US Army Corps of Engineers®

Stewardship news

Volume 5, Issue 1: March 2022

YOUR Thoughts

We are looking for contributors and ideas .

✖ If you have a topic, success story, lesson learned, or helpful suggestion—let us know.

Send to: Tara.J.Whitsel@usace.army.mil

Stewardship News is an unofficial publication of the U.S. Army Corps of Engineers (USACE). This online publication is produced quarterly with the purpose of providing its readers information about the USACE Stewardship Program. Editorial views and opinions expressed are not necessarily those of the Department of the Army. Mention of specific vendors does not constitute endorsement by the Department of the Army or any element thereof.

Your Stewardship HQ Update

POC: Roseana Burick,

On Apr. 22, 2022 we join with those around the globe to celebrate Earth Day with a theme of "Invest In Our Planet". As natural resources managers of more than 12 million acres of public lands and waters we take our commitment to ensuring a sustainable environment for future generations to heart. We are investing in energy saving technology in our parks, managing invasive species to sustain native, resilient ecosystems, and we are engaging with our communities and visitors to foster a greater understanding and connection to our natural resources.

Stewardship News turns 5 this year! All past issues are on the NRM Gateway!

Celebrating National Invasive Species Awareness Week

National Invasive Species Awareness Week was held Feb. 28, 2022 through Mar. 04, 2022. NISAW is aimed at raising awareness about invasive species, the threat they pose, and what can be done to prevent their introduction, impacts, and spread.

The Invasive Species Leadership Team (ISLT) shared a daily message regarding USACE invasive species efforts each day throughout the week.

Those posts along with ones from previous years, are available on the NRM Gateway.

Click here for daily posts!

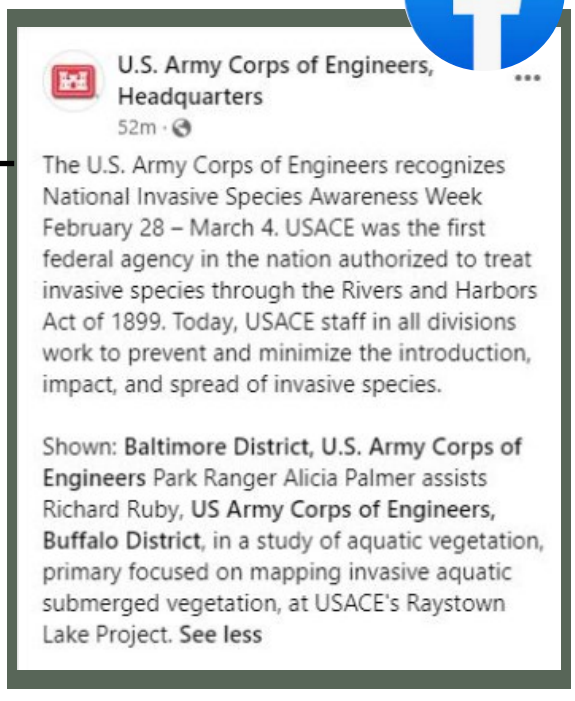
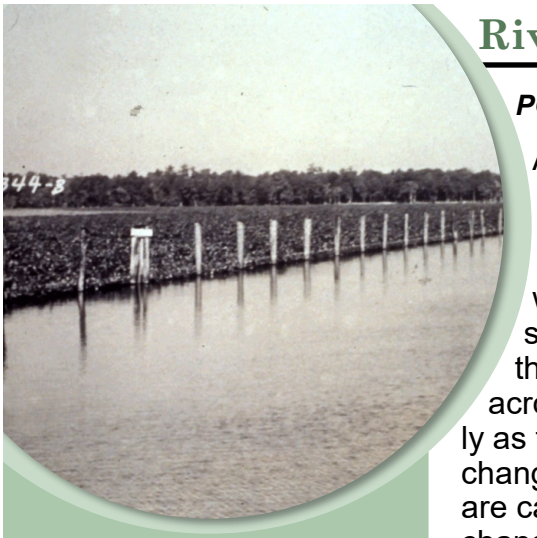


Photo Top: Visitors to USACE's Cordell Hull Lake. Photo Bottom: Picture as noted in HQ USACE Facebook Post during NISAW.



CHECK IT OUT!

Managing Great Lakes Invaders Video Series

The five-part short video series Managing Great Lakes Invaders, was developed by Michigan Sea Grant and the Great Lakes Aquatic Nonindigenous Species Information System (GLANSIS).

Each short video focuses on a different Great Lakes invasion story, including ballast water, sea lamprey, dreissenid mussels, and invasive carp, along with a capstone video that unites them. A playlist of the Managing Great Lakes Invaders video series is available online at Michigan Sea Grant's YouTube account. The goal of these videos is to highlight AIS success stories and the ongoing research and collaboration that is essential to the fight against aquatic invaders. This project demonstrates how cooperation between researchers, legislators, industry, and other stakeholders can make a powerful difference in protecting the Great Lakes.

https://www.youtube.com/watch?v=sH_aXtOvAEs&list=PLrRNRwudM7U90Y614QPP0xFpxGISedvQT&index=1

Photo Top: A fence constructed on the St. Johns River at a cost of $2,086 in 1942 to control invasive aquatic movement.

