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Between the Public and the Private Interest: The Interrelationship of Intermediary Roles of Environmental Nonprofits in Coastal Resilience

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ABSTRACT

Government regulators cannot mitigate the loss of wetlands and coastal erosion alone. Nonprofits, uniquely situated between coastal property owners with personal interests and governments with regulatory interests, are positioned to mediate the interests of different parties while considering local context and individual circumstances. However, it is unclear what roles environmental nonprofits play within the network of actors. This study asks: *(1) What roles do environmental nonprofit organizations play in local stakeholder network arrangements for wetlands conservation and shoreline management? (2) How are these roles interrelated?* We use two frameworks describing the roles of nonprofits to examine the roles of environmental nonprofits within the network of actors that seek to mitigate loss of wetlands and coastal erosion by focusing on living shorelines as shoreline management solutions utilizing natural and nature-based features. We show how these roles are interrelated to provide context for how government can leverage nonprofits in achieving regulatory outcomes.

INTRODUCTION

Sea level rise and environmental deterioration along the coast is a concern in the U.S. and worldwide. Stakeholders from across multiple sectors, including government authorities, residents, private contractors, and environmental nonprofit organizations, seek ways to help individuals and communities be sustainable and resilient in the face of sea level rise and its impacts. Governments are actively engaged in policy and management efforts to protect wetlands and reduce shoreline erosion, particularly through natural and nature-based solutions. Local, state, and federal governmental agencies in the U.S. have implemented public policy and regulation to manage shorelines such as by encouraging the use of living shorelines (Bilkovic, Mitchell, Mason, & Duhring, 2016; Pace, 2017; Spidalieri, 2020). Living shorelines, the shoreline management approach that is the focus of our research, are created or enhanced shorelines that use strategic placement of plants, stone, sand fill, and other materials to reduce shoreline erosion and maintain or improve habitat and water quality (Bilkovic et al., 2016). They offer a way to protect development and property while mitigating the loss of wetlands.

A preference for living shorelines is embedded within most state and local permitting and planning requirements. Virginia – the case study site for our research – implemented specific permitting processes to expedite and prioritize living shoreline projects (Bilkovic et al., 2016; Currin, Chappell, & Deaton, 2010; Pace, 2017), most recently adopting legislative requirements (Code of Virginia §28.2-104.1) for living shorelines as the preferred method for managing erosion. At the locality level, zoning ordinances and planning regulations offer a way to encourage living shorelines (Spidalieri, 2020).

However, government cannot achieve the goals of shoreline management and wetlands conservation alone; other groups of stakeholders ranging from property owners, shoreline

contractors, community leaders, and nonprofit organizations contribute to these efforts. The nonprofit sector has long been engaged in environmental stewardship and sustainability. Nonprofit organizations are a part of the network of actors engaged in coastal resilience efforts such as those associated with wetlands conservation. Lor (2006) suggests that environmental groups play diverse roles of advocacy, environmental protection and conservation, and community education. Other studies also support the interdependent nature of these roles among nonprofits given their diverse contributions (Collins & Gerlach, 2019; Gazley, Cheng, & Lafontant, 2018; Morris, Gibson, Leavitt, & Jones, 2014).

Our focus is on the roles nonprofits play as intermediaries between private interests of property owners and others involved within the network of actors in shoreline permitting in Virginia. We utilize an exploratory qualitative approach to answer the following research questions: *What intermediary roles do environmental nonprofit organizations play in local stakeholder network arrangements for wetlands conservation and shoreline management? How are these roles interrelated?*

Answering these research questions helps clarify environmental nonprofits' roles and position within the network of actors in coastal Virginia that seek to mitigate loss of wetlands by focusing on living shorelines as a shoreline management approach to mitigate flooding and coastal erosion. We use two theoretical frameworks to provide a comparative approach to how these roles facilitate interaction between nonprofits and government and non-governmental actors in network arrangements.

Evaluation of shoreline permitting and impacts on wetlands have found that the government regulatory approach has not produced the desirable policy outcomes (Berman, Mason, Nunez, & Tombleson, 2018; Center for Coastal Resources Management, 2012),

suggesting that the government is not fulfilling its regulatory role. However, these outcomes result from activities and decisions of a network of actors; poor outcomes cannot be attributed solely to failure of government regulators. Improved outcomes require understanding the network: the actors involved, their roles, and their interactions within the network. Understanding the specific roles of nonprofits in working with government regulators or in supporting businesses and property owners provides insights into the workings of a regulatory approach that also relies on nongovernmental actors such as nonprofits. Our study contributes to research and practice regarding shoreline management approaches that depend on a network of governmental and nongovernmental actors. Our results have implications for how network dynamics and outcomes are influenced by nonprofit involvement.

