



US Army Corps
of Engineers®

Stewardship news

YOUR Thoughts

Volume 2, Issue 4: December 2019

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.

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Your Stewardship HQ Update

POC: Jeremy Crossland, Program Manager for Land Use, HQUSACE, 202-761-4259

The last issue of Stewardship News highlighted numerous invasive species challenges and boundary ideas, among the many great activities our natural resource community is working on. In the upcoming calendar year we hope to bring new policy initiatives to the Environmental Stewardship program to support this great work. A project delivery team (PDT) was formed last fiscal year to support development of an asset management tool for boundary management. USACE manages approximately 38,600 miles of boundary; many of which are challenged by significant pressure from neighboring activities. The team is developing best management practices and tools to rank and prioritize boundary to support this never ending challenge.

Invasive species present another never ending challenge for our projects. These challenges are not limited to just our Natural Resource Management mission but to all of USACE's Operations and Maintenance business lines. The Invasive Species

Leadership Team is working to develop policy to help facilitate appropriated funding toward management of invasive species and less on logistics. Meanwhile the Environmental Advisory Board (EAB) is wrapping up a review of USACE's invasive species management activities, policies, and opportunities. It is anticipated that the EAB will share its findings with MG Semonite in the Spring of 2020 in the form of a white paper. At the same time, with the support of the NRM Branch at HQ and the Water Quality Committee, the EAB will be looking into harmful algal bloom issues at our projects over the next 12-16 months and produce a similar set of recommendations. While not policy related, with the support of the Stewardship Advisory Team, we will continue to offer ENS101 in 2020 and start the development of a more advanced ENS specific training course.

**Looking Forward:
2021 National
NRM Workshop!**
*Get it on your
IDPs now!*

**Thank you all for
your dedication
and hard work
over the past
year! Have a
safe and happy
holiday season!**

**Looking forward:
2021 National NRM Workshop**
Get it on your IDPs now!

Project Spotlight: Bubble Curtains to Assist in Aquatic Invasive Species Management

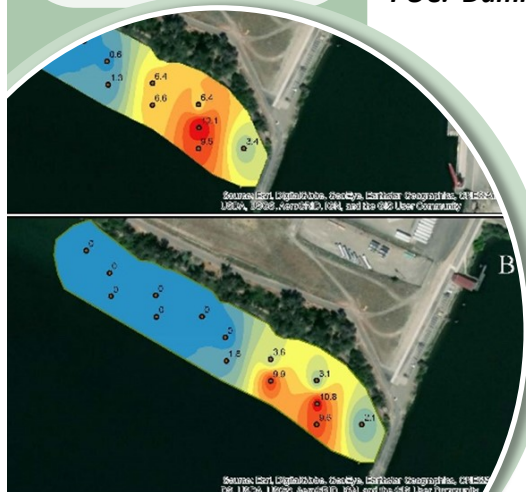
POC: Damian Walter, Damian.J.Walter@usace.army.mil

The US Army Engineer Research and Development Center (ERDC) and the Walla Walla District (NWW) are collaborating to develop and improve control methods for the invasive aquatic plant, flowering rush. The team is evaluating bubble curtains and their utility to reduce water exchange in areas where flowering rush has become established. Limiting water exchange can increase aqueous herbicide exposure times required for effective plant control.

In run-of-the-river reservoir systems chemical treatments are most effective in areas of slow or slack water movement such as coves and/or backwaters. Areas with little water movement allow sufficient herbicide exposure time thus resulting in more successful plant control. By using bubble curtains the team is working to reduce water exchange in high flow areas where efficacious herbicide exposure times cannot be typically maintained.

Article continued on page 4.

Photo Left: Rhodamine wt dye concentrations recorded at Port of Pasco Site #4. The images represent dye measurements recorded in the middle of the water column.





7 i-Tree.

i-Tree is a combination of science and free tools that:

1. Quantifies the benefits and values of trees around the world,
2. Aids in tree and forest management and advocacy,
3. Shows potential risks to tree and forest health.

