



Stewardship

news

YOUR Thoughts Volume 2, Issue 1: March 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.

Managing Editor:
Tara Whitsel.

Tara.J.Whitsel@usace.army.mil

Your Stewardship HQ Update

**POC: Heather Burke, Acting Env. Stewardship
Business Line Manager, HQUSACE, 202-761-4704**

As I wind down on my final month serving as the HQ ENS business line manager, I'd like to thank all in the NRM community who provided their support and patience as I delved back into the world of budget development. FY 20 is shaping up to be another good year for the ENS program with a total combined value of \$124 million in the President's Budget for O&M/MRT funds to support ENS functions, the highest historical budget we've received for ENS. In particular, we received a significant increase in funds for Master Plan updates and boundary packages.

With my regular role as the National Partnership Program Manager, it is great to see the importance of partnerships to the ENS program highlighted in this newsletter. Whether it is working with state or federal agencies, universities, the military, ERDC, or other Corps districts with specific areas of expertise, partnerships are key to the success of the ENS program and will continue to help us leverage our annual ENS appropriated funding.

Editor's Note

National Invasive Species Awareness Week was held February 25-March 3 to raise awareness and identify solutions to invasive species issues at local, state, tribal, regional, and national scales. This issue of Stewardship News highlights many efforts from around the Corps to identify and minimize the detrimental effects that invasive species pose to our natural biodiversity.

Please remember that anyone can request use of the Traveling Trunk from the Invasive Species Leadership Team. This trunk is easy to borrow and is full of great hands-on examples of many of the most common species that impact our lands and waters. Visit the Gateway for a request form!



Project Spotlight: Hydrilla Invasive Plant Control U.S. Army Corps of Engineers Partners with Juniata College

Article proved by: Shaina Souder, Public Affairs Specialist, Buffalo District

In early October, several technical experts from the Corps' Buffalo District and Baltimore District, with the help of Juniata College students, surveyed aquatic plants in Raystown Lake with a focus on hydrilla (*Hydrilla verticillata*).

"Establishing that long-term relationship with the college and the Corps of Engineers as a whole, not just Buffalo District, is important," said Michael Greer, Buffalo District Regional Technical Expert. "The Corps relationship with Juniata College is a perfect example of how we attract the best Science Technology Engineering Mathematics (STEM) talent through university outreach programs."

The 2018 Raystown Lake aquatic plant survey was not only to document the types of plants currently living in Raystown Lake, but was also used as a means to empower multidisciplinary teams by sharing technical expertise.

Photo: Students from Juniata College sift through lake sediment to identify the presence of tubers formed by the hydrilla plant. Article continued on page 4.





Have YOU Heard of eDNA?

2

POC: Richard Lance, PhD, Leader: Conservation & Ecological Genetics Team
Environmental Processes Branch, richard.f.lance@usace.army.mil, 601-634-3971

