SPRING/SUMMER 2019

Orleans Conservation Trust

Resilient Coastlands

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Hike to Pochet Island on Celebrate Our Waters weekend! **Walks & Talks**, pages 8–9

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On the cover: Dawn at Nauset Marsh, © by Hardie Truesdale. Photo of Alan McClennen by Bob Tucker.

In this issue, we focus on land conservation for climate resilience. To learn about Resilient Cape Cod, visit capecodcommission.org. Another Cape-wide effort, Cape Cod Climate Change Collaborative, is at capecodclimate.org.

from the president

Dear OCT members and supporters,

Welcoming spring and preparing for the busy summer ahead have me outdoors a lot these days—working on the farm but also collecting data. For years, I've been recording the first sounds of peepers on the bog near our place, reporting firefly activity through Mass Audubon's Firefly Watch Citizen Science project, and helping track the rate of erosion on our town's coastal properties—especially at Nauset Beach. Although the work is useful, I'm motivated more by the urge to stay in touch with our natural surroundings. When we pause to listen and look, nature and its inhabitants tell us where we've been and where we are going.

This newsletter spotlights "resilient coastlands." The Trust has been fortunate to participate—along with other stakeholders—in the Resilient Cape Cod project, led by the Cape Cod Commission. To date, this effort has identified forty-four adaptation strategies that protect shorelines or enable them to accommodate the impacts of climate change.

Some of the natural strategies align with OCT's mission and its commitment to protecting Orleans' coastal resources. Since 1970, OCT has acquired dozens of coastal properties, keeping them undeveloped as open space. Doing so has preserved their natural systems—beaches, marshes, dunes, and bogs that constitute a cost-effective, front-line defense against rising sea levels and increasing storm intensity. In his keynote article, Director Steve O'Grady describes our region's unique exposure to those impacts, the complex changes being wrought in coastal habitats, and how conserving land helps.

Local fisheries are vital to the Cape's character and economy, and herring in particular depend on protections for their marine habitat and the onshore streams and lakes where they spawn. Seth Rolbein of the Fisheries Trust, who spoke to OCT members last fall, writes about recent successes (page 10). Farther inland, spring is an exciting time around vernal pools. Orleans has quite a few, and more OCT wetlands may be certified this year (page 15). Moving indoors, I hope you found time to join us for the second annual Arts for the Earth event at the Addison Art Gallery (page 6).

There's so much to enjoy out on the land and waters. I hope your summer includes several visits to OCT's trails around town. Thanks to OCT members, our protected lands and trails are there for you and all of Orleans. As always I thank you, our donors, volunteers, staff, and the trustees who guide OCT's work.

Kevin F. Galligan
President

Remember to Renew!

Very soon you should receive our letter asking you to renew your membership. Our membership year starts on July 1—by renewing, you guarantee your right to vote at the Annual Meeting and other benefits of membership, including this publication. Most important, you support OCT's work to safeguard our town's open spaces, natural habitats, and community character, and to address climate change.

Mark your calendar for the Trust's Annual Meeting on Monday, August 26!

Winter to Summer at the Trust

Hard to believe, but it's been less than two years since Orleans Conservation Trust moved into our headquarters at 203 South Orleans Road. One member called it "the best move we ever made"—not counting our land-saving work, of course. We're happy to be more visible and more available to OCT members and visitors, and we see a lot more of both these days.

Last December, we celebrated the end of our first full year in the new space with an open house. We welcomed upward of fifty people for hors d'oeuvres supplied by the trustees and beverages poured with a smile by Bob Platten, husband of recently retired trustee Patty Platten. Attendees admired our holiday decorations, and so did voters in the second annual Holiday Decorating Contest sponsored by the Orleans Chamber of Commerce. Trustees and volunteers, guided by Bonny Runyon, created delightful (and sometimes edible) wildlife-themed decorations for our outdoor space. OCT was awarded second place in the Santa's Elves open competition and honorable mention in the People's Choice category. It was also a win for our neighborhood birds and other critters who enjoyed munching on our contributions through the New Year,

On the fiscal front, we had a strong year end, testifying to our members' commitment to the important work of OCT, despite tax law changes that may have reduced the charitable deductions donors have benefited from. Kudos to Treasurer Steve Koehler and the Finance Committee for careful financial planning and a fine-tuned budget.

Now, like our Orleans neighbors, we're watching the flowers come up in our front garden, clearing up winter storm debris on our lands (nothing as bad as last year, fortunately!), and looking ahead to an active summer. Check out our schedule of upcoming Walks and Talks (pages 8–9), watch your e-mail for volunteer opportunities coming up, and mark your calendars for the OCT Annual Meeting on August 26!