The tools are based on peer-reviewed, USDA Forest Service Research.

A few tool examples include:

- i-Tree Design (web app) provides parcel level analysis of current and future tree benefits,
- i-Tree My Tree (web app) assess the value of one to several trees in a mobile web browser,
- i-Tree Harvest estimates the amount of carbon stored in harvested wood products. Give it a try and see what you think.



Click here to try the tool.

1 The Utility Arborist Association produced a video on YouTube regarding utility right of way efforts for pollinator habitat.



Click here to access the video!

2 Gardening for Pollinators. The U.S. Forest Service has created a list of helpful tips for creating a pollinator friendly landscape around your home or work place.



Click here for the site.

3 Addressing Incidental Take of Migratory Birds: Opportunities for State Action and Leadership. The Association of Fish and Wildlife Agencies (AFWA) final incidental take report, entitled *Addressing Incidental Take of Migratory Birds: Opportunities for State Action and Leadership* was formally approved by the state fish and wildlife agency directors at the Association of Fish and Wildlife Agencies' annual meeting. The report provides several important tools and resources, including:

- A compilation of existing state laws pertaining to incidental take;
- A memo providing an evaluation of the state law compilation;
- A compilation of Best Management Practices/Guidelines for reducing or avoiding incidental take;
- An evaluation of incidental take threats that states and provinces are addressing;
- Follow up on the top 5 identified threats, including resources for states to better access and inform guidelines and education materials related to those threats;
- An overview of future considerations for addressing incidental take threats to migratory birds.



Click here for more information.

4 Harmful Algal Blooms. If you would like to learn more about Harmful Algal Blooms (HABs), consider subscribing to the EPAs Freshwater HABs Newsletter (a monthly publication). To sign up for the newsletter send an email to epacyanohabs@epa.gov.

5 Hydrilla. The outlet river connecting Lake Panasoffkee and the Withlacoochee River became infested with hydrilla earlier this year. The infestation resulted in significantly reduced water flow from the lake to the river. The reduction of water flow lead to flooding conditions for large acreages (including residential properties) surrounding the lake and outlet river. The Southwest Florida Water Management District called on the University of Florida's Center for Aquatic and Invasive Plants to help manage the situation. In this video, Dr. Benjamin Sperry explains the situation and the tools used to combat the issue. Several USACE Projects and the Invasive Species Leadership Team have had the opportunity to work members of the University of Florida's Team other aquatic concerns.



Click here for more information.

6 eDNA Atlas. An open-access, crowd-sourced database of species occurrence records derived from aquatic eDNA surveys conducted by dozens of natural resource agencies in the U.S. is now available. The eDNA Atlas Project website hosts results for 16,708 species determinations at 11,018 unique stream and river sites (ponds, lakes & spring results coming this winter) and is updated biannually with additional results for a growing list of species. eDNA species occurrence results were processed through the National Genomics Center for Wildlife and Fish Conservation (NGC), a science collaborative within the Rocky Mountain Research Station of the U.S. Forest Service. All field samples were collected using the same standardized field protocol, are properly georeferenced to reaches in the National Hydrology Dataset (<https://www.usgs.gov/core-science-systems/ngp/national-hydrography>), are accompanied by comprehensive metadata, and are easily downloadable as geodatabases using ArcGIS dynamic mapping tools (<https://www.fs.fed.us/rm/boise/AWAE/projects/eDNAAtlas/the-edna-atlas-results.html>). The website also contains contact information for project staff that are willing and able to assist partners in designing new eDNA sample surveys.



Click here to access the atlas.

3 Billion Bird Campaign

Press release provided by 3 BillionBirds.org

A study published on September 19, 2019, in the journal *Science* reveals that since 1970, bird populations in the United States and Canada have declined by 29 percent, or almost 3 billion birds, signaling a widespread ecological crisis. The results show tremendous losses across diverse groups of birds and habitats — from iconic songsters such as meadowlarks to long-distance migrants such as swallows and backyard birds including sparrows.

This is the first study to undertake an accounting of the net population changes across a total of 529 breeding bird species in the United States and Canada. The researchers analyzed birds on a group-by-group basis, allowing them to identify declines among species that use similar habitats. The data included 48 years of data from multiple independent sources, including the North American Breeding Bird Survey and the Christmas Bird Count. A comprehensive analysis of 11 years of data from 143 NEXRAD radar stations showed a similarly steep decline in the magnitude of migration.

The study notes that birds are indicators of environmental health, signaling that natural systems across the U.S. and Canada are now being so severely impacted by human activities that they no longer support the same robust wildlife populations. The findings show that of nearly 3 billion birds lost, 90 percent belong to 12 bird families, including sparrows, warblers, finches, and swallows — common, widespread species that play influential roles in food webs and ecosystem functioning, from seed dispersal to pest control.

Although the study did not analyze the causes of declines, it noted that the steep drop in North American birds parallels the losses of birds elsewhere in the world, suggesting multiple interacting causes that reduce breeding success and increase mortality. It noted that the largest factor driving these declines is likely the widespread loss and degradation of habitat, especially due to agricultural intensification and urbanization.

Other studies have documented mortality from predation by free-roaming domestic cats; collisions with glass, buildings, and other structures; and pervasive use of pesticides associated with widespread declines in insects, an essential food source for birds. Climate change is expected to compound these challenges by altering habitats and threatening plant communities that birds need to survive. More research is needed to pinpoint primary causes for declines in individual species.

NRM Community—We want to hear from you! Previous issues of Stewardship News have included articles regarding USACE efforts to aid Whooping Cranes and Least Terns (Interior Population) - but we know there is so much more. Please consider sharing the efforts of your project regarding bird conservation.

Stories may be sent to Tara Whitsel at Tara.J.Whitsel@usace.army.mil.

Where Are The Worst Losses?



Forests alone have lost **1 billion birds** since 1970.



Grassland birds are also hard hit, with a **53% reduction** in population—more than 720 million birds.



Aerial insectivores—birds like swallows, nighthawks, and flycatchers—are **down by 32%**, or million.



Coastal shorebirds, already at dangerously low numbers, lost **more than 1/3** of their population.



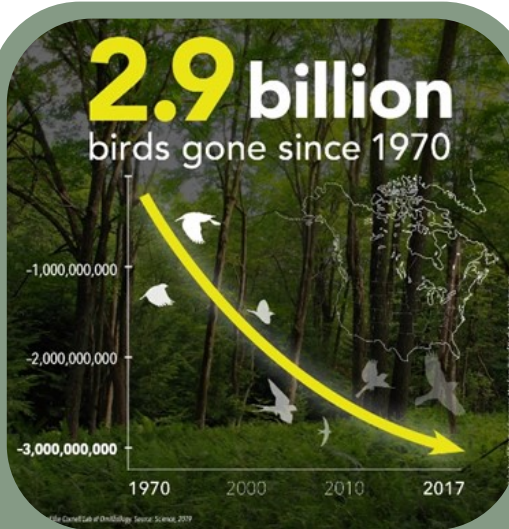
The volume of spring migration, measured by radar in the night skies, has **dropped by 14%** in just the past decade.



Want to read the full report? Click here!



Visit 3 BillionBirds.org for more information. Click here!



Grassland Birds

720 MILLION
GRASSLAND BIRDS
LOST SINCE 1970

-53%
POPULATION LOSS
IN GRASSLAND
BIRDS SINCE 1970

3 IN 4

EASTERN MEADOWLARKS
LOST SINCE 1970



Migratory Birds

2.5 BILLION
MIGRATORY BIRDS
LOST SINCE 1970

-28%
POPULATION LOSS
IN MIGRATORY
BIRD SPECIES
SINCE 1970

2 IN 5

BALTIMORE ORIOLES
LOST SINCE 1970



Credit: Cornell Lab of Ornithology



Photo Above: Black Capped Chickadee. Photo Right: Cedar Waxwing. Photos provided by Alicia Palmer—Raystown Lake.

Bubble Curtains Continued

Currently, the team is measuring bulk water exchange processes at multiple locations within the McNary Pool of the Columbia River and evaluating the effectiveness of the bubble curtain using an inert fluorescent dye. The dye is resistant to absorption by plants and sediments and can be monitored and quantified *in situ* using fluorimeters. Following application, dye levels are measured throughout the site as a means to determine a whole plot water-exchange half-life (to simulate aqueous herbicide exposure in the plot). Dye studies performed with and without bubble curtains can be compared to determine any increases in water exchange, and how the data can be used to enhance herbicide applications.



Flowering Rush

Flowering Rush is a reed-like wetland plant with pink flowers. It is a perennial plant that grows 1 to 4 feet high along the shore in shallow, slow-moving water. In deeper water, it can grow in a submerged form that does not produce flowers. Native to Europe and Western Asia the species was unintentionally introduced into the US through the discharge of contaminated cargo ship ballast water. Flowering rush is primarily spread through movement of water-related equipment and illegal release of water garden plants into public waters.



Photo Above: Pictures of bubble curtain post dye treatment to determine water exchange rate. **Photos Left and Right:** Pictures from manufacturer *Canadianpond.ca* of the bubble curtain.

Based on preliminary results, bubble curtains have shown promise as a tool to reduce water exchange. Data generated from these evaluations will lead to refinements of how this innovative technology is utilized to diagnose and improve the management of invasive aquatic plants.

ERDC researchers on this subject are Dr. Kurt Getsinger and Dr. Bradley Sartain.




DoD Partners in Amphibian and Reptile Conservation (DoD PARC)

In support of precluding at-risk species on DoD lands from becoming Endangered Species Act listed, DoD PARC and the US Fish and Wildlife Service developed the attached report Recommended Best Management Practices (BMPs) for the Wood Turtle. The management practices described in this

document are intended to serve as guidelines that DoD natural resource managers can use to help plan, prioritize, and implement conservation and management actions that provide a conservation benefit to the wood turtle.

Not in the wood turtle range? The DoD PARC website provides species factsheets, BMPs, and a lot of very helpful information. Take a minute to visit the site!

 [Click here for more information.](#)



Department of Defense Legacy Resource Management Program

Recommended Best Management Practices for the Wood Turtle on Department of Defense Installations

Department of Defense Partners in Amphibian and Reptile Conservation



October 2019

Florida and Oregon Team Up to Fight Invasive Species

POC: Doug Swanson, Douglas.C.Swanson@usace.army.mil

Jacksonville District formed an unlikely partnership with staff members from the Portland District to develop a revolutionary approach to invasive species management. Smart phones, cloud storage, and innovation now supplement Jacksonville's machetes, air boats and tenacity in the fight against invasive species.

This unlikely partnership came together with hurricane force wind in September 2017 when Hurricane Irma roared across Florida. Douglas Swanson, a Geographer from Portland District's GIS, CADD & Mapping Section and a GIS Cadre Action Officer for Emergency Response, deployed to Jacksonville, Florida to support the Blue Roof Mission. In the hustle and bustle of setting up an EM field office, employees found workspace anywhere they could. Mr. Swanson was randomly seated next to Jessica Spencer, an Invasive Species Biologist in Jacksonville's Invasive Species Management Branch who volunteered to help in the Emergency Call Center. Working long hours, seven days a week, the two discussed their fields of expertise and soon realized that GIS technology could provide solutions to biologist field woes. With the support of Jon Lane, Chief of the Invasive Species Management Branch and a firm supporter of technological innovation, the new alliance was ready to make landfall.

Invasive Species Biologists have their hands full in the field, quite literally. Cameras, GPS units and notebooks are needed to record information, all the while, saws, spray bottles, and shovels are used to treat and remove unwanted plants. Add safety gear, phones, water and the task at hand only becomes more challenging.

Who's Ready ⁵ for Earth Day 2020?

Did you know that 22 April 2020 will be the 50th Anniversary of Earth Day? The Earth Day Network (earthday.org) has designated this year's environmental priority as "Climate Action".

The first Earth Day, 22 April 1970, is credited with launching the modern environmental movement. The annual event is now recognized as the planet's largest civic event!

We want to know what your project is doing for Earth Day. Send your event information to CorpsLakes@usace.army.mil to get it posted on the Corps Lakes Gateway.

Pre-determined drop-down lists created within the GIS data to facilitate quick and easy species ID in the field.

Symbology was an important part to help identification. The pink dot represents salt-cedar as the flowers of the plant are pink.

Once the species has been identified, additional data is collected, like Condition.

Accessing the camera through the app ties photos directly to the data

Management action is recorded as well as behind the scenes auto-population info like Date and Field Observer.

Coordination with regional standards were vital and Records can be shared

Graphic Above: Storyboard depicting the ArcCollector App and process. Photo Bottom Right: Jessica Spencer, ISM Branch Biologist, locates an invasive species (salt-cedar) during field testing.



Stewardship Advisory Team

I'm Rocky Millenbine, Chair of the Stewardship Advisory Team (SAT). The SAT is a team of USACE employees within the Environmental Stewardship (ENS) Program that meet bi-annually to discuss hot topics within ENS and to advise HQ on emerging issues and trends.

The team consists of each Division's Recreation Major Subordinate Command (MSC) and a field or district representative from each Division.

The most recent meeting took place in November 2019 in Washington DC along with the Recreation Leadership Advisory Team (RLAT) meeting. Some of the topics discussed were creating an enterprise process for Shoreline Management, Master Plan progress and documentation in NRM Assessment, Boundary Management and Encroachments including the movement towards a subject Operational Condition Assessment (OCA), NRM Assessment, the Invasive Species Program and the success of the ENS 101 course.

If you would like to know more about the SAT Team or the topics discussed please feel free to reach out to myself or your Division SAT Representative.

Fight Invasive Species Continued

Post field work involves Air Gap computers, coordinating GPS points with log book entries and trying to identify which photos correspond to what record and point. Building a database for reporting and analysis becomes burdensome.

The Solution. Arc Collector, a GPS based app on a smart phone is used to record field surveys. Using the smart phone's camera, internal GPS and network capabilities, it's an all in one, already present, package. Associated cloud based storage allows data to upload automatically, with location, photos and field notes all waiting on the cloud for immediate viewing back at the office.

Collaboration is Key. Biologists know what they need and geographers know the technical capabilities. The two worked together to generate pre-determined drop-down lists (pick-lists) based on field workflow that facilitates plant removal by streamlining enhanced data collection. Using the App, the biologist identifies the species then selects it from a pick-list. They then identify the plant condition and management action, both from a pick-list. (Pick-lists ensure more detailed data is collected faster and with more fidelity). Behind the scenes, location Date and Field Observer are automatically recorded and a track log shows absence/presence. Accessing the camera through the app ties photos directly to the data. Take a photo or two and submit the record. If cellular or Wi-Fi coverage is available it's instantaneous and if not, all records are stored on the phone, so working in remote locations does not impact collection efforts.



Photo Above: Douglas Swanson and Tim Harris field test the Aquatic version of the Application.

Coordination with regional invasive species management standards was vital and efforts were coordinated with Chuck Barger (University of Georgia). Tests were conducted to ensure database compatibility with EDDMapS (Early Detection and Distribution Mapping System), a web-based database for documenting invasive species distribution.

The success of the terrestrial effort brought Mr. Swanson back to Jacksonville District to work with Ms. Spencer as well as Tim Harris, Supervisory Biologist at the Palatka Field Office, Invasive Species Management Branch, to create an aquatic version of the

app. To date there are over 600 records.

Sharing these successes has generated Corps-wide interest. Spreading the word at the Innovations in Invasive Species Management Conference, webinars and at Invasive Species Leadership Team meetings is having an effect, with biologists from Hawaii to Pennsylvania acquiring the materials to modify the App for their local plant species.

There are now plans to tie Collector records with both EDDMapS and OMBIL, (Operations and Maintenance Business Information Link), a database that requires Corps Projects to justify project funding but only collects annual data totals, with no geospatial component. There is also an effort to identify minimum standards for consistency USACE-wide is also a critical step that is being taken.

As we work toward compatibility and continue to educate and promote these innovative tools, they are still used every day in the field in Jacksonville District. Unlike the hurricane that brought this unlikely partnership together, the results are positive, culminating in a storm surge of innovation.

Note. An extensive Standard Operating Procedure and associated materials are available by contacting Douglas Swanson at doug.c.swanson@usace.army.mil or Jessica Spencer at Jessica.e.spencer@usace.army.mil

The Great Outdoors Fund

POC: Heather Burke, Heather.D.Burke@usace.army.mil

The Great Outdoors Fund (TGOF) is a new, national non-profit that was established to unleash private sector capital to improve recreation infrastructure and access to the great outdoors. **USACE is an ELIGIBLE partner!**



 **Click here for information on the NRM Gateway (including the Proposal Form).**

TGOF will seek funding for projects to improve recreation infrastructure, access, and habitat. In addition to facility and **habitat enhancements**, grants may be used for education/outreach, monitoring/evaluation, and research.

TGOF has created a unique database (dB) for local, state and federal agencies, and nonprofits partners, who can populate **The Fund dB** with recreation/habitat related projects that will undergo a merit-based evaluation in order to become eligible for public crowdfunding campaigns on TGOF's forward-facing website.

We would like you to consider submitting a project proposal. First, request access to The Fund dB by sending an email to lori@thegreatoutdoorsfund.org. It is recommended that you complete the Word document "Project Template for the Fund dB" before submitting your project to the database, as it has all the required information you will need to include. The Form and additional

**ERDC
University**

 **Click here to access the Great Outdoor Fund Website!**

POC: Patrice Creel, Patrice.Creel@usace.army.mil

ERDC University offers the opportunity for (non-ERDC) USACE employees to apply for a cross-command developmental assignment to ERDC. Participants serve as a member of an interdisciplinary Research and Development team reporting to Lead Project Managers and/or R&D Direct Program Managers. The goal of the program is to provide USACE employees the opportunity to serve on a research and development team working on real-world solutions; and transition technologies throughout USACE to strengthen the technical knowledge base. The program offers a 6 month detail (not to exceed 179 days) from February—July of each year. GS 07—GS 13 are encouraged to apply. The employee's home-duty station will provide for labor or travel/per diem costs but not both. While the application period for 2020 will be open until December 24th it is not too early to think about this opportunity for future years and ensure it is on your IDP.

 **Click here to learn more about ERDC U!**

Photo Right: Walla Walla District Biologist Damien Walter, right, recently graduated from ERDC University, in ceremonies held at the headquarters in Vicksburg, Mississippi. Joining in the ceremony were, from left, ERDC Environmental Lab's Dr. Kurt Getsinger, who served as one of Walter's mentors; and then ERDC Commander Col. Ivan Beckman. Walter's ERDC U project centered on extensive research for invasive plant prevention and eradication during his six month ERDC-U session.



Walla Walla District Biologist Walter Graduates from ERDC U

Challenges of Flowering Rush

"I developed a better understanding of the biology of the invasive plant species, Flowering Rush, through various plant competition studies and induction study development. I gained a better understanding of the development of biological controls and plant response factors that I was not aware of prior to my time at ERDC," said Walla Wall District Biologist Damien Walter about his six-month developmental opportunity as a student selected for the Engineer Research and Development Center's outreach program, ERDC University.

"The research work I performed has provided tools and knowledge I am able to bring back and share with state and other district partners to aid us in managing not only Flowering Rush, but all invasive plant species we are starting to encounter. I am sharing the experience I had, the opportunity to perform research relevant to the work I do and the great atmosphere at ERDC in all the labs I got to visit. I am highly recommending that others consider doing this detail and experience the resources of ERDC."

