

**M**ARYLAND  
WATER  
MONITORING  
COUNCIL  
23RD ANNUAL  
CONFERENCE

# MANAGING WATER QUALITY *in a Changing World*

DEC. 8, 2017 | MARITIME INSTITUTE | LINTHICUM



# 2017 MWMC Annual Conference

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**MARYLAND WATER MONITORING COUNCIL  
23rd Annual Conference - Friday, December 8, 2017**

***Managing Water Quality in a Changing World***

7:30 Registration/Poster Set-up/Continental Breakfast – Registration in Room A-100

Morning Plenary Session (8:30-10:00) in the Auditorium (simulcast in Classroom 1)

8:30 **MWMC Board Chair's Call to Order** – Clark Howells; Baltimore City Department of Public Works; Chairman, MWMC Board of Directors

8:45 **The 2016 Ellicott City Flood: A 225-Year-Old Mill Town's Survival Story** – James Caldwell – Director, Howard County Office of Sustainability

9:15 **A 10,000 Year Record of Climate, Forests, Land Use, and Chesapeake Water Quality** – Dr. Grace Brush – Professor, Johns Hopkins University

9:45 **Carl S. Weber Awards** – Sandy Hertz; Maryland Department of Transportation and Cathy Weber

10:00 **Break/Poster Session** – Authors Present

Only speakers are listed for oral presentations. The Conference Program contains the full list of authors, co-authors, contact information, and abstracts.

	Auditorium	Room A-300	Room A-111/113	Classroom 1	Classroom 2	Classroom 3	Room A-302
<b>10:30 – 12:00</b>	<p><b>STREAM RESTORATION MONITORING I</b> – Moderator, Jai Cole (M-NCPPC)</p>	<p><b>OPPORTUNITY OF THE COMMONS: DEFINING MARYLAND'S OCEAN FUTURE</b> – Moderator, Joe Abe (MDNR)</p>	<p><b>DOWN ON THE FARM: YOUR FOOD AND YOUR WATER</b> – Moderator, Charlie Poukish (MDE)</p>	<p><b>UPDATES ON THE STATE OF THE CHESAPEAKE BAY</b> – Moderator, Diana Muller (Chesapeake BaySavers)</p>	<p><b>CLIMATE RESILIENCY: THE NATURAL CAPACITY TO RESIST CHANGE</b> – Moderator, Sandy Hertz (MDOT)</p>	<p><b>MONITORING URBAN WATERS</b> – Moderator, Chris Victoria (Anne Arundel County)</p>	<p><b>CITIZEN SCIENCE: SAVING THE BAY ONE RIVER AT A TIME</b> – Moderator, Richard Mitchell (USEPA)</p>
	<p><b>STREAM RESTORATION: TMDLS, BIOTIC UPLIFT, AND PERMITTING - ARE WE AT THE CONFLUENCE?</b> - Jeff White (MDE)</p> <p><b>FROM HORSE-DRAWN CARRIAGES TO CITY COMMUTER ROUTES: A STORY OF URBAN WATERSHED REVIVAL IN THE CHESAPEAKE BAY</b> - Matt Harper (M-NCPPC)</p> <p><b>ADAPTIVE MANAGEMENT AND EVALUATING EFFICACY OF A FLOODPLAIN RESTORATION</b> - David Osgood (Albright College)</p> <p><b>RESTORING WATER QUALITY AND BROOK TROUT POPULATIONS IN THE CASSELMAN RIVER</b> - Constance Lyons Loucks (MDE)</p>	<p><b>THIS SESSION WILL HIGHLIGHT SOME OF MARYLAND'S WORK TO CONSERVE MARINE RESOURCES DURING A TIME OF NEW DISCOVERY, INTENSIFYING USE, AND A CHANGING CLIMATE. THE SESSION WILL INCLUDE A SHORT VIDEO, A JOINT PRESENTATION, FOLLOWED BY A DISCUSSION WITH THE AUDIENCE.</b></p> <p>Presenters are: Joe Abe (MDNR), Catherine McCall (MDNR), and Kimberly Hernandez (MDNR)</p>	<p><b>THREE DECADES OF PROGRESS ON REDUCING NUTRIENT LOADS FROM MD CROPLAND</b> - Ken Staver (University of MD)</p> <p><b>CATTAIL CREEK STREAM RESTORATION AT MAPLE DELL FARM</b> - Lindsay DeMarzo (Howard County)</p> <p><b>MARYLAND AGRICULTURE'S ROLE AND PROGRESS TOWARD THE CHESAPEAKE BAY RESTORATION</b> - Alisha Spears Mulkey (MDA)</p> <p><b>AGRICULTURE AND LOCAL FISH HABITAT CONDITIONS IN CHESAPEAKE BAY</b> - Jim Uphoff (MDNR)</p>	<p><b>STATUS AND TRENDS OF THE CHESAPEAKE BAY WATER QUALITY STANDARDS CRITERIA ATTAINMENT</b> - Qian Zhang (UMCES/USEPA CBPO)</p> <p><b>USING SPARROW TO UNDERSTAND NUTRIENT TRENDS IN CHESAPEAKE BAY TRIBUTARIES, 1992-2012</b> - Scott W. Ator (USGS)</p> <p><b>BASELINE ANALYSIS OF OILS, CDOM AND OPTICAL BRIGHTENERS IN SHALLOW ESTUARINE ENVIRONMENTS: POTENTIAL TOOLS FOR EVALUATING RESTORATION EFFECTIVENESS</b> - Andrew C. Muller (US Navy)</p> <p><b>INTEGRATING MONITORING MODELING AND TRENDS ANALYSES FOR MANAGEMENT DECISIONS: A CHOPTANK RIVER EXAMPLE</b> - Emily Trentacoste (USEPA)</p>	<p><b>THE MARYLAND HEALTHY SOILS INITIATIVE</b> - Susan Frick Payne (MDA)</p> <p><b>USING NATIONAL ESTUARINE RESEARCH RESERVES TO UNDERSTAND CLIMATE CHANGE IN CHESAPEAKE BAY</b> - Jennifer Raulin (CBNERR)</p> <p><b>STREAM MONITORING TO PRIORITIZE RESTORATION AND RESILIENCE</b> - Britta Bierwagen (USEPA)</p> <p><b>INDICATORS: SMART FOR RESILIENCE</b> - Michael Kolian (USEPA)</p>	<p><b>URBAN LEGACIES: AQUATIC STRESSORS AND LOW BIODIVERSITY PERSIST AFTER STORM-WATER MANAGEMENT IMPLEMENTATION</b> - Rosemary Fanelli (University of MD)</p> <p><b>THE INFLUENCE OF GRAY AND GREEN INFRASTRUCTURE ON WATER QUALITY CHANGE IN THE GWYNNS FALLS WATERSHED, BALTIMORE, MARYLAND</b> - Ellen Woytowitz (USGS)</p> <p><b>BIOENERGETIC SIGNATURES OF STRESS IN CADDISFLY LARVAE FROM STREAMS ALONG AN URBAN TO RURAL GRADIENT</b> - Madison Smith (Towson University)</p> <p><b>DETECTION OF THE EFFECTS OF STORM WATER BEST MANAGEMENT PRACTICE, BAYESIAN BACI POWER ANALYSIS</b> - Dong Liang (UMCES/CBL)</p>	<p><b>WHAT CAN A TEENY-TINY NONPROFIT DO?</b> - Chuck Foster (Friends of the Bohemia)</p> <p><b>CLEARING THE WATERS OF THE MUDDY BRANCH WITH CITIZEN SCIENCE</b> - Paul Hlavinka (Muddy Branch Alliance)</p> <p><b>CREEK CRITTERS: ENGAGING PEOPLE IN STREAM STEWARDSHIP AND ADVOCACY</b> - Gregg Trilling (Audubon Naturalist Society)</p>

Two Lunch Groups – 12:00 – 1:00 (Orange Name Tag Sticker) - 12:30 – 1:30 (Blue Name Tag Sticker)

12:00 - 12:30 and 1:00 – 1:30 Poster Session – Authors Present

	Auditorium	Room A-300	Room A-111/113	Classroom 1	Classroom 2	Classroom 3	Room A-302
<b>1:30 – 3:00</b>	<p><b>STREAM RESTORATION MONITORING II –</b> Moderator, Mark Southerland (AKRF)</p>	<p><b>WATER AND ELECTRICITY DO MIX!:</b> <b>NEW MONITORING TECHNOLOGIES –</b> Moderator, Mike Pieper (KCI)</p>	<p><b>PLANNING FOR CLIMATE CHANGE –</b> Moderator, Clark Howells (Baltimore City)</p>	<p><b>TOOLS OF THE TRADE; DATA RESOURCES FOR EFFECTIVE WATER MANAGEMENT –</b> Moderator, Mark Trice (MDNR)</p>	<p><b>COMMUNITY ENGAGEMENT, EDUCATION AND TRAINING –</b> Moderator, Jeff Reagan (Biohabitats)</p>	<p><b>MANAGING MARYLAND LAKES IN A CHANGING WORLD –</b> Moderator, Sherm Garrison (NALMS)</p>	<p><b>CHANGE IS UNDERFOOT: LESSONS FROM GROUNDWATER MONITORING –</b> Moderator, Mat Pajerowski (USGS)</p>
	<p><b><u>IF YOU BUILD IT, WILL THEY (BENTHOS) COME?</u></b> - Mark Southerland (AKRF)</p> <p><b><u>ECOLOGICAL AND HABITAT RESPONSES IN PIEDMONT URBAN STREAM RESTORATIONS</u></b> - Joe Acord (UMCES/AL)</p> <p><b><u>ECOLOGICAL IMPACTS OF REGENERATIVE STREAMWATER CONVEYANCE (RSC) SYSTEMS IN MARYLAND'S COASTAL PLAIN</u></b> - Rebecca Cope (USEPA)</p> <p><b><u>SETTING EFFECTIVENESS GOALS FOR STREAM AND WATERSHED RESTORATION</u></b> - Nancy Roth (Tetra Tech)</p>	<p><b><u>A NOVEL USE OF ELECTRICAL RESISTIVITY TO INVESTIGATE THE HYDROGEOLOGY OF SPRINGS SUPPORTING ENDANGERED AMPHIPODS</u></b> - Andrew Staley (MGS)</p> <p><b>EXPLORING THE USE OF STRUCTURE FROM MOTION SURVEYING AS A COST-EFFECTIVE MEANS TO QUANTIFY LANDSCAPE CHANGE IN NEAR REAL-TIME</b> - Matthew J Cashman (USGS)</p> <p><b>IMPROVEMENTS IN QUANTIFYING BANK EROSION FOR SEDIMENT BUDGETS WITHIN THE CHESAPEAKE BAY WATERSHED BY INTEGRATING STRUCTURE-FROM-MOTION PHOTOGRAMMETRY</b> - Joseph Bell (USGS)</p> <p><b><u>REAL-TIME WATER QUALITY IN AN ACTIVE CONTROL WET POND</u></b> - Micah Strauss (OptiRTC)</p>	<p><b><u>CAPACITY BUILDING FOR RESILIENCE, PART I</u></b> - Kristin Baja (Urban Sustainability Directors Network)</p> <p><b>CAPACITY BUILDING FOR RESILIENCE, PART II</b> - Kimberly Grove (Baltimore City)</p> <p><b>MARYLAND ROADWAY VULNERABILITY ASSESSMENT</b> - Elizabeth Habic (MD SHA)</p>	<p><b><u>FLOODPLAIN MAPPING TOOLS AVAILABLE NOW AND E-COLLABORATION TOOLS UNDER DEVELOPMENT</u></b> - David Guignet (MDE)</p> <p><b><u>FROM THE FIELD TO THE CLOUD - A REVIEW OF ONLINE RESOURCES FOR LOCAL WATER QUALITY DATA AND ASSESSMENT</u></b> - Mark Trice (MDNR)</p> <p><b><u>EVALUATING LANDSCAPE-SCALE CHANGE DETECTION METHODS FOR LANDSAT TIME SERIES</u></b> - Emily Mills (Chesapeake Conservancy)</p> <p><b><u>EXPLORING AMBIENT NUTRIENT MONITORING DATA WITH THE WATER QUALITY INDICATORS (WQI) TOOL</u></b> - Rusty Wasem (USEPA)</p>	<p><b>BUILDING A 21ST CENTURY WORKFORCE - CHALLENGES, OPPORTUNITIES</b> - Joan Michelson (Green Connections Media)</p> <p><b><u>INTEGRATING SOCIAL AND ECOLOGICAL RESTORATION FOR STACKED BENEFITS</u></b> - Lori Lilly (Howard EcoWorks)</p> <p><b>NAVIGATING PROBLEMS TEACHERS FACE</b> - Lolita Kiorpes (Charles County Public Schools/North Point High School)</p>	<p><b><u>THE STATE OF LAKES IN A CHANGING WORLD</u></b> - Lisa Borre (Cary Institute of Ecosystem Studies/NALMS)</p> <p><b><u>OVERVIEW OF AQUATIC INVASIVE SPECIES MANAGEMENT AND ASSESSMENT IN MARYLAND LAKES</u></b> - Mark Lewandowski (MDNR)</p> <p><b><u>MANAGING MULTI-PURPOSE LAKES AND PONDS IN COLUMBIA, MARYLAND</u></b> - John L McCoy (Columbia Association)</p> <p><b><u>MANAGING LAKES- BUILDING A STATE FRAMEWORK</u></b> - Barbara Beelar (Friends of Deep Creek Lake)</p>	<p><b><u>IRRIGATION ACCELERATES NITRATE TRANSPORT WITHIN THE GROWING SEASON</u></b> - Alexander Soroka (USGS)</p> <p><b><u>INCREASING CHLORIDE AND SODIUM CONCENTRATIONS IN GROUNDWATER DUE TO ROAD SALT INPUTS AND LONG-TERM EFFECTS ON STREAM CHEMISTRY VIA BASEFLOW</u></b> - Joel Moore (Towson University)</p> <p><b><u>COMPILING WELLWATER QUALITY DATA FROM MULTIPLE DATABASES IN MARYLAND: OPPORTUNITIES AND CHALLENGES</u></b> - David W. Bolton (MGS)</p> <p><b><u>ASSESSING RIPARIAN HYDROLOGIC PATHWAYS AS CONTROLS ON FORESTED BUFFER FUNCTION IN FOUR SUBWATERSHEDS IN WESTERN MARYLAND</u></b> - Stephanie Siemek (UMCES/AL)</p>

**3:00 – 3:30 Break/Poster Session – Authors Present – Announcement of Student Poster Award Winners (Auditorium)**

	<b>Auditorium</b>	<b>Room A-300</b>	<b>Room A-111/113</b>	<b>Classroom 1</b>	<b>Classroom 2</b>	<b>Classroom 3</b>	<b>Room A-302</b>
<b>3:30 – 4:30</b>	<p><b>STREAM RESTORATION MONITORING III –</b> Moderator, Scott Stranko (MDNR)</p>	<p><b>IT'S ALL CONNECTED: WATER QUALITY, WATER QUANTITY AND PUBLIC HEALTH –</b> Moderator, Andrew Muller (US Navy)</p>	<p><b>NEW APPROACHES TO STREAM AND WETLAND MONITORING AND RESTORATION –</b> Moderator, Jeff Reagan (Biohabitats)</p>	<p><b>COMMUNICATING CHALLENGES AND SUCCESSES IN A CHANGING WORLD –</b> Moderator, Kathy Stecker (MDE)</p>	<p><b>DATA TO DECISIONS –</b> Moderator, Angel Valdez (MDE)</p>	<p><b>SAVE THE TROUT!: MANAGING STORMWATER FOR HEALTHY WATERS –</b> Moderator, Byron Madigan (Carroll County)</p>	<p><b>STUDENT-PROFESSIONAL NETWORKING SESSION –</b> Moderator, Dot Lundberg (Rowan University)</p>
	<p><b>INITIAL EFFECTS OF STREAM RESTORATION ON FISH AND INVERTEBRATE ASSEMBLAGES IN LITTLE TUSCARORA CREEK, MARYLAND -</b> Jonathan Watson (MDNR)</p> <p><b>IN-STREAM IMPOUNDMENT REMOVAL AND STREAM CHANNEL CREATION FOR BROOK TROUT RESTORATION AND CONSERVATION IN A GARRETT COUNTY, MARYLAND, STREAM -</b> Alan Heft (MDNR)</p> <p><b>DAM REMOVAL MONITORING IN THE PATAPSCO- ESTABLISHING A BASELINE FOR BIOLOGICAL CONDITIONS PRIOR TO THE REMOVAL OF BLOEDE DAM -</b> William Harbold (MDNR)</p>	<p><b>MANURE AND FERTILIZER INPUTS TO LAND IN THE CHESAPEAKE BAY WATERSHED, 1950-2012 -</b> Jeni Keisman (USGS)</p> <p><b>PUBLIC HEALTH IMPLICATIONS OF THE DEATHS OF TWO MARYLAND DOGS EXPOSED TO HARMFUL ALGAE -</b> David A. Crum (MD Department of Health)</p> <p><b>FOCUS ON NONTRADITIONAL IRRIGATION WATER IN A CHANGING CLIMATE: ASSESSING FARMERS' NEEDS, WATER QUALITY, AND ACCESSIBILITY -</b> Rachel Rosenberg Goldstein (University of MD)</p>	<p><b>WETLAND SOIL FUNCTIONAL ASSESSMENT USING IRIS (INDICATOR OF REDUCTION IN SOILS) TECHNOLOGY -</b> Martin C. Rabenhorst (University of MD)</p> <p><b>LESSONS LEARNED IN PLANNING AND PRACTICE: USING "LESS IS MORE" AS A SUSTAINABLE RESTORATION APPROACH -</b> Catherine Hoy (Ecotone)</p> <p><b>USING ECOSYSTEM SERVICES TO GENERATE TMDL CREDIT – OUTSIDE THE BOX THINKING FOR A CHANGING WORLD -</b> Scott McGill (Ecotone)</p>	<p><b>THIS INTERACTIVE WORKSHOP FOCUSES ON WATER QUALITY OUTREACH TO DIVERSE AUDIENCES IN AN EVOLVING COMMUNICATIONS LANDSCAPE. HOW DO WE CRAFT OUR MESSAGES, TARGET OUR AUDIENCES, AND CHOOSE WHEN AND WHERE TO COMMUNICATE? HOW DO WE KNOW IF THE PUBLIC IS ACTUALLY HEARING OUR MESSAGES?</b></p> <p>Presenters are: Steve Raabe (Opinion Works) and Bill Dennison (UMCES)</p>	<p><b>TAKE A WALK ON THE REGULATORY SIDE -</b> Becky Monahan (MDE)</p> <p><b>CHESAPEAKE MONITORING COOPERATIVE -</b> Liz Chudoba (Alliance for the Chesapeake Bay)</p> <p><b>USING A MULTI-PARTY APPROACH TO MONITORING STORMWATER MANAGEMENT SYSTEMS IN PRINCE GEORGE'S COUNTY, MARYLAND -</b> Lia Mastropolo (AKRF/Clean Water Partnership)</p>	<p><b>ARE BROOK TROUT POPULATIONS IN MARYLAND FUNCTIONALLY EQUIVALENT? -</b> Nathaniel (Than) Hitt (USGS)</p> <p><b>TEMPERATURE MONITORING OF STORMWATER MANAGEMENT PRACTICES -</b> Sam Lee (MES)</p>	<p><b>LEARN ABOUT CAREERS! MAKE CONNECTIONS! HIGH SCHOOL AND UNDERGRADUATE STUDENTS ARE INVITED TO INTERACT WITH PROFESSIONALS IN THE FIELDS OF AQUATIC BIOLOGY, FRESHWATER ECOLOGY, MARINE BIOLOGY, WATERSHED SCIENCE, INTEGRATED MANAGEMENT, SCIENCE COMMUNICATION, AND MORE!</b></p>

