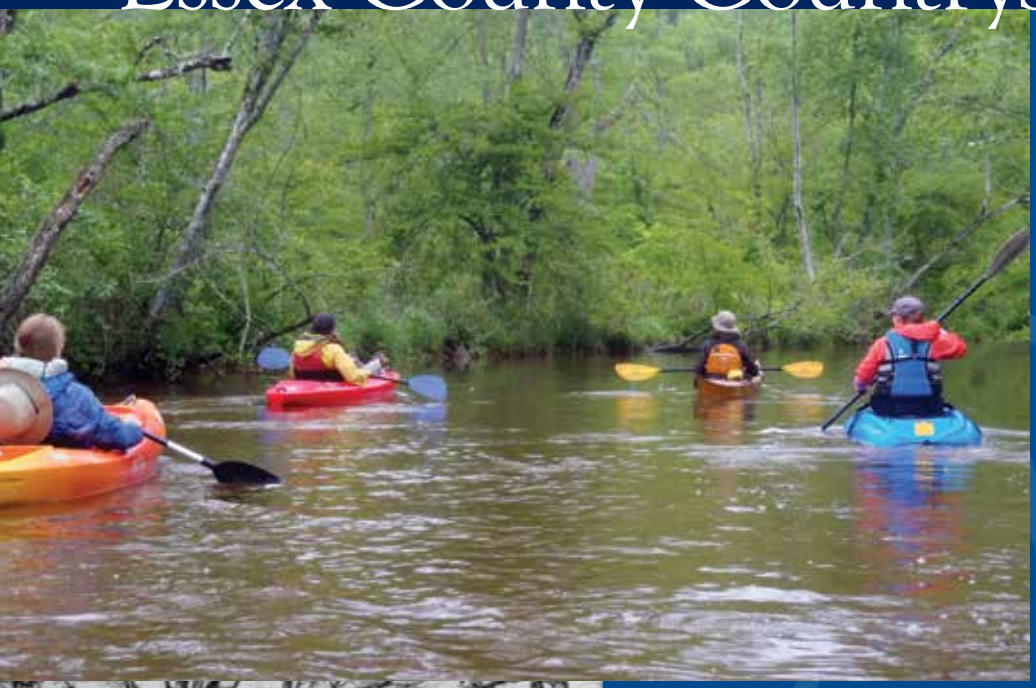
Essex County Countryside Alliance

2015 Report



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Essex County Countryside Alliance 2015 Report

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The ECCA 2015 Report is published by the Essex County Countryside Alliance.

Letter From the President

Welcome to the 8th magazine published by the Essex County Countryside Alliance since 2007.

Essex County has made great progress in these last 8 years with our percentage of land under easement while we are delighted with this success, particularly relative to the other counties in the Northern Neck and Middle Peninsula. We have grown from under 4 percent in 2007 to 13 percent as of June 30, 2015.

But worrisome to us all is Governor McAuliffe and the Virginia Legislature's move to alter the tax credit structure in the law governing conservation Easements (see summary of these changes from the Virginia Outdoors Foundation on page 65). I fear these will greatly slow our progress.

Here in Essex, the quality of our lives is affected greatly by whether the Rappahannock and its tributaries are clean, somewhat clean or polluted.

Which organizations and who in our River Valley makes a clean Rappahannock a priority: our farmers, developers, government official, conservation groups such as Friends of the Rappahannock and The Chesapeake Bay Foundation, or WE as individuals?

As Private Citizens, using land conservation, prudent farming practices, (buffers to streams, fencing cattle out of streams, etc.) well-planned commercial and residential development with buffers and all state-of-the-art Chesapeake Bay protection measures we have an obligation to work to protect our River.

A walk along the River shorelines in Upper Essex is usually greeted with litter of all sorts, including plastic cups, six-pack holders, buckets, plastic trash bags, and other garbage that won't disintegrate.

Where is our sense of pride in a clean river?

Plastics, aluminum and other contaminants endanger fish, boaters, birds, and fisherman and are a visual blight for all of us, and this does even contemplate the Sediment, Nitrogen, and Phosphorus entering the Rappahannock as a result of run off and farming.

In Richard Leakey's book *Origins Reconsidered* first published in 1992, he makes the point that Home Sapiens are but one species among many but we alone "have the intelligence to comprehend the impact of what we do as a species on the rest of the species around us." The period, over which we have responsibility, the period in which we can make a difference is now.

All of the conservation groups that work to protect the Rappahannock: The Essex County Countryside Alliance, Caroline County Countryside Alliance, Chesapeake Bay Foundation, Friends of the Rappahannock, Nature Conservancy, Northern Neck Land Conservancy, Scenic Virginia, Historic Virginia Land Conservancy, Virginia Outdoors Foundation and the US Fish and Wildlife Service, have a stake in the long term health of the river and perhaps it is time to get together and produce a comprehensive plan for its protection.

Lets think about it.

Sincerely,

County	Acres under Easement	Total Acres	% in Easement
Clarke	23,578.74	113,036.62	20.86%
Albemarle	90,104.75	462,469.68	19.48%
Essex	21,346.07	164,972.54	12.94%
King and Queen	21,190.64	202,406.08	10.47%
King George	7,810.26	115,199.82	6.78%
Richmond	6,539.97	122,534.21	5.34%
Westmoreland	7,502.61	146,674.97	5.12%
Middlesex	3,282.83	83,391.87	3.94%
Lancaster	3,285.20	85,209.47	3.86%
Northumberland	4,731.92	123,071.81	3.84%
Caroline	8,388.89	340,812.27	2.46%
Mathews	1,104.37	54,835.11	2.01%
Gloucester	2,554.09	138,630.18	1.84%

We have grown from under 4 percent in 2007 to 13 percent as of June 30, 2015.

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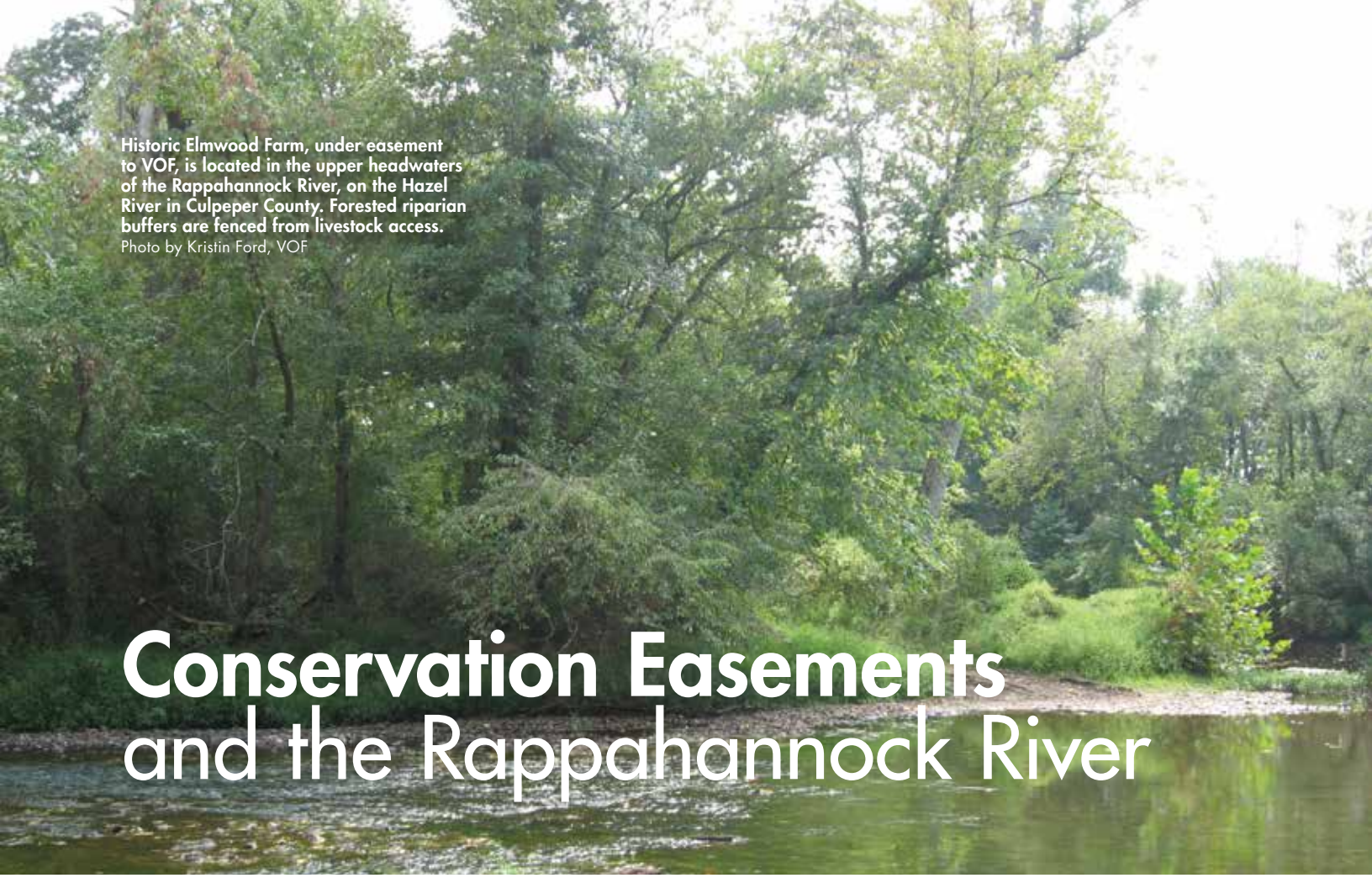


Historic Elmwood Farm, under easement to VOF, is located in the upper headwaters of the Rappahannock River, on the Hazel River in Culpeper County. Forested riparian buffers are fenced from livestock access.
Photo by Kristin Ford, VOF

Conservation Easements and the Rappahannock River

By Tamara Vance and Estie Thomas

The Rappahannock is one of the main tributaries to the Chesapeake Bay, and the regional Chesapeake Bay program aims to improve the health of the bay as outlined in the 2014 Chesapeake Watershed Agreement.

Did you know that Essex County is among the top ten counties in the state with land under easement to the Virginia Outdoors Foundation? Thanks to Essex County rural landowners, and with help from Essex County Countryside Alliance (ECCA), educating potential donors and helping facilitate new easements, today there are fifty properties in Essex protected by VOF easements, covering over 20,000 acres.

On these properties, rural landowners have voluntarily restricted subdivision, intensive building, and most industrial and commercial uses of the property. VOF easements (called conservation or "open space" easements) in Essex preserve prime farmland, rare species, productive timberland, historic sites, wildlife habitat, wetlands, and scenic views.

One of the most significant benefits of conserving open space in the county is that it helps to protect the water quality of the Rappahannock River. Limiting intensive development reduces impervious surface cover on land. Rain water can seep into the ground, slow run-off, and be filtered before entering waterways. Protecting a strip of natural vegetation adjacent to wetlands and other waterways helps filter out pollution from the land. Statewide, VOF easements protect thousands of miles of streams and rivers

Occupacia Creek, Marsh through the trees, Essex County. Photo by Estie Thomas, VOF

with riparian buffers. The Center for Watershed Protection, a research group in Maryland, points out that once a watershed reaches 10 percent paved area, water quality suffers. VOF easements, typically, limit impervious surfaces to less than one percent of land area and require natural vegetative buffers along waterways including wetland areas.

The Rappahannock River watershed begins with small drainage areas. Some start in Essex County, such as the headwaters of Mount Landing Creek, while a large part of the watershed is farther upstream, starting in the Blue Ridge Mountains. The total area in easements held by Virginia Outdoors Foundation in the Rappahannock watershed is over 152,000 acres, and includes almost 700 properties that are at least partly within the watershed and over 600 completely within the watershed. In all, about eighty-eight miles, or 20 percent of the river bank, along the main stem of the river is under easement with VOF (this counts both banks, so would be the equivalent of forty-four miles on both sides).

Before it passes by Essex County as a beautiful, wide, tidal river, the Rappahannock provides drinking water for the city of Fredericksburg, and six other smaller communities along the way. Upstream from Fredericksburg, VOF easements in the Rappahannock watershed total over 107,000 acres, and account for over 10 percent of the land area upstream from the public drinking water intake for the city. The city of Fredericksburg itself has placed over 4,200 acres of riverfront land, located in five counties, under easement to VOF for the protection of its water supply. The easements provide riparian buffer preservation along approximately twenty-one miles of the main stem of the Rappahannock River, twelve miles of the tributary Rapidan River, and thirty-two miles of other tributaries. Because of this and other upstream conservation lands, we presume that the river water reaching Essex is cleaner than it would be without these protections. Cleaner water reaching public drinking water intakes means lower treatment cost for local governments as well as improved wildlife habitat, and more enjoyable recreational experiences.

The Rappahannock is one of the main tributaries to the Chesapeake Bay, and the regional Chesapeake Bay program aims to improve the health of the bay as outlined in the 2014 Chesapeake Watershed Agreement. This new agreement, signed by Governor McAuliffe, six other bay watershed governors, the Mayor of Washington, DC, the chair of the Chesapeake Bay Commission, and seven federal agency heads, establishes goals and sets out expected conservation outcomes. Among these efforts, the new agreement acknowledges the importance of land conservation contributing to the health of the bay, and sets a goal of two million additional acres to be protected by the year 2025 (using 2010 as a base year). The agreement also seeks to conserve existing buffers along waterways until at least 70 percent of the riparian areas throughout the watershed are forested. Of the three-quarters of a million acres under easement to VOF, over a half-million acres are already located in the bay watershed.

The Rappahannock River is the central feature of the US Fish and Wildlife Service (USFWS) Rappahannock River Valley National Wildlife Refuge, and Essex is one of the four counties within its borders. The federal refuge boundary, including 284,600 acres, was created to protect vital wildlife habitat, especially for waterfowl and other birds, but also for rare plants, anadromous fish, and other commer-

Rappahannock River at Payne's Island, Essex County.
Photo by Estie Thomas, VOF

cially and ecologically important fish. Since the refuge was created, VOF and USFWS, working together, have preserved over 10 percent of the area. VOF easements cover approximately 21,000 acres, and USFWS has protected over 8,800 acres, by both acquiring land and additional conservation easements. VOF is among several governmental agencies and private organizations working to expand conserved lands for the refuge. As part of its support for the refuge, VOF is currently working with ECCA and the Northern Neck Land Conservancy to establish a VOF Special Project Area overlaying the refuge. VOF Special Project Areas are geographic regions in which protection through easements is especially warranted and in which VOF expects to concentrate resources. Ten such areas have been identified around the state. Another example is the nearby Cat Point Creek watershed, nominated by the Northern Neck Land Conservancy, covering parts of Westmoreland and Richmond counties. The VOF website (virginiaoutdoorsfoundation.org) has more information about VOF Special Project Areas.

For the past twenty years, several agencies and groups have been working to preserve the central portion of the Rappahannock River watershed. Known as the Rappahannock Land Protection Partnership Working Group and including staff from VOF, the Nature Conservancy, the Trust for Public Land, the Conservation Fund, the Chesapeake Bay Foundation, Ducks Unlimited, Fort A. P. Hill, and the Virginia Department of Game and Inland Fisheries, these groups have identified important land and water resources for permanent protection. In 2009 the working group was recognized by the US Department of the Interior and received the national Partners in Conservation award for outstanding collaboration efforts in land conservation.

Rappahannock riverbank Easements to VOF and DGIF, covering areas in five counties, protect 4200 acres upstream of the City of Fredericksburg water supply intake. Seven other smaller jurisdictions also use the Rappahannock for drinking water.
Photo by Irvin Wilson, DCR, Division of Natural Heritage

Tax incentives for donating conservation easements have been reduced at the state and federal level. This year the cap on the amount of state tax credits that may be allocated is down to $75 million from a previous level of $100 million, and federal income tax incentives have been reduced from their "expanded" levels (once up to 50 percent adjusted gross income [AGI], and 100 percent for eligible farmers) down to their former level, tied to 30 percent AGI for all taxpayers. Even so, many projects are in the pipeline for VOF board approval this year, including several from Essex County. Next year will be the fiftieth anniversary of the creation of the Virginia Outdoors Foundation by the Virginia General Assembly, a time to celebrate with our conservation partners, including ECCA. And there are others: colleagues at the Nature Conservancy, National Audubon Society, US Fish and Wildlife Service, Conservation Fund, Virginia Department of Conservation and Recreation, and the Friends Group for the Rappahannock River Valley Wildlife Refuge. Thank you to all our partners for our joint success! We have made a good start, but there is more work for all of us who care about land conservation.

Tamara Vance is the deputy director of new easements for VOF and has worked for VOF for nearly twenty years, including nine years as executive director. Before VOF, she worked for Alliance for the Chesapeake Bay, and Piedmont Environmental Council, each for seven years. She is a graduate of William and Mary, and Virginia Tech, and lives in Blacksburg. She recently learned from cousins that her colonial-era ancestors lived in what is now Essex County in the headwaters area of Hoskins Creek.

Protecting a Family Legacy

(reprinted from VOF newsletter)

By Estie Thomas

Baird family farm in Essex County, permanently protected forested riparian buffers seen in the background, are a goal of the new Chesapeake Bay Watershed Agreement.
Photo by Estie Thomas, VOF

In 1839, through the marriage of the Baird and Rouzie families, a legacy of farming in upper Essex County was born. Today young farmer Ben Baird continues that tradition by farming the family's various land holdings that total roughly 2,000 acres.

Standing on the farm parcel located on Occupacia Creek, known as the Flats, Ben explains, "The land has held the family together through six generations and many hard times, including the years after the Civil War, the Great Depression, and the current economic climate. When I stand on this land that has supported us and I look out at the fields and think about my ancestors who have looked over the same fields, I know that I'm a small cog in a big wheel."

In late 2009 Ben placed three properties under easement with the Virginia Outdoors Foundation: The Flats, consisting of 419 acres; Taliaferros, consisting of 173 acres; and the Grants tract, consisting of 189 acres. The easements ensure that the family farm properties will be protected forever.

The Flats property contains wide, open, agricultural fields of prime farmland soils with shoreline and tidal wetlands on Occupacia Creek, a tributary of the Rappahannock River. This property is also located within the boundaries of the US Fish and Wildlife Service's Rappahannock River Refuge and hosts a variety of waterfowl over the winter months. The other two properties under easement are located farther up on Occupacia Creek and contain forested areas as well as farmland.

Growing up and spending his teen years on the farm, Ben first learned to drive on an old Allis Chalmers tractor and felt that "every day was a bit like being Huck Finn: there was always something to do." Today, the farm is planted in a mix of small grains: corn, soybean, wheat, and barley in rotation. The properties were conventionally farmed for years and were one of the first in the area to innovate and use no-till planting. Ben is interested in trying out new methods for farming and will start using GPS technology for fertilizer application in order to improve water quality in the Rappahannock River.

As a young farmer who uses the land to support his family, Ben feels that VOF easements offer the most common-sense language for a farmer. "VOF understands that agriculture changes over time and that you need to adapt to situations and be able to build new agricultural buildings and structures on the farm," he says.

He adds that the VOF easements give him the benefit of knowing that even if the farm at some time ceases to be part of his livelihood, it won't be discarded. "The farm has supported the family through the generations and will be protected from development forever," he notes.

In true family tradition, Ben's teenaged son Zach wants to farm and will begin in earnest this season. Ben plans to let his son be responsible for planting the double crop beans, and "put him on the tractor and let him go."

Estie Thomas is the easement project manager for VOF in the Tappahannock Office. She has worked for VOF for fifteen years, and before coming to VOF, she worked for the Chesapeake Bay Foundation. Except for a few of the earliest easements in the county, she has done the staff work for all of the VOF easements in Essex County. Last year she had the privilege of working on a Northhampton county easement located on her ancestral land on the Virginia Eastern Shore.

Runoff Pollution and the Rappahannock

By John Page Williams

What is your watershed address? Do you know where the water goes after it rains on your house? Yes, your answer is probably the Rappahannock River, but specifically which part of it? Many of us can't answer that question in any detail. For example, I've been a professional "enviro" since the early 1970s, but I learned the watershed address of the house I grew up in only a couple of years ago. Here's the story.

When I was in elementary school in Richmond's West End, my friends and I played every day in a small stream just off the campus. We named the stream the Tiber River (we were studying Rome in history class). My mother warned me, though, that the "Tiber's" water was dirty and asked me to stay out of it. And then it disappeared. Some workmen from the city dug a trench, put in a pipe to carry the water, covered the pipe with dirt, and planted grass. Years later, I found out that the "Tiber," still flowing through its pipe, is a tributary of Upham Brook, which flows into the Chickahominy River, one of my favorite Chesapeake waterways. A huge chunk of Richmond's West End flows north to Upham Brook, but most of that flow is underground.

Okay, Richmond is larger than any city or town in the Rappahannock's watershed, but runoff from developed land still affects the health of the waterways to which it flows. An obvious example for ECCA folks is the way Prince Street and Duke Street in Tappahannock channel rainwater directly to the river. Less obvious is the way runoff from parking lots and rooftops along Airport Road to the west and the malls along Rt. 17 to the east, between the town center and Brays Fork, send rain to Hoskins Creek.

