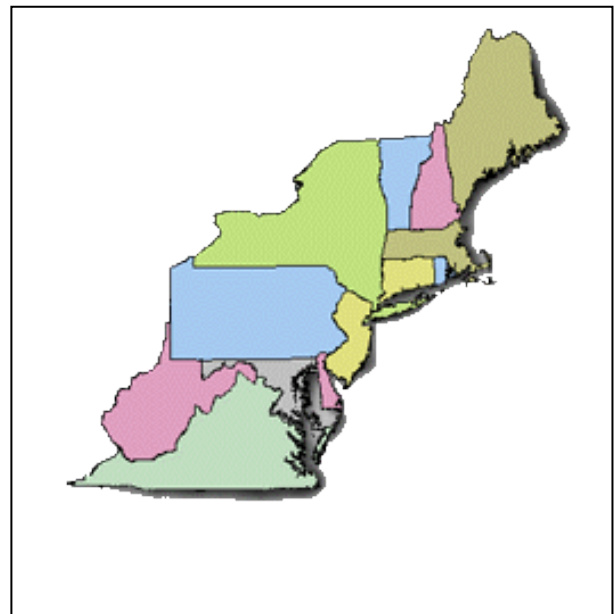# Traits that Affect Capacity of Refuges in USFWS Region 5 to Facilitate Recreation, Education, and Service Opportunities

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EXECUTIVE SUMMARY

This exploratory research project focuses on understanding national wildlife refuges (NWRs) as bridging organizations. Bridging organizations function as collaborative brokers who, through their leadership and organizational processes, help catalyze and expedite collaborative efforts. Bridging organizations facilitate planning and coordination between organizations, and they help collaborators gain access to resources needed to implement joint actions.

Refuge personnel may take on a bridging role as they strive to conserve or restore ecosystems. For example, refuge personnel often facilitate planning, coordination, and resource sharing among collaborators with a mutual interest in wetland restoration. Our project focused on how NWRs serve as bridging organizations to facilitate compatible recreation, environmental education, and community service opportunities.

Our study had two objectives:

(1) Characterize engagement processes NWR administrators use to encourage local residents' involvement in nature-dependent, pro-environmental activities or organizations, both within and external to NWR boundaries; and

(2) Identify barriers to and opportunities for collaboration between refuge staff and local communities to promote local residents' involvement in nature-dependent, pro-environmental activities or organizations, especially among youth and in urban areas.

Methods

We contacted representatives from 19 different NWRs across USFWS Region 5. A total of 16 Refuge personnel representing 14 NWRs or NWR complexes subsequently participated in 30-60 minute semi-structured interviews. We focused on refuges that hosted or supported onsite or offsite community engagement programs.

Interview questions were designed to solicit information on how USFWS personnel and organizational processes catalyze and expedite collaborative efforts to deliver recreation, environmental education, and volunteer service opportunities. Theory on organizational capacity was the underlying conceptual framework for our interview questions. In advance of interviews, we reviewed information on refuge activities found in publicly available sources (e.g., USFWS websites and reports). Insights from these resources informed the development of interview questions and provided additional detail about the range of bridging activities occurring across Region 5.

We synthesized information on challenges and opportunities obtained through personal interviews and returned the synthesis document to interviewees for additions, revisions, and comments. Based on these follow-up comments, we revised our final list of traits that enable or inhibit capacity of national wildlife refuges to facilitate compatible recreation, environmental education, or service learning opportunities.

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Results

The nature of bridging activities to support nature-dependent activities

Millions of days of hunting, fishing, and wildlife viewing occur each year on Refuges with no need for bridging (i.e., Refuges do not need to collaborate with other organizations to provide such recreation opportunities. Bridging does occur, however, to facilitate special hunting, fishing, and birding events.

For example, we heard examples of refuges working with their state fish or wildlife agency and local fishing and hunting organizations to offer fly tying events, surf fishing seminars, a Pathways to Fishing program, a free youth fishing day, hunter education courses, tours at an annual birding festival, or waterfowl identification courses. Some refuges had worked with partners to create specialized birding tours guided by volunteers associated with nongovernmental groups NGOs (e.g., Audubon). These bridging activities create opportunities to recruit new hunters, anglers, birders, and refuge volunteers.

