Editor’s Note

Dear Wetlanders,

No matter what the weather report says, I can smell spring in the air. Of course, breathing it in was a little difficult earlier this week when it was 4 degrees Fahrenheit during our morning dog walk. But hey, I won’t complain (much) because there was still that indescribable sensation of anticipation and promise. This morning the birds were even chirping in agreement.

We have collected many new relevant news stories over the past month, including information regarding the recently released proposed rule revising the definition of the Waters of the U.S. and information on public comment opportunities. Along the same lines, the Supreme Court agreed to hear the case, County of Maui v. Hawaii Wildlife Fund regarding pollutant discharges into groundwater – this court decision could have far-reaching implications for how the federal government, as well as states and tribes, protect their aquatic resources.

We have many state news stories to share as well, including a new study by Duke University in North Carolina identifying new clues to predict tipping points for marsh survival. You will also find a story about an historic agreement to clean up coal ash in Virginia and an incredibly successful collaboration between the West Virginia Division of Natural Resources and the Conservation Fund to purchase 18,778 acres of forestland to significantly increase public access for hunting and wildlife-associated recreation while benefiting threatened and endangered species.

I hope you enjoy this month’s publication of Wetland Breaking News and encourage all of you to send us your newsworthy stories to share to news@aswm.org.

Best regards,

Marla J. Stelk
Editor
Wetland Breaking News
Federal Agencies Publish Revised Rule on Waters of the United States

By David Reynolds – ACWA – February 14, 2019
The U.S. Environmental Protection Agency (EPA) and Army Corps (Army) on Feb. 14 published their revised rule on the definition of the "Waters of the United States" in the federal register. The agencies co-hosted a webinar to explain the new rule. EPA and the Army will hold a public hearing on the proposed new "Waters of the United States" definition in Kansas City with sessions on Feb. 27 and 28. The published rule appears the same as the draft that was previously released in December. Read full story here.

Supreme Court to hear case that could restrict federal water rules

By Timothy Cama – The Hill – February 19, 2019
The Supreme Court agreed Tuesday to hear a major dispute with potentially far-reaching implications for how the federal government protects waterways from pollution. The case, County of Maui v. Hawaii Wildlife Fund, challenges an appeals court’s ruling that pollution discharged into groundwater that later flows into a navigable waterway can constitute a violation of the Clean Water Act. Read full story here.

'Green New Deal' lands in the Capitol

By Zak Colman and Anthony Adragna – Politico – February 7, 2019
Rep. Alexandria Ocasio-Cortez (D-N.Y.) and Sen. Ed Markey (D-Mass.) released a blueprint for a Green New Deal on Thursday, urging a "10-year national mobilization" for a speedy shift away from fossil fuels and calling for national health care coverage and job guarantees in a sweeping bid to remake the U.S. economy. The burgeoning left-wing faction within the Democratic Party quickly persuaded several 2020 White House contenders to sign onto the Green New Deal's tenets in a bid to push climate change and the broad economic platform up the ladder of party priorities. Read full story here.

Nomination of acting EPA head Wheeler moves to full Senate

By Ellen Knickmeyer – The Tribune – February 5, 2019
Acting Environmental Protection Agency chief and former coal lobbyist Andrew Wheeler won a Senate committee's approval of his appointment to the permanent post on Tuesday, along with praise from the panel’s Republicans for his work rolling back a series of Obama-era environmental measures. The 11-10 vote by the Senate Environment and Public Works Committee sends President Donald Trump’s nomination of Wheeler to the full Senate. Read full story here.

Trump Eyes Action to Limit States’ Powers to Block Pipelines

By Ari Natter and Jennifer A. Dlouhy – Bloomberg – January 24, 2019
The Trump administration is considering taking steps to limit the ability of states to block interstate gas pipelines and other energy projects, according to three people familiar with the deliberations. The effort, possibly done through an executive order, is aimed chiefly at states in the Northeast U.S., where opposition to pipeline projects has helped prevent abundant shale gas in Pennsylvania and Ohio from reaching consumers in New York and other cities. Read full story here.
ASWM announces the availability of a range of new tools and resources designed to help states and tribes build program capacity related to aquatic resource permitting of oil and gas pipeline projects. Though mostly focused on ASWM’s findings and products, the web resource also provides links to helpful external resources related to oil and gas pipeline permitting.

ASWM’s new pipeline permitting web resource provides access to resources that help wetland professionals:

- Understand and overcome common challenges to effective state/tribal pipeline permitting; or
- Make transparent state/tribal 401 certification permitting processes and points of access using permitting process maps
- Identify and adopt best practices
- Consider cumulative impacts;
- Build shared understanding between parties engaged in the permitting process; and
- Encourage regular, ongoing training of new and existing staff engaged in permit review.

Specific products on the site include:

- A guide to identifying and developing pipeline permitting BMPs, with appendices providing links to sample BMPs for five types of practices;
- Information on issues and challenges for high quality, efficient environmental review of state and tribal oil and gas permitting and potential strategies to overcome them;
- A process mapping guide for documenting and sharing permit processes, including an adaptable process map template and sample state permitting process maps;
- A white paper on considering cumulative adverse effects (including a review of legal cases and supporting literature) and an adaptable CAE assessment model;
- A checklist-style document to help guide discussions about pipeline permitting with consultants and applicants; and
- A document identifying common pipeline permitting training needs for staff and strategies to improve training on these topics,

Links to webinar recordings on the following topics:

- Pipeline Permitting 101: An Overview of Basic Oil and Gas Pipeline Permitting Processes and Concepts for Wetland Regulators
- Cumulative Adverse Effects of Pipeline Development on Wetlands and Other Aquatic Resources
- Improving the Information Pipeline: Working with Consultants During Oil and Gas Pipeline Permitting Processes
- Horizontal Directional Drilling: Understanding Context when Reviewing Oil and Gas Pipeline Permit Applications

All products were developed in partnership with a national workgroup of state, tribal, federal and other professionals over a two-year project period. Funding for these resources was provided by an EPA Wetland Program Development Grant, the Robert and Patricia Switzer Foundation and the McKnight Foundation.
National News

EPA Seeks Nominations for Members of Great Lakes Advisory Board

Contact: Allison Lippert – U.S. Environmental Protection Agency – February 21, 2019
The U.S. Environmental Protection Agency (EPA) is seeking nominations of qualified candidates who desire to serve as members of EPA's Great Lakes Advisory Board (GLAB). Read full news release here.

Spending Deal Averts Shutdown, Funds Science Agencies Through September

American Institute of Physics – February 15, 2019
Final appropriations legislation enacted today provides steady or increased funding to research programs at science agencies that have been operating on stopgap spending from the outset of fiscal year 2019. President Trump signed legislation today that provides funding through Sept. 30 to all the agencies that have been operating on stopgap appropriations since October. The move averts a repeat of the recent funding lapse that shuttered many federal science agencies. The Senate passed the bill on a vote of 83 to 16 yesterday, and the House quickly followed suit with a vote of 300 to 128. Read full story here.

EPA plan stops short of regulating toxic chemical, promises decision later

By Annie Snider – Politico – February 14, 2019
The Environmental Protection Agency released a plan on Thursday to deal with a class of toxic chemicals found in 98 percent of Americans' blood, but offered no guarantee the agency will enact enforceable drinking water regulations for the two best-studied compounds. Instead, the plan commits to taking the first step under the lengthy Safe Drinking Water Act process by making a formal decision on whether to set a limit on the amount of the chemicals allowed in tap water, called a Maximum Contaminant Level, this year. Read full story here.

The Senate just passed the decade's biggest public lands package. Here's what's in it.

The Senate on Tuesday passed the most sweeping conservation legislation in a decade, protecting millions of acres of land and hundreds of miles of wild rivers across the country and establishing four new national monuments honoring heroes including Civil War soldiers and a civil rights icon. The 662-page measure, which passed 92 to 8, represented an old-fashioned approach to dealmaking that has largely disappeared on Capitol Hill. Senators from across the ideological spectrum celebrated home-state gains and congratulated each other for bridging the partisan divide. Read full story here.
House lawmakers introduce resolution to support Paris climate agreement

By Timothy Cama – The Hill – February 8, 2019
Dozens of House Democrats and one Republican introduced legislation Friday meant to demonstrate congressional support for the Paris climate agreement. The short, nonbinding resolution would declare that Congress “reaffirms its commitment” to the 2015 pact that every other nation in the world has signed onto, and that the United States “should not withdraw.” The measure would not mandate that the U.S. return to the agreement. Read full story here.

Earth marks fourth hottest year on record as Congress opens climate hearings

By Anthony Adragna, Kelsey Tamborrino, Zack Colman and Eric Wolff – Politico – February 6, 2019
The Earth posted the fourth hottest year on record in 2018, according to data released by federal scientists on Wednesday, as Democrats in the House convened to take their first, tentative steps toward addressing climate change since they took control of the chamber last month. The new analysis by NASA and the National Oceanic and Atmospheric Administration showed 2018’s average surface temperatures firmly in line with the warming trends that have made the past five years the hottest since record keeping began in 1880. Read full story here.

EPA Signs MOU with The Water Research Foundation Advancing Nutrient Management Efforts

U.S. Environmental Protection Agency – February 1, 2019
Today, as part of the Trump Administration’s commitment to protecting America’s waters through smart partnerships and market-based approaches, the U.S. Environmental Protection Agency (EPA) signed a Memorandum of Understanding (MOU) with The Water Research Foundation (WRF) to accelerate progress on reducing excess nutrients in the nation’s waterways. Read full news release here. View MOU here.

Government shutdown cost economy $11 billion, budget office says

Federal employees went back to work Monday after the longest shutdown in government history—but the economic effects will be felt for a long time. A report released Monday by the nonpartisan Congressional Budget Office found that the economy took an $11 billion hit, including $3 billion that's gone forever, in the 35 days that parts of the federal government went unfunded. "In CBO's estimation, the shutdown dampened economic activity mainly because of the loss of furloughed federal workers' contribution to GDP, the delay in federal spending on goods and services, and the reduction in aggregate demand," the report said. Read full story here.