Now repeat this narrative throughout the Rappahannock's watershed for towns from the eastern slopes of the Blue Ridge to the river's mouth between Windmill and Stingray Points. Consider Warrenton, Sperryville, Madison, Orange, and Culpeper. On the tidal waters, think Port Royal, Warsaw (especially as its west side flows to Cat Point Creek), Lively, Urbanna, Deltaville, and the complex of towns (Lancaster Court House, Weems, Irvington, and White Stone) that flow into the Corrotoman and Carter's Creek. Over the past century, our approach has been to put polluted runoff from our communities into pipes and send that dirty

What we're really trying to do with runoff pollution today is deal with the effects of the Chesapeake's most invasive species: ourselves.

water—untreated in any way—into our streams, creeks, and rivers. In other words, we have spent a lot of money to put that pollution out of sight, out of mind, when we could have directed those public dollars to cleaning it up at its sources.

Other Chesapeake cleanup efforts in wastewater treatment and agriculture are now steadily reducing the nitrogen, phosphorus, and sediment that they send to the bay system. In Essex County many farmers have worked clean water miracles, setting great examples for the rest of us. However, our runoff pollution is still increasing. And as a society, we're only now getting serious about it.

Where Runoff Comes From

Ever notice how clean the air feels and smells after a hard rain? What happened is that the water droplets "scrubbed" a lot of stuff out of the air. What stuff? Both solids and gasses, but we get so used to them that we don't notice till they're gone. Think ozone, an unstable and thus chemically reactive group of oxygen atoms that help to form smog and can damage our lungs. Think oxides of nitrogen, which come from our power plants and vehicle exhaust pipes. They're odorless and highly soluble in water, so rain catches them and takes them with it to fertilize algae growth when the water emerges from a pipe into sunlight. Think "particulate carbon," aka soot, which comes from incomplete combustion of petroleum fuels and also can damage our lungs. We used to see a lot of it from the exhaust stacks of trucks and boats. Though modern diesel technology has eliminated much of it, there are still vehicles and boats out there with old-technology engines that send it into the air we breathe.

Chemists call water H2O, a nearly universal solvent. It can dissolve many substances, to one degree or another. And what it can't dissolve it can pick up in suspension and move, especially if it is flowing fast, the way it does when heavy rain falls on hard asphalt or concrete instead of a woodland with deep soil that soaks it up like a sponge.

From the Great Green Filter to the Greasy Gray Funnel, and Back to the Filter

When Capt. John Smith explored the Chesapeake, its vast watershed was 95 percent virgin forest, ranging from great stands of white pines and hemlock in north-central Pennsylvania to the great oaks and loblolly pines of tidewater that the Jamestown colonists envisioned as timbers and masts for their Royal Navy. Those forests caught rain very effectively. The water and the trees' leaves and needles formed the basis for diverse biotic (living) communities of plants and animals. All materials and water flowed through that community's living cells over and over, working their ways gradually downstream where the rivers met the tides and salt water, into the biotic communities of the bay ecosystem.

Consider how much we have changed those forests and that watershed over the past four centuries. What we're really trying to do with runoff pollution today is deal with the effects of the Chesapeake's most invasive species: ourselves. We mostly caused those changes unintentionally. They were unexpected consequences of useful tasks such as crowning paved roadways to keep rainwater from pooling on them. Without meaning to do so, we changed the Chesapeake's great green filter (that virgin forested watershed) into a greasy gray funnel. We didn't pay attention to what that water picked up as it flowed downhill, or to the accumulating damage it did to our streams, creeks, and rivers.

Until now. What makes the task so tough for folks charged with healing those waterways and so startling for people who have never thought about where rainwater goes is that we have to turn around at least a century of damage caused by pavement and rooftops. And that's not counting the sediments that flowed downhill from

tobacco farms because of primitive soil conservation practices in the preceding three centuries.

The Chesapeake is a remarkably resilient ecosystem. Even during periods like the first half of the twentieth century, when everyone knew that the big western shore rivers, such as the Rappahannock, were grossly polluted around city and town centers, the Bay and its lower tidal rivers continued to provide vast quantities of seafood and other attributes of the Land of Pleasant Living. By the 1960s, however, it became obvious that human changes to the watershed were pushing the whole ecosystem into unpleasant changes.

We began to get down to business in the 1970s, working on improving sewage treatment and gradually, agriculture. But urban/suburban runoff? Only since Y2K have we begun to pay serious attention to pavement and rooftops. Who knew? With other pollution issues, we could always point the finger at someone else. No more. As Pogo, the comic strip possum, famously said, "We have met the enemy, and he is us."

The theory behind that fancy term stormwater remediation is simple: slow down the runoff and let it soak back into the ground, where biological processes can put it and whatever it carries to work in the terrestrial ecosystem before sliding downhill into tidal water. In other words, it means turning parts of the greasy gray funnel back into great green filter.

Alphabet Soup: LID and RSC

Regaining green filters in twenty-first-century, mid-Atlantic environments requires a combination of science and art, civil engineering blended with landscape architecture and supported by good construction practices. It can be as simple as installing a rain barrel on a townhouse downspout and adding an overflow soaker hose for a deep-bed flower garden, or as complex as reconnecting a mile of eroded stream with its floodplain. The former is an increasingly popular voluntary practice for homeowners. The latter is a large public works project generally funded by a local government with a municipal bond.

Inevitably, these techniques and remediation systems fall prey to acronyms. One system for re-connecting a stream with its floodplain is called an RSC, or Regenerative Stream Conveyance. The general term for this work is LID, or Low Impact Development. It's a holistic planning point of view embodied in Virginia's stormwater management program that looks for complementary green filter opportunities on a site, from the sources of rainwater, like a parking lot, through a storm drain's outfall into a gully that leads to a stream. Google environmental site design and low impact development for examples of this fast-growing field of environmental science. Two sites of special value for the Chesapeake are the Center for Watershed Protection (www.cwp.org) and the Chesapeake Stormwater Network (www.chesapeakestormwater.net).

While much of stormwater remediation requires professional planning and construction, there is a growing body of voluntary practices suitable for homeowners, community associations, churches, mosques, and synagogues.

Because of its diffuse nature, runoff pollution poses a tricky challenge that literally hits each of us close to home. And we'll never have healthy rivers or a clean Bay until we meet it head-on and persist in dealing with it. Fortunately, we have a growing body of successes to build on, and we're learning more every day about how to make it ecologically effective and cost efficient. The people of the Rappahannock Valley have as much to gain from the process as anyone in the Chesapeake region; most have creeks and streams not too far from their "back yards"! Consider what you can do to help.

John Page Williams, the Chesapeake Bay Foundation's Senior Naturalist, has spent most of his life exploring and running CBF field trips on the Chesapeake and its tributaries. For the past ten years, he has led CBF's partnership with the National Park Service and the Chesapeake Conservancy to establish this all-water National Historical Trail. In the process, he has written a richly illustrated book about Capt. Smith's Trail for the National Geographic Society and a comprehensive online boater's guide to the trail for the Park Service and the Conservancy (http://smithtrail.net/things-to-do/water-trail-adventures/)

Photo by Capt. Joe Evans

Reducing Pollution from Agriculture has the Smallest Price Tag

Source: World Resources Institute, 2011

Pollution-Reduction Progress in Pennsylvania, Maryland, and Virginia

Nitrogen Pollution in Pennsylvania (pounds per year)

Source	2014 Progress	2014 Goal
Agriculture	65,1000,070	52,505,225
Urban and Suburban Runoff	17,440,900	14,730,340
Wastewater Treatment	9,813,094	10,930,780
Septic	2,548,089	2,110,638
Other*	22,111,683	22,243,842
All Sources	**117,013,836**	**102,502,754**

Phosphorus Pollution in Pennsylvania (pounds per year)

Source	2014 Progress	2014 Goal
Agriculture	2,569,653	2,378,228
Urban and Suburban Runoff	695,805	638,262
Wastewater Treatment	757,529	1,005,398
Other*	421,271	432,340
All Sources	**4,438,258**	**4,454,228**

On Track Within 10% More than 10% Off Track

Nitrogen Pollution in Maryland (pounds per year)

Source	2014 Progress	2014 Goal
Agriculture	18,843,848	52,505,225
Urban and Suburban Runoff	9,785,410	14,730,340
Wastewater Treatment	12,658,807	10,930,780
Septic	2,830,070	2,110,638
Other*	5,696,635	22,243,842
All Sources	**49,814,770**	**102,502,754**

Phosphorus Pollution in Maryland (pounds per year)

Source	2014 Progress	2014 Goal
Agriculture	1,459,794	1,549,440
Urban and Suburban Runoff	674,188	636,359
Wastewater Treatment	599,400	738,748
Other*	185,540	192,478
All Sources	**2,918,922**	**3,117,025**

On Track Within 10% More than 10% Off Track

Nitrogen Pollution in Virginia (pounds per year)

Source	2014 Progress	2014 Goal
Agriculture	17,937,197	18,001,009
Urban and Suburban Runoff	11,196,779	9,621,210
Wastewater Treatment	14,517,977	19,047,647
Septic	2,570,242	2,326,658
Other*	12,801,699	1,962,903
All Sources	**59,023,893**	**62,300,196**

Phosphorus Pollution in Virginia (pounds per year)

Source	2014 Progress	2014 Goal
Agriculture	3,565,040	4,192,106
Urban and Suburban Runoff	1,216,359	1,154,034
Wastewater Treatment	1,024,251	1,537,741
Other*	819,266	936,767
All Sources	**6,623,916**	**7,820,648**

On Track Within 10% More than 10% Off Track

* Other Sources of Pollution are from Forests and Air Pollution Falling on Non-Tidal Waters

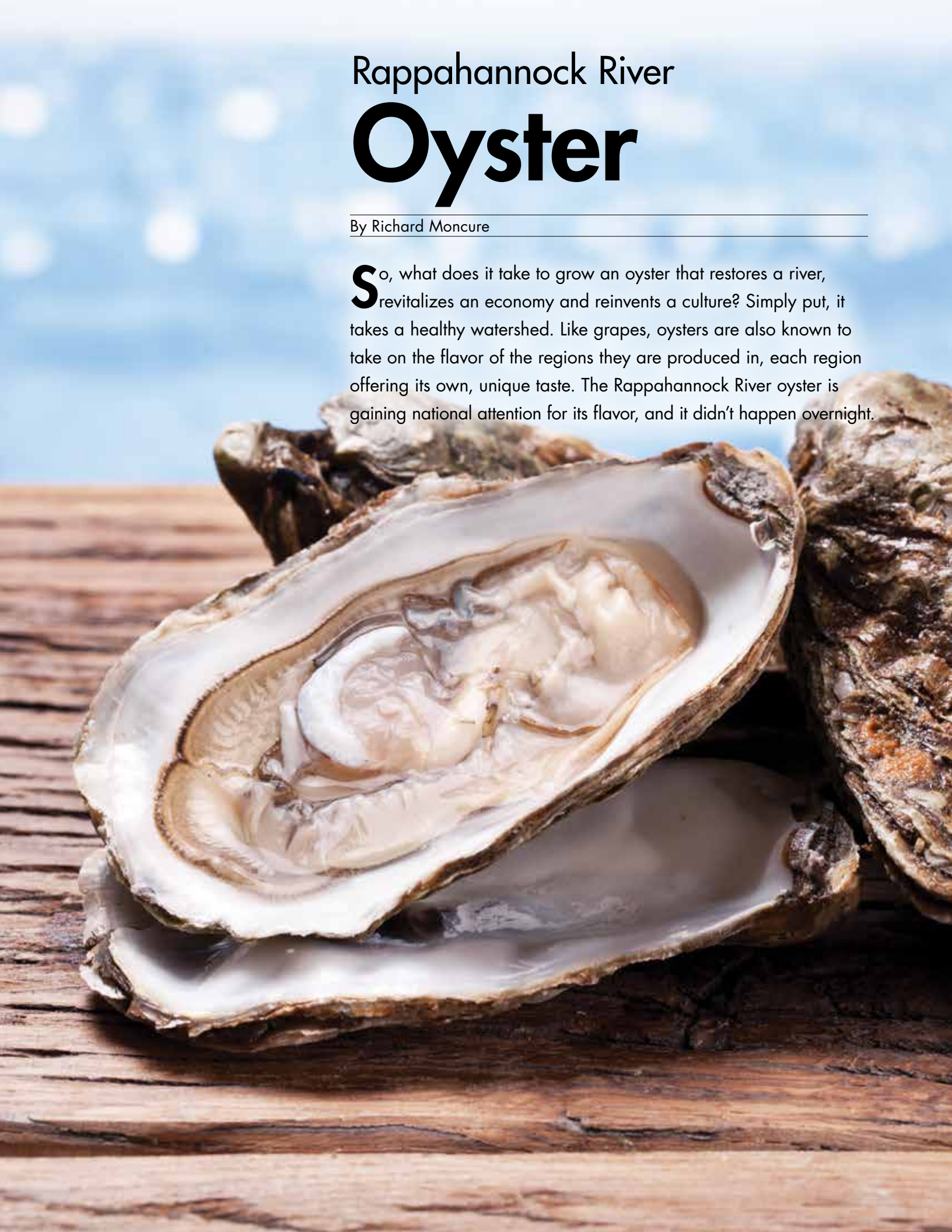
Source: Chesapeake Bay Program Watershed Model 5.2.1

Graphics from Chesapeake Bay Foundation

Rappahannock River Oyster

By Richard Moncure

So, what does it take to grow an oyster that restores a river, revitalizes an economy and reinvents a culture? Simply put, it takes a healthy watershed. Like grapes, oysters are also known to take on the flavor of the regions they are produced in, each region offering its own, unique taste. The Rappahannock River oyster is gaining national attention for its flavor, and it didn't happen overnight.



It was not until the late 1990s that the US Army Corps of Engineers began to explore the possibility of jumpstarting native oyster restoration efforts in the lower Rappahannock River. The Rappahannock River had been known for its generous-sized oysters with a smooth, buttery taste that is less salty than that of oysters found along the Eastern Shore and farther up and down the East Coast. This flavor is shaped by the river's abundant supply of minerals flowing down from the Blue Ridge Mountains. As in most places in the Chesapeake Bay, Rappahannock River oysters were showing the impact of decades of overharvesting. This impact on oyster populations in the Rappahannock River would be magnified by a pair of diseases, commonly known in the oyster industry as MSX and dermo. They threatened to wipe out our native species, entirely.

As oysters disappeared, the Chesapeake Bay began to reflect the loss of a keystone species. Even the bountiful Rappahannock River had become a mere shadow of her robust self. The river that had provided for the great chief of Powhatan and his compassionate daughter Pocahontas, as well as the expeditions of John Smith, and seen the birth of our nation, would find herself on the brink of disaster.

The Rappahannock was losing her internal filters, and, at the same time, her external, protective skin. With increased agricultural, residential, and commercial development in the Rappahannock River watershed, wetlands and riparian buffers also began to disappear. In addition to providing habitat for river critters, wetlands and riparian buffers filter trash and take up harmful nutrient pollutants such as nitrogen and phosphorus. Many of the Rappahannock River watershed's developers and farmers, eager to increase productivity, had not considered the ecological value of these lands along the water's edge. Generations of clear cutting, buffer building, and wetland filling were carried out by a succession of developers and homeowners unaware of their impact downstream.

Excess nutrients, entering the river unchecked, fuel massive algae blooms that grow so large they can't support themselves. When these algae blooms decompose, they take up the dissolved oxygen in the river system, leaving behind large dead zones or stretches of river without enough dissolved oxygen to support aquatic life. At the confluence of the Rappahannock River and the Chesapeake Bay, there is a steep sill that causes water in the lower parts of the water column to oscillate upriver and downriver with winds and tide, but these waters have a difficult time completely flushing and reoxygenating at such depths. During the summer months this causes the Rappahannock River dead zone to stretch from Tappahannock to Windmill Point in the lower depths of the water column, stressing the few remaining oysters and their reef communities in the Rappahannock.

Scientists and the seafood industry began to grasp for solutions. The first oyster restoration efforts by the US Army Corps of Engineers in the lower Rappahannock River were designed to improve the commercial oyster harvests, simply placing shell seeded with oyster larvae on the few remaining beds in the Rappahannock River. This strategy had not considered the need to develop self-sustaining oyster populations, and the greater need to restore the river's ecology. While Rappahannock River spat-on-shell projects were showing signs of hope, scientists had concerns about future spawns and the continuing impacts of sedimentation. Because Rappahannock River oysters were often under significant stress from dead zones, many older oysters quickly became susceptible to disease. US Army Corps engineers considered introducing the nonnative Asian oyster as a disease resistant alternative to our native Crassostrea virginica.

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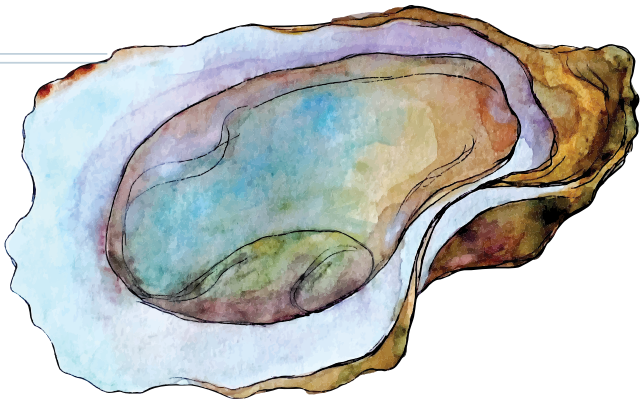


As scientists debated the pros and cons of a nonnative species introduction, the native oyster industry all but collapsed. Many of the region's larger oyster producers such as Kellum's, Cowart's, and Beavans imported oyster supplies from Louisiana and the Gulf Coast to try and maintain a dwindling demand in a community that was quickly losing its oyster heritage and culture.

Rather than introduce a new species, scientists and the industry began to explore the idea of modifying native oysters so that they would be less susceptible to disease. Introducing a third chromosome renders the native oyster sterile, allowing the oyster to focus on growth rather than reproduction, throughout the year. Because the triploid oysters grow to market size more quickly, they could be removed from the river system before becoming prone to MSX and dermo. While the introduction of the triploid oyster would help improve the commercial fishery, it had yet to answer the many concerns about the need for self-sustaining oyster populations and the restoration of the river's ecology.

Introducing the triploid oyster would also take pressure off native oyster beds in the Rappahannock. Recognizing the benefit of a shorter growing period, many Rappahannock River watermen took advantage of cost share programs introducing oystermen to aquaculture. For the first time, many of our river's watermen were able to think beyond a hunter/gatherer mentality. Oyster growers could plant oyster "seeds," and predict growth and mortality rates, opening new doors for marketing and branding that many watermen had never had the time or the product to consider.

The recent branding of our local oyster has generated more of a demand than many in the industry had anticipated. From Topping, Virginia, the Rappahannock River Oyster Company LLC has taken our river's name worldwide. The swelling enthusiasm for our local oyster has had a ripple effect on our river economy. In 2014 the state of Virginia reported a commercial oyster harvest of over a half million bushels. This isn't much, considering historic harvest numbers that were once over seven million bushels, but it is certainly hopeful in the dim light of our last few decades of oyster production. What is more important is that is has revitalized our oyster culture. Understanding the opportunity, many watermen are now beginning to get into seed and larvae production. And the economic spinoffs don't stop there. Just this winter Virginia Governor Terry McAuliffe announced his support for Virginia's Oyster Trail to connect travelers to a true Virginia oyster experience.

While oyster production is up, celebrations should be tempered and we should consider the tasks ahead. Water quality and habitat conditions in the Rappahannock River have not returned to levels that will support robust populations of fisheries. In fact, Ross's Rock, the river's first site of natural spat, just below the Downing Bridge and one of our river's most historic reefs, remains closed for harvest by the Virginia Department of Health's Office of Shellfish Sanitation until water quality conditions improve. And while a rotational harvest system enforced by the Virginia Marine Resources Commission has allowed for slight improvements in native stocks, we have yet to provide a self-sustaining solution to native populations.

It will take an entire watershed to solve these issues, but with the Rappahannock River oyster, we have hope on the half shell. And maybe that is just the flavor to keep us coming back for more!

Richard C. L. Moncure, Jr. has spent a lifetime fishing and farming along the Rappahannock. Now working as the Tidal Rappahannock River Steward for the Friends of the Rappahannock, he lives with his wife, Jessica, son and daughter at Simonsons in Richmond County where they grow or catch most of what they eat.

Paddling Through History
on the Captain John Smith Chesapeake National Historic Trail

It's possible that Captain John Smith followed this creek, Cat Point, to the Rappahannock River in 1608.
Photo by Kurt Repanshek

By Kurt Repanshek
Reprinted from National Parks Traveler 2/4/2015
www.nationalparkstraveler.com/2015/02/paddling-through-history-captain-john-smith-chesapeake-national-historic-trail26218

We knew we were being watched. We skimmed across the water, with our paddle blades rising and falling in a quick cadence. From its tall perch atop a pine, a bald eagle slowly rotated its white-feathered head and kept its eyes on us as we paddled further across Menokin Bay towards Cat Point Creek.

Though this bay is said to be the Rappahannock River's largest tributary, with several holes plunging more than 30 feet deep, our five kayaks were alone on the water. Only the birds watched us, though there could have been an otter or beaver looking on from the understory along the shores. Moments earlier we had slipped into the bay's tea-colored water and now, having crossed the Menokin with its numerous duck blinds and rimming marshes, our small flotilla of red, blue, yellow, and cedar-strip kayaks threaded the creek's narrow channel that cuts across Virginia's Northern Neck and ties back into the Rappahannock.

Captain John Smith's map of the Chesapeake region was published in England in 1612. It locates more than 200 Indian towns, and carries an illustration of Chief Powhatan.