Interview comments make it clear that bridging is commonly undertaken to increase the quantity, and enhance the quality, of formal environmental education offered at Refuges. On the refuges represented in our study, the primary mechanism by which USFWS met the objective of providing environmental education opportunities was through partnerships facilitated by USFWS staff, and programs delivered by other organizations.

Refuges are able to provide opportunities for a core group of long-term volunteers without any bridging activities. The number of long-term volunteers varies widely (one of the informants we interviewed estimated his volunteer base around 200, another reported having only 10 long-term volunteers). Some coastal refuges are also able to support a small number of seasonal core volunteers without any bridging activity. Refuges do collaborate with local organizations to provide single-day events where volunteers contribute to group conservation activity (e.g., invasive plant removal, restoring native plant species, a beach or stream clean-up). In some refuges small work groups or teams are paired with a staff member or volunteer from a conservation organization. These types of events can be valuable as a means of introducing local residents to conservation organizations and building social networks in the local conservation community.

Many refuges host high school or college students as seasonal interns to work on specific habitat, maintenance, research, environmental education, or environmental stewardship projects. They are supervised by refuge staff and may be introduced to multiple conservation professionals and organizations over the course of the internship. Some student internships include opportunities for mentoring from conservation professionals and are considered vehicles to encourage students to consider a career path with USFWS. Although some internships can be offered unilaterally by a refuge, interviewees described how the depth of the intern experience, degree of mentoring, and number of internships (or service-learning opportunities) are all enhanced through bridging activities with other organizations.

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Factors that inhibit or enhance USFWS capacity for bridging activities

Based on a synthesis of interview comments, as well as feedback from interviewees on a preliminary set of statements, we grouped factors that inhibit or enhance USFWS bridging efforts under six headings.

Staff resources. Interviewees at 13 different refuges described examples demonstrating how amount and types of staffing are critical in determining the degree to which refuges can be bridging entities. Lack of staff constrains the ability of a refuge to be a bridging entity, because staff execute functions necessary to facilitate recreation opportunities, environmental education programs, and volunteer supervision. Having a Visitor Services Manager on staff was noted as being critical to delivery of all categories of visitor opportunities.

Multiple interviewees noted that USFWS provides very good training and staff development opportunities, and those investments help staff seize opportunities to get grants and build partnerships. On the other hand, multiple interviewees mentioned an agency hiring freeze that has been in place for some time at USFWS, which constrains the ability of refuges to replace or expand staff positions. Moreover, when allowed, new hires are made at lower General Service (GS) levels, meaning these employees have less education or experience, and have a more limited range of duties and responsibilities, than the staff they replace. These constraints reportedly make it increasingly difficult to deliver the same level of programming year after year.

Interviewees from 7 different refuges described interpersonal relationships as a critical part of their ability to work with other organizations that can create and deliver visitor opportunities. Some interviewees believed interpersonal relationships are nearly as important as funding and staffing in their ability to facilitate visitor experiences. They noted that staff size limits ability to engage with local communities and develop interpersonal relationships with members of potential partner organizations, especially those that provide environmental education programming.

Funding. Interviewees from 10 different refuges stated that access to funding is critical in determining the degree to which refuges can be bridging entities as they deliver recreation or environmental education, or as they work with refuge volunteers. It was clear from interviewee comments that additional funding provided as part of programs such as The Urban Wildlife Refuge Initiative create opportunities to expand staff, facilities, infrastructure and programming in ways that greatly enhance the ability of refuges to bridge visitors to members of the conservation community. Refuge entrance fees also create opportunities to expand staff and programming in ways that greatly enhance the ability of refuges to facilitate recreation, education, or volunteer service opportunities by working with other members of the conservation community. Interviewees described programs, activities, actions they are able to take only because of their ability to charge a visitor entrance/use fee.

Information: Refuges recognize that information on the effectiveness of environmental education programming is needed to incrementally improve those programs. They also recognize that they need to measure and evaluate the impacts of new programs created to address the Service's

Urban Wildlife Refuge Initiative in order to defend those investments to refuge system leaders and legislators. For example, interviewees from 2 different refuges mentioned that evaluative information is needed to determine effectiveness of their new programs directed at serving urban youth. However, neither the refuges where programs are implemented, nor the national offices (e.g., Human Dimensions Branch of the Refuge System) have the staff capacity to conduct rigorous program evaluations.

