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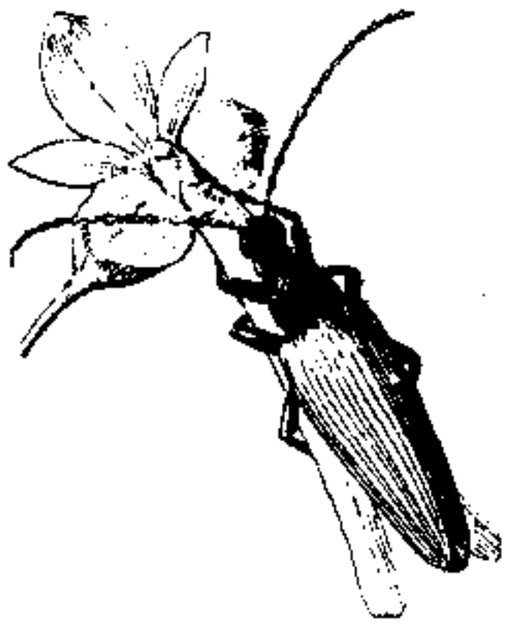


The Maryland Native Plant Society

(MNPS) is a nonprofit organization that uses education, research, and community service to increase the awareness and appreciation of native plants and their habitats, leading to their conservation and restoration. Membership is open to all who are interested in Maryland's native plants and their habitats, preserving Maryland's natural heritage, increasing their knowledge about native plants, and helping to further the Society's mission.

MNPS sponsors monthly meetings, workshops, field trips, and a fall conference.

LETTER FROM THE EDITOR,

As you all have likely noticed, timely announcements, upcoming events, and action alert items, as well as occasional short articles and conservation updates, are included in the society's new publication and newsletter, *Native News*. Many thanks to Jake Hughes for doing a great job of editing and producing *Native News* this year. *Marilandica* will continue as the society's journal and will feature articles on native plants, natural history, ecology, natural communities, conservation issues, and land management. It will also be a record of various society activities and accomplishments. Special thanks to Meghan Tice for helping with editing and formatting. Thanks also to Jim MacDonald, Lou Aronica, and the many volunteers who have spent innumerable hours folding and preparing *Native News*, *Marilandica*, and MNPS field trip brochures for each mailing.

On the research and conservation fronts, the society has been very busy this past year surveying the remaining Magnolia Bogs in Maryland, collecting data, and working towards completing a community classification of them. At present, these very rare natural communities are unranked and are not adequately protected by current federal or state wetland regulations. Mark Strong, MNPS member and Smithsonian Institution botanist, Rod Simmons, and Stan Shetler, Curator of Botany Emeritus at the Smithsonian Institution, expect to have a report describing Magnolia Bogs ready for publication this fall. The society has also been working on documenting several other important natural communities of the inner Coastal Plain and Piedmont - Terrace Gravel Forest, Shell-Marl Ravine Forest, and Diabase and Serpentinite Communities. Much of this work is a collaborative effort with the Maryland and Virginia Departments of Natural Heritage, the National Park Service, local park authorities, botanists and ecologists who have spent many years studying the flora and plant associations of the region, naturalists, and many others. It is hoped that this information will bring attention to these special places and lead to their conservation. Appreciation is also extended to the FOMA (Friends of Mount Aventine), SAMMS (Save Araby, Mattawoman, & Mason Springs), and MAGIC (Maryland Alliance for Greenway Improvement and Conservation) organizations for their assistance and outstanding environmental education and conservation efforts. All are welcome to participate in plant surveys and field trips. Look for updates and announcements in future *Marilandica* and *Native News* issues, and at our web site.

Sincerely,

Rod Simmons

A Trip to the Wetlands

By Janet L. Earickson

The sun's rays were just peeking over the tops of the rowhomes in South Baltimore, and the purple and yellow pansies waved in the cool breeze the morning of October 22, 2000. I stood on the sidewalk in front of my house, awaiting my sister's arrival and our imminent departure. I had been up since 5:30 a.m., filled with anticipation of the day's events. We were about to embark upon our field trip for the wetland class we had been attending every Monday evening for the past three weeks. We had received a general classroom introduction to wetlands during those weeks, including lectures from two well-known wetland ecology experts—Ralph Tiner from the U.S. Fish and Wildlife Service and Bill Sipple from EPA, and would soon receive a first-hand field lesson from Bill Sipple.

Early fall in Maryland is one of my favorite times of year. The air is clear and easy to breathe, the skies are like oil paintings—wisps of white on a cerulean blue canvas, and the biting onset of crisp cool weather snaps me out of my end-of-summer lethargy letting me know that I am alive. It was nearing 8:30 a.m. I spied Sandy's blue Cavalier turning at the top of the street, and readied myself for the beginning of our journey. She pulled the car up, greeted me, and opened the trunk. I loaded in our supplies for the day—one pair of brand new Swamp Walkers, a cooler with lunch and refreshments, several towels, spare socks, and a water-proof bag. The rest of the field equipment—a notebook and pens, camera with zoom lens and several rolls of film, a few first-aid items, handouts from class lectures, and some sundry items—I wore in my field jacket. Once the car was loaded and we were buckled in, we headed toward our meeting place—Holly's Restaurant on the Eastern Shore.

I live for this experience every year: The chance to smell the pungent, fishy Bay, to feel the wind on my face as it blows salt spray off of the water, to cross over to the Eastern Shore of the Chesapeake where the landscape makes a dramatic change to lowlands. The salt and the sand and the water call me. After about an hour's drive, Sandy and I arrived at Holly's.

Soon, our fellow classmates began congregating in the parking lot. One man named Bob pointed out a persimmon tree. Plucking the fruit and pulling out his pocket knife, he cut the persimmon open and showed us that we could eat it. A few of us introduced ourselves, and then our instructor appeared with punctuality. It was time to get underway.

We consolidated ourselves into a train of five vehicles. Bill gave us directions to load up our day's gear (including lunch and waders) into the vehicles we would be riding in, then pull out onto the access road and line up on the shoulder. When we were all in place we would follow him east on Route 50 to the town of Easton. We very efficiently followed directions and were soon on our way.

After about half an hour we reached Easton, then turned left on Route 331 (Dover Road). In a couple of miles we turned left again on Black Dog Alley, then right on Kingston Road, and right again on an unpaved road that led to a farm. It did not seem like the kind of place we were going to find a marsh.

