CAPE ANN VERNAL POND TEAM

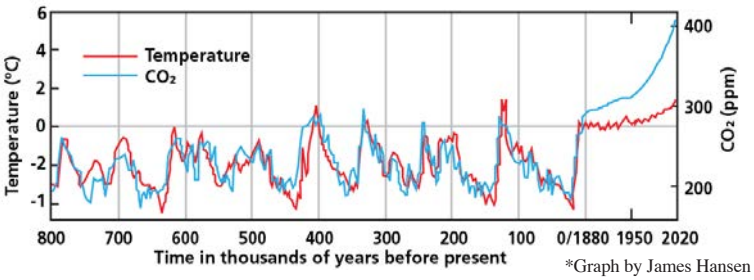
A NEWSLETTER
from the
CAPE ANN VERNAL POND TEAM

Spring 2020 www.capeannvernalpondteam.org Email: cavpt@yahoo.com

Are We Going to Make a Change?

by Rick Roth

Why another article on climate change especially in the CAVPT newsletter? Well, since being involved with the Cape Ann Climate Crisis Initiative I can tell you I have a new understanding of what's at stake. It's going to affect everything and everyone.



*Graph by James Hansen

The above graph indicates climate change over the last 800,000 years. Carbon emissions since the beginning of the industrial revolution have risen higher than ever. As you can see historically there is a correlation between carbon emissions (shown in blue) and temperature (shown in red). It is only a matter of time before global temperature accelerates to a catastrophic level. According to the US National Oceanic and Atmospheric Administration, 2019 was the sixth year in a row of record high global temperatures and this past January was the warmest in 141 years.

Global warming is real, it is caused by human activity, and it is serious.

We have already witnessed the effects climate change has had on our planet Earth: drought, sea level rise, frequent extreme weather events, flooding and wildfires. Warming is expected to cause 250,000 more deaths a year from malaria, malnutrition and heat stress.

We can choose to Wait and See or Act Now.

What if we take the Wait and See approach? What will we do in 10 years, being an ocean community, if the sea has risen so much it's truly at our back door and we lose our beaches and homes? Increased temperature will wreak havoc with the biodiversity of our region.

If we choose to Act Now like the world is on fire-and it is-and take whatever steps we can to change the trajectory of carbon emissions and temperature, what will happen to us? We will see less pollution and waste, cleaner air and water and new jobs in wind, solar and tidal energy.

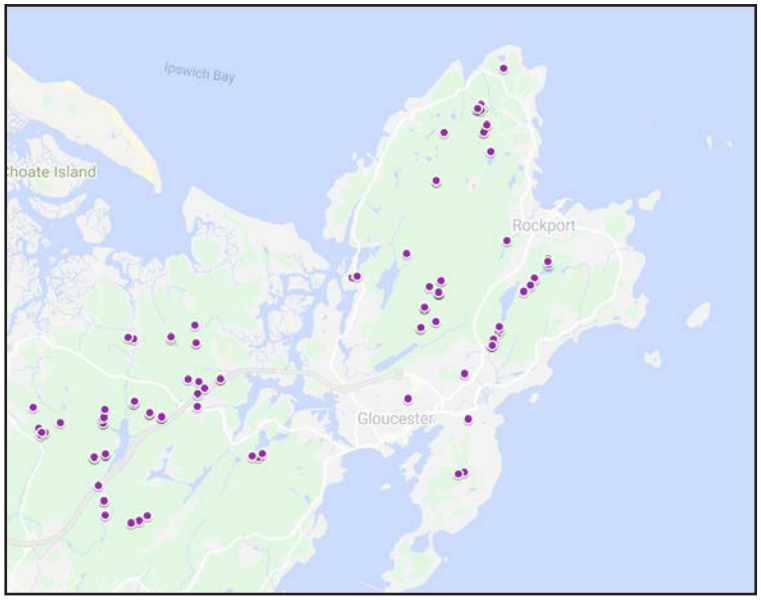
We lose nothing by challenging ourselves to take action at this stage and if the doomsday prophets turn out to be wrong (and they're not) we still win.