Rivers Project Office Installs a Motus Receiver

POC: Insiyaa Ahmed, Rivers Project Office, 678-793-5173

Advances in tracking technology have vastly improved our understanding of migratory wildlife. However, there is still much to learn about the movement of animals across landscapes, especially as factors such as climate change and land development are causing unprecedented changes to ecosystem functions and wildlife behavior.

The Motus Wildlife Tracking System is an international collaborative research network that is establishing one of the world's largest wildlife tracking datasets. Using radio telemetry towers, called receiving stations, this system automatically detects transmitter tags attached to small animals within range. The range may be as much as 15km, but varies with station. The data from the tag is automatically uploaded onto the Motus database. There are almost 1,300 active tower stations across the globe collecting data on tens of thousands of tagged birds, bats, and even insects. Each tag emits a unique signature that can transmit a wide array of data such as where the animal travels, how fast they move between points, how long they stay in an area, and other data that can inform conservation efforts. This project also allows researchers and partners to study animal movement at multiple scales ranging from local to regional to hemispheric.

Photos Above: Installation of the MOTUS tower atop the Rivers Project Office in West Alton, MO.

The St. Louis District Rivers Project has recently established a Motus tower atop their office location at the Riverlands Migratory Bird Sanctuary.

Article continued on page 3.

Rivers Project Office Continued

This was a joint effort between the USACE, Audubon Center at Riverlands, and the Missouri Department of Conservation (MDC) with funding provided by the St. Louis Audubon Cathleen Creley Memorial Conservation Grant. The location of the Project office along the central flyway and at the confluence of three major rivers makes it an ideal location for tracking migrating fauna. The tower itself is around 25 feet tall and has a dual-listening CTT receiver, four 166.38 MHz antennas, and four 434 MHz antennas. There is much potential for the tower's location to provide valuable insight into the species that migrate through the Mississippi River flyway.

The most impactful aspect of the Motus Tower Project is its foundation in collaborative science. The system relies on deploying and registering transmitters from researchers all over the world, and from the community of scientists, organizations, non-profits, governments, and individuals that maintain the global network of receiving stations. The centralized database that stores the information gathered by the towers can also be accessed and utilized by researchers and educators regardless of their management of receivers or transmitters.

With the activation of the Riverlands Motus Tower in December 2021, it has joined this global network with the hopes of contributing meaningful data to improve the conservation and management of wildlife.

Need Invasive Species Resources?

1 **USGS—NAS.** USGS has established a central repository for spatially referenced biogeographic accounts of nonindigenous aquatic species (NAS). The program provides scientific reports, online/realtime queries, spatial data sets, distribution maps, and general information. The data is made available for use by biologists, interagency groups, and the general public. By registering for the NAS Alert System, you can receive tailored email alerts such as: 1. All new alerts for a state; 2. All new alerts for a taxonomic group; 3. All new alerts for a few selected species; 4. Or any combination of 1-3. **Website:** https://nas.er.usgs.gov/default.aspx

Click here to learn more about USGS– NAS!

2 **EDDMapS—USACE.** EDDMapS is a web-based mapping system for documenting invasive species' distribution. Launched in 2005 by the Center for Invasive Species and Ecosystem Health at the University of Georgia, it was originally designed as a tool for state Exotic Pest Plant Councils to develop more complete distribution data of invasive species. Overall, the goal of EDDMapS is to maximize the effectiveness and accessibility of the immense numbers of invasive species observations recorded each year. USACE has a module in which NRM projects spatial data information is included to allow USACE users to enter invasive species occurrences.
Website: www.eddmaps.org/usace/

EDDMapS Early Detection & Distribution Mapping System — U.S. Army Corps of Engineers®

