

Nonindigenous Aquatic Species Database Update

The U.S. Geological Survey's (USGS) Nonindigenous Aquatic Species (NAS) Database (<https://nas.er.usgs.gov>) is the foremost national repository that monitors, records, and analyzes observations of non-native aquatic animal and plant species throughout the United States and its territories. Nonindigenous species can be either foreign or domestic and occur in waters outside of their historic native range through human intervention. All types of aquatic ecosystems, from the largest lakes and rivers to the smallest streams and ponds, wetlands, estuaries, and coastlines, are home to nonindigenous aquatic species.

Since the fall of 2019 WRP update there has been 54 new introductions (new to U.S., state, county or drainage) of non-native species in western waters. Of those 54 new introductions 21 were plants, 20 mollusks (bivalves and gastropods), 5 fishes, 4 bryozoans, 2 crustaceans, 1 reptile and 1 hydrozoan (see figure 1 for locations in states). Of those sightings, 70% were new to a drainage and 20% new to a county. Two sightings were new to a state, New Zealand mudsnail (*Potamopyrgus antipodarum*) in South Dakota and spiny water nymph (*Najas marina*) in Montana. One sighting was new to the nation, Blackbelt cichlid (*Vieja maculicauda*) in Washington. Blackbelt cichlids are a hardy aggressive fish species from Central America on the Atlantic slope. They are in the pet trade that can reach a maximum of 12". It is assumed that the introduction has failed.

Some of the species to be on the watch for include boat vector species including zebra mussels (*Dreissena polymorpha*) and Eurasian watermilfoil (*Myriophyllum spicatum*). There have been 10 new introductions of zebra mussels in the west including Kansas (1 sighting), North Dakota (1), South Dakota (6), and Texas (2). Eurasian watermilfoil is also spreading across the west with jumps to new drainages in Idaho and Texas, and a new county in Oklahoma.

New actionable tools and data from the NAS Database

Screen and Evaluate Invasive and Non-Native Data (SEINeD)

The SEINeD tool will allow the users to upload a biological dataset that can be screened for any of the invasive or non-native aquatic species tracked by the NAS database. To utilize this resource, users can find the automated tool on the NAS home page. They must upload a .CSV spreadsheet of their data that contains a set of standardized column headers. Upon uploading, the SEINeD tool will rapidly screen the data (with the ability to process 100,000s records in a few minutes) to identify species that were collected outside of their known native ranges. Once processed, SEINeD will return two .CSV files to the user. The first containing the original dataset with new value-added geospatial linkage data added, and a second containing data only on nonindigenous species that is of interest to NAS. Upon completion, users will be prompted to share their non-native data with NAS; however, they may do so at their own discretion as it is not required. Ultimately, SEINeD aims to help managers and research groups identify biological surveys that may unknowingly contain data on nonindigenous species, and to enhance the effectiveness of early detection and rapid response efforts from state and federal management.

Native fish ranges

Since 2017, the NAS Database has been creating detailed native ranges for North American fishes. To date 330 species/subspecies native ranges have been created from extensive research of the scientific literature and historical natural history collections. All native ranges are mapped to the eight-digit Hydrologic Units (HUC-8) with numerous also being developed for twelve-digit Hydrologic Units (HUC-12). The native range data is available on ScienceBase (<https://www.usgs.gov/centers/wetland-and->

[aquatic-research-center-warc/science/defining-native-ranges-us-inland-fishes?qt-science_center_objects=0#qt-science_center_objects](#)) and soon from an API from the NAS Database.

Adding eDNA data to NAS

The rapid development of eDNA methodology has provided valuable tools for the biosurveillance of invasive species. Detection using eDNA assays can allow for the initiation of rapid response actions, estimation of relative occurrence rates, mapping of new invasion pathways, and monitoring of eradication efforts. NAS scientists since spring 2020 have worked within the invasive species and eDNA communities to establish a conservative set of standards by which we could verify eDNA geospatial occurrence data for admittance to the NAS database. Starting in 2021, the NAS Database will start hosting eDNA data along side the traditional visual specimen sightings.

NAS Alerts

from 10/01/2019-09/08/2020

