive and puts the nectar in an empty honeycomb. Natural chemicals from the bee's head glands and the evaporation of the water from the nectar change the nectar into honey. 🐝

Share Your Patuxent Experience



You, and most folks who visit Patuxent Research Refuge, find a connection with nature. It may be the calm feeling of the forest sanctuary; the sight of a Great blue heron flying over the lake; the scent of a fox who passed by the spot early this morning.

Please share your experience – the one that left you inspired, smiling, grateful, amused, or however you felt. You may have written a description in your nature journal or drawn what you saw in your sketchbook, or taken several photos of wonderful places, critters and sights

Send your write-up, photo(s), sketch, or excerpt so others can enjoy it too. If you prefer, you may do it anonymously; or we will be glad to acknowledge you as author, artist or photographer.

Thank you in advance for sharing.

You may send your submissions to Jeanne Latham at jelatham@verizon.net. Jeanne is the Vice-chair of the Friends of Patuxent. If you have any questions, call her at 410-798-1601.

We're Likin' Lichens at Patuxent!

Continued from page 4

part of these organisms collect and convert sunlight to sugars; the fungi parts consume those to get energy for other functions; together they absorb moisture, minerals – just about everything and anything in the air, the fog, the rain that lands upon them. Little rootless sponges they are, absorbing, absorbing, and also altering the soil beneath them as they live, in ways that scientists are still exploring.



Old Man's Beard Lichen (*Usnea* genus) at the Patuxent Research Refuge National Wildlife Visitor Center.

She further noted that, because they absorb almost everything that falls on them, lichens have long been recognized as sensitive indicators of air quality and air pollution. One lichen species, for example, is so sensitive to the air pollutant, sulphur dioxide (SO₂), that this lichen's very existence in a given locale generally indicates good air quality. If air pollutants are present, this species, with its long, fine, delicate tendrils will absorb them; its metabolic functions will be impeded by the pollutants, and it will die! Lichens are also sensitive to air-temperature fluctuations, which makes them important to understanding climate change and its effects.

So, you may ask, how's the air quality around our Visitors' Center? The presence of the old man's beard lichen, aka, "*Usnea*" (/ooze-nee-uh/), says it's pretty good! And what was young Ava's favorite lichen? "The script lichen!" she announced, thrilled to know of its existence and its name, saying that she would be looking for it whenever she went out. 🐢

The Big Trees of Patuxent!

Continued from page 11

when at about 6:30 AM on August 10, 2005, the branch came crashing to the ground as employees walked to work. Fortunately, no one was under the branch, but Bird Banding Lab employee, Wendy Manear, was not far from it and witnessed and heard the thunderous crash. The branch apparently could no longer support itself with the increased summer moisture and growth. Wendy said she had planned to send the Facilities Department a request to trim the branch, but procrastinated one day too long!!

Many of the living trees of Patuxent have endured where other trees failed. They deserve our respect for surviving, but they also warrant our thanks for providing cleaner air and a more interesting environment for all humans to enjoy. The exotic trees were mostly planted in the 1940-50s as the Refuge was being developed and most are in the Headquarters area. The native ones are scattered throughout the Refuge in the many diverse habitats. Some are easy to find, but some offer a challenge. New entries are always welcomed, so good luck in your search. 🐢

Photo by Karen E.H. Atwood



Northern catalpa tree inspected by scientist from the National Arboretum, 2009.



Largest sycamore at Patuxent measured by M. C. Perry, 2015.



Friends of Patuxent

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www.friendsofpatuxent.org

WE INVITE YOU TO JOIN!

Friends of the Patuxent Wildlife Research Center and Patuxent Research Refuge, Inc. is a designated Section 501(c)(3) public charity. It is a membership organization whose mission is to financially support the research of the PWRC and the environmental education, outreach and recreational missions at the PRR. All contributions are tax deductible to the extent allowed by law. Our Maryland Charitable Organization Registration-2348.

Your membership/contribution helps support the mission and programs at Patuxent. You also receive the following benefits:

- Quarterly newsletter (mailed on request or go to www.friendsofpatuxent.org)
- 10% discount in our Wildlife Images bookstore and other area refuge bookstores
- Attendance at member functions
- Participation in on-site educational programs
- Sense of accomplishment in providing many opportunities for wildlife-related recreation, education and research

(Application on reverse side)