We passed by a shed and through a gate, and soon found ourselves driving around the perimeter of a large farm field, past enormous combines and kicking up dust all the way. After circuiting the field we arrived at King's Creek Nature Preserve. It was nearing 11:00 a.m. and the day already seemed to be slipping by much too rapidly. We stepped from our vehicles into ankle-high grass and gathered round as Bill spread a very well-worn map on the hood of his car and showed us where we were: a 250-acre brackish tidal marsh along the Choptank River in Talbot County, Maryland. We received some handouts—a regional map of our location; a series of distribution maps for spatterdock (*Nuphar luteum*), arrow-arum (*Peltandra virginica*), giant cordgrass (*Spartina cynosuroides*), and saltmarsh cordgrass (*Spartina alterniflora*) in Maryland's tidal wetlands; and an incredibly jam-packed map of tidewater Maryland that showed the distribution of hundreds upon hundreds of sampling stations for marsh, swamp, and strand vascular plant species. Bill explained that we would be walking through the marsh on a boardwalk and would not need our waders. Sandy and I were both disappointed, as we were ready to jump right in and get wet and muddy.

As we stepped onto the boardwalk and entered the marsh, we were suddenly surrounded by vegetation on both sides: giant cordgrass and reeds ten to twelve feet in height. Bill stepped off the boardwalk (asking the rest of us to remain) to cut some specimens and point out the various features of specific plants. The height of the vegetation became

dramatically evident and quite striking—I could easily imagine getting lost and being swallowed up by the vast marsh, and I was thankful we had a boardwalk to follow.

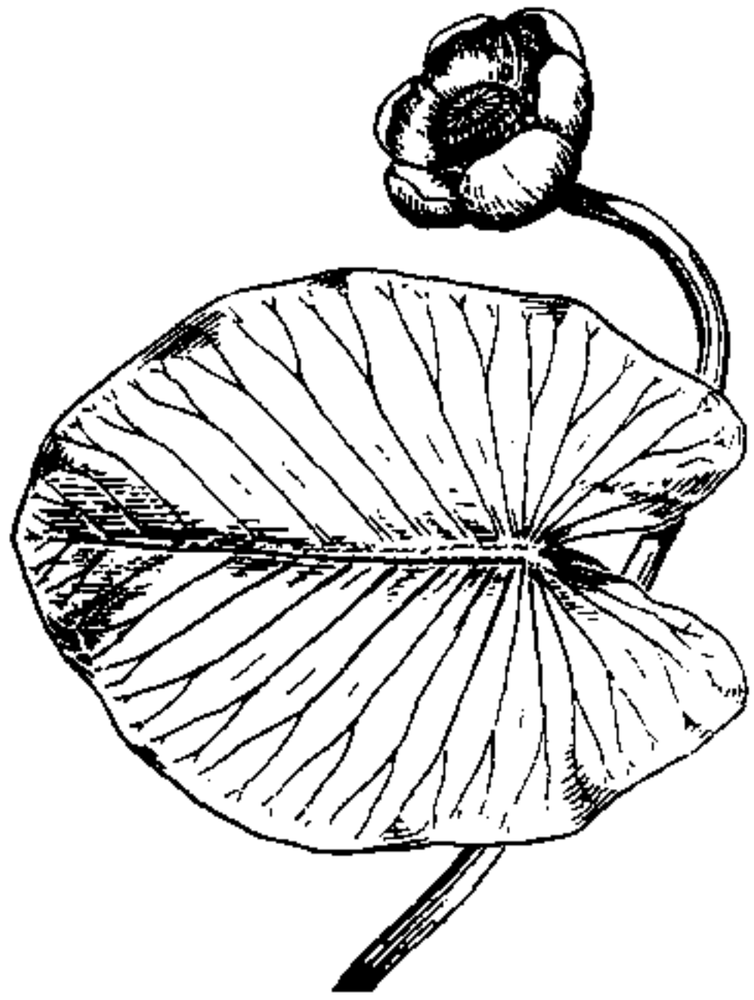
The information soon began flowing faster than we could process it. Plants were identified by both common name and scientific name. We were given some to hold, to visualize and feel their textures. Sandy produced a hand lens, and we examined each one. I remember the rose mallow (*Hibiscus moscheutos*), a small brown plant with pods whose flowers had already gone. And, I remember Bill demonstrating the difference between the narrow-leaf cattail (*Typha angustifolia*) and the broad-leaf cattail (*Typha latifolia*). Sandy scribbled notes rapidly, and I attempted to capture what I could for photographic posterity.

We soon pressed onward further into the marsh. We came upon a tall wispy plant that waved gracefully in the gentle breeze: wildrice (*Zizania aquatica*). Wildrice is an annual grass that is very important to wildlife. It is often crowded out by aggressive invasive species, which we would discuss a bit later.

After a short talk on the virtues of wildrice, Bill again left the boardwalk and began gathering handfuls of plants. The marsh surface looked very wet and muddy, and it was obviously not an easy walk at times, but he did not sink, to my surprise. When he returned he showed us the differences between arrow-arum (*Peltandra virginica*) and pickerelweed (*Pontederia cordata*), both plants with arrowhead-shaped leaves. We examined their similar basal leaf lobes and noted the differences in vein patterns. It suddenly clicked: I could tell the difference between two plants that had previously looked the same to me! This was getting really interesting!

We were then handed some round seeds from the arrow-arum to examine. They were rubbery and produced a sticky gelatinous substance when squeezed. We soon noticed they were floating abundantly in a nearby tidal gut. There was also a beautiful stand of cattails growing nearby, although I could not tell whether they were narrow- or broad-leaf.

Bill remarked that it was getting late, and suddenly we found ourselves pressing forward quite rapidly. It was no easy task keeping up, having a much smaller stride than our leader. And, there was one tricky section of boardwalk that acted like a springboard, catapulting into the air the last person to step on it as the person in front moved on to the next section. For a moment I thought I might unintentionally become one with the marsh.



Suddenly we came to a stop, and Bill pointed out that we were in a field of common reeds (*Phragmites australis*), an aggressively invasive species that grows quite densely and tall, on the order of twelve to fourteen feet or so. This is the plant that too often crowds out the valuable wildrice. I had heard of *Phragmites* many times before but did not realize it was an invader. To demonstrate the stand's thickness and how it crowds out other vegetation, Bill left the boardwalk once more and very quickly disappeared into the reeds. As the reeds shook I soon became aware that the air was filled with dust (possibly disintegrating flower and other plant parts), and my allergies kicked into high gear.

After Bill emerged from the reeds and rejoined us, we moved on through the vast stand; the reeds bent over the boardwalk and at times had to be ducked around or pushed away. An observation platform lay ahead of us. We reached it and climbed the steps, and were amazed at the size of the field of *Phragmites* that surrounded us. White poles were visible among the reeds; these were used to delineate the edge of the stand so that scientists could monitor its growth.

As we stood gazing over the marsh, an amazing thing happened: Quite suddenly, hundreds—maybe even thousands—of geese rose up from beyond the tree line. Their incredible sound was near deafening, and our lecture paused as they approached and passed over, forming many "V's" and flying in the same general direction, with an occasional straggler or two.