<u>Facilities, equipment, and infrastructure</u>. Interviewees from 7 different refuges described how upgrades in facilities, equipment, or infrastructure can enhance the degree to which refuges can be bridging entities (or conversely, how their absence limits bridging capacity). A dedicated environmental education building (i.e., a building with classrooms, meeting spaces, exhibits, restrooms, teaching materials, etc.) was identified an invaluable asset to deliver environmental education experiences. Simple, low-maintenance buildings with capacity to seat groups up to 50 were identified as an inexpensive means of creating space for environmental education experiences facilitated by refuge staff or partner organizations. Facilities that allow refuges to house seasonal interns (e.g., an intern "bunkhouse") can increase refuge capacity to provide service learning opportunities. Infrastructure additions (e.g., expanding a community bike trail into a refuge, creating a bike lane to a refuge, working with state DOT to place a city bus stop at the refuge entrance, improving parking lots, improving a refuge road to allow school bus traffic, improving trailheads, developing bathroom facilities) can increase visitation by nontraditional audiences, creating opportunities to introduce a more diverse audience to USFWS, refuge volunteers, and refuge partners.

<u>Institutional linkages</u>. Interviewees believed that the ability of their organization to collaborate with other organizations was a natural strength. Interviewees from 5 different refuges described how inter-agency coalitions and collaborations expanded capacity to create recreation, and education opportunities.

<u>Leadership</u>. Several interviewees pointed out how leadership at the local and national level of USFWS expands their capacity to be a bridging organization. Leadership was identified as instrumental to addressing staffing and funding constraints and developing institutional linkages and partnerships.

Discussion

Our findings suggest that visitor services managers, volunteer coordinators, and refuge managers in USFWS Region 5 are extensively engaged in activities to catalyze, expedite, and facilitate inter-organizational collaborations that provide opportunities for visitors to participate in nature-dependent, pro-environmental activities on national wildlife refuges. We found that Refuge personnel take on these bridging roles most frequently to increase capacity for environmental education programming, but to a lesser degree bridging activity is occurring to facilitate trial experiences in wildlife-dependent recreation (i.e., hunting, fishing, bird watching) and service learning experiences and internships. Our findings also illustrate the breadth and depth of intensive bridging activities that are occurring at regional priority refuges striving to build programs that engage local residents and ethnically-diverse, underserved audiences. This study

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helps to document how Refuge personnel are operationalizing long-standing recommendations to expand partnerships and collaborations.

We documented examples of how six facets of organizational capacity—staff resources; funding; information; facilities, equipment, and infrastructure; institutional linkages, and leadership—determine capacity for Refuges to serve as bridging entities. The broad categories of factors are not surprising; these categories of factors are known to influence a wide array of organizations in many different contexts. USFWS reports and evaluations have previously identified several of these factors (i.e., staff resources, funding constraints, facility construction and maintenance) as constraints on capacity of the refuge system to achieve its mission generally. Our findings are important because they provide specific empirical evidence of how organizational capacity plays out with respect to facilitating nature-based, recreation and pro-environmental activity by refuge visitors.

Study limitations. Our findings come from a small number of interviews in a sample of national wildlife refuges within a single USFWS region. Generalizations from our study to the entire refuge system should be made cautiously. Our conclusions that Refuges' capacity to facilitate provision of nature-based recreation is influenced by funding, staffing, facilities and infrastructure, leadership, and institutional linkages are consistent with conclusions from previous program evaluations by USFWS, however, supporting the proposition that the findings are generalizable beyond the region where we collected data.

Suggestions for further research. We believe the most promising areas for future research on bridging activity and nature-dependent recreation relate to evaluation of the Service's Urban Wildlife Refuge Initiative, particularly evaluation of pilot programs at regional priority refuges within that initiative. Regional priority refuges include some of the most urban units in the refuge system (e.g., Rocky Mountain Arsenal NWR, John Heinz NWR). The USFWS recognizes that stable funding, sufficient staff numbers and skill sets, and sustained community partnerships will be necessary for regional priority refuges to achieve their goals. Pilot projects have been established in some of these refuges to address factors that constrain the capacity of refuges to reach underserved populations. Service leadership recognizes that it is critical to monitor and evaluate these pilot projects to determine which investments in organizational capacity have the greatest promise as a means to help the Service achieve its aspiration of engaging more diverse, underserved audiences. Given what we learned in these interviews, we agree that efforts to evaluate the outcomes associated with Urban Wildlife Refuge Initiative investments should be a high priority.