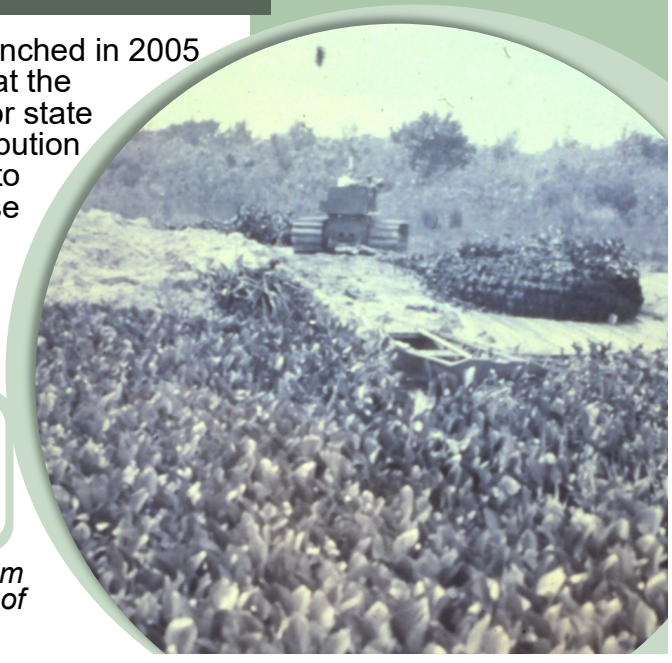


Photo Bottom Right: A bulldozer is used to remove hyacinths from the Caloosahatchee River in July 1939. Approximately 20 yards of hyacinth are in the seine.

From DoD PARC

DoD PARC shares Best Management Practices (BMPs) documents for the Florida Pinesnake and Gopher Tortoise.

Both of these species are DoD Mission Sensitive Species, at-risk, and are either under review or candidate for Endangered Species Act-listing by the U.S. Fish and Wildlife Service.
The BMPs are intended as guidelines for resource managers to plan, prioritize, and implement management for the conservation benefit of these species. We hope you find them helpful.

BMPs for the Spotted Turtle, Gopher Frog, Eastern Diamond-backed Rattlesnake, Western Pond Turtle, Alligator Snapping Turtle, Wood Turtle, and Northern Red-bellied Cooter can be downloaded on Denix: https://www.denix.osd.mil/dodparc/parc-

A Brief Look at USACE's Invasive Species Management History

Information provided by Jon Lane, Jacksonville District

Exotic Species. The exotic aquatic plants that cause many of the problems being managed by USACE today began arriving in the continental United States in the 1880's. Water hyacinth, a free floating plant native to South America, is thought to have been brought into the United States during the New Orleans Cotton Exposition in 1884. Several specimens, admired for their beauty, were transported to north Florida to enhance areas lying along the banks of the St. Johns River. Within a few years the plant had become a problem, with steamboats having difficulty dock-ing in the area and traversing the river. Water hyacinth was also causing similar problems in southern Louisiana, and was found in California in 1904.

Other exotic species include the emersed plant alligatorweed, the floating plant waterlettuce, and the submersed plants Eurasian watermilfoil and hydrilla. Alligatorweed and waterlettuce are found mainly in the southeastern United States. The submersed exotic aquatic plants, rooted to the bottom with shoots extending to the surface, are capable of living under low light conditions; hydrilla can grow at 1% normal sunlight. Eurasian watermilfoil, native to Europe and Asia, was possibly introduced into the United States as early as 1900. More recently, this troublesome species has entered the northern United States from Canada. Hydrilla was introduced around 1960 near Miami, FL, and has spread to many other states.

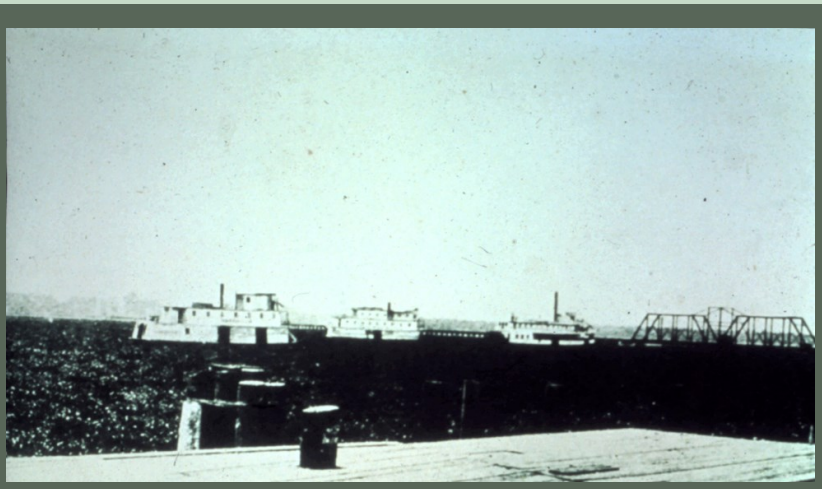


Photo: Steamboats such as this one travelled the St. Johns River carrying supplies tourists on regular routes from Palatka down the Ocklawaha, to Silver Springs. By 1896, the water hyacinth had moved from the tributaries into the main reiver and caused navigation problems.

Beginning of USACE Programs—Removal of Aquatic Growth. In the late 1880's and early 1890's, populations of water hyacinth expanded, and problems associated with the plant increased. Commercial river traffic was impeded. Faced with mounting problems, the citizens of Florida and Louisiana petitioned Congress for assistance. The effect was that certain aquatic plant management operation directives, known as the Removal of Aquatic Growths (RAG) Project, were included in the Rivers and Harbors Act (R&HA) of 1899.

Photo: This was a grapple/derrick operating on a tributary of the St. Johns River, in 1927. Grapples were used as early as 1916.