4:30 Adjourn

## Poster Presentations (In Order of Primary Author's Last Name)

**ST. ANDREW'S LANDFILL GAS (LFG) SYSTEM'S IMPACT ON A MID-SIZED LANDFILL** - John Agnoli, Carly Cushing, and Kaitlyn Peterson (Maryland Environmental Service)

**NON-TRADITIONAL APPROACHES TO IMPROVE MACROBENTHIC INVERTEBRATE COMMUNITIES FOR STREAM RESTORATION PROJECTS** - J. Patrick Barber (Acer Environmental, LLC)+

**THE TENTH ANNUAL MARYLAND STREAMS ROUNDTABLE** - Andy Becker (KCI Technologies) and Dan Boward (MDNR)

**(STUDENT POSTER) - TRACKING CONDUCTIVITY WITH INCREASED TEMPORAL RESOLUTION BETWEEN TWO STORM WATER MANAGEMENT PONDS** - Joe Broome, Gregory Woodward, and Joel Moore (Towson University)

**(STUDENT POSTER) - WATER QUALITY IN BALTIMORE'S WATERSHEDS: A BIO-CHEMICAL INVESTIGATION** - Tashawan Colbert, DaRae Solomon, Dr. Jiru , Dr.Tatiana Roth, Tamera Warrington, Malia Vester, Aaliyah McCollough, and Jasmynn George (Coppin State University)

**USING STATISTICAL MODELS TO IMPROVE REMOTELY SENSED ESTIMATES OF TOTAL SUSPENDED SOLIDS IN THE CHESAPEAKE BAY** - Nicole M. DeLuca and Benjamin F. Zaitchik (Johns Hopkins University)

**THE FREDERICK COUNTY STREAM SURVEY: USING A COUNTYWIDE MONITORING PROGRAM TO BETTER INFORM RESTORATION DECISIONS ON A WATERSHED SCALE** - Donald Dorsey and Shannon Moore (Frederick County), and Ginny Rogers and Ryan Corbin (Versar)

**(STUDENT POSTER) - GREEN CONCRETE: A COMPARISON OF CONCRETE SUBSTRATES FOR MACROINVERTEBRATE COLONIZATION** - Samantha Francis, Dr. Patrick Kangas, and Dr. Peter May (University of Maryland), Ms. Evelyn Tickle (James Madison University)

**EFFECTS OF ROAD DEICING SALT AND TEMPERATURE ON LARVAL GREEN FROGS IN CENTRAL MARYLAND** - Frank Green, Raul Morin, Andrew East, and Christopher Salice (Towson University)

**BENTHIC MACROINVERTEBRATE RESPONSES TO A REGENERATIVE STORMWATER CONVEYANCE RESTORATION IN A COASTAL PLAIN STREAM** - Kyle Hodgson (MDNR)

**IS RNA/DNA A GOOD INDICATOR OF LARVAL YELLOW PERCH HABITAT QUALITY?** - Carrie Hoover, Alexis Park, Jim Uphoff, and Margaret McGinty, (MDNR)

**(STUDENT POSTER) - FINGERPRINTING SOURCES OF NITROGEN POLLUTION ON SCHOOLYARDS IN WESTERN MARYLAND** - McKenna Houser, Hailey Moore, and Rebecca Kenyon-Sisler (Northern Garrett High School), Andrew Elmore, Cassie Doty, David Nelson, Joel Bostic, and Cathlyn Stylinski (UMCES)

**(STUDENT POSTER) - ANALYSIS OF BACTERIAL AND ALGAL DIVERSITY IN THE ANACOSTIA RIVER** - Gabrielle Humlicek, Giovanna Vazquez, Dr. Caroline Solomon, and Dr. Gaurav Arora (Gallaudet University)

**(STUDENT POSTER) - ESTABLISHING BASELINE CONDITIONS BEFORE STREAM RESTORATION IN BALTIMORE AND HARFORD COUNTIES** - Ginny Jeppi, Vanessa Beauchamp, and Joel Moore (Towson University)

**(STUDENT POSTER) - HOW TO SURVIVE AS AN OYSTER IN BALTIMORE'S INNER HARBOR** - Natalie Johnson, Jonathan Mann, and Keith Johnson (Stevenson University)

**INCORPORATING DIATOM COLLECTION AND ANALYSIS IN COMBINATION WITH BENTHIC MACROINVERTEBRATES AND FISHERIES SAMPLING TO PROVIDE A MORE HOLISTIC REPRESENTATION OF WATER QUALITY CONDITIONS** - Sarah T. Koser (EA Engineering, Science, and Technology), Brian Cox (Maryland State Highway Administration), Jack Holt (Susquehanna University) and Matt Harper (M-NCPPC)

**MBSSTOOLS, AN R PACKAGE** - Erik W. Leppo (Tetra Tech)

**A SUITE OF IONS INCREASES WITH URBANIZATION IN MATTAWOMAN CREEK** - Jim Long and Laurie Fortis Snow (Mattawoman Watershed Society)

**DIVERSE ORGANIC CHEMICAL COMPOSITION OF MARYLAND STREAMWATERS AND OPPORTUNITY FOR ENVIRONMENTAL TRACER DEVELOPMENT** - Jenna Luek and Katherine R. Martin (UMCES), Mourad Harir (Helmholtz), Andrew Heyes and Lora Harris (UMCES), Philippe Schmitt-Kopplin (Helmholtz), and Michael Gonsior (UMCES)

**(STUDENT POSTER) - ASSESSING THE APPLICATION OF THE BANK EROSION HAZARD INDEX MODEL TO PREDICT STREAMBANK EROSION AT LITTLE CATOCTIN CREEK, MARYLAND** - Jeremy Malen (Towson University)

**(STUDENT POSTER) - NATURAL VS ARTIFICIAL THE REEF THAT FISH PREFER** - Jonathan Mann, Natalie Johnson, and Keith Johnson (Stevenson University)

**CANCELLED - AN EVALUATION OF FOREST IMPACTS AS COMPARED TO BENEFITS ASSOCIATED WITH STREAM RESTORATION** - Kevin McGuckin and Ginny Rogers (Versar), Verl Emrick (Virginia Tech), Jennifer Saville (Versar), and Nancy Roth (Tetra Tech)

**AQUATIC SPECIES DIVERSITY AND HABITAT CHARACTERIZATION IN TIDAL PARKERS CREEK** - Michael Molina (American Chestnut Land Trust)

**USING STABLE WATER ISOTOPES TO CHARACTERIZE PATHWAYS OF SUBSURFACE P LOSS IN A DITCH-DRAINED FIELD** - Lauren Mosesso (University of Delaware)

**CANCELLED - SAMPLING MARYLAND'S STATE OWNED LAKES FOR INVASIVE SPECIES** - Mike Naylor and Mark Lewindowski (MDNR)

**(STUDENT POSTER) - EFFECTS OF STREAM RESTORATION ON FLOW AND WATER QUALITY** - Emily O'Gwin, Tom Jordan, Carey Pelc, and Joshua Thompson (Smithsonian)

**ASSESSING THREATS TO MARINE WATER QUALITY CONDITIONS ALONG ASSATEAGUE ISLAND NATIONAL SEASHORE** - Judith M. O'Neil (UMCES) and Catherine Wazniak (MDNR)

**MERCURY IN STREAM ECOSYSTEMS OF THE KILPATRICK MARSH WATERSHED: USING INVERTEBRATES TO EVALUATE FOODWEB EXPOSURE** - Jacob Oster, Andrew Heyes, and Laura Lapham (Chesapeake Biological Laboratory)

**IDENTIFY AND CLASSIFY THE POTENTIAL NON-TRADITIONAL IRRIGATION WATER SOURCES IN MID-ATLANTIC REGION** - Manashi Paul and Masoud Negahban-Azar (University of Maryland)

**CANCELLED - (STUDENT POSTER) - DNA COMPARISON OF MARYLAND CRAYFISH SPECIES USING CYTOCHROME C OXIDASE** - John Prettyman and Joe Matanoski (Stevenson University)

**THE AGRICULTURAL WATER FOOTPRINT IN THE CHESAPEAKE WATERSHED** - Mary Schmidt and Dr. Masoud Negahban-Azar (University of Maryland)