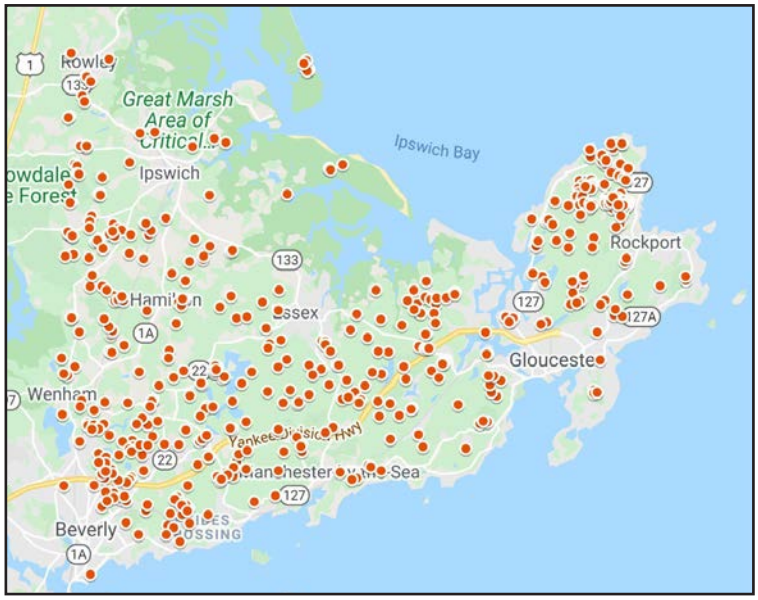
Thirty years ago climate change wasn't in the front of any of our minds. I formed the Cape Ann Vernal Pond Team because I was already seeing habitat loss from development and I wanted to save the diversity of the woods and open spaces. The beautiful temperate forests and plant life here on Cape Ann are crucial to reducing the carbon emission levels in our air. Conservation of local woodlands is a key part of combating climate change, especially if everyone does it world wide.

Rick Roth
Executive Director of the CAVPT
Cape Ann Climate Crisis Initiative Member

"Humanity needs to reduce its impact on the Earth urgently and there are three ways to do this: we can stop consuming so many resources, we can change our technology, and we can reduce our population. We probably need to do all three." — David Attenboro

**James Hansen was NASA's top climate scientist in 1988. In June of 1988 he testified before Congress that "Global Warming" was already here and that the rise in temperature was a result of human activity.*





OLIVER to the Rescue by Adam Bolonsky

When the team first began identifying Cape Ann vernal pools in the early 1990s in Rockport, Gloucester, Manchester, and Essex, we relied almost exclusively on local knowledge. If you were a woodsy, outdoorsy Cape Ann landowner, say, you'd probably noticed there were vernal pools on your property. And if you knew Rick Roth, you'd let him know about them.

If you were a hiker who'd been through Dogtown, Lanesville, Ravenswood Park and other wooded areas, and had an affinity for peering into pools of water, you probably knew what a vernal pool looked like. If you spotted one, you noted its location, contacted a team member, and returned in March or April to measure the pool's width, length and depth, photograph its relevant egg masses, make note of what kind of vegetation you were in, and did your best to mark the pool's location on a map. Note: March and April are the only time you can find the egg masses in the pools.

Our efforts were very grassroots. There really wasn't any other way to get the job done. We hiked around in the woods. We looked around. We made mental or handwritten notes, and simply passed the word.

Our efforts have changed a lot since. Thanks to the state's comprehensive Natural Heritage and Endangered Species Program, and geographical information systems (GIS) and the availability of a variety of specialized online maps, we can work a lot faster.

How do we do it now? We download from the state's helpful OLIVER website, predictions of the exact locations of hundreds of potential vernal pools in any area we choose, from Rockport to Lynnfield. We load the locations into our handheld GPS units, gather up our cameras and our field notebooks, and head out into the woods knowing exactly where to look. We start by looking at ones that lie close to public roads and well-marked hiking areas.

On the left you'll see the map marking the locations of all the vernal pools we have certified since we began this work almost thirty years ago. In total, we've certified over two hundred: each dot on the map represents a pool we took samples from, and reported to the state through its observation portal.

Doesn't look like there are a lot of dots on that map, does it? Well, as Hamlet said, There's the rub. Vernal pools on Cape Ann are often so close to one another (sometimes just 10 or 15 feet apart) that a map small enough to fit in the newsletter piles dozens of those dots on top of one another!