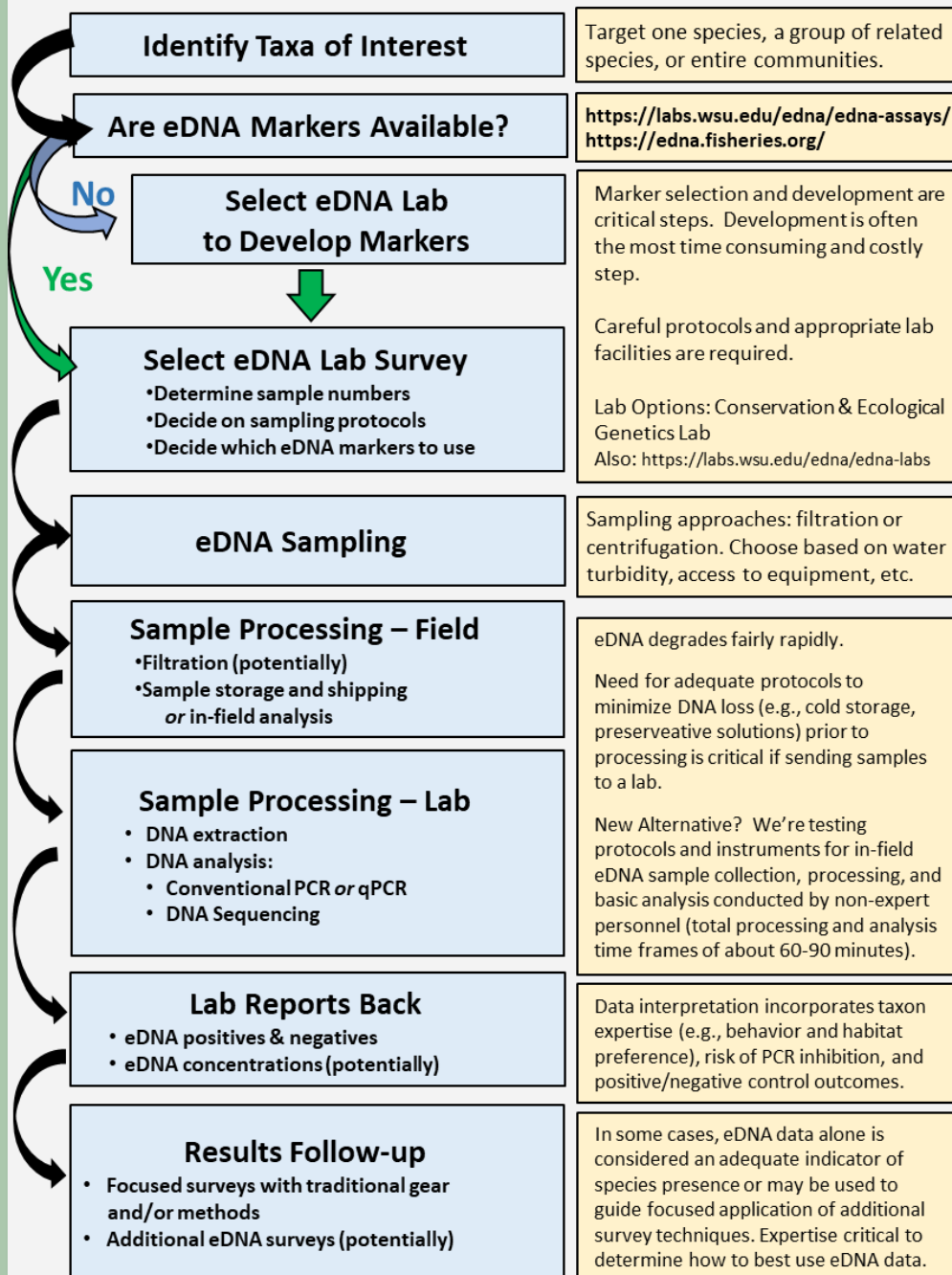
All organisms constantly shed minute traces of DNA into their respective environments – whether that genetic material is found in hair, scales, blood, biological wastes, etc. Forensic science is famous for making use of these minute DNA traces to track down bad guys and solve complex criminal cases. Similar methods are now being used to analyze DNA traces left behind by both bad guys (invasive species) and good guys (threatened or endangered species) in aquatic environments. New approaches based on detecting these traces of “environmental DNA” or “eDNA” in wa-

Photo Top: ERDC technicians collect water samples from the lower Mississippi River for eDNA studies targeting invasive black carp.

ter samples are proving to be highly sensitive methods for determining whether rare or difficult-to-observe species may be in present at a locale. In addition to their sensitivity, these methods are appealing because samples can be as simple as a scoop of water, can be tested for more (many more) than one taxon, and can be stored for long periods of time. Consequently, interest in eDNA as an environmental management tool has boomed. In the last 10 years, following the seminal paper on eDNA detections of invasive bullfrogs in France, dozens, if not hundreds, of different invasive, threatened, endangered, at-risk, or keystone species have been the subjects of eDNA surveys and several hundred scientific articles on eDNA have been published.

However, eDNA approaches are not quite as simple as they may seem. Corps researchers with the US Army Engineer Research & Development Center’s Environmental Laboratory (ERDC) have been at the forefront in understanding eDNA methods, data, and utility. Dr. Richard Lance’s Conservation and Ecological Genetics Team (CEGT) was first brought on-board in 2010 to help the Corps understand eDNA data pertaining to invasive bighead and silver carp in the Chicago Area Waterway System. The team had to process and analyze hundreds of water samples from this system for the presence of eDNA from those two harmful invasive species. At the same time, ERDC teamed with partners from the US Geological Survey and US Fish & Wildlife Service to conduct a large research effort, the eDNA Calibration Study, which tackled a wide range of questions about the movement of aquatic eDNA, its degradation, sources of false positive results, the potential for false negative results, the relationship between concentrations of eDNA and invasive carp numbers or biomass, how eDNA can be used to inform decision-making, etc.

