

**Statement of Katherine Wychulis
to the Virginia Marine Resources Commission
on Application #17-0921 to Restore Dyke Marsh
March 27, 2018**

BIOGRAPHY: Katherine Wychulis has lived in Virginia since 1994, currently residing in Arlington, Virginia, and working as an attorney in Fairfax County. She graduated from The College of William & Mary and the University of Virginia School of Law. She is presenting as a volunteer board member on behalf of The Friends of Dyke Marsh.

REMARKS: Good morning and thank you to Chairman Bowman, each member of the VMRC, and the Staff for the opportunity to speak today about the proposed restoration of the Dyke Marsh Wildlife Preserve.

I'm surprised to be here. Not just because of our two postponements, but as I read the comment letters and prepared for today, it seemed that the bottom line is that we are debating the loss of several acres of hydrilla as compared to preventing a freshwater tidal marsh from disappearing. I'll explain.

The Marsh was estimated at one time to be as much as 380 acres.¹ Following decades of dredge mining, the marsh entered a net destructive phase, eroding at a rate of 1 ½ - 2 acres per year.

Today, the Marsh is approximately 50 acres.²

¹ Letter dated March 21, 2018 signed by Robert A. Vogel, Regional Director, National Capital Region, National Park Service, U.S. Department of the Interior to Steven G. Bowman, Commissioner VMRC {"NPS March 21 Letter"}.

² NPS March 21 Letter.

In less than 20 years, by 2035, Dyke Marsh is expected to be gone according to the U.S. Geological Survey (USGS) in 2013:³

Wetland Losses

The expected disappearance of Dyke Marsh is in keeping with larger trends.

64% of the world's wetlands have disappeared since 1900 according to the Ramsar Convention on Wetlands.

Since colonial times, the contiguous United States has lost more than half of its wetlands, which dropped from 221 million acres in the early 1600s to just over 110 million acres in 2009.⁴ In Virginia, around 40 to 45% of wetlands vanished during that same period.⁵

³ *"We ultimately conclude that Dyke Marsh presently is in its late stages of failure as a freshwater tidal marsh system . . . Erosion is fragmenting the marsh and dismantling tidal creek networks by stream piracy. In the absence of human efforts to restore the equilibrium between marsh and tide, and equilibrium to the other natural forces acting on this wetland, Dyke Marsh likely will continue to accelerate its degradation, erosion and fragmentation until it is gone. This likely will occur prior to 2035*

AD. <file:///C:/Users/gboot/Documents/DMRestorationUSGSNov2013.pdf>

⁴ Dahl, T.E. 1990. *Wetlands Losses in the United States 1780's TO 1980's*, U.S. Department of the Interior, Fish and Wildlife Service, Washington, D.C. 13pp.

⁵ National Wetlands Inventory maintained by the Fish and Wildlife Service. Virginia Wildlife, Sept. – Oct. 2012, "Virginia's Watery Wonderlands".

Separately: "It has been estimated that more than 50% of the wetlands present at the time of the Revolution have been lost. During a twenty-year period from 1956 to 1977, Virginia lost nearly 6% of its total wetland area. Eighty percent of these losses occurred in the Coastal Plain." "The Value of Wetland: A Guide for Citizens" prepared by the Southeastern Virginia District Planning District Commission, September 1988, with cooperation and assistance from

Dyke Marsh is a part of the Chesapeake Bay Watershed,⁶ a coastal wetland that drains into the Chesapeake Bay. Coastal wetlands in the eastern US like Dyke Marsh are being lost at twice the rate they are being restored, and more than 80,000 acres of coastal wetlands are being lost on average each year.⁷

One last statistic: between the 4 ½-year period from 2004 to 2009, wetlands in the Atlantic coastal watershed of which we are a part declined by an estimated 111,960 acres.⁸

The Loss of Wetlands is Significant because of the Ecological Services They Provide

Freshwater tidal wetlands are “known for high species diversity”⁹ and are extremely productive habitats.¹⁰ One VIMS scientist calls them “biological supermarkets.”

representatives of VIMS, VMRC, U.S. Army Corps of Engineers, and other government and private organizations and individuals, p. 12.

⁶ “What is a Watershed” <https://water.usgs.gov/edu/watershed.html> (see map)

⁷ T.E. Dahl and S.M. Stedman. 2013. Status and trends of wetlands in the coastal watersheds of the Conterminous United States 2004 to 2009. U.S. Department of the Interior, Fish and Wildlife Service and National Oceanic and Atmospheric Administration, National Marine Fisheries Service. (46 p.)

⁸ T.E. Dahl and S.M. Stedman. 2013. Status and trends of wetlands in the coastal watersheds of the Conterminous United States 2004 to 2009. U.S. Department of the Interior, Fish and Wildlife Service and National Oceanic and Atmospheric Administration, National Marine Fisheries Service. (46 p.)

⁹ U.S. EPA, “Characteristic Mid-Atlantic Wetland Type – Freshwater Tidal Marsh” [ADD URL]

¹⁰ “The Value of Wetland: A Guide for Citizens” prepared by the Southeastern Virginia District Planning District Commission, September 1988, with cooperation and assistance from representatives of VIMS, VMRC, U.S. Army Corps of Engineers, and other government and private organizations and individuals.

The Chesapeake Bay watershed contains three distinct geologic regions: the Atlantic coastal plain, the Piedmont plateau and the Appalachian province.

<https://www.chesapeakebay.net/discover/facts>

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Marshes provide nursery and forage grounds for pelagic fish.

Tidal freshwater marshes provide important habitat for anadromous fish such as striped bass and American shad as well as the Atlantic sturgeon.

They offer an ideal food source for migratory shore-birds due to the exceptional high density and diversity of nutrient-rich marsh vegetation.¹¹

Wetlands help purify water by trapping sediments and other pollutants.¹² “It has been estimated that a high quality wetland can remove more than 90% of the nitrogen and phosphorus contained in stormwater runoff.”¹³

Wetlands also serve as a flood buffer and absorb floodwaters.

Storms and floods, which account for almost three-fourths of weather-related disasters, are becoming more common and more costly.¹⁴ 2017 was the most expensive year on record for natural catastrophes in the U.S.¹⁵ As storms and

¹¹ “Functions of Mid-Atlantic Tidal Freshwater Marshes: A Summary” published by vhb (citing Odum 1988). [FIX CITE]

¹² The Value of Wetland: A Guide for Citizens” prepared by the Southeastern Virginia District Planning District Commission, September 1988, with cooperation and assistance from representatives of VIMS, VMRC, U.S. Army Corps of Engineers, and other government and private organizations and individuals, p. 8.

¹³ The Value of Wetland: A Guide for Citizens” prepared by the Southeastern Virginia District Planning District Commission, September 1988, with cooperation and assistance from representatives of VIMS, VMRC, U.S. Army Corps of Engineers, and other government and private organizations and individuals, p. 7.

¹⁴ “How to Cope with Floods” The Economist, September 2nd – 8th 2017, p. 9

¹⁵ “Extreme hurricanes and wildfires made 2017 the most costly U.S. disaster year on record” by Chris Mooney and Brady Dennis, The Washington Post, January 8, 2018 as updated.

floods are increasing, populations are also increasing in size and moving to coastlines.

Fairfax County which is adjacent to the Marsh, expects its own population to increase some 30% over the next 28 years¹⁶

In other words, the need for the Marsh to serve as a coastal buffer and shoreline protection is increasing.

“An acre of wetland can store 1 to 1.5 million gallons of floodwater.”¹⁷

“. . . Wetlands provide temporary storage of the flood waters, releasing them slowly and reducing peak downstream flows.

One final point: declines in waterfowl population[s] along the Atlantic Flyway have been linked, in part, to declines in marsh acreage.¹⁸ What will be the effect on migratory birds like these red-breasted mergansers [see poster] if the Marsh disappears as it is on track to do by 2035?

To summarize, tidal freshwater wetlands are rare, declining and important.

¹⁶ 1,131,900 in 2016 to 1,405,100 in 2045 [FIX CITE]

¹⁷ U.S. Environmental Protection Agency <https://www.epa.gov/sites/production/files/2016-02/documents/functionsvaluesofwetlands.pdf>

¹⁸ “The Value of Wetland: A Guide for Citizens” prepared by the Southeastern Virginia District Planning District Commission, September 1988, with cooperation and assistance from representatives of VIMS, VMRC, U.S. Army Corps of Engineers, and other government and private organizations and individuals.

Unlike hydrilla: The Preserve contains about 319 acres of subaquatic vegetation, SAV¹⁹ predominantly hydrilla.²⁰ The restoration project proposed in this application will result in a quote “permanent” loss of approximately 7 acres of invasive SAV.²¹

Dr. Linda Nelson of the Army Corps whose PhD is in botany and weed science stated in her January 17 comment letter that “the perils of hydrilla were largely understated” by VIMS and NOAA-NMFS.²²

Hydrilla has been classified as a Federal Noxious Weed by the USDA, and is recognized and regulated as an invasive noxious weed by many states.²³ The Virginia Department of Conservation and Recreation puts hydrilla on the Virginia Invasive Plant Species List and designates it as a species that exhibits HIGH levels of invasiveness.²⁴

Hydrilla . . .

- Has a prolific growth rate with multiple reproductive strategies, colonizing large areas in a relatively short time.

¹⁹ Letter dated December 1, 2017 signed by Dr. Mark Luckenbach, Associate Dean of Research and Advisory Services, Virginia Institute of Marine Science, Office of Research and Advisory Services, William & Mary.

²⁰ “Dyke Marsh Wetland Restoration and Long-term Management Plan/ Final Environmental Impact Statement, October 2014, p. 88.

²¹ Letter dated January 17, 2018, signed by Linda S. Nelson, PhD, Associate Technical Director, Environmental Engineering & Sciences, Civil Works, U.S. Department of Defense, Department of the Army, Engineer Research and Development Center, Corps of Engineers, Environmental Laboratory (“U.S. Army Corps of Engineers Comment Letter”).

²² U.S. Army Corps of Engineers Comment Letter.

²³ U.S. Army Corps of Engineers Comment Letter.

²⁴ U.S. Army Corps of Engineers Comment Letter.

- A single 4-inch stem of hydrilla can grow vertically and horizontally up to 191 inches per day.²⁵ My arm span, finger tip to tip is @67” about 1/3 of the maximum daily growth of hydrilla.
 - This summer, I was kayaking in the Potomac River, and saw for myself large dense hydrilla patches that I could not avoid and had to be ever so careful to keep my paddles clear of the branches that were like greedy, sticky hands.
 - Studies have found that high densities of hydrilla can adversely affect the growth of fish species by reducing foraging success (bluegill for example) and reducing predator-prey interactions between largemouth bass and bluegill, and high densities represent a risk to fish populations due to depleted oxygen levels [note: plant senescence]
- Hydrilla supports AVM, a fatal neurologic disease²⁶ of the Southeastern U.S. that has killed many birds, including ducks and geese.²⁷ Grass carp and turtles may be susceptible to AVM, as well as amphibians and reptiles.²⁸ Although the Potomac River has not been sampled for AVM, toxin-positive AVM has been found in Virginia.²⁹

I encourage you to refer to Dr. Nelson’s comment letter for more information about AVM.

The type of hydrilla found in the DMWP was first identified there in 1982, and within 4 years, became the most abundant species in the area.³⁰

²⁵ U.S. Army Corps of Engineers Comment Letter (citing Glomski and Netherland 2012).

²⁶ U.S. Army Corps of Engineers Comment Letter (citing Wilde et al. 2005, Wiley et al. 2007, Wiley et al. 2009 and Wilde et al. 2014).

²⁷ U.S. Army Corps of Engineers Comment Letter (citing with respect to grass carp and turtles, Rocke et al. 2005, Augspurger et al. 2003, Birrenkott et al. 2004, Wilde et al. 2005, and with respect to amphibians and reptiles, Susan Wilde).

²⁸ U.S. Army Corps of Engineers Comment Letter (citing Haynie et al. 2013, Mercurio et al. 2014).

²⁹ U.S. Army Corps of Engineers Comment Letter (citing Susan Wilde).

³⁰ U.S. Army Corps of Engineers Comment Letter.

In other words, hydrilla is abundant, aggressive, adaptable and thriving.

Dr. Katharina Engelhart, long-time researcher of the Preserve, is quote “baffled” by the VIMS argument comparing the potential loss of several acres of hydrilla to the potential gain of tidal marsh wetland³¹ and I share this view.

VIMS acknowledges in its December 1 comment letter, “We recognize that ongoing erosion at the DMWP poses a real and significant environmental problem.”

Dr. George Ledec, ecologist, in his comment letter to VMRC, said that in Dyke Marsh, the tidal freshwater wetland marsh stands out as a higher-value ecosystem than its SAV.

The Friends of Dyke Marsh believe that VMRC should recognize the value of a healthy, functioning, biodiverse marsh, all of the aquatic and terrestrial species, not just invasive hydrilla beds.

The proposed restoration of the Marsh is funded, designed, and contracted out. How likely will Congress be to fund a similar project before 2035 if we can’t get this done?

If the restoration doesn’t happen, the Marsh is likely doomed.

³¹ Letter dated January 16, 2018 from Dr. Katharina Engelhart, PhD, Research Associate Professor, University of Maryland Center for Environmental Science, to Mr. Mark Eversole, VMRC.

I encourage you to vote yes without conditions on the permit application to restore the Dyke Marsh Wildlife Preserve.

Thank you for your public service.

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