The map on the top right shows how many more pools we need to investigate in the coming months. There's a lot of dots there, aren't there? To give you an idea of just how much more work we have left to do, the map doesn't include the potential Cape Ann vernal pools lying west of Route 1A or north of Ipswich. Would you believe me if I told you we still have 466 pools to assess? Well, believe me. We do!

Consider this an invitation to join Nick Taormina, Rick Roth and me in March, when we head back into the woods. We'll show you how to download potential pool locations into our GPS units from OLIVER, how to use the GPS route to find the pool, and finally how to examine, measure, and asses a vernal pool so it meets state reporting requirements. A team can investigate a dozen pools a day using our new resources.

Rainy Nights and Flashlights

Every spring Cape Ann Vernal Pond Team members lead Nighttime Field Trips to vernal ponds to see the amphibian breeding activity. Most people have no idea what vernal ponds are or even that vernal ponds exist, but there are hundreds of vernal ponds on Cape Ann. A vernal pond is a fishless confined basin depression with no permanent inlet or outlet with a unique ecology. Vernal ponds provide more food for countless forest species than any other type of wetland. Our focus is on educating the public to understand more about our local ecology.

We encourage you to check out a Nighttime Field Trip if you haven't already. Why at night? Because some of the breeding species are nocturnal and migrate and mate at night. Why all wet? Because some amphibians travel as far as a mile to reach a pond in the spring but only when the ground is wet. If we get a good night, it's an amazing spectacle and really the fun part of vernal ponding.

Put your rain gear, boots and flashlight on the hook by the door. Make sure we have your email to receive notices about our field trips and activities at cavpt@yahoo.com.

Photo credit Susan Boyé

Did You Know...?

by Nathan Mineo

Did you know that the red-backed salamander (Plethodon cinereus) comes in three different varieties? That means there are three main, distinct color patterns (called phases or morphs) that P. cinereus can exhibit (and an additional five or so anomalous morphs). So why do these differences exist? If one color morph helps P. cinereus avoid predators better or is more attractive to potential mates, shouldn't that color morph win out and be all we see? Turns out evolution isn't that simple…

The erythristic morph is perhaps the most interesting, and poorly researched. Most of us have never even heard of, let alone seen this all red morph of P. cinereus. I certainly hadn't. Tilly et al. (1982) studied populations of erythristic red-backs in the Northeast U.S. Their study found that birds (in this study, captured wild blue jays) avoided eating the erythristic red-backs. Tilly et al. asserts that the all red erythristic P. cinereus enjoy an advantage because they look like the toxic red eft stage of the red-spotted newt (Notophthalmus viridenscens). Being an example of mimicry also helps explain why the erythristic morph is rarely seen. In order for a mimic to be successful, the tasty mimic must coexist with and be less abundant than the unpalatable model it mimics. Otherwise, predators will find tasty mimics more often than unpalatable models, and the advantage of looking toxic, and possibly even the advantage of being toxic, will be lost.

Around here we see mostly the red-backed morph. This familiar P. cinereus morph usually has a distinct red stripe down its back, though there can be A LOT of variation in the color and shade of the stripe. Multiple studies show that the red-back morph is the most common morph in the northern, cooler portions of its range. The further south, the more the proportion shifts towards the lead-back morph (almost all back with no stripe). One rather peculiar study conducted in Maryland used clay models of P. cinereus to determine if predation played a role in the proportion of red-back to lead-back morphs (Grant et al. 2018). In Maryland, the lead-back morph is much more common. By using clay models, the researchers were able to distinguish whether a predation attempt was from a mammal or bird from the marks left on the model. They found that birds in particular targeted the red-back models more than the lead-back models, suggesting that birds, which hunt primarily by sight, can more easily see and eat more of the red-back morph, leading to a greater proportion of the lead-back morph in the Maryland population. But if that's true, why are there more red-back morphs further north? And if they are being targeted more, why is the red-back morph still around?