USACE was tasked to solve the problem, since many affected waterways were Federal navigation projects. The RAG Project, funded at 100% Federal cost, was limited to such projects in Florida, Alabama, Mississippi, Louisiana, and Texas.

The R&HA of 1899 was amended by the R&HA of 1902, which allowed for the extermination and removal of water hyacinths by mechanical, chemical, or other means, and by the R&HA of 1905, which prohibited the use, only in Florida, of any chemical process injurious to cattle.

The Start of the Aquatic Plant Control Program. In 1945, the Committee on Rivers and Harbors of the House of Representatives adopted a resolution charging the Board of Engineers for Rivers and Harbors with the responsibility of determining if an expansion of the original 1899 authorization was advisable.

Invasive History Continued

This review called for "control and progressive eradication of the water hyacinth, alligatorweed and other detrimental aquatic plant growths from the watercourses." It became a 1956 House Document entitled "Water Hyacinth Obstructions in the Waters of the Gulf and South Atlantic States."

This action resulted in the enactment of Public Law (PL) 85-500, Section 104, R&HA of 1958, which provided for a 5-year pilot project, referred to as "The Expanded Project for Aquatic Plant Control" with an annual funding cap of $1.5 million. The Expanded Project extended control operations from Federal navigation project waters to those tributary areas beyond the limits of navigation, and added Georgia, South Carolina, and North Carolina.

Water buffalo in Florida

These hefty animals with ravenous appetites are fond of the aquatic plants choking our waterways. They just might be an answer to the problem.

BY BARBARA KIMMEL/PHOTOGRAPHS: NANCY M. HAMILTON

ainesville four burly east Asia nswer to st plant — a male lo, a calf imported da, game Popenoe, ersity of Tropical uary, the ergoing a university cafeteria- pecies of ine if the he weeds a's lakes ical weed pt to the climate

Buddy is protective of his family and becomes noticeably agitated whenever Robey separates a family member from the group for weighing. Buddy will wave his horns in the air, flare his nostrils and squeal shrilly to communicate with the others. They, in turn, return his cry and continue doing so until the four are reunited.

Under the supervision of Popenoe and Dr. James Hentges, professor of animal science, Robey has been conducting experiments to see which species of aquatic weeds the buffalo prefer. Along with their regular dinner of Bermuda grass hay — a standard dietary staple — Robey offers the buffalo a cafeteria-style dinner each night — a choice of water hyacinths, cow lily, maidencane, alligator weed and cattail shoots. Robey gathers the weeds daily from Bivens Lake to satisfy their

Photo: Some very unusual biological control methods have been suggested over the years. Water buffalo were tested as possible control gents. The buffalo seemed to prefer water hyacinth but were rejected due to possible water quality problems and potential for injury to fishermen.

Results of the Expanded Project were later forwarded by the Chief of Engineers to the Secretary of the Army and subsequently to Congress. The report recommended that a "project" approach was no longer desirable, and that "a continuing nationwide program" should be authorized "for the control of obnoxious aquatic plants wherever infestations of such plants constitute a serious threat to navigation, agriculture, public health, the efficient operation of drainage and flood control works, or the use of the Nation's waterways."

Consequently, PL 85-500 was amended by PL 89-298, Section 302, which was approved in 1965. Public Law 89-298 authorized "a comprehensive program to provide for control and progressive eradication of water hyacinth, alligator-weed, Eurasian watermilfoil, and other obnoxious aquatic plant growths, from the navigable waters, tributary streams, connecting channels, and other allied waters of the United States."
This law also provided that "costs for research and planning under-taken pursuant to the authorities of this section shall be borne fully by the Federal government." The Aquatic Plant Control (APC) Program was created, with an annual funding ceiling of $5 million at that time.

The APC program is not an Operation and Maintenance (O&M) program. Aquatic plant control necessary for O&M of authorized reservoirs, channels, harbors, or other water areas under the jurisdiction of USACE or other Federal not be undertaken as part of the APC program except as areas that may be used for experimental purposes.

In response to increasing problems and needs, this ceiling was increased to $10 million in 1983 (PL 98-63). The Water Resources Develop-ment Act of 1986 (PL 99-662) changed the non-Federal share of APC Program opera-tions from 30 to 50 per cent and increased the annual funding ceiling to $12 million. Local sponsors can, however, contribute more than 50 per cent of the program cost.

