University of Maryland
CENTER FOR ENVIRONMENTAL SCIENCE
HORN POINT LABORATORY

Natural Resources – SAV Protection Zones and Hydraulic Clam Dredges (Aquatic Habitat Protection Act)
INFORMATIONAL TESTIMONY

House Bill 1306: Environment and Transportation
Hearing March 4, 2020,

Written Testimony: Lorie Staver, Associate Research Scientist
Oral Testimony: Dave Nemazie, Chief of Staff

Thank you Chairman Barve and members of the Environment and Transportation Committee to allow me to provide this testimony on behalf of Dr. Lorie Staver as background on submerged aquatic vegetation (SAV). We are at the University of Maryland Center for Environmental Science (UMCES).

1. Submersed aquatic vegetation (SAV) is a critical component of Chesapeake Bay, providing valuable benefits (ecological services), such as habitat for commercially valuable fisheries species, foraging habitat for waterfowl, nutrient uptake, wave attenuation, sediment stabilization and increased water clarity. However, SAV is vulnerable to a number of factors that degrade water quality, for example nutrient and sediment pollution, as well as direct physical disturbance of existing SAV beds. While many studies have focused on the first (water quality), fewer studies have directly addressed the second (physical disturbance).

2. Disturbance of existing SAV beds can occur due to both large-scale events, such as storms, and localized activities, such as boating and shellfish harvest. Boat operation in shallow water can leave visible tracks of bare sediment where vegetation was dislodged by propellers[1], and anchoring boats within SAV beds can leave circular scars where vegetation is dislodged by the anchor line[2]. Localized impacts also result from direct gear-related damage, and turbidity plumes, during dredging operations for shellfish harvest, specifically, in Chesapeake Bay, from dredging for scallops[3] and clams[4].

3. While few studies have directly addressed SAV recovery from disturbance, it likely depends on 1) the extent of disturbance, 2) existing water quality conditions, and 3) the type of SAV. Recovery from large-scale disturbance, for example storms, can take 3-4 years[5], while small scale losses would recover more quickly (e.g. 9-13 months for anchor scars[2]), if water quality conditions were conducive to recovery. Perennial species that form dense root mats (e.g. eelgrass, *Zostera marina,* common in the southern Chesapeake Bay) may take longer to recover than annual species that reproduce by seed (e.g. horned pondweed, *Zannichellia palustris,* common throughout the Bay and also the first to respond to improving water quality). Species that reproduce by both seed and other means (e.g. widgeon grass, *Ruppia maritima*, common throughout the Bay) are probably intermediate in recovery time.

4. There is evidence of diminished shellfish harvest following extensive dredging through SAV beds, with shellfish recovery tied to SAV recovery[3].

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[1]Zieman, J. C. (1976). "The ecological effects of physical damage from motor boats on turtle grass beds in Southern Florida." Aquatic Botany **2**: 127-139.
[2]Creed, J. C. and G. M. Amado Filho (1999). "Disturbance and recovery of the macroflora of a seagrass (Halodule wrightii Ascherson) meadow in the Abrolhos Marine National Park, Brazil: an experimental evaluation of anchor damage." Journal of Experimental Marine Biology and Ecology **235**(2): 285-306.
[3]Fonseca et.al. 1984 Fonseca, M. S., et al. (1984). "Impact of Scallop Harvesting on Eelgrass (Zostera marina) Meadows: Implications for Management." North American Journal of Fisheries Management **4**(3): 286-293.
[4]Ruffin, K. K. 1998. The Persistence of Anthropogenic Turbidity Plumes in a Shallow Water Estuary. *Estuarine, Coastal and Shelf Science.* 47, 579-592.
[5]Landry, J. B. and R. R. Golden (2018). "In Situ Effects of Shoreline Type and Watershed Land Use on Submerged Aquatic Vegetation Habitat Quality in the Chesapeake and Mid-Atlantic Coastal Bays." Estuaries and Coasts **41**(1): 101-113.

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