The Maryland study lacks the consideration of a key component of the predator-prey evolutionary arms race—postautotomy tail movement. This is the fancy, scientific term for a particular predator-avoidance strategy shared by a number of salamanders and lizards where the end of the tail breaks off and starts wriggling around. The benefit is the predator becomes distracted by the wriggling tail and loses interest in the salamander, allowing the salamander to escape with its life. Don't worry, the tail grows back. Surprisingly, the autotomized tails of the red-back morph wriggle around faster and for a longer period of time than those of the lead-back morph (Otaibi et al.). This could be due to an increase in predation pressure on the red-back morph. If that red stripe makes them easier to see and they get targeted more by predators, evolution could favor the adaptation of more movement of autotomized tails. But then why would the red-back morph exist at all? What's the advantage to having that stripe?

We could continue down this rabbit hole chasing an answer to that question only to be met with another question, and another and another and another. The question as to why both the lead-back and red-back morphs exist has a very complex answer that isn't fully understood yet. Diversity in habitat, differences in predation pressures, physiological differences, food availability, and complex genetic interactions are just a few ingredients that make up the answer. One possibility that I like to entertain is that we could be glimpsing a snapshot in time of the evolution of two or even three separate species of salamanders branching off of the one and very diverse red-backed salamander. One thing is for certain though: these little salamanders have a lot to teach us about evolution and selection.

Photo credit Nova Scotia Museum

The three morphs of the red-backed salamander

Citations for "Did you Know"***:***

Grant, A. H., Ransom, T. S., & Liebgold, E. B. 2018. Differential survival and the effects of predation on a color polymorphic species, the red-backed salamander (Plethodon cinereus). Journal of Herpetology 52: 127-135.

Tilley, S. G., Lundrigan, B. G., & Brower, L. P. 1982. Erythrism and mimicry in the salamander Plethodon cinereus. Herpetologica 38:409–417.

Otaibi, B. W., Johnson, Q. K., & Cosentino, B. J. 2017. Postautotomy tail movement differs between colour morphs of the red-backed salamander (Plethodon cinereus). Amphibia-Reptilia, 38(3), 395–399.

Helen Anne Lind

Here's a photie from the Way-Back Machine, circa 1990, of Cape Ann Vernal Pond Team Charter Members Margaret Flowers, Rick Roth, and Helen Anne Lind in our matching New England Herpetological Society milk snake t-shirts. The three of us went on a nighttime field trip to a vernal pond in Ravenswood Park sometime in the late 1980s, and soon after that CAVPT was formed. Sadly, Helen Anne passed away on August 22, 2019. She was an integral part of our early years, creating our logo (we're still using it) and our first newsletter (the beginning of a proud tradition) and much more. Thank you H. A.

Grants & Donations

In 2019 We Received Grants From:

Thanks to everyone who responded to our annual appeal with generous donations, and to those who donated throughout the year.

Special thanks to:

- *Martha Farnsworth*
- *Noel Mann*
- *Wendy Prendergast*
- *Anne Rosenfeld*
- *Gerry Swislow*
- *New England Herpetological Society*
- *Brace Cove Foundation*
- *Several Anonymous*
- *Karen Camille & Barnes Group Inc.*

We are proud, and oh so grateful, to have over sixty volunteers generously donating their time and energy to make CAVPT grow and flourish.

The Times They are A-Changing…

This year we say goodbye to our Annual Yard Sale. For 20 years the Yard Sale has been a way of generating cash and connecting us with the community. Unfortunately the ratio of effort from everyone to cash received doesn't make it viable anymore. We thank everyone who has been a part of this great event.

So… In the Words of the Wise…
When one door closes another opens. We now give you The Shop!

Shop the Pop Up Shop
Spring is on the way…and when you think about the items in your home that are taking up space, and feel overwhelmed by the thought of all the hard work it will take to make a couple of bucks… consider donating your extra special things to the Cape Ann Vernal Pond Team.

Our first Pop Up Shop date is Saturday, May 30th from 10am-5pm

How it Works
The Shop is an area in our new office located at 242 Main St. #5, Gloucester. It will be open periodically for shopping or dropping off your cool gently used items for resale. The proceeds from the sale of your donated items help us to run our organization. Money brought to us this way isn't earmarked for specific uses as are most grants. It can go directly to overhead expenses such as rent, insurance, and animal care.