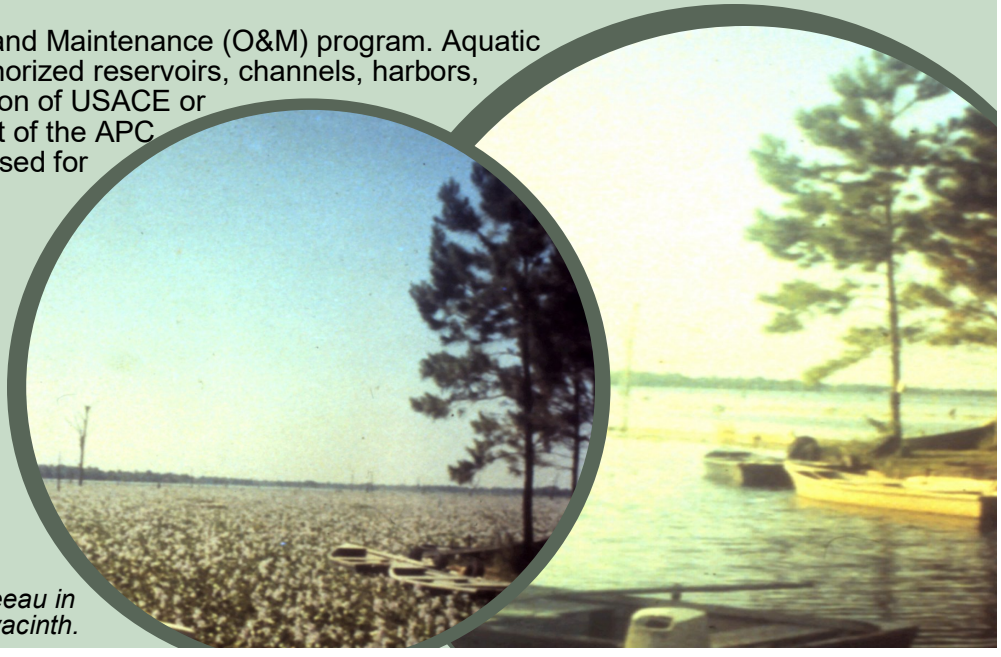
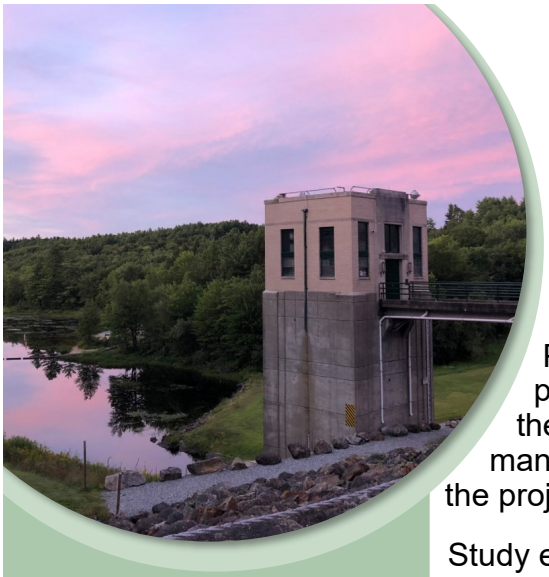


Photo: Buddy's Fish Camp on Lake Rouseeau in 1965 before and after treatment of water hyacinth.



Edward MacDowell Dam Works With Franklin Peirce University to Conduct Bat Studies

POC: Caleb Blakeslee Edward MacDowell Lake (978) 318-8473

For the past three years, staff at Edward MacDowell Lake in New England District have worked with Jacques Veilleux of Franklin Pierce University to conduct studies to determine bat species presence on USACE managed lands. Information learned from these studies have established a base-line data set to inform best management practices for bats during forestry management plans for the project.

Study efforts began with a mist netting survey in 2019 to document the distribution and abundance of bats on the project. In 2020 and 2021 the use of mist nets and direct handling of bats was restricted by the USFWS and the New Hampshire Fish and Game Department due to the potential risk of transmitting SARS-CoV-2 to endemic bats of the U.S. Therefore, acoustic surveys aimed at sampling a variety of habitat types for the presence of bat species at Edward MacDowell Lake were conducted.

Photo: Example of an acoustic monitoring system deployed at the Edward MacDowell Dam. Photo provided by Dr. Jacques Veilleux, Ph.D., Franklin Pierce University.

The results of Dr. Veilleux's study proved to be interesting for both University and Edward MacDowell Staff. Overall, seven of the eight species of bat known from New Hampshire were documented in both acoustic survey years. Hoary bats were the most commonly recorded species in both years at 52.1%, followed by the little brown bat at 29.4% and big brown bats at 13.2%. The federally threatened northern long-eared bat was recorded 13 times at five survey locations.

Edward MacDowell Lake

The dam at Edward MacDowell Lake is located on Nubanusit Brook in Peterborough, New Hampshire. Construction of the dam began in March 1948 and was completed in March 1950 at a cost of $2 million. The spillway at Edward MacDowell Lake is unusual in that instead of being located adjacent to the dam as most spillways are, it is located 3.2 miles northeast of the dam, at Halfmoon Pod. Discharges from the spillway flow from halfmoon Pod into Ferguson Brook which, in turn, discharges into the Contoocook River.

The conservation pool at Edward MacDowell Lake covers an area of 165 acres and has a maximum depth of seven feet. In total the lake and all associated project lands cover 1,469 acres.