They had probably been disturbed by the combines starting up on the farm field we had driven around earlier.

It was nearly 12:30 p.m. and we were all getting hungry, so Bill suggested we walk as quickly as possible back to our cars and that we move on to our designated lunch spot at Martinak State Park. We trekked down the steps of the observation platform and headed back. Along the way we stopped as Bill stomped out into the marsh to show us one last interesting feature: a muskrat (*Ondatra zibethicus*) hut. It was obviously not easy walking in that area of the marsh, and we had to wait several minutes while he stomped out and back. Disappointingly, there was no muskrat to be seen.

After 15 minutes or so we reached our cars, piled in, and filed back around the farm field to Route 331, where we made a left-hand turn. From there we turned left on Route 578 (Bethlehem Road, becoming Harmony Road), and left on Route 404 (Shore Highway). After about half an hour we reached Martinak State Park, where we had lunch beneath the trees in view of the freshwater portion of the Choptank River.

After lunch, Bill climbed down the riverbank and began digging up some spatterdock (yellow pond lily). It looked like it took quite a bit of effort, and when he climbed back up and showed us what he had, it became apparent why. The spatterdock has many thick rhizomes (underground, rootlike systems) that grow together in a tangle. This is the root mass that holds the marsh together. These spongy structures also help get oxygen to the plant's roots as they grow in anaerobic soil. The spatterdock rhizomes were passed around and examined. They were surprisingly lightweight, appearing buoyant. Bill asked if anyone wanted to keep the specimens, and Sandy jumped at the chance to take them back to her eighth-grade science classroom.

Before leaving the park, Bill had one last nifty thing to show us, and he asked us to look for ants to demonstrate. Someone quickly spotted a few and scooped them up. Then we were asked to look for small cone-like depressions, which would be the dens of antlions (also known as doodlebugs). After walking around a bit, we found one. An ant was placed inside, and soon sand was flying out of the hole as the antlion gobbled up its prey. After repeating this in a nearby antlion den, Bill scooped out a handful of sand and produced a little gray bug with pincher-like jaws. I remember as a child seeing depressions such as these in my yard. Who could have imagined such a beast was so close at hand?

It was time to move on once more. Before getting in the car, we placed the spatterdock in our cooler to give it safe passage home. Once our vehicle train was in place, we filed out of the park, taking 10 minutes just for everyone to turn left onto busy Route 404 and line up on the shoulder once more. With everyone in place, we followed our leader to Route 313 north (Greensboro Road, becoming Goldsboro Road), then right on Jones Road. From here on my directions are obscure, and I am quite sure that I could not find either of our last stops a second time.

It was nearing 2:00 p.m. when we pulled off on the shoulder of the road and got out of our cars. We were promised a wetland type referred to as a Delmarva pothole, but all we could see was a thick stand of woods. The students began climbing a small embankment and entering the woods. This time I was at the back of the group, and it was taking quite a long time to get moving; I couldn't imagine what was taking so long. Finally, Sandy and I made it up the embankment to the edge of the woods, and it was soon obvious what was causing the delay—the woods were filled with prickly vines, common greenbriers (*Smilax rotundifolia*), that were snagging everyone's clothing. Sandy had on shorts and had to endure multiple scratches (she came out looking like she'd been attacked by a roving band of angry housecats). Our first-aid supplies would soon get put to use. I was wearing sweatpants, which seemed to have a magnetic attraction for the prickles. I was quickly tangled up and spent several minutes trying to free myself, in the process missing the beginning of Bill's discussion.

The sight of the pothole was well worth the effort it took to get to it. It was a large circular depression covered with water and fallen brown leaves, and it had several trees growing from it. The trees reflected off the water in the afternoon sunlight, producing a very tranquil scene.

Soon Sandy began laughing. A large, gangly green bug with legs like twigs had fallen onto my hat. He was an interesting fellow, but no one, not even Bill, could identify him. As we turned to file out of the woods, Bill remarked, "There's that path I was looking for," and our exit was a bit smoother than our entrance.

There was one last stop to make. We got back on to Route 313 and followed our leader through a place called Baltimore Corners. After a short jaunt on a dirt

road, we pulled off at the edge of a forest next to a field. The field had a "No Trespassing" sign, but Bill assured us that it did not apply to the path we would be following, whose right-of-way was owned by The Nature Conservancy. Both this area and our previous stop were part of the Baltimore Corners Preserve, located in Caroline County, Maryland. At last we were told to don our waders and boots.

As it turned out, the field had once been covered by water and was indeed a Delmarva pothole. Bill asked us to wait while he went out into the field with an auger simply to take a soil sample. He brought it back and showed us the black mucky substance, explaining how the soil gave clues to the wetland status of the field. He explained that it was a prime site for wetland restoration/enhancement; since it had once been flooded, it would be easy to get wetland plants to grow there, as the soil conditions were just right. While he talked, we passed around the soil sample, which felt somewhat sticky and a little like silly putty. He contrasted this soil sample with one obtained in the adjacent upland, which had a much lighter brown color. Afterwards, we continued walking around the field until we came to a path, then entered the forest.

A short ways into the woods we came across a small depression filled with water (another Delmarva pothole), but this was not our destination, so we paused only briefly and then moved on. As we walked through the forest, I noticed that the ground surface was unusual, not entirely steady. When I planted my foot, the ground seemed to shift, like a very thick layer of mud on top of a liquid layer. We were walking on peat, and it had a very unique feel to it.

After a short hike we came to the edge of the woods, and before us lay a giant Delmarva pothole. Most of the class followed Bill out into knee-deep water and waist-high Walter's sedge (*Carex walteriana*). The sedge was golden brown in the late afternoon sun, and the pothole was surrounded by beautiful fall foliage, trees that were shades of red and orange and brown, and some still a little green. I cautiously stepped out into the water, remembering what my colleague Charles had told me: Make sure you plant your foot firmly, and when you step, get a firm grip on your boot first; otherwise, you'll lose your balance trying to recover it and fall down, and there's no saving face after that. Also, never wade in deeper than your boots or waders, because they'll fill up with water and become a drowning hazard.

Because I can't swim very well, I was quite cautious. I soon discovered that the channel everyone was walking in was somewhat treacherous, and each time I stepped I would sink another few inches. I moved up into the sedge and out of the channel, and got much better footing.

I missed most of the lecture at this location because I was in the back of the group and could not wade out as far as I needed to. A handful of folks had no field gear and never even left the edge of the woods. When Sandy emerged from the pothole, her socks and shoes were blackened, and she had pieces of vegetation clinging to her. But, we were both having a great time. One of the students had caught a tiny frog and was showing it off while Bill cleaned his auger. (We had hoped to see the rare carpenter frog, *Rana virgatipes*, which occurs at this site, but we didn't.)