Top: OCT staff, trustees, and volunteers decorate our HQ. Left: An uninvited guest at our bird feeder. Above: Enjoying our holiday open house.

Remembering Bob Moore

OCT trustees and staff were deeply saddened to learn of the death of Bob Moore following a short illness. After retiring to Orleans from a distinguished legal career, Bob devoted his energies mostly to mediation work and wastewater issues. He joined our board less than a year ago but during that time made important contributions to our endeavors, and his wisdom, insight, and good humor were reliable and welcome features of all our interactions with him. We join his family and many friends in mourning his passing.

Resilient Coastlands

Natural Systems Buffer a Changing Climate

by Stephen O'Grady

Above: Namskaket Marsh, on Cape Cod Bay in Orleans. The photograph is by Hans Rilling, a long-time OCT member who contributed a number of fine images to our archive. Rilling was a research scientist in biochemistry and an active environmentalist in various places around the country where he lived. Below: Salt marsh dieback caused by submergence, NPS photo.

On Cape Cod, we live by the sea. The water that surrounds us profoundly affects our lives; we feel the strong winds whipped up by nor'easters, and we smell the fresh salt air on a cool spring day as we head to our local seafood shacks and ice cream stands, finally reopening for the season. Sometimes it feels like we get three months of "in like a lion" before the lamb arrives, at long last, in June. While we await the slow springtime warming of the ocean expanse—or, as summer eases into fall, enjoy warm walks on the beach thanks to the same ocean buffering us from cool inland air masses—we have a front-row seat to observe our rapidly changing environment.

The Cape is a fragile peninsula that reaches out into the Atlantic, with nonstop exposure to its tremendous power. Coastal change is constant here, but the current pace is alarming. As we continue adding greenhouse gases to the atmosphere, we are experiencing storms with increased frequency and intensity.

And sea levels are rising. The surface waters of the Gulf of Maine are warming faster than 99 percent of the world's oceans, as author Sandy Macfarlane cautioned at her OCT talk this March. We have guaranteed ourselves a future of drastic coastal change. While it's critical that we work to slow greenhouse gas emissions, it's just as important to think about how we'll be affected by the onslaught of storms, coastal erosion, and sea level rise we will face in the coming decades.

The term *climate resilience* has become a buzzword in climate change discussions. There are incredibly complex models that attempt to predict the resiliency of a given region and locality in the context of anticipated climatic shifts; they all contain a good bit of calculated guesswork. ("All

models are wrong, but some are useful," as British statistician George Box wrote.) But when it comes to climate resilience on coastlines, one thing is clear: the more coastline that's left in its natural state, the higher the resiliency for that area. In particular, salt marshes, barrier beaches, and coastal dunes take the brunt of storm surges and provide a buffer for the uplands behind them. Salt marshes are also critical in countering carbon emissions: while OCT's forest, meadow, and freshwater wetland ecosystems all serve as effective carbon sinks, they pale in comparison to the tremendous amount of carbon stored in salt marshes. Fortunately, environmental regulations ensure that these buffering ecosystems are protected from development.

With rising sea levels, however, things become more complicated. The salt marshes that typically protect uplands are slowly becoming submerged. Although the dense root masses of cordgrass (*Spartina alterniflora*, the predominant saltmarsh grass) stand up well to forces that would otherwise cause erosion, they have no defense against slowly rising sea levels, which effectively drown the plants. They can tolerate an impressive amount of submergence but require some exposure to air. There is a distinct layering of vegetation at the edge of salt marshes, as grasses more tolerant of the aquatic salt environment give way to salt hay (*Spartina patens*), sea pickle, seaside lavender, and eventually shrubs, including marsh elder (also known as high-tide bush) and bayberry.

A biodiverse seaside community brings many benefits: shelter, carbon sequestration, water filtration, shellfish to eat, and innumerable other ecosystem services. What's needed to continue those benefits is time and space for *ecosystem retreat*. Plants need time to colonize a slightly higher elevation where an appropriate balance of salinity, submergence, and wave action gives them a competitive advantage over upland species. At OCT, we have placed a high priority on acquiring land that abuts estuaries and salt marshes to allow for salt marsh retreat and an ecosystem transition. Unfortunately, we aren't the only ones seeking waterfront property on Pleasant Bay, Nauset Estuary, or the salt marshes on Cape Cod Bay!

In any case, we can't do it alone. Coastal real estate may be prohibitively expensive for OCT to acquire, but we also try to educate shoreline landowners on the importance of fostering a healthy buffering ecosystem. Erosion is a natural process, but appropriate native vegetation can go a long way to slow erosion—while serving as a carbon sink, providing valuable habitat, and offering aesthetic pleasure.