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ACKNOWLEDGMENTS

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This exploratory research project focuses on understanding national wildlife refuges (NWRs) as bridging organizations. Bridging organizations function as collaborative brokers who, through their leadership and organizational processes, help catalyze and expedite collaborative efforts (Berkes 2009). Bridging organizations facilitate planning and coordination between organizations, and they help collaborators gain access to resources needed to implement joint actions.

Refuge personnel may take on a bridging role as they strive to conserve or restore ecosystems. For example, refuge personnel often facilitate planning, coordination, and resource sharing among collaborators with a mutual interest in restoration of salt marshes or freshwater wetlands. Our project focused on how NWRs serve as bridging organizations to facilitate compatible recreation, environmental education, and community service opportunities.

Background

In 2014, members of Cornell's Human Dimensions Research Unit (currently Cornell Center for Conservation Social Science) initiated a study to investigate relationships between participation in nature-dependent activities (NDAs) on public lands and local residents' pro-environmental behaviors and community involvement[1]. Our work between 2014 and 2016 focused on two study sites in New York State. One of these study sites was Wertheim NWR, the flagship refuge in the six-unit Long Island refuge complex. We completed 37 qualitative interviews with Wertheim NWR volunteers and staff, and local environmental leaders. Interviewees reported that participation in NDAs at Wertheim NWR enhanced their (1) knowledge of local wildlife and their habitats, (2) concern for and, in some cases, engagement in protecting local natural resources, and (3) familiarity with the local community. This indicates participation in NDAs at Wertheim provided valuable social and ecological benefits to local communities. Ultimately participation in NDAs on Wertheim were shown to facilitate communication between local residents, experiential learning opportunities, and community building opportunities (Doyle-Capitman et al. 2017). We found that Wertheim's facilities, staff, and programming provided contextually-unique opportunities for local residents to come together and learn about local natural environments and environmental organizations. We clarified how Wertheim NWR staff played the role of a bridging entity, helping facilitate local residents' access to NDAs on and beyond the refuge.

These findings were encouraging, but limited to a single location. As such, the prevalence and generalizability of refuges' ability to serve a bridging function for local residents to gain access to NDAs remained unclear. Thus, we obtained support to learn more about how other refuges in the USFWS Region 5 (i.e., the Northeast Region) serve the role of bridging entities who facilitate recreation, environmental education, and volunteer service opportunities.

Our study had two objectives:

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(1) Characterize engagement processes NWR administrators use to encourage local residents' involvement in nature-dependent, pro-environmental activities or organizations, both within and external to NWR boundaries; and

(2) Identify barriers to and opportunities for collaboration between refuge staff and local communities to promote local residents' involvement in nature-dependent, pro-environmental activities or organizations, especially among youth and in urban areas.

METHODS

Conceptual Foundation: Organizational Capacity

We were interested in learning what NWR personnel perceived as key factors affecting their organizational capacity to facilitate NDAs or other activities (e.g. volunteer service) that may connect people to nature and to conservation communities. Thus, we used organizational capacity as an underlying conceptual framework to guide questioning during personal interviews.

Institutional capacity and capacity development are multi-dimensional concepts that have been defined in various ways (Lusthaus, Anderson, & Murphy, 1995; Lusthaus, Adrien, & Perstinger, 1999). For the purposes of our research the term *capacity* refers to a refuge's capabilities for serving as a bridging entity that brings together resources and organizations to facilitate recreation, environmental education, or service opportunities. *Capacity development* refers to any system, effort or process designed to enhance those capabilities. Capacity development literature identifies five internal features of governmental agencies that play a role in institutional capacity: leadership; human resources; other core resources; program and process management; and inter-institutional linkages (Lusthaus et al., 1995; Lusthaus et al. 1999; Wondelleck & Yafee, 2000; Raik, Decker, & Siemer, 2003; Riley, Taylor, & Elliott, 2003; Lauber, Stedman, Decker, & Knuth, 2009).

Leadership includes a broad range of formal and informal activities that direct an organization and help it navigate through social, economic, and political changes. Leaders set goals and direct staff and stakeholders toward actions that address the organization's objectives. Leaders take action to secure resources, motivate staff and stakeholders to perform in ways that address objectives, and help the organization adapt to external stressors in the management environment.