We retraced our path through the woods and back to our cars, and Bill told us that after we got cleaned up he would lead us back toward Holly's. On the ride home I plucked a curious fellow off my shoulder—an inchworm, probably picked up on our final trek through the woods, and placed him on the dashboard where he inched around for over an hour. I would find several more in my hair and clothing before the end of the day. I had become one with nature, and it felt good.

About an hour-long drive brought us back to our journey's beginning: my front steps. Sandy double-parked, my husband met us at the curb eager to hear about our great adventure, and I removed the spatterdock rhizomes from the cooler before unloading it from the car. The sun was just beginning to sink beyond the skyline of houses and stadiums, and I was suddenly reminded of some lines from a favorite Theodore Roethke poem called "The Waking":

> I wake to sleep and take my waking slow,
> I learn by going where I have to go.

I had learned today where I have to go. I must return to the wetlands where there is still much to learn. As we said goodbye and Sandy drove away, I realized that today's journey would be the first of many.

Janet L. Earickson is a technical writer and editor for an environmental consulting firm, and a freelance writer with strong interest in the natural environment.

Araby Bog
A Globally-Rare Magnolia Bog In Charles County, Maryland

By Roderick H. Simmons and Mark T. Strong

The Araby Bog is a diverse, 6.5 acre Magnolia Bog in Charles County, Maryland with a large, open section that gives rise to a pristine perennial stream that flows into nearby Mattawoman Creek. Magnolia Bogs are acidic, fen-like seeps (Shetler 2000, Thomas 2000) associated with gravel terraces of the inner Coastal Plain near the fall line that are named for the unique assemblage of Sweetbay Magnolia (*Magnolia virginiana*), sphagnum moss, and other bog flora (McAtee 1918, Shetler 1970). Occasionally they are referred to as "McAteean Bogs", after W.L. McAtee who first defined them in 1918 (Shetler 2000), or "Seepage Bogs" (Fleming et al. 2001). These rare wetlands differ geologically and hydrologically from the famous, rain-fed (ombrotrophic) peat bogs of New England and northern Europe because they occur in terrace gravel deposits and are spring-fed. Their distribution generally follows the fall line in a narrow east-west band from the Laurel area, at the northern extent of their range, in Prince Georges County, Maryland, to their southern extent, near Fredericksburg in Caroline County, Virginia, and are perhaps best developed in the Washington, D.C. vicinity (Simmons and Strong 2001). Throughout their range they were never common or very large, usually occupying an area an acre or so in size (McAtee 1918). Other well known bogs near Washington that are more eastward of the fall line, like the Glen Burnie and Magothy Bogs, are not characteristic Magnolia Bogs, despite some floristic similarities, because of different geological conditions and plant assemblages (Shreve et al. 1910, Sipple 1999, Severn River Association 2000).

Magnolia Bogs are enlarged springs or seeps that usually form on a slope where a perched water table intersects the ground surface above an impervious clay lens or aquiclude. Such seepage areas are particularly associated with terrace gravel formations which hold large amounts of rainwater in the porous sand and gravel lenses. The soils of high elevation gravel terraces in the vicinity of the fall line are composed of beds of cobble (gravel), sand, silt, and clay that were deposited by the Potomac River during glacial melting millions of years ago (Weems 1995). They are weathered, very acidic (pH 4.0), and generally infertile as a result of calcium ions and other nutrients associated with rich soils leaching into stream valleys below over a long period of time (Simmons 1995). The soils of Magnolia Bogs are also very acidic, sandy, and gravelly because they are derived from terrace gravel deposits. As a result, they are not characterized by accumulated peat or organic soils as true peat bogs are, except in some super-saturated areas. Nor are they characterized by the deep, mucky soils of more commonly encountered wetlands in the region, though occasionally these soils occur in small pockets within the Magnolia Bog complex.

Extensive studies of Magnolia Bogs throughout their range reveal most, if not all, to include dense, shaded thickets of ferns, shrubs, and large magnolias, as well as open, sunny areas dominated by graminoids (grasses and grass-like plants), a diversity of herbaceous plants, and scattered shrubs (Hitchcock and Standley 1919, Simmons and Strong 2001). Sphagnum moss is a dominant groundcover in both settings because of the permanently saturated, acidic conditions throughout the bog (pH 4.2-5.0) (Simmons 1995, Long 1999). The gravel and sand substrate is frequently exposed as well, "flushed...to the surface or slightly overflowed...by a constant flow of clear, cool spring water" (McAtee 1918). A characteristic "suite" of plant species, many of which are rare in Maryland and Virginia, comprises the flora of Magnolia Bogs and in addition to the aforementioned factors makes them unique (McAtee 1918, Hitchcock and Standley 1919, Shetler 1970, Simmons and Strong 2001, Fleming et al. 2001). Several rare dragonflies and damselflies (Fleming et al. 2001) and a rare copepod (Thomas 1991) are also associated with Magnolia Bogs.

Growing on forested slopes slightly above the bogs, in the permanently moist soil (capillary fringe) that surrounds the feeder-seeps, are often lush carpets of Ground Pine (*Lycopodium obscurum*), ferns, scattered ericads (shrubs in the Heath Family), and other characteristic plants of acidic seeps. These areas are usually extensive and are typically associated with Magnolia Bogs (Simmons and Strong 2001). Constant groundwater outflow that passes through these seeps and accumulates in the bogs then continues on as small perennial streams (Hitchcock and Standley 1919, Simmons and Strong 2001), sometimes forming acidic Seepage Swamps (Fleming et al. 2001). Such a condition exists at the Araby site.

Magnolia Bogs are therefore important components of the intricate hydrological cycle of terrace gravel communities, which also include upland Oak-Chestnut-Heath Forest, acidic seeps, perennial streams, and Seepage Swamps.

Magnolia Bogs have become increasingly rare and surviving ones degraded throughout their range because of extensive development of the gravel terraces that surround the bogs, which destroys or severely depletes their water supply (Rosenstock 2001). Most of the famous ones near Washington surveyed by the Smithsonian Institution and others nearly a century ago, like the Powder Mill Bogs, Holmead Swamp, and Terra Cotta Bog, have been destroyed. Some, like the Suitland Bog and the Oxon Run Bogs, have survived, although the Suitland Bog is greatly disturbed and faces further damage by encroaching development. The Little Paint Branch Bogs (small remnants of the once-extensive Powder Mill Bogs) exist under power lines and are therefore degraded by invasive exotic plants and utility maintenance, especially herbicides and utility vehicles. Siltation has damaged the bogs at the Beltsville Agricultural Research Center and channelized stormwater runoff from a housing development placed too near has mostly destroyed the Franconia Bog in Springfield, Virginia, Fairfax County's largest and best remaining Magnolia Bog. Urbanization, stormwater runoff, siltation, utility maintenance, and invasive exotic plants have degraded most of the remaining bogs. In contrast, the Araby Bog is unique among known Magnolia Bogs because of its pristine, undisturbed condition. Unfortunately, it is currently threatened by the proposed Falcon Ridge and Hunters Brooke development projects because of the extensive clearing, re-grading, and construction planned for the land surrounding the bog, especially the groundwater recharge areas.