Coastline change is happening, and it will become more intense in the coming decades. The seaside communities that succeed best in coping with such change will rely on good resilience planning, citizens who value protected lands, and landowners who are good stewards of waterfront properties.

Salt Marsh on Sea Breeze

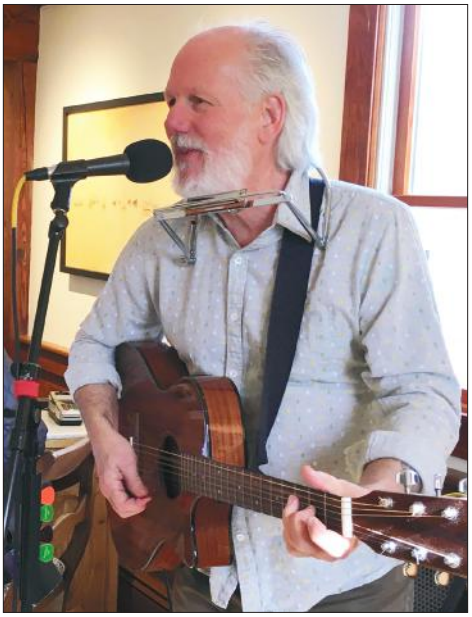
OCT is in the process of acquiring about a half-acre on Little Namskaket Marsh. The property at 14 Sea Breeze Lane, which is being generously donated to the Trust by the Smith and DeMorais families, lies only a few feet above sea level and above the salt marsh. Preserving this piece of land will allow for salt marsh retreat over a number of decades. In the short term, as the property grows in with denser vegetation, it will provide a buffer for surrounding homes during storms, provide more upland habitat for wildlife that feeds in and passes through the marsh, and serve as a filtration system to remove nutrients and pollutants that would otherwise enter the marsh.

Two families are donating the red-outlined lot near Little Namskaket Marsh to OCT.

Arts for the Earth

2nd Annual Earth Day Celebration at Addison Art Gallery

Orleans Conservation Trust again welcomed its members to mingle with the art world at the second annual Arts for the Earth event. The Addison Art Gallery showcases some of the Cape's most renowned artists. It was a treat to spend the Saturday afternoon after Earth Day with friends new and old, enjoying beautiful paintings, wine, and cheese while benefiting the work of Orleans Conservation Trust. Two artists represented by the gallery came to demonstrate their crafts: Amy Sanders, who works magic with her pastels, and Paul Batch, who paints gorgeous landscapes in oil. If you haven't seen the amazing work of these two talented artists, it's worth a trip to the gallery to see them.



Tim Sweeney accompanied his own vocals on guitar and ukulele in the main gallery space.

We were excited once again to host local author and educator Peter Trull, who signed copies of his recently published book, *Birds of Paradox: The Life of Terns*. This new release chronicles the ten-plus years Peter spent researching, photographing, and observing these graceful shorebirds from Massachusetts to the coast of Guyana. It contains more than 100 photographs depicting life in their noisy nesting colonies (including the Monomoy National Wildlife Refuge, the largest colony of common terms on the East Coast, which supports over ten thousand pairs) and their daily struggle for survival. Peter has authored many works about the Cape's wildlife, including coyotes, whales, seals, sharks, and, of course, birds.

New to an OCT event were writer-photographer Janice Riley and Stephen Spear, a conservation specialist with the USDA. Their award-winning book, *Out in Blue Fields, A Year at Hokum Rock Blueberry Farm*, features inspiring essays and photographs chronicling a year spent cultivating blueberries on their farm. Janice and Steve own and operate this "pick-your-own" blueberry farm in Dennis, which was established in 1973 by Steve and his parents. This beautiful book aims to capture the essence of farming life and why it is so important to us. It even has a section with Hokum Farm's favorite blueberry recipes.

Above: *Sunset Dunes*, oil by Paul Batch. Courtesy of the artist and Addison Art Gallery.

"It's an honor and great fun to host our town's conservation trust. You'll surely want to join the party in 2020."

–Helen Addison

Peter Trull talks about his latest book with some fans.

Top left: Amy Sanders demonstrates her finely detailed pastel technique. Above: Paul Batch with an oil painting in progress during the event. Top right: *Splash*, pastel by Amy Sanders. Courtesy of the artist and Addison Art Gallery. Right: Authors Steve Spear, Janice Riley, and Peter Trull signed copies of their award-winning books.

We were fortunate to have another Orleans native, Tim Sweeney, singing and playing guitar, ukulele, and harmonica during the reception. A self-described "journeyman guitar player and saloon singer who has happened upon some cool ukulele adventures," Tim is equally adept at coaxing sweet magic from his ukulele or a warm, resonant strum from his fleet of guitars.