The banks were overgrown. There were Loblolly pines, Sweet gums, oaks, cedars, and sycamores. Nodding waves of wild rice, cattails, Marshmallow, Switch grass, Great bulrush, wild iris, grew along the shore. This marshy tangle forms a thick veil along the two shores, and hemmed us in as the channel thinned. It was home to great blue herons, belted kingfishers, osprey, tiger swallowtails, and marsh crabs.

Captain John Smith presumably encountered a similar scene sometime between 1607 and 1609 (one historian puts it at July 1608) during his explorations of the Chesapeake Bay and its major tributaries. The Englishman was searching for the mythical Northwest Passage that would provide a quick route to the Orient, but three years of exploration failed to find it, because it didn't exist. But the captain did discover a place where, as he wrote in his Description of Virginia in 1612, "the mildnesse of the aire, the fertilitie of the soil and the situation of the rivers are so propitious to the nature and use of man as no place is more convenient for pleasure, profif and man's sustanence."

The Chesapeake Bay is the nation's largest estuary. It, or its tributaries, borders parts of Maryland, Delaware, Virginia, reaches into New York and Pennsylvania, and even to West Virginia. Many rivers drain into the Chesapeake, and America's earliest colonial-era cities were situated at or above the fall line of these rivers, including Richmond, Virginia, on the James River, Fredericksburg, Virginia, on the Rappahannock, Washington, D.C., on the Potomac, and Harrisburg, Pennsylvania, on the Susquehanna. Other streams and rivers—the York, Patuxent, Nanticoke, Choptank, and Elk, to name a few—drain more than 64,000 square miles of land.

Captain John Smith's map of the Chesapeake region was published in England in 1612. It locates more

than 200 Indian towns, and carries an illustration of Chief Powhatan.

The Chesapeake, with its waterscape and surrounding countryside, offers one of the most enticing trail networks in the entire National Park System. Along the Captain John Smith Chesapeake National Historic Trail, more than 2,000 miles of shoreline, counting all of the back-waters, coves, bays, rivers, and streams, await paddlers. It was here that the Park Service launched the nation's first national water trail in 2006. It's perfect for a canoe, kayak, and even a Stand Up Paddleboard in places. Occasionally visitors will even watch a 60-foot trawler pass by.

The trail blends our country's foundational history with current events. Charming towns are home to the working watermen who harvest blue crab, oysters, and shad (which author John McPhee called the "founding fish"). And there are seemingly endless miles of water-supported recreation. You can boat, fish, or simply cool off in a river or bay.

What's the best way to approach this watery treasure? That's almost beside the point. There are well-known areas, and not-so-well-known areas. There are places where you must count your strokes. There are places of solitude, where the heavily vegetated shorelines close in on you, and practically embrace you. There are places where you can close your eyes, and feel the rise and fall of your boat with the currents. You'll wish the day was longer.

I found myself on Cat Point Creek on a drizzly, late-May day when the air temperature was struggling to reach 65 degrees Fahrenheit and the sun wasn't going to shine. The creek ties Menokin Bay, on the north side of the neck, with the Rappahannock River on the south. Four centuries ago, Smith and his crew took their 28-foot "shallop" up the Rappahannock. They made it as far as present-day Fredericksburg, where the Great Falls on the river forced them to turn back.

When Smith explored these waters, he counted more than 200 Indian villages, and mapped the coastal areas that supported agriculture. At one point the captain feared for his life after being stung in the arm by a stingray. Another time, he was reportedly held captive by Indians.

There's a possibility that Smith even followed this route up Cat Point Creek across the Neck, though on this day I wasn't searching for evidence of that. Rather, with Suzanne Copping of the National Park Service and Richard Moncure of Friends of the Rappahannock, I simply wanted to gain a sense of the vast possibilities of paddling the Captain John Smith Trail.

The Menokin Foundation is Restoring the Past

You don't need to paddle to enjoy this trail, as history and beauty runs right down to the waterline. Our group headed to the Cat Point Creek put-in, but before dipping a blade we briefly explored the remains of Francis Lightfoot Lee's 18th century mansion. Lee was one of the signatories of the Declaration of Independence, and had a particularly generous father-in-law. Upon his marriage in 1769 to Rebecca Tayloe, John Tayloe II gave the couple not only the property along Menokin Bay, but also paid for construction of their Neo-Palladian home.

My normal paddling waters are the big lakes of Yellowstone National Park and the fast, rapid-filled rivers that roar through Dinosaur National Monument. While there would be no rapids this day—only a subtle tidal shift and a living landscape— the history held in this countryside is rich and deep. It reaches back to the country's birth, and before. To reach our put-in on Menokin Bay, we traversed the plantation once owned by Francis Lightfoot Lee, a signer of the Declaration of Independence. Long before Lee there were at least two Indian settlements here along the 19 miles of Cat Point Creek.

Heading out across the bay, Moncure pointed out that we were seemingly passing through time, from the 1700s of the Menokin settlement to farther back to the days of Pocahontas. We inched up the creek, and were soon ducking beneath snarls of branches and dodging tree trunks that time, and strong winds, had toppled into the water. The current was sluggish and not a challenge, though the creek banks closed in, and made it tricky to maneuver. While it's possible to slowly navigate across the Neck into the Rappahannock, that was not in our plan this day. We were just out to enjoy one small stretch of the water trail.

The creek might seem inconsequential when you consider the more than 2,000 miles to be explored, but its waters are considered to be some of the cleanest in

the watershed. Its setting reminded us of what once was found across the Chesapeake landscape. The connection to Menokin, where the Menokin Foundation is working today to preserve the skeletal remains of Lee's home, is just one spot where partners—federal agencies such as the National Park Service, state agencies that operate parks, nonprofit groups such as the Friends of the Rappahannock—meld their skills and talents to bring significant depth and breadth to the trail, both on the water and on the surrounding lands.

After the morning paddle on Cat Point Creek, Ranger Copping and I headed out with our kayaks for a launch site on the Rappahannock River below Fones Cliffs. This sheer, four-mile-long, 100-foot-tall cliff is studded with fossilized shark teeth and scallop shells. Thanks to the river's fish, as well as the healthy geese and duck populations, the cliffs are also home to one of the highest concentrations of bald eagles on the Eastern Seaboard. We spotted a few as we paddled the river's warm waters, as well as a few herons. We wished we could linger.

Captain Smith's journals describe three American Indian settlements above the cliffs and a skirmish with a few dozen Rappahannock warriors. But today the main threat here is development, which could lead to homes atop the cliffs, though there is an ongoing attempt to purchase the land to add to the adjacent Rappahannock River Valley National Wildlife Refuge.

Below the cliffs, the current is slow, and the rain continues. But we're not about to let these showers drive us to shelter. Captain Smith surely wouldn't have, so we paddled on.

Resources

A Boater's Guide to the Captain John Smith Chesapeake National Historic Trail

This softcover guide, produced by the National Park Service in partnership with the Chesapeake Conservancy and the Chesapeake Bay Foundation, is a good resource. It provides a deep overview of the water trail, and offers trip itineraries with notations for the optimal watercraft. Maps pinpoint trailheads, and there is some historical perspective on Capt. Smith. You can download the entire guide, or just portions you are interested in.

Yes, There's An App for The Water Trail

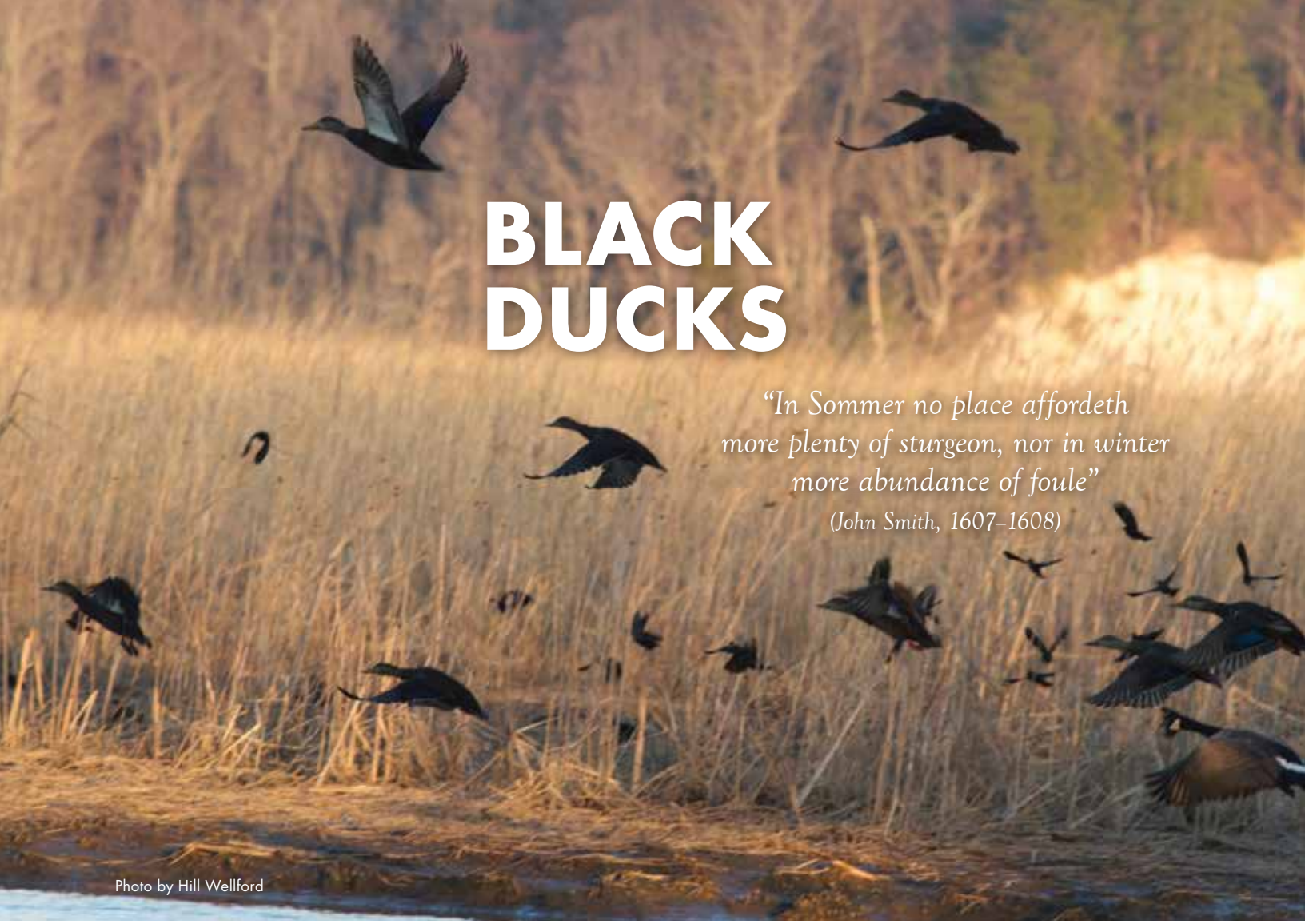
Download the free **Chesapeake Explorer App** for your smartphone; it can help you identify more than 50 units of the National Park System in the region, locate other national trails, find places to hike, bike, fish and paddle, craft cycling or driving tours, or get directions to lighthouses, museums.

Find Freedom to Float

The **Freedom to Float** campaign put together by the National Parks Conservation Association is a great resource for finding spots to paddle along the trail. The program aims to bring greater awareness to the issue of public water access throughout the Chesapeake Bay region. NPCA, the National Park Service, and dozens of local partners are working to create 300 water access sites by 2025. Over the past year, they've opened 36 public water access sites throughout the Chesapeake watershed. This year, partnerships are forming in towns and cities throughout the region to open another 40 or more access sites in the Chesapeake.

Along the Captain John Smith Trail, NPCA is working to create a true water trail experience with the construction of paddler access points and canoe-in camping along the Potomac River, starting at George Washington's Birthplace National Monument. A 30-mile stretch of the trail will feature four paddling/canoe-in camping access points along the Middle Potomac in Virginia and Maryland. Via the Freedom to Float website, you can quickly figure out a great trip for a day or longer. Check out the "Paddling Pirates" of the Chesapeake Paddlers Association and you'll be able to join a group for an evening paddle.

Kurt Repanshek's writing career spans three decades, with credits from The Associated Press, Smithsonian, National Geographic Traveler, Sunset Magazine, Audubon, National Wildlife, and many other periodicals. Since August 2005 he has overseen NationalParksTraveler.com, the country's top-rated webzine dedicated to news and feature coverage of national parks.



BLACK DUCKS

"In Sommer no place affordeth more plenty of sturgeon, nor in winter more abundance of foule"
(John Smith, 1607–1608)

Photo by Hill Wellford

By Ben Lewis

Each fall, as the days grow shorter and the temperatures drop, waterfowl across North America prepare for the remarkable journey from their northern breeding grounds to southern latitudes where they will spend the winter months. Encouraged by a full moon and a north wind, they begin the long trip to destinations scattered across the continent. In the Atlantic flyway one of the most prominent wintering destinations is the watershed of the Chesapeake Bay.

Although not as abundant as described by John Smith when he made his first voyage up the Chesapeake, thousands of waterfowl and other wildlife still depend on the diverse habitats of the watershed to support them during various times of their life cycle. While many species of waterfowl, such as the mallard and Canada goose, are thriving in today's Chesapeake Bay, a few waterfowl species have declined significantly from historic population levels. Most prominent of these species is the American black duck.

Once the most abundant freshwater duck in eastern North America, the black duck population declined steadily for three decades and reached an all-time low in the 1980s. The black duck was identified as the first species of priority concern in the North American Waterfowl Management Plan (NAWMP). In 1989 the Black Duck Joint Venture was formed to help determine population trends and to identify key factors responsible for this change, with the ultimate goal of ensuring the security of the black duck throughout its range. Since

Trapping the ducks.

In an effort to investigate whether wintering, breeding, or migration habitats are limiting black duck populations, the VDGIF conducted a satellite telemetry study to track large-scale movement patterns of black ducks wintering in Virginia.

Department Biologist with transmitter-equipped black duck.
Photos by VDGIF

the peak of the declines, populations have stabilized but have not experienced the growth that would signify a complete recovery.

With oversight from the Black Duck Joint Venture, recent research has focused on identifying factors that are limiting this growth. In cooperation with organizations such as Ducks Unlimited, the US Fish and Wildlife Service, and other state fish and wildlife agencies, the Virginia Department of Game and Inland Fisheries (VDGIF) has been involved with several black duck research projects. Recently, these research projects have included a multistate food availability study, a study of migration corridors, and currently, an increased post-hunting-season banding effort.

The food availability research consisted of the collection of wetland habitat samples at three critical areas in the black duck wintering range: Long Island, New York, New Jersey, and the Eastern Shore of Virginia. After collection, habitat samples were sorted and all potential waterfowl food items were separated, identified, dried, and weighed. By multiplying the amount of waterfowl food available with the amount of existing habitat, an estimate of the number of waterfowl that can be

Releasing the ducks with the transmitters on.

supported on the landscape is generated. This estimate is a key component in determining wintering carrying capacity for black ducks across the Atlantic flyway. An estimate of carrying capacity helps set reasonable and attainable populations goals for black ducks and other waterfowl.

In an effort to investigate whether wintering, breeding, or migration habitats are limiting black duck populations, the VDGIF conducted a satellite telemetry study to track large-scale movement patterns of black ducks wintering in Virginia. During the winters of 2006–2007 and 2008–2009, thirty-one female black ducks were outfitted with satellite transmitters. These birds were captured at multiple locations in tributaries of the Chesapeake Bay, including the Eastern Shore, the James River, the Pamunkey River, and the Rappahannock River. Satellite locations of the outfitted birds provided valuable information on migration routes, timing, critical staging areas, and wintering and breeding ground affiliations. To view migration maps and location diaries, please visit the VDGIF website at www.dgif.virginia.gov/wildlife/waterfowl/black-duck/.

Most recently, VDGIF waterfowl biologists have been participating in a flyway-wide, post-hunting-season and black duck banding effort. The purpose of this increased effort is to evaluate variances in survival rates between black ducks banded pre and post hunting season via increased postseason banding on the wintering grounds versus the traditional breeding ground banding efforts. These estimates form the basis of black duck adaptive management and allow researchers and managers to assess model predictions, evaluate responses of black ducks to management activities, and track progress toward NAWMP goals. Over 700 black ducks have been tagged in Virginia as a result of this effort. Black ducks and other waterfowl are captured using rocket nets and funnel traps on state, federal, and private lands in the eastern portion of the state. Primary banding locations include the Eastern Shore, and the James, Pamunkey, Potomac, and Rappahannock rivers.

The primary purpose of this ongoing research is to determine the most beneficial and efficient ways to allocate conservation resources to protect and encourage the growth of the remaining black duck population. As in most research, many different conclusions can be drawn

Photos by Hill Wellford

The importance of our area to waterfowl, the American black duck, and all other wildlife in Virginia is tremendous. As human populations continue to grow and more areas are threatened by development, the work of organizations such as the Essex County Countryside Alliance becomes increasingly important.

and, many times, the results lead to even more questions. Nevertheless, one common theme arising from the research is that the protection of our remaining coastal wetland habitats is critical for the conservation of the black duck and other Atlantic flyway waterfowl.

In Virginia one of the most critical places to implement protection and conservation efforts is the watershed of the Rappahannock River, as few places in the Commonwealth's boundaries support more wintering waterfowl. Each year VDGIF staff flies a coordinated midwinter waterfowl survey during the first full week in January. In fact, many of you have probably seen our low-flying airplane circling the creeks and shorelines of the area. This survey covers all of the major water bodies from Interstate 95 to the barrier islands of the Eastern Shore. To put the importance of the Rappahannock River to wintering waterfowl in perspective, roughly 10 percent of all dabbling ducks, 12 percent of all black ducks, and 33 percent of Atlantic-population Canada geese observed during the statewide, midwinter, waterfowl survey are counted from the Route 3 bridge to Port Royal on the Rappahannock River. This is especially impressive considering the miles of coastline covered during the survey.

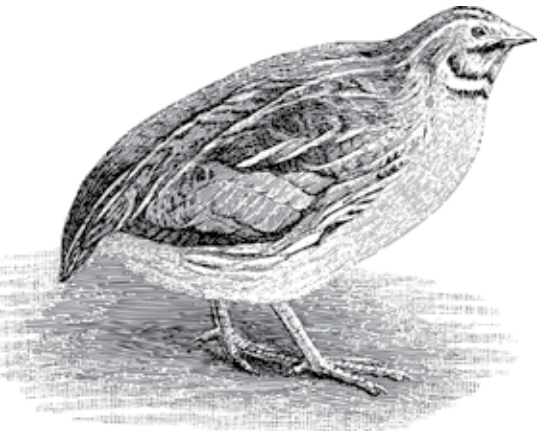
The importance of our area to waterfowl, the American black duck, and all other wildlife in Virginia is tremendous. As human populations continue to grow and more areas are threatened by development, the work of organizations such as the Essex County Countryside Alliance becomes increasingly important. In partnership with other state, federal, and nonprofit organizations, the protection of valuable wetland and associated upland habitats makes a difference now and in the future for both people and wildlife. So when you hear the geese this fall, flying high on a full moon, or see the black ducks show up in the creeks and marshes, remember that the good work you do keeps them coming back year after year.

Ben Lewis Jr. is the Statewide Waterfowl Biologist for the Virginia Department of Game and Inland Fisheries. Ben received his bachelor of science degree in wildlife science from Virginia Tech and is currently finishing his master of science degree in zoology from Southern Illinois University- Carbondale. Ben lives in Aylett, Virginia, with his wife, Katherine.

Photo by Dwight Dyke, VDGIF

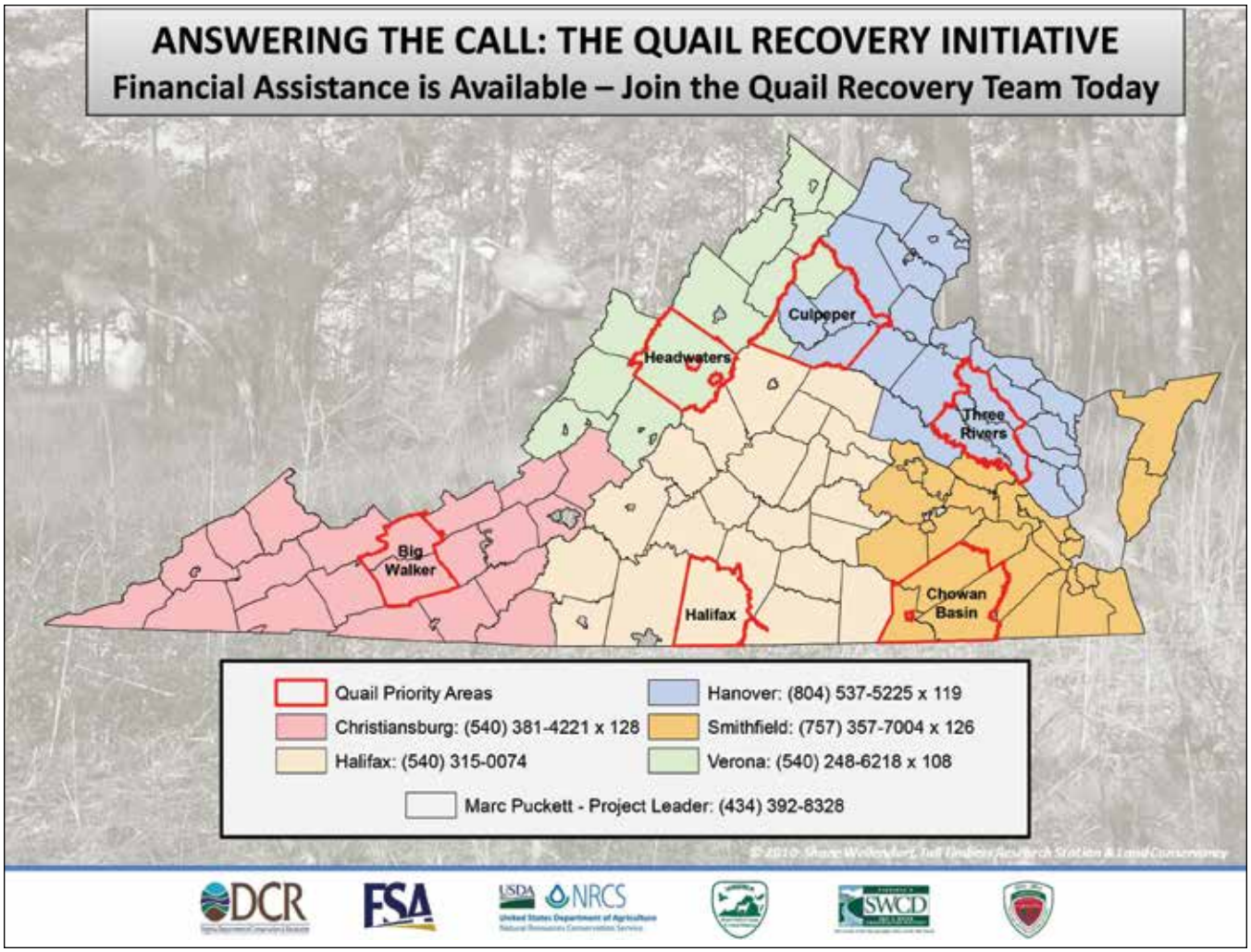
Managing Timber for **Quail**

By A. Fleet Dillard, III



The ECCA promotes the preservation and enhancement of forests and wildlife habitat in Essex County. The Virginia Department of Forestry (VDOF) and the Virginia Department of Game and Inland Fisheries (VDGIF) share these ideas: healthy, sustainable forests and optimal populations of wildlife. As a result of the collaborative efforts between VDOF and VDGIF, there is a program known as the Forestry Quail Habitat Recovery Cost-Share Program, a part of Virginia's Quail Recovery Initiative. The initiative began in 2009 and this particular program was created in 2013.

Essex County is one of fifteen in the Commonwealth that is labeled as a "target" county in the program. The objective is to create and enhance quail habitat, while utilizing a variety of good forestry practices. A map detailing all of the counties in the program is shown herein. Private, nonindustrial forest landowners may qualify for the program. There are five cost-share practices: herbicidal application in managed forests, commercial thinning in small acreage stands, diminished pine species establishment, noncommercial thinning, and prescribed burning in forest stands. Each of them has been, or could be, utilized in Essex County to promote quail habitat.



I became interested in shortleaf pine, which, together with longleaf pine, comprise the diminished pine species establishment practice. In 2013 I was considering how to reforest a fifteen acre parcel in Rappahannock Magisterial District. The adjacent landowner, R. Peel Dillard of Old Mill Farm, was going to reforest approximately thirty acres. Through the help of John Reid, private forester, and Nelson Hillyer and Warner Coburn of DOF, we learned more about the program and decided to replant forty acres, more or less, with shortleaf pine. Through the program, we received cost-share assistance not only for the reforestation with shortleaf pine but also with site preparation. Application of chemicals to destroy competing hardwoods is critical to the success of a shortleaf reforestation because it is a shade-intolerant tree.

Virginia's shortleaf pine acreage, like the quail population, has seen a dramatic decline in the past fifty years. There are several reasons for the decline, including understocked stands after harvesting most of the virgin stands in the late 1800s and 1900s and the popularity of loblolly pine in historically shortleaf pine areas. Although loblolly may grow faster, shortleaf provides an excellent alternative when reforesting. Shortleaf is also known as rosemary pine, southern yellow, and shortstraw pine. It grows straight with a tight grain and is long lived. An interesting growth trait of shortleaf pine seedlings is the development of a J shaped crook in the stem at ground line. If the top is killed or damaged, the lateral buds associated with the crook will elongate and sprout. This continues for about ten years after germination. Shortleaf is also a native species that provides high quality wildlife habitat.

If you are wondering how to improve wildlife habitat, you should talk to K. Marc Puckett, VDGIF Small Game Project Leader and certified wildlife biologist. Marc serves as the team leader of Virginia's Quail Recovery Initiative mentioned earlier herein. When you speak to Marc about the quail population, he mentions "holding the line" in as many places as possible. Fortunately for you, me, and our children, Essex County is one of those places that

holds promise. In an interview in April 2015 Marc described the idea of a "quail quilt" in these target area counties. By utilizing practices such as shortleaf pine reforestation, we can increase the habitat areas or quilts. Shortleaf is planted at a relatively low density, usually in a spacing of ten feet by ten feet, or 434 trees/acre. This allows sunlight to reach the forest floor. Sunlight on the ground encourages native weed and brush growth, which provide cover and food for quail.

David A. Bryan is a private lands wildlife biologist with the USDA and VDGIF. Like Marc, David works with the Virginia Quail Recovery Initiative. His office is in Hanover County. David has provided wildlife management advice to other Essex County landowners for field borders but sees great promise with the management practices for forests. When I interviewed David in late April, he emphasized the idea of keeping the forest open, whether it be shortleaf, longleaf, or loblolly. Again, open forests equal sunlight and sunlight encourages understories of berries, vine, and grasses. This growth is part of the early successional habitat. Early successional habitat is an often-used term in this type of land management. After a forest is harvested, the succession of the plants and trees is reset. Early succession is critical for wildlife habitat. In particular, quail depend on the structure, food, and diversity of the successive plants after a reset. An open understory with scattered plants creates stems and overhead concealment for quail. These habitats also create seeds and provide insects that are critical to the quail diet. Lastly, a diverse habitat exists in the early successional habitat such as blackberries, huckleberries, honeysuckle, creeper, poison ivy, and perennial grasses.

Marc and David noted that the shortleaf pine reforestation provides a good opportunity for quail habitat over several decades while also providing a viable commercial timber product. During years one through eight of a shortleaf stand, the habitat for quail can be significantly increased with plantings such as partridge pea, beggarweed, and indigo bush. The forest canopy of shortleaf pine takes longer to block out the sun, which is beneficial for the understory. After approximately twenty years, commercial thinning can occur, which opens the door for controlled burning. Disturbance of the forest floor, whether by discing or burning, benefits the food source and cover for quail. Marc describes burning as the icing on the cake for quail management. From a timber management perspective, shortleaf stands can be thinned multiple times and can grow eighty to one hundred feet in height and two to three feet in diameter.

Conservation and favorable timber management practices can provide good habitat for quail and other wildlife. Even as a small landowner, you can make a difference by planning and managing your timber or fields. Moreover, you can partner with adjacent landowners to help expand the quilt. I think it is incumbent on all of us to do what we can in this regard. If you have ever experienced the thrill of bird hunting, you can appreciate the importance of these efforts. I hope my children can experience it too. If you own any forestland, regardless of its acreage, I would encourage you to learn more about the various practices provided by the habitat recovery program. A special thanks to Marc Puckett and David Bryan for speaking to me about this issue.

Photo by A. Fleet Dillard, III

Recommended sites:
www.facebook.com/VirginiaBobwhiteBulletin
www.dgif.virginia.gov/quail
www.bringbackbobwhites.org
www.dof.virginia.gov

Secretary of the Essex County Countryside Alliance, A. Fleet Dillard, III lives in Tappahannock, Virginia, with his wife, Latane, and two boys, Sandy and Fitz.

Soil Conservation in Essex County: A Legacy in Progress

Buffer strips hold soil during heavy rainfall events.

Story and photos by David Taliaferro

If one were to consider a human being as a complex array of organic compounds, apart from an identity, one would miss entirely the definition of what it means to be a human being. So it is with soil. One might consider the productive upper layer of the earth as "dirt" and miss the fact that soil is a living environment of carbon, silicon, and various other minerals, infiltrated by earthworms, microbes, and various insects, viable yet delicate.

If one were to consider a human being as a complex array of organic compounds, apart from an identity, one would miss entirely the definition of what it means to be a human being. So it is with soil. One might consider the productive upper layer of the earth as "dirt" and miss the fact that soil is a living environment of carbon, silicon, and various other minerals, infiltrated by earthworms, microbes, and various insects, viable yet delicate. The bounty of the soil provides the human species with food, fiber, and shelter that cannot be created from any other source. If there is a future for mankind on the face

The best short-term practice that Essex farmers employ is the almost-exclusive use of "no-till farming." Tillage can be defined as mechanically disturbing the soil to bury crop residue and expose soil for planting. The advantage of no-till is that it avoids the most notable problem with tillage: soil erosion.

Planting units on a no-till drill. The larger disc slices into the soil, while seeds fall through the vertical tube. A closing wheel follows to cover the seeds.

Drop structure showing a water flow channel to a vertical drain.

of this earth, then land, and more specifically soil conservation, should be the first priority. Theodore Roosevelt recognized this in his address to the National Progressive Party convention in 1912 when he stated, "There can be no greater issue than that of Conservation in this country. Just as we must conserve our men, women, and children, so we must conserve the resources of the land on which they live. We must conserve the soil so that our children shall have a land that is more and not less fertile than our fathers dwelt in. We must conserve the forests, not by disuse, but by use, making them more valuable at the same time we use them." It is the recognition of this priority that motivates present-day Essex County farmers to use the best conservation principles in their farming operations. As Ray Thomas, farming in Essex County since the 1960s, notes, "There has been a substantial improvement in farming methods over the years. Today no pesticides are applied without scouting, fertilizer rates are determined by good soil testing, and the use of technology such as drones will make farmers even more efficient. We care for our land because it provides our living and we have to preserve it for our children."

This begs the question of which farming practices promote soil conservation. The best answer is to consider both short-term approaches and permanent solutions that, when taken in concert, offer the best-case scenario. The ultimate goal of good conservation is "sustainability." Given the fact that our farms have nourished the populace for centuries, does it not follow that, with the wise use of modern technology, the land will produce as required for many years to come?

The best short-term practice that Essex farmers employ is the almost-exclusive use of "no-till farming." Tillage can be defined as mechanically disturbing the soil to bury crop residue and expose soil for planting. The advantage of no-till is that it avoids the most notable problem with tillage: soil erosion. Thus, a spring thunder shower could devastate a freshly tilled field. Movement of soil into the Chesapeake watershed also carries phosphorous with it. A second serious problem with tillage is soil compaction. Naturally occurring soil structures, such as earthworm channels, are destroyed and tilth is lost that would otherwise allow water infiltration and enhance root development. From the 1970s on, new products

such as chemicals, seed varieties, and machinery have allowed farmers to tend their land without any tillage, while increasing their yields. With regard to innovations in chemical usage, recent developments in plant disease research include fungicides that improve wheat production so fall tillage to bury corn residues that host yield-robbing fungi is unnecessary. Likewise, the evolution of no-till drills means farmers can successfully plant wheat kernels through tough corn fodder directly into the soil. While some may object to the widespread use of genetically modified seeds to resist herbicide applications, they cannot deny that tillage has been significantly reduced. Ask farmers today what the future of tillage is and they will surely say "vertical." The vertical tillage tool penetrates without causing lateral soil movement, leaving most of the residue on the surface. The intended effect is to enhance decomposition and to fix the residue, giving the no-till drill a better chance of soil penetration.

In discussing no-till, Keith Balderson, Essex County Extension agent, comments, "Adoption of continuous no-tillage crop production (sometimes referred to as 'never till') in Essex and surrounding counties is one of the most innovative changes I have witnessed in almost 30 years as a Virginia Cooperative Extension agent in agriculture and natural resources. While the system is not perfect and presented some challenges and continues to do so, farmers realize the economic and environmental benefits of planting 'no-till.' The system greatly reduces soil erosion and now farmers are realizing that never till can improve soil health, especially when cover crops are incorporated. As I was taught many years ago, the system saves 'oil, soil, and toil.' In my opinion, it is a key ingredient to our cropping systems in eastern Virginia remaining profitable and conserving soil and water resources."

Consequently, a practice that is growing in popularity among Essex farmers is the use of cover crops. The principle advantage of a fall cover crop (barley, wheat, or rye) is to capture and hold unused nutrients, especially phosphorus and nitrogen. One might notice small grain covers planted after corn that show green streaks from unused nitrogen applied to corn in the previous spring. This is particularly noticeable after dry growing seasons. A second benefit is the soil-holding capacity of a cover crop. Thus, erosion ditches appearing across the fields are now things of the past.

In contrast, more permanent conservation practices, with appropriate maintenance, include grass waterways, buffer strips, and drop structures. The Food Security Act of 1985—the 1985 Farm Bill—supplies commodity supports with the provision that farmers have to implement conservation plans on their farms. These requirements were once thought to be sacrifices in that significant acreage was taken out of production. In retrospect, however, we see that the quality of the remaining acreage is enhanced and soil erosion is all but eliminated. The plan requires that grass waterways and buffer strips be established where needed. Those areas in the field where there is a swale or lower path on which water collects and flows with force have to be graded and seeded with grass. In some cases, a grass buffer is necessary to protect a ridge line, either in the field or along its edge. The object of the buffer strip is to hold the soil with grass vegetation while the rain water seeks a lower level. In extreme situations of massive water flow a drop structure is used. Usually, a concrete pipe placed vertically in front of a berm of soil takes the flow to a lower level where, through a horizontal pipe, the discharge flows harmlessly to a stream some distance away from the field edge.

Additionally, the Food Security Act requires farmers to reduce tillage on acreage that has been identified as highly erodible land (HEL). This mandate often equated with a plan to use 100 percent no-till practices in the spring and minimum till in the fall. Minimum till includes either a disc or vertical till with the goal of leaving a substantial amount of residue on the surface.

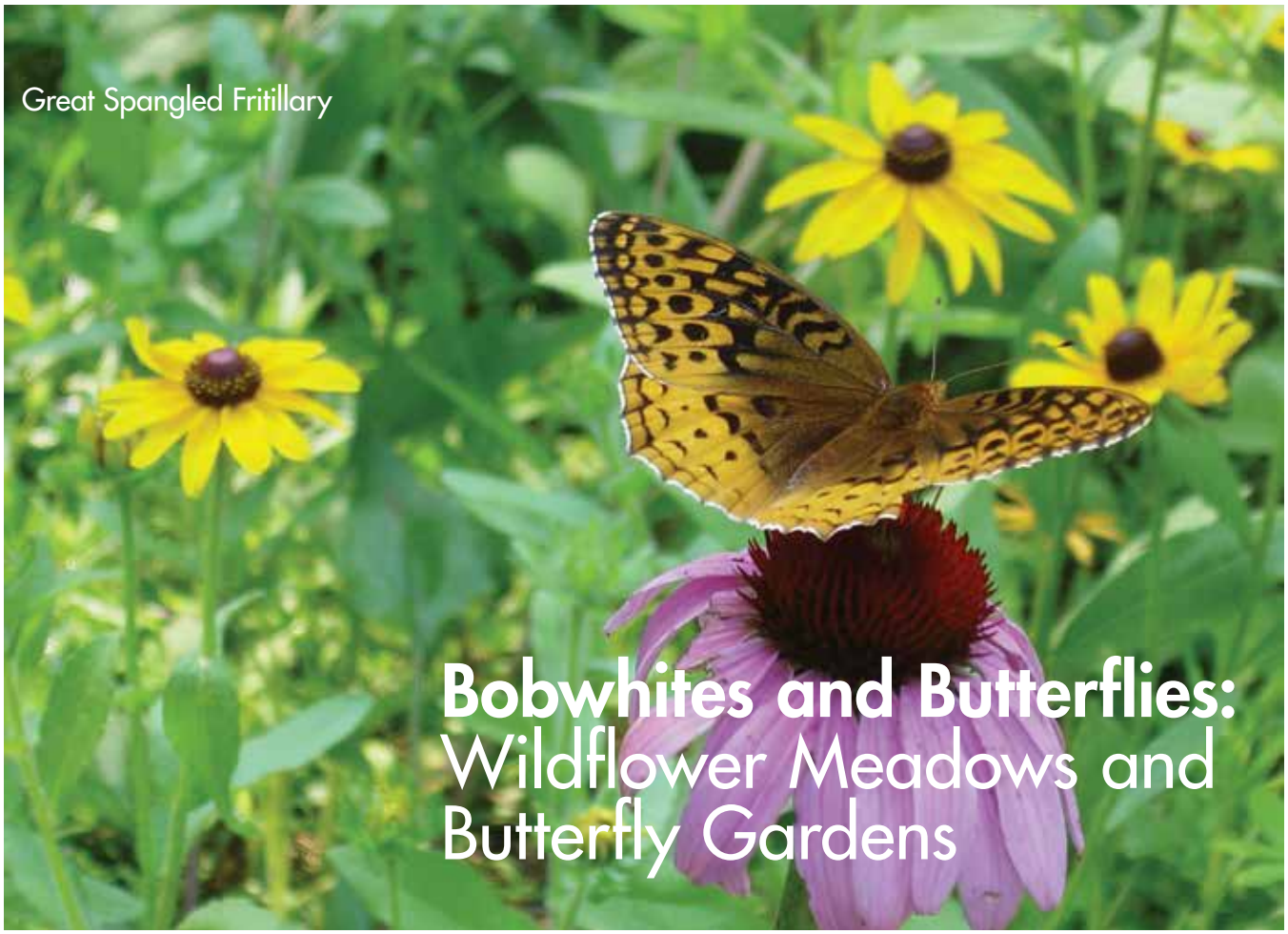
David Taliaferro is part of the family business, Montague Farms, with his two brothers Bill and Bryan, his nephew Tom, and his son Jay. Montague Farms grows corn, wheat, soybeans, and barley and also exports food-grade soybeans to Japan and South Korea. David received his undergraduate degree in physics from Wake Forest University, his Master of Science degree in physics at the University of Virginia and served in the US Army in Germany.

A Great Plans Manufacturing turbo max vertical tillaget tool

Plans established in 1985 are still in effect and updated as needed.

Thankfully, the involvement of government in the conservation effort has been significant and important to the progress that has been made. Three Rivers Soil and Water Conservation District (http://threeriversswcd.org/) and Natural Resources Conservation Service (NRCS) (http://www.nrcs.usda.gov/) provide funding, technical assistance, and critical education to Essex farmers. Among the most popular programs are funding for the cover crops, drop structures, waterways, and buffer strips. John Dille, District Conservationist, USDA-NRCS, has observed that "over the last five years farmers in Essex County have participated in the Natural Resource Conservation Service's Environmental Quality Incentive Program (EQIP) and other Farm Bill Conservation Programs to complete sixty-seven contracts to improve soil health improve water quality, and provide wildlife habitat on 16,755 acres, for a dollar amount of almost one million dollars. I've seen farmers and landowners in this area steadily implement more conservation on their farms especially since conservation came to the forefront in the 1985 Farm Bill. They have voluntarily joined a movement on private land that not only made sense from a perspective of conserving our natural resources, but from an economic and practical standpoint as well." For further information on the impact of these programs, Dille recommends the NRCS website, particularly the articles on how the implemented programs have impacted the Chesapeake Bay watershed (http://www.nrcs.usda.gov/).

Essex County farmers, like farmers across the nation, view their profession as more than a source of income. They recognize that farms have been here for centuries and will need to be here for centuries to come. Farm ownership does not mean the same as owning an automobile, for example. The opportunity to farm and own property means, simply, that one has been given the privilege to care for this land, improving it so as to leave it more productive and environmentally stable than at the beginning of one's tenure. Wendell Berry, in Bringing it to the Table: Writings on Farming and Food, observes, "Good farmers, who take seriously their duties as stewards of Creation and of their land's inheritors, contribute to the welfare of society in more ways than society usually acknowledges, or even knows. These farmers produce valuable goods, of course; but they also conserve soil, they conserve water, they conserve wildlife, they conserve open space, they conserve scenery."



Bobwhites and Butterflies: Wildflower Meadows and Butterfly Gardens

By Alice Wellford

Conservation of land in Essex County means, to most people, preserving open space or preserving farms and woodlands. But it also means protecting these lands against invasive plants and enhancing habitat for native plants and animals. The Rappahannock River corridor is critical for migrating waterfowl that rest and feed in the valuable brackish marshes. It also provides migrating songbirds and butterflies (yes, some butterflies migrate!) with food and shelter along the riparian borders of the river and the many creeks and streams that feed into it. Protecting and enhancing this wildlife corridor is important conservation work.

I have found that wildflower meadows and butterfly gardens are a great way to add habitat in the areas between the trees along the waterways and the field crops. These wildflowers and native grasses do not need fertilizer; they help to absorb nitrogen before it filters into the river. As well as providing food for caterpillars, they provide areas for ground nesting birds such as the Bobwhite Quail and turkeys. They provide insects and seeds for resident and migrating birds. Once these plantings are established, they need little maintenance other than a once-a-year mowing in early spring and vigilance to make sure invasives don't get a foothold.

Butterfly gardens and wildflower meadows contain native plants that caterpillars can feed upon as well as flowering plants that provide nectar for adult butterflies and other


Bobwhite Quail


Bobwhite Quail


Bobwhite Quail Nest


Black Swallowtail


Monarch on Common Milkweed

pollinators such as bees, moths, and hummingbirds. Butterfly caterpillars usually eat only the foliage of specific plants. When these plants are not present, the butterflies cannot reproduce. For instance, Golden Alexander is a member of the parsley family of plants, which serve as host plants for Black Swallowtail caterpillars. It is one of the earliest blooming plants in the garden so it also provides early spring nectar.

Violets provide early spring nectar as well and are host plants for Fritillary caterpillars. The legume family of plants (such as Senna, Partridge Pea, Baptisia and Clover) provide nectar throughout the growing season and are the host plants for Sulfur butterfly caterpillars.

Choose plants that flower at different times so nectar is available whenever the weather is warm enough for butterfly flight. Among the plants in my garden, other than the ones I mention elsewhere, are Purple Coneflower, Cosmos, Bee Balm, Coreopsis, Black-eyed Susans and Sunflowers. Plant Asters, which are the host plants for Pearl Crescent caterpillars and along with Goldenrod provide late summer nectar for fall migrating butterflies.

Special attention needs to be paid to the Monarch butterfly. Be sure to plant milkweeds in your garden. They are the only food that Monarch butterfly caterpillars can eat to reproduce. There is growing concern for Monarchs because of lost habitat, both in terms of the milkweed habitat of Monarch caterpillars and in terms of the climate change threat to the Monarch's wintering habitat in Mexico. Monarchs migrate, so all along their migration routes there must be nectaring plants as well as milkweeds for each generation of Monarch caterpillars.

Welcome some weeds into your field edges or meadows. Red Admirals feed upon False-Nettle, Painted Ladies need Pearly Everlasting plants, and Plantains are hosts for Buckeye caterpillars. Outside your meadow will be various grasses, shrubs, and trees that are host plants for some


Buckeye


Monarch


Spicebush Swallowtail


Sleepy Orange Sulphur


Pipevine Swallowtail

caterpillars, such as Spring Azures, Eastern Tiger Swallowtails, Eastern Tailed Blues, Hackberry Emperors, and Spicebush and Pipevine Swallowtails. When all these caterpillars change into butterflies, they will visit your garden to seek nectar from your flowering plants.

Gardens with cultivated plants near your house will provide more nectar. Although Zinnias, Garden Phlox, Lilies, and other nonnatives will not host the caterpillars, the adult butterflies will visit these flowers to sip nectar and delight children of all ages! This is your reward for establishing your butterfly garden. When the Bobwhites move in and start calling, you know you have established great habitat.

Some Personal Musings

Most songbirds depend upon caterpillars to feed their young, so by supporting butterflies, you are supporting birds.

I have learned to enjoy hot, muggy, July days because those are the days when most butterflies are in flight. Mid-July is the time of the national butterfly count. Choose a sunny day in early July and list all the butterfly species you see.

I hope I have interested you in providing native plants for butterflies, even if you only incorporate a few into your existing home garden.

If you want to pursue butterflying, I have two recommendations:

First, buy a good butterfly book. I recommend *Butterflies through Binoculars: the East* by Jeffrey Glassburg. This book has excellent pictures of butterflies so you can identify them, plus it lists the various food plants for the caterpillars.

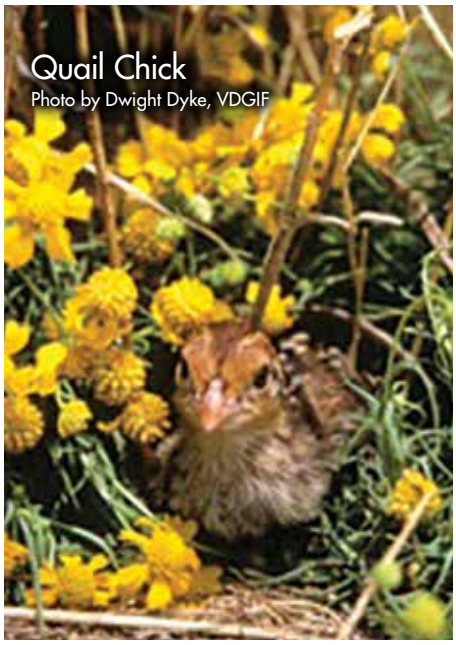
Second, buy a pair of close-focus (butterfly) binoculars so you can see details of the butterflies. Mine are the Eagle Optics Ranger 8 X 32, fully armored and waterproof (www.eagleoptics.com).

Great Spangled Fritillary on Butterfly Milkweed

Turkey Nest

Painted Lady

Choose plants that flower at different times so nectar is available whenever the weather is warm enough for butterfly flight. Among the plants in my garden, other than the ones I mention elsewhere, are Purple Coneflower, Cosmos, Bee Balm, Coreopsis, Black-eyed Susans and Sunflowers.



Quail Chick
Photo by Dwight Dyke, VDGIF

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If you want to learn more, here are some helpful websites:

www.naba.org—North American Butterfly Association. This has information on butterfly gardening plus many interesting articles in its magazine and blog.

www.vnps.org—Virginia Native Plant Society. This is all about growing native plants. You can search for "VNPS Native Plant Nurseries List"

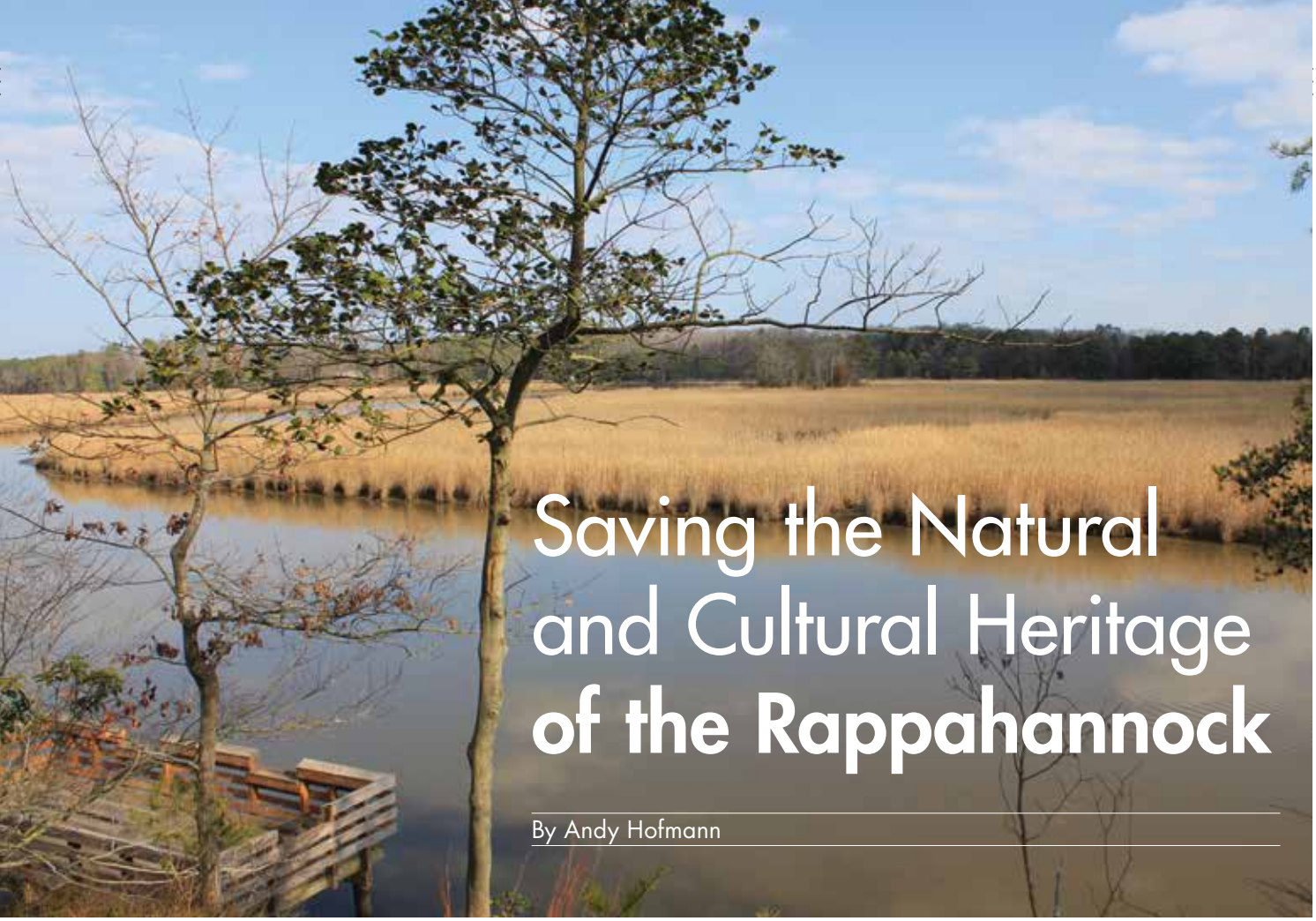
www.ernstseed.com—native wildflower seed and mixtures for various habitats

www.dgif.virginia.gov/habitat—click on "Creating a Butterfly Garden."

www.butterflysocietyofva.org—lists butterflies of Tidewater Virginia and their host plants.

I recommend Douglas W. Tallamy's book, *Bringing Nature Home: How You Can Sustain Wildlife with Native Plants*. He makes the case for using native plants in our home landscaping in order to prevent extinction of many species of plants and animals as our wild, natural places become developed.

Alice Wellford is an active steward of the marshes, woodlands and farmland of Kendale Farm, her family's farm on the Rappahannock River in Essex County. She and her husband Hill work to create and maintain Northern Bobwhite Quail habitat as well as to protect against invasive species such as Ailanthus and Japanese Stiltgrass. Alice's particular concern is the invasive form of Phragmites which threatens the marshes and wetlands of the East Coast. She was the founder of the Rappahannock Phragmites Action Committee which addressed this threat to the Rappahannock River marshes and wetlands. For this work, in 2002 The U.S. Fish & Wildlife Service gave her the National Wetlands Conservation Award to the Private Sector for Region Five. The Wellford family has conservation easements on their riverfront property and stays vigilant about threats to the river ecosystem from inappropriate development and activities.



Saving the Natural and Cultural Heritage of the Rappahannock

By Andy Hofmann

Rappahannock River Valley National Wildlife Refuge - Hutchinson Tract overlooking Mt. Landing Creek

A Rappahannock River Valley National Wildlife Refuge (refuge) was established in 1996 as part of the National Wildlife Refuge System to conserve and protect fish and wildlife resources, including endangered and threatened species and wetlands, from the risk of development and destruction. The refuge has an acquisition boundary of 268,000 acres and stretches more than sixty river miles over seven counties from Port Royal in Caroline County to Lancaster County. Within its acquisition boundary, the refuge may acquire up to 20,000 acres of high-priority lands through fee title purchase or conservation easements. Over the past nineteen years the refuge has grown to more than 8,700 acres of valuable habitats protecting over 230 species of migratory birds and the food resources they rely on. Protected species include neotropical migrants, waterfowl, wading birds, and America's national symbol, the bald eagle.

Over the past nineteen years the refuge has grown to more than 8,700 acres of valuable habitats protecting over 230 species of migratory birds and the food resources they rely on.

Over the past several years the refuge has been working hard to protect high-priority lands on the main stem of the Rappahannock. These lands total more than 1,200 acres and are not only important for the bald eagle, forest interior bird species, and habitat protection but have a rich history to preserve as well. One example is telling Captain John Smith's story of his voyages and encounters with the local Indian tribes through the Chesapeake Bay back in the early seventeenth century.

In 2014 the refuge worked with the Virginia Outdoors Foundation to secure a Coastal Wetlands Grant to purchase a conservation easement on a 180-acre parcel along Cat Point Creek. The Cat Point Creek watershed is a tributary of the Rappahannock River and a focus area for the refuge as well


Cat Point Creek from Heritage

Collectively, the efforts of federal, state, and nonprofit partners have helped protect nearly 40,000 acres along the Rappahannock watershed through both fee title and conservation easements.

as a number of our conservation partners. This easement purchase helped close the gap on unprotected lands along a nine-mile stretch of shoreline on the creek that is home to waterfowl, shorebirds, wading birds, secretive marsh birds, and bald eagles. Now there is a contiguous nine-mile stretch of riparian lands protected along the creek, due to the collective efforts of our conservation partnership with other conservation organizations.

More recently, the refuge has been working with the US Fish and Wildlife Service's Chesapeake Bay Field Office and partners (including the Nature Conservancy, Conservation Fund, Trust for Public Land, Virginia Outdoors Foundation, Fort A. P. Hill, and the Northern Neck Land Conservancy) to explore alternative funding sources and to prioritize land protection efforts on the Rappahannock. These partnerships help ensure that limited funding is utilized to acquire the highest priority lands for protection. The service only acquires land from willing sellers. Prioritizing, for acquisition, lands with the highest conservation value help the service take a more focused approach to land protection to ensure quality habitat for our trust resources. Collectively, the efforts of federal, state, and nonprofit partners have helped protect nearly 40,000 acres along the Rappahannock watershed through both fee title and conservation easements. Along with these efforts, some private landowners who are interested in being good land stewards implement conservation best-management practices on their land on their own.

You might ask why you should care about protecting habitat in your back yard. Protecting and restoring natural habitats help maintain a healthy diversity and abundance of migratory birds, fish, mammals, and insects. You see, it is all part of the food web. Each and every human being is part of that web along with all the species and environments on this planet we call Earth. Every time we make a decision that negatively impacts one strand of that web (such as a species of wildlife), we put additional strain on the other pieces of the web. Since human beings are part of this web, we and all of the ecological systems that we rely on will ultimately be affected by this imbalance. That is why it is so important to keep things in balance throughout the system.

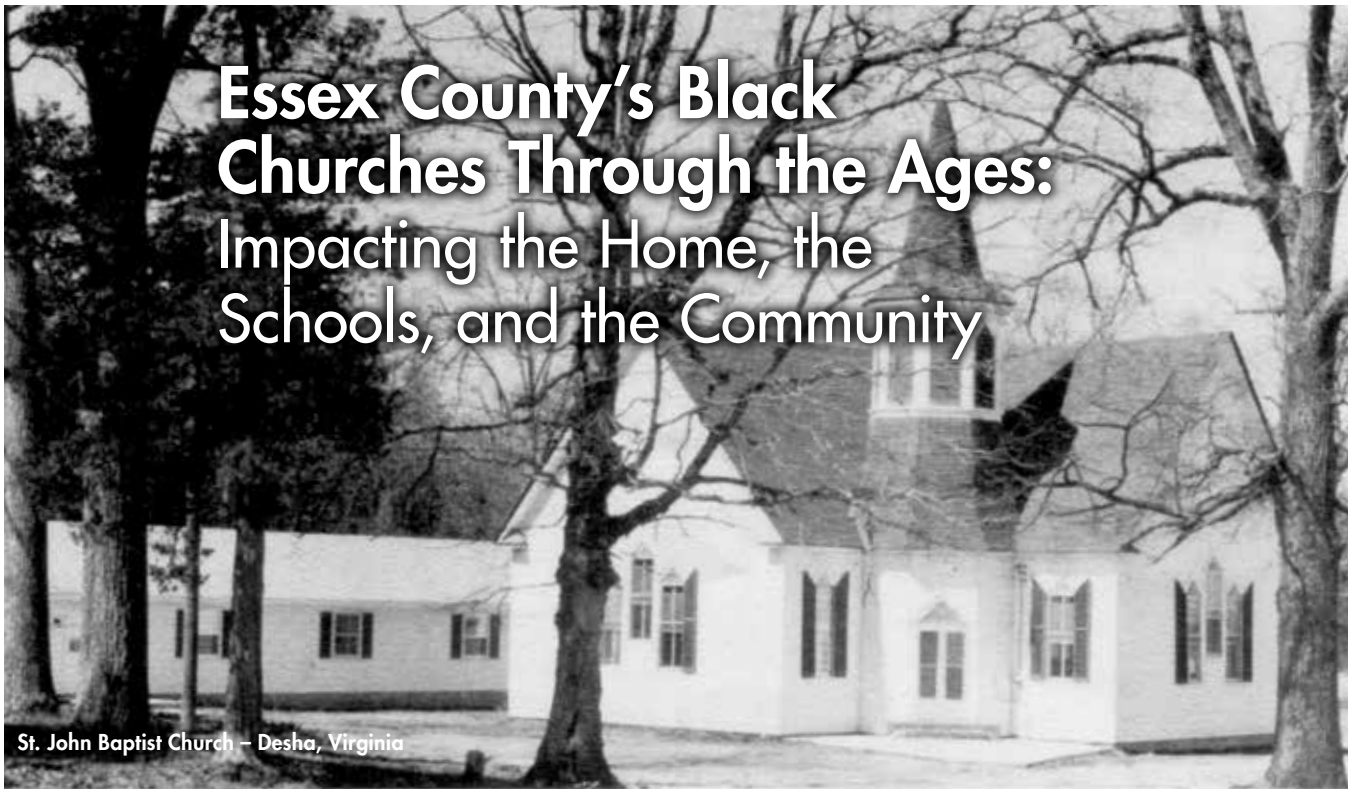
What can you do to be a responsible landowner? The most important thing we can all do is protect our watersheds. The process begins in our uplands. Everything we do in our uplands eventually finds its way into our waterways. The health of the whole ecosystem depends on how well the habitats from forest and field to wetlands and marshes can filter out contaminants before they reach our waterways. It is important to have buffers of habitat that can filter out harmful contaminants before they have the chance to reach our waterways that ultimately feed America's largest estuary, the Chesa-

peake Bay. What are contaminants? Well, contaminants can be chemicals, sewage, or sediments that wash down into our waterways during storm events that deposit harmful toxins and bacteria into our drinking water, or sediments that cloud and warm the water, which has an impact on important spawning grounds for our fish and other aquatic species. Invasive plant species are also a contaminant that depletes or outcompetes against diverse native species, creating a monoculture, which diminishes food resources for a variety of wildlife. Preventing the introduction of these invaders of natural habitats is an important component to ecosystem health. Other ways you can help include working with nonprofit or government land conservation organizations and agencies to put a conservation easement on your land or selling your land to a conservation organization for preservation.

Wildlife Biologist, Lauren Billodeaux setting up the black duck trap and trail camera for our work with the state.
Photo Credit: USFWS

Throughout the Rappahannock River Valley National Wildlife Refuge, our staff and volunteers work hard to manage, maintain, and restore excellent habitat for migratory birds and other wildlife. Former agricultural fields have been restored to upland hardwood forests or native warm season grasses, wetlands preserved and invasive species controlled. At the refuge, you can engage in recreational activities to gain a better understanding and appreciation of the conservation work refuge employees and volunteers do to protect and manage America's trust resources. Such activities include hunting, fishing, environmental education, interpretation, wildlife observation, and photography. The Hutchinson, Wilna, and Laurel Grove tracts are currently open to these recreational activities, and we plan to open wildlife observation trails on the Port Royal and Wellford tracts this summer. For more information contact the refuge headquarters at 804-333-1470 or visit our website at www.fws.gov/refuge/Rappahannock_River_Valley/.

Andy Hofmann was born and raised in Southeast Pennsylvania. As he grew up, he spent a lot of time hunting, fishing, and camping with family friends and the Boy Scouts. He has a BS in wildlife biology from California University of Pennsylvania. He has worked for the US Fish and Wildlife Service for the past fifteen years at refuges in Alabama, Delaware, Idaho, Nevada, Tennessee, Virginia, and West Virginia. He currently serves as the refuge manager for the Eastern Virginia Rivers National Wildlife Refuge Complex, a four-refuge complex that comprises the Rappahannock River Valley, James River, Presquile, and Plum Tree Island National Wildlife Refuges and spreads across the western bay shores and tributaries of the Chesapeake Bay. Andy, his wife, and their four children live in Manquin, Virginia, and love to spend time outdoors whenever they can.



Essex County's Black Churches Through the Ages: Impacting the Home, the Schools, and the Community

St. John Baptist Church – Desha, Virginia

By Lillian H. McGuire

The Black churches in Essex County have invested well in the county's land. Eighteen churches located around the county—north, south, east and west—own significant acreage. They were all deeded more than 100 years ago, thus, categorizing the Black churches among the business operations having the most stable "stay power" in Essex County. Some of these churches are historic in nature because of their sites, having been established on a site once occupied by a church of the colonial period, and some are historic in nature by virtue of the time of their establishment, which reaches back to the 1860s.

The Reverend Henry L. Young, an emancipated slave from a plantation in upper Essex, was a pioneer in the Black church movement and initiated the establishment of several churches in the area.

Some of these churches are modest in structure, symbolizing the countryside appeal of "The Little Brown Church in the Vale," while others are more sophisticated in structure. In some instances, the original physical structure that was erected on the site has been replaced with a newer edifice, while, in other instances, the original structure remains intact, renovated and maintained to serve many generations of families and newcomers.

However, all of the Black houses of worship in Essex County, some of brick structure and some of frame structure, have joined other churches of various denominations in their commitment to making an impact on the aesthetic pride of the county.

The contribution of the Black church community to enhancing pride in the beauty of the county can be captured on the property that they own, each showcasing a well-kept, eye-pleasing, physical structure featuring a steeple towering up toward the heavens. Each has beautifully manicured acreage

A Baptizing in the Rappahannock River

The Rappahannock River was the site of baptismal rites for many Black churches. This photo took place at Butylo in Lower Essex in 1940.

The First Baptist Church – Tappahannock, Virginia

The churches shown are representatives of the eighteen Black Houses of Worship currently in Essex County; some of brick structure and some of frame structure. Each has an in depth history, with five beginning in 1866.

All photos from the files of Essex County's Black History, complied by Historian Lillian H. McGuire.