Peatlands, pocosins, fens, and bogs throughout the Coastal Plain are extremely rare as a result of habitat disturbance, fire suppression, and fragmentation (Fleming et al. 2001). Similarly, Magnolia Bogs of the mid-Atlantic region are globally-rare natural communities (Morse 2000, Shetler 2000, Thomas 2000, Simmons and Strong 2001) with dwindling prospects for future survival. Unless adequate protection is uniformly given to these sites, most of them will disappear in the decades to come. To ensure some degree of conservation and stewardship, as well as recognition of their being highly-rare natural communities, it is strongly recommended that all Magnolia Bogs, regardless of rare species content, be designated a "Wetlands of Special State Concern" or similar status.

The following is a list of characteristic Magnolia Bog species (McAtee 1918, Hitchcock and Standley 1919, Shetler 1970, Simmons and Strong 2001, Fleming et al. 2001) that occur in the Araby Bog. Species actively tracked by the Maryland Natural Heritage Program (noted below) have a state rank of S1 (highly state rare) or S2 (state rare) and sometimes a state status of E (endangered) or T (threatened). A watchlist species has a state rank of S3 and is rare to uncommon, but is not actively tracked. A species that was historically known from Maryland with the expectation that it may be rediscovered has a rank of SH. A species that is believed to be extirpated in Maryland with little or no chance of rediscovery has a rank of SX.

Alnus serrulata (Ait.) Willd. Common Alder
Amelanchier canadensis (L.) Medic. Serviceberry
Aronia arbutifolia (L.) Pers Red Chokeberry
Calamagrostis coarctata (Torr.) Eaton Reed Bentgrass
Carex albolutescens Schwein. Greenish-white Sedge
Carex crinita Lam. Fringed Sedge
Carex debilis Michx. White Edge Sedge
Carex folliculata L. Long Sedge
Carex intumescens Rudge Bladder Sedge
Carex leptalea Wahlenb. Bristly-stalked Sedge
Carex lurida Wahlenb. Sallow Sedge
Carex seorsa Howe Weak Stellate Sedge
Carex stricta Lam. Tussock Sedge
Carex styloflexa Buckl. Bent Sedge
Carex venusta Dewey var. *minor* Boeckl. Dark-green Sedge (S2T)
Chelone glabra L. White Turtlehead, Balmony
Chionanthus virginicus L. Fringe Tree
Dioscorea villosa L. Wild Yam
Eleocharis tortilis (Link) J.A. Schultes Twisted Spikerush (S3)
Gaylussacia frondosa (L.) T. & G. Blue Huckleberry, Dangleberry, Blue Tangle
Glyceria striata (Lam.) Hitchc. Fowl Mannagrass
Gratiola virginiana L. Virginia Hedge-hyssop
Hypericum canadense L. Canadian St. John's Wort
Ilex laevigata (Pursh) Gray Smooth Winterberry
Ilex verticillata (L.) Gray Winterberry
Juncus acuminatus Michx. Tapertip Rush

Juncus canadensis J. Gay ex Laharpe Canada Rush
Juncus scirpoides Lam. Scirpus-like Rush
Juncus subcaudatus (Engelm.) Coville & Blake Woodland Rush
Kalmia angustifolia L. Sheep Laurel (S3S4)
Leersia virginica Willd. Whitegrass
Leucothoe racemosa (L.) Gray Fetterbush
Lilium superbum L. Turk's Cap Lily
Lyonia ligustrina (L.) DC. Maleberry
Magnolia virginiana L. Sweetbay Magnolia
Maianthemum canadense Desf. Canada Mayflower
Osmunda cinnamomea L. Cinnamon Fern
Osmunda regalis L. Royal Fern
Oxypolis rigidior (L.) C. & R. Cowbane, Water Dropwort
Platanthera clavellata (Michx.) Luer Green Wood Orchid
Rhexia virginica L. Virginia Meadow Beauty
Rhododendron viscosum (L.) Torr. Swamp Azalea
Rhynchospora capitellata (Michx.) Vahl. Brownish Beakrush
Rhynchospora capitellata (Michx.) Vahl. forma *controversa* (S.F. Blake) Gale Brownish Beakrush
Rhynchospora gracilenta Gray Slender Beakrush
Rubus hispidus L. Bristly Dewberry
Scirpus polyphyllus Vahl. Leafy Bulrush
Smilax pseudochina L. Halberd-leaved Greenbrier (S2T)
Sphagnum imbricatum Hornsch. ex J.L. Russell
Sphagnum recurvum P. Beauv. Recurved Sphagnum Moss
Thelypteris palustris Schott Marsh Fern
Toxicodendron vernix (L.) Kuntze Poison Sumac
Vaccinium atrococcum (Gray) Heller Black Highbush Blueberry
Vaccinium corymbosum L. Highbush Blueberry
Viburnum nudum L. Possum-haw
Viola primulifolia L. Primrose-leaved Violet
Woodwardia areolata (L.) Moore Netted Chain Fern
Woodwardia virginica (L.) Sm. Virginia Chain Fern
Xyris torta Sm. Twisted Yellow-eyed Grass

The following species are also characteristic of Magnolia Bogs (MacAtee 1918, Hitchcock and Standley 1919, Shetler 1970, Simmons and Strong 2001, Fleming et al. 2001). They may occur in the seed banks at Araby Bog and other remaining sites. Species with an asterisk (*) were historically noted at several sites, but have not been recently observed in any Magnolia Bogs.

Arethusa bulbosa L.* Swamp Pink (SH)
Asclepias rubra L. Red Milkweed (S1E)
Bartonia paniculata (Michx.) Muhl. ssp. *paniculata* Screwstem (S3)
Bartonia virginica (L.) B.S.P. Yellow Bartonia
Calopogon tuberosus (L.) B.S.P.* Grass Pink (S1E)
Carex bullata Schkuhr ex Willd. Button Sedge (S3)
Carex collinsii Nutt. Collins' Sedge
Drosera intermedia Hayne Spatulate-leaved Sundew
Drosera rotundifolia L. var. *rotundifolia* Round-leaved Sundew (S3)
Eriocaulon decangulare L. Ten-angled Pipewort (S2)
Eriophorum virginicum L. Tawny Cottongrass (S3)
Fuirena squarrosa Michx. Recurved Umbrella-grass
Juncus debilis Gray Weak Rush
Juncus longii Fern. Long's Rush (S1E)
Lycopodiella appressa (Chapm.) Cranfill Bog Clubmoss
Lycopodiella caroliniana (L.) Pichi Sermolli* Slender Clubmoss (S1)
Lyonia mariana L. Staggerbush
Platanthera blephariglottis (Willd.) Lindl.* White Fringed Orchid (S2T)
Platanthera ciliaris (L.) Lindl.* Yellow Fringed Orchid (S2T)
Platanthera cristata (Michx.) Lindl.* Crested Yellow Orchid (S2T)
Pogonia ophioglossoides (L.) Ker-Gawl. Rose Pogonia (S3)
Polygala cruciata L. Cross-leaved Milkwort (S2T)
Polygala curtissii Gray Curtiss' Milkwort
Polygala lutea L.* Orange Milkwort
Rhynchospora alba (L.) Vahl White Beakrush (S3)
Rhynchospora cephalantha Gray Capitate Beakrush (S1E)
Rhynchospora microcephala (Britt.) Britt. ex Small Tiny-headed Beakrush (S2S3)
Sagittaria latifolia Willd. var. *pubescens* (Muhl. ex Nutt.) J.G. Sm. Pubescent Broad-leaved Arrowhead
Scleria muehlenbergii Steud. Reticulated Nutrush (S2)
Solidago latissimifolia P. Mill. Elliott's Goldenrod (S3)
Solidago uliginosa Nutt. Bog Goldenrod (S3)
Spiranthes cernua (L.) L.C. Rich. Nodding Ladies'-tresses
Thelypteris simulata (Davenp.) Nieuwl. Bog Fern (S2T)

Tofieldia racemosa (Walt.) B.S.P.* Coastal False Asphodel (SX)
Utricularia subulata L. Zigzag Bladderwort (S3)
Xyris difformis Chapm. var. *difformis* Bog Yellow-eyed Grass

The following species occurring at Araby are characteristic of acidic seeps that cover the permanently moist areas (capillary fringe) surrounding the groundwater outflow sources that feed the bog.

Gaylussacia frondosa (L.) T. & G. Blue Huckleberry, Dangleberry, Blue Tangle
Isotria verticillata (Willd.) Raf. Whorled Pogonia
Leucothoe racemosa (L.) Gray Fetterbush
Lycopodium obscurum L. Ground Pine, Tree Clubmoss
Lyonia ligustrina (L.) DC. Maleberry
Medeola virginiana L. Indian Cucumber Root
Osmunda cinnamomea L. Cinnamon Fern
Osmunda regalis L. Royal Fern
Symplocarpus foetidus (L.) Nutt. Skunk Cabbage
Thelypteris noveboracensis (L.) Nieuwl. New York Fern
Uvularia sessilifolia L. Wild Oats, Sessile Bellwort
Vaccinium atrococcum (Gray) Heller Black Highbush Blueberry

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For more information, contact SAMMS (Save Araby, Mattawoman, & Mason Springs) on the web at: www.samms.org or Pat Stamper at (301) 753-6175.

MNPS Field Botany Updates

Aberdeen Proving Ground, Harford County: Carolina Clubmoss (*Lycopodiella caroliniana*) (S1) was rediscovered in Maryland growing in an open, gravelly section of the Aberdeen Proving Ground. This plant was previously ranked as state-historical (SH).

Surveyor: Brent Steury

Araby Bog, Charles County: Canadian St. John's Wort (*Hypericum canadense*), Scirpus-like Rush (*Juncus scirpoides*), Virginia Meadow Beauty (*Rhexia virginica*), and Yellow-eyed Grass (*Xyris torta*) were discovered at Araby Bog this spring growing in a gravelly area where a tree had fallen, exposing the dormant seed bank and providing light. A colony of Sheep Laurel (*Kalmia angustifolia*) was also discovered near this area. The state-rare Dark-green Sedge (*Carex venusta* var. *minor*) (S2 Threatened) and a rare pink-blooming variety of Swamp Azalea (*Rhododendron viscosum*) were observed near the upper reaches of the bog.

Surveyors: Dave Linthicum, Rod Simmons, Mark Strong, and Meghan Tice

Chapman Shell-Marl Ravine Forest, Charles County: Additions to the flora of this site include Solitary Pussytoes (*Antennaria solitaria*) (S2 Threatened), Fragrant Bedstraw (*Galium triflorum*), Wild Geranium (*Geranium maculatum*), and Round-lobed Hepatica (*Hepatica nobilis* var. *obtusa*). The Solitary Pussytoes was growing in rich, calcareous soil on a very steep ravine slope. Bordering the Shell-Marl Ravine Forest along the Potomac River is a large, non-tidal, scrub-shrub palustrine wetland with some forested sections. New species discovered there are Adder's-tongue Fern (*Ophioglossum vulgatum*) and Marsh Fern (*Thelypteris palustris*).

Surveyors: Rod Simmons and Meghan Tice

Fort Dupont Park, Washington, D.C.: A 376-acre Terrace Gravel Forest Community with a diverse native flora. The uncommon Ovate-leaved Violet (*Viola sagittata* var. *ovata*) was seen growing on a steep stream bank along with a large colony of Pink Lady's Slipper Orchid (*Cypripedium acaule*).

Surveyors: Lou Aronica, Becky Barclay, Phil Blair, Jake Hughes, Mary Pat Rowan, Rod Simmons, and Meghan Tice

Hoyles Mill Diabase Area, Montgomery County: One of Maryland's rarest plants, Smooth Phlox (*Phlox glaberrima*), was rediscovered growing on diabase bedrock in woodland. This plant is presently ranked as state-historical (SH), but should now be ranked S1.