How You Can Help
Come by with your articles that no longer add value to your life. Please keep in mind that we are accepting items that are worth a little something and not your run-of-the-mill yard sale goods. The items for the store are curated and are perhaps tax deductible. These drop off dates will be periodically sent to you by email. Or, email us to set up a convenient time.

We thank you for all the contributions you make to our organization… whether it's volunteer time, money, moral support, or goods! What a great feeling knowing your cool stuff gets upcycled to support our wonderful programs and mission.

POSTPONED

Amazon Smile

In this day and age of virtual technologies, donating to your favorite charity is easier than ever. Most of us frequently make purchases through Amazon. It's fast, convenient, and can be done pretty much anywhere at any time with your smartphone. Thanks to Amazon Smile, when making your online purchases you can choose a favorite charity and Amazon will donate a percentage of your total to them at no cost to you.

Please support what we do and consider selecting the Cape Ann Vernal Pond Team as your charity of choice.

amazonsmile Org Central

Maritime Gloucester

Maritime Gloucester is happy to support vernal ponders and their crepuscular activities through use of our bulk-mailing permit. Because conserving the environment starts locally and is driven by education, come see our efforts in our Sea-Pocket Aquarium and our Stellwagen Bank exhibit. Or end a day of vernal ponding with our beautiful harbor views, a sail on the Schooner Ardelle, or exploring our working waterfront at 23 Harbor Loop, Gloucester. www.maritimegloucester.org

MARITIME GLOUCESTER

Don't miss any of our exciting upcoming events!

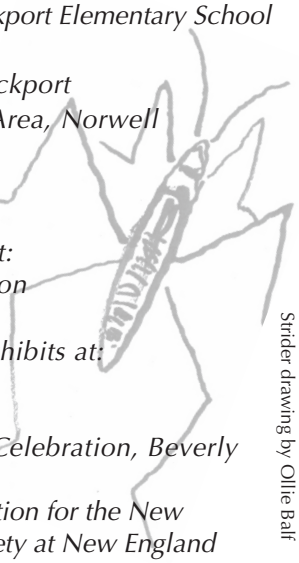
Check out our website at:
www.capeannvernalpondteam.org

Like Us on **Facebook Cape Ann Vernal Pond Team**

Is anyone interested in being our Social Media person?

Last Year We…

- *Led our usual nighttime vernal pond field trips*
- *Led daytime field trips to:*
  - *Manchester Essex Conservation Trust*
  - *Dow Brook Conservation Area, Ipswich*
- *Presented "Snakes of New England and the World" at:*
  - *TOHP Burnham Public Library Essex*
  - *Cape Ann YMCA at West Parish School, Gloucester*
  - *Essex Elementary STEM Night*
  - *Lynn Woods Earthfest*
  - *Saints Academy STREAM Night, Beverly*
  - *Riverfest, Great Meadows National Wildlife Refuge, Sudbury*
  - *Harold Parker State Forest, Andover*
  - *Cambridge Block Party*
  - *Summer Fun Day Camp, Rockport Elementary School*
  - *Ipswich River Day Camp (2)*
  - *Halibut Point State Park, Rockport*
  - *Jacob's Pond Conservation Area, Norwell*
  - *Cub Scouts of Wellesley*
  - *North Shore Mall, Peabody*
- *Presented Vernal Pond Exhibit at:*
  - *Rockport Earthday Celebration*
- *Presented Vernal Pond/Snake Exhibits at:*
  - *Motif No.1 Day, Rockport*
  - *Gloucester Growfest*
  - *Endicott College Earth Day Celebration, Beverly*
- *Presented a Vernal Pond Presentation for the New England Herpetological Society at New England Wildlife Center, South Weymouth*
- *Snakes of New England and the World Exhibits:*
  - *Three Main Street Block Parties, Gloucester*
  - *Cape Ann Farmer's Market, Gloucester*
  - *Maritime Gloucester Heritage Day*
  - *Square One Mall, Saugus*
  - *Harvestfest Downtown Rockport*
  - *Gloucester Side Walk Bazaar and at our Benefit Yard Sale*
- *Snake Presentation and Incubator Design at Rockport Middle School*
- *Presented a Native Snake Display at:*
  - *The New England Herpetological Society Reptile Expo in Hanover, MA*
- *Snakes of New England Exhibit at:*
  - *Ipswich River, Audubon in Topsfield*



Strider drawing by Ollie Balf

If we value wildlife, we must protect vernal ponds.....