Basic eDNA Work Flow



eDNA

Article continued from page 2.



Photo Above: ERDC technician filtering water samples as part of bighead and silver carp eDNA monitoring.

Over time, CEGT has continued to conduct a wide-variety of eDNA studies. A two-pronged study was developed by CEGT, biologists from Joint Base Elmendorf in Richardson, AK, and other ERDC partners. Part one of the study surveyed installation lakes for invasive northern pike that prey on young salmon, a critical food source for protected Beluga in bays downstream of the installation. Part two of the study involved developing eDNA markers for invasive populations of western and Canadian waterweed, an emerging problem across Alaska. ERDC worked with installation personnel to procure a number of water samples pre- and post-rotenone treatment of lakes and eDNA results helped demonstrate that pike had been eradicated.

One of the most exciting projects the CEGT has been involved in has been forming and leading an informal multi-agency working group called the Government eDNA Working Group (GEDWG). GEDWG is comprised of eDNA scientists from many different federal, state, provincial, and local agencies, and is focused on making sure that best practices, lessons learned, and new advances are quickly communicated among eDNA practitioners. GEDWG has sponsored two very successful eDNA technical exchange and training workshops and is planning for another later this year.

CEGT is always on the look-out for new opportunities to conduct eDNA studies -- to expand the range of species, systems, and habitats to which eDNA has been applied, to find new ways to use eDNA to answer important questions, and to learn the lessons that come from each new study. More importantly, Dr. Lance's team is focused on demonstrating different ways in which eDNA can be used to help the Corps meet its critical flood control and other missions. If you think that you might be interested in learning more about eDNA, or are interested in potentially working with CEGT to conduct eDNA studies or research on your project, please contact Dr. Richard Lance (601-634-3971; richard.f.lance@usace.army.mil) or Ms. Denise Lindsay (601-634-2362; denise.l.lindsay@usace.army.mil).

Fighting Zebra Mussel Infestation at Glenn Cunningham Lake



POC: Heath Kruger, Natural Resources Chief, Omaha District, 402-995-2716

On July 3, 2018, the Nebraska Invasive Species Program Coordinator notified Omaha District that Cunningham Lake in Omaha tested positive for zebra mussels. The proposed treatment method outlined in a draft EA included drawing the lake down during the fall and winter months of 2018 into 2019 to freeze the zebra mussels and applying rotenone in the remaining pools to control common carp. Once the lake refills, Nebraska Game and Parks Commission would restock the lake with a variety of desired sport fish to include hatchery-sized, one-year old and adult-sized fish. Here is the summary:

WHO: USACE; City of Omaha, NE; Nebraska Invasive Species Program; Nebraska Game and Parks Commission (NGPC).

WHY: Stay ahead of population spike and potentially eradicate zebra mussels and control population of common carp that is detrimental to both biodiversity of the lake and desirable sport fish species that draw anglers to Cunningham Lake.

WHAT'S NEXT: Public comment on an EA closed October 17, 2018. Public input will help facilitate the closure schedule and facilities to cordon off. From public input received so far, the City of Omaha is working on a plan to keep trails open around the lake.

Campgrounds

Join us for a Cunningham Lake Open House for more information on the status of Glenn Cunningham Lake.
Tuesday, January 8th
6:00pm-8:00pm
Camelot Community Center, 9270 Cady Avenue

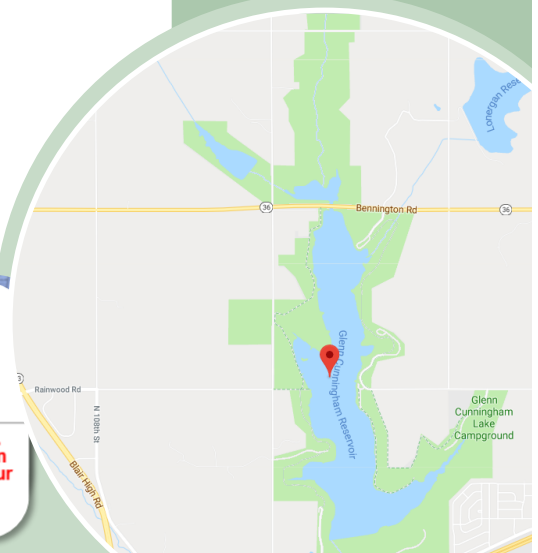
Glenn Cunningham Lake's campground is closed for 2019 until further notice. Currently, the lake is undergoing draining from the Zebra Mussel infestation in 2018. Improvements will also be made to the campgrounds. Thank you for your patience and understanding.