BACKGROUND AND LITERATURE

Network of Actors in Shoreline Management

Environmental conservation is challenging and complex. Desired outcomes cannot be achieved by a single stakeholder or sector given the nature of property rights in the U.S., the need to balance development with environmental impacts, and conflicting public and private preferences (Campbell, 2019; Grant & Grooms, 2017). Government alone cannot be responsible for environmental conservation and, in our case, managing shoreline development to mitigate loss of wetlands. Diverse stakeholders – local communities, government authorities, nonprofits, and businesses – play a pivotal role individually and collectively.
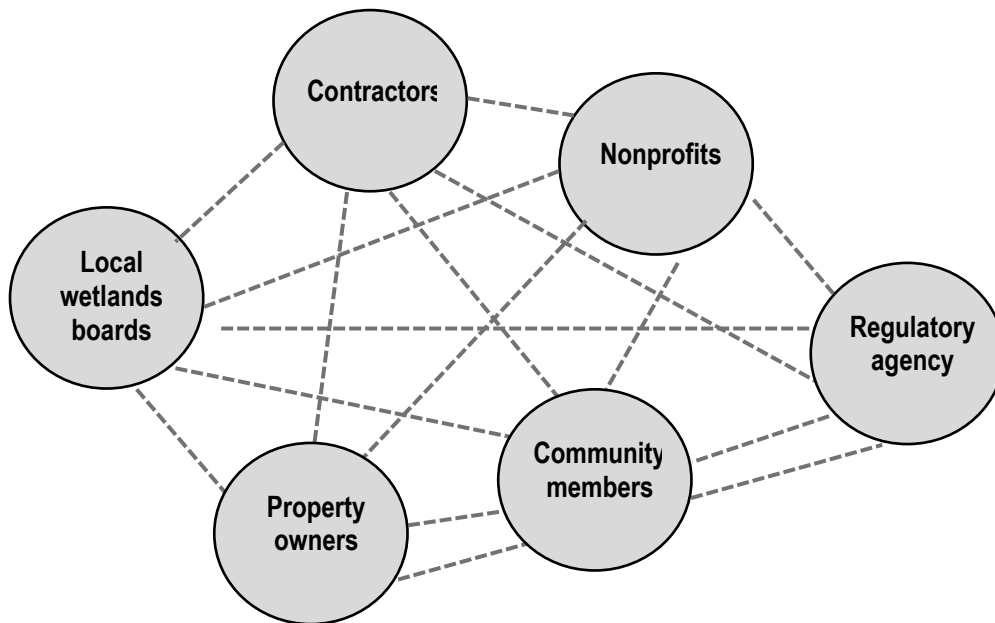
Shoreline management illustrates a local stakeholder network arrangement comprising of governmental and non-governmental actors with different interests and preferences. Where wetlands are affected by private development, policy and management approaches must consider

and protect private property rights (Spidalieri, 2020). Property owners wanting to make modifications to their shorelines must apply for a permit before any work can be done. At the local level, ordinance and regulatory programs address the siting, design, and construction of shoreline modification projects such as those involving living shorelines. However, property owners need to be aware of and receptive to living shorelines, and to implement living shorelines rather than hardened structured such as bulkheads and revetments. Contractors that work with property owners to design and construct projects need to be aware of living shorelines and capable of constructing living shoreline projects where appropriate.

Furthermore, because wetlands provide value to the community, all residents are affected by shoreline management and are participants in the network of actors. These community members include those who own shoreline properties, frequently use wetlands amenities, operate businesses in or adjacent to wetlands, or are leaders of grassroots or community organizations with interests in wetlands and/or development. Actors from the nonprofit sector also play key roles, serving as intermediaries between governments and residents and businesses, supporting community engagement, and filling gaps that government is unable to meet (Shea, 2011). For example, nonprofits with an educational focus provide outreach and public educational programs regarding wetlands conservation and living shorelines. Others work directly with property owners to determine if and how living shorelines can be installed on their properties (Du Bois, 2017; Spidalieri, 2020; Stafford, 2020). Nonprofits also assume compliance and advocacy roles within a framework outlined by local or state authorities. Citizens' advisory boards, comprised of residents of the community they represent, are one such authority (Lor, 2006). In terms of shoreline management, local wetlands boards, an example of citizens' advisory boards for

regulatory purposes, work with local environmental nonprofits to ensure protection of wetlands and make shoreline development decisions that balance interests that may be at odds.

Figure 1. An Illustrative Example of the Network of Actors for Wetlands Conservation and Shoreline Management

To summarize, Figure 1 illustrates, based on the literature just discussed, the different groups of actors within a local stakeholder network arrangement for wetlands conservation and shoreline management. This figure also provides an illustrative example of how the actors may be interconnected within the stakeholder network since the previous discussion of actors in the network suggests that these actors interact in different ways. These interactions can take various forms, such as work-for-hire between property owners and contractors, permit issuance to contractors or property owners by regulatory agencies or wetlands board, advocacy by nonprofits to improve regulatory processes, consultation between nonprofits and contractors for living

shoreline project by nonprofit organizations, and informational campaigns for community members by nonprofits.

The arena of environmental disputes highlights the multiple interests of stakeholders within a network. These stakeholders may not always agree on particular methods or decisions regarding coastal adaptation and resilience, which increases the complexity of environmental issues (Lor, 2006). Studies have shown that in the area of coastal natural resource protection property owners generally demand protections for their private property rights, and contractors seek subsidies as well as training in living shoreline installation (Malysa, 1996; Spidalieri, 2020). Given their long-term consequences, decisions should account for diverse interests of multiple actors including environmental nonprofits, property owners, contractors, citizen wetlands boards, and state authorities.

Environmental Nonprofits in Coastal Resilience

Nonprofits enhance environmental health by addressing unmet environmental needs in coastal communities, advocating and providing services to protect the environment, and promoting environmental sustainability (Robinson, Shum, & Singh, 2018). For example, environmental nonprofits may use fundraising to educate the public about the relevance and importance of environmental problems and their effects (Campbell, 2019; Lor, 2006). Environmental nonprofits may also play a role in ensuring and promoting compliance with environmental standards, which helps communities uniformly enhance coastal sustainability and resilience (Grant & Langpap, 2019; Morris et al., 2014). When government monitoring or enforcement is lacking, environmental nonprofits may step in (Grant & Grooms, 2017). In the U.S., for example, environmental nonprofits facilitate industrial compliance with the Clean

Water Act through activities like mobilization, information, coaching, and assistance with monitoring and enforcement. The literature also notes the importance of adversarial action, political agenda setting, and public advocacy and education by environmental nonprofits to advance environmental standards, ensure accountability, and influence policy outcomes (Burke, 2013; Morris et al., 2014).

Chanse (2011) showed how concurrent activities by nonprofit organizations complement government activities in addressing environmental issues using participatory models that involve citizen engagement and volunteerism. As a "force multiplier," nonprofits amplify overall effectiveness of collaboration efforts through added resources (Morris et al., 2014). Environmental nonprofits' overarching goal is to positively impact the environment by providing services and collaborating with government agencies and other organizations. They engage in within-sector and cross-sector collaborations to leverage their capacity and resources to complement or supplement government efforts (Collins & Gerlach, 2019; Michaels, 1999; Morris et al., 2014). Such collaborations also enhance successful campaigning and coordination on coastal issues through building alliances and exchanging strategies and resources across sectoral boundaries.

The Coastal Virginia Context

Nonprofit organizations capture regional variations in their missions and roles, making it important to understand the context in which they work (Grønbjerg & Paarlberg, 2001). Our study seeks to understand the roles and activities of environmental nonprofits as actors in network arrangements for coastal resilience in Virginia. We look specifically at the roles of nonprofits in encouraging living shorelines as a shoreline management approach. Coastal

Virginia is experiencing accelerating sea level rise coupled with subsidence, and is one of the most vulnerable coastal regions in the U.S., with significant assets and infrastructure vulnerable to inundation and erosion (Considine, Covi, & Yusuf, 2017; Ezer, 2018; Ezer & Atkinson, 2014; Kleinosky, Yarnal, & Fisher, 2007; Wu, Najjar, & Siewert, 2009).

In 2011 state statute established in the Code of Virginia (§28.2-104.1) the preference for living shorelines as a shoreline stabilization method ("Living shorelines; development of general permit; guidance," 2011). The legislation defines living shorelines as "a shoreline management practice that provides erosion control and water quality benefits; protects, restores or enhances natural shoreline habitat; and maintains coastal processes through the strategic placement of plants, stone, sand fill, and other structural and organic materials." In 2020, this state code was updated to make living shorelines the only approach for erosion management "unless the best available science shows that such approaches are not suitable" ("Living shorelines; development of general permit; guidance," 2020).

Statutory authority was given to the Virginia Marine Resources Commission (VMRC), a state agency, to develop and implement a permit process that encourages the use of living shorelines. The Virginia Institute of Marine Science was required to develop recommended guidance to enable local governments' implementation and decision making that is consistent with the sustained protection of tidal shoreline resources. Regulatory decisions regarding developments affecting or within tidal wetlands, such as shoreline stabilization projects, are made by local citizen wetlands boards or by the VMRC for localities without a board.

THEORETICAL FRAMEWORKS

Studies highlighted in the previous sections emphasize how nonprofits' roles in environmental conservation efforts are multifaceted. Two frameworks in particular accommodate the complexity of interactions not only with governmental actors but also with various private interests. Young's (2000) approach synthesizes nonprofit roles in a way that captures both partner and rival roles in a network of relationships between governmental and non-governmental actors, whereas Frumkin (2002) approaches the roles of nonprofits as shaped independent of government by a combination of supply-demand conditions and instrumental-expressive values. Nonprofit roles according to Young's framework encompass supplementary work beyond what government does, complementary activities that are government-funded, and adversarial practices that advocate for policy change. Frumkin proposed four core nonprofit roles that encompass service provision, social innovation, civic and political engagement, and individual value expression. Using these frameworks to categorize different role manifestations of environmental nonprofits, given both the regulatory environment and the presence of competing government' and private stakeholders' interests, allows us to position nonprofits more accurately as active contributors to the public policy implementation process (Brandsen & Pestoff, 2006). This co-production approach captures the multitude of roles that nonprofit organizations play in public service delivery in a way that explains the significance of their involvement.

According to Young (2000) supplementary nonprofit role assumes that nonprofit organizations provide goods and services voluntarily and independently of government (Weisbrod, 1977). Since citizens' service preferences can be heterogeneous, nonprofits fill the void left by limited public goods provision in areas of diverse or transient preferences. In other

words, the supplementary role characterizes service providers in cases where the government is lagging in the provision of services. In the environmental context, Young's framework suggests that nonprofits provide additional services left unfulfilled by government such as in efforts to publicly promote sustainable environmental practices like living shoreline projects. For example, by providing information sessions or demonstrations of living shoreline projects environmental nonprofits play a supplementary role in encouraging living shorelines beyond governmental efforts.

The complementary nonprofit role includes delivering public services on a contractual basis using government funding (Salamon, 1995). This role allows nonprofits to partner with the government to reach more clients and offset the cost for governments as the sole service provider. The Environmental Protection Agency's Chesapeake Bay Program includes government and nonprofit partners collectively working on coastal restoration through grants and research, an example of the complementary nonprofit role (Aigner, 2019). In the context of living shorelines, the complementary role can be exemplified by nonprofits partnering with the government to share the cost burden of living shoreline projects with property owners.

Under the adversarial role nonprofits are engaged in a relationship where they advocate on behalf of constituents to promote their causes before government authorities or challenge the status quo of existing government policies (Young, 2000). In this case, nonprofits may appeal to the government for additional funding or changes in public policy. In the environmental arena, the Chesapeake Bay Foundation advocates to the government to continue supporting the Chesapeake Bay Program to improve water quality and natural habitat of the Bay (Aigner, 2019). Environmental nonprofits fulfill adversarial roles in policymaking and service delivery by

advocating to government for changes in regulatory or funding practices around living shorelines.

Frumkin uses two dimensions to categorize nonprofit roles. The supply-demand dimension organizes roles into those driven by public needs (demand) or created due to the presence of resources (supply). Hunger, homelessness, or environmental pollution are societal issues that can be addressed by nonprofits, whereas donations, ideas, and changing technology can supply the flow of new innovative solutions to social problems. The second dimension is instrumental-expressive orientation, where the instrumental component seeks to accomplish tangible goals and the expressive component fulfills intangible manifestations of faith and values. In serving as an instrument to fulfill specific societal goals such as providing shelter to the homeless or training to the unemployed, nonprofits can achieve measurable outputs. On the other hand, nonprofits can also fulfill internal motivations of self-actualization and commitment to a higher purpose on the part of those who serve in these organizations.

The four roles formed at the intersection of these two dimensions are service provision (demand-instrumental), social entrepreneurship or innovation (supply-instrumental), civic and political engagement (demand-expressive), and values and belief expression (supply-expressive). Applied to environmental nonprofits, these roles can be used to categorize such activities as cleanup of local creeks and waterways (service provision), new mobile applications that can monitor and measure water quality (social innovation), advocacy efforts for stricter pollution standards (civic and political engagement), and an outlet for purposeful expression of views about environmental sustainability for volunteers, staff, board members, and community members (values and belief).

Both frameworks assume simultaneity and interrelatedness of nonprofit roles, consistent with other studies that find both "distinctiveness and overlap" of roles (Moulton & Eckerd, 2012, p. 674). Focusing on policy implementation, Levine Daniel and Fyall (2019) found that nonprofit roles and activities can influence and be influenced by other actors, suggesting more dynamic relationships in the provision of public service. Depicting the configuration of multiple roles filled by nonprofits in a network arrangement provides unique information about how nonprofits leverage and achieve synergies across those different roles and activities. Understanding this interdependence of environmental nonprofit roles can help government efforts to better cultivate their relationships with nonprofit organizations.

Private interests of residents, property owners, and contractors are prominent in the network of actors surrounding the adoption of living shoreline projects. Hence, environmental nonprofits facilitate or mediate between governmental and non-governmental actors to bridge the gap between regulatory burden and value creation within the existing network of actors (Jang, Feiock, & Saitgalina, 2016; Lor, 2006). In this way, nonprofits function as boundary spanners by transcending borders, linking, or bridging diverse actors, building new and facilitating existing relationships, and navigating diverse roles and interests while addressing power and control inequities (Leung, 2013; Tushman, 1977). In the context of environmental sustainability and climate adaptation, St. John and Yusuf (2019) emphasized the importance and necessity of boundary spanners in navigating the complexity of structural, environmental, and organizational forces involved in coastal adaptation and mitigation. Given the multi-actor arrangement involved in living shoreline projects, understanding the interdependence of environmental nonprofit roles can inform how nonprofits pursue roles that are mutually reinforcing while helping government facilitate different interests to ensure accomplishment of environmental and policy outcomes.

METHODS

This study employs qualitative research methodology using structured interviews to extract consistent, robust, and in-depth information from nonprofit organizations (Hays & Singh, 2011). A total of eleven interviews were conducted, representing a diverse group of environmental nonprofits involved in shoreline management, coastal protection and restoration, and environmental conservation and stewardship in Virginia. They were selected from a list of nonprofits identified by staff of the Center for Coastal Resources Management at the Virginia Institute of Marine Science (a state agency) as being involved in these activities in coastal Virginia.

As shown in Table 1, these nonprofit organizations are diverse in terms of geographic scope, services and functions, and environmental focus. The nonprofits' service areas range in size from small watersheds (e.g., 10 to 20 square miles) or a single locality to larger watersheds that encompass many smaller watersheds (e.g., upward of 60,000 square miles) and span multiple regions or states. Nonprofit organizations in the sample are also diverse in their primary focus areas including wetlands conservation and restoration, shoreline management and policy advocacy, habitat protection, and water quality improvements. The diversity of these participating organizations is important because it allows for a nuanced understanding of environmental nonprofits participating in the local network of actors for shoreline management as a heterogeneous group that engages with other actors in varied ways.

Table 1. Nonprofit organizations included in the study

Org	Mission area	Geographic scope	Longevity of shoreline work	Centrality of shoreline management to organization's mission
N01	Sustainable landscaping	Multiple states	Developing	Low
N02	Wetlands restoration	Local	Established	High
N03	Water quality	Regional	Established	High
N04	Protection of land and water	Regional	Nascent	Medium
N05	Water quality	Multiple states	Established	High
N06	Protection of farm, forest, wetland, water, heritage, and culture	Regional	Established	Medium
N07	Watershed restoration	Regional	Developing	High
N08	Wetlands preservation	Multiple regions	Established	High
N09	Watershed protection and restoration	Local	Developing	Medium
N10	Watershed restoration	Regional	Nascent	High
N11	Shoreline evaluation	Regional	Developing	High

Notes:
Geographic scope: local – serves one locality; regional – spans multiple watersheds or localities in a region; multiple regions – spans localities or watersheds in multiple regions; multiple states – spans watersheds or localities in multiple states.
Longevity of shoreline work: nascent – 3 years or less; developing – between 3 and 10 years, established – more than 10 years.

Relevant contact persons were identified for the selected nonprofit organizations and contacted via e-mail and telephone to schedule interviews. The interviews were conducted in October and November 2019 and lasted between 60 and 90 minutes. The structured interviews included questions about the organization's work related to shoreline management broadly, and wetlands restoration and living shorelines projects, specifically; roles and activities associated with living shoreline projects; and collaborations with other nonprofits, government agencies, contractors, and universities. Table 2 lists the interview questions relevant to our research questions.

Table 2. Relevant interview questions

- What kinds of work does your organization do related to shoreline management?
- What kinds of outreach to the community in general, if any, do you do specifically related to shorelines?
- What kinds of advocacy at the local, state, or national level, if any, do you do specifically related to shoreline protection or restoration?
- Do you collaborate with others - NGOs, universities, state agencies, or contractors - in your work with living shorelines? Who and how?
- How do you work with property owners on living shorelines projects? Specifically, what kinds of living shorelines services do you provide?
- What kinds of education or training, if any, do you provide to property owners specifically related to shoreline work?
- How do you connect with property owners?

Our qualitative analysis approach was theory-driven (Braun & Clarke, 2006) to ensure that identified themes were connected to the extant literature and conceptual frameworks. We utilized a critical approach to identify dominant patterns, applying an analytical process that combines qualitative data with the conceptual frameworks and extant literature, interpreted using the research team's skills, knowledge, and expertise (Terry, Hayfield, Clarke, & Braun, 2017). This allowed us to capture nuances of the data as identified by different researchers while allowing for cross-checking for consistency. Through this qualitative approach we were able to derive insights that may not have been possible through a quantitative approach or quantitative reporting of identified themes from the interviews.

Interview transcripts were hand-coded individually by three researchers using an a priori coding scheme based on the literature. Activities undertaken by nonprofits were assigned to a theme or category. The individual codes were then discussed by the research team to ensure reliability and consistency. Consensus was reached on the coding of nonprofit roles and activities by all members of the research team, and the codes were combined into a single analytical scheme. A variety of activities mentioned by different environmental nonprofits were assigned to

Young's (2000) supplementary, complementary, and adversarial roles, and Frumkin's (2002) service provision and civic and political engagement roles. No activities were identified from the interviews that could be classified as innovation or values and beliefs roles.

RESULTS AND DISCUSSION

Nonprofit Activities

We identified five distinct activities in our sample of environmental nonprofits: information and education; training and certification; design, technical work, and construction; cost sharing; and advocacy.

Information and education activities included information sessions and public education programs for homeowners and residents as well as workshops on living shorelines for contractors and property owners. To illustrate, one nonprofit (N01) offered information and education to the public such as "joint talks [with another environmental nonprofit] to community members who want to know about sea level rise, living shorelines, what can be done for landscaping practices at the water's edge." Some nonprofits offered public education by participating in public events such as having tables and displays at local festivals or farmers markets. Other activities targeted at the public include creation of living shorelines demonstration sites that property owners and the public could visit to learn more about and see examples of living shorelines. One organization (N10), serving a rural area with few living shoreline projects, indicated "working in [several counties] to do a [living shorelines] demo for residents to see examples of living shorelines." Other *information and education* activities targeted a younger audience. For example, one nonprofit (N02), in its initial years, provided

youth educational programs through high school environmental clubs. Another organization (N04) offered classes for 5th, 7th, and 10th grade students.

Training and certification activities encompassed training programs for government staff and contractors, and certification and credentialing programs for landscape and green infrastructure professionals. One nonprofit (N01), recognizing that "landscape professionals play a vital role in making the water's edge attractive as well as functional," offered a training and certification program built around the role of landscape contractors in the design, planting, construction, and maintenance of living shoreline projects. Furthermore, this training has grown beyond certifying landscape professionals to include "engineers, landscape architects, stormwater and erosion and sediment control inspectors, [and] soil and water conservation district agents."

Design, technical work, and construction activities included planning and execution of living shoreline projects for property owners or serving as an intermediary in technical work discussions between property owners and contractors or between property owners and other relevant parties. One nonprofit (N03) summarized its work as covering the full spectrum of service, "anything from design to build, from working with the homeowner initially to design and cost estimating to permitting and installation or working with a contractor." The same organization emphasized maintenance and checking on the living shoreline projects every five years. Another organization (N09) focused on pre-design technical work, such as "help with site survey… look at the situation and consider factors – fetch, slope, wakes, etc. – to see if a living shoreline will work."

Cost share activities included the joint work of nonprofits with the government to offset the costs of living shoreline projects for homeowners and contractors. Two organizations offered

a cost share program that provided funding to property owners who install living shoreline projects. Cost share also occurred when the nonprofits worked with private contractors on living shorelines projects paid for by government funding.

Advocacy activities included interactions with government entities, such as participation in wetlands board meetings and public hearings where permit decisions are made, and involvement in revisions to the shoreline permitting process. As one nonprofit (N04) noted, "advocacy is part of everything we do." Another organization (N05) undertook advocacy activities at multiple levels of government, advocating at "local, state, and national [levels] for [funding for] shoreline protection or restoration." One nonprofit (N04) focused simultaneously on "big picture advocacy at the national and international level" and "local advocacy at the wetlands board and city council."

Nonprofit Roles

Using Young's (2000) framework, *information and education, training and certification,* and *design, technical work, and construction* activities were categorized as **supplementary** roles. These three activities were determined to be *supplementary* because they are offered independently from the government given the demand for such services that is not fulfilled by the government. Nonprofit's **complementary** role included *cost share* programs that provide funding to cover costs of implementing living shorelines projects. *Cost share* activities were determined to be *complementary* since the government provides funding through nonprofit organizations or these organizations complement government funding with additional resources. *Advocacy* activities were included under the **adversarial** role which encompasses environmental rights initiatives in support of living shorelines at various levels of government.

Using Frumkin's (2002) framework, *information and education, training and certification, cost share,* and *design, technical work, and construction* fell under the **service provision** role because they represent tangible services in response to the lack of government or market offerings. *Advocacy* activities were designated as **civic and political engagement** due to nonprofit's mobilization efforts to ensure continuous funding and optimal regulatory practices.

Table 3. Roles of environmental nonprofits in promoting living shorelines

Roles			
Frumkin's framework	**Young's framework**	**Activities**	**No. of orgs**
Service provision	Supplementary	Information and education	11
		Training and certification	2
		Design, technical work, and construction	3
	Complementary	Cost share	3
Civic and political engagement	Adversarial	Advocacy	9

As shown in Table 3, under the *supplementary* or *service provision* role, *information and education* activities were performed by all eleven nonprofit organizations, *training and certification* activities were undertaken by two organizations, and *design, technical work, and construction* was performed by three organizations. Three nonprofits performed *cost share* activities to fulfill a *complementary* role and nine organizations assumed *advocacy* activities in pursuit of the *adversarial* or *civic and political engagement* role.

Connections across Roles

Of the eleven interviewed nonprofits, only one performed a single *supplementary* role (N11), while using Frumkin's framework two organizations fulfilled a single *service provider*

role (N10, N11). The most common combination of roles performed by the environmental

nonprofit organizations in our sample was *supplementary* and *adversarial* or *service provision*

and *civic and political engagement*. Seven organizations performed these two roles. Another two

nonprofits (N03, N08) performed these roles in conjunction with the *complementary/service*

provision role (see Table 4).

Table 4. Combination of roles and activities of environmental nonprofits in promoting living
shorelines

Roles				
Frumkin's framework	**Young's framework**	**Activities**	**No. of orgs**	**Orgs**
Service provision	Supplementary only	-Information and education	1	N11
	Supplementary and complementary	-Information and education -Training and certification -Design, technical work, and construction -Cost share	1	N10
Service provision and civic and political engagement	Supplementary and adversarial	-Information and education -Training and certification -Design, technical work, and construction -Advocacy	7	N01, N02, N04, N05, N06, N07, N09
Service provision and civic and political engagement	Supplementary, complementary, and adversarial	-Information and education -Design, technical work, and construction -Cost share -Advocacy	2	N03, N08

Uniformity in role alignment between the two frameworks suggests a need to further

investigate the connections between different roles. For example, Fyall (2017) suggested that

nonprofits may perform concurrent roles of service provider and advocate, influencing policies

not only when engaging in advocacy or lobbying activities but also while delivering services.

This dual and simultaneous role of advocate-provider situates nonprofit activities more

appropriately in the public policy process, as the "policy discretion of nonprofit providers" allows them to more effectively exercise their ability to affect policy change (Fyall, 2017, p. 132). Hwang and Suárez (2019) found that most service providers in their sample also embraced advocacy activities as an indispensable, albeit not explicit, part of their service mission.

We see similar results with environmental nonprofits in our sample. One organization (N07) that performed the advocate-provider combination mentioned that they undertake local level advocacy by also "try[ing] to break the mold [of preferring bulkheads] with tours and boat trips to see shorelines for their aesthetic beauty and the variety of circumstances in which a living shoreline can work," suggesting efforts to change the status quo in both the policy realm and the normative space. This organization also performs more traditional advocacy activities at the state level to "advocate for funding for living shorelines and related initiatives." Another organization (N09) that combined advocate-provider roles highlighted being the convenor for educational and informational sessions by "bringing in experts for residents, churches, any property owner in the watershed, contractors [to] promote living shorelines" while also focusing on local level advocacy.

According to Young (2000), nonprofits work to correct the information asymmetry between producers and consumers, which encompasses the *information and education* activity of the *supplementary/service provision* role. But this logic can also be used in the *advocacy* activity of nonprofits' *adversarial/civic and political engagement* role where nonprofits reduce information asymmetry on the government side by ensuring the views of property owners and issues with the permitting process are known to regulatory agencies.

Fyall (2017) noted that the "nonprofit's mission defines its unique priorities as distinct from a more general commitment to furthering the public good" (p.136). While the centrality of

shoreline management in the organization's mission varied from low to high for nonprofits in our sample, the advocate-provider role was essential to furthering the shoreline management component of the mission. Given that the mission determines organizational priorities, the primacy as well as complementarity of advocate-provider roles in our sample of environmental nonprofit organizations indicate that the shoreline management focus of the mission drives the prevalence of these roles and activities.

Connections across Nonprofits

Being service providers with a defined purpose allows nonprofits to engage with other similar service providers, while setting the stage for collective advocacy action. Nonprofits in our sample highlighted the interconnectedness of their work with other actors in the network as they mentioned common organizations they partner or regularly engage with. Connections also occur among the actors performing different activities and roles. For example, organizations that do not perform a complementary role by offering cost sharing said that they provide property owners with information about cost share options offered by other organizations.

Two nonprofits (N03, N08) that performed Young's (2000) three roles emphasized partnerships and long-term support. In terms of partnerships, the organizations had well-established relationships with both local and state governments through an *adversarial/civic and political engagement* role and with other nonprofits through *supplementary* and *complementary* or *service provider* roles with which they conduct outreach and provide cost share programs. For example, one organization (N03) utilized a partnership approach to expand its reach to specific neighborhoods to conduct information sessions and promote the cost share program.

Connections among Activities

Some nonprofits in our study performed multiple *supplementary/service provision* activities. Two organizations (N03, N05) provided *information and education* activities along with *design, technical work, and construction*, and one organization (N01) provided *information and education* activities in conjunction with *training and certification* activities.

Design, technical work, and construction extend the *information and education* activities of environmental nonprofits by carrying over the interest that was piqued during information and education activity to the next stage of living shoreline project development. For example, one organization (N03) mentioned involvement in "initial consultation, design, cost estimate, permit, and construction" of living shoreline projects, which logically stemmed from their information and education activity of "promoting living shorelines and encouraging property owners to choose living shorelines." Another nonprofit (N05) said that they are "always talking about resilience," and that in providing "design, advice, [and] assistance with permitting" they also "open [up] lines of communication … connecting property owners to the right partners," thus advancing information and education into the more practical realm and serving as an intermediary between different parties.

Training and certification activities reinforce *information and education* activities by assisting the process of supporting living shorelines from the provider or supplier side. The work of environmental nonprofits in relation to *training and certification* augments the *information and education* activities by ensuring there are enough certified contractors to deliver the living shoreline projects that are being promoted by these nonprofits. One organization (N01) expressed this connection between the two activities in the following way:

"Other partners want certified professionals they can recommend to the community or

want [us to] help in educating the community. We do joint workshops or talks as

requested to provide education but also to recruit landscape contractors to be certified."

Boundary Spanning Functions

In exploring connections between specific activities under different roles, we discovered

relationships that suggest how nonprofits fulfill boundary spanning functions within a network of

actors. The boundary spanning function helps explain environmental nonprofit organizations'

efforts across different roles and activities and as they interact with other actors. The theme of

boundary spanning runs through many interviews. A nonprofit (N08) that performed all three

roles identified by Young (2000) summarized the boundary spanning role as:

"We act as a boundary organization, we bring the information from organizations like the

Virginia Institute of Marine Sciences to decision makers at the local and state level,

neighborhood groups, civic leagues, and other stakeholder groups, bring tools and

decisions to stakeholder groups."

Another organization (N06) highlighted this boundary spanning function by pointing to the

benefit of having "someone between landowners and contractors" in increasing the chances of

success of a living shoreline project. This nonprofit was also "increasingly serving [an]

intermediary role with government agencies," further highlighting the interconnectedness of

environmental nonprofits in the network of actors.

One organization (N02) emphasized that most of the information and advocacy activities

were performed while working on specific projects, suggesting that these roles come into play

and evolve as the nonprofit engages in various activities related to living shorelines. This idea

emphasizes situational awareness and flexibility to changes in the environment that are intrinsic for boundary spanning entities (Leung, 2013). The boundary spanning function in a collaborative setting expands beyond one activity to a chain of interconnected activities that comprise an attitude of constant information and situation "awareness, or vigilance toward the ever-changing conditions that emerge in the collaborative processes and relationships" (Leung, 2013, p. 456).

Co-production Partners

The *supplementary/service provision* role was at the core of the work of environmental nonprofit organizations in our sample. According to Young (2000), nonprofits respond to the varied preferences left unmet by the government and private market. But they are not simply reactive entities, they also initiate, fund, and implement changes as independent actors of the public policy process. In areas where preferences may diverge, like in our instance, nonprofits play a bigger role compared to where public preferences are more uniform. In the case of environmental nonprofits involved in promotion of living shorelines, where different interests and preferences are held by property owners, landscape professionals and contractors, and regulatory agencies, nonprofits' roles become more substantial, sequential, and multidimensional.

Gazley, Cheng, and Lafontant (2018) offered an analysis of co-production forms of nonprofit activities supporting governments efforts in maintaining U.S. public parks. Extrapolating this to the case of environmental nonprofits in encouraging living shorelines as a shoreline management approach, nonprofits' engagement in public policy goes beyond government's policy preference mandate and adds the missing elements to achieve the policy intent, such as educational elements, architectural design capabilities, and trained construction

experts. Networks of environmental nonprofits for coastal resilience in Virginia also contributed to their collective role as a co-producer of public services, given common partnerships between different nonprofits to support and amplify each other's activities through cost-share programs. Environmental nonprofit role manifestations also resemble a co-production model of activities given the policy arrangements regarding the permitting process where nonprofits actively advocate for resource deployment and permitting process improvements that augment the original intent of the policy preference for living shorelines. Overall, the interdependence of roles categorized in this study among environmental nonprofits supporting government efforts in achieving coastal management policy goals is indicative of a larger co-productive function that situates nonprofits as active partners in public service delivery who help to shape this process as much as being shaped by it.

CONCLUSION

In this study we described and categorized the roles and activities of environmental nonprofit organizations involved in living shorelines and wetlands conservation in relation to governments and regulatory entities such as wetland boards representing public interests and other network actors such as property owners and contractors representing private interests. Through our analysis, we addressed two research questions: (1) What roles do environmental nonprofit organizations play in local stakeholder network arrangements for wetlands conservation and shoreline management? (2) How are these roles interrelated?

Using two different frameworks, we described the roles of environmental nonprofit organizations as they navigate the dynamics between public and private interests. Using these roles, we classified various activities performed by nonprofits, such as educating the public, providing certification and training to contractors, assisting with design and construction of

living shorelines, providing cost share to implement living shoreline projects, advocating for funding, and providing input on existing policies. Through these activities organizations mediate the interests of diverse groups of actors within the network focused on adoption of living shorelines to protect wetlands. We also explored macro-level connections between the different activities and roles of environmental nonprofits to position these organizations within the network of actors.

These nonprofits use their local experience to carry out living shoreline projects from start to finish as service providers, but also propose changes to the shoreline permitting process to improve environmental and policy outcomes, such as through streamlined government regulations that protect private interests without sacrificing environmental outcomes. Local knowledge and intimate understanding of the process allows nonprofits to better navigate the system and be able to assist other actors in a more nuanced way. In other words, these nonprofits fill in the gaps left by the regulatory framework through a dual advocate-provider role (Fyall 2017) while encouraging property owners to opt for living shorelines rather than hardened structures.

We found nonprofits' activities and roles to be interrelated, although the *supplementary/service provision* role tended to be the focal point of the organization's mission. As Young (2000) notes, "supplementary relationship becomes more prominent … when government is relatively passive in its approach to social policy or slow to respond to social issues" (p. 169), which is the case in our study context. The government regulatory framework only addresses the permitting process, leaving public education, training, design, construction, and subsequent maintenance of shoreline projects for nonprofit organizations and others to fulfill. This leads us to conclude that these roles are also integrated into a co-production approach

where environmental nonprofits share a larger and more integrative role in contributing to public service provisions (Brandsen & Pestoff, 2006; Gazley, et al., 2018).

Hence, a combination of roles was more common than single-role representation. The composite activities of *supplementary/service provider* and *adversarial/civic and political engagement* roles were more intricately connected, suggesting that limited government involvement outside of the regulatory realm leaves out certain aspects of the process that are fulfilled by the advocate-provider role arrangement.

Findings of our exploratory study provide insights into interdependence of nonprofits' advocacy in supporting regulatory processes and service provision through public information and education efforts about issues that funnel into the regulatory process, and through direct participation in the implementation of projects that come out of the regulatory process. Recognizing these activities and roles of nonprofits, in addition to their boundary spanning functions between activities, roles, and actors within the network, is important for holistic understanding of environmental and policy outcomes that result from a dynamic process that extends beyond the government regulatory framework that only encompasses the permitting process. Our findings point to the criticality of nonprofits in bridging the chasms between government and non-governmental actors, whether by overcoming information asymmetry or providing material resources and technical expertise.

Our findings are based on a small sample of environmental nonprofits in coastal Virginia whose work involves some aspects of living shorelines and wetlands conservation. However, the sample may not fully reflect the richness and diversity that can be found in the larger population of nonprofit organizations engaged in shoreline management. For example, we cannot extend our

findings beyond the coastal Virginia context since other coastal states will have their own shoreline management and regulatory approaches affecting wetlands.

The applicability of our findings should be evaluated in light of regulatory frameworks used for managing shoreline development. Many other states have similarly emphasized living shorelines to manage development in the coastal zone; similar analysis of the role of nonprofits in these states' network of actors would extend our knowledge to different contexts and provide insights into how roles may vary according to different approaches to shoreline management.

Our findings also highlight the partnership or collaborative approaches that nonprofits utilize given their interconnectedness with other nonprofits, contractors, and wetlands boards. These collaborations within the nonprofit sector or with private and government partners warrant future research, particularly regarding how they affect environmental outcomes. Given that the regulatory outcomes in Virginia have not met policy goals, efforts to improve policy outcomes cannot focus solely on government action. Instead, as nonprofits play important and varied roles, recognition of these roles suggests an expansion of nonprofit involvement to influence outcomes in different ways.

The boundary spanning function of environmental nonprofits and the idea of co-production, driven by different situational roles and activities, are especially significant given diverse private and public interests and the lack of knowledge and awareness about new and more sustainable environmental solutions. Nonprofit intermediaries can achieve better environmental results than government when there is a general lack of knowledge and awareness about different sustainable solutions (Melindi-Ghidi, Dedeurwaerdere, & Fabbri, 2020).Governments should encourage such work of nonprofit organizations in facilitating the knowledge and tools to improve effectiveness and adoption of living shoreline projects.

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