2024

POTOMAC RIVER CONFERENCE: REELING IN THE CHALLENCE OF AQUATIC INVASIVE SPECIES

Conference Booklet

October 17, 2024

River View at the Occoquan

Lorton, Virginia

Interstate Commission on the Potomac River Basin

The mission of the Interstate Commission on the Potomac River Basin (ICPRB) is to protect and enhance the waters and related resources of the Potomac River basin through science, regional cooperation, and education. Considered the "Nation's River," for more than six million basin residents, the river plays an important role in the lives of all. Through regional cooperation and partnerships, ICPRB is protecting the river and improving the quality of life in the watershed.

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2024 POTOMAC RIVER CONFERENCE:

REELING IN THE CHALLENCE OF AQUATIC INVASIVE SPECIES

Date: Thursday, October 17, 2024, 8:30 am - 3:30 pm

Location: The River View at Occoquan, 9751 Ox Road, Lorton, Va

Agenda

Coffee and Registration (8:30 am)

Opening (9:00 am)

Moderator: Michael Nardolilli, ICPRB

- **Welcome -**
  - Michael Nardolilli, Executive Director, ICPRB
  - Delegate Kathy K. L. Tran, ICPRB Commissioner for Virginia
  - Supervisor Dan Storck, Mount Vernon District
- **Plenary: The Potomac of the future will be different from the Potomac of the past: socio-economic-political influence then, now, and beyond 2025** - Peter Tango, Ph.D., Chesapeake Bay Monitoring Coordinator, USGS MD-DE-DC Water Science Center, Chesapeake Bay Program Office
- **Opening Question & Answer Session** - Moderator: Gordon "Mike" Selckmann, ICPRB

Session 1 - Invasive Poster Child: The Case of the Blue Catfish (10:00 am)

Moderator: Renee Thompson, ICPRB

- **The Chesapeake Bay Program's Invasive Catfish Workgroup: Tackling the blue catfish problem** - Bruce Vogt, NOAA Chesapeake Bay Office
- **Invasive blue catfish (*Ictalurus furcatus*) in Chesapeake Bay tributaries: Comparative status based on reproductive parameters** - Heather Walsh, USGS
- **Design of population monitoring and modeling to evaluate potential management actions for invasive blue catfish in Maryland** - Ellen Robertson, USGS
- **Poster Lightning Round** - Poster Presenters

Break (11:00)

Session 2 - It's the Economy... (11:15 am)

Moderator: Stephanie Pazzaglia, J.J. McDonnell & Co, Inc.

- **The economics of invasive species** - Benjamin Simon, GWU
- **Invasive catfish: Promotion and marketing wild blue catfish, population stock assessment, impact on blue crabs, shad, herring, striped bass, other fish, clams and oysters** - Mike Hutt, VA Marine Products Board
- **Marketing an invasive species: Tales of the blue catfish** - Matthew Scales, MD Department of Ag
- **From boat to plate: A supply chain perspective** - Stephanie Pazzaglia, J.J. McDonnell & Co, Inc.

Agenda continues on the following page.

Agenda (Cont.)

Lunch & Posters (12:15 pm)

18th Century American Indian Historical Perspectives on Introduced Species (1:00pm)

Doug Wood, Storyteller

Session 3 - The Rest of the Story (1:30pm)

Moderator: Nancy Rybicki, USGS

- **Biotic invasion and assimilation in the tidal freshwater Potomac River** - Dann Sklarew, R. C. Jones, and R. Christova, George Mason University
- **Aquatic invasive species in the Anacostia River, a recovering urban river** - Jorge Bogantes Montero, Anacostia Watershed Society
- **Two-horned Trapa (*Trapa bispinosa*) - a new threat** - Scott Baron, Northern Virginia Soil and Water Conservation District and Erin Abrahams, Fairfax County Maintenance and Stormwater Management Division
- **Natal origin and broad-scale movement of northern snakehead in the Potomac River** - Hae Kim, MO State University

Session 4 - Closing Discussion (2:50)

Gordon "Mike" Selckmann, ICPRB

Poster Session (3:00)