Glenn Cunningham Lake - CLOSED

Glenn Cunningham Lake

Glenn Cunningham Lake is a 390 acre reservoir with 1,050 acres of land located in Omaha, Nebraska. The Papillion (Papio) Creek Projects consist of Glenn Cunningham, Standing Bear, Zorinsky and Wehrspann Lakes and Dam. The Corps built the dams and developed the initial recreation plan as part of the Papio Creek and Tributaries Lakes Project. The Corps cooperates with other agencies to manage and protect the natural resources of these lakes and surrounding lands. The Corps leases all but one of its Papio Creek Reservoirs to the City of Omaha.

Graphic Below: City of Omaha Park website announcing park closure while zebra mussel treatment is underway.





2019 Land Manager's Guide to Developing an Invasive Plant Management Plan (Guide)

The 2019 Land Manager's Guide to Developing an Invasive Plant Management Plan (Guide) has been released. The Guide focuses on the process of invasive plant management planning and deciding how to focus limited invasive species management resources to gain the greatest conservation benefit. It is applicable at any scale and in any situation wherever invasive plant management is necessary. It is intended to promote a strategic and adaptive invasive plant management approach using the best available information and following the time-tested principles of integrated pest management. The Guide does not address specific policies and regulations because these can differ widely across agencies and organizations. Rather, it informs a manager as to critical points in the planning process when policies and regulations should be considered.

Development of this Guide was led by the U.S. Fish & Wildlife Service's Pacific Southwest Region, Inventory and Monitoring Initiative and the California Invasive Plant Council (Cal-IPC).

A pdf of the guide will be posted on the invasive species page of the NRM Gateway.

Buffalo District educated Baltimore District Park Rangers and Juniata College students and professors so they can perform the aquatic plant surveys and data collection independently.

"The collaboration with the Corps provides the unique opportunity to teach Juniata students with meaningful hands-on experience in the field they are working towards," said Professor Chuck Yohn, Juniata College Raystown Field Station Director. "In addition to the knowledge that they were contributing to visibly important conservation work, the students especially appreciated the accumulated wisdom, networking and employment advice that came from working side by side with resource professionals. Such experiences are potent learning opportunities for students as they begin to launch careers in conservation fields."



Photo Left: Francesca Ferguson, a student at Juniata College, identifies an aquatic plant with the assistance of Mike Greer, Buffalo District.



Photo Right: Dr. Chuck Yohn, Juniata College, identifies aquatic plants with Raystown Lake Park Ranger Jacob Homan during the Hydrilla study.

Hydrilla is a non-native invasive aquatic plant that, if left untreated, will crowd out native vegetation, diminish the habitat available for fish and wildlife, and impede boating and recreational use of the waterway. Management of Hydrilla, within the Buffalo District and neighboring areas, is especially important to order to minimize the spread of hydrilla from localized areas within the Great Lakes basin and to reduce the risk of new introductions from adjacent watersheds occurring.

The Corps of Engineers Aquatic Plant Control Research Program is authorized to treat hydrilla under Section 104 of the River and Harbor Act of 1958. When hydrilla was found in Raystown Lake, the Corps' National Invasive Species Team decided it was best to utilize the Buffalo District's technical experts coupled with their collaborators at U.S. Army Engineering Research and Development Center (ERDC) and the University of Florida.

"We have developed a lot of technical experts on hydrilla," said Michael Greer, Buffalo District Regional Technical Expert. "Outside of Jacksonville and maybe New Orleans districts, Buffalo has become a leader with the capabilities and know-how to eradicate the invasive plant."