In the context of our research, *human resources* includes all available agency staff who might contribute to visitor services, volunteer services, management of compatible recreation on refuges, or environmental education opportunities for youth and adults. Many other types of staff may play supporting roles in volunteer, recreation or environmental education programs (e.g., Refuge Managers, community affairs and communication specialists, law enforcement personnel). The number, type, competencies, and qualities of staff (e.g., experience, intelligence, and judgment) play a crucial role in capacity of an agency. Social attributes of staff, such as the nature and extent of social networks that staff form within their agency and with peers in other agencies (e.g., social capital), are components of human resources that may contribute to learning and adaptability in organizations.

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Other core resources essential to agency capacity include program funding (e.g., level and types), infrastructure (e.g., facilities for community engagement, classroom or outdoor education; accessible sites for compatible recreation), and technological resources (which may or may not be relevant given the focus of our research).

Program/process management refers to all the coordinating processes and management activities that guide staff activities and interactions with partner agencies and organizations. These processes include: planning, problem solving, decision making, internal communications, monitoring, and evaluation. Examples of program management related to our research include efforts to implement the National Wildlife Refuge System Volunteer and Community Partnership Enhancement Act of 1998 and NWR's Urban Wildlife Refuge Initiative.

Inter-institutional linkages are essential to magnify NWR efforts to encourage recreation, education, and volunteer service. Capacity depends in part on the strength of linkages between NWRs and other organizations that have potential to collaborate, coordinate, or share responsibilities for delivery of recreation, education or volunteer service opportunities.

Although studies to date have identified some of the tangible factors that may determine capacity, that literature does not offer a framework for understanding how those factors interrelate. To address that need, we looked to policy learning literature (Fiorino, 2001; Glasbergen, 1996; Lauber & Brown, 2006; Lauber, Stedman, Decker, & Knuth, 2011). That literature views policy making and management as learning processes and identifies factors that contribute to learning. We relied on such literature because we believe learning can play a key role in how quickly and effectively NWRs develop capacity to facilitate collaborative efforts to provide recreation, education, or volunteer service opportunities.

The policy learning literature suggests that factors affecting capacity, including those discussed above, fall into three inter-related groups: necessary resources, enabling processes, and institutional foundation for capacity development (Fiorino, 2001; Glasbergen, 1996; Lauber & Brown, 2006; Lauber, Stedman, Decker, & Knuth, 2011). Necessary resources (e.g., funding, staffing, facilities and equipment, information) are those factors that contribute most directly to management actions to accomplish objectives. Enabling processes (e.g., authority to conduct activities [legitimation], coordination between actors, and other elements related to program/process management) are activities that have to take place in order for resources to be secured and used for these purposes. Long-term development of an institutional foundation for this work, spanning the agencies playing a role in linking people to nature, is necessary to establish essential enabling processes. An institutional foundation is built through dialogue, development of relationships between individual actors and institutions, and by reaching agreement about objectives and activities.

Data collection

We contacted a representative of 19 different NWRs across USFWS Region 5. We focused on refuges large enough to support onsite or offsite community engagement programs, such as: collaborations with local school districts to deliver environmental education programs, community-oriented public events held at a refuge, urban wildlife refuge partnerships, providing

habitat restoration field days, or interacting with refuge friends organizations. Refuge representatives were sent background information about the research and asked if they or another staff member would agree to a voluntary 30-60 minute interview, to be scheduled at their convenience. In August and September of 2017, we completed interviews with 16 USFWS personnel representing 14 different refuges or refuge complexes (Table 1).

Questions followed an interview guide designed to solicit information on how USFWS personnel and organizational processes catalyze and expedite collaborative efforts to deliver recreation, environmental education, and volunteer service opportunities (Appendix A). Our request to contact human subjects to conduct interviews, and associated interview guide, were reviewed and granted approval by the Cornell University Office of Research Integrity and Assurance (Institutional Review Board for Human Participants Protocol ID# 1006001472). In advance of interviews, Cornell staff reviewed information on refuge activities found in publically-available sources (e.g., USFWS websites and reports). This information informed specific interview questions and provided additional detail about the range of bridging activities occurring across Region 5.

We synthesized information on challenges and opportunities obtained through personal interviews, and returned the synthesis document to interviewees for additions, revisions, and comments. Based on these follow-up comments, we revised our final list of traits that enable or inhibit capacity of national wildlife refuges to facilitate compatible recreation, environmental education, or service learning opportunities.

Table 1. National wildlife refuges/refuge complexes represented by the USFWS personnel interviewed for this study.