"Many thanks to Helen Addison for hosting what we hope will be an annual tradition of celebrating Earth Day among the beautiful artworks in her gallery," said Jamie Demas, who chairs OCT's Fund-raising Committee. "Special thanks to Amy Sanders and Paul Batch for offering a glimpse into their techniques, and our gratitude to authors Peter, Janice, and Steve for engaging with our community and donating part of their book sales to help the Trust preserve the natural beauty of Orleans."

Summer/Fall 2019 Speakers

Join us at the Orleans Yacht Club for the latest in our series of **entertaining and informative** talks by **local and regional experts**. Admission **free** (cash bar). Doors open at 6:00 pm; talks begin at 6:30 pm.

Sea Turtles: A Tale of Two Seasons

Bob Prescott

Director, Wellfleet Bay Wildlife Sanctuary, Mass Audubon

Learn about the four sea turtle species that frequent Massachusetts waters. Some are here only in the summer; some make navigating errors and get trapped in the fall. You'll find out what they eat while here and where you might see them. All sea turtle species are listed as either endangered or threatened, from the massive 1,500-pound leatherback to the eight-pound Kemp's ridley, the rarest sea turtle in the world.

Monday, August 26
(**5:00 pm start,** immediately following OCT's Annual Meeting)

Preserving Our Past, Enriching Our Future

Ron Peterson

Chair, Orleans Historical Commission

The history of Orleans began long before 1797, when our town was founded. We have a rich, compelling, and multifaceted heritage that contributes greatly to the "sense of place" that residents and visitors know and love in Orleans today. Ron's presentation will provide an overview of the town's history since 1605 and trace its many varied threads. He will also discuss the importance of preserving our landscapes and historic structures for future generations.

Tuesday, September 10

Understanding Cape Cod Lakes

Ken Wagner

Ph.D., president of Water Resource Services, Wilbraham, MA

Dr. Ken Wagner has worked in water resource management (mainly lakes, reservoirs, rivers, and streams) for over 40 years and has been a technical consultant to the Orleans Pond Coalition. He will give an expert's perspective on the Cape's ponds, which are mostly glacially created kettle holes with few outlets. He will discuss how this makes them vulnerable to pollution and some of the options for improving the health of freshwater lakes and ponds.

Tuesday, October 8

Beyond the Springtime Herring Runs

Brad Chase

Diadromous Fisheries Project Leader, Massachusetts Department of Marine Fisheries

While most Cape Codders are familiar with the annual run of river herring, how much do we really know about these and other diadromous fish (fish that spend part of their life in both fresh water and salt water) that inhabit our area? Brad will discuss river herring, American eels, and more.

Tuesday, November 19

Summer/Fall 2019 Walks

Get to know the **open spaces** of Orleans on our **popular guided walks.** They're **free, fun**, and appropriate for **all ages**.

White's Lane Conservation Area

Walkers will see coastal sandplain meadow and healthy terrapin turtle habitat. Led by Bob Prescott, director of Mass Audubon Wellfleet Sanctuary. Advance registration required.

Meet at OCT Office, 203 South Orleans Rd, Orleans. We will carpool to the trailhead.
Wednesday, May 29
9:00–10:30 am

Grassy Knoll Conservation Area

1.5-mile walk through an early succession habitat and along the shores of Nauset Harbor.

Meet at 60 Champlain Rd, Orleans
Thursday, June 20
9:00–10:30 am

Ice House & Reuben's Ponds Conservation Area

1.5-mile walk around two freshwater ponds and through 25-plus acres of pine–oak woodlands.

Meet at 245 Tonset Road, Orleans
Tuesday, July 16
9:00–10:30 am

Kayak to Little Sipson Island

Paddle a total of about 3 miles to and from Little Sipson Island Conservation Area—one of our most popular outings, led by Mass Audubon staff. Pack water and snacks or a small lunch. Please bring your own watercraft; a few loaners available. Advance registration required.

Meet at the Route 28 Town Landing, South Orleans.
Thursday, August 22
9:00–11:30 am

Hike to Pochet Island

OCT leads this walk as part of Orleans Pond Coalition's Celebrate Our Waters weekend. Walk about 5 miles, including strenuous portions over soft sand, to this hidden gem. Advance registration required.

Meet at Nauset Beach, the southern ORV trailhead
Sunday, September 22
9:00 am–1:00 pm

Woods Cove Conservation Area

Walk about 1 mile through pine-oak woodlands and along Nauset Estuary. This less well-known OCT property preserves important wildlife habitat including two vernal pools.

Meet at 366 Tonset Road, Orleans
Saturday, October 19
10:00–11:30 am

Photo © Hardie Truesdale

Join Us to Explore the Ponds!