Buffalo District performed the first aquatic plant survey with Baltimore District and Juniata College on Raystown Lake in the fall of 2017 to determine the extent of the hydrilla infestation and provide a baseline for the species richness of submerged aquatic plants and their relative abundances. In addition, hydro-acoustics were collected which provide detailed bathymetry and enable quantification of the volume of plants in these nearshore areas. All of this information will be helpful in developing an invasive species management plan for hydrilla.

Raystown Lake, located in central Pennsylvania, is an 8,300 surface acre lake surrounded by nearly 21,000 acres of forested mountain slopes. Constructed from 1968-1974, Raystown serves as a multi-purpose lake for flood control, recreation, fish & wildlife preservation, and mitigation/augmentation of water quality.

In an effort to raise awareness regarding the spread of hydrilla throughout the region, Buffalo District experts have been actively surveying and assisting/educating sister districts and other agencies in the control of hydrilla. Specifically, the team has conducted research at Pymatuning Lake which borders Pennsylvania and Ohio and is within a 3 hour drive from Raystown Lake.

Photo Top Left: Students from Juniata College work with regional experts from the Buffalo District to pull sediment samples from Raystown Lake in an effort to identify tubers produced by hydrilla.

Some Interesting Articles/Links:



① First Comprehensive List of Non-Native Species Established in Three Major Regions of the United States. The list contains 11,344 unique names: 598 taxa for Alaska, 5,848 taxa for Hawaii, and 6,675 taxa for the conterminous United States. USGS Open-File Report 2018-1156.

<https://doi.org/10.3133/ofr20181156>

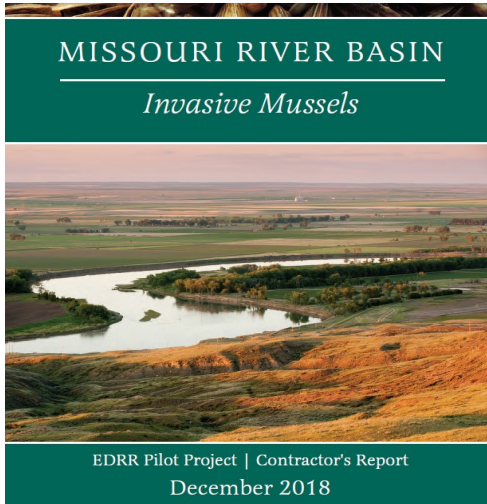
② Missouri River Basin: Invasive Mussels
Funded by the National Invasive Species Council this Contractor's Report provides an overview and evaluation of the multi-stakeholder initiative established in response to the first detection of invasive Dresseinid mussels in Montana."

https://www.doi.gov/sites/doi.gov/files/uploads/misouri_river_basin_invasive_mussel_contractors

③ Partners in Amphibian and Reptile Conservation 2018 Annual Report. This report demonstrates the efforts with DoD PARC, in support of military readiness, that contribute toward the larger conservation efforts of the National PARC network.

<http://parcplace.org/about/annual-reports/>

Additionally, DoD is the first federal agency to complete an agency-wide inventory of herpetofauna. The document, published in the Journal of Herpetological Conservation and Biology, supports military readiness by identifying common and at-risk amphibian and reptile species (confirmed and unconfirmed) on over 400 military sites. It also promotes healthy landscapes that support long-term testing and training requirements, and helps to develop proactive, science-based conservation and management strategies and partnerships. This in turn helps DoD avoid mission restrictions and increases mission flexibility.



Salamander Chytrid Fungus Risk Assessment on Department of Defense Installations

Bsal or salamander chytrid fungus) has caused significant die-offs of salamanders in Europe. Most experts believe that it is likely that this disease will be introduced into the U.S., which supports the greatest diversity of salamander species in the world. Based on a DoD herp inventory database, DoD installations in the continental U.S. support 83 species of salamanders on approximately 200 DoD properties.

Photo Bottom Right: Piping Plover eggs. Photo credit to John Pribilla, New England District



TEST

The USACE Threatened and Endangered Species Team (TEST) announces the launch of their new website.

<https://test.el.erdc.dren.mil/index.html>

The site is intended to be a resource and repository for a wide variety of tools, publications, information, and resources regarding federally listed species with a nexus to Corps projects.

The next big effort will be to finish development of a searchable clearinghouse for Biological Opinions, and include detailed profiles for 25 or more species.