State	Refuge	State	Refuge
DE	Coastal Delaware NWR	NY	Montezuma NWR
		PA	John Heinz NWR
ME	Maine Coastal Islands NWR	PA	Erie NWR
ME	Rachel Carson NWR		
		RI	Rhode Island NWR
MD	Chesapeake Marshland NWR		
		VT	Missisquoi NWR
MA	Eastern Massachussetts NWR		
MA	Monomoy NWR	VA	Great Dismal Swamp NWR
MA	Parker River NWR	VA	Chincoteague NWR
NJ	Cape May NWR	WV	Ohio River Islands NWR
NJ	Edwin B. Forsythe NWR		

Actions to Facilitate Nature-Dependent Activities and Experiences

Hunting, fishing, and bird watching

Refuge visits for the purpose of hunting, fishing, bird watching, and environmental interpretation routinely occur without any bridging activity (i.e., refuges don't need to collaborate with other organizations to provide such opportunities onsite). Refuge personnel periodically coordinate with state fish and wildlife agencies to facilitate delivery of specific hunting or fishing events. For example, we heard examples of refuges working with their state fish or wildlife agency and local fishing and hunting organizations to offer fly tying events, surf fishing seminars, a Pathways to Fishing program, a free youth fishing day, hunter education courses, tours at an annual birding festival, or waterfowl identification courses. Some refuges have worked with nongovernmental groups (NGOs) to create specialized birding opportunities that can only be experienced as part of a tour group guided by volunteers associated with NGOs. For example, one refuge works with Audubon staff, who deliver a weekly birding trip to local senior citizens who have little or no previous birding experience. Most refuges provide opportunities for self-guided interpretive experiences (e.g., walking trails with interpretive signage, self-guided auto tours, self-guided interpretive exhibits within a refuge visitor center). Some refuges provide special use permits to nonprofit organizations, to facilitate provision of guided refuge tours.

Environmental education

Refuges provide some onsite environmental education activities without any inter-organizational collaboration. Refuges offer a range of environmental education experiences targeted mainly at students in grades K-6. Refuge staff routinely offer environmental education presentations to various audiences. A smaller number of refuges offer environmental education programs delivered by refuge staff. For example, John Heinz NWR offers an environmental education program called "Philly Nature Kids." Refuge personnel work with youth from schools in 4 urban neighborhoods adjacent to the refuge. Refuge staff meet with the students multiple times during the school year. It is described as a "quality over quantity" approach, where these local youth are encouraged to visit the refuge independently (by bus or bicycle), in addition to formal field trip visits organized through their school. The Visitor Services Manager works closely with the neighboring communities and the City of Philadelphia in a comprehensive approach to engaging urban youth and urban communities. Activities go on within the refuge and in the adjacent communities.

But the primary mechanism by which USFWS meets the objective of providing environmental education opportunities at refuges is through partnerships facilitated by USFWS staff and delivery of programming by other organizations. One interviewee described how his refuge uses funding associated with the urban wildlife refuge to train teachers. Those teachers go on to lead environmental education programs in their school. More commonly, refuges try to facilitate environmental education by facilitating travel from schools to refuges, or by providing educational resources and facilities for educators and students.

Often formal environmental education experiences are delivered by staff of a nongovernmental conservation organization. For example, The Montezuma Audubon Center (MAC) is a state-owned facility operated through a cooperative agreement between the New York State Department of Environmental Conservation (DEC) and the National Audubon Society. Managed by Audubon New York, the MAC building (paid for by DEC and USFWS) houses a large exhibit area, classroom, nature store, office area, auditorium, and a meeting room (set on a 198-acre property with two restored freshwater marshes, hiking trails, and an all-access observation platform). Through strategic partnerships (with DEC, USFWS, Ducks Unlimited, The Nature Conservancy, and Pheasants Forever), Audubon reintroduces audiences of all ages to nature with a diverse range of programs that highlight the critical importance of habitats focusing on wetland ecology, migration, and habitat restoration and improvements. Programming is provided by paid Aububon staff.

Volunteer opportunities

Most refuges have a core group of long-term volunteers. The number of long-term volunteers varies widely (one of the informants we interviewed estimated his volunteer base around 200, another reported having only 10 long-term volunteers). Some coastal refuges also have seasonal core volunteers. These refuges provide seasonal camping hookups in exchange for 20 hours of volunteer service per week. This attracts retirees with a camper, who also have skills needed by the refuge (e.g., skills in the building trades, building maintenance, or heavy equipment operation). Refuge staff are able to provide opportunities for these core volunteers without coordination or collaboration with other organizations.