New Governors Target Climate Change from Day One in Vulnerable Great Lakes Region

By Dan Gearino – InsideClimate News – January 24, 2019
Climate change poses risks to the economy and identity of a Great Lakes landscape, much of it defined by bountiful farms, pine forests and clear waters. But political leaders haven't always treated it that way. That's starting to change as a wave of new governors and attorneys general take office across the region with promises—and actions—to address climate change. The regional changes may signal a new dynamic for national debates, as climate policy advocates broaden their base of support to include some of the country's hubs of manufacturing and farming. Read full story here.

Poll: Extreme weather events changing Americans' climate change views

By Timothy Cama – The Hill – January 22, 2019
Extreme weather events like droughts and floods are pushing Americans to believe more in the science of climate change, a new poll found. In the Associated Press-NORC poll released Tuesday, 48 percent of respondents said they found the science of human-induced climate change more convincing when the poll was taken in November 2018 than they did five years ago. Read full story here.

Army Corps releases crucial guide for reducing flood risk and increasing resilience

By Shannon Cunniff – Environmental Defense Fund – January 16, 2019
This week, the Army Corps of Engineers formally released an important resource guide, "Engineering with Nature: An Atlas." This isn't your typical government issued atlas of maps and figures. It's an important first step toward broadening understanding, consideration and acceptance of natural infrastructure as a flood risk reduction and resilience strategy. The glossy compendium of 56 Corps projects illustrates that restoring nature and using nature-
State News

CA: Calif. clinches new regulations just in time for federal rollback

Ariel Wittenberg – E&E News – February 4, 2019
After more than a decade of drafting and editing, California is poised to finally update its wetlands regulations this spring. The effort, which began after a pair of Supreme Court decisions limited federal wetlands protections, could be finalized just in time to insulate the state from a Trump administration proposal restricting which wetlands and waterways are protected by the Clean Water Act. California State Water Resources Control Board Chief Deputy Director Jonathan Bishop said the administration's Waters of the U.S., or WOTUS, rule "has little to do with our process." But, he said, "It does highlight the need to have clear rules for Waters of the State so that no matter what happens with WOTUS, we are still protecting these important features in California." Read full story here.

CA: The Land Where Birds Are Grown

By Cynthia Hooper – Places Journal – January 2019 – Videos
Remaking California’s Central Valley wetlands was a complicated project that took much of the 20th century. Resurrected from degraded farmland and cash-strapped gun clubs, assembled by bulldozer and backhoe, the current patchwork of national wildlife refuges, state wildlife areas, and county preserves is much diminished from the four million acres of primeval wetlands that spanned the Central Valley before it was farmed. Nevertheless, these habitats are ecologically significant on a hemispheric level, serving 60 percent of migratory waterfowl on the Pacific Flyway, including three million ducks, two million geese, and a half million shorebirds. Their restoration has lured hungry birds away from agricultural fields, created wilderness access for rural communities, and returned endangered species to viable numbers. Decades before the spread of concepts like the Anthropocene and reconciliation ecology, refuge managers were devising ways to sustain ecological systems that had been dramatically altered. Read full article and view videos here. Read full story and view video here.

CA: The West Coast’s biggest bird oasis is dying. Will it be saved?

By Alejandra Borunda – National Geographic – December 28, 2018 – Video
During migration season, birds pack the wetlands at the edge of the Salton Sea. Ducks dive, pelicans skim across the water’s surface, and hundreds of other species stalk the shores and bob on the surface of California’s largest, and most unusual, lake. The Salton Sea is a vast, shallow body of water percolating in the hot desert inland of San Diego and a key stopover point for many birds migrating along the Pacific Flyway. Over the years, as other wetlands along the flyway have been lost to development, drought, or other causes, it has taken on an outsized importance for migrating birds. Read full story and view video here.
DE: DNREC introduces Delaware Living Shorelines Monitoring Framework to help gauge success of shoreline restoration project

Contact: Joanna Wilson – Department of Natural Resources and Environmental Control – January 22, 2019
The Department of Natural Resources and Environmental Control’s Division of Watershed Stewardship in partnership with public and private environmental organizations have introduced the Delaware Living Shorelines Monitoring Framework, a tool to help landowners, professionals, and scientists develop plans for gauging the success of living shoreline projects installed throughout the state. Read full story here.

MD: Maryland Reduces Use of Road Salts to Protect the Environment and Public Health

Contacts: Jay Apperson and Charlie Gischlar – Maryland Department of the Environment – January 18, 2019
As winter weather impacts the state, Maryland is working to reduce the use of road salts that can threaten public health and the environment – including the water that we drink – while keeping traffic moving safely. The Maryland Department of the Environment (MDE) is taking steps to reduce salt in rivers, streams and groundwater to protect aquatic life and drinking water sources while roads are made safe for winter travel. MDE has been working for several years with state agencies and local jurisdictions on best practices for salt application, including use of improved weather forecasting, using the right amount of salt, targeting roads in most need of treatment, using brine to reduce overall salt usage and increasing training for employees and contracted equipment operators. The Maryland Department of Transportation State Highway Administration (MDOT SHA) employs a range of strategies to reduce its use of salt while continuing to keep roads safe – and over the past five years has reduced its overall salt usage by half. Read full story here.

MN: Minnesota's winters are warming at a rate 13 times faster than its summers

Associated Press SC Times – January 17, 2019
With its famously bitter winters growing milder, Minnesota is one of the fastest warming states in the country, according to scientists. Minnesota’s winters are warming at a rate 13 times faster than its summers, and Minneapolis and Mankato are among the fastest-warming cities, University of Minnesota professor Tracy Twine told state lawmakers Tuesday. The meeting is part of the newly named House Energy and Climate Finance and Policy Division’s efforts to spotlight how climate change is affecting the state, the Star Tribune reported. Read full story here.

MS: Mississippi Sues Federal Government Over River Flooding

By Jeff Amy – The Washington Post – February 11, 2019
The state of Mississippi on Monday sued the federal government, claiming a dam complex in Louisiana that keeps the Mississippi River from changing course is harming state land. The suit seeks at least $25 million in damages and touches on one of the most sensitive engineering questions in the nation — the U.S. Army Corps of Engineers’ decades-long effort to keep the Mississippi in its current channel flowing past Baton Rouge and New Orleans. Read full story here.

NC: Study Yields New Clues to Predict Tipping Points for Marsh Survival

Contact: Tim Lucas – Nicolas School of the Environment – February 13, 2019
Sea-level rise, sediment starvation and other environmental woes pose increasing threats to coastal wetlands worldwide. But a massive new Duke University study could help stem these losses by giving scientists a broader understanding of which wetlands are most at risk, and why. The study, which assessed wetland distribution and resilience in hundreds of U.S. estuaries, found that it’s all a matter of scale. Read full story here.

SC: SC wetlands — prized for habitat and flood buffer — lose protection under Trump water rule

By Chloe Johnson – The Post and Courier – January 18, 2019
Luke Pope-Corbett has been leading kayakers on ecology-focused expeditions at the site, near Middleton Place, for nine years. The experience serves as an immersion into one of the most iconic landscapes of the Lowcountry: a blackwater cypress swamp. The bottomland forest where Pope-Corbett conducts tours is protected from development by a conservation easement, but it’s a striking example of a landscape that could be under threat if changes to the Clean Water Act proposed last month take effect, experts say. Read full story here.
VT: As Feds Weaken Wetlands Rules, Locals Eye Greater Protections for Otter Creek Swamps

By John Dillon – VRP – February 6, 2019
The state’s largest wetlands area stretches 15 miles along the Otter Creek in Addison and Rutland counties. Local groups have started talking to the state about how to provide greater protection for the Otter Creek wetlands, as the Trump administration seeks to roll back national wetland protection rules. Read full story here.


By Laura Adams Boycourt – Chesapeake Bay Magazine – January 25, 2019
Virginia Governor Ralph Northam and bipartisan state lawmakers have agreed to remove more than 27 million cubic yards of coal ash from the watershed. Read full article here. Coal ash, which is essentially what remains after coal is burned in coal-fired power plants, contains a variety of hazardous contaminants. If stored or disposed of improperly, it can threaten the health of nearby species and ecosystems. Read full article here.

WA: Seattle Metal Recycler Fined $98,000 For Pollution Discharges to Duwamish River

Contacts: Larry Altose, Jerry Shervey, and Allison Geiselbrecht – Washington Department of Ecology – February 13, 2019
A company on the Duwamish River that recovers metal from cars and other machinery continued to discharge excessive levels of zinc, copper, lead, and other pollutants into the waterway over the past two years. The Washington Department of Ecology has fined Seattle Iron and Metals Corp. (Seattle Iron) $98,000, for violations in 2017 and 2018. The company violated limits on pollutant discharges into the river dozens of times and failed to maintain facilities that protect the waterway from untreated stormwater. Read full news release here.

WV: The Conservation Fund Acquires 18,000 Acres in Key Step for Public Recreation and Wildlife Conservation In West Virginia

Contact: Ann Simonelli – The Conservation Fund – December 20, 2018
Today, The Conservation Fund announced its purchase of 18,778 acres of forestland—an important step toward significantly increasing public access for hunting and wildlife-associated recreation in northwestern West Virginia, while benefiting threatened and endangered species. Acquired by the Fund at the request of the West Virginia Division of Natural Resources (WVDNR), the lands will eventually be transferred to the state as funding becomes available, enabling the future creation of five new West Virginia Wildlife Management Areas (WMA) and the expansion of four existing WMAs and the North Bend State Park. Read full story here.