The Ice House & Reuben's Ponds Conservation Area is the largest in a network of OCT preserves in the Tonset region, and it hosts OCT's largest uninterrupted trail system. Walkers will learn about the two very different ponds the conservation area is named for, and about the importance of a healthy watershed.

To register in advance for walks, go to orleansconservationtrust.org/walks. You can also preview walks and find trail maps on our website.

Little Fish, Big Hopes

by Seth Rolbein

Above left: The herring run at Pilgrim Lake in Orleans was unusually active this spring, perhaps due in part to the newly rebuilt weir. Right: Brad Chase and Sigurd Winslow work on the weir.

They're back.

And for the first time in a very long time, there's compelling reason to think that they'll not only keep coming back but will do so in historic, growing numbers.

I'm talking about my favorite seasonal visitors—with no offense to our many tourists and summer homeowners.

I'm talking about herring.

The Cape's herring runs, including the one in Orleans from Lonnie's Pond to Pilgrim Lake, have been active. The amazing, cosmic, Herculean cycle these little fish perform—roaming the seas, returning to spawn in the fresh water where they were born—has been completed once more.

That's way good, but the reason I am optimistic about their future, a big change in my perspective from a decade ago, reaches beyond strong efforts onshore to protect and encourage the herrings' return. Recent successes at offshore management finally have created reasonable controls on how these fish are harvested just a few miles from "home."

For decades, "pair trawlers"—large draggers working in tandem, drawing nets the size of football fields with small mesh designed to catch everything in their paths—have been allowed to fish for herring just beyond three miles offshore. Their target is ocean herring, a cousin of our river herring. But ocean and river herring move together. As a result, pair trawlers have been catching and killing millions of pounds of river herring every year, within sight of our runs. Most of that catch isn't eaten by people or even used as bait. It is discarded, dead, overboard.

And so we have been in the unbelievable position of creating rules that levy a substantial fine if a person in Massachusetts takes so much as a single herring out of a river, while simultaneously allowing trawlers to kill millions of them.

A broad coalition came together to move federal policy, focusing on the New England Fishery Management Council. It took a decade, but the council finally voted for a 12-mile midwater trawl buffer zone from Montauk to Canada. Maybe even more important for our community, two more "boxes" east of the Cape would protect vital spawning grounds out to 20 miles.

Those who understand how important ocean herring are to the offshore world stepped up. Those who care about reviving freshwater runs joined forces. Selectmen, town councilors, county commissioners, the county assembly of delegates, state representatives and senators, all weighed in. Scientific proof that herring stocks are at historic lows added urgency.

It was a dramatic success, but we're not quite there yet. Council decisions must make their way to approval through a federal labyrinth in Washington that can take months, even years. While the new rules climb their own run, this year's allowable harvest has been dramatically reduced, creating protections right away.

This peninsula could have been named Cape Herring rather than Cape Cod, so large did the little fish loom in our history. Most towns have a Herring River, and one of the first public positions in Colonial days was Herring Warden. Their returning schools powered our economy and served as crucial forage for cod, bluefish, bass, tuna. Rebuilding the runs, and now giving herring a chance to reach them, might be this generation's most important conservation success—so far.

Seth Rolbein, former editor of the *Cape Codder* and the *Cape Cod Voice*, is director of the Cape Cod Fisheries Trust.

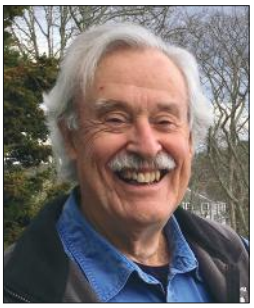
More about Herring

Come to our talk by Brad Chase of the state Department of Marine Fisheries on November 19.

Open Space Keeps Orleans Special

A Conversation with Alan McClennen

Sixty years ago, a teenage Alan McClennen was scraping boat bottoms as a summer worker in an Orleans that was wide open and thinly peopled. This month he's retiring from the Board of Selectmen, which he has chaired at two different times. His local career in public service goes back to 2004, when he joined the Open Space Committee, and has been marked by a series of notable achievements in land and community preservation. Director Steve O'Grady and trustee Diana Landau recently sat down with McClennen as he told some stories, recalled turning points and triumphs, and pondered what comes next. Here are edited excerpts from the conversation.



Q. Alan, you've lived in Orleans full time since 2003 and part-time for much longer. How has this place shaped you and your outlook? How has it changed?