What a CAVPT membership offers:

- A really neat CAVPT car decal
- CAVPT t-shirts and hats
- Subscription to our annual newsletter
- Email updates of vernal pond activities and events
- Guided field trips to local vernal ponds
- The satisfaction of knowing you are helping preserve these unique and vital habitats

Our programs & activities include:

- Vernal pond certification
- Exhibits & presentations
- Daytime & nighttime field trips
- Certification workshops
- "Intro to Vernal Ponds" Presentation
- Website: capeannvernalpondteam.org
- Scout patch program
- Snakes of New England & the World

Salamander linoleum cut by Isabel Natti

Inspiration comes in all shapes and sizes - wood frog egg mass

The funding for our programs is provided by:

- Corporate gifts
- Grants
- Sale of our merchandise
- Donations from community members like you
- Memberships

CAVPT thanks the following organizations and foundations for their generous support over the years:
The EnTrust Fund • The Norcross Wildlife Foundation • GoodSearch New England Herpetological Society • Sweetwater Trust • TD Bank Toad Hall Bookstore • Gloucester Cultural Council • Sam Park & Company New England BioLabs • The Bellevue Fund • The William P. Wharton Trust New England Grassroots Environment Fund • Cell Signaling Technology Barnes Group • Captain Planet Foundation • The Boston Foundation's Belinda Fund Brace Cove Foundation

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Support the Cape Ann Vernal Pond Team. Become a member or renew today!

Membership and donations can also be completed on our secure website, www.capeannvernalpondteam.org

Membership levels

☐ ***Family - $35.00 (USD)***
Subscription period: 1 year
Yearly membership to CAVPT for a family (2 adults and children)
Gift includes a CAVPT decal & bumper sticker
*Please list names of adults and names/ages of children

☐ ***Family - Lifetime - $350.00 (USD)***
Subscription period: Unlimited
Lifetime membership to CAVPT for a family (2 adults and children).
Gifts include CAVPT decal & bumper sticker, Vernal Pond Field Guide, Shirt or hat
*Please list names of adults and names/ages of children

☐ ***Individual - $20.00 (USD)***
Subscription period: 1 year
Yearly membership to CAVPT for an adult (17 years and older)
Gift includes a CAVPT decal & bumper sticker.

☐ ***Individual - Lifetime - $200.00 (USD)***
Subscription period: Unlimited
Lifetime membership to CAVPT for an adult (17 years and older).
Gifts include CAVPT decal & bumper sticker, Vernal Pool Field Guide, Shirt or hat

☐ ***Junior (under 16) - $10.00 (USD)***
Subscription period: 1 year
Yearly membership to CAVPT for juniors (16 years and younger)
Gift includes a CAVPT decal & bumper sticker

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capeannvernalpondteam.org

If sending a check, please fill out the following:

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Street _____

City, State, Zip _____

Phone _____ Email _____

Please detach this form and mail your donation to:

Cape Ann Vernal Pond Team
242 Main St. #5
Gloucester, MA 01930

CAPE ANN VERNAL POND TEAM

CAVPT is a 501(c)(3) nonprofit organization. Your contribution is tax deductible

Cape Ann Vernal Pond Team
242 Main Street #5
Gloucester, MA 01930

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Block print by Isabel Natti

The Need for Protection...

The temporary nature of vernal ponds often belies their importance. Countless plants and animals live in vernal ponds. Insects, amphibians, reptiles, birds and mammals visit to drink, feed, breed and nest. Some species, such as spotted salamanders, wood frogs and fairy shrimp are totally dependent on this habitat.

Photo by Shay Cajolet

Hey buddy, going my way? Spring peeper hitches a ride to vernal pond aboard the Spotted salamander express

Salamander print by Isabel Natti

How to Protect...

The best way to protect vernal ponds is to own the property. The next best way to protect them is to certify ponds with the Natural Heritage & Endangered Species Program. Certification applications are now done online and include photographs and field observation data. To learn more go to www.capeannvernalpondteam.org or check out the Vernal Pool Association's website at www.vernalpool.org