WI: Inside Wisconsin’s Disastrous $4.5 Billion Deal with Foxconn

By Austin Carr – Bloomberg – February 6, 2019
“This is the Eighth Wonder of the World.” So declared President Donald Trump onstage last June at a press event at Foxconn’s new factory in Mount Pleasant, Wis. He was there to herald the potential of the Taiwanese manufacturing giant’s expansion into cheesehead country. He’d joined Foxconn Chairman Terry Gou and then-Wisconsin Governor Scott Walker to celebrate a partnership he’d helped broker—“one of the great deals ever,” Trump said. In exchange for more than $4.5 billion in government incentives, Foxconn had agreed to build a high-tech manufacturing hub on 3,000 acres of farmland south of Milwaukee and create as many as 13,000 good-paying jobs for “amazing Wisconsin workers” as early as 2022. Read full story here.

Sharon Weaver photo
WI: Superior, Douglas County work together on wetland mitigation

By Shelley Nelson – Superior Telegram – February 1, 2019
Few counties in Wisconsin are as wet as Douglas County. Nearly a quarter of the total acreage of land in Douglas County is wetland and that poses a challenge for economic development. Douglas County has a plan to manage that challenge and is working with city officials to draw on decades of expertise in handling wetland mitigation as it pushes to create an in-lieu fee program for wetland mitigation. Read full story here.

WI: Could an effort to restore wetlands along Mukwonago River impact an already-endangered frog species?

Jim Riccioli – Milwaukee Journal Sentinel – January 24, 2019
Naturally, the last thing you expect a wetland restoration effort to do is negatively impact an already-endangered little frog. Strictly speaking, according to state officials, the 52-acre wetland mitigation project within the Davis Nature Preserve isn't a major factor in the survival of the Blanchard's cricket frog, a half-inch long amphibian that has been struggling to hang on in Wisconsin, Minnesota and Michigan. But on about 1.3 acres west of the village of Mukwonago, along the Mukwonago River, the dark-colored frog has been making a home in the vicinity of the former wetland habitat that was drained for agricultural use in the 1950s. Read full story here.
EPA & Army Corps Publish Proposed Rule Redefining WOTUS

On Thursday, February 14th, EPA and the Army Corps of Engineers (Corps) published the official proposed rule redefining Waters of the U.S. (WOTUS) in the Federal Register. Of note, the 60-day comment period also began Thursday – you can submit comments on regulations.gov here. The proposed rule as published is substantively identical to the pre-publication version which EPA had posted on their website in December. ASWM (along with ACWA, ECOS and AFWA) submitted a comment letter asking EPA and the Corps to extend the comment period by another 60 days in light of the importance and complexity of the rule, and because of the delayed public outreach meetings.

EPA and Corps sent a letter to all governors offices announcing several opportunities for state engagement on the revised Waters of the U.S proposal. The agencies will be hosting a half-day discussion forum at the following locations: Kansas City, Kansas, on February 26, 2019; Atlanta, Georgia, on March 11, 2019; and Albuquerque, New Mexico, on March 26, 2019. State officials who would like to attend any of these meetings should send an email to wotus-outreach@epa.gov and the agencies will respond with meeting details and registration information. The state meetings will coincide with similar meetings with tribal representatives. These meetings have three primary purposes: to present the proposed revised definition of “waters of the United States” and address clarifying questions from co-regulators; to hear initial feedback on the proposal from co-regulators; and to allow robust discussion of implementation considerations and the potential for developing geospatial datasets of “waters of the United States.”

State Meeting Registration Details

- **February 26, 2019 in Kansas City, Kansas.**
  The discussion forum will take place from 1pm until 5pm in the Reardon Convention Center, 520 Minnesota Ave., Kansas City, KS 66101. You may register for this forum here.

- **March 11, 2019 in Atlanta, Georgia.**
  The discussion forum will be from 1 pm to 5pm in the Martin Luther King Jr. Federal Building, 77 Forsyth Street, SW, Atlanta, GA 30303. You may register for this forum here. If you require special accommodations, please contact us at wotus-outreach@epa.gov by March 4, 2019, to make arrangements.

- **March 26, 2019 in Albuquerque, New Mexico.**
  The location for this meeting is still being finalized, but it will be hosted in the afternoon. You may register for this forum here. If you require special accommodations, please contact us at wotus-outreach@epa.gov by March 19, 2019, to make arrangements.

Public Hearing Registration Details

A public hearing will be held in Kansas City, Kansas, with sessions on February 27 and February 28, 2019, to provide interested parties the opportunity to present data, views, or information concerning the proposed rule. The hearing will be held in the Wyandotte Ballroom of the Reardon Convention Center, 520 Minnesota Avenue, Kansas City, Kansas 66101. EPA and the Army are hosting two public hearing sessions - one on Wednesday, February 27, and one on Thursday, February 28.

- The **Wednesday, February 27**, session of the public hearing will convene at 4:00 pm (local time) and will conclude no later than 8:00 pm.
- The **Thursday, February 28**, session will convene at 9:00 am and will conclude no later than 12:00 pm

You can pre-register for the public hearing at Eventbrite. The last day to pre-register to speak at the hearing was February 21, 2019. On February 26, 2019, the agencies will post a general agenda for the hearing in this web page; it will list pre-registered speakers in approximate order.
Arctic Sea Ice Loss in Past Linked to Abrupt Climate Events

British Antarctic Survey – February 12, 2019
A new study on ice cores shows that reductions in sea ice in the Arctic in the period between 30-100,000 years ago led to major climate events. During this period, Greenland temperatures rose by as much as 16 degrees Celsius. The results are published this week (Monday 11 February) in Proceedings of the National Academy of Sciences (PNAS). A team from British Antarctic Survey (BAS), University of Cambridge and University of Birmingham studied data from ice cores drilled in Greenland. They looked at oxygen isotopes and compared them to climate models run on the ARCHER supercomputer. From this they determined that sea ice changes were massively significant in past climate change events in the North Atlantic. These periods, called Dansgaard-Oeschger events, are some of the fastest and largest abrupt climate changes ever recorded. During some of these events, Greenland temperatures are likely to have increased by 16 degrees Celsius in less than a decade. Read full story here.

For a Climate Reporter, a Dreaded Question: ‘Then Why Is It So Cold?’

What were the temperatures where you live yesterday? What about last week? A month ago? What were the daytime highs and lows two years ago last Tuesday? If I’ve stumped you, that’s the point. Most of us might be able to recall, more or less, what our local temperatures were through the previous week; further back than that, we need to start pulling up temperature records. And even if you could remember, that would only reveal the temperatures where you were. It wouldn’t tell you what temperatures were halfway around the globe, across the country or, unless you’re a merperson, in the ocean. But whenever temperatures dip, as they did last week across much of the United States during the polar vortex, some people — including the president — ask, “If the planet is warming, why is it still cold?” It’s a question that frustrates a lot of climate scientists and climate reporters, both because the answer is obvious to us, and because some of the people asking the question seem to be using it as part of an effort to sow misinformation about climate change. We would never point to a night sky as evidence that the sun doesn’t exist. Read full story here.

We may be overestimating the carbon cleanup power of trees

By Sarah DeWeerdt – Anthropocene Magazine – January 29, 2019
Human activities are pumping excess carbon dioxide into the air; plants remove carbon dioxide from the air through photosynthesis and use it to fuel their growth. That neat equation has spurred hopes that a so-called “fertilization effect” of increased atmospheric carbon dioxide will result in increased plant growth and partially mitigate climate change. In fact, land plants and soils currently absorb about 25% of human-caused carbon dioxide emissions. But two papers published in the past week suggest that we’ve been overestimating the potential for increased plant growth to get us out of our climate change jam. Read full article here.
Dry inland waters are underrated players in climate change

By Nadja Neumann – IGB – January 22, 2019
2018: a year of drought – climate change causes an increase in the number of freshwaters that run dry, at least temporarily. Also, many lakes are shrinking permanently or have disappeared completely. Around 90,000 square kilometers of water surface have already vanished in the last 30 years. This trend is not only a threat to drinking water reserves and major ecosystems – dried freshwaters also play an important role in the global carbon cycle and may be responsible for the release of CO2 and other climate-relevant gases. Two recently published studies undertaken with involvement of the Leibniz-Institute of Freshwater Ecology and Inland Fisheries (IGB) reveal that the importance of this phenomenon has so far been underrated. Read full story here.

Endangered Species Act Is Working for Sea Turtles and Marine Mammals

By Jason Daley – Sierra – January 19, 2019
The Endangered Species Act (ESA) of 1973 is one of the legal cornerstones of conservation in the United States, and when it works the results can be spectacular. Bald eagles and peregrine falcons have returned to the skies, wolves and grizzly bears prowl around Yellowstone, and humpback whales ply oceans on both coasts. But deciding whether the ESA is doing its job for other species is much more difficult. There are fewer scientists keeping tabs, less data, and less money. That’s why researchers from the Center for Biodiversity looked into the recoveries of marine mammals and sea turtles listed on the ESA: 78 percent of the populations they investigated saw significant increases after listing, indicating that the law is doing its job. Read full story here.
Resources and Publications

Lily Pads and Long Toes: A Marsh Bird Sampler
By James Teaford – Amazon Kindle – January 31, 2019
While observations of secretive marsh birds and other wildlife form the framework, the author extends these field experiences by contemplating the probable backstories and the potential outcomes associated with various wetland incidents. With a mix of objectivity, subjectivity, and a dash of humor, the author examines subjects such as avian jumping jacks, dancing grebes, whopper-class frogs, crayfish-chomping alligators, and the foraging habits of herons and egrets. Read more and order book here.

Chesapeake Conservancy develops technology for James River restoration work
Augusta Free Press – January 19, 2019
To support the Virginia Environmental Endowment’s new James River Water Quality Improvement Grant Program, the Chesapeake Conservancy’s Conservation Innovation Center recently developed a “Restoration Planner,” a web-based application to support planning and evaluation of restoration projects. The Restoration Planner leverages the CIC’s high-resolution land cover and flow path data to identify and prioritize high-impact, cost-effective projects that maximize water quality benefits for the James River watershed. Read full story here. More information on how to access the Planner and webinar can be found here.