I'm part of a generation that represents a hinge between what Orleans was and what it's become. When I was spending summers here, pre-Mid-Cape Highway, you could walk from the junction of Routes 28 and 39 all the way to Baker's Pond or Cliff Pond and see nothing but trees and wildlife. After a week in the salt water, you'd go jump in one of those ponds to wash off the salt. My family buried garbage in a compost pit and burned trash in a 50-gallon drum on the beach—you could look around Pleasant Bay at night and see those fires all over.

Back then, a major topic at Town Meeting was deciding whether to put oil on the dirt roads to keep down the dust. You knew everyone, went where you wanted, did what you wanted. It was a time of great freedom and simplicity.

Today it's a different world. We have, to an extent, suburbanized, though not as much as the Upper Cape. After those early summers, I was away for a long time, building my adult life and career, coming back for summer and Thanksgiving holidays. I didn't notice much change until the 1970s. That was when land values (and taxes) started to climb and families began to sell their land to be subdivided. I think the population doubled in the '70s and '80s.

Some people began to worry that these changes were affecting the basic character of the town, and a kind of rebellion against unfettered development arose. The founders of Orleans Conservation Trust were really prescient—they organized way back in 1970 and some put conservation restrictions on their own lands. On the town side, we created an Open Space Committee in 1985. That was two years before we even had a town charter.

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Protecting Sipson Island

When the effort to preserve Sipson Island in Pleasant Bay began to gain steam last winter, Alan McClennen was in the thick of it. The island falls within Orleans' borders; plans call for the town, using Community Preservation funds, to purchase a CR on the island as part of a larger fund-raising campaign, to ensure public access in perpetuity. McClennen helped shepherd the proposal through the Community Preservation Committee and championed it on the Board of Selectmen. Article 15, authorizing purchase of the CR, will go before voters at Town Meeting on May 13, probably before this issue reaches you.

"For me it's very simple," McClennen says. "This is the last unprotected island in Pleasant Bay, and we citizens should continue our practice of approving these important, once-in-a-generation open space acquisitions. Valuable property like this will be developed sooner or later, if left unprotected.

"I believe voters understand how this fits into the big picture of what we want to preserve here in Orleans, and will support it. The way CPA funds are set up, we have plenty of room under the 'cap' to purchase and bond for the CR, and still have the resources to fund other big priorities like housing and water access when those opportunities arise. This opportunity is before us ***now***."

Orleans Conservation Trust supports the acquisition and protection of Sipson Island under nonprofit management. For more information, visit sipsonisland.org.

High Heat to High Tech

Using Tools Old and New to Restore OCT Lands

OCT trustee Steve Koehler, AmeriCorps Individual Placement Courtney King, and land manager Andrew Bagnara using our new GPS devices to fix a boundary.

What a difference a winter can make! Last year at this time, we were testing the limits of OCT's chainsaw, working our way through miles of storm damage on our trails. This spring, after a tame winter, we are finally getting ahead. Later in the season, mowing and maintaining trails consume much of our time, but in March and April, we focus on removing invasive plants and burning brush.

The time-honored tool of fire, used by humans since the Stone Age to alter their landscape, helps with this work. Fire management techniques are especially important for habitats we intend to keep open as grassland, or what's called old field habitat. "Woody plants and invasive species tend to overgrow and compete for nutrients and sunlight needed by native grasses and herbaceous plant communities," notes OCT President Kevin Galligan, who is active on the Land Management Committee and often in the field. "Controlled burning helps exclude them."

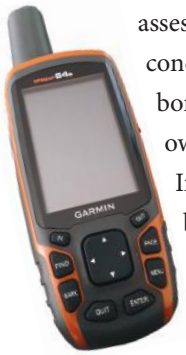
Burning to Keep Grasslands Open

Old field habitats are sometimes called as early successional fields, referring to a stage in the natural process of ecosystem succession. Left alone, grasslands are gradually colonized by certain species of shrubs and trees known as pioneer species. As they grow, pioneer species eventually create a more shaded understory that favors climax species, such as American beech and white pine, which tolerate more shade. When the climax species become dominant, the forest is reaching maturity.

So why not let nature take its course and let OCT's grasslands become forests? Well, that would be a lot easier from a management standpoint! But a variety of habitat types is important to an ecosystem's biodiversity. A healthy mix that includes meadows, young forests, and mature old-growth forests is the goal in managing upland habitat. And grasslands—once commonplace when the land was farmed and grazed and trees harvested for firewood—are increasingly rare in New England. So too are many birds and insects that depend on these habitats. While we can't make a forest age faster, we can do a lot to make sure that our grasslands don't all become young forests.

To maintain grasslands, we strategically thin out shrubs and trees, accumulating large piles over a few years. When there is enough stockpiled brush to justify the time invested in a controlled burn, we organize a burn day. Besides disposing of the woody trash, burning sends nutrients back into the soil for native grasses to take up. Meanwhile, the accumulating brush piles have their own benefits, Galligan notes. "They provide temporary shelter for birds and for critters that in turn provide food for hawks, owls, and other predators."