- **Short-term risk assessment for a newly introduced water chestnut, *Trapa bispinosa Roxb.*, entering the Potomac River, U.S.** - Ian Pfingsten and Nancy Rybicki of USGS
- **Field demonstrations for water chestnut (*Trapa spp.*) management – Year 1** - Ryan McIntyre of US Army Corps of Engineers and Nancy Rybicki of USGS
- **An age and growth study of blue catfish populations in MD tributaries** - Evangeline Sawyers of MD DNR
- **Invasive flathead catfish population dynamics, movement patterns and dietary preferences** - Daniel Ryan of DOEE

Abstracts and Speaker Biographies

(In order of appearance)

Opening Session

Welcome

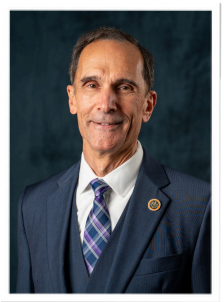
Michael Nardolilli, ICPRB (*moderator*)

Michael Nardolilli joined the Interstate Commission on the Potomac River Basin (ICPRB) as its Executive Director in 2019. Previously, Mr. Nardolilli served as the Chairman of the Board of Directors of the Northern Virginia Regional Park Authority (operators of 33 parks in Northern Virginia), President of the Arlington Outdoor Lab (a 225-acre nature educational facility in Virginia), Executive Director of the Montgomery Parks Foundation (the fundraising arm of Montgomery Parks), President of the C&O Canal Trust (the official non-profit partner of the C&O Canal National Historical Park), and President of the Northern Virginia Conservation Trust (a regional land trust). Prior to his work in the non-profit field, Mr. Nardolilli had a successful 18-year legal career representing Fortune 500 companies suing their insurance carriers for delayed manifestation claims. In 2011, Mr. Nardolilli was selected as a "Green City Leader" by Washington Life Magazine and was named a WETA-TV "Hometown Hero" in 2007. Mr. Nardolilli received a Certificate of Executive Non-Profit Management from Georgetown University, a JD from the College of William & Mary and a BSFS from Georgetown University.

Delegate Kathy K. L. Tran, ICPRB Commissioner for Virginia

When she was just 7 months old, Kathy Tran fled Vietnam with her parents as boat refugees. Serving in the Virginia House of Delegates since 2017, Kathy is fighting to protect the values that led her parents to risk everything to come to the United States: hope, opportunity, and freedom. Kathy has introduced and passed bills to protect coverage for preexisting conditions, expand voter access, improve worker's rights, protect waterways, and make Virginia more welcoming and inclusive. She also serves as the Chair of the House Democratic Caucus and Chair Emeritus of the Virginia Asian American and Pacific Islander Caucus. Kathy graduated from Duke University and earned her Master of Social Work from the University of Michigan. She spent 12 years working at the U.S. Department of Labor and at the National Immigration Forum. The past president of her local PTA, she and her husband Matt live in West Springfield with their five children, all avid Washington Nationals fans.

Supervisor Dan Storck, Mount Vernon District



Supervisor Storck is now serving his third term on the Fairfax County Board of Supervisors. Supervisor Storck's leadership includes the Fairfax Green Initiatives; Embark and revitalization of Richmond Highway; Strategic Economic Development Taskforce; Tourism Taskforce; Infill Development Taskforce; Lorton Visioning 2040; Environmental Advisory Committee; Joint Board/School Board Environmental Task Force (JET); renovation of Original Mount Vernon High School; approval and construction of the new Lorton Community Center/Library/Park, Lorton Police Station and Animal Shelter, Mount Vernon Rec Center and Penn Daw/Beacon Hill Fire Station, Emergency and Supportive Housing. He chairs the Board's Economic Initiatives Committee, Council for Economic Opportunity and Audit Committee; previously the Board's Environmental Committee; and serves on several regional bodies. Previously, Supervisor Storck served on the Fairfax County School Board from January 2004 through December 2015, including three terms as School Board chairman, and co-chair of two joint School Board/Board of Supervisor committees. In his professional life, Supervisor Storck has developed and owned several health care and benefits firms. He holds an M.B.A. in management and a B.S. in finance from Miami University (Ohio) and is a former board president of Good Shepherd Housing, West Potomac High School PTSA, and Riverside Gardens Recreation Association, as well as a former Head Start administrator and youth basketball coach.