Engineering With Nature: An Atlas
U.S. Army Corps of Engineers – October 2018
This atlas is a collection of 56 projects that illustrate a diverse portfolio of contexts, motivations, and successful outcomes. These projects are presented and considered in this atlas using an Engineering With Nature® lens as a means of revealing the use of nature-based approaches and the range of benefits that can be achieved. Read more and download book here.
The Rising Tide of Climate Injustice

By Clinton Parks – Undark – February 14, 2019
Chesapeake Avenue, in the Salters Creek neighborhood of Newport News, Virginia, sits atop a seawall that shields it from the Hampton Roads, the body of water that connects the mouths of the James and Elizabeth Rivers to the Chesapeake Bay near where it empties into the Atlantic Ocean. The avenue stretches 2.5 miles east from Newport News to neighboring Hampton. Many of the adjacent neighborhoods, including Salters Creek, where I grew up, sit just a few meters above sea level. Here, the seawall is quite literally a last line of protection against climate change. Read full story here.

Find Your Climate-Altered Future on A New Interactive Map

By Timothy B. Wheeler – Bay Journal – February 12, 2019
Ever had trouble picturing how climate change could alter the quality of life in your community? Now there’s a map for that. Using a statistical technique called “climate-analog mapping,” two researchers have matched hundreds of cities in the United States and Canada with places that currently have the climate those cities are projected to have decades hence. Read full blog post here.

Helping farmers help our waterways

By Rebecca Chillrud – Chesapeake Bay Program – January 30, 2019
Agriculture is vital to the Chesapeake region. There are more than 83,000 farms in the watershed that make up a $10 billion industry and provide us with food and fiber. However, agriculture is also the single largest source of nutrient and sediment pollution entering the Bay. Many farmers are working to implement positive conservation practices that reduce their impact on local waterways and the Bay, but these practices can often be costly. One of the main way’s farmers are able to obtain support for these projects is through programs funded by the federal Farm Bill. Read full blog post here.

Cleaner Power and Flowing Water: Finding Balance Between Smart Renewable Energy and River Protection

By Michelle Lakly, Managing Director, Saving Rivers Program the Nature Conservancy – January 24, 2019
If there were any lingering doubts about just how dangerous, and imminent climate change really is, those were dispelled by recent IPCC report, which underscored the imperative of limiting temperature increases to 1.5°C above preindustrial levels. This requires achieving net-zero greenhouse gas emissions by mid-century, and to do that, the world must quickly transition to renewable energy. And yet it’s not quite as simple—there are other considerations to keep in mind as we make this transition. Read full story here.
Loons Are Getting Squeezed by Wind Farms

By Jerry Howard – Hakai Magazine – January 14, 2019
Wind turbines don’t just wallop birds that collide with their spinning blades, they also shift where birds choose to fly and land. A new study shows that wind farms in the German North Sea have squeezed loons into a smaller resting spot along their spring migration route, which could make it harder for them to find food. Scientists suggest that as wind energy developments become more common, these subtler effects need to be considered. Read full article here.

Developers, not farmers, get biggest hit from wetlands rule

The Associated Press – January 14, 2019
President Donald Trump often points to farmers as among the biggest winners from the administration’s proposed rollback of federal protections for wetlands and waterways across the country. But under longstanding federal law and rules, farmers and farmland already are exempt from most of the regulatory hurdles on behalf of wetlands that the Trump administration is targeting. Because of that, environmental groups long have argued that builders, oil and gas drillers and other industry owners would be the big winners if the government adopts the pending rollback, making it easier to fill in bogs, creeks and streams for plowing, drilling, mining or building. Read full blog post here.

'Waters of the US' would alter environmental reg as we know it

By Joshua A. Bloom – The Hill – January 1, 2019
The scope of the Clean Water Act has been the subject of dispute beginning with its enactment in 1972. After three seminal and other Supreme Court decisions, hundreds of appellate and district court cases and stops and starts by the U.S. Environmental Protection Agency and Army Corps of Engineers to fashion regulations to both reflect congressional intent and seek practical implementation of the act, the Trump administration has now proposed a regulation that will drastically curtail the reach of that law. Read full story here.
# Calendar of Events

## Webinars

### February 2019

- **February 26, 2019 2:00 p.m. ET**
  - Environmental Law Institute Webinar: Stream Compensatory Mitigation – Monitoring and Performance Standards

- **February 27, 2019 3:00 p.m. ET**
  - EBM Tools Webinar: Learning from others: The new global conservation planning database

- **February 28, 2019 1:00 p.m. ET**
  - The Swamp School Webinar: Wetlands and Soil Taxonomy

### March 2019

- **March 18, 2019 10:30 a.m. ET**
  - International Institute for Environment and Development Webinar: So far yet so close: Why the high seas matter to vulnerable coastal communities

- **March 21, 2019 1:00 p.m. ET**
  - The Swamp School Webinar: 2019 Waters of the US

- **March 21, 2019 2:00 p.m. ET**
  - Wetland BMP Knowledge Exchange Webinar: Towards Understanding the Influence of Headwater Catchments on Water Availability In the Athabasca River Basin

### April 2019

- **April 2, 2019 3:00 p.m. ET**
  - Land Trust Alliance Webinar: Looking to the Land (Forests): Mitigating Climate Change

- **April 10, 2019 1:00 p.m. ET**
  - American Water Resources Association Webinar: Preparing for a Climate with More Extremes

- **April 24, 2019 1:00 p.m. ET**

## Special Events

- **Shiver in the River**
  - February 23, 2019
  - Richmond, VA

- **National Invasive Species Awareness Week**
  - February 25-March 3, 2019

- **Viera Wetlands Nature Festival**
  - Viera, FL
  - April 13-14, 2019

- **Earth Day**
  - April 22, 2019

- **Wildwood Park Wetlands Festival**
  - Harrisburg, PA
  - April 27, 2019

- **Wings Over the Rockies Festival**
  - May 2019

- **World Migratory Bird Day**
  - May 11, 2019

- **Bay Day Festival**
  - May 18, 2019
  - Kemah, TX

- **BIOBLITZ 2019**
  - July 19-20, 2019
  - Pickerington, OH
# Meetings

## February 2019

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>February 27-28, 2019</td>
<td><strong>International Conference on Water Management Modeling</strong></td>
</tr>
<tr>
<td>Toronto, Canada</td>
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<tr>
<td>Bend, OR</td>
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</table>

## March 2019

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
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</thead>
<tbody>
<tr>
<td>March 2, 2019</td>
<td>Massachusetts Association of Conservation Commission <strong>Annual Environmental Conference</strong></td>
</tr>
<tr>
<td>Worcester, MA</td>
<td></td>
</tr>
<tr>
<td>March 6, 2019</td>
<td><strong>2019 Washington Botanical Symposium</strong></td>
</tr>
<tr>
<td>Seattle, WA</td>
<td></td>
</tr>
<tr>
<td>March 6-8, 2019</td>
<td>Rocky Mountain Land Use Institute: <strong>2019 Wester Places/Western Spaces Conference: Designing for the Future: Building Enduring Value</strong></td>
</tr>
<tr>
<td>Denver, CO</td>
<td></td>
</tr>
<tr>
<td>March 11-22, 2019</td>
<td>Smithsonian-Mason School of Conservation Course: <strong>Statistics for Ecology and Conservation Biology</strong></td>
</tr>
<tr>
<td>Front Royal, VA</td>
<td></td>
</tr>
<tr>
<td>March 13-15, 2019</td>
<td><strong>Michigan Stormwater Floodplain Association Conference</strong></td>
</tr>
<tr>
<td>Ann Arbor, MI</td>
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</tr>
<tr>
<td>March 13-17, 2019</td>
<td><strong>CitSci 2019: Growing Our Family Tree</strong></td>
</tr>
<tr>
<td>Raleigh, NC</td>
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<tr>
<td>Washington, DC</td>
<td></td>
</tr>
<tr>
<td>March 20-22, 2019</td>
<td><strong>Climate Leadership Conference</strong></td>
</tr>
<tr>
<td>Baltimore, MD</td>
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</tr>
<tr>
<td>March 21-23, 2019</td>
<td>5th Life Discovery – Doing Science Biology Education Conference: <strong>Microbiomes to Ecosystems: Evolution and Biodiversity across Scale, Space, and Time</strong></td>
</tr>
<tr>
<td>Gainesville, FL</td>
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<tr>
<td>Berlin, CT</td>
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<tr>
<td>Denver, CO</td>
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## April 2019

<table>
<thead>
<tr>
<th>Date</th>
<th>Location</th>
<th>Event</th>
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<tbody>
<tr>
<td>April 2-3, 2019</td>
<td>Saratoga Springs, NY</td>
<td>New York State Wetlands Forum Annual Conference and Meeting</td>
</tr>
<tr>
<td>April 2-4, 2019</td>
<td>Leesburg, VA</td>
<td>Association of State Wetland Managers Annual State/Tribal/Federal Coordination Meeting: Translating Wetland Science into Fair and Reasonable Government Policies</td>
</tr>
<tr>
<td>April 4-6, 2019</td>
<td>Ashland, OH</td>
<td>Ohio Wetlands Association Vernal Poolooza</td>
</tr>
<tr>
<td>April 7-11, 2019</td>
<td>Fort Collins, CO</td>
<td>US-IALE Annual Meeting: Conservation Innovation</td>
</tr>
<tr>
<td>April 8-9, 2019</td>
<td>Zurich, Switzerland</td>
<td>7th International Conference: Green Energy &amp; Technology</td>
</tr>
<tr>
<td>April 12, 2019</td>
<td>New Brunswick, NJ</td>
<td>New Jersey Conservation Foundation: 23rd Annual New Jersey Land Conservation Rally</td>
</tr>
<tr>
<td>April 12-14, 2019</td>
<td>Pella, IA</td>
<td>2019 Society of Ecological Restoration Midwest-Great Lakes Meeting</td>
</tr>
<tr>
<td>April 22-25, 2019</td>
<td>Coral Springs, FL</td>
<td>Greater Everglades Ecosystem Restoration: Science Advancing Everglades Resilience and Sustainability</td>
</tr>
<tr>
<td>April 23-25, 2019</td>
<td>Madison, WI</td>
<td>National Adaptation Forum</td>
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## May 2019

<table>
<thead>
<tr>
<th>Date</th>
<th>Location</th>
<th>Event</th>
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<tbody>
<tr>
<td>May 20-22, 2019</td>
<td>Baltimore, MD</td>
<td>Choose Clean Water Coalition: 10th Annual Choose Clean Water Conference</td>
</tr>
<tr>
<td>May 6-10, 2019</td>
<td>Minneapolis, MN</td>
<td>National Mitigation &amp; Ecosystem Banking Conference: Connecting Policy, Practice, Business, Science &amp; People</td>
</tr>
<tr>
<td>May 7, 2019</td>
<td>Washington, DC</td>
<td>Environmental Law Institute 30th Annual National Wetlands Awards 2019</td>
</tr>
<tr>
<td>May 19-22, 2019</td>
<td>Lisle, IL</td>
<td>Arboriculture &amp; Urban Forestry Educators’ Symposium &amp; Summit</td>
</tr>
</tbody>
</table>
May 19-23, 2019
Baltimore, MD
2019 NAEP Conference: The Environmental Landscape in an Age of Infrastructure Modernization

May 19-23, 2019
Cleveland, OH
Association of State Floodplain Managers 42nd Annual Meeting: Managing Floods Where the Mountains Meet the Desert

May 28-31, 2019
Baltimore, MD
Society of Wetland Scientists 2019 Annual Meeting: The Role of Wetlands in Meeting Global Environmental Challenges: Linking Wetland Science, Policy, and Society

May 29-June 2, 2019
Waikoloa, HI
Ducks Unlimited National Convention

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June 2019

June 4-6, 2019
Bologna, Italy
2nd International Conference on Community Ecology

June 10-12, 2019
New Haven, CT
Third Annual Digital Data in Biodiversity Research Conference: Methods, Protocols, and Analytical Tools for Specimen-based Research in the Biological Sciences

June 10-14, 2019
Brockport, NY
The College at Brockport, State University of New York: 62nd Annual Conference on Great Lakes Research: Large Lakes Research: Connecting People and Ideas

June 12-14, 2019
Manhattan, KS
Kansas State University: Arthropod Genomics Symposium
Abstracts due by March 11, 2019

June 13-14, 2019
Providence, FL
Land Trust Alliance: Seventh Symposium on Advanced Legal Topics in Land Conservation

June 16-19, 2019
Sparks, NV
2019 AWRA Summer Specialty Conference: Improving Water Infrastructure Through Resilient Adaptation

June 17-20, 2019
Louisville, KY
National Hydrologic Warning Council Conference

June 21-24, 2019
Cleveland, OH
River Network: River Rally

June 23-27, 2019
Flagstaff, AZ

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July 2019

July 1-5, 2019
Milano, Italy
International Association for Landscape Ecology's World Congress: Nature and society facing the Anthropocene: challenges and perspectives for Landscape Ecology

July 25-31, 2019
Dublin, Ireland
20th INUA Congress: Life on the Edge
## August 2019

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
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<tbody>
<tr>
<td>August 11-16, 2019</td>
<td>Ecological Society of America Annual Meeting</td>
</tr>
<tr>
<td>Louisville, KY</td>
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<tr>
<td>August 18-22, 2019</td>
<td>StormCon</td>
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<tr>
<td>Atlanta, GA</td>
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## September 2019

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
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<tbody>
<tr>
<td>September 22-26, 2019</td>
<td>International Conference on Ecology &amp; Transportation</td>
</tr>
<tr>
<td>Sacramento, CA</td>
<td>Abstracts due by March 29, 2019</td>
</tr>
</tbody>
</table>

## October 2019

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>October 8-10, 2019</td>
<td>Natural Areas Association: Natural Areas Conference</td>
</tr>
<tr>
<td>Pittsburgh, PA</td>
<td>Proposals due by April 15, 2019</td>
</tr>
<tr>
<td>October 17-19, 2019</td>
<td>Land Trust Alliance Rally 2019</td>
</tr>
<tr>
<td>Raleigh, NC</td>
<td></td>
</tr>
<tr>
<td>October 27-30, 2019</td>
<td>AASHE Conference: Co-Creating a Sustainable Economy</td>
</tr>
<tr>
<td>Spokane, WA</td>
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## November 2019

<table>
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<tr>
<th>Date</th>
<th>Event</th>
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</thead>
<tbody>
<tr>
<td>November 3-7, 2019</td>
<td>American Water Resources Association: Annual Water Resources Conference</td>
</tr>
<tr>
<td>Salt Lake City, UT</td>
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</table>

## December 2019

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
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</thead>
<tbody>
<tr>
<td>December 10-14, 2019</td>
<td>AGU Fall Meeting: Science Communication: A Sharing Science Room</td>
</tr>
<tr>
<td>Washington, DC</td>
<td></td>
</tr>
</tbody>
</table>

*Sharon Weaver photo*
# Training/Workshops

## February 2019

- **February 28, 2019**  
  Shoreline, WA  
  Wetland Training Institute, Inc.  
  Course: Demystifying Wetland and In-Water Permitting in Washington State

## March 2019

<table>
<thead>
<tr>
<th>Date</th>
<th>Location</th>
<th>Organizer</th>
<th>Event Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>March 4-5, 2019</td>
<td>Houston, TX</td>
<td>Wetland Training Institute, Inc.</td>
<td>Online Lecture and Field Practicum Course: Basic Wetland Delineation Other dates and location offered</td>
</tr>
<tr>
<td>March 4-5, 2019</td>
<td>Houston, TX</td>
<td>Wetland Training Institute, Inc.</td>
<td>Course: Basic Wetland Delineation Refresher Course Other dates and locations offered</td>
</tr>
<tr>
<td>March 4-May 27, 2019</td>
<td>Online</td>
<td>The Swamp School Online Course</td>
<td>Wetland Basic Delineation Training 2019 Other dates offered.</td>
</tr>
<tr>
<td>March 4-May 27, 2019</td>
<td>Online</td>
<td>The Swamp School Online Course</td>
<td>Principles of Wetland Design Other dates offered</td>
</tr>
<tr>
<td>March 4-May 27, 2019</td>
<td>Online</td>
<td>The Swamp School Online Course</td>
<td>Certified Wetland Botanist</td>
</tr>
<tr>
<td>March 11-14, 2019</td>
<td>Nashville, TN</td>
<td>The Swamp School Course</td>
<td>Wetland Delineation Training</td>
</tr>
<tr>
<td>March 11-15, 2019</td>
<td>Atlanta, GA</td>
<td>Duncan &amp; Duncan Wetland &amp; Endangered Species Training</td>
<td>Basic Wetland Delineation</td>
</tr>
<tr>
<td>March 11-22, 2019</td>
<td>Front Royal, VA</td>
<td>Smithsonian-Mason School of Conservation Course</td>
<td>Statistics for Ecology and Conservation Biology</td>
</tr>
<tr>
<td>March 11-25, 2019</td>
<td>Online</td>
<td>The Swamp School Course</td>
<td>Habitat Conservation Plans Other dates offered</td>
</tr>
<tr>
<td>March 18-22, 2019</td>
<td>Shepherdstown, WV</td>
<td>U.S. Fish and Wildlife Course</td>
<td>Stream Habitat Measurement Techniques</td>
</tr>
<tr>
<td>March 18-April 15, 2019</td>
<td>Online</td>
<td>The Swamp School Online Course</td>
<td>Developing Wetland Water Budgets 2019 Other dates being offered</td>
</tr>
<tr>
<td>March 18-April 28, 2019</td>
<td>Fairbanks, AK</td>
<td>University of Alaska Fairbanks Course</td>
<td>Arctic Alaska Ecosystems 17-day Field Excursion – June 13-30, 2019</td>
</tr>
<tr>
<td>March 18-June 10, 2019</td>
<td>Online</td>
<td>The Swamp School Online Course</td>
<td>Wetland Monitoring Techniques Also offered on July 8, 2019</td>
</tr>
<tr>
<td>March 19-20, 2019</td>
<td>Somerset, NJ</td>
<td>Rutgers Office of Continuing Professional Education Course</td>
<td>Ecological Risk Assessment</td>
</tr>
<tr>
<td>March 25-26, 2019</td>
<td>Atlanta, GA</td>
<td>Duncan &amp; Duncan Wetland &amp; Endangered Species Training</td>
<td>Interagency Consultation for Endangered Species (Section 7) Other dates offered</td>
</tr>
</tbody>
</table>
March 27-29, 2019
Hays, KS
Wetland Training Institute, Inc. Course: Woody Plant Identification

March 28-29, 2019
San Diego, CA
Wetland Training Institute, Inc. Course: Basic Wetland Delineation Refresher Course
Other dates and locations offered

March 29-29, 2019
Sacramento, CA
Wetland Training Institute, Inc. Online Lecture and Field Practicum Course: Basic Wetland Delineation
Other dates and location offered

April 2019

April 1-3, 2019
Raleigh, NC
The Swamp School Workshop: Dam Removal Functional Mitigation Design

April 1-5, 2019
Sacramento, CA
Wetland Training Institute, Inc. Course: Basic Wetland Delineation
Other dates and locations offered

April 1-5, 2019
Shepherdstown, WV
U.S. Fish and Wildlife Course: Wetland Assessment, Restoration and Management

April 1-June 24, 2019
Online
The Swamp School Online Course: Certified Hydric Soils Investigator
Other dates offered.

April 4-5, 2019
Savannah, GA
Duncan & Duncan Wetland & Endangered Species Training: Advanced Hydric Soils, Hydrology, and Regional Indicators (Coastal Plain)
Other dates offered

April 8-10, 2019
Knoxville, TN
CUAHSI Workshop: The Role of Runoff and Erosion on Soil Carbon Stocks: From Soilscapes to Landscapes

April 8-11, 2019
Atlanta, GA
The Swamp School Course: Wetland Delineation Training
Other dates offered.

April 8-12, 2019
Online
Field Day – Raleigh, NC
April 16-17, 2019
The Swamp School Online Workshop and Field Day: Blended Online and Field Wetland Delineation

April 18, 2019
Hillsborough, NJ
Rutgers Office of Continuing Professional Education Course: Pond Design, Management and Maintenance

April 22-May 20, 2019
Online
The Swamp School Course: Phase I Environmental Site Assessment
Other dates offered

April 29-May 3, 2019
Great Bend, KS
Wetland Training Institute, Inc. Course: Basic Wetland Delineation
Other dates and locations offered

April 29-May 3, 2019
Online
Field Days – PA
May 8-9, 2019
The Swamp School Online Course and Field Day: Blended Online and Field Wetland Delineation Workshop
Other dates offered

April 29-May 27, 2019
Online
The Swamp School Course: Basic Botany for Wetland Assessment
Other dates offered
<table>
<thead>
<tr>
<th>Date</th>
<th>Location</th>
<th>Course</th>
</tr>
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<tbody>
<tr>
<td>May 6-9, 2019</td>
<td>Aliquippa, PA</td>
<td>The Swamp School Course: Wetland Delineation Training Other dates offered</td>
</tr>
<tr>
<td>May 6-10, 2019</td>
<td>Charleston, SC</td>
<td>Duncan &amp; Duncan Wetland &amp; Endangered Species Training: Basic Wetland Delineation Other dates offered</td>
</tr>
<tr>
<td>May 6-July 29, 2019</td>
<td>Online</td>
<td>The Swamp School Online Course: Wetland Basic Delineation Training 2019 Other dates offered.</td>
</tr>
<tr>
<td>May 13-14, 2019</td>
<td>State College, PA</td>
<td>Wetland Training Institute, Inc. Course: Advanced Hydric Soils Online with Field Practicum Other dates and location offered</td>
</tr>
<tr>
<td>May 19-25, 2019</td>
<td>Steuben, ME</td>
<td>Eagle Hill Natural History Science Field Seminar: Lichens and Lichen Ecology</td>
</tr>
<tr>
<td>May 21, 2019</td>
<td>Boulder, CO</td>
<td>CUAHSI Short Course: The Science and Practice of Operational Ensemble Hydrological Prediction</td>
</tr>
<tr>
<td>May 21-24, 2019</td>
<td>Kays, KS</td>
<td>Wetland Training Institute, Inc. Course: Graminoids (Grasses, Sedges, Rushes) ID for Wetlands and Wetland Delineators</td>
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<tr>
<td>May 21-June 11, 2019</td>
<td>Prince of Wales Island, AK</td>
<td>Tatoosh School Course: Community Ecology</td>
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<tr>
<td>May 23-24, 2019</td>
<td>Sussex, NJ</td>
<td>Rutgers Office of Continuing Professional Education Course: Vegetation Identification for Wetland Delineation: North</td>
</tr>
<tr>
<td>May 26-June 1, 2019</td>
<td>Steuben, ME</td>
<td>Eagle Hill Natural History Science Field Seminar: Calcioid Lichens and Fungi of the Acadian Forest: Identification and Ecology</td>
</tr>
<tr>
<td>May 26-June 1, 2019</td>
<td>Steuben, ME</td>
<td>Eagle Hill Natural History Science Field Seminar: Introduction to Bryophytes and lichens</td>
</tr>
<tr>
<td>May 29-31, 2019</td>
<td>Golden, CO</td>
<td>CUAHSI Short Course: Integrated Simulation of Watershed Systems using Parflow</td>
</tr>
<tr>
<td>May 30-31, 2019</td>
<td>Charleston, SC</td>
<td>Duncan &amp; Duncan Wetland &amp; Endangered Species Training: Hydrophytic Vegetation (Coastal Plain)</td>
</tr>
<tr>
<td>Date</td>
<td>Location</td>
<td>Event Title</td>
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<tr>
<td>June 3, 2019</td>
<td>Boston, MA Area</td>
<td>Institute for Wetland &amp; Environmental Education &amp; Research: Plant ID Course:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wetlands &amp; Their Borders</td>
</tr>
<tr>
<td>June 3-5, 2019</td>
<td>San Diego, CA</td>
<td>Wetland Training Institute, Inc. Course: Plant identification for Coastal Southern California</td>
</tr>
<tr>
<td>June 3-7, 2019</td>
<td>Collins, CO</td>
<td>Stream Mechanics Workshop: Stream Functions Pyramid</td>
</tr>
<tr>
<td>June 3-8, 2019</td>
<td>Isle Royale, MI</td>
<td>Isle Royale &amp; Keweenaw parks Association: Isle Royale Plant I.D. Workshop</td>
</tr>
<tr>
<td>June 3-August 26, 2019</td>
<td>Online</td>
<td>The Swamp School Online Course: Wetland Basic Delineation Training 2019 Other dates offered.</td>
</tr>
<tr>
<td>June 3- August 26, 2019</td>
<td>Online</td>
<td>The Swamp School Online Course: Certified Wetland Hydrologist Other dates offered.</td>
</tr>
<tr>
<td>June 4-7, 2019</td>
<td>Boston, MA Area</td>
<td>Institute for Wetland &amp; Environmental Education &amp; Research: Plant ID Course: Basic Wetland Delineator Training Other dates offered.</td>
</tr>
<tr>
<td>June 9-15, 2019</td>
<td>Steuben, ME</td>
<td>Eagle Hill Natural History Science Field Seminars: Chironomids: Classification, Morphology, Identification, and Lifecycles</td>
</tr>
<tr>
<td>June 10-11, 2019</td>
<td>Charleston, SC</td>
<td>Duncan &amp; Duncan Wetland &amp; Endangered Species Training: Advanced Hydric Soils, Hydrology, and Regional Indicators (Coastal Plain) Other dates offered.</td>
</tr>
<tr>
<td>June 10-13, 2019</td>
<td>Teatown Lake Reservation Westchester County, NY</td>
<td>The Swamp School Course: Wetland Delineation Training</td>
</tr>
<tr>
<td>June 10-July 8, 2019</td>
<td>Online</td>
<td>The Swamp School Course: Basic Botany for Wetland Assessment Other dates offered.</td>
</tr>
<tr>
<td>June 11-14, 2019</td>
<td>Basking Ridge, NJ</td>
<td>Rutgers Office of Continuing Professional Education Course: Methodology for Delineating Wetlands</td>
</tr>
<tr>
<td>June 12, 2019</td>
<td>Basking Ridge, NJ</td>
<td>Rutgers Office of Continuing Professional Education Course: Introduction to Wetland Identification</td>
</tr>
<tr>
<td>June 16-22, 2019</td>
<td>Steuben, ME</td>
<td>Eagle Hill Natural History Science Field Seminars: Independent Study: Topics in Fungal Biology</td>
</tr>
<tr>
<td>June 16-22, 2019</td>
<td>Steuben, ME</td>
<td>Eagle Hill Natural History Science Field Seminars: Medicinal Plants: Traditions and Contemporary Perspectives</td>
</tr>
<tr>
<td>June 16-29, 2019</td>
<td>Fort Collins, CO</td>
<td>Colorado State University Course: Summer Soil Institute</td>
</tr>
</tbody>
</table>
June 17-21, 2019
Online
Fields Days June 24 & 26, 2019
Various locations

The Swamp School Course: Accelerated Online Wetland Delineation Training Workshop
Other dates offered

June 17-July 1, 2019
Online

The Swamp School Online Course: Habitat Conservation Plans
Other dates offered

June 18-July 31, 2019
Alaska

Tatoosh School Course: Case Studies for a Changing World

June 19-20, 2019
Anchorage, AK

Wetland Training Institute, Inc. Course: Advanced Hydric Soils Online with Field Practicum
Other dates and location offered

June 23-29, 2019
Steuben, ME

Eagle Hill Natural History Science Field Seminars: Sedges and Rushes: Identification and Ecology

June 23-29, 2019
Steuben, ME

Eagle Hill Natural History Science Field Seminars: Insect and Spider Biology “Through the Lens”

June 24-25, 2019
Twin Cities, MN

Wetland Training Institute, Inc. Course: Advanced Hydric Soils Online with Field Practicum
Other dates and location offered

June 24-27, 2019
Pittsburgh, PA

Wetland Training Institute, Inc. Course: Identifying Grasses, Sedges, and Rushes

June 24-July 5, 2019
Missoula, MT

Flathead Lake Biological Station Course: Conservation Ecology

June 24-July 5, 2019
Missoula, MT

Flathead Lake Biological Station Course: Environmental Sensors: Designing, Building and Deploying in the Field

June 25-28, 2019
State College, PA

Wetland Training Institute, Inc. Course: Planning Hydrology, Vegetation, and Soils for Constructed Wetlands

June 28, 2019
Portage, WA

Wetland Training Institute, Inc. Course: Beginners Plant ID for Wetland Delineation

June 30-July 20, 2019
St. George’s Bermuda

Bermuda Institute of Ocean Sciences: Coral Reef Ecology: Reef Response to Environmental Change

July 2019

July 1-September 23, 2019
Online

The Swamp School Online Course: Wetland Basic Delineation Training 2019
Other dates offered.

July 7-13, 2019
Steuben, ME

Eagle Hill Natural History Science Field Seminars: Survey of Grasses: Their Structure, Identification, and Ecology

July 7-13, 2019
Steuben, ME

Eagle Hill Natural History Science Field Seminars: Marine Benthic Invertebrates

July 8-28, 2019
Colorado Springs, CO

Rocky Mountain Field Course: Earth Corps Field Studies
The Swamp School Online Course: Certified Hydric Soils Investigator
Other dates offered.

The Swamp School Online Course: Principles of Wetland Design
Other dates offered.

