

The Forum

NEW YORK STATE WETLANDS FORUM NEWSLETTER

PRESIDENT TRUMP’S EXECUTIVE ORDER ON THE CLEAN WATER RULE

Amy G. Doan

On February 28, 2017, President Trump signed an Executive Order calling for the Administrator of the EPA and the Assistant Secretary of the Army for Civil Works to review the Clean Water Rule and subsequently publish for notice and comment a proposed rule rescinding or revising the rule. See *Presidential Executive Order on Restoring the Rule of Law, Federalism, and Economic Growth by Reviewing the “Waters of the United States” Rule*, Feb. 28, 2017 (the “Order”). The Order specifically provides that “the Administrator and Assistant Secretary shall consider interpreting the term “navigable waters,” as defined in 33 U.S.C. 1632(7), in a manner consistent with the opinion of Justice Antonin Scalia in *Rapanos v. United States*, 547 U.S. 715 (2006).”

According to President Trump, “The EPA’s so-called “Waters of the United States” rule is one of the worst examples of federal regulation, and it has truly run amok, and is one of the rules most strongly opposed by farmers, ranchers and agricultural workers all across our land. It’s prohibiting them from being allowed to do what they’re supposed to be doing. It’s been a disaster.” President Trump called the rule a “massive power grab,” blamed the rule

for the losses of hundreds of thousands of jobs and stated that the rule treated farmers and small businesses horribly, as if they were “major industrial polluter[s].” As a result, President Trump believed rescinding or replacing this rule is necessary to restrain the EPA’s authority in its regulation of wetlands.

The Clean Water Rule was promulgated in 2015 to address confusion associated with the Government’s authority to regulate certain waters after the Supreme Court decisions in *Rapanos v. United States* (2006) and *Solid Water Agency of Northern Cook County v. United States Army Corps of Eng’rs* (2001) (SWANCC). Initially, in 2007 (amended in 2008), the EPA and Army Corps of Engineers (the “Corps”) issued a joint memorandum identifying criteria by which the EPA/Corps would make decisions on whether or not to exercise jurisdiction over a particular body of water/wetland. However, there was still confusion as to which bodies of water were subject to the agencies’ jurisdiction. The Clean Water Rule was intended to eliminate that confusion.

When introduced in 2015, the Clean Water Rule was immediately challenged in the courts and the Sixth Circuit issued a nationwide temporary stay of the rule. After the stay was implemented, the EPA and the Corps resumed nationwide use of the agencies’ prior regulations and the

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Mission

The New York State Wetlands Forum is a non-advocacy corporation comprised of individuals and groups with diverse backgrounds, interests and viewpoints regarding wetlands and their science, use and management. Incorporated in 1994, the Forum is a 501(c)(3) not-for-profit organization. Its purpose is to improve communication among people interested in wetlands; call attention to and objectively discuss local, statewide, regional, national and global wetland issues as they relate to New York State; improve its members' knowledge and understanding of wetlands; and, make available information about wetlands to its members and the general public.

MESSAGE FROM THE CHAIR

It's that time again! Time to officially welcome spring-like weather; time to open up the 2017 field season; and time to register for the NYS Wetlands Forum's 2017 Annual Conference, April 25th and 26th in Suffern, NY. If you haven't read elsewhere, we are combining efforts this year with the Mid-Atlantic Chapter of the Society of Wetland Scientists (SWS). This joint initiative brings us a bit further downstate than we have ventured in the past, but if you look up directions to Suffern I think you will find that it isn't as difficult to get to as you may think.

Anyone that has been paying attention to the news (how could you not), knows there has been a lot of discussion regarding future budget cuts, regulatory changes, alterations to environmental agency roles and responsibilities – the list goes on and on. It has been of increasing importance for our communities, our workplaces, and ourselves to stay resilient and power through these times of change. The remainder of 2017 may be filled with uncertainty, but the Joint NYSWF and SWS-Mid Atlantic Chapter Conference provides us with 1.5 days to join together in these changing times to share ideas, form partnerships, and collaborate on our wetland future. We hope that you will be there to join us.

☺



“ASK THE NATURALIST”

Mike N. from Saratoga Springs writes:

Dear Mr. Naturalist:

I set up a game cam along a stream behind my house. I was very surprised how many animals I caught over the course of 2 weeks from mink, beavers, porcupines and many birds, but one bird I was unable to identify, some sort of duck, perhaps? I've attached the photo – can you please help?

Answer on page 11



INVESTIGATING VERNAL POOL QUALITY TO INFORM RESTORATION AND CONSERVATION EFFORTS

Leah Nagel

Vernal pools are small, temporary wetlands that provide important habitat for a wide range of species, common and threatened alike. These wetland islands increase habitat complexity in the forested landscape; because they support a unique aquatic community, they contribute significantly to landscape-level biodiversity. Historically, small, isolated wetlands were the most abundant wetland type in the northeastern U.S. and were present at high densities. However, vernal pools have disappeared—and continue to disappear—from the landscape at higher rates than wetlands overall due to inadequate regulatory protection and because they are easily destroyed. Vernal pools can be difficult to protect, but they are perhaps even more difficult to replace. Even where vernal pools are protected and remediation is required for mitigation purposes, the hydroperiod—the length of time in which there is water in the basin—often does not match that of the original pool, and in many cases the pools either become permanent or never fill at all.

From both a conservation and restoration perspective, then, understanding how different abiotic factors vary across a range of hydroperiods and landscape settings—and how these in turn affect vernal pool biota—is critical. In my research, I am especially interested in questions of pool quality. What makes a quality vernal pool? Throughout the northeastern U.S., evidence of breeding by amphibian indicator species is often used to identify and classify vernal pools for conservation purposes. But does comparing breeding effort between pools necessarily identify the pool that produces the most juveniles and therefore makes a stronger contribution to populations? In semi-permanent and permanent pools, egg predation by other amphibian species such as green frogs may significantly decrease the number of eggs that hatch in a pool. Furthermore, are high-quality pools for vernal pool-associated amphibians high-quality pools for other vernal pool organisms? My research focuses on amphibian survival as a metric of pool quality, and aims to identify factors that are especially significant in influencing larval survival to metamorphosis.

This year, I am working in two locations in central New York that contain a number of pre-existing vernal pools and pools constructed by the Upper Susquehanna Coalition (in Beaver Dams and Tully, NY) and researchers from SUNY-ESF (in Tully). In both locations, created pools vary in size and shape, and were constructed in a variety of forest types. For each pool, I am tracking water depth and surface area, water quality, and other abiotic factors throughout the spring and summer. Earlier this spring,

I recorded the number of egg masses laid by wood frogs and Ambystomatid salamanders (mostly spotted salamanders), and noted which pools contained overwintering



green frog tadpoles and red-spotted newt adults. This summer, I will collect data on a subset of macroinvertebrate taxa to better characterize pool communities, and sample amphibian metamorphs before they exit the pools to quantify survival to metamorphosis. At the end of the season, I will characterize hydroperiod length for each pool along a gradient from temporary to permanent, and combine factors measured in the field with remote sensing data including land cover, local disturbance, and proximity to nearby pools to assess their relative importance in amphibian survival across all pools.

The results of this study will augment understanding of amphibian survival in a range of vernal pools and inform conservation efforts currently focused on breeding effort as the primary metric of vernal pool quality. Vernal pools are important systems that provide nursery habitat for predation-vulnerable amphibians and contain distinct communities that increase biodiversity at the landscape scale; by integrating pool-scale and landscape-scale variables in assessments of pool functionality, this study will reflect the multi-scale drivers of both amphibian population dynamics and vernal pool influences on surrounding ecosystems. This study will also serve as a pilot study for the development of a rapid-assessment protocol in conjunction with the New York Natural Heritage Program (NYNHP) to examine the range of vernal pools statewide and develop metrics to compare pools within and between different regions statewide. The results of these surveys, combined with the substantial but unconsolidated vernal pool research that has been conducted in different parts of the state, will help deepen our understanding of the range of vernal pools throughout New York State and allow land managers and conservation professionals to make more informed decisions about vernal pool management.

I would like to thank the Wetlands Forum for supporting this project through the student scholarship, which allowed me to purchase waders early in the season and defray transportation costs. Being able to attend the conference in April was an invaluable experience, and I am grateful for the opportunity to meet a wide range of wetland practitioners from throughout the state and to join the NYS community of wetland professionals.

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joint memorandum. Accordingly, following the stay, the EPA/Corps applies relevant case law, applicable policy, and the best science and technical data on a case-by-case basis to determine which waters are jurisdictional. Therefore, if the Clean Water Rule was merely rescinded, there would not likely be any change to the EPA's/Corps' authority.

However, President Trump ordered the Administrator and Secretary to consider interpreting "navigable waters" in accordance with Justice Scalia's opinion in *Rapanos*. In *Rapanos*, there were five different opinions written: one plurality where four Justices joined, two concurring opinions and two dissenting opinions. The plurality opinion was written by Justice Scalia and was perhaps the most restrained in its interpretation of the statute's definition of navigable waters and thus the most conservative in its application and enforcement.

Specifically, Justice Scalia defined waters of the United States under the statute to include only those relatively permanent, standing or continuously flowing bodies of water forming geographic features that are described in ordinary parlance as streams, oceans, rivers and lakes. *Rapanos*, 547 U.S. 715, 739 (2006) (quotations and citations omitted). Scalia opined that the "phrase does not include channels through which water flows intermittently or ephemerally, or channels that periodically provide drainage for rainfall." *Id.* With regards to wetlands, the plurality held that "only those wetlands with a continuous surface connection to bodies that are 'waters of the United States' in their own right, so that there is no clear demarcation between 'waters' and wetlands, are 'adjacent to' such waters and covered by the Act." *Id.* at 742. Scalia identified a two-part test for establishing that a wetland is subject to the Act: (1) the adjacent channel contains a water of the United States (a relatively permanent body of water connected to traditional interstate navigable waters); and (2) the wetland has a continuous surface connection with that water making it difficult to determine where the water ends and the wetland begins. *Id.*

Despite the plurality opinion, the EPA and Corps' joint memorandum applied the broader significant nexus test that had been included in Justice Kennedy's opinion, thereby giving the agencies more discretion. See *Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in Rapanos v. United States & Carbell v. United States*, Dec. 2, 2008; see also *Rapanos* at 753-57. Accordingly, if the EPA were to adopt Scalia's definition of waters of the United States, the EPA/Corps' jurisdiction to protect wetlands would be significantly limited.

For example, under the guidance memorandum, the agencies decide jurisdiction over certain wetlands based on a "fact-specific analysis" to determine if the wetlands have a significant nexus with traditional navigable water for (1)

wetlands adjacent to non-navigable tributaries that are not relatively permanent and (2) wetlands that are adjacent to but that do not directly abut a relatively permanent non-navigable tributary. Under Scalia's definition, neither of these "types" of wetlands would be jurisdictional because the wetlands are not adjacent to and do not directly abut a "relatively permanent body of water" and likely do not have a "continuous surface connection" with that water. Under the current guidance, the jurisdiction of such wetlands are considered on a case-by-case basis, at the very least affording the potential for regulation and protection. If the Scalia definition is adopted as the rule, the agencies' discretion will be eliminated and the agencies' jurisdiction over many of the wetlands that they currently protect would be significantly diminished.

Without federal regulation by the EPA/Corps in place, it is likely that fewer wetlands will be protected leading to a decline in wetland acreage. Fewer wetlands could result in increased flooding, a decline in significant habitat for threatened and endangered species and more polluted waters. Accordingly, if this is the direction the EPA/Corps are forced to take, then regulation of wetlands on the state level becomes critical. In some states, like New York that only regulates wetlands exceeding 12.4 acres, significant changes to existing state and local regulations would be necessary to expand the state's jurisdiction over smaller wetlands with a significant nexus to traditional navigable waters. Either way, it appears that significant changes with respect to wetland protection and regulation lay ahead.

UPCOMING WORKSHOP

Grasses of New York (Tompkins County).

Instructor: David Werier. Joint with Bailey Hortorium at Cornell University.

The workshop will focus on the identification and ecology of grasses that occur in New York. This workshop is for all levels and includes a lot of time in the field and lab time as well, where access to dissecting microscopes will make examination of the small floral structures easier. There will be a review of basic grass parts and time for self or group study of specimens that will be supplied and/or that students bring. Workshop will take place from Friday June 9th at 7pm to Sunday the 11th in the afternoon. It will be based out of the Bailey Hortorium Herbarium at Cornell University, Ithaca, NY. For more information visit www.nyflora.org.

MICROBEADS IN SEDIMENT, DREISSENID MUSSELS, AND ANURANS IN THE LITTORAL ZONE OF THE ST. LAWRENCE RIVER

McKenzie Schessl

Introduction

The study and acknowledgement of plastic pollution within marine environments has been conducted among scholars for the past 45 years (see review by Castañeda et al. 2014). Studies have examined for small plastics in the littoral sediment (Browne et al. 2010; Thompson et al. 2004), pelagic water column (see review by Cole et al. 2011; Derraik 2002), and organisms (Browne et al. 2008). With global plastic production reaching over 260 million tons per year (Browne et al. 2010), it is no wonder the global extent of microplastic pollution is still largely a mystery (see review by Browne et al. 2011).

Sources of plastic pollution entering waterways ranges from drainage systems from households, sewage system overflow and wastewater treatment plant (WWTP) effluents (EPA 2007, Browne et al. 2011), improper garbage disposal (Browne et al. 2010; see review by Eriksen et al. 2013), and even runoff of degraded, road abrasion particles (Browne et al. 2010). Industrial sites such as textile laundering and sandblasting facilities have also been known to pollute marine environments with microplastic fibers and particles (Dreidger et al. 2015; see review by Eriksen et al. 2013). In the environment, larger plastics photo-degrade resulting in pervasive environmental microplastics (Dreidger et al. 2015) that are unable to be effectively removed with technology today including existing WWTPs (Browne et al. 2011; Dreidger et al. 2015).

Studies have found that microplastics have penetrated freshwater systems just as extensively as marine systems (Dreidger et al. 2015; see review by Eerkes-Medrano et al. 2015; Eriksen et al. 2013) having been found throughout North America, in Europe including Austria, Germany, and the United Kingdom, and Mongolia (see review by Eerkes-Medrano et al. 2015). However far less attention has been paid to freshwater systems and the effects of microplastic pollution on the ecosystems.

The knowledge gaps in microplastic presence and the effects on freshwater systems, specifically wetlands presents opportunity for extensive research. I hypothesized that microplastics would continue to be found in the littoral, marsh zone of St. Lawrence River and that their presence in the water column and sediment would allow for their transfer through the trophic levels of the St. Lawrence River ecosystem either through consumption or accidental ingestion. In an effort to test a trophic transfer hypothesis I sampled sediment along with 114 zebra and quagga mussels from the marsh regions, and 41 roadkill amphibian

individuals collected adjacent to the St. Lawrence River for microbeads.

Methods and Results

I sampled four sites along the St. Lawrence River, from Alexandria Bay to Waddington, NY. The four sites were chosen based on proximity to human activity and settlement, low water velocity, and a small inlet where the current flowed in. The sampling sites included Grass Point State Park in Alexandria Bay at the beach access point, Oak Point in Hammond, NY at the public docks, Rockway Point in Lisbon, NY at a small inlet, and Coles Creek State Park in Waddington, NY at the beach access point.

Sediment samples were collected from the four sample sites and three subsamples taken from each site. Sediment subsamples were collected based on locations where decreased velocity or low energy zones were evident like in coves or inlets (Vianello et al. 2013). Subsamples were collected at Grass Point State Park on 5 September 2015. Oak Point, Rockway Point, and Coles Creek State Park sediment subsamples were collected on 31 October 2015. All sediment subsamples were taken at a water depth of 0.5 meters using a metal hand scoop (355 mL). Three scoops were taken per subsample to a depth of 7.5 cm beneath the surface sediment. The sediment subsamples were then sieved using a 500 micron grade metal sieve (Castañeda et al. 2015) on site using river water to facilitate sifting. The sediment and water were stored at a room temperature of 18 degrees Celsius until processing. Each sediment subsample was sorted using forceps, removing larger rocks and debris ranging from 3 to 30 mm in diameter and placed in a separate container. These contents were rinsed and visually inspected for microplastic particles (microbeads) based on spherical shape, color, and texture individually. Smaller sediment was analyzed by separating each subsample further in petri dishes and combing through the samples using forceps and a dissecting microscope (Olympus SZ-ST, SZ30, SZ3060) at 2x magnification for microbeads. Any microbeads that were found were removed with forceps and stored in a 20 mL scintillation vial with water.

Mussels were collected at three of the four sites through haphazard sampling of larger rocks and inspecting them for mussels which were identified as either zebra, *Dreissena polymorpha*, or quagga, *Dreissena bugensis*, mussels. All mussels were removed and transported in buckets of river water, sorted into sealed plastic bags, and frozen until analysis. Specimens were removed from the freezer, their length measured using digital calipers (Maxwell 150 mm), and then thawed prior to dissection. Once thawed, a scalpel was inserted between the valves to cut the attachment of mantle, separating the bivalve shells and the soft tissue was removed from the shell entirely (Ram et al. 1999).

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WETLAND ASSESSMENT WORKSHOP

The NYSWF held a Wetland Assessment Workshop on October 13, 2016, at the Beaver Lake Nature Center in Baldwinsville, NY. The training focused on wetland functional assessment techniques most commonly employed in New York State for both permitting (NYSDEC/USACE) and managing wetland resources on agricultural lands (Natural Resource Conservation Service - NRCS). Dr. Kevin Bliss (NYSDEC Permit Manager) and Kim Farrell (NRCS State Biologist) provided technical expertise and spoke to their many experiences with wetland assessment in the state. Dave MacDougall (Kleinfelder Senior Biologist) provided an introduction on how to assess wildlife utilization and habitat function and value within wetlands, while Dr. Laura Shappell (NY Natural Heritage Program Wetland Ecologist) covered the NHP's NYRAM assessment technique.

Despite the longer than anticipated training day and the wet weather, the 55 or so participants that attended this seminar spoke highly of the trainers and the information covered. The NYSWF extends its sincerest appreciation to the trainers that made this event a success and to the Beaver Lake Nature Center (BLNC). Heidi Kortright, BLNC Director, not only provided the Forum with a meeting space and field locations at the facility, she also provided coffee, A/V equipment, staff assistance . . . the list goes on. BLNC is in the Onondaga County Park system and offers 9 miles of trails and special events throughout the year. Please consider a visit to this facility if you are ever in the greater Syracuse area.

For more information visit: <http://www.onondagacountyparks.com/parks/beaver-lake-nature-center/> or <http://www.beaverlakenaturecenter.org/>

2016 ANNUAL CONFERENCE & MEETING SNAPSHOTS



WILTON WILDLIFE PRESERVE & PARK FIELD TRIP

Aimee Viens Rutledge

The 2016 NYSWF Annual Meeting featured a well attended field trip to the Wilton Wildlife Preserve & Park (WWPP) to learn about the Blanding's turtle population research at the WWPP. Andrea Chaloux, a NYS Wildlife Biologist, presented her research of the small and isolated population of Blanding's turtle which have inhabited the WWPP wetlands possibly since the end of the last glacial period, when the melting of the glacier left behind the sand dunes and vernal pools that make up the unique habitats of the Saratoga Sandplains ecosystem. The findings of the research study resulted in important recommendations to help in the conservation of this population. Andrea and Margo Olson, Director of the WWPP provided a tour of the Blanding's turtles habitat on the snow covered April afternoon. Education and protection of the Blanding's turtles is critical to the survival of this isolated population.



BOG MEADOW BROOK NATURE TRAIL BIRD WALK

Greg Lawrence

Eight hardy wetland scientists braved below freezing temperatures and snow covered trails for the Wednesday morning bird walk, led by Kurt Weiskotten. The walk was along an abandoned railroad bed at the Bog Meadow Brook Nature Trail in Saratoga Springs. The trail traversed a forested wetland, a wet meadow, and an almost frozen over beaver pond. Though the air was cold, there was still plenty of bird activity in the marsh. The group was treated to close looks at a number of recently arrived Swamp Sparrows who were already singing on territory. A pair of Eastern Phoebes also put on a show by the bridge over the creek, and we had good looks at multiple Northern Flickers on some dead snags. The small portion of water that was not iced over yielded a Wood Duck and great looks at three Green-winged Teal. While looking at the ducks, we spotted a Common Raven fly over giving its distinctive croaking call. However, the highlight of the trip included point blank looks at three Rusty Blackbirds right next to the trail. We all admired their glossy black and blue coloration mixed with their namesake rusty color. After an hour of hiking, even the Rusty Blackbirds weren't enough to keep the group from retreating to the warmth of the cars. Altogether, we observed 20 species of birds and had a great morning hike in the fresh air.

THE NATURALIST RESPONDS

That's a drake Wood Duck coming out of its basic plumage and molting into its alternate plumage. Give it another month or so and it will look absolutely beautiful like the typical male wood ducks we are familiar with.

Did you know the Latin name for Wood Duck means "as if in wedding dress" - very appropriate for this swamp beauty!



Please send your "Ask the Naturalist" questions to the NYSWF at info@wetlandsforum.org.

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The soft tissue of each individual mussel, along with the now empty shell were dissected under a dissecting scope at 2x magnification to inspect for microbeads.

Surveys for amphibians were conducted on paved roadways nearest each sampling site, both up and downstream of sediment sampling sites with a total of 25 km surveyed for each site. These surveys were conducted on nights that were rainy, following warm days, during peak to end of amphibian migration season throughout the month of October 2015. This time period was selected due to climatic factors that increase movement of amphibian species which increased the likelihood of amphibian mortality on the road (Todd and Winne 2006). The vehicle was driven at 8 kmph along paved roads while scouting for amphibians. Dead specimens found on the road were inspected to see if the digestive tract was intact and of large enough size to equate adult age for the species. The individual was then collected in sealed plastic bags, GPS coordinates were noted using Garmin smartphone application (<http://sites.garmin.com/en-US/smartphonelink/android/>) and species identified. Specimen were then frozen until further analysis. In the lab, samples were allowed 24 hours to thaw before analysis, any that were still frozen were left in the bag and placed in a container of room temperature water for 10 minutes to finish thawing. Once thawed, snout to vent length, and wet weight were collected on all viable specimen. The sample was then dissected in order to remove the digestive tract. When present, the digestive tract was placed in the original bag and the rest of the sample discarded. These bags were then frozen again, thawed, and the digestive track cut open and placed in 2.5 oz. jars and allowed to liquefy for 2.5 weeks at room temperature of 21 degrees Celsius. To help speed up the liquefaction process the jars were agitated every two days. Then the liquefied digestive tracts were placed in petri dishes and analyzed for the presence of microbeads using a scalpel, forceps, and a dissecting microscope at 2x magnification in a fume hood to help with ventilation.

Of the four sample sites along the St. Lawrence River and twelve sediment subsamples in total, two sites were found to contain microbeads in the sediment. The color of the microbeads showed little variation. At Oak Point, 188 white, opaque microbeads were found in subsample 1, 20 in subsample 2, and 138 in subsample 3. At Rockway Point 2 white, opaque microbeads and 1 black microbead were found in subsample 1. The microbeads varied in size 0.0748 mm - 1.2264 mm with an average diameter of .8667. No microbeads were found within the sediment subsamples at Grass Point State Park or Coles Creek State Park locations.

With microbeads being detected at two sites out of four, a more extensive and intensive approach is needed to determine the full extent of microbead infiltration. A

lack of detection could be due to currents within the river forcing microbeads and other debris to places where currents converge (Driedger et al. 2015) meaning that the lack of beads detected could be due to the lack of deposition at these particular sites not their lack of presence within the St. Lawrence River as a whole. Since the sources of microbeads are anthropogenic, sites were chosen based on their proximity to towns and public access points like beaches but their distance from WWTPs was not a direct factor in site location. A study found that an average of one microplastic particle is in every liter of WWTP effluent (see review by Browne et al. 2011), that can originate from cosmetic products and cleaners but also from synthetic fibers from washing clothing (see review by Eerkes-Medrano et al. 2015). It is possible that if sampling occurred closer to WWTPs along the St. Lawrence River then microbead abundance would increase.

At Grass Point State Park 18 zebra and 20 quagga samples were collected, 40 quagga samples were collected at Oak Point, and 36 zebra mussels from Coles Creek State Park. No mussel samples were collected at Rockway Point. A total of 114 Dreissenid mussels were collected. The size ranged from 10.59 - 22.9 cm, the average length was 17.33 cm. After analysis, no microbeads were found within any of the mussel samples. On adjacent roads, a total of 41 roadkill amphibian samples were collected. In 31 of the samples, the digestive track or a partial digestive track was present due to vehicle mutilation and dissected. No microbeads were found in any of the amphibian samples.

The lack of microbeads detected within mussel and amphibian samples does not mean that microbeads are not being transferred through the trophic levels of the St. Lawrence River. A proper model must be developed to thoroughly assess for the presence of microbeads within organisms and their ability to transfer through the trophic levels. The largest mussel found at sampling locations was 22.9 cm, with an average of 17.33 cm in length. Typically mussels of this size selectively ingest particle between 5-35 microns (Sprung and Rose 1988). The microbeads sampled from Alexandria Bay to Waddington, NY were 74.8 - 1226 microns in size. Finding microbeads within mussel samples of that size was unlikely due to physical constraints. Complimentary lab experiments are recommended using a range of mussels and microplastics sizes to assess the probability of freshwater mussels taking up microplastic pollution.

The majority of amphibian species with viable digestive tracks collected were American bullfrogs (*Rana catesbeiana*) and Northern leopard frogs (*Rana pipiens*). The diet of the American bullfrog includes small fish, crayfish, insects, and even other frogs and bugs and for the Northern leopard frog insects, leafhoppers, and spiders (Gibbs et al. 2007). Thus the possibility of finding microbeads within the bullfrogs is possible but unlikely

within the northern leopard due to its diet consisting primarily of insects. Further research using a variety of aquatic species is recommended to determine whether microbeads are being transferred through trophic levels of the St. Lawrence River. A bottom feeding species of fish such as the Round Goby (*Neogobius melanostomus*) or the Rusty Crayfish (*Orconectes rusticus*) may be a viable target species due to their diets consisting of other aquatic organisms or the likelihood of accidental ingestion.

Conclusion

Completion of this experiment proved that sediment within the St. Lawrence River does contain microplastic debris, however microplastic particles were not detected within the Dreissenid mussels or anuran amphibians in and around the St. Lawrence River ecosystem. A challenge in researching microplastics is there is no set definition for “microplastic” even though it is commonly referred to as a plastic particle that is smaller than 5 mm (Driedger et al. 2015). The lack of standardized microbead definition makes studying and quantifying samples somewhat subjective.

Even though WWTPs are a known point source of microbeads and other microplastic particle pollution (see review by Cole et al. 2011; Driedger et al. 2015) there is currently no regulation in the United States on monitoring influents or effluent of these facilities (Driedger et al. 2015). If preliminary evidence is telling, then regulations should be put into effect immediately to curb the amount of microplastic pollution within effluents, both dry and wet. But in order for microbeads to be removed, new filtration technology is required (Nalbone 2014). New York State and Illinois were the first two states to write legislation that addressed microbeads pollution. In New York State an amendment was made to the Environmental Conservation Law and to the Environmental Protection Act in Illinois banning the manufacturing of microbeads by 2016 in New York and 2017 in Illinois and the distribution of products containing microbeads by 2018 (<http://www.npr.org/2014/05/21/313157701/why-those-tiny-microbeads-in-soap-may-pose-problem-for-great-lakes>). On December 28, 2015, the U.S. Congress passed a bill requiring companies to phase out microbeads by July 2017 (<http://wyomingpublicmedia.org/post/congress-bans-microbeads>). Even though some companies were beginning to phase out microbead use to appease consumers, the Microbead-Free Waters Act of 2015 provides a national law forcing companies to remove microbeads from their products or face prosecution thus holding the companies responsible.

Many plastic beads and particles resemble macroinvertebrates, eggs, and organic debris that aquatic organisms feed on making ingestion probable (Carpenter et al. 1972; Teuten et al. 2007). Sanchez et al. (2014)

and Imhof et al. (2013) investigated for the presence of microplastics in aquatic organisms such as the gudgeon (*Gobio gobio*) and annelids (*Lumbriculus variegatus*), crustaceans (*D. Magna* and *Gammarus pulex*), ostracods (*Notodromas monacha*), and gastropods (*Potamopyrgus antipodarum*), respectively and found that aquatic organisms are potentially prone to microplastic ingestion. In France, a study was done investigating the presence of microbeads within the fresh water fish species wild gudgeons (*Gobio gobio*) by collecting 186 individuals and dissecting their digestive tracks. It was found that 12% of the samples were contaminated with microbeads but that more data was needed as this was the first study of its kind (Sanchez et al. 2014). While this data on consumption is valuable, more research investigating the effects of ingesting microplastics, the residual chemicals they possess, and the potential for bioaccumulation is necessary. Preliminary studies have been conducted suggesting that many plastics act as sponges and soak up chemicals that they sit in coupled with their ability to be ingested by organisms pose bioaccumulation issues with trophic transfer of contaminants, especially when ingested by lower trophic organisms (Betts 2008; Teuten et al. 2007). The potential for chemicals to buildup may pose a potential health risk to aquatic organisms especially those particularly sensitive within wetland ecosystems.

Acknowledgement

I thank Dr. Carrie Johns and Professor Sara Asphole in the Environmental Studies Department at St. Lawrence University for their advice in designing this project and reviewing suggestions. Dr. Brad Baldwin of the Biology Department is thanked for his advice and help in imaging microbeads. I am grateful for the volunteer who helped collect and analyze samples.

New York State Wetlands Forum, Inc. & Society of Wetland Scientists Mid-Atlantic Chapter
2017 Annual Conference and Meeting
Crown Plaza Suffern-Mahwah, Suffern, New York
April 25 & 26, 2017
OUR WETLAND FUTURE: RESILIENCY IN UNCERTAIN TIMES

April 25

6:30 – 7:30

Exhibitor/Poster Setup – Renaissance I & II

7:30 – 5:00

Registration and Review of Exhibits and Posters – Montebello Foyer and Renaissance I & II

7:30 – 9:30

Continental Breakfast – Renaissance I & II

8:30 – 8:40

Opening Remarks: Ms. Johanna Duffy, Barton & Loguidice, DPC and Chair, New York State Wetlands Forum, and Mr. Jeff Trulick, U.S. Army Corps of Engineers and President, Society of Wetland Scientists – Mid-Atlantic Chapter – Montebello III & IV

8:40 – 9:20

KEYNOTE ADDRESS: Ms. Hayley Carlock, Esq., Director of Environmental Advocacy - Scenic Hudson

9:20 – 9:30

Break and Review of Exhibits/Posters – Renaissance I & II

9:30 – 10:50

CONCURRENT SESSION A

1. Resilient and Adaptive Thinking – Montebello III & IV

Moderator: TBD

- The Impact of Large Storms on Coastal Wetlands of the United States: Meta-Analysis
Speaker: Ms. Frances Knickmeyer, State University of New York, College of Environmental Science and Forestry
- Phragmites: Ecosystem Services and Control
Speakers: Ms. Judith S. Weis, Rutgers University and Mr. Erik Kiviat, Hudsonia
- Using Flood Inundation Mapping and Stream Power to Identify Risks and Set Conservation Priorities
Speaker: Mr. Mark Carabetta, Milone & MacBroom, Inc.

2. Successful Wetland Mitigation Initiatives: Lessons Learned - Montebello I & II

Moderator: Mr. Jeremy Waddell, Upper Susquehanna Coalition

- Review of the Wetland Mitigation Process for the NJ Turnpike Authority Interchange 6 to 9 Widening Project
Speaker: Mr. Edward Samanns, Louis Berger Group, Inc.
- Micro-Topography Benefits for Restoration Plantings
Speaker: Mr. Jaak Van den Sype, HDR
- The Use of Seed Mixes in Wetland Creation Sites as an Alternative to Plantings
Speakers: Mr. Steve Wittig, Gannett Fleming, Inc. and Ms. Dani-Ella Betz, Chester County Water Resources Authority

10:50 – 11:10

Break and Review of Exhibits/Posters – Renaissance I & II

11:10 – 12:30

CONCURRENT SESSION B

1. Wetland Vegetation in Changing Environments – Montebello III & IV

Moderator: Ms. Amanda Post, Sterling Environmental Engineering, P.C.

- An Emerging Threat to New York State: *Brachypodium sylvaticum* (False brome)
Speaker: Ms. Andie Graham, The College of Brockport, State University of New York
- Phenolic Content of Invasive and Non-Invasive Emergent Wetland Plants
Speaker: Ms. Melissa Harrison, Rochester Institute of Technology
- Urban Wetland Ecology: Seed Bank and Vegetation Changes Following a Disturbance
Speaker: Ms. Megan A. Larson, State University of New York at Binghamton

2. SEQR Regulation and Practical Implementation – Montebello I & II

Moderator: Mr. Chris Einstein, CHA Consulting, Inc.

- NEPA & Federal Agency Involvement in New York State Projects
Speaker: Ms. Teresa Bakner, Whiteman Osterman & Hanna, LLP
- SEQR Regulation Update
Speakers: Mr. Jim Eldred and Mr. Larry Weintraub, NYS Department of Environmental Conservation
- Using DEC On-Line Tools to Prepare an Environmental Assessment Form
Speakers: Ms. Jean Loewenstein and Ms. Nicole Frazer, CHA Consulting, Inc.

12:30 – 2:00

Lunch and Membership Meetings - Waterfall Garden

2:20 – 3:40

CONCURRENT SESSION C

1. Wetland Mitigation Banks and In-Lieu Programs – Montebello III & IV

Moderator: Mr. Kevin Bliss, NYS Department of Environmental Conservation

- Wetland Mitigation Banking – Measuring Benefits, Weighing Risks
Speakers: Mr. Daniel Spethmann, Working Lands Investment Partners, LLC and Ms. Charlotte Brett, Environmental Consultant
- Utilizing Wetland Banking for the Preservation and Restoration of Critical Freshwater Wetland Habitats: Case Study of Troy Meadows Wetland Mitigation Bank, Morris County, NJ
Speakers: Mr. Justin Baker, Louis Berger Group, Inc. and Mr. Len Fariello, Wildlife Preserves, Inc.
- Challenges and Progress of the Ducks Unlimited In-Lieu Fee Program in New York State
Speaker: Mr. John Fraser, Ducks Unlimited, Inc.

2. Wildlife and Habitat Studies – Montebello I & II

Moderator: Ms. Johanna Duffy, Barton & Loguidice, DPC

- Habitat Suitability for Muhlenburg's (Bog) Turtle (*Glyptemys muhlenbergii*): Vegetation and Soils in the Hudson Housatonic Recovery Unit of New York, Connecticut, & Massachusetts
Speaker: Mr. David MacDougall, Kleinfelder
- Trapping, Relocation, and Re-Colonization of Devil Crayfish in Cayuga Creek, NY
Speaker: Mr. Tom Somerville, Earth Dimensions, Inc.
- Comparison of Burrowing Effects of Fiddler Crab on Denitrification Enzyme Activity
Speaker: Ms. Tori Moebus, University of Rhode Island

3:40 – 4:00

Break and Review of Exhibits/Posters – Renaissance I & II

4:00 – 5:20

CONCURRENT SESSION D

1. Online Resources, Including Databases and Mapping – Montebello III & IV

Moderator: Ms. Melissa Yearick, Upper Susquehanna Coalition

- News From the New York Flora Association and Plant Atlas Program
Speaker: Mr. Joseph M. McMullen, Environmental Consultant
- How Can iMapInvasives Help You?
Speaker: Ms. Meg Wilkinson, New York Natural Heritage Program

2. Adding Resiliency to Infrastructure – Montebello I & II

Moderator: Ms. Stephanie Wojtowicz, NYS Department of State

- Pioneering Roadway and Utility Project Incorporates BMPs to Reduce Flooding in Springfield Gardens, Queens
Speaker: Mr. Brian Sayre, Dewberry
- Tappen Zee Bridge: Design-Build Contracting and Considering Environmental Effects
Speaker: Ms. Melissa Toni, Federal Highway Administration
- Functionality of Floating Islands and Wetland Systems in Lined Reservoirs to Promote Water Quality
Speakers: Mr. David H. Graff and Ms. Samantha Hockenberry, Gannett Fleming, Inc. and Mr. Ray Davis, Floating Wetland Solutions

5:30 – 6:30

Technical Poster Review - Renaissance I & II

April 26

6:00 – 8:00

Spring Bird Walk, at Celery Farm, in nearby Allendale, New Jersey with Mr. Kurt Weiskotten, GPI/Greenman-Pedersen, Inc. and Mr. Greg Lawrence, The College at Brockport, State University of New York

7:30 – 8:30

Registration and Continental Breakfast – Montebello Foyer and Renaissance I & II

8:30 – 8:35

Announcements – Ms. Johanna Duffy, Barton & Loguidice, DPC and Chair, New York State Wetlands Forum and

8:40 – 10:00

1. Tools for the Wetland Biologist – Montebello III & IV

Moderator: Mr. Jason Smith, Hanover Engineering Associates, Inc.

- Evaluating Corps Jurisdiction Via a Subsurface Nexus
Speaker: Mr. Steve Mooney, O'Brien & Gere
- Field Indicators of Hydric Soils in the United States, 2016 Version 8.0
Speaker: Mr. Will Buetow, TRC
- The Wetland Biologist in Court: A Survival Guide
Speaker: Mr. Stephen Seymour, HDR

2. Fens and Peatlands – Montebello I & II

Moderator: Mr. Tim Post, NYS Department of Environmental Conservation

- Paleocological Investigation of An Atypical Coastal Pocket Peatland of Lake Ontario
Speaker: Ms. Eli Polzer, The College of Brockport, State University of New York
- Cattail Control and Restoration of a Rare Fen Community in Lake Ontario
Speaker: Mr. Brad M. Mudrzynski, The College of Brockport, State University of New York
- Restoration of Fen Habitat at the Former Village Firing Range at the Franklin Correction Facility, Malone, NY – A Case Study
Speaker: Mr. Kyle W. Buelow, O'Brien & Gere

10:00 – 10:20

Break and Review of Exhibits/Posters – Renaissance I & II

10:20 – 11:50

1. Legislative and Regulatory Updates – Montebello III & IV

Moderator: Ms. Kathleen Bennett, Bond, Schoeneck & King, PLLC

- U.S. Fish and Wildlife Service - Updates
Speaker: Mr. Tim Sullivan, U.S. Fish and Wildlife Service
- Update on the Wonderful World of Habitat Protection at NYSDEC
Speaker: Mr. Roy "JR" Jacobson, NYS Department of Environmental Conservation
- U.S. Environmental Protection Agency - Updates
Speaker: Mr. Daniel Montella, U.S. Environmental Protection Agency
- U.S. Army Corps of Engineers - Regulatory Updates
Speaker: Mr. Stephan Ryba, U.S. Army Corps of Engineers

11:50 – 12:00

Closing Remarks

12:00 – 1:00

Lunch (On Your Own)

1:00 – 4:00

Field Trips – Mr. Kurt Weiskotten, GPI/Greenman-Pedersen, Inc.

- Vernal Pool Mitigation Sites at Stewart Airport and Forest Preserve
- Wetland Birds and Plants at Iona Marsh and Doodletown Bird Conservation Area
- Freshwater Wetland and Tidal Marsh at the Richard P. Kane Natural Area

POSTER SESSION

- Investigating the Role of Shade Tolerance in the Invasive Regime of *Brachypodium sylvaticum* at Bergen Swamp
Presented by Mr. Wyatt Jackson, The College at Brockport, State University of New York
- Impacts of the Cryptic Macroalgal Invader, *Nitellopsis abtusa*, on Macrophyte Communities
Presented by Mr. Andrew S. Brainard, O'Brien & Gere and State University of New York, College of Environmental Science and Forestry
- Long Term Restoration Effects on the Denitrification Potential of the New England Salt Marsh
Presented by Ms. Christine Gardiner, University of Rhode Island
- Identifying Quality Vernal Pools: Factors Influencing Amphibian Survival in Small, Isolated Wetlands
Presented by Ms. Leah Nagel, State University of New York, College of Environmental Science and Forestry
- Understanding Long-Term Salt Marsh Restoration Trends with Mapping and Porewater Analysis
Presented by Mr. Anthony Campbell and Ms. Serena Moseman-Valtierra, University of Rhode Island
- Predicting the Spread of the Invasive *Brachypodium sylvaticum* in Bergen Swamp
Presented by Ms. Tiffany Clay, The College at Brockport, State University of New York
- Spatial Prioritization Information for Invasive Species Work
Presented by Ms. Meg Wilkinson, New York Natural Heritage Program
- New York Protected Area Database (NYPAD) <http://nypad.org/>
Presented by Ms. Meg Wilkinson, New York Natural Heritage Program
- A Three-tiered Approach To Wetland Assessment in New York State
Presented by Ms. Laura Shappell, New York Natural Heritage Program



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Mid-Atlantic Chapter

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ATTENDEE REGISTRATION (Pre-registration must be received by April 10. *All on-site/late registrations - \$175.*)

Two-day registration fees include: lunch (Tuesday, April 25), continental breakfasts, conference materials and field trips.

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Speakers - **\$110** Speaker (session only) - **FREE** \$ _____

Pre-reg Member - **\$130** [NYSWF and/or SWS-MAC] Pre-reg Non-member - **\$150** \$ _____

One-day registration fees include: continental breakfast, lunch, and conference materials for Tuesday; or continental breakfast, conference materials and field trips for Wednesday.

One-day Tuesday (April 25) - **\$100** One-day Wednesday (April 26) - **\$100** \$ _____

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(*Exhibitors should contact Johanna Duffy prior to registering at (315) 457-5200 or jduffy@bartonandloguidice.com)

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