Surveyor: John Parrish

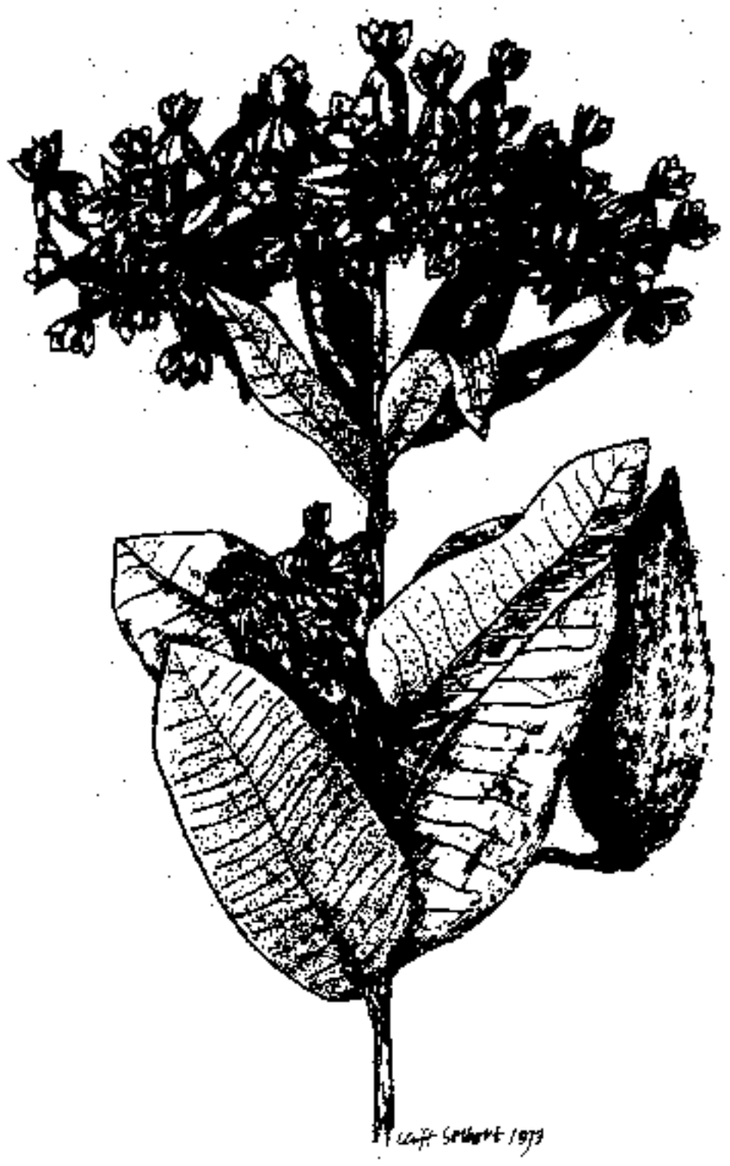
Oxon Run Bogs, Washington, D.C.: Numerous clumps of the state-rare Bog Fern (*Thelypteris simulata*) (S1) were observed in a gravelly, hillside bog along with Bog Clubmoss (*Lycopodiella appressa*) and other Magnolia Bog flora.

Surveyors: Sharon Geil, Stan Shetler, Rod Simmons, Brent Steury, Mark Strong, and Meghan Tice

Suitland Bog, Prince Georges County: Several plants characteristic of the Magnolia Bog Community were rediscovered at this site this year, including Collins' Sedge (*Carex collinsii*), Curtiss' Milkwort (*Polygala curtissii*), Capitate Beakrush (*Rhynchospora cephalantha*) (S1 Endangered), and Halberd-leaved Greenbrier (*Smilax pseudochina*) (S2 Threatened). Wintergreen (*Gaultheria procumbens*) was also observed growing next to the boardwalk on the northeast edge of the bog. Bill Sipple rediscovered Long's Rush (*Juncus longii*) (S1 Endangered) last year growing along the boardwalk by the Red Milkweed (*Asclepias rubra*) (S1 Endangered) colony in the open section of the bog.

Surveyors: Lou Aronica, Rod Simmons, Bill Sipple, Mark Strong, and Meghan Tice

Note: Species actively tracked by the Maryland Natural Heritage Program have a state rank of S1 (highly state-rare) or S2 (state-rare) and sometimes a state status of Endangered or Threatened.



The Least Successful Explorer

[Reprinted from the Winter 2001 Newsletter of the Connecticut Botanical Society]

Thomas Nuttall (1786-1859) was a pioneer botanist whose main field of study was the flora of remote parts Northwest America. As an explorer, however, his work was characterized by the fact that he was almost permanently lost. During his expedition of 1812 his colleagues frequently had to light beacons in the evening to help him find his way back to camp.

One night he completely failed to return and a search party was sent out. As it approached him in darkness, Nuttall assumed they were Indians and tried to escape. The annoyed rescuers pursued him for three days through brush and river until he accidentally wandered back into camp. On another occasion, Nuttall was lost again and lay down exhausted. He looked so pathetic that a passing Indian, instead of scalping him, picked him up, carried him three miles to the river, and paddled him home in a canoe.

From: *The Incomplete Book of Failures* by Stephen Pile, E.P. Dutton, publishers, 1979. Submitted by Donald Swan.

Encounters With *Origin*

By David B. Williams

[Reprinted from the Winter 2000 issue of *Douglasia*, the newsletter of the Washington Native Plant Society]

In the winter of 1997, I held a first edition of *Origin of Species* in my hands. The green cover was cracked and frayed. Cardboard backing protruded through the torn corners. Wanting to be careful, I put the book down and simply stared at it. The owner of this book had been Asa Gray, one of America's greatest botanists, and a friend of the author, Charles Darwin.

Gray was a professor of natural history at Harvard University in 1859, when *Origin* was published. More importantly, he was a member of Darwin's inner circle and a provider of key botanical information to the English naturalist while he wrote his great book. After publication, Gray became the most important American supporter of natural selection, writing and lecturing on behalf of Darwin's radical idea.

Until I touched that historical edition, I had never had a desire to read *Origin of Species*. I understood the basics of the theory of evolution, so why read a Victorian-age book bound to be impenetrable and filled with unwieldy sentences? Consider the rarely used title: *On the Origin of Species By Means of Natural Selection, or the Preservation of the Favoured Races in the Struggle for Life*. How could this book be interesting?

Asa Gray

I first heard about this unique copy of *Origin* while researching unusual materials owned by Harvard's natural history libraries. A librarian had told me that the university owned Asa Gray's personal copy of *Origin of Species*. I wondered if Gray had made notes of any kind in his book, so I asked if I could see it. The librarian said yes and I returned to the red brick building two days later.

Inside the library, I handed over my book bag and filled out the required white form to request the book. Judy Warnement, the head librarian, walked over to a gray cabinet, unlocked it, and pulled out a gray box. On the spine in simple black lettering it read Origin of Species Darwin, each word stacked on top of the other. She unwound the two white strings that held the acid-free box closed and pulled out the book. Before handing it over she cautioned my to be careful as the book was not in good shape.

I carried Gray's book over to one of the two reading tables, pulled out a chair, sat down, and dried my hands on my pants legs. I was already somewhat nervous getting ready to hold and read through this book. Now, I had to be extra careful to not damage it further. Beyond the cracks and dog-eared corners, the binding and cover had separated to the point that only the brownish endsheets held the book together. Asa Gray either was careless with his books or had read and reread this one.