The Swamp School Online Course: Wetland Monitoring Techniques

Isle Royale & Keweenaw Association: Keweenaw Plant I.D. Workshop

Wetland Training Institute, Inc. Course: Advanced Hydric Soils Online with Field Practicum
Other dates and location offered

Eagle Hill Natural History Science Field Seminars: Wetland Identification, Delineation, and Ecology

The Swamp School Course: Phase I Environmental Site Assessment
Other dates offered

Institute for Wetland & Environmental Education & Research: Plant ID Course: Basic Wetland Delineator Training

Wetland Training Institute, Inc. Course: Plant Identification for Wetland Delineators

Eagle Hill Natural History Science Field Seminars: Ericaceae and Heathland Communities of Coastal Maine

Eagle Hill Natural History Science Field Seminars: Drawing and Painting Birds

Flathead Lake Biological Station Course: Stream Ecology

The Swamp School Course: Data Collection for Environmental Professionals
Other dates offered

Eagle Hill Natural History Science Field Seminars: Mushroom Identification for the Novice: Focus on Edible and Medicinal Mushrooms

Eagle Hill Natural History Science Field Seminars: Leaf and Stem Mining Insects

College of the Atlantic Field Botany: Plants of New England
### August 2019

<table>
<thead>
<tr>
<th>Date</th>
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<tbody>
<tr>
<td>August 4-August 10, 2019 Steuben, ME</td>
<td>Eagle Hill Natural History Science Field Seminars: Submersed and Floating Aquatic Plants</td>
</tr>
<tr>
<td>August 5-October 28, 2019 Online</td>
<td>The Swamp School Online Course: Certified Wetland Botanist</td>
</tr>
<tr>
<td>August 7, 2019 Ann Arbor, MI</td>
<td>CUAHSI: Open Source Urban Hydrology Sensor Bootcamp</td>
</tr>
<tr>
<td>August 9, 2019 Marysville, WA</td>
<td>Wetland Training Institute, Inc. Course: Beginners Plant ID for Wetland Delineation</td>
</tr>
<tr>
<td>August 11-17, 2019 Steuben, ME</td>
<td>Eagle Hill Natural History Science Field Seminars: Lichens, Biofilms, and Stone</td>
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<tr>
<td>August 11-17, 2019 Steuben, ME</td>
<td>Eagle Hill Natural History Science Field Seminars: EPT Taxonomy and Ecology</td>
</tr>
<tr>
<td>August 13-14, 2019 Atlanta, GA</td>
<td>Duncan &amp; Duncan Wetland &amp; Endangered Species Training: Hydrophytic Vegetation (Piedmont)</td>
</tr>
<tr>
<td>August 13-16, 2019 Hays, KS</td>
<td>Wetland Training Institute, Inc. Course: Plant Identification for Wetlands and Wetland Delineators</td>
</tr>
<tr>
<td>August 18-24, 2019 Steuben, ME</td>
<td>Eagle Hill Natural History Science Field Seminars: Mushroom Microscopy: An Exploration of the Intricate Microscopic World of Mushrooms</td>
</tr>
<tr>
<td>August 18-24, 2019 Steuben, ME</td>
<td>Eagle Hill Natural History Science Field Seminars: Taxonomy and Biology of Ferns and Lycophytes</td>
</tr>
<tr>
<td>August 18-24, 2019 Steuben, ME</td>
<td>Eagle Hill Natural History Science Field Seminars: Introduction to Bird Banding, Research, and Monitoring for Songbirds and Raptors</td>
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### September 2019

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<tbody>
<tr>
<td>September 10-12, 2019 Avondale, PA</td>
<td>CUAHSI Workshop: DIY Water Monitoring Data Portals, and Watershed Modeling</td>
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### October 2019

<table>
<thead>
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<tbody>
<tr>
<td>October 14-18, 2019 Shepherdstown, WV</td>
<td>Stream Mechanics Workshop: Stream Functions Pyramid</td>
</tr>
<tr>
<td>October 15, 2019 Boulder, CO</td>
<td>CUAHSI Workshop: The Community WRF-Hydro Modeling System</td>
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</table>
EDITOR’S CHOICE

- Federal Agencies Publish Revised Rule on Waters of the United States
- Supreme Court to hear case that could restrict federal water rules
- ‘Green New Deal’ lands in the Capitol
- Nomination of acting EPA head Wheeler moves to full Senate
- Trump Eyes Action to Limit States’ Powers to Block Pipelines

NATIONAL NEWS

- EPA Seeks Nominations for Members of Great Lakes Advisory Board
- Spending Deal Averts Shutdown, Funds Science Agencies Through September
- EPA plan stops short of regulating toxic chemical, promises decision later
- The Senate just passed the decade’s biggest public lands package. Here’s what’s in it.
- House lawmakers introduce resolution to support Paris climate agreement
- Earth marks fourth hottest year on record as Congress opens climate hearings
- EPA Signs MOU with The Water Research Foundation Advancing Nutrient Management Efforts
- Government shutdown cost economy $11 billion, budget office says
- New Governors Target Climate Change from Day One in Vulnerable Great Lakes Region
- Poll: Extreme weather events changing Americans’ climate change views
- Army Corps releases crucial guide for reducing flood risk and increasing resilience

STATE NEWS

- CA: Calif. clinches new regulations just in time for federal rollback
- CA: The Land Where Birds Are Grown
- CA: The West Coast’s biggest bird oasis is dying. Will it be saved?
- DE: DNREC introduces Delaware Living Shorelines Monitoring Framework to help gauge success of shoreline restoration project
- MD: Maryland Reduces Use of Road Salts to Protect the Environment and Public Health
- MN: Minnesota’s winters are warming at a rate 13 times faster than its summers
- MS: Mississippi Sues Federal Government Over River Flooding
- NC: Study Yields New Clues to Predict Tipping Points for Marsh Survival
- SC: SC wetlands — prized for habitat and flood buffer — lose protection under Trump water rule
- VT: As Feds Weaken Wetlands Rules, Locals Eye Greater Protections for Otter Creek Swamps
- WA: Seattle Metal Recycler Fined $98,000 For Pollution Discharges to Duwamish River
- WV: The Conservation Fund Acquires 18,000 Acres in Key Step for Public Recreation and Wildlife Conservation In West Virginia
- WI: Inside Wisconsin’s Disastrous $4.5 Billion Deal with Foxconn
- WI: Superior, Douglas County work together on wetland mitigation
- WI: Could an effort to restore wetlands along Mukwonago River impact an already-endangered frog species?
WETLAND SCIENCE NEWS

• Arctic Sea Ice Loss in Past Linked to Abrupt Climate Events
• For a Climate Reporter, a Dreaded Question: ‘Then Why Is It So Cold?’
• We may be overestimating the carbon cleanup power of trees
• Dry inland waters are underrated players in climate change
• Endangered Species Act Is Working for Sea Turtles and Marine Mammals

RESOURCES AND PUBLICATIONS

• Lily Pads and Long Toes: A Marsh Bird Sampler
• Chesapeake Conservancy develops technology for James River restoration work

POTOURRI

• The Rising Tide of Climate Injustice
• Find Your Climate-Altered Future on A New Interactive Map
• Helping farmers help our waterways
• Cleaner Power and Flowing Water: Finding Balance Between Smart Renewable Energy and River Protection
• Loons Are Getting Squeezed by Wind Farms
• Developers, not farmers, get biggest hit from wetlands rule
• ‘Waters of the US’ would alter environmental reg as we know it

Sharon Weaver photo
CALENDAR OF EVENTS

Webinars

February

- Environmental Law Institute Webinar: Stream Compensatory Mitigation -- Monitoring and Performance Standards
- EBM Tools Webinar: Learning from others: The new global conservation planning database
- The Swamp School Webinar: Wetlands and Soil Taxonomy

March

- The Swamp School Webinar: 2019 Waters of the US
- International Institute for Environment and Development Webinar: So far yet so close: Why the high seas matter to vulnerable coastal communities

April

- Land Trust Alliance Webinar: Looking to the Land (Forests): Mitigating Climate Change
- American Water Resources Association Webinar: Preparing for a Climate with More Extremes

MEETINGS

February 2019

- International Conference on Water Management Modeling

March 2019

- Massachusetts Association of Conservation Commission Annual Environmental Conference
- 2019 Washington Botanical Symposium
- Rocky Mountain Land Use Institute: 2019 Wester Places/Western Spaces Conference: Designing for the Future: Building Enduring Value
- Smithsonian-Mason School of Conservation Course: Statistics for Ecology and Conservation Biology
- Michigan Stormwater Floodplain Association Conference
- CitSci 2019: Growing Our Family Tree
- Climate Leadership Conference
- 5th Life Discovery – Doing Science Biology Education Conference: Microbiomes to Ecosystems: Evolution and Biodiversity across Scale, Space, and Time

Sharon Weaver photo
April 2019

- New York State Wetlands Forum Annual Conference and Meeting
- Association of State Wetland Managers Annual State/Tribal/Federal Coordination Meeting: Translating Wetland Science into Fair and Reasonable Government Policies
- Ohio Wetlands Association Vernal Poolooza
- US-IALE Annual Meeting: Conservation Innovation
- 7th International Conference: Green Energy & Technology
- New Jersey Conservation Foundation: 23rd Annual New Jersey Land Conservation Rally
- 2019 Society of Ecological Restoration Midwest-Great Lakes Meeting
- Greater Everglades Ecosystem Restoration: Science Advancing Everglades Resilience and Sustainability
- National Adaptation Forum
- Center for Watershed Protection: 2019 National Watershed & Stormwater Conference

May 2019

- Environmental Law Institute Conference: Clean Water Act: Law and Regulation 2019
- Land Trust Alliance: New York Land Conservation Conference
- Choose Clean Water Coalition: 10th Annual Choose Clean Water Conference
- National Mitigation & Ecosystem Banking Conference: Connecting Policy, Practice, Business, Science & People
- Environmental Law Institute 30th Annual National Wetlands Awards 2019
- Hudson River Environmental Society: 2019 Hudson River Symposium: Ecosystem Response to Climate Change and Sea-Level Rise in the Hudson Estuary
- Arboriculture & Urban Forestry Educators’ Symposium & Summit
- 2019 NAEP Conference: The Environmental Landscape in an Age of Infrastructure Modernization
- Association of State Floodplain Managers 42nd Annual Meeting: Managing Floods Where the Mountains Meet the Desert
- Society of Wetland Scientists 2019 Annual Meeting: The Role of Wetlands in Meeting Global Environmental Challenges: Linking Wetland Science, Policy, and Society
- Ducks Unlimited National Convention