Plenary: The Potomac of the future will be different from the Potomac of the past: socio-economic-political influence then, now, and beyond 2025

Speaker: Peter Tango, Ph.D., USGS MD-DE-DC Water Science Center, Chesapeake Bay Program Office

Since 2006, Peter has served as a liaison between the U.S. Environmental Protection Agency and the U.S. Geological Survey in his role as Chesapeake Bay Monitoring Coordinator. In this role, Peter leads a wide range of teams and workgroups for the Chesapeake Bay Program partnership addressing issues related to monitoring, management, science and policy, focused on the health and restoration of the Bay watershed. He holds a bachelor's in forest biology, masters in wildlife management and a PhD. in fisheries science. He has worked across the Chesapeake Bay watershed for over 30 years and started his career as a U.S. Fish and Wildlife Service contract employee banding American woodcock on the lower Delmarva Peninsula, and with the Virginia Department of Game and Inland Fisheries restoring river otter and snowshoe hare populations. Peter grew up in the eastern U.S. enjoying the outdoors with his family of hunters and fishermen.

Opening Question and Answer Session

Speaker: Gordon “Mike” Selckmann, ICPRB

Gordon “Mike” Selckmann is the Associate Director of Aquatic Habitats at the Interstate Commission on the Potomac River Basin (ICPRB). He is responsible for evaluating and assessing the habitat quality and biological health of communities within Potomac waters. His work coordinates the cooperation of federal, state, academic, and local partners to find and implement solutions to environmental issues. Prior to joining ICPRB, Mr. Selckmann worked for the University of Maryland Chesapeake Biological Lab, Round River Conservation, and the Okavango Research Institute. He is currently the primary investigator and project coordinator for the ICPRB’s Large River Assessment, Harmful Algae Bloom Program, North Branch Potomac Tailwater optimization, and ground water biological studies. Mr. Selckmann holds a M.S. in Environmental Biology from Hood College – a BA in Biology from St. Mary’s College of Maryland.

Session 1 - Invasive Poster Child: The Case of the Blue Catfish

Moderator: Renee Thompson, Interstate Commission on the Potomac River Basin (ICPRB)

Renee is a Water Resources Planner for ICPRB. Previously, she worked on mapping and modeling land use change in the Chesapeake bay, maintained datasets related to protected lands and federal lands, conducted research related to infill and redevelopment, mapping and modeling healthy watersheds and vulnerability. She also served as the Coordinator of the Chesapeake Bay Program's Maintain Healthy Watershed Goal Implementation Team. Renee T. is passionate about land preservation and clean water. In her spare time, she enjoys camping, stand up paddleboarding, swimming and spending time with her kids. She resides in Northeast, Washington, D.C.

The Chesapeake Bay Program’s Invasive Catfish Workgroup: Tackling the Blue Catfish Problem

Abstract: Blue catfish (*Ictalurus furcatus*) are not native to the Chesapeake Bay. The species was introduced into a few Virginia rivers in the 1970s and 1980s. Since then, they have expanded their range and are now established in rivers and tributaries around the watershed, including the Potomac River basin. Blue catfish have become a prized sportfish for some recreational anglers, and it is quickly becoming a popular and tasty menu item. But blue catfish are considered an invasive species. They can consume and outcompete native species, including blue crabs. In order to address this issue, the Chesapeake Bay Program formed the Invasive Catfish Workgroup. The goal of this group is to come together, share information, and coordinate science based management of these species. The Invasive Catfish Workgroup is developing a workplan to designate specific action items for the group to take over the next few years.

Speaker: Bruce Vogt, NOAA Chesapeake Bay Office

Bruce hails from a small fishing community in Gloucester County, Virginia where he developed a passion for science, marshes and the animals that live in estuaries. He holds a Masters degree from the Virginia Institute of Marine Science and currently works as the Ecosystem Science Manger for NOAA's Chesapeake Bay Office to support and translate science that informs management of living resources. He enjoys spending time outdoors with his wife and two boys, listening to music, and cooking.