Wildlife management practices help to ensure cover and nesting habitat for a variety of species including whitetail deer, moose, beaver, fisher, otter, and other mammal species are common.

Edward MacDowell Dam Continued

The state-endangered little brown bat and the tri-colored bat were detected at 22 and 5 survey points respectively. In total, three of the four New Hampshire state endangered bat species were found to be present during the study.

Future studies hope to incorporate telemetry to document forested areas used as roosting habitat by target species such as the northern long-eared bat. Additionally, Dr. Veilleux and Edward MacDowell staff hope to increase mist netting effort at areas where rarely captured species such at the tri-colored bat, hoary bat, and silver-haired bats were documented with acoustics survey methods.

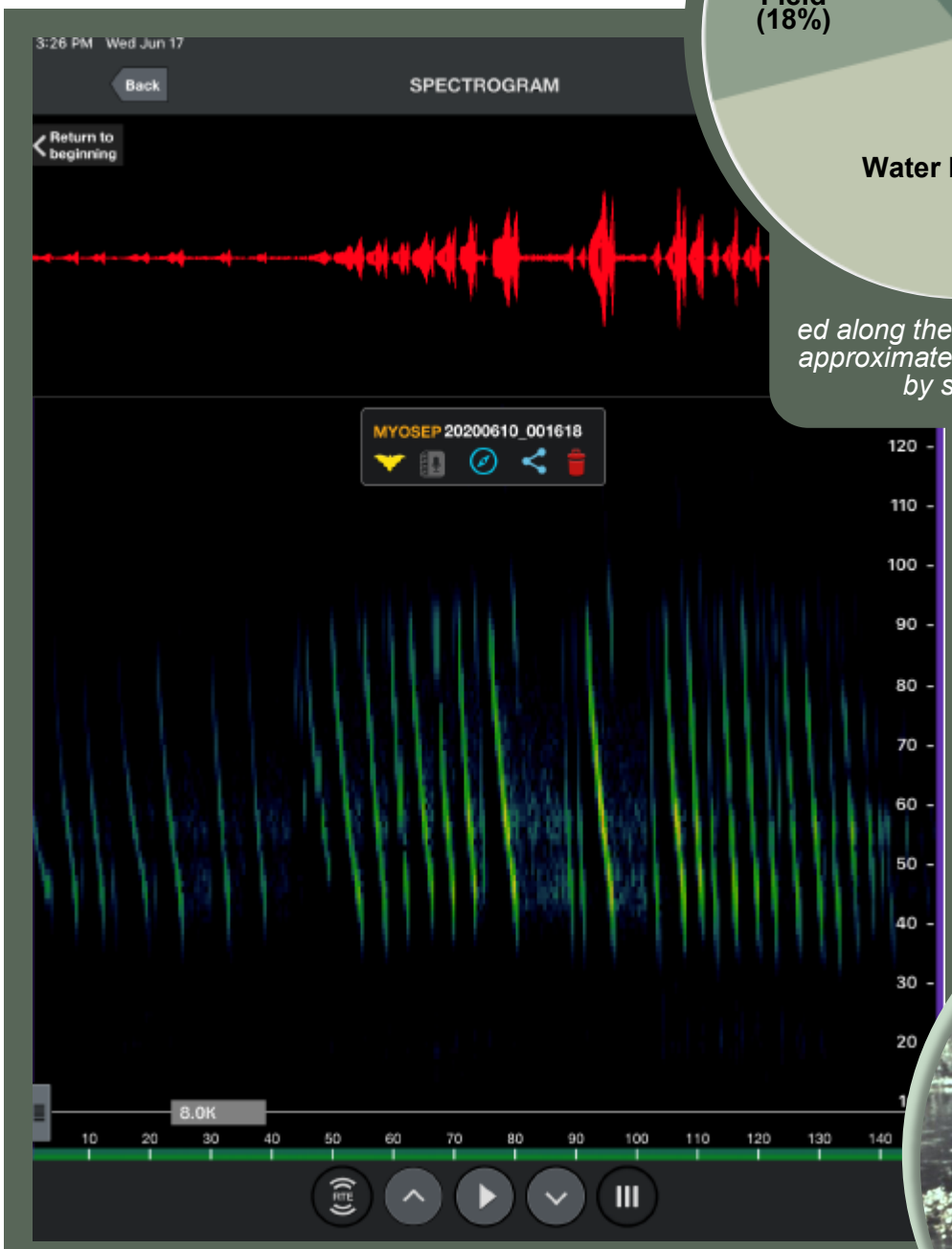
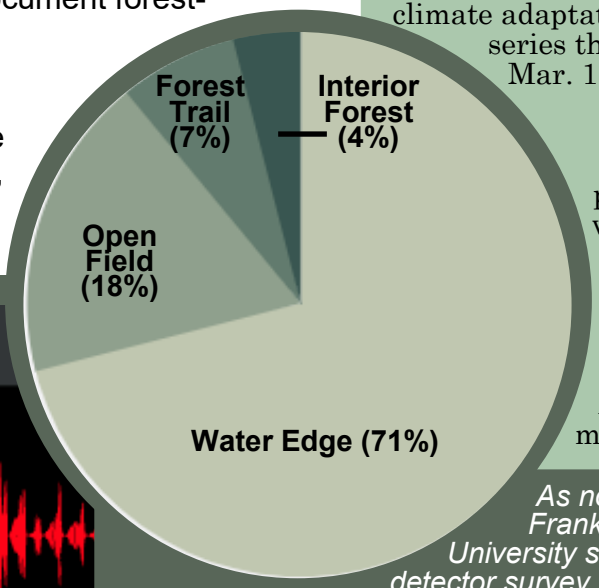