**INVESTIGATING BIORETENTION PERFORMANCE THROUGH FOCUS ON LANDSCAPE ARCHITECTURE DESIGN SYNTAX** - Behnaz Safavi, Archana Sharma, PhD, James Hunter, PhD (Morgan State University)

**CURRENT STATUS OF WATER REUSE REGULATIONS AND GUIDELINES IN MID-ATLANTIC AND U.S.** - Farshid Shoushtarian and Masoud Negahban-Azar (University of Maryland)

**(STUDENT POSTER) - BACTERIAL SPECIES ISOLATED FROM THE JONES FALLS WITH ENHANCED GROWTH IN RESPONSE TO USED MOTOR OIL** - Mychala Snead, Sergut Admasu, Madison Socks, and Kim Pause Tucker (Stevenson University)

**(STUDENT POSTER) - LINKING WILDLIFE AND ECOSYSTEM HEALTH IN A WETLAND USING THE RED-EARED SLIDER AND PAINTED TURTLE** - Emily Sunnucks (Towson University) and Laura Zimmerman (Millikin University)

**(STUDENT POSTER) - PLANT DIVERSITY IN A HEADWATER STREAM AS A POTENTIAL INDICATOR OF STREAM HEALTH** - Jason Swartz, Makaila Lyons, Annette Palma, Allison Parker, and Dr. Holly Martinson (McDaniel College)

**PHYSICAL MONITORING AND SEDIMENT MAPPING SURVEY OF THE PATAPSCO RIVER NEAR BLOEDE DAM HOWARD AND BALTIMORE COUNTIES, MARYLAND** - Elizabeth Sylvia, Stephen Van Ryswick, Katherine Knipper, Anna Gillmor, Christopher Connallon, (MDNR - Maryland Geological Survey)

**FRESHWATER MUSSEL RESTORATION IN THE PATAPSCO RIVER** - Jennifer Tam and Matthew Ashton (MDNR)

**LONG-TERM CHANGE IN THE PATUXENT RIVER ESTUARY** - Jeremy Testa, Laura Lapham, Ryan Woodland, Carys Mitchelmore, Vic Kennedy, Zachary Gotthardt, Nicole Basenback, Katie Martin, Erin Crandall, Ginni La Rosa, Mathapelo Seopela, Natalie Peyronnin (UMCES)

**(STUDENT POSTER) - ANALYSIS OF HUMAN INTESTINAL PARASITES IN BIVALVES AND WATER OF THE JONES FALLS WATERSHED AND CHESAPEAKE BAY AND INNER HARBOR OF BALTIMORE MARYLAND** - Connor Wasilnak, Kim Pause Tucker, and Matt Tucker (Stevenson University)

**DETECTING HARMFUL 'ALGAE' IN MARYLAND LAKES** - Catherine Wazniak (MDNR), Rick Stumpf (NOAA), Charlie Poukish (MDE), Celia Dawson (MDNR), Blake Schaeffer (USEPA), and Chris Luckett (MDE)

**A COMPARISON OF TWO BENTHIC SUBSAMPLING METHODS AND TWO IBIS** - Adam Webb (Coastal Resources)

**AUTOMATIC SAMPLER COLLECTION OF LARGE-VOLUME STORM SAMPLES FOR SUSPENDED SEDIMENT-BOUND ORGANIC CONTAMINANTS FOR TMDL MODEL DEVELOPMENT IN TRIBUTARIES TO THE ANACOSTIA RIVER, WASHINGTON, D.C.** - Tim Wilson, Brian Banks, Deb Bringman, Shannon Jackson, Brenda Majedi, Charles Walker, and Timothy Wilson (USGS)

**TEMPERATURE MODELING FOR TMDL DEVELOPMENT AND IMPLEMENTATION IN NONTIDAL COLD STREAMS IN MARYLAND** - Guido Yactayo and Greg Busch (MDE)

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**PLEASE NOTE – A full program with talk and poster abstracts and committee reports is available on the MWMC website at [www.marylandwatermonitoring.org](http://www.marylandwatermonitoring.org)**