Invasive Blue Catfish (*Ictalurus furcatus*) in Chesapeake Bay Tributaries: Comparative Status Based on Reproductive Parameters

Abstract: Blue catfish (Ictalurus furcatus) are identified among federal and state partners in the mid-Atlantic region as a priority when considering aquatic invasive species. Since their introductions in the James River almost 50 years ago, they have disseminated throughout lower reaches of tributaries in Virginia and Maryland. Information related to reproduction of invasive blue catfish would help to inform managers about their spawning habits and inform models for population dissemination risk. To achieve this goal, methods were developed to assess reproductive status in blue catfish for use across tributaries in the region to enable comparisons of reproductive and spawning synchronicity. To do this, blue catfish were sampled from the Nanticoke River, Maryland and plasma was analyzed for estradiol (E2), calcium, and total protein and gonads were taken for histology to assess reproductive development. Additionally, blue catfish gonads were sampled for histology from the Patuxent River, Broad Creek, and Marshyhope Creek, Maryland.

Speaker: Heather Walsh, USGS

Dr. Walsh is a Research Fish Biologist at the U.S. Geological Survey Eastern Ecological Science Center.She has focused her research on the development of comprehensive fish health assessments to better understand disease in wild fish associated with pathogens and contaminants. Much of her work has focused on fish species used as indicators of environmental contamination, including smallmouth bass, brown bullhead catfish, white suckers, and yellow perch and recently, she has also started conducting research on invasive blue catfish in the Chesapeake Bay.

Design of population monitoring and modeling to evaluate potential management actions for invasive blue catfish in Maryland

To better understand and work towards controlling population growth of invasive blue catfish, managers need: (1) to quantify the current population growth rate of blue catfish; (2) to quantify the cost of controlling blue catfish and evaluate alternative removal strategies; and (3) to develop a monitoring plan for evaluating the effectiveness of management actions. We are developing population projection models to evaluate alternative management strategies for blue catfish removals. We are combining empirical information on estimated vital rates for blue catfish and their uncertainty. We are then using these vital rate estimates to develop population projection models to evaluate alternative management strategies. We are also developing a formal three-point expert elicitation approach to elicit vital rate estimates from experts to supplement vital rate information missing in the literature. Finally, in collaboration with Maryland DNR, we are designing a monitoring program for monitoring abundance of blue catfish. Co-authors: Julien Martin, Jennifer Moore, and Andy Royle of USGS, and Branson Williams of Maryland Department of Natural Resources.

Speaker: Ellen Robertson, USGS

Ellen Robertson is a quantitative ecologist with the U.S. Geological Survey (USGS)'s Eastern Ecological Science Center. Today she will speak about work she and collaborators are developing to design surveys and population models for blue catfish management in Maryland.

Session 2 - It's the Economy...

Moderator: Stephanie Pazzaglia, J.J. McDonnell & Co.

See below for biography.

The Economics of Invasive Species

Economics has a role in many areas of invasive species policy including the economic consequences of invasive species introduction, cost-benefit analysis of different management options, the allocation of scarce resources and funding for invasive species management, and the implications of trade and sanitary and phytosanitary (SPS) policies. This presentation will focus on areas that are most relevant to management of invasive aquatic species in the Potomac basin, including management issues, such as the optimal allocation of resources for prevention, control, and eradication of invasive species, and the valuation of invasive species impacts on ecological and human uses (including non-market impacts).

Speaker: Benjamin Simon, George Washington University

Dr. Simon is currently an adjunct professor of economics and public policy at the George Washington University. Dr. Simon was Chief Economist at the Department of the Interior and director of the economics staff in the Office of Policy Analysis until December 2021. Dr. Simon has also worked as an economist at the New Zealand Ministry of Finance. At Interior, over the course of a 30 year career, he worked on a wide variety of water and land management issues.

Invasive Catfish: Promotion and marketing wild blue catfish, population stock assessment, impact on blue crabs, shad, herring, striped bass, other fish, clams and oysters

Promotion and marketing wild blue catfish, population stock assessment, impact on blue crabs, shad, herring, striped bass, other fish, clams and oysters.

Speaker: Mike Hutt, Virginia Marine Products Board

Mike Hutt is the Executive Director at the Virginia Marine Products Board. The Virginia Marine Products Board is the marketing arm of the seafood industry. In this capacity, he conducts a comprehensive marketing program designed to upgrade and expand both domestic and foreign sales and markets to further the overall economic development of the industry. It is an internationally recognized marketing board within the Virginia Department of Agriculture and Consumer Services. Mike conducts trade advertising, direct marketing, trade shows, and international video conferences, marketing calls and merchandising programs for wholesale distributors, retailers and restaurateurs. In doing so, he brings a value to the commercial seafood industry in Virginia.