Finding Boundaries with Web GIS



No matter what kinds of habitat we manage, it's important to know where our property boundaries are and to assess the ecological conditions of neighboring, privately owned properties. Invasive oriental bittersweet has no respect for boundaries, so we try to coordinate with neighbors on a plan for holistic restoration in the longer term. Most but not all OCT properties have been professionally surveyed. And even with a survey, without some physical bound in place (and not hidden under several inches of leaf litter), it can be difficult to distinguish where our properties meet those of our neighbors.

With human resources at a premium, we try to leverage any way to streamline vital stewardship tasks. In recent years, that's meant adding technological advances to our toolbox. "OCT has taken advantage of geographic information system (GIS) software, Google maps, and global positioning system hardware (GPS) to better manage our lands," says Land Management Committee Chair Steve Gass, who came to OCT's board with an IT background and has moved us toward new technologies. While OCT doesn't fly drones over our properties (yet!), as some larger conservation organizations do to monitor their land, we do routinely use satellite imagery to identify where neighboring properties may be encroaching on OCT land. We even use a webtool that provides a timeline of aerial photographs that helps us understand historical land use of our properties. You can learn more at www.capecodcommission.org/chronology/.

Out in the field, we can use GIS software to clarify where our property boundaries are or to pinpoint hazardous trees for future removal. This data is uploaded to an online mapping program, yielding a real-time visual that can help us assess where the worst storm damage has occurred or determine the square footage of invasive plant infestation. We recently ordered a few GPS units that we hope to share with our volunteer land stewards, enabling them to more accurately monitor properties they look after. Expect to see more about this initiative and our volunteer land steward program soon!

OCT has learned a lot about fire management techniques over the years in partnership with the Cape Cod National Seashore's Fire Management Officer Dave Crary. Here, Steve O'Grady brings more brush to a burn at the McMahan Conservation Area.

Another preserve where OCT does prescribed burning is White's Lane Conservation Area, where we need to maintain open habitat for the nesting terrapins.

OCT takes our stewardship role seriously. All our management work aims to fulfill our responsibility to maintain or enhance the land's conservation value where we can.

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Paw Wah Point, at the north end of Little Pleasant Bay.

Things finally came to a head at Paw Wah Point, where the owner had subdivided and an investor wanted to put in six big houses. Enough people didn't like that idea that the town voted to buy the land. It was Orleans' first major open space purchase, and it was citizen-driven. After a few more significant acquisitions in the late '80s, the town realized we couldn't buy our way out of the problem, so the committee worked to persuade owners to protect their land privately, with some success—as at Viking Point and some of Kenrick Woods.

Q. And then the Land Bank (now the Community Preservation Act) came along?

We finally got the Land Bank in 1999, after it was voted down the first time. I'm proud that Orleans had the largest plurality of any Cape town in supporting its passage. Our Land Bank Committee and town planner George Meservey then sat down to structure how Orleans should go about protecting its open space resources, setting a goal of 400 acres.

By bonding up to the allowed limit and working with the state, Orleans acquired a big stretch of land on Cape Cod Bay, from Skaket Beach to Namskaket Marsh. Then we started buying what's now the Kenrick Woods Conservation Area, Kent's Point, and other properties. The debt service on that bonding was considerable but is largely paid down by now—and these important places are preserved.

After I retired from my job as town planner in Arlington, we moved to Orleans full-time in 2003. Open space became my focus, because I believe it is so critical to sustaining the town's character and attractiveness.

My wife, Fran, put her energies toward the private sector, helping to create the popular Celebrate Our Waters weekend with Orleans Pond Coalition. Our interests often converged. I'd worked hard to help the town acquire two properties on the north side of Arey's River to complete the Kenrick Woods project, and we wanted to highlight their importance as a natural corridor for wildlife. So we came up with the "Potanumicut Ferry." During the first Celebrate Our Waters, I towed a float up Arey's River to ferry 50 or 60 folks, who'd walked down from Kenrick Woods, across to the northern shore.

Q: That was kind of an informal public/private partnership for conservation. Why are public/private collaborations so important?

We in Orleans are lucky because we've managed to hang onto some of our Cape character. You don't need to go many miles west—maybe across the Bass River—to be in suburbia. People from all around the world visit and remember Cape Cod because of that special character. We have something that's highly marketable as long as we take care of it.

