Review of Threatened and Endangered Plant Species Potentially Impacting U.S. Army Corps of Engineers Mission Areas

Researchers at ERDC Environmental Lab (EL) and USACE-Chicago District performed a cost assessment and prepared an ERDC Special Report (available at https://erdc-library.erdc.dren.mil/items/340b2d82-5184-4235-abbd-31291ccba842) summarizing federally threatened and endangered plant species that have most affected recent USACE projects in terms of dollars spent on research, management, and mitigation. This report also provides insight as to which of these highest cost-associated species are most likely to benefit from further research and conservation efforts, with goals of species recovery and delisting and avoiding future project conflicts and impacts.

In the execution and ongoing operations and maintenance of numerous small- and large-scale water resources projects, USACE sometimes encounters federally listed threatened and endangered species (TES). USACE avoids, minimizes, and mitigates for any impacts on TES as part of its compliance activities for the National Environmental Policy Act (NEPA), Endangered Species Act (ESA), and other applicable federal laws and regulations. ERDC-Environmental Lab researchers, Doug Raybuck, Brook Herman, Todd Swannack, and Rich Fischer, along with Jason Zylka with USACE-Chicago District, queried the USACE TES Cost Database (https://tescost.el.erdc.dren.mil/) for expenditures, by district, on TES plants from 2005 to 2022 and examined most recent USFWS 5-year reviews and other recent literature for the most costly species over this time period to assess which species are most likely to continue to affect USACE projects. Highlights of this review are as follows:

- USACE spends millions of dollars every year in compliance activities related to animal and plant TES (e.g., $130 million in 2022).

- Of the $3.7 billion spent by USACE on TES from 2005 to 2022 (across all plant and wildlife taxa), a relatively small fraction ($27.8 million; 0.7%) was spent on 385 federally threatened or endangered plant species.

- Of these species, total expenditures over these 17 years were greater than $500,000 for just 18 species.

- Of these top 18 species/subspecies reviewed, the authors believe 14 warrant further investigation for potential additional investment into conservation, management, and research efforts to improve species baselines and assist in moving toward recovery. These recommendations are based on recovery potential and the ability to provide information through research that could be used to delist species. These 14 species, ranked in order from most to least costly from 2005 to 2022, are seabeach amaranth (*Amaranthus pumilus*), Michaux's sumac (*Rhus michauxii*), Willamette daisy (*Erigeron decumbens*), ʻōhā wai (*Clermontia* spp.), Texas trailing phlox (*Phlox nivalis* ssp. *texensis*), *Polyscias racemosa*, Kincaid's lupine (*Lupinus sulphureus* ssp. *kincaidii*), Bradshaw's desert-parsley (*Lomatium bradshawii*), pondberry (*Lindera melissifolia*; Fig. 1), palo de nigua (*Cornutia obovata*), Santa Ana River wooly star (*Eriastrum densifolium* ssp. *sanctorum*),

decurrent false aster (*Boltonia decurrens*), Texas prairie dawn-flower (*Hymenoxys texana*), and slender-horned spineflower (*Dodecahema leptoceras*).

- Four species are not recommended for prioritized additional investment. Ute ladies' tresses (*Spiranthes diluvialis*) are already recommended for delisting, and Johnson's seagrass (*Halophila johnsonii*) has been determined to have been listed in error based on new genetic information. Wireweed (*Polygonella basiramia*) and Santa Cruz cypress (*Hesperocyparis abramsiana*) seem to be unlikely to be affected by USACE activities at a consistent or widespread level (100% and 99% of expenditures for each species were reported in just a single year between 2005 and 2022). Expenditures for these species were likely due to a single action or project requiring Section 7 actions. USACE may experience future impacts with these species, but the impacts seem due to isolated projects, rather than regular and ongoing operations.

Figure 5. ERDC-Environmental Lab researcher Andrew Sharp counts temporarily flagged pondberry stems in the Delta National Forest, Mississippi. Long-term monitoring surveys, data analyses, and conservation planning for this federally endangered species, funded by the Vicksburg District, have been crucial to developing a Biological Assessment and a Section 7(a)(1) Conservation Plan, sent to the USFWS as part of the most recent (2024) Yazoo Backwater Project environmental impact assessment. Photo Credit: Doug Raybuck.

Funding: This study was funded by the Dredging Operations and Environmental Research (DOER) program, Environmental Resource Management focus area, under the Threatened and Endangered Species Team (TEST) project (Project RT-14-05), WIC F802D6, Funding Account Code U4396587, AMSCO Code 89500.

POCs: Dr. Douglas Raybuck, Wildlife Biologist, Environmental Laboratory
Douglas.W.Raybuck@erdc.dren.mil