Marketing an Invasive Species: Tales of the Blue Catfish

The Maryland Department of Agriculture's marketing arm, Maryland's Best, highlights local products such as wild-caught Chesapeake blue catfish. In an effort to provide awareness around the abundance of blue catfish in the Chesapeake Bay, the Maryland's Best team has steered away from using the term "invasive species" and focusing on labeling it as "wild caught Chesapeake blue catfish." Through working with chefs in the region, the Maryland Best team has worked on getting the fish in more retail stores, restaurants, which leads to getting into more mouths, who end up loving the fish.

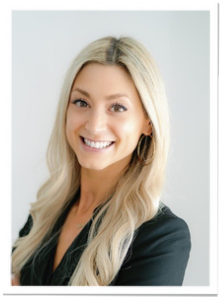
Speaker: Matthew Scales, Maryland Department of Agriculture

A graduate of Towson University, Matthew Scales has a Master of Science in Communication Management. His prior experience includes serving as the public relations specialist with the Maryland Office of Tourism, then the Executive Director for Visit Harford. Matthew has served on several boards, which currently serves on Maryland's Aquaculture Coordinating Council. Matthew's leadership includes serving in the U.S. Coast Guard, and the Harford Leadership Academy. Matthew lives in Harford County, Maryland with his wife and two children.

From Boat to Plate: A Supply Chain Perspective

JJ McDonnell is a prominent seafood processor and distributor based in Elkridge, Maryland. Established in 1945 in the Baltimore Seafood Market, the company relocated to the Jessup seafood market in the 1980s before moving to its current facility in Elkridge in 2016. JJ McDonnell has been a leader in advocating for and collaborating with local watermen to develop a market for Wild Chesapeake Bay Blue Catfish for over a decade. Positioned within the mid-supply chain, the company possesses a unique understanding of both the watermen's perspective as well as the demand in the market space. JJ McDonnell plays a pivotal role in partnering with watermen while also educating foodservice and retail customers on the benefits of incorporating Wild Chesapeake Bay Blue Catfish into their menus. This initiative not only supports local fisheries but also promotes an exceptional choice for consumers—ensuring a seamless journey from boat to table.

Speaker: Stephanie Pazzaglia, J.J. McDonnell & Co.



Stephanie has a lifelong passion for the seafood industry–one that she is fortunate to pursue and serve in many ways. From a young age she worked for her family's wholesale and retail seafood company, where she was introduced to many aspects of the business. After graduating with a degree in Marine Biology from Stockton University, she served as a research technician at the Stockton Marine Facility, then worked for the New Jersey Department of Environmental Protection, Bureau of Shellfisheries. Joining J.J. McDonnell in 2016, and took on the role as Business Development Manager in 2017. In 2021, she was elected acting chair of Sea Pact to serve two years–having served as a board member since 2019. Sea Pact is a group of leading North American seafood companies dedicated to driving stewardship and continuous improvement of social, economic, and environmental responsibility throughout the global seafood supply chain. Stephanie was appointed as chair of the commissioners of the Maryland Seafood Marketing Committee in 2023 as a voice from the industry's mid-supply chain. Stephanie was elected to serve a 3-year term in 2024 as a Board of Director for the National Fisheries Institute. Known for her deep knowledge about the industry, she enjoys connecting consumers with commercial fishing boats and sourcing information, sharing insights that will help guide purchasing decisions to enhance customer's business. She is passionate about responsible sourcing and education-based outreach–two key pillars of J.J. McDonnell. With her team, she helps brainstorm creative approaches to build both her team's and client's knowledge. Along with education and outreach Stephanie is highly engaged with the industry, from commercial fishermen interactions to government and industry relations.