Image Above: Example of an acoustic file of the northern myotis, Myotis septentrionalis, recorded during the 2020 survey. Provided by Dr. Jacques Veilleux, Ph.D., Franklin Pierce University.



As noted in the Franklin Pierce University study report, detector survey points located along the edges of open water accounted for approximately two-thirds of recordings, followed by survey points in open fields.

USFWS New Webinar Series

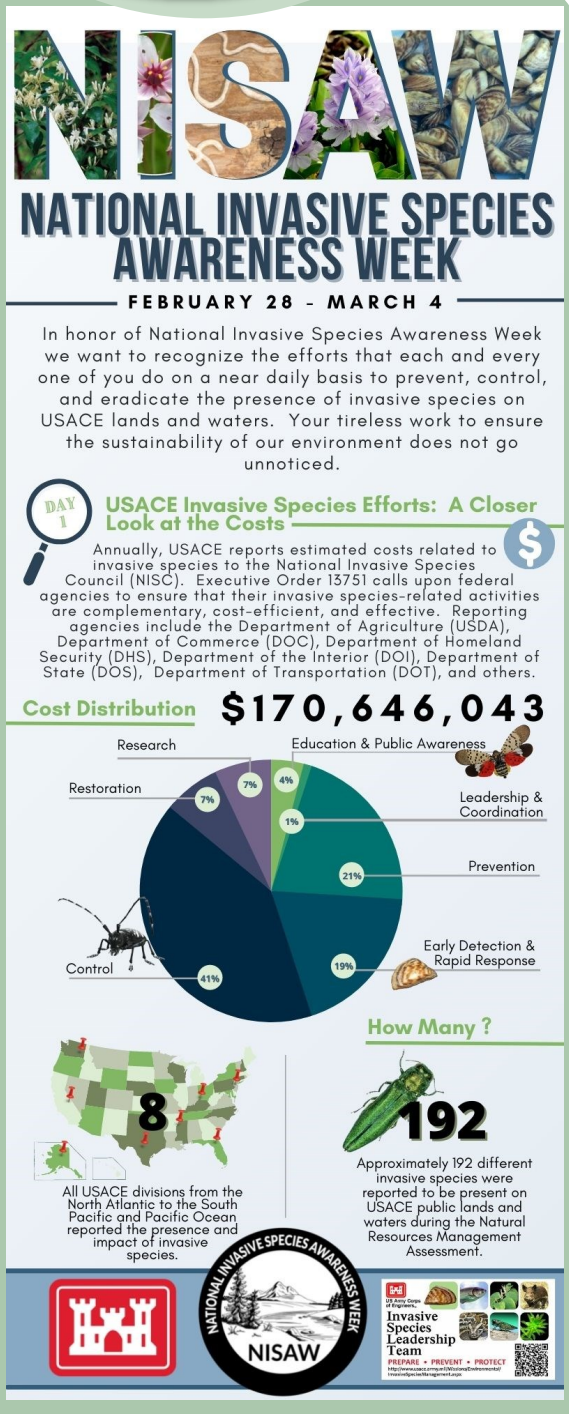
The U.S. Fish & Wildlife Service - National Conservation Training Center launched a new 12-part monthly forest climate adaptation webinar series that began on Mar. 15, 2022.

NCTC is working in partnership with the U.S. Forest Service, USDA and the Northern Institute of Applied Climate Science (NIACS) to present the series.

Please Register Here:
https://doitalent.zoomgov.com/webinar/register/WN_hz6jP44-R_y-boTiyMqUWg

Photo Below: When all else failed, a little elbow grease was used to break up invasive mats. This picture was taken on Arbuckle Creek in March of 1952.

Some Interesting Reading & View-



1 **Project Wingspan Pollinator Habitat Technical Training Workshop Series.** The Project Wingspan team is offering the Project Wingspan Pollinator Habitat Technical Training Workshop Series to increase the success of native habitat restoration and management efforts by offering land managers and stewards advanced educational support, recent findings from scientific field research, guidance on current best management practices, and practical solutions to 'real-world' habitat management obstacles, in collaboration with professional land managers and conservation scientists. The 5-part workshop series can be viewed free on demand—additional information visit *https://www.pollinator.org/wingspan/habitat-training-workshops*.