And no one group can do it all. What we have now is thanks to the concerted efforts of citizens, public officials, nonprofits like OCT, landowners with clear vision, and experts who know how to access state and federal resources. We have the largest saltwater estuary on the Cape, frontage and a harbor on Cape Cod Bay, wonderful freshwater ponds, an Atlantic Ocean beach to die for—all the pieces that make Orleans an extremely attractive community.

Open space is a huge factor in that. If you don't preserve the land, there's no community. People want to come here and live here partly because they can find solitude and respite in natural surroundings. I think the efforts over many decades by OCT and the various Town boards and committees have educated people: that if we don't invest in these resources, we're going to lose something we can never get back.

We need to keep our eye on the future and take actions to make sure that 20 years from now Orleans is still in the forefront.

Q: How will you fill your time when you're not busy with the Select Board?

[Laughs.] It won't be a problem. I guess public service must be in my blood; I can't seem to walk away. For one thing, I hope to serve on the Board of Water and Sewer Commissioners so I can continue to help us progress on dealing with wastewater.

But I'm most excited about my work with the new Affordable Housing Trust, a new town agency that has many of the powers of a private nonprofit like OCT. We all know how critical this issue has become. Having been the BOS liaison to the police and fire departments, I've heard plenty about how the cost of housing impacts our ability to attract new young workers in those key posts.

So that's another key component to preserving and enhancing community. I hope our new trust can succeed in our mission as well as OCT has in yours!

Vernal Happenings

by Andrew Bagnara

If you live in New England, chances are you've heard the term vernal pool. But what really is a vernal pool and why do they receive so much attention? These special habitats are distinguished from other wetlands by their hydroperiod—that is, vernal pools hold water for some length of time but dry out semiregularly.

Traditional vernal pools on Cape Cod will hold water from sometime in late fall through early to mid-summer, when they dry out. Not all vernal pools have such a predictable hydroperiod, but a defining characteristic is that they dry out often enough that fish populations cannot establish. Without predation from fish, amphibians and other vernal pool critters have a much greater chance of survival.

As their name suggests, vernal pools come alive in the spring. If you hear wood frogs chorusing, happen on an elusive spotted salamander, or spy the little crustaceans known as fairy shrimp, you can conclude that you've encountered a vernal pool. These are obligate species, meaning they occur only in a particular kind of habitat (think "obliged"). These inhabitants of our vernal pools are wholly dependent on ephemeral wetlands to complete their life cycles. The amphibians breed and lay their eggs in the water while spending most of their lives in the surrounding uplands, migrating downslope to the water in late winter. One OCT member, whose home lies on a slope between woodlands and a vernal pool, typically finds a small crowd of spotted salamanders beneath the leaves in her yard each spring!

Orleans Conservation Trust has long recognized the importance of these rare habitats, and we make special efforts to protect them. The state's Natural Heritage and Endangered Species Program oversees a certification process for vernal pools and maintains a publicly available database of every vernal pool in Massachusetts. There are eleven certified vernal pools on OCT properties, and we have been involved in certifying many others on Town-owned and privately held lands as well.

We suspect that OCT lands are home to several more pools not yet certified. This spring, with the help of our AmeriCorps service member, I documented the presence of either fairy shrimp or wood frogs in four more wetlands! Although activity around them is already restricted under the Massachusetts Wetland Protection Act, vernal pool certification adds a more stringent layer of protection for the sensitive habitat and the many species—some of them in decline—that depend on these magical spots. If you know of a wetland that may be a vernal pool but isn't yet certified, please let us know—or check out the certification process yourself at www.mass.gov/files/documents/2017/01/uw/vpcert.pdf.

Above left: Fairy shrimp (order Anostraca), from a vernal pool on OCT land. Above: Spotted salamanders (*Ambystoma maculatum*) rescued from a South Orleans yard. Below: Vernal pool in the Mill Pond Valley Conservation Area.

Orleans Conservation Trust

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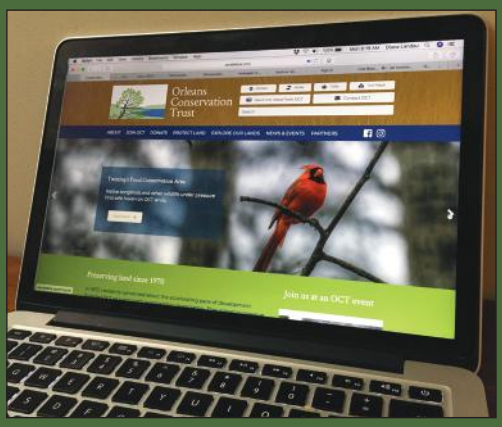

Check out OCT's new website!

Visit **www.orleansconservationtrust.org** for background on the Trust, ways to give and get involved, beautiful images of our lands, and everything you want to know about our preserves and trails.

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