Storyteller - 18th Century American Indian Historical Perspectives on Introduced Species

Douglas McClure Wood is a 1977 graduate of the WVU School of Agriculture and Forestry (precursor to the Davis College of Agriculture, Natural Resources, and Design), with a B.S. in Wildlife Management. He retired in 2011 from a 33-year career in water pollution research with the WV DNR and DEP, focusing on negative impacts to aquatic ecology. He now writes management plans for WV designated natural areas on state lands and is also the sole proprietor of an education service focusing on natural history and cultural history in the central Appalachian Mountains. Doug is active in living-history presentations, including his roles on the WV Humanities Council's History Alive! roster. He is also on the Ward Hollow Wildlife Habitat Team of Dow Chemical Corp. in South Charleston, WV, where he assists with invasive species control and native species restoration. Doug describes himself as an ecologist, armchair historian, and student of the historical connections between humans and environments.

Session 3 - The Rest of the Story

Biotic invasion and assimilation in the tidal freshwater Potomac River

Speaker: Dann Sklarew, George Mason University

George Mason University Professor Dann Sklarew has been a tiny, sentient tributary of the Potomac River for over 40 years. From adolescent swims in Lake Thoreau through researching impacts of climate change and de-fertilization on the tidal freshwater Potomac ecosystem, Dr. Sklarew aims to give some back to the waters which sustain us here. He has taught aquatic ecology college students and neighbors alike to be mindful of our habits with respect to our shared Potomac watershed habitat. In collaboration with ICPRB's Curtis Dalpra (RIP), he designed and hosted the original 1995-era websites for the Potomac River Commission and *Potomac River Reporter*. After 8 years with the United Nations, Dr. Sklarew served as an alternate ICPRB commissioner then as the first Potomac River friendship ambassador to our Arakawa sister river in Japan. Dr. Sklarew, colleagues and mentees also studied microplastics in the tidal Potomac. He is presently co-creating a riparian "foragers' forest" of edible native flora to help ecologically restore formerly developed land on Mason's Fairfax campus. Dr. Sklarew and family reside nearby, adjacent to a Fairfax stream which flows into Royal Lake then onward to the tidal Potomac River.

Speaker: R.C. Jones, George Mason University

Speaker: R. Christova, George Mason University

Aquatic Invasive Species in the Anacostia River, a Recovering Urban River

Neglected for centuries and labeled the "forgotten river", the Anacostia River has come a long way. The tidewater tributary of the Potomac River has seen a remarkable amount of efforts and investments to clean and restore its aquatic ecosystems in the last few decades. But as an urban river in a globalized world, it has been subject to many non-native and invasive species introductions. For the last 35 years, the Anacostia Watershed Society has contributed to the recovery of aquatic species and ecosystems in the Anacostia River in the face of ongoing non-indigenous species introductions.

Speaker: Jorge Bogantes Montero, Anacostia Watershed Society

As a Natural Resources Specialist, Jorge has been leading our restoration efforts in and around the Anacostia River, including reforestation with native tree species; wetland restoration, meadow restoration and invasive plant management. Additionally, Jorge helps our team of environmental educators teach youth and adults about the biodiversity of the river. Before joining AWS, Jorge worked for six years on biodiversity conservation efforts in his native Costa Rica. Jorge is often out on the river at dawn with his camera and shares his photography through the AWS Facebook page.

Two-horned Trapa (*Trapa bispinosa*) - a new threat

Two-horned Trapa (*Trapa bispinosa*), is an invasive annual, rooted, floating, aquatic plant native to the Far East. Its presence in Northern Virginia dates to at least 1995. It quickly forms dense mats, harming biodiversity and hindering navigation and recreation. The spiny, barbed seeds cause discomfort and bleeding when they pierce clothing and skin. This invasive plant is known from over 100 waterbodies and is found in new locations each year. All reports of this species were from Northern Virginia until 2022, when infestations were reported from suburban Maryland and Virginia's southern Piedmont. If Two-horned Trapa reaches the Potomac River and the Chesapeake Bay, it could cause considerable economic, ecological, and recreational damage and could be very difficult to contain. Research, outreach and monitoring and treatment have shown promise in containing or even eradicating Two-horned Trapa from North America. Continued funding is urgently needed while its population is relatively small.

Speaker: Scott Baron, Northern Virginia Soil and Water Conservation District

Scott Baron is employed as an Urban Conservation Specialist with the Northern Virginia Soil and Water Conservation District. He has 8 years of experience in management of invasive plants. He coordinates a Trapa control program, funded by a grant from Fairfax County, Va. and is on the Steering Committee of National Capital PRISM. Scott is a certified Chesapeake Bay Landscape Professional and holds a master's degree in Natural Resources Stewardship from Colorado State University.