June 2019

- 2nd International Conference on Community Ecology
- Third Annual Digital Data in Biodiversity Research Conference: Methods, Protocols, and Analytical Tools for Specimen-based Research in the Biological Sciences
- The College at Brockport, State University of New York: 62nd Annual Conference on Great Lakes Research: Large Lakes Research: Connecting People and Ideas
- Kansas State University: Arthropod Genomics Symposium
- Land Trust Alliance: Seventh Symposium on Advanced Legal Topics in Land Conservation
- 2019 AWRA Summer Specialty Conference: Improving Water Infrastructure Through Resilient Adaptation
- National Hydrologic Warning Council Conference
- River Network: River Rally

July 2019

- International Association for Landscape Ecology’s World Congress: Nature and society facing the Anthropocene: challenges and perspectives for Landscape Ecology
- 20th INUA Congress: Life on the Edge

August 2019

- Ecological Society of America Annual Meeting
- StormCon
September 2019

- International Conference on Ecology & Transportation

October 2019

- Natural Areas Association: Natural Areas Conference
- Land Trust Alliance Rally 2019
- AASHE Conference: Co-Creating a Sustainable Economy

November 2019

- American Water Resources Association: Annual Water Resources Conference

December 2019

- AGU Fall Meeting: Science Communication: A Sharing Science Room

Training/Workshops

February 2019

- Wetland Training Institute, Inc. Course: Demystifying Wetland and In-Water Permitting in Washington State

March 2019

- Wetland Training Institute, Inc. Online Lecture and Field Practicum Course: Basic Wetland Delineation
- Wetland Training Institute, Inc. Course: Basic Wetland Delineation Refresher Course
- The Swamp School Online Course: Wetland Basic Delineation Training 2019
- The Swamp School Online Course: Principles of Wetland Design
- The Swamp School Online Course: Certified Wetland Botanist
- The Swamp School Course: Wetland Delineation Training
- Duncan & Duncan Wetland & Endangered Species Training: Basic Wetland Delineation
- Smithsonian-Mason School of Conservation Course: Statistics for Ecology and Conservation Biology
- The Swamp School Course: Habitat Conservation Plans
- U.S. Fish and Wildlife Course: Stream Habitat Measurement Techniques
- The Swamp School Online Course: Developing Wetland Water Budgets 2019
- University of Alaska Fairbanks Course: Arctic Alaska Ecosystems
- The Swamp School Online Course: Wetland Monitoring Techniques
- Rutgers Office of Continuing Professional Education Course: Ecological Risk Assessment
- Duncan & Duncan Wetland & Endangered Species Training: Interagency Consultation for Endangered Species (Section 7)
- Wetland Training Institute, Inc. Course: Woody Plant Identification
- Wetland Training Institute, Inc. Course: Basic Wetland Delineation Refresher Course
- Wetland Training Institute, Inc. Online Lecture and Field Practicum Course: Basic Wetland Delineation

April 2019

- The Swamp School Workshop: Dam Removal Functional Mitigation Design
- Wetland Training Institute, Inc. Course: Basic Wetland Delineation
- U.S. Fish and Wildlife Course: Wetland Assessment, Restoration and Management
- The Swamp School Online Course: Certified Hydric Soils Investigator
- The Swamp School Online Course: Wetland Basic Delineation Training 2019
- Duncan & Duncan Wetland & Endangered Species Training: Advanced Hydric Soils, Hydrology, and Regional Indicators (Coastal Plain)
- CUAHSI Workshop: The Role of Runoff and Erosion on Soil Carbon Stocks: From Soilscapes to Landscapes
- The Swamp School Online Workshop and Field Day: Blended Online and Field Wetland Delineation
- Rutgers Office of Continuing Professional Education Course: Pond Design, Management and Maintenance
- The Swamp School Course: Phase I Environmental Site Assessment
- Wetland Training Institute, Inc. Course: Basic Wetland Delineation
- The Swamp School Online Course and Field Day: Blended Online and Field Wetland Delineation Workshop
- The Swamp School Course: Basic Botany for Wetland Assessment

May 2019

- American Law Institute Continuing Legal Education Course: Clean Water Act: Law and Regulation 2019
- Rutgers Office of Continuing Professional Education Course: Coastal Community Resilience: An Overview of Strategies, Tools, and Science
- The Swamp School Course: Wetland Delineation Training
- Duncan & Duncan Wetland & Endangered Species Training: Basic Wetland Delineation
- The Swamp School Online Course: Wetland Basic Delineation Training 2019
- Wetland Training Institute, Inc. Course: Advanced Hydric Soils Online with Field Practicum
- Northern Arizona University Training Course: New Advances in Land Carbon Cycle Modeling
- Eagle Hill Natural History Science Field Seminar: Lichens and Lichen Ecology
- CUAHSI Short Course: The Science and Practice of Operational Ensemble Hydrological Prediction
- Wetland Training Institute, Inc. Course: Graminoids (Grasses, Sedges, Rushes) ID for Wetlands and Wetland Delineators
- Tatoosh School Course: Community Ecology
- Rutgers Office of Continuing Professional Education Course: Vegetation Identification for Wetland Delineation: North
- Eagle Hill Natural History Science Field Seminar: Calicioid Lichens and Fungi of the Acadian Forest: Identification and Ecology
- Eagle Hill Natural History Science Field Seminar: Introduction to Bryophytes and lichens
- CUAHSI Short Course: Integrated Simulation of Watershed Systems using Parflow
- Duncan & Duncan Wetland & Endangered Species Training: Hydrophytic Vegetation (Coastal Plain)

June 2019

- Institute for Wetland & Environmental Education & Research: Plant ID Course: Wetlands & Their Borders
- Wetland Training Institute, Inc. Course: Plant identification for Coastal Southern California
- Stream Mechanics Workshop: Stream Functions Pyramid
- Isle Royale & Keweenaw parks Association: Isle Royale Plant I.D. Workshop
- The Swamp School Online Course: Wetland Basic Delineation Training 2019
- The Swamp School Online Course: Certified Wetland Hydrologist
- Institute for Wetland & Environmental Education & Research: Plant ID Course: Basic Wetland Delineator Training
- Eagle Hill Natural History Science Field Seminars: Mosses: Structure, Ecology, and Identification
- Eagle Hill Natural History Science Field Seminars: Chironomids: Classification, Morphology, Identification, and Lifecycles
- Duncan & Duncan Wetland & Endangered Species Training: Advanced Hydric Soils, Hydrology, and Regional Indicators (Coastal Plain)
- The Swamp School Course: Wetland Delineation Training
- The Swamp School Course: Basic Botany for Wetland Assessment
- Rutgers Office of Continuing Professional Education Course: Methodology for Delineating Wetlands
- Rutgers Office of Continuing Professional Education Course: Introduction to Wetland Identification
- Eagle Hill Natural History Science Field Seminars: Independent Study: Topics in Fungal Biology
- Eagle Hill Natural History Science Field Seminars: Medicinal Plants: Traditions and Contemporary Perspectives
- Colorado State University Course: Summer Soil Institute
- The Swamp School Course: Accelerated Online Wetland Delineation Training Workshop
- The Swamp School Online Course: Habitat Conservation Plans
- Tatoosh School Course: Case Studies for a Changing World
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- Wetland Training Institute, Inc. Course: Identifying Grasses, Sedges, and Rushes
- Flathead Lake Biological Station Course: Conservation Ecology
- Flathead Lake Biological Station Course: Environmental Sensors: Designing, Building and Deploying in the Field
- Wetland Training Institute, Inc. Course: Planning Hydrology, Vegetation, and Soils for Constructed Wetlands
- Wetland Training Institute, Inc. Course: Beginners Plant ID for Wetland Delineation
- Bermuda Institute of Ocean Sciences: Coral Reef Ecology: Reef Response to Environmental Change

**July 2019**

- The Swamp School Online Course: Wetland Basic Delineation Training 2019
- Eagle Hill Natural History Science Field Seminars: Survey of Grasses: Their Structure, Identification, and Ecology
- Eagle Hill Natural History Science Field Seminars: Marine Benthic Invertebrates
- Rocky Mountain Field Course: Earth Corps Field Studies
- The Swamp School Online Course: Certified Hydric Soils Investigator
- The Swamp School Online Course: Principles of Wetland Design
- The Swamp School Online Course: Wetland Monitoring Techniques
- Isle Royale & Keweenaw Association: Keweenaw Plant I.D. Workshop
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- College of the Atlantic Field Botany: Plants of New England

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- Stream Mechanics Workshop: Stream Functions Pyramid
- CUAHSI Workshop: The Community WRF-Hydro Modeling System
The Association of State Wetland Managers' *Wetland Breaking News* (WBN) is a monthly e-newsletter. *Wetland Breaking News* is an edited compilation of wetland-related stories and announcements submitted by readers and gleaned from listservs, press releases and news sources from throughout the United States. WBN chronicles the legislative, national and state news relevant to wetland science and policy, wetland regulations and legal analysis of Supreme court cases from the past month; it also links to new publications and resources available to wetland professionals as well as events and training opportunities for those working in water resources and related fields. *Wetland Breaking News* has been published for over fifteen years and ASWM has been a think-tank and source for wetland science and policy news and discussion for over 30 years.

The items presented in *Wetland Breaking News* do not necessarily reflect the views of the editor or of the Association of State Wetland Managers. Send your news items, comments, corrections, or suggestions to news@aswm.org.

"WETLAND BREAKING NEWS" Compiled by Starsha Schiller, ASWM Intern; Edited by Marla Stelk, Executive Director; Laura Burchill and Sharon Weaver, Assistant Editors, Association of State Wetland Managers, 32 Tandberg Trail, Ste. 2A, Windham, ME 04062. Telephone: 207-892-3399;

Send your news items, events, comments, corrections, or suggestions to news@aswm.org