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Title of Dissertation: A Comparative Assessment of Aquatic Invasive Species Management Capacity in Maryland and Virginia.

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ABSTRACT

The objective of this exploratory case study was to comparatively assess the state aquatic invasive species (AIS) management capacity in Maryland and Virginia. That is, to measure the perceived ability of each of these states to effectively manage AIS. To collect data for the assessment I conducted semi-structured interviews as scripted telephone surveys, which included both open-ended and closed-ended questions. The framework for the assessment was based on categorical responses to perceptual questions relating to the various dimensions of AIS capacity, including: situational, political, institutional, state, organizational, and evaluation capacities. The respondents surveyed represented a wide spectrum of AIS experts in Maryland (n=20) and Virginia (n=10) ranging from field biologists to senior managers in both the governmental and nongovernmental sectors.

Categorical data relating to the perceptual responses regarding the various dimensions of AIS capacity was transformed to ordinal data based on a traditional Likert-like scale, ranging from 1-5 (poorly-developed capacity=1, moderately-developed capacity=3, well-developed capacity=5) with indices (i.e., means) calculated for each dimension assessed. An integrative metric—the index of state AIS management capacity (I_{AIS})—was calculated for each state, as a composite measurement incorporating transformed values for all perceptual responses for all dimensions of capacity evaluated. The overall I_{AIS} for Maryland was 3.3 while the overall I_{AIS} for Virginia was 2.6. On a relative scale of 1-5, a higher I_{AIS} value indicates an overall perception of a better-developed state AIS management capacity.

The greatest perceptual differences were apparent in the respondent's perceptions of situational and state capacity, which were both higher in Maryland than in Virginia. Permutation analysis was conducted to determine whether the perception of the individual dimensions of AIS management capacity differed significantly in Maryland and Virginia. These analyses confirmed the empirical findings, with statistically

significant differences found between states in relation to perceptions of situational ($p < 0.05$) and state capacity ($p < 0.05$). No statistically significant differences were observed between states as far as perceptions of political capacity, institutional capacity, organizational capacity, or evaluation capacity.

Seemingly, the AIS programs in Maryland and Virginia are functionally rather similar, with adequate regulations in place to address most AIS concerns. However, the framework for addressing AIS concerns is not codified or formally established in Maryland, unlike Virginia where such an AIS framework is both codified and formally established. Considerable differences were observed in the governance of the executive branch natural resource agencies tasked with AIS program implementation in each state. A basic framework for AIS management has been developed in each state, although some AIS policies are still being formulated.

While both states have an AIS organization, neither has a discrete AIS program. Staff is generally assigned in a collateral fashion on an *ad hoc* basis within responsible state AIS organizations. However, both states have a long-standing regional involvement in AIS issues and both states have had successes in AIS eradication, although AIS issues remain generally a low priority issue.