Natal Origin and Broad-Scale Movement of Northern Snakehead in the Potomac River

Understanding fish movement can provide valuable biological and ecological insights for management, particularly when movement across interjurisdictional boundaries and ecologically significant habitats occur. Otolith microchemistry can help elucidate broad-scale movement. We evaluated Sr/Ca and Ba/Ca ratios in Northern Snakehead otoliths to better understand broad-scale movement patterns and natal origins. Fish were collected across Virginia Potomac River tidal freshwater tributaries from Stafford County to the Pentagon Basin. Several models were developed and trained to assign fish to known collection tributaries. Overall model accuracy was high (90%), and both elemental ratios appeared to increase downstream. These models were used to assign natal origin using core signatures, which revealed broad-movement patterns and suggested dispersal rates may be high in certain environments. Natal fidelity was higher downstream and lower upstream. The evaluated tributaries represent important ecological transition zones influenced by freshwater and estuarine processes. These nursery habitats are important for fishes, and better understanding of these habitats can provide insights into other ecologically and recreationally important fisheries.

Speaker: Hae Kim, MO State University

Hae Kim's interest primarily focuses on using basic and applied ecology and biology to inform management decisions. He received a bachelor's degree in Fisheries and Wildlife Sciences from Virginia Tech and a master's degree in biology from Missouri State University. During his bachelor's degree, he worked on invasive Blue Catfish in Virginia tidal rivers. His masters work focused on evaluating sturgeon drift dynamics in the Middle Mississippi River, near St. Louis, Missouri. Since that time, he has been fortunate enough to work across a wide range of systems and fishes. Some of that work has brought him back "home" and provided opportunities to work on Northern Snakehead.

Poster Session

Short-term risk assessment for a newly introduced water chestnut, *Trapa bispinosa Roxb.*, entering the Potomac River, U.S.

A new species of water chestnut (*Trapa bispinosa Roxb.*) was discovered in the Potomac River basin in 2014. By 2024, over 100 colonies were verified in lakes and ponds in five counties of northeast Virginia, one in southeast Virginia, and one in Maryland. We assessed the short-term risk of *T. bispinosa* entering the Potomac River. We identified three potential vectors for dispersal of *T. bispinosa*: primarily epizoochory on waterfowl plumage, followed by hydrochory into downstream waterways and potentially hitchhiking on recreational boats and boat trailers. We identified over 1,000 at-risk waterbodies (mostly private ponds) from Maryland, Virginia, and the District of Columbia. Twenty public boat launches were within 30 km of the epicenter. Our results identify the number and locations of at-risk waterbodies and boat launches that state and local managers can prioritize outreach, management, signage, and monitoring efforts for early detection and rapid response of *T. bispinosa*.

Ian Pfingsten, USGS

Ian Pfingsten (co-author) is an aquatic plant ecologist with the U.S. Geological Survey (USGS) in Gainesville, FL. Along with aquatic wildlife ecologists, he maintains the Nonindigenous Aquatic Species database (nas.er.usgs.gov), which provides public maps and occurrence records of introduced aquatic plants and animals in the U.S., Puerto Rico, U.S. Virgin Islands, and Guam (and some of Canada). Ian is also a member of the Mid-Atlantic and Northeast Panels to the Aquatic Nuisance Species Task Force. He has developed risk maps for aquatic species potentially moving by floods after major storms, and he is collaborating with partners on projecting future risk of freshwater invasive fish, plants, and invertebrates to the northeast due to climate change.

Nancy Rybicki, USGS

Dr. Nancy Rybicki (presenter) is an aquatic plant ecologist and affiliate professor at George Mason University. She is retired from the US Geological Survey, Water Mission Area, Reston VA, but she continues her research as a scientist emerita. Today Dr. Rybicki will report on investigations into a recently discovered and newly identified species of water chestnut from Asia. This plant is a non-native floating aquatic plant that was first observed in 2014 in the Potomac River watershed. It was observed in about 100 sites in Virginia and recently spread to Maryland where it was observed in two locations in Prince Georges county.