I pulled up my sleeves and opened one of only 1,250 copies of the first edition of *Origin of Species*. Surprisingly, neither the publisher, John Murray of London, nor Darwin expected the book to sell well (Not that sales mattered to Darwin financially; he was independently wealthy. Nevertheless, he would receive two-thirds of the net profit!). Just one month before publication Darwin wrote to Murray: "I heartily hope that my Book may be sufficiently successful that you may not repent of having undertaken it." To spread the word about *Origin*, Darwin had asked his publisher to send presentation copies to potential reviewers.

The book I held was one of these review copies. Turning past the dark brown endpaper of Gray's book, I found where the publisher had written "From the Author" in ink now faded to golden brown. Asa Gray had penciled his name above it. Skipping over the wordy Victorian title page, I discovered that writing his name was only the first of numerous additions made by Gray. He peppered the margins with "Yes", "Well put", and numerous exclamation points. But he also read it like an editor, writing "too much personification" and "overdone, too fanciful", adding commas, and rearranging sentences. In summing up Gray's marks his biographer Hunter Dupree wrote "the[y] point to the conclusion that he approved much of Darwin's reasoning and most of his individual examples."

Charles Darwin

Gray's copy of *Origin* also contained two pages of Darwin's handwritten notes pasted into the back, comments that addressed several errors from the first edition and clarified information on domesticated dogs and slave-ants. Darwin sent these notes in January 1860, so that Gray could facilitate the publication of an American edition of *Origin*. Gray was instrumental in this endeavor because America did not recognize foreign copyrights until 1891; therefore, anyone could publish *Origin* in the U.S., with or without the author's consent. Gray helped arrange for a single American edition to be published in New York by Appelton. By May 1860, Appelton had sold 1,750 copies.

One week after looking through Asa Gray's copy, I had the opportunity to examine another first edition, presentation copy of *Origin*. Louis Agassiz, who in the 1860s was America's foremost opponent of the theory of evolution and Gray's colleague at Harvard, owned this copy. "From the Author" adorned the frontispiece of his book, too. The similarity with Gray's ended there, for no cracks marred the green cover and the corners lacked dog ears. Agassiz also wrote in the margins but his comments ranged from "This is monstrous" to "The mistake of Darwin..." to "A sentence likely to mislead!"

Louis Agassiz

Despite his opposition to evolution, Agassiz was a world renowned naturalist, respected by scientists and liked by the general public. He lectured brilliantly on subjects as diverse as the Ice Age, fossil fishes, and embryology. Agassiz, however, supported the theory of special creationism, which held that God had created each and every species in its current location. Species did not change through time, but great catastrophes like glaciers or floods periodically destroyed life on earth, and then God began the process all over.

After reading through these two books, I felt obligated to purchase my own copy of *Origin of Species*. I wanted to understand the context of their notes. I had many editions to choose from at the local bookstore. Publishing *Origin* has come full circle; anyone can publish the book because the copyright ran out years ago. I purchased the Penguin Books edition because it was a reprint of the first edition.

Darwin's writing pleasantly surprised me. He occasionally baffled me with long, ponderous ramblings, but for the most part I found *Origin* to be compelling and thought-provoking. I enjoyed his almost overwhelming number of examples. Despite the fact that Darwin wrote the book from his country home in England, he referred to rhododendrons from the Himalayas, South American tyrant flycatchers, slave-making ants in Sussex, and glaciers in North America. He also discussed plants and animals as diverse as legumes and lemurs, parasites and pigeons, and beetles and bats.

As a naturalist I was most impressed with Darwin's discussions of the relationships between organisms. In one case he showed how domestic cats affected the abundance of wildflowers in a field. He began by describing how bees are essential to the fertilization of flowers. From there Darwin examined how field mice destroy the insects' nests and honeycombs, thus affecting the number of bees in a region. "The number of mice," he said, "is largely dependent, as everyone knows, on the number of cats." By the end he created a splendid domino effect: Cats killing mice prevents the rodents from destroying nests, which allows bees to multiply and pollinate, thus producing a field full of flowers.

Darwin understood the importance of this interdependence of organisms. In the conclusion of his chapter devoted specifically to natural selection he wrote: "I can see no limit to the amount of change, to the beauty and infinite complexity of the coadaptations between all organic beings, one with another and with their physical conditions of life, which may be effected in the long course of time by nature's power of selection."

He clearly appreciated nature and did not write merely as a detached observer. He raised pigeons to show how domesticated animals could serve as an example of "natural selection"; examined the means of dispersal by testing the effects of salt water on seeds; and studied pollination in his garden plants. And of course, Darwin also spent the early part of his career traveling around South America on the HMS Beagle.

Darwin even discussed the deleterious effects of cattle grazing. He described exploring a "large and extremely barren heath" where cattle grazed. In the midst of the heath was an enclosure of Scottish fir. Within this fenced-in area he found 12 species of plants and six birds not found in the heath. In describing the heath he wrote: "I found a multitude of seedlings and little trees, which had been perpetually browsed down by the cattle."

My greatest surprise in reading this book was that Charles Darwin did not use the phrase "survival of the fittest." He came close, using phrases like "individuals having any advantage...would have the best chance of surviving..." or "the selected form having some advantage in the struggle for life over other forms." The precise four word aphorism, however, did not appear until the fifth edition, printed in 1869, ten years after the original publication. Furthermore, Darwin did not even coin the maxim—English philosopher Herbert Spencer first used "survival of the fittest" in 1862 in his *Principles of Biology Volume 1*.

After reading *Origin* I decided to find out if I was alone in my prior prejudice against the book. Over a several-month period I asked scientists, friends, writers, and science journalists if they had read it. The responses ranged from "I once read a book with *Origin* in the title. Does that count?" to "Of course, I even celebrate Darwin's birthday." This same friend said that he had self-consciously kept a copy of *Origin of Species* in his hip pocket during junior high school. He read it then and continues to reread it "for its constantly new insights and graceful language, and especially for the way in which the right questions kept coming to him (and, often, the right answers)."

Most of the people I asked could not claim such familiarity with *Origin*. They knew of the book, but they had only read passages or at most a chapter or two. Of the few who had finished the entire book, most had been required to read it for a class. I only found one or two people who had read it on their own accord.

I was not surprised. Most of the people with whom I spoke are readers and are familiar with natural history writing, but they, like me, take Darwin for granted; his theory has been explained, updated, and proven, so why read *Origin of Species*?

The reason is simple; we should read *Origin* to honor Darwin. The theory of evolution changed the way humanity thinks about itself and the world around us. Few natural scientists have had such an impact. We owe it to Darwin to read *On the Origin of Species By Means of Natural Selection, or the Preservation of the Favoured Races in the Struggle for Life* because it presents clearly one of the most important ideas ever proposed. Plus, it is a good read.

David B. Williams is a freelance writer and naturalist who writes about the connections between people, plants, animals, and landscape, whether they are in a national park or in one's own backyard.

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