2 Click here to access link!

The U.S. Register of Introduced and Invasive Species (US-RIIS), is now live on USGS' ScienceBase. From the U.S Geological Survey: Introduced species that becomes established may eventually become invasive, so tracking introduced species provides a baseline for effective modeling of species trends and interactions, geospatially and temporally.

The United States Register of Introduced and Invasive Species (US-RIIS) is comprised of three lists, one each for Alaska (AK, with 532 records), Hawaii (HI, with 6,075 records), and the conterminous United States (L48, with 8,657 records). Each list includes introduced (non-native), established (reproducing) taxa that: are, or may become, invasive (harmful) in the locality; are not known to be harmful there; and/or have been used for biological control in the locality. To be included in the US-RIIS, a taxon must be non-native everywhere in the locality and established (reproducing) anywhere in the locality. Native pest species are not included. Each record has information on taxonomy, dates of introduction (where available; currently for 38%), invasion status (invasive or introduced), and citations for the authoritative sources from which this information is drawn.

The US-RIIS builds on a previous dataset, A Comprehensive List of Non-Native Species Established in Three Major Regions of the U.S.: Version 3.0 (Simpson et al., 2020, There are 15,264 records in the master list and 12,981 unique scientific names. The list is derived from 5,951 authoritative sources, was reviewed by or based on input from 30 invasive species scientists, and continues to be updated. Publication of version 2.0 of the US-RIIS is anticipated (but not guar-

3 Click here to access link!

Millions of Giant Spiders have invaded Georgia. Will They Spread to the Rest of the US? Shared by the Armed Forces Pest Management Board, visit https://www.sciencealert.com/giant-spiders-have-invaded-georgia-will-they-spread-to-the-rest-of-the-us for the entire article.

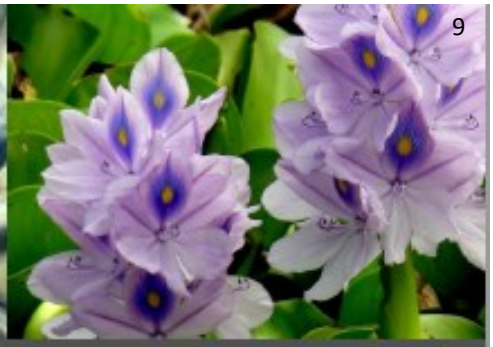
4 Click here to access link!

DoD PARC shares the release of **Episode 10-Timber Rattlesnake** of the Species Profile Video Series.

YouTube: https://youtu.be/J9v3Eyp1010
milTube: https://www.milsuite.mil/video/watch/video/50125

Photo Top Circle: Hyacinths were piled on the rivers after removal from navigation channels in Florida.

Click here for link!



Invasive Species Leadership Team
PREPARE • PREVENT • PROTECT

CENTER FOR AQUATIC AND INVASIVE PLANTS

The Invasive Species Leadership Team works to maintain a network for the exchange of information on invasive species challenges, lessons learned, success stories, and best management practices. In partnership with the University of Florida's Center for Aquatic and Invasive Plants, the ISLT will host a 7-part webinar series focused on aquatic invasive species.

WEBINARS 2022

Mar 23 2:00 PM EST	**Understanding USACE-ERDCs Aquatic Invasive Research Program Opportunities**	Christine VanZomeren, Ph.D., ERDC Jeremy Crossland, ERDC
Mar 30 2:00 PM EST	**Invasive Aquatic Control Methods**	Benjamin Sperry, Ph.D., ERDC, University of Florida
Apr 6 2:00 PM EST	**Understanding the Pesticide Registration Process**	Jason Ferrell, Ph.D., University of Florida
Apr 13 2:00 PM EST	**"Getting in the Game": The Story of USACE's Non-Federal Reimbursement Program for AIS Prevention and Response**	Jonas Grundman, USACE
Apr 20 2:00 PM EST	**ERDC's Aquatic Plant Management Team: Research Overview**	Bradley Sartain, Ph.D., ERDC
Apr 27 2:00 PM EST	**Proactive Plant Management: Does It Make a Difference?**	Jason Ferrell, Ph.D., University of Florida & Benjamin Sperry, Ph.D., ERDC, University of Florida
May 4 2:00 PM EST	**Aquatic Invasive Management: Myths, Misconceptions, and Frequently Asked Questions**	Invasive Species Leadership Team, Panel of Members

TO LOG IN

Reservations are not necessary, just follow these simple instructions

STEP 1: Join the conference on your computer by using: https://usace1.webex.com/meet/tara.j.whitsel

STEP 2: For best audio quality, have the computer call you!

STEP 3: If joining by audio only, call 1-844-800-2712, access code 199 565 7227 #