Field Demonstrations for Water Chestnut (*Trapa spp.*) Management – Year 1

Collaborative applied research conducted under the U.S. Army Corps of Engineers' Aquatic Plant Control Research Program is currently developing management strategies of introduced water chestnut species, *Trapa natans* and *T. bispinosa var. iinuma*i. While much information exists on management in the U.S., specifically targeting *T. natans*, knowledge gaps exist in translating management strategies from one congener to another, and whether currently employed strategies are successful in reducing impact and spread of this invasive aquatic plant. Demonstrations and lessons learned from Year 1 of a 2-year project work focus on determining what management approach works best in an operational setting to control two water chestnut species. While not all known strategies are reviewed, those currently being implemented and recent findings from greenhouse and mesocosm studies were demonstrated during the summer of 2023 at field sites in NY for *T. natans*, and in VA and MD for *T. bispinosa*. Preliminary results indicate that foliar herbicide applications work well to reduce biomass for both species of water chestnut, but that biomass harvesting strategies employed for *T. natans* will need further investigation for implementation large-scale for *T. bispinosa* control. Findings from this 2-year study will be used to refine water chestnut management strategies.

Ryan McIntyre, US Army Corps of Engineers

Ryan McIntyre is a graduate student at George Mason University, studying invasion ecology as a research fellow with the Army Corps of Engineers. He's worked as an ecology technician for the Smithsonian Conservation Biology Institute and the Smithsonian Environmental Research Center. He is currently partnering with a variety of government agencies (federal, state, and local) to study the management of newly introduced invasive plants.

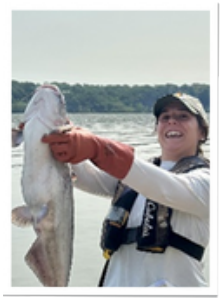
Nancy Rybicki, USGS

See biography on previous page.

An Age and Growth Study of Blue Catfish Populations in MD Tributaries

The blue catfish (*Ictalurus furcatus*) is the largest species of catfish in North America, and is considered invasive to the Chesapeake Bay watershed. The species now occupies every major tributary to the Chesapeake Bay and has raised concern about their ecological effects. Blue catfish populations vary between systems and tributary-specific management is a regional goal. This study examines the age and growth of blue catfish populations in two Maryland rivers, and compares them to those of established populations of Virginia rivers. Otoliths collected from blue catfish in the Potomac and Patuxent rivers in Maryland were aged and growth rates and other population parameters were estimated and compared. These findings support the goals for tributary-specific blue catfish management in the Chesapeake Bay Program's Invasive Catfish Strategy and other regional or state-wide management plans in the Chesapeake Bay.

Evangeline Sawyers, MD Department of Natural Resources



Evangeline Sawyers is an environmental scientist dedicated to natural resource management and conservation. She earned her Environmental Science degree with a Biology minor from Towson University in the Spring of 2021. After graduation, Evangeline began her career as a Park Ranger in Baltimore County. In 2023, she joined the Maryland Department of Natural Resources (MDNR) on a full-time contract, contributing to state and federal research on endangered freshwater mussels. Notably, she played a key role in developing Maryland's first mobile mussel propagation trailer within the Resource Assessment Services and Fisheries department. Since March, Evangeline has been a full-time member of MDNR's Invasive Species Management team. Her primary responsibilities include managing invasive species removal at the Conowingo Dam, focusing on northern snakehead, blue catfish, and flathead catfish. In her personal time, Evangeline enjoys hiking, camping, kayaking, outdoor activities, traveling, and music.

Invasive Flathead Catfish Population Dynamics, Movement Patterns and Dietary Preferences

Flathead catfish (*Pylodictus olivarus*) are a long-lived North American catfish species native to the lower Great Lakes region and Mississippi River basin. Flathead catfish are the second largest North American catfish species (after the blue catfish), reaching lengths of over five feet and weighing more than 120 lbs. Over the years they have been widely introduced to enhance recreational fishing opportunities. As a result of introductions by neighboring jurisdictions, flathead catfish are now found in the tidal portions of the Potomac and Anacostia rivers within the District of Columbia. In an effort to determine the severity and potential impacts of this invasive species, DOEE is conducting a multifaceted survey using PIT (passive integrated transponder) tags and acoustic tags, as well as examining diet content.

Daniel Ryan, DC Department of Energy & Department