Please visit the site and provide feedback on how the site can be more useful to you. Any and all suggestions are welcomed and should be sent to:

Richard A. Fischer, Ph.D.
Lead, USACE Threatened and Endangered Species Team
ERDC

Environmental Laboratory
Richard.A.Fischer@erdc.dren.mil



ENS 101: Class 1 Complete!

POC: Tara Whitsel, Natural Resource Specialist, 814-641-3080

The pilot offering of ENS 101 was held January 29-31, 2019 at J. Percy Priest Lake, TN located in the Nashville District. The objective of this course was to provide an introduction to the guiding principles of the Corps' environmental stewardship program. The course provided employees a foundation in the principles of natural resource management, regulations and laws that guide the program, and awareness of the resources available to support management of an ENS activities at the project level.

The concept of this course development was initiated by the Stewardship Advisory Team (SAT). It has long been recognized that new personnel entering the Corps (at Civil Works Projects) as Park Rangers receive Visitor Assistance Training. However, those personnel entering the Corps as Natural Resource Specialists whose primary responsibilities relate to the stewardship of USACE lands and waters typically only receive project specific on-the-job training.

A total of 26 students, from 6 divisions (11 Districts and ERDC) participated in the class with almost 75% of the class having less than 7 years of work experience with the Corps. During the 3 days of instruction, students were introduced to a wide variety of focus areas within the ENS program such as: master plans, special status species and invasive management, shoreline and outgrant management, and fish, wildlife and forest management to name a few. A total of 23 different classroom sessions were provided along with 4 field site visits. The field exercises included hands-on demonstrations of boundary, outgrant, special status species, and invasive species management. Upon conclusion of the course, 100% of the students either strongly agreed or agreed that the training provided them with skills or concept understanding that will allow them to do their job better.

An after action review with the instructor team resulted in the following: Goal A) provide 2 training classes per year as long as a minimum of 15 students register to attend, Goal B) continue to provide training classes at field operating projects (or within close proximity) to maximize field session opportunities which provide "real life" "hands-on" examples. Goal C) continue to provide in-depth and engaging discussion through case studies to develop the skill set needed to plan and execute local, regional, and national agency initiatives.

Future classes: August 19-22, 2019 at Saylorville Lake (MVD) and February 3-6, 2020 at J. Strom Thurmond Lake (SAD). Class announcements and registration instructions are being distributed by MSCs and have already been posted on the NRM Gateway. You may also contact Tara Whitsel through email at Tara.J.Whitsel@usace.army.mil for more information.



Photo Above: Students and instructors of the first ENS 101 Class held 29-31 January 2019 at J. Percy Priest Lake, TN (Nashville District, USACE).



ENS 101

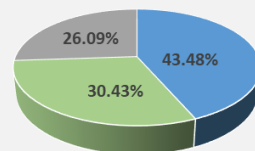
During ENS 101 students and instructors had the opportunity to participate in a field session that focused on the management of special status species, specifically the streamside salamander (*Ambystoma barbouri*). The streamside salamander is a species of mole salamander from North America, occurring in several Midwestern states. Conservation status of the species is listed as imperiled in Tennessee, critically imperiled in West Virginia, and near threatened globally. J. Percy Priest staff work with researchers from the Tennessee Natural Heritage Program in conservation of the species.



Photo Top: Students in ENS 101 examine the habitat of the streamside salamander with zoologist David Withers of the Tennessee Natural Heritage Program.

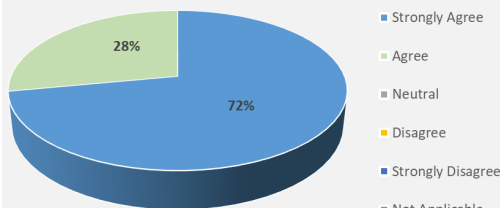
Photo Bottom: Mike Champagne (Lead Ranger at Waco Lake), an instructor for ENS 101 displays the streamside salamander he located during a field session in ENS 101.

How long have you worked with the USACE?



■ 0-3 Years ■ 3-7 Years ■ 7-12 Years
■ 12-20 Years ■ 20+ Years

This course gave me skills or concept understanding that will allow me to do my job better.



■ Strongly Agree
■ Agree
■ Neutral
■ Disagree
■ Strongly Disagree
■ Not Applicable