Refuge staff collaborate with local organizations to provide single-day events where volunteers contribute to group conservation activity (e.g., invasive plant removal, restoring native plant species, a beach or stream clean-up). In some refuges small work groups or teams are paired with a staff member or volunteer from a conservation organization. During the course of the workday and a shared meal, volunteers can interact with their team leader and learn about the work of local conservation organizations. These types of bridging activities may introduce local residents to conservation organizations and build social networks in the local conservation community.

Many refuges host high school or college students as seasonal, volunteer or paid interns (paid interns are considered to be volunteers). Interns can work up to 40 hours a week and are brought on to work on specific habitat, maintenance, research, environmental education, or environmental stewardship projects. They are supervised by refuge staff and may be introduced to multiple conservation professionals and organizations over the course of the internship. Some internships offer opportunities for a student to receive mentoring from conservation professionals and are considered vehicles to encourage students to consider a career path with USFWS.

Some refuges collaborate or cooperate with nongovernmental organizations to offer internships. For example, Chincoteague NWR participates in a travel program called Chincoteague Road Scholars, where about 25 scholars come each spring and fall to complete a service learning project. Participants in the program spend a week on the barrier islands of Chincoteague and Assateague working at the Chincoteague NWR and the Museum of Chincoteague Island, where

they participate in a variety of projects (e.g., planting pollinator gardens, repairing trails, working with the Museum's collection of artifacts and records).

Factors That Inhibit or Enhance Bridging Efforts

Based on a synthesis of interview comments, as well as feedback from interviewees on a preliminary set of statements, we grouped factors that inhibit or enhance USFWS bridging efforts under six headings. Succinct descriptions of specific inhibitors and enhancers are described in Table 2. The following subsections provide additional details and quotes supporting the statements in Table 2.

Staff Resources

Interviewees at 13 different refuges described examples demonstrating how amount and types of staffing are critical in determining the degree to which refuges can be bridging entities. Lack of staff constrains the ability of a refuge to be a bridging entity, because staff execute functions necessary to facilitate recreation opportunities, environmental education programs, and volunteer supervision. Having a Visitor Services Manager on staff was noted as being critical to delivery of all categories of visitor opportunities.

> "*If I could have another visitor services person, or some kind of like community liason-type, to help work and do some more programs, more inquiry-based environmental education, things like that, that I think have a strong influence on kids …[going] into science, I think that would be very valuable. Because the three staff that I have right now in Visitor Services are sometimes just really challenged to get everything that they already have on their plate done. If it wasn't for the volunteers running our EE programs with the …schools, I don't think it would get done. So having another person would allow us to do more. That's not going to happen. All the refuges across our region have been decreasing staff. So the fact that we have three is unheard of. We have more Visitor Services people than we have biologists right now. If one of our [Visitor Services] folks left, there would be no doubt about it—they would not let us refill that position. …so yeah, that is a big challenge.*" [Blackwater NWR]

Multiple interviewees noted that USFWS provides very good training and staff development opportunities. They believed that those investments help staff seize opportunities to get grants and build partnerships. On the other hand, multiple interviewees mentioned an agency hiring freeze that has been in place for some time at USFWS, which constrains the ability of refuges to replace or expand staff positions. Moreover, when allowed new hires are made at a lower government services (GS) level, so new staff do not have the skill sets, and are not allowed to fulfill the same range of duties, as the staff they have replaced. These constraints reportedly make it increasingly difficult to deliver the same level of programming year after year.

> "*Our budget has been cut every year since 2010, we've lost 70 positions I think, in the refuge system in the northeast [Region 5] since then, maybe more. And we're going to lose probably another 60 or 70. So when you have vacancies that are not filled, or are filled at a lower level than they used to be …so you have a body but they don't have the*

Table 2. Organizational traits of national wildlife refuges (NWRs) that enhance or inhibit capacity of a refuge to facilitate compatible recreation, environmental education, or service learning opportunities.

Staff resources

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Enabling traits	Inhibiting traits
• USFWS staff generally work effectively with representatives of other organizations wherever there are common interests across organizations.	• Lack of staff constrains the ability of a refuge to be a bridging entity, because staff are essential to execute functions necessary to build and sustain collaborations with other organizations.
• Interpersonal relationships, developed by USFWS staff with representatