USACE Natural Resource Management Crustaceans



Purpose

As the manager of over 12 million acres of public lands and waters, the U.S. Army Corps of Engineers (USACE) works to manage and conserve natural resources while providing quality outdoor recreation experiences to the public. USACE employs both passive and proactive management which sustains healthy ecosystems, promotes vibrant biodiversity, and protects special status species. The following factsheets were developed by USACE's Natural Resources Management (NRM) Program in order to highlight species specific conservation efforts occurring at USACE projects.



Across USACE's projects there are over 300 unique, federally listed species for which conservation concerns exist. USACE expenditures relating to the Endangered Species Act average around \$230 Findangered Species Act average around \$230 million each year. Recognizing that USACE missions occur in a complex environment of regulations, compliance requirements, and high costs, the Engineering Research and Development Center (ERDC) and USACE Headquarters formed the Threatened & Endangered Species Team (TEST). TEST works to accelerate the development of solutions for threatened and endan-gered species issues that will improve budget planning capabilities and

gered species issues that will improve budget planning capabilities and operational flexibility to reduce future costs and adverse impacts to USACE mission execution. These factsheets are intended to complement the TEST initiative by highlighting unique project efforts and promote collaboration.

As part of this effort, the NRM based factsheets also highlight species which are not federally listed. A goal of the NRM program is to maintain a factsheet for each species reported annually through the NRM Assessment and those for which special conservation efforts at lake and river projects are ongoing. Often these species may be listed at the state level, in State Wildlife Action Plans, or are target species for specific conservation initiative(s).



Vernal Tadpole Shrimp

Conservation occurs in a multifaceted, ever-changing set of circumstances which may challenge project-level efforts. For instance, unpredictable changes in temperature and precipitation stemming from climate change will likely influence species' distribution. This complicates planning for future impacts as species may emigrate from, or immigrate to, the project in unpredictable fashions. Similarly, habitat loss, degradation, and fragmentation on lands surrounding USACE projects will influence species' abundance and distribution at the local scale. Changes in habitat and climate may also allow for the increased spread of non-native, invasive species which have the potential to degrade habitat past the point of usability for a species. Funding can also be a hurdle to conservation efforts, as it fluctuhurdle to conservation efforts, as it fluctuates with fiscal years.



What's going on in this photo? Find out

where this image was taken on page two of the Mammoth Cave Shrimp sheet!

Photos: Vernal Tadpole shrimp (Doug Wirtz, University of California), Guyandotte River crayfish (Casey Swecker, Marshall University), Conservancy fairy shrimp (Doug Wirtz, University of California)

These factsheets have been informed by information available from the U.S. Fish and Wildlife Service, the U.S. Geological Survey, various colleges and universities, and the NatureServe Explorer.

Natural Resource Management (NRM)

This fact sheet has been prepared as an unofficial publication of the

U.S. Army Corps of Engineers (USACE). This online publication is produced to provide its readers information about best management practices related to special status species. 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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Crustacea is a group of invertebrate animals with around 45,00 species worldwide and includes well known species such as crabs, lobsters, shrimps, and wood lice. Crustaceans are often fully aquatic, but not always. Even for the species of crustaceans which are not fully aquatic, aquatic or moist habitats are necessary some portion of the time. Some characteristics which distinguish Crustaceans from other arthropods include paired appendages near the mouth which function as jaws as well as having two pairs of appendages in front of the mouth. (Encyclopedia Britannica) Due to crustaceans dependence on water, they are impacted by factors which decrease water quantity and/or degrade water quality. (USFWS)



Photo: A Big Sandy Crayfish specimen being held by a USFWS researcher.

USACE is one of the nation's largest water management agencies with hundreds of lake and river projects. These projects are often home to crustacean species, some of which are federally listed. Where crustaceans occur within USACE jurisdiction, USACE has the potential to mitigate the impacts of threats and benefit these species.

USACE engages in invasive species management which can benefit crustaceans in a variety of ways. The control of terrestrial invasive plants can reduce erosion. Erosion often leads to increased sedimentation in streams, thereby degrading water quality. Control of invasive species, such as the rusty crayfish which has spread well beyond its native range, reduces competition for native species, thereby increasing the ability for native species to succeed. (USFWS)



Helpful Resources

Crustacean conservation is no simple task, but there are a multitude of resources available to aide land managers looking to have a positive impact on these species. State Wildlife Action Plans (SWAPs) are developed by U.S. State and territories for conserving wildlife and habitat before they become too rare or costly to restore. Each plan includes the identification of Species of Greatest Conservation Need.

States also have Natural Heritage Programs which maintain databases of information on rare and threatened species and natural communities. Natural Heritage Programs (sometimes known as Conservation Data Centers) are usually affiliated with state government agencies, but may also be maintained by universities or The Nature Conservancy's state office.



Another useful resource is the NatureServe Explorer. Nature-Serve is a nonprofit organization of biodiversity scientists that NATURESERVE work to provide scientific knowledge to support informed deci-sions. The Explorer is a database which contains the life history of many of North

USACE NATURAL RESOURCE MANAGEMENT SUITE America's species.

Internally, the USACE NRM Program has worked diligently to provide the field with the National Initiatives Viewer. The Viewer displays key information for management decisions from various national initiatives and highlights where there is overlap with USACE projects. Data within tool is displayed spatially in the hopes that it can connect Projects where similar problems are occurring to foster collaboration and innovative solutions.



Photo, right: The homepage of USACE National Initiatives Viewer.