Angel Visit Baptist Church – Dunnsville, Virginia

featuring a cemetery dotted with graceful headstones and each has a picturesque bulletin board mounted in the churchyard to invite "whosoever-will" to come in and join in the fellowship worshipping God. The beauty of these grounds and upkeep of the structures is maintained by a body of baptized believers. In some cases, the congregant number is small, which reflects limited finances. Nevertheless, the congregations are big in commitment and determination to hold on to the church that their ancestors built because members' great-great-grandpa and great-great-grandma, or some other ancestral relatives, are resting in the churchyard.

Many of the churches in the county are close in proximity because they were established at the time when the horse and buggy or walking was the primary means of traveling to church on Sunday mornings through all kinds of weather conditions. Therefore, it was more convenient to have a church in your own community.

Most of the Black churches in Essex County can trace their beginning to the end of the Civil War and the emancipation of the slaves, 150 years ago. Others follow closely. It was during this era when free Negroes withdrew from the balcony and back pews of their former masters' churches, having entered through the side door or back entrance. They made a commitment to embark on the journey to fulfill 200 years of yearning to worship God in their own style and build their own houses of worship where they could enter the sanctuary through the front door. Those bodies of baptized- believers began their churches by meeting in the homes of the members or under crudely constructed brush (bush) arbors soon after they were emancipated in 1865. They used those kinds of meeting places for a few years before they could afford to construct physical structures to meet in.

Most of the Black spiritual congregations in Essex County are Baptist, with several houses of worship bearing the name First Baptist, thus, identifying themselves as the first church of the Baptist denomination

The Rappahannock Industrial Academy (RIA) established at Ozeana, in Essex County, in 1902, by an organization of Black churches from Essex and two neighboring counties known as the Southside Rappahannock Baptist Association, was the first high school in the county to service Black students. It accommodated "boarding students" in the dormitories shown above and there were also "day students that commuted daily.

to be established in their respective communities.

A pioneer in the early Black church movement in Essex County was the Rev. Henry L. Young, an emancipated slave from an estate in Upper Essex. Rev. Young revealed in his autobiographical sketch the negative aspects of his spiritual experiences on the plantation and his yearning for religious freedom. He was instrumental in the conception of several churches and physically involved in hewing timber for them and constructing them in the upper Essex district, after his emancipation. He is also credited with doing the same in some neighboring counties.

The Rev. Young was the patriarch of a dynasty of six generations of ministers including an Essex County educator and activist, the late Rev. William "WA" Young, and a great-great-granddaughter.

Essex County's Black churches have made a profound impact on their members and their families, on the schools and education systems of Essex County, and on the community at large. Spirituality is the lifeblood of Black life.

Impacting the Home and Family

Established in a era when the term *immediate family* was defined—and the Black family was clearly identified—as a cohesive group consisting of one father and one mother united in holy matrimony and parenting (in most cases) several children, all living and sharing in the same household, the church has had an impact on the home and family though the concept that "the family that prays together stays together." Thus, the church was the place where the whole family spent quality time together, worshipping through sharing various spiritual services. The church further impacted the home and family through its biblical teaching, "Train up the child in the way he should go and when he is old, he will not depart from it" (Proverbs 22:6). To the Black family, this "training" was perceived as including training in good behavior. "Sparing the rod and spoiling the child" was not an option. Therefore, if a spanking (or whipping) was needed to correct a child's unacceptable behavior, he/she received it, and it was not considered as child abuse. Rather, it was considered a necessary step toward making a future man or woman who would fit wholesomely in society. The Black church, through the years, has further influenced the family through its program of Homecoming Day services, which instill family values and prompt generations of family members who have departed from the area to return to the place of their roots. Many have sought and found missing information about ancestral family history in these churches, which serve to reunite generations of family members, from far and near, through weddings, funerals, and other celebrations.

Impacting the Schools and Education

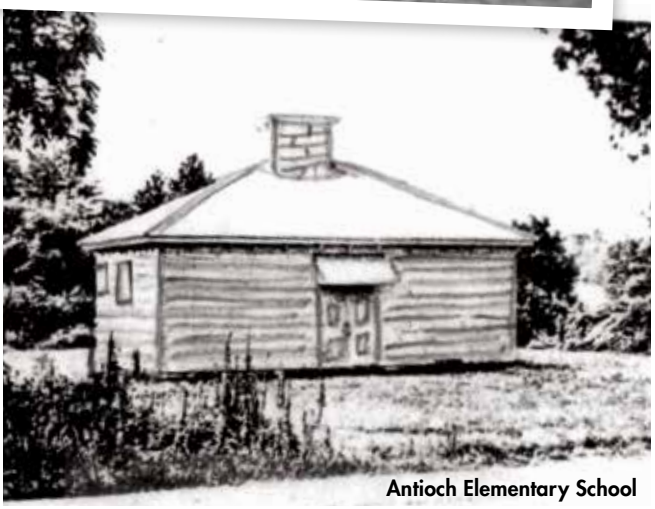
The schools and the educational system in Essex County have also been positively impacted by the Black churches. Long before the slogan was coined by the United Negro

Essex County's Black churches have made a profound impact on their members and their families, on the schools and education systems of Essex County, and on the community at large. Spirituality is the lifeblood of Black life.

College Fund (UNCF), there was, seemingly, a general knowledge by the emancipated Negro that "a mind is a terrible thing to waste." Thus, on equal footing with the yearning for religious freedom, there was a yearning for the freedom of education within the Black community. Having been denied the opportunity and experience to receive an education themselves, the black parents of the Emancipation era still had the wisdom to know that education was the key that opened doors to success and to a better fit in society.

Thus, after establishing their houses of worship, their next course of action was the construction of schoolhouses for their children's formal education. Though the school system's records—available beginning in 1892—show that the county paid teachers a meager salary, the fact is that the Black churches took up the slack of the county's school board and erected and maintained schoolhouses for the children. On the premises of most of the Black churches there could be found a one-room or two-room schoolhouse providing an education for children of grades one through seven. In most cases, the school was given the name of the Black church that constructed it and maintained its upkeep on land provided by the church. In some instances, schools received assistance from the philanthropist Julius Rosenwald, who was president of Sears, Roebuck & Company from 1908 to 1924.


Good Hope Elementary School


Antioch Elementary School

Antioch Elementary School, on the premises of Antioch Baptist Church in Champlain and Good Hope Elementary School maintained by Good Hope Baptist Church in Dunnsville, are typical examples of Essex's 28 early elementary schools on record.

Still, there was no public high school for Black students in Essex County. Those who desired an education beyond the seventh grade had to leave the county to pursue it in places that accommodated them. Again, the Black churches came to the rescue. In conjunction with a group of churches from surrounding counties, known as the Southside Rappahannock Baptist Association, the Black churches established and operated the private Rappahannock Industrial Academy (RIA) at Ozeana, Essex County, in 1902. The RIA, an accredited four-year facility, served the needs of high school students for forty-eight years before the county provided a public high school for Black students. During that same period, the Reverend Aston Hamilton spearheaded the movement that established the John Moncure High School. The school educated many and was under the auspices of Grace Episcopal Church, which

The Black churches in Essex County have, through the years, fed their membership with spiritual, moral, and civic nutrients, which, in turn, had a positive impact on the community at large.

Rev. Hamilton served as spiritual leader at the same time as serving as principal of the school.

Impacting the Community at Large

The Black churches in Essex County have, through the years, fed their membership with spiritual, moral, and civic nutrients, which, in turn, had a positive impact on the community at large. From the emancipation, reconstruction, and post-reconstruction era through the civil rights and desegregation era and currently in the twenty-first century, the impact of the Black churches can be measured through their members' services to the well-being and welfare of the county. Some of these contributors and their contributions are discussed in the next paragraphs.

From the Emancipation and Reconstruction there were many who can only be identified as "unsung heroes." Their names will never be known, but their legacies endure. The "unsung heroes" include those who founded the initial Third of April Emancipation Celebration in Tappahannock as a lasting reminder of the tragic plight of generations of human beings. Then there are the unsung heroes who hewed trees and constructed the twenty-eight early one-room and two-room schoolhouses that once existed in the county, and the early churches, most of which still stand.

Some "unsung heroes" and their contribution, from the Reconstruction, can be identified by name. Among them was the Rev. Henry L. Young, who was mentioned earlier. An emancipated slave and pioneer in establishing churches, Rev. Young served as the first pastor of the Baptist churches of Antioch, First Baptist, Loretto, and Mt. Olive (Mt. Olivet).

Likewise, the Reconstruction was prolific in producing Black government officials, who can be identified by name. Among them was William Breedlove, an antebellum free Negro who owned a blacksmith business and repaired weapons for the Essex County troops during the Civil War. Later, he was elected as the first Black member of the Tappahannock Town Council (called trustees at that time). Still later, Breedlove was elected to represent Essex County at the Virginia Constitutional Convention (1867–1868).

Then there was Aaron Commodore, from the Reconstruction, who manned the Grand Jury of Essex County. Commodore was an emancipated slave who established a shoemaking business in Tappahannock and, in the course of time, was overwhelmingly elected to represent Essex County in the House of Delegates of the Virginia General Assembly (1875–1877). Both Breedlove and Commodore were members of First Baptist Church in Tappahannock. Their biographies can be read in the *Dictionary of Virginia Biographies*, which is published by the Library of Virginia and also appears in other public documents.

In addition to Breedlove and Commodore, there were several others who served the county's government during the Reconstruction, but the post-Reconstruction era brought a forty-year hiatus that ushered in a time of new ventures. For example, Lewis McGuire gained the post of Tappahannock's first Black policeman during this time. McGuire was a mail carrier and a businessman. His primary business operation, in partnership with his wife, Ida, was the McGuire Tourist Home where he boldly displayed the gatepost sign, Colored Tourists. This business, for approximately fifty years, was the only place in Essex County in the early to mid-1900s where Black tourists and travelers could find overnight sleeping accommodations. The McGuires also operated the McGuire Kitchen Restaurant. They were members of First Baptist Church, Tappahannock.

In 1934 Dr. Elric G. Stewart established his medical practice in Tappahannock. He was the first Black doctor to establish permanent residency in the county and maintained it until his death fifty years later. He made an impact on medical services by providing free inoculation clinics to the county's Black schools. He served the Tidewater Memorial Hospital and was among those with the foresight to establish a health center in the county. Dr. Stewart and his wife, Clara, were members of Grace Episcopal Church.

In 1937 Reginald "RA" Markham pursued multiple business operations in Essex County. Most notable was the Markhaven Beach on the Rappahannock River, an operation that had nationwide appeal and

brought multitudes to Essex County for more than thirty-five years. When the beach closed, Markham established the Markham Townhouse Apartments, the first brick townhouse facility in Tappahannock. He was one of two Black citizens to have a street in Tappahannock named in his honor: Markham Terrace. Markham and his wife, Gertrude, were members of Grace Episcopal Church.

Thomas C. "Sonny" Harris and his wife, Irene, extended the family food business established by his grandfather, "TC" Harris and aunt, "Miss Virgie" Harris in the early 1900s. Thomas and Irene established the only Black "fast-food" business the county has had to date. Upon its closure, he opened the only Black storage business in the county. The Harrises worshipped at First Baptist Church, Tappahannock.

The Washington Funeral Home in Tappahannock has been in service since the 1940s. Originally the Corbin Funeral Home, it was purchased by mortician Oliver "OD" Washington and became the Washington Funeral Home. After OD's death, the business passed to his son, Craig Washington, who also expired unexpectedly. Through the years, Blanche Washington, the matriarch of the family, has been the manager. Blanche Washington still operates the business located on Tappahannock Boulevard. The Washingtons worshipped together at First Baptist Church in Tappahannock.

Prince Lee of Tappahannock was a prominent businessman. For many years, he operated Lee's Barber Shop and a gas station. Additionally, he operated the only taxicab business that has ever served the county. He was a member of First Union Baptist Church in Rexburg.

A Black Owned Lodging Business

The foundation for this dwelling, on Marsh Street in Tappahannock, was laid in the early 1900s or before and was operated by Lewis and Ida McGuire as "McGuire's Home for Colored Tourists". The original structure on the site underwent extensive renovation and expansion in 1962 and was operated by Charles and Lillian McGuire as "McGuire Rooms". From the early 1900s until the era of desegregation, it was the only place in Essex where Black tourists or travelers could find lodging year-round. The dwelling maintained family living quarters.

Mary Johnson of Caret was a prominent caterer who was engaged for the most elaborate celebrations in the county and elsewhere, thus, serving all segments of the population. She was a member of New Mt. Zion Baptist Church.

In the 1950s Charles and Lillian McGuire revived and expanded the "tourist home" business established by Lewis and Ida McGuire in the early 1900s, operating under the name McGuire Rooms. The renovated facility remained the only place where Black travelers, tourists, and long-term roomers could find temporary living accommodations in Essex County until desegregation. The McGuires worshipped at First Baptist Church in Tappahannock.

The civil rights and desegregation era brought an end to the forty-year hiatus in the election of a Black official to town government. This was the election of Ernest A. Gaines to the Tappahannock Town Council in 1966. Gaines succeeded his father, Alexander Gaines, who had been elected and served forty years earlier.

As was his father, Ernest Gaines was also a prominent businessman and proved to be a popular "vote getter," which propelled him to twenty-four consecutive years on the town council. It was through Gaines's vision that the Essex County Civic League was established and the Essex County Recreation Corporation had its beginning. The latter facility is currently the Essex County Department of Parks and Recreation, which was efficiently manned by Sylvia Darby Allen for more than forty years. Ernest Gaines was, and Sylvia Darby Allen is a member of First Baptist Church in Tappahannock.

The first president of the Essex County Civic League was Rev. Charles E. McGuire, a member of the First Baptist Church in Tappahannock. The league joined forces with Essex County's branch

In 1979 the power of Essex County's civic organizations, through improved voting and campaigning strategies, resulted in the election of the first Black member of the Essex County Board of Supervisors.

of the National Association for the Advancement of Colored People (NAACP), the president of which was T. Delmas Harris, a member of St. John Baptist Church in Desha. The power of the combined civic organizations working cohesively with the Essex County Chamber of Commerce, Essex County's Biracial Committee, headed by Mayor George C. Clanton, and the Prince Street Shopping Center Organization brought about a significant breakthrough in ending job-hiring discrimination and other forms of discrimination. The impact of the civic organizations was felt in the smooth desegregation of the schools. They had the powerful support of many "concerned citizens" from all of Essex County's Black churches, including Francis Savage and his wife, Marjorie, of the Angel Visit Baptist Church, who would later serve as leaders of the Essex County Civic League.

In 1979 the power of Essex County's civic organizations, through improved voting and campaigning strategies, resulted in the election of the first Black member of the Essex County Board of Supervisors. He was Robert C. Johnson, a member of the First Baptist Church, Loretto.

James H. Cary became the first Black central office official in the Essex County school system during the school desegregation process when he was appointed as the administrative assistant. Cary had previously served thirteen years as principal of Essex County High School. Later, just prior to his retirement, he served as the first Black superintendent of Essex County Schools. He has since worn many hats in contributing to the welfare of Essex County. James H. Cary and his wife, Ann, are members of First Baptist Church in Tappahannock,

During the desegregation era, Esther L. Harris became the first Black woman elected to the Essex County school board. She had, before her retirement, been one of the many Black women who gave quality education as a classroom teacher. She was a member of Grace Episcopal Church.

In January 1995 Stanley Clark was appointed to the post of sheriff to fill the unexpired term of his predecessor who had died suddenly. In November 1995, after a highly successful campaign, he was overwhelmingly elected and became the first Black sheriff to serve Essex County. His distinguished career began in January 1996, and he has had many successful re-elections. Clark is a member of Zion Baptist Church, Chance.

The New Millennium and the Twenty-First Century

Although the twenty-first century still finds the churches of Essex County to be the most segregated faction of the county for Sunday morning worship services, strides have been made toward the unity of the county's citizens in terms of religion. One example is the current Essex Churches Together: Operation Inasmuch movement. In this interracial, spiritual, countywide church activity, Black churches and White churches are integral parts of the program, working harmoniously to make a contribution to the welfare of the county's citizens.

Also, in an earlier era, the annual interracial Community Thanksgiving Service found all the churches working in harmony. The on-going annual Lenten services and Easter Sunrise services have been shared.

Lastly, Black contributions have been made toward the preservation of Essex County's total history, including the publication of the book *Uprooted and Transplanted: From Africa to America: Focus on African-Americans in Essex County, Virginia—the 1600s–1900s*. The book, published in 2000 by Vantage Press in New York, is the first comprehensive compilation of Essex County's Black history. It fills a major part of the gap of missing information in Essex County's total history. It is authored by Lillian H. McGuire and is available upon request.

The twenty-first century has produced other Black women contributors to arts and culture and other areas. They include (but are not limited to) the following writers:

Dorothy Alves Holmes, an award-winning poet, has published several books and is also an award-winning artist of watercolor and oil paintings. She has worked at the Essex County Public Library for a number of years as coordinator of its 123 READ program for preschool children. This program was initiated to help break the cycle of illiteracy.

Rena Roberts Shipp, a proficient church musician, retired classroom teacher, and school administrator,

is the author of three young adult novels: *I Did It Nanna's Way*, Carly Finds Out [On Her First Day], and *Can't Hurry Love*. Shipp is a member of First Baptist Church in Tappahannock.

Gina R. McGuire has written and presented numerous plays in recent years. Her first book of poetry is pending publication in June 2015. McGuire is a member of First Baptist Church.

In other areas, the twenty-first century brought its first Black woman to serve in the county government with the election of Anita Latane to the Tappahannock Town Council. Andrea Roane was the first Black woman to serve the public school system under the title of principal. She served as principal of Essex Intermediate School for a period of time. During the early 1900s, women who headed the one-room and two-room schools were called head teachers.

The Reverend Griselda Amy Bayton, pastor of Trinity Baptist Church, has served as the county's Christmas Mother for the past two years.

Historic Site Locations

Some of Essex County's Black churches are listed in the county's *Historic Sites and Archeological Report*. The report is filed in the Essex County Courthouse and was compiled by historians Jeff Odel and Charles W. H. Warner. The list includes the following information:

St. John Baptist Church, Desha, is located on or very near the ground where an Episcopal church stood during colonial days. The original owner of the Episcopal church was the Church of England.

Beulah Baptist Church, Minor, organized in 1873, is located on the site of the first Piscataway Baptist Church, which was constituted March 13, 1774.

Macedonia Baptist Church, organized in 1868, is located on the site of the former Rennolds Chapel of the Methodist Church, on land donated in 1854 by Arthur Rennolds.

Mt. Olivet Baptist Church of Hustle was organized in 1877 by Rev. Henry L. Young.

White church, Black church, interracial church—God respects all persons. Essex Churches Together: Operation Inasmuch exemplifies the true spirit of Christianity as was expressed in the original wording of the pledge to the Christian flag: "One brotherhood, uniting all mankind, in service and love."

Lillian H. McGuire of Tappahannock, a native of Middlesex County, Virginia, has been a resident of Essex County since 1957. A graduate of The Rappahannock Industrial Academy in Essex County and Morgan State University in Baltimore, Maryland, she is a retired educator, having served the Essex County and Richmond County School Systems a total of 36 years.

Lillian has researched Essex County's Black History extensively and is the author of five books on the subject; and additionally, numerous contributing writings for the other books, newspapers and magazine publications.

Lillian served as secretary for the "Tappahannock Tricentennial Celebrations Commission" (1980-1982) as a member of the "Essex County Tricentennial Celebration Commission" (1992). She was a charter member of the Board of Directors for the Essex County Museum (1996) and remained a member of the board ten years. She was a member of the Essex County Historical Society several years before its merger with the museum, and she remains a member of the merged organization.

Lillian was the recipient of the Essex County's Museum's "Annual Historic Preservation Award" in 2010. She is biographically cited in "Who's Who in American" and "Who's Who of American Woman". The widow of Essex County's activist, the late Reverend Charles E. McGuire, she is mother of grown daughters.

ECCA 2014 Fall Meeting & Silent Auction

Held at Kendale, the home of Alice and Hill Wellford.

Randy & Betsy Shuford

Kendale

Richard Carter, Hill Wellford, Brett Glymph

Larry & Peggy Garnett

David Foresman, Jeannette Baylor, Madeline Foresman

Prue Davis & Frances Ellis

Carl Strock, Rob Wittman

Ginny B. Sasser, Susan Bance,
Betty Anne Garrett, Johanna von Walter

Tom & Rebecca Rubino,
Eric & Cindy Ecklesdafer

ECCA 2015 Fall Meeting

Please mark your calendars for this year's Fall Meeting and Auction to be held at 6pm Friday, September 25th, 2015 at Wheatland:

- **New Silent Auction Items**
- **Live Music**
- **Invitation to Follow**

If you would like to be added to our mailing list please send your name and physical address to info@essexecca.com.

ECCA Board Reports: **Financial**

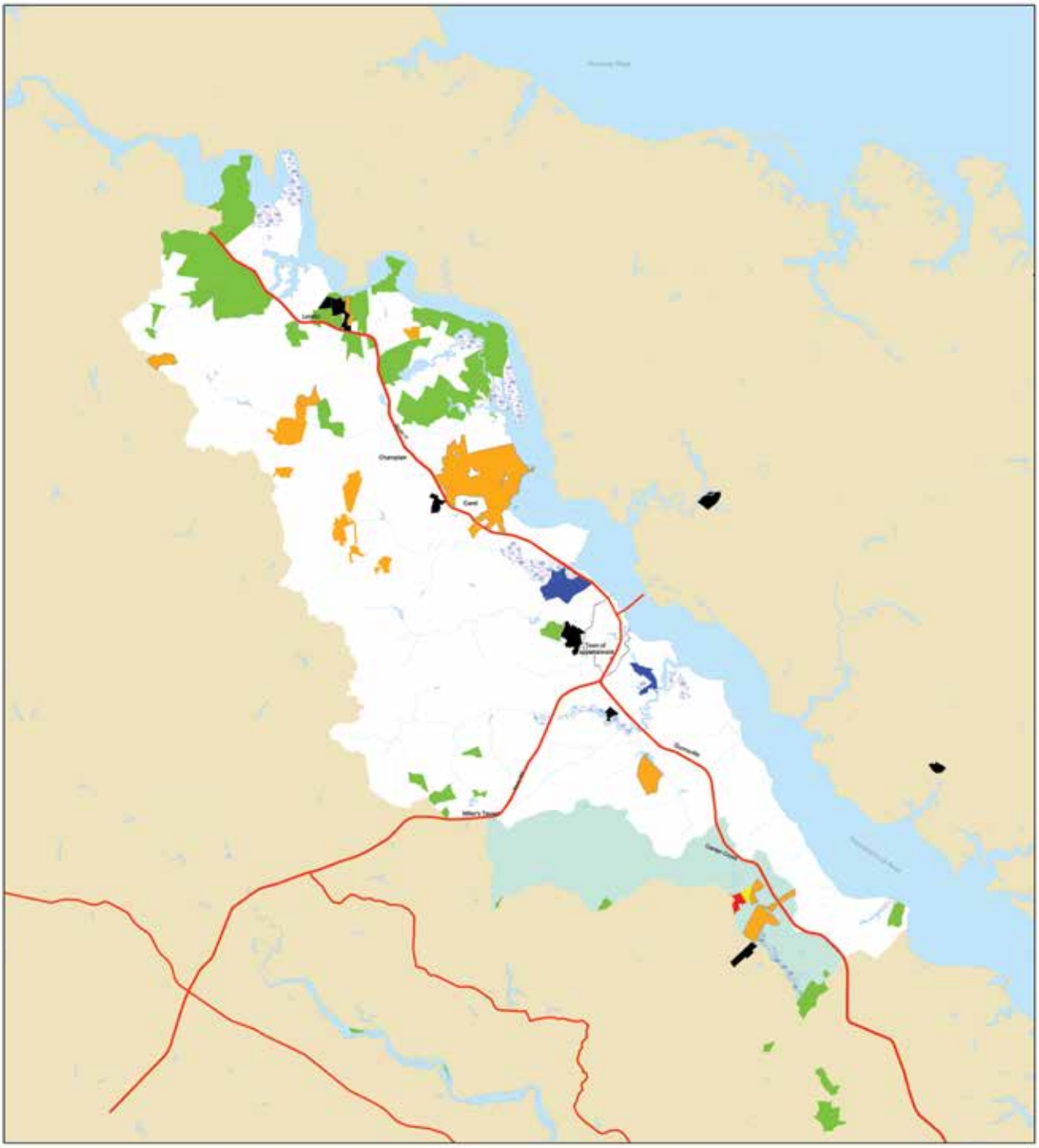
By Trip Taliaferro, Treasurer

I would like to join the rest of the Directors in thanking you for your continued generosity of the last year. As I have stated in previous years, the support our members provide enables the ECCA to continue its mission of educating and informing landowners on the various options available to them through conservation easements and spreading the word relating to the conservation of our region's diverse habitats .

In the last 12 months, 589 acres in Essex Country have gone under easement, bring the total number of acres under easement to 21,346.07, or 13% of Essex's total acreage.

Year to date, the ECCA has taken in $13,100 in donations. While this is a significant amount, it is behind prior years. I ask you to please remember the ECCA as you contemplate annual giving through the remainder of the year.

Protected Lands 2015
Essex County, Virginia



ESSEX COUNTY · Stop Sprawl · COUNTRYSIDE ALLIANCE

Protected Lands reported to PDC as of June 2015

- Essex County's Additional Protected Parcels June 2014 June 2015

Lands Protected in Previous Map Updates:

- Rappahannock River Valley National Wildlife Refuge
- VA Department of Forestry
- Middle Peninsula Chesapeake Bay Public Access Authority
- Land Protected by Private Landowners
- Essex County's Protected Parcels June 2012 June 2013
- Dragon Run Watershed

Data for the map provided by Essex County, the Virginia Department of Conservation & Recreation's protected lands database, Virginia Outdoors Foundation & The Nature Conservancy

MIDDLE PENINSULA PLANNING DISTRICT COMMISSION

5

0 1.25 2.5 5 7.5 Miles

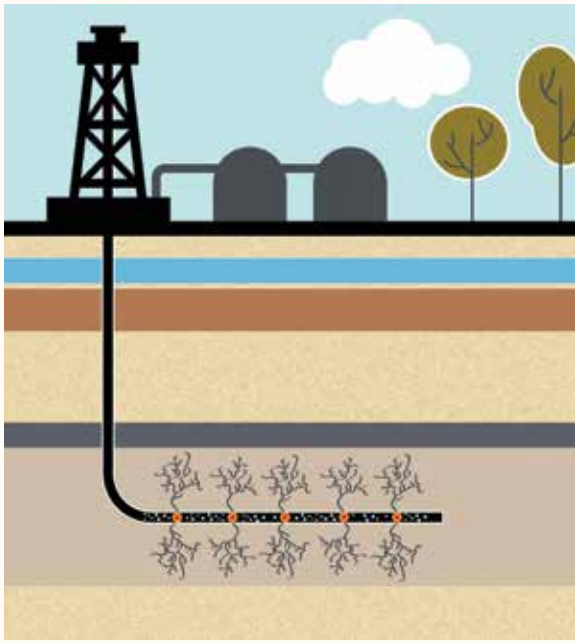
County	Acres under Easement	Total Acres	% in Easement
Clarke	23,578.74	113,036.62	20.86%
Albemarle	90,104.75	462,469.68	19.48%
Essex	21,346.07	164,972.54	12.94%
King and Queen	21,190.64	202,406.08	10.47%
King George	7,810.26	115,199.82	6.78%
Richmond	6,539.97	122,534.21	5.34%
Westmoreland	7,502.61	146,674.97	5.12%
Middlesex	3,282.83	83,391.87	3.94%
Lancaster	3,285.20	85,209.47	3.86%
Northumberland	4,731.92	123,071.81	3.84%
Caroline	8,388.89	340,812.27	2.46%
Mathews	1,104.37	54,835.11	2.01%
Gloucester	2,554.09	138,630.18	1.84%

Following are recent updates on fracking found online June 2015:

After a seven year review New York State officially **bans** Fracking. See the New York State, Department of Environmental Conservation Findings Report at: http://www.dec.ny.gov/docs/materials_minerals_pdf/findingstate-hvhf62015.pdf

Oklahoma State Supreme Court rules **homeowners can sue** Oil and Gas companies directly in state courts for damages due to Earthquakes allegedly due to injection well activity and wastewater disposal. Attorneys for the energy companies had argued that the Oklahoma Corporations Commission had sole authority over oil and gas companies.

Pennsylvania Department of Environmental Protection (DEP) announces **8.9 Million dollar fine** for Texas-based Range Resources for poorly constructed leaking gas wells drilled in 2011. Methane was found in a nearby stream and ground water in Lycoming County. DEP issued a notice of violation in September 2013, but Range Resources has not repaired what the regulators say is a defective cement job. Range Resources **agreed to pay 4.5 Million dollar fine**, close five drilling waste-water impoundments that leaked into soil and ground water in Washington County and upgrade others with new best practices for the large lined earthen pools in September 2014.



Evaluating a groundwater supply contamination incident attributed to Marcellus Shale gas development.

By Garth T. Llewellyn, Frank Borman, J. L. Westland, D. Yoxtheimer, Paul Grieve, Todd Sowers, E. Humston-Fulmer and Susan L. Brantley

Journal: The Proceedings of the National Academy of Sciences of the USA
Volume: 112
Issue: 20
Pages: 6325-6330
Issue date: May 19, 2015

Significance

New techniques of high-volume hydraulic fracturing (HVHF) are now used to unlock oil and gas from rocks with very low permeability. Some members of the public protest against HVHF due to fears that associated compounds could migrate into aquifers. We report a case where natural gas and other contaminants migrated laterally through kilometers of rock at shallow to intermediate depths, impacting an aquifer used as a potable water source. The incident was attributed to Marcellus Shale gas development. The organic contaminants—likely derived from drilling or HVHF fluids—were detected using instrumentation not available in most commercial laboratories. More such incidents must be analyzed and data released publicly so that similar problems can be avoided through use of better management practices.

Abstract

High-volume hydraulic fracturing (HVHF) has revolutionized the oil and gas industry worldwide but has been accompanied by highly controversial incidents of reported water contamination. For example, groundwater contamination of shallow potable aquifers by HVHF at depth has never been fully documented. We investigated a case where Marcellus Shale gas wells in Pennsylvania caused inundation of natural gas and foam in initially potable groundwater used by several households. With comprehensive 2D gas chromatography coupled to time-of-flight mas spectrometry (GCxGC-TOFMS), an unresolved complex mixture of organic compounds was identified in the aquifer. Similar signatures were also observed in flowback from Marcellus Shale gas wells. A compound identified in flowback, 2-n-Butoxyethanol, was also positively identified I one of the foaming drinking water wells at nanogram-per-liter concentrations. The most likely explanation of the incident is that stray natural gas and drilling or HF compounds were diven ~1-3 km along shallow to intermediate depth fractures to the aquifer used as a potable water source. Part of the problem may have been wastewaters from a pit leak reported nearest gas well pad—the only nearby pad where wells were hydraulically fractured before the contamination incident. If samples of drilling, pit, and HVHF fluids had been available, GCxGC-TOFMS might have fingerprinted the contamination source. Such evaluations would contribute significantly to better management practices as the shale gas industry expands worldwide.

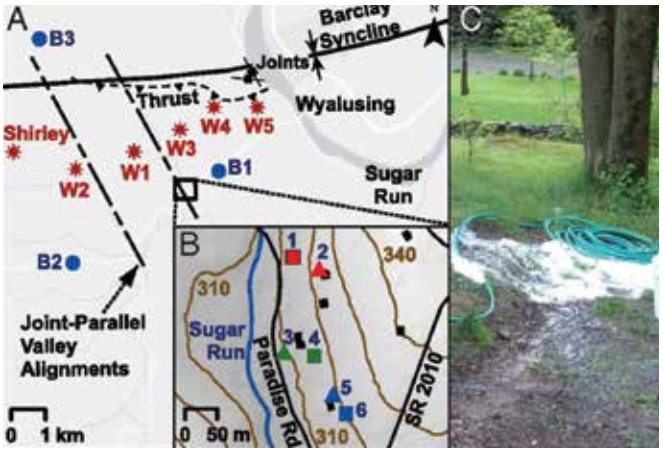


Fig. 1. (A) Study area showing the communities of Wyalusing and Sugar Run located on Susquehanna river (dark grey), gas wells (Shirley, Welles 1–5 well pads labeled as W1 through W5), domestic water wells not impacted by gas drilling activities (B1–B3), and notable geologic features (thrust fault surface expression, regional joint orientation, axis of syncline). (B) Expanded view of tributary of Sugar Run creek (blue line) showing domestic water Wells 1–6 impacted by gas drilling activities. Wells 2, 3, and 5 (triangles) are original impacted wells. Wells 1, 4, and 6 (squares) are replacement wells provided by gas company that also showed contamination. Brown lines are elevation contours (m-msl). Black squares are structures and lines are roads. (C) Foam emitted during purging of domestic water Well 2 in Spring, 2012.

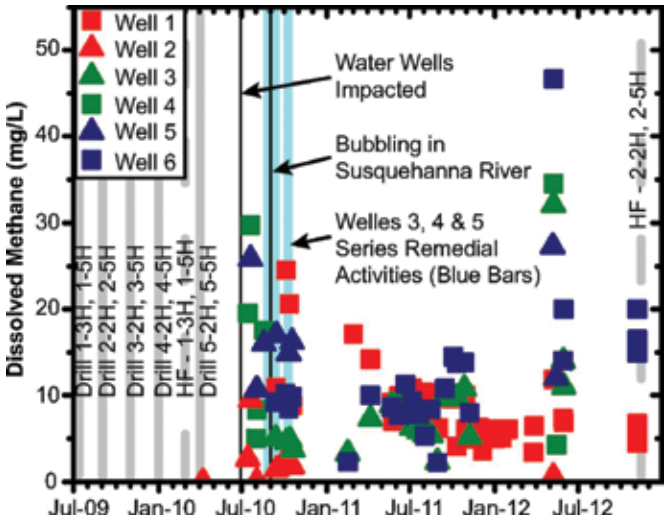


Fig. 2. Time series plot of dissolved methane concentrations with notable events, such as gas drilling, high-volume hydraulic fracturing (dashed grey lines labeled HF), gas well remedial activities, and onset of impacts to water Wells 1–6. 0

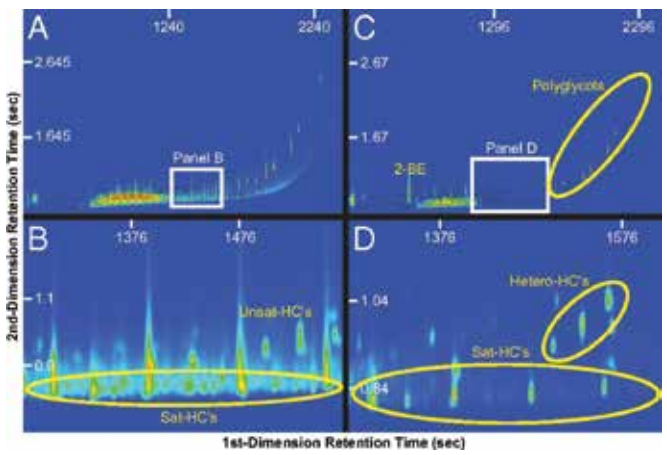


Fig. 3. GCxGC-TOFMS chromatograms of flowback water. (A) Example from a gas well in Connelsville, PA. (B) Magnified portion of A as indicated by white rectangle. (C) Example from a gas well in Kittanning, PA. (D) Magnified portion of C as indicated by white rectangle. General compound classes are illustrated in panels. Unresolved complex mixture (UCM) concentrations are relative to each panel, but increase in concentration from cool (e.g., blue) to bright (e.g., red) color.

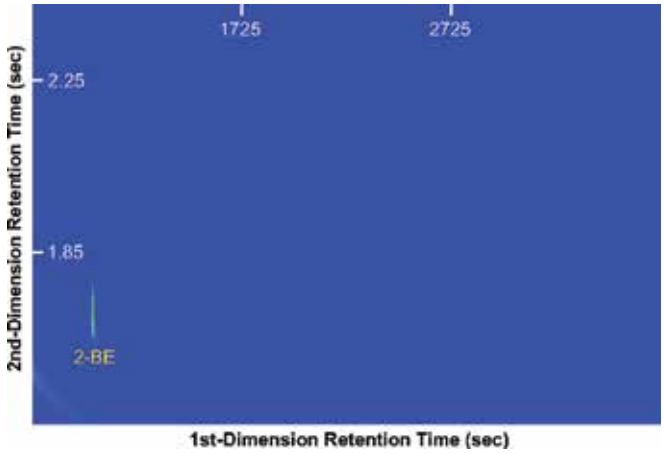


Fig. 5. GCxGC-TOFMS chromatogram for Airfoam illustrating 2-BE as the sole detectable component.

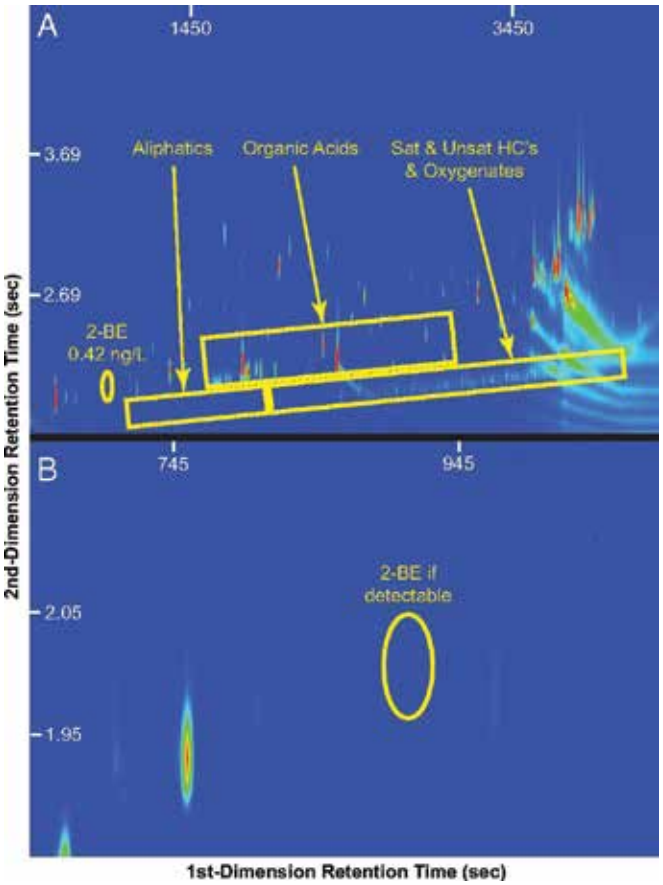


Fig. 4. GCxGC-TOFMS chromatograms for (A) Well 1 (PLG-12-67A) before purging and (B) background Well B1 (PLG-13-7A) that was not impacted by gas drilling activities. The hydrocarbon UCM observed in Well 1 is similar to that observed in flowback samples (e.g., Fig. 3). The 2-BE was positively identified in Well 1 (impacted by gas drilling activities), but not as part of background water quality. B is magnified to illustrate the absence of 2-BE.

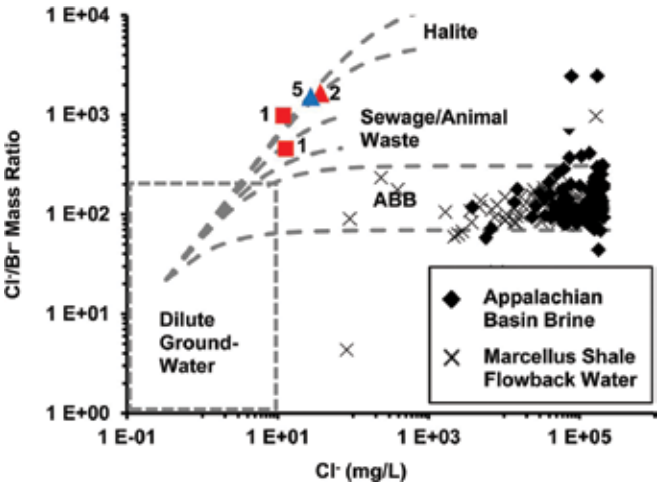


Fig. 6. Crossplot of Cl/Br mass ratio vs. Cl concentrations for samples collected from Wells 1, 2, and 5 (labeled) with bounding upper and lower conservative mixing curves for various endmembers (e.g., Appalachian Basin brine, sewage and animal waste, and halite sources). Appalachian Basin brine samples (20–22, 24) and Marcellus Shale flowback samples (23, 25, 26) are also plotted for comparison.

Photo by Hill Wellford

Rappahannock Eagles Beat Expectations

By Bryan Watts

When bald eagle surveys were initiated in the Chesapeake Bay during the late 1950s and early 1960s, the Rappahannock River was not a standout. Compared to the historic James and Potomac Rivers, the Rappahannock was not as well known to the public. In terms of eagle numbers, the river was overshadowed by the DDT-era strongholds of the upper Potomac, the lower James, and the Blackwater.

But one has only to look over a map of the tributary to recognize the bones of a thoroughbred. The Rappahannock flows through a landscape that remains relatively low on development and high on natural beauty. The creeks, bluffs, marshes, and meanders combine to make one of the most attractive locations for breeding eagles in the Chesapeake region, and over the past two decades the river has come into its own.

Recovery of breeding eagles along the Rappahannock has been dramatic. By the early 1970s the population had been reduced to six known pairs and the long-standing pair along LaGrange Creek near Urbanna had not produced a single young in ten years. Most of the pairs were located in the lower, salty reach of the river. Over the next twenty years productivity improved, the population increased to more than fifty pairs and birds began to occupy many of the landmarks that today represent hallowed ground. Fones Cliffs, Cat Point Creek, Payne's Island, Owl Hollow, and Portobago Bay, over time, have become synonymous with bald eagles in the Chesapeake Bay. Since the early 1990s, the Rappahannock has bloomed and now supports one of the densest breeding populations found anywhere throughout the species' range.

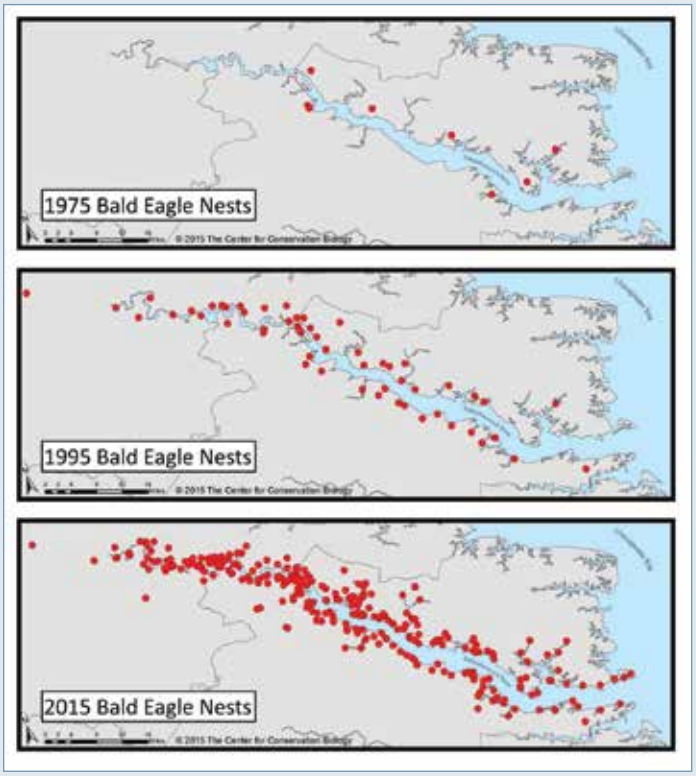
The 2015 early survey that includes the Rappahannock was completed on March 12 and documents 219 breeding pairs. Over the past forty years eagles have poured into the less salty parts of the river. The twenty-five-mile (forty kilometers) reach of the river just above Tappahannock now supports an incredible ninety pairs. Three locations within this reach support two eagle pairs nesting within 100 meters of each other. Tolerance of territorial neighbors to this degree was never imagined in the early days of the survey and is a testament to the high availability of prey.

Although impacted by the treatment of agricultural lands during the "living better through chemistry" period of recent history, the Rappahannock is now one of the jewels of the mid-Atlantic region. Protection of conservation lands within this watershed will continue to provide a great return on investment.

A glimpse of an eagle clutch from the survey plane along the Rappahannock River. Adults take short breaks from incubation duties during warm, sunny days. The "egg cup" containing the eggs that helps to facilitate incubation is visible.
Photo by Bryan Watts

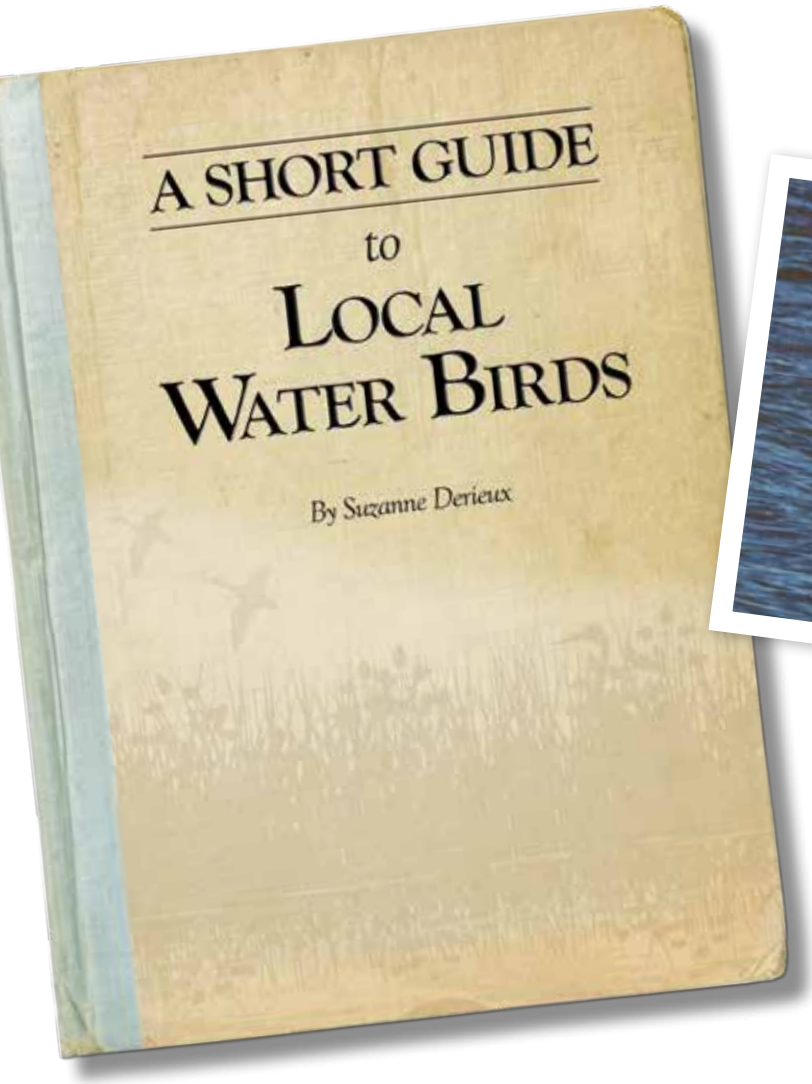
Adult incubating in large oak tree along Occupacia Creek. This pristine creek is positioned in the heart of the highest eagle density within the Rappahannock watershed.
Photo by Bryan Watts

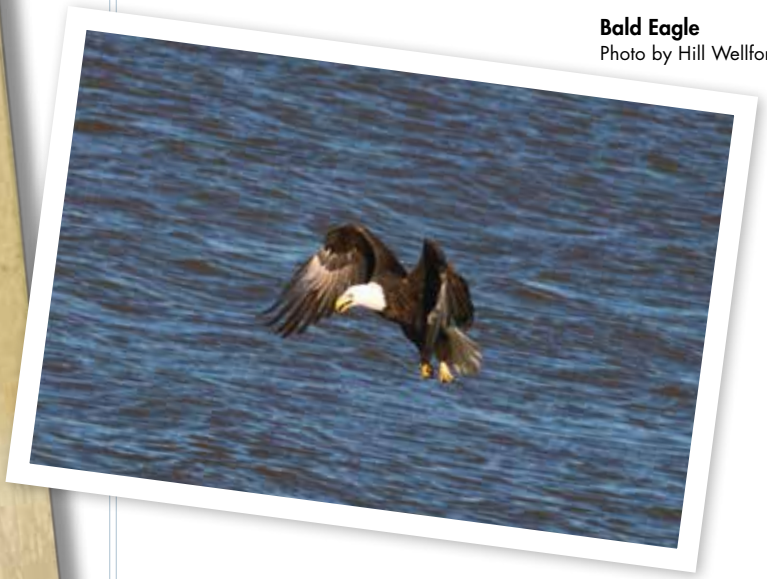
Forty years of bald eagle recovery along the Rappahannock River.
Data from the Center for Conservation Biology



Eaglets in nest looking out over LaGrange Creek along the Rappahannock River. The single pair on this creek during the 1960s and 1970s produced no young in more than ten years. Today, the creek supports five breeding pairs.
Photo by Bryan Watts

Dr. Bryan Watts is Mitchell A. Byrd Professor of Conservation Biology at the College of William and Mary and director of the William and Mary/Virginia Commonwealth University Center for Conservation Biology. He has worked with bald eagles in the Chesapeake Bay for more than twenty-five years.





Bald Eagle
Photo by Hill Wellford

Bald Eagles

Bald eagles, also known as sea eagles, are the only eagles whose range extends over all of North America. All brown when they are juvenile, they attain the white head at sexual maturity, reached at about five years old. The name bald came from Old English, meaning "piebald," or "white headed."

The bald eagle is a large bird, growing three to four feet in length with a wingspan of five to eight feet. The females are 25 percent larger than the males, otherwise similar, both having massive, hooked, yellow beaks and yellow feet with large claws. They live near open bodies of water, preferring tall, old-growth trees that have a view of the water and can bear the weight of the eagle's nest, which can be eight to ten feet wide, up to thirteen feet deep, and weigh a ton or more. They return to this nest as long as it lasts, sometimes for decades. An eagle's nest is the largest of any North American bird's nest, and the largest tree nest of any avian species.

Eagles are thought to be monogamous but have been known to split up and find other mates if breeding is unsuccessful between them. They are early nesters and breeders, laying one to three eggs in March, which hatch out from mid-April to early May. Both parents incubate and feed their young, which fledge out at eight to fourteen weeks and leave the nest about eight weeks after that.

Eagles are opportunistic feeders, eating both carrion and live food: fish, small mammals, and birds. The young scavenge more than the mature eagles do. They will attack osprey and gulls, snatching the food out of the air when their victims drop it. An eagle's dive speed can reach 75 to 99 mph.

An average lifespan is around twenty years and very few animals are a threat to them. Almost 70 percent of eagle mortality is due to human intervention, either by shooting, trapping, electrocution, or poisoning. In the early eighteenth century their population was thought to be around a quarter to half a million. In 1950 there was a count of only about 400 nesting pairs in the contiguous United States. In 1969, because of declining numbers due to DDT poisoning, bald eagles were put on the endangered species list. After DDT was banned in 1972, numbers began to rebound. They were de-listed in 2007, although they continue to be deliberately destroyed, despite being the national bird of the United States.

Osprey

Also called sea hawks or fish hawks, osprey are the second most widely dispersed raptor, with varieties found worldwide. They can grow to two feet in length and have a wingspan of up to six feet. An adult has yellow eyes, a large hooked beak, and a head that is mostly white with a broad black mark through the cheeks and on the side of the neck. The bodies are dark brown, the belly grayish-white, and the tail is long with narrow black bars. Juveniles have white spots on their back, and buff shading on their breast. In flight, the wings are bent, with split tips. Their call is a series of sharp whistles, getting frenzied if they are disturbed around their nest.

Ospreys eat mostly fish, although they will eat small mammals, since they can lift anything from five ounces to four pounds, or six inches to a foot in length. They dive to catch prey from thirty to one hundred feet above, having three secret weapons: a transparent nictitating membrane over the eye to keep water out, closeable nostrils, and a reversible outer toe that allows them to grip a fish with two toes in front and in back. They shake off their wings, point the fish head forward to decrease wind resistance, and go to a perch or nest to feed. Bald eagles often dive at an osprey to steal its catch, snatching the fish out of the air.

Thought to be monogamous, ospreys prefer large nests made of sticks and located high off the ground. They raise one brood of two to four young a year, with both parents incubating and feeding, although the female does more of the incubation, while the male brings home dinner. The young fledge out in eight to ten weeks and have a typical lifespan of seven to ten years. On the decline in the 1950s and 1960s due to DDT, populations have risen, especially since the establishment of programs to build nesting platforms and move populations to better locations.

Common Loon

Found in the upper part of Essex County where the water is fresher, the common loon has a black head, black and white checkerboard back and wings, and a white belly and collar in summer. In winter, they morph to gray backs and white bellies. They have long bodies with short tails, rounded heads, and sharp bills.

Loons live on the water, diving up to 200 feet deep for food, and come ashore only to nest. Because of their high sensitivity to human disturbances, their populations have declined across all of North America. Their call, or song, is unique and beautiful.

Osprey
Photo by Hill Wellford

Belted Kingfisher

There are over ninety species of kingfishers, divided into three families: river kingfishers, tree kingfishers, and water kingfishers. All six American species belong to the latter group, common along freshwater rivers and creeks.

The most widespread variety is the belted kingfisher, which grows to about a foot in length, with a wingspan of about two feet. It has a short body with a large head and shaggy crest, with a long, thick, black bill. The males are bright blue with a white collar and white belly; the female is blue-grey, with chestnut-colored bands across the belly, sides, and flanks.

They can raise one or two broods of five to eight eggs a year, with incubation and feeding done by both sexes. Their nests are dug three to ten feet into a bank, rising upward to protect the young from a flood.

Kingfishers plunge headfirst into the water from a perch or a hover up to twenty feet above the water before diving. They feed primarily on fish but also like insects, reptiles, amphibians, and crustaceans. Their population is in slight decline in North America due to habitat destruction.

Great Blue Heron

The most widespread of North American herons, this bird is also called a crane or blue crane. It is the largest of the North American herons, reaching a height of almost six feet, with a wingspan of six to eight feet.

Their color ranges from pale gray to slate blue, and they have a long, yellowish, dagger-like bill. Herons stand, or stalk, along the edge of a salt or freshwater marsh,

Heron and Egret
Photos by Hill Wellford

stirring up the water and stabbing their prey. Their flight is slow, with powerful wing beats, and they curl their long necks as they fly. They are social, nesting in heronries, and raising one or two broods of two to three chicks a year. Both parents incubate and feed the young, which fledge at six weeks.

Little Blue Heron

The young of the little blue heron are often mistaken for snowy egrets, having white plumage until a year old, when it changes to grayish-blue. Growing only to about two feet tall, with a wingspan of three to four feet, they have thick necks, and a thick, black, tapered bill.

They hunt in the same manner as the great blues, stalking along the water's edge. They also raise one brood a year, with both parents incubating and feeding. Their population is somewhat on the rebound, due to protection of breeding colonies.

Egret

An egret is also called a white heron, since the difference between the birds is due more to appearance than biology. They are white from birth and were once heavily hunted for their plumage, used to decorate women's hats. Fashions having changed, their population has rebounded.

They are social, nesting in colonies, and raise one brood of two or three chicks a year. Both parents incubate and feed the young. They hunt in the same manner as other herons. The great egret can grow to over four feet, with a wingspan of almost five feet, and has a yellow bill, and black legs and feet. The snowy egret has a black bill, black legs, and yellow feet. It only grows to about two feet in length, with a wingspan of about three feet.

Seagulls

Seagull varieties are found worldwide. They are omnivorous and equally adept at walking, flying, and swimming. Social birds, they live and nest in colonies, although they will fight each other over any scrap of food. The most common gulls here are the ring-billed gull, herring gull, and laughing gull.

Ring-Billed Gull

The ring-billed gull is one of the most familiar and widespread gulls in North America. Growing to a length of eighteen to nineteen inches and having a wingspan of up to four feet, they can be spotted by their yellow feet and yellow bill, which has a black ring around it. One of the few birds that have benefited from man's alteration to their habitat, they frequent parking lots and dumps, foraging for food. Besides french fries, they like seeds, insects, fish, and rodents. They raise one brood a year, incubated and fed by both parents. Their population is stable and growing.

Laughing Gull

Laughing gulls undergo two distinct plumages before true adulthood, when they gain a black head, black tail, slate grey wings, and white belly. Their bill is dark red and their feet are black. These gulls do not swim underwater but eat from the ground. They prefer marshes and ponds, eating fish, insects, carrion, eggs, and refuse. They can

Osprey
Photo © Bill Portlock

Ring-Billed Gull

ride updrafts for miles and will eat food thrown to them while they hover in the air. They raise one brood a year, incubated and fed by both parents.

Herring Gull

Another well-known and widespread gull, this species has also benefited from man's alterations, being an opportunistic feeder. It follows ships to feed on refuse thrown overboard and visits parking lots and garbage dumps. The adult herring gull can be two feet in length, with a wingspan of over four feet. It has a white head, breast, and tail, and grey back and wings with black wing tips, and pinkish legs and feet. It raises one brood per year, incubated and fed by both parents.

Sora

Soras are members of the rail family, slightly smaller than the Virginia rail. They are marsh and lowland birds, avoiding open water, growing only seven to eleven inches, with a wingspan of twelve to fourteen inches. They have a chicken-like short yellow bill, while the Virginia rail has a longer red bill. Soras are black and buff, with a black patch around the bill and face and yellow-green legs. They eat mainly seed, insects, and plant life. Monogamous, they raise two broods of eight to twelve chicks a year, both parents incubating and feeding the young. They were once hunted and trapped to low numbers, but their popularity as a food source has declined, and they are now considered common and widespread.

Red Wing Blackbirds

One of the most abundant blackbirds, the adult male is instantly recognizable by its bright red shoulder patch and yellow wing bar. The females are brown, with dark streaks. They prefer wetlands, either salt or fresh, and nest in colonies in the marsh. They lay two to three clutches a year, with three to five chicks. The female incubates alone, possibly due to the visible colors of the male. Polygamous, a male will defend the territory of up to ten females, whether or not their offspring are his. They eat insects, grain, fruit, and seeds, and will visit bird feeders. Red wings are sometimes poisoned because they are felt to be an agricultural pest, although their insect eating more than makes up for seed theft.

Suzanne Derieux was born, raised, and currently resides in Tappahannock, Virginia. She graduated from St. Margaret's in Tappahannock and Mary Washington College in Fredericksburg. She is a professional genealogist, and can be found doing research in Essex County Courthouse. In her spare time she enjoys refereeing women's lacrosse and field hockey at the high school and collegiate level.

ECCA Welcomes New Board Members

By Larry Mazzeno

Richard Moncure was raised on the Northern Neck, where his family owned the Happy Clam restaurant in Colonial Beach. He earned his bachelor's degree at Hampden Sydney College and served in the Peace Corps in Zambia working on rural aquaculture projects. He has worked in his family's restaurant business and as a commercial waterman. Currently he is employed by the Friends of the Rappahannock as Tidal Rappahannock River Steward. He and his wife Jessica live with their children, five-year-old Tripp and two-year-old Chatham, in Richmond County. Moncure's work as a truck farmer in Essex County introduced him to the work of ECCA, and over the years he has watched the organization evolve. Moncure says ECCA's initiatives to place land in conservation easement dovetail with his own desire to preserve and protect for his children the natural resources which he and his father enjoyed while growing up.

Gam Rose was born and raised in Philadelphia, Pennsylvania. He attended Yale University and earned an MBA from the University of Virginia. He owns pasture, timber, and cropland in Essex and Richmond Counties. In 2008 he and his wife Kendall put their Essex County waterfront acreage into a Conservation Easement to protect it in perpetuity. Kendall and Gam sustain a long-term commitment to protecting Virginia's wildlife habitat and water quality from the danger of short-sighted residential and industrial use. He lives and works in Virginia, where he enjoys hunting and working on his land with his wife and three children.

Margaret Smith grew up in Warsaw, Richmond County. She graduated from the University of Virginia with a Bachelor's degree in Economics and completed the Graduate Accounting program at Virginia Commonwealth University. Smith now works as a Certified Public Account for Canal Capital Management LLC in Richmond, where she serves as Director of Financial Planning and Tax Services. She and her husband Blakely and new daughter, Ellie (born in July 2014), live in Mechanicsville. Smith has always enjoyed the tranquility of the outdoors and was delighted when, in 2001, her grandparents' farm became part of the Rappahannock River Valley National Wildlife Refuge.

Tax Benefits of Conservation Easements

*VOF provides this information about tax benefits to assist landowners, but not as tax advice. Please check with your tax advisor or attorney about qualifying for any tax benefits associated with conservation easements. The gift of an open-space easement in perpetuity to the Virginia Outdoors Foundation (VOF) may qualify as a non-cash charitable gift, providing the donor with various tax benefits. A donor applying for tax benefits must hire an independent certified appraiser to establish the value of the easement, which value is primarily based on the value of the development rights forgone. Once that value is established, it becomes the basis for calculating tax benefits.

1 Federal Income Tax Deduction. Donations of open-space easements that meet federal tax code requirements may entitle the donor to federal income tax deductions. For tax year 2015, the deduction is limited to 30% of adjusted gross income, which if not used up in 2015, may be carried forward at 30% of adjusted gross income for an additional five years or until the donation is fully expended, whichever comes first. (An enhanced federal deduction was available from 2006 through calendar year 2014, but has now expired.) IRS Form 8283 must be filed to obtain this deduction. Form 8283 requires attachment of a copy of the appraisal, an appraiser's declaration, and VOF's acknowledgement of the gift.

2 Virginia State Tax Credit. A Virginia state tax credit has been established for conservation easements at 40% of the value of the easement. The amount of the credit that may be used by a taxpayer may not exceed $20,000 for taxable years 2015 and 2016 and $50,000 for taxable year 2017 and each taxable year thereafter, but any unexpended portion may be carried forward for the next 13 taxable years. In addition, any unexpended portion may be transferred to another Virginia taxpayer. A recent tax court opinion suggests that the income from the sale of tax credits held for more than one year prior to sale may receive more favorable long-term capital gains treatment. (Check with your tax advisor or attorney to determine whether and when tax credits should be sold.) Tax credits in excess of $1 million or more will be issued only if the conservation value of the donation has been verified by the Director of the Department of Conservation and Recreation (DCR) based on criteria adopted by the Virginia Land Conservation Foundation. Pre-filing review of the conservation value is available through DCR. There is a $75 million limit on the amount of tax credits that the Department of Taxation may issue in each calendar year. Form LPC-1 must be filed with the Department of Taxation for registration of credits and Form LPC-2 for transfer of credits.

3 Federal Estate Tax Reduction and Exclusion. Extinguishing some or all of the development rights for a parcel of land through a conservation easement may reduce the value of the land for estate tax purposes, thus reducing the estate taxes, often substantially. In addition, Section 2031(c) of the Internal Revenue Code provides an estate tax exclusion from the gross estate of up to 40% of the remaining encumbered value of the land (but not improvements on the land) protected by a qualified conservation easement. The exclusion is capped at $500,000 and is reduced if the conservation easement reduced the land's value by less than 30% at the time of the contribution. To qualify the easement must prohibit all but "de minimis commercial recreational use."

4 Local Property Taxes. Local property taxes may be reduced with respect to land (but not dwellings, farm buildings, or other improvements to the land). However, if land is already assessed at "use value," in other words, enrolled in a local land-use assessment taxation program, an additional reduction in taxes is unlikely.

Department of Conservation and Recreation's Review Criteria

The Director of the Department of Conservation and Recreation (DCR) will review and verify the conservation value of donated land or conservation easements or other less-than-fee interests in land that result in tax credit applications for $1 million or more.

Please visit http://www.dcr.virginia.gov/land_conservation/lpc.shtml for more information about applying for Land Preservation Tax Credits.

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May 2015 Board Gathering

at Flip and Ginny B. Sasser's Duck Shack

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