

Title: Changing Freshwater Flows Affect Fish Populations in the Potomac River

Issue: Millions of people rely on the Potomac River for drinking water and recreational opportunities. The Potomac is Maryland's most popular freshwater fishing destination, and the second largest river that enters the Chesapeake Bay. Restoring fisheries is also an important goal for the Chesapeake Bay Partnership restoration efforts.

The Study: The USGS worked with Maryland Department of Natural Resources (MD DNR) to analyze fish population trends in the non-tidal Potomac River using data collected from 1975-2017. The aim of the study was to determine whether fish populations were increasing or decreasing, and if so, whether these changes could be explained based on species spawning strategies.

#### Major findings

- Thirteen of the 28 species in the analysis had changed in abundance over the 43-year period of data.
- The species that showed a decline in population included smallmouth bass and other fish species that require stable or predictable river flows for spawning. The species that showed a population increase included banded killifish, mosquitofish, and other species that thrive in unpredictable river flow conditions.
- River flows during the spring spawning season have become less predictable over recent decades, and this has hindered some species while enhancing others.

#### Implications

- The results will be useful for decision makers as they work to protect recreationally important species, such as smallmouth bass, as well as non-game species that are vital to the food web of this important river.
- The study indicates the importance of stable river flows during the spring spawning season for sportfish management. Land management practices to reduce storm runoff therefore could benefit some fish species. For example, planting trees along streams and rivers and reducing paved and other impervious surface area could play a role in bringing more consistency back to river flows.
- Research on climate change and land use predicts more intense storms, and the study's findings are consistent with those predictions. However, scientists do not separate climate change from land use in this study because either could produce the observed results. Instead, the study provides a benchmark for monitoring biological conditions in the Potomac River moving forward.

#### For more information

The results of the study "*Fish life history trends indicate increasing flow stochasticity in an unregulated river*" was recently published in the journal *Ecosphere* and is available [here](#).

The USGS co-authored the journal article with MD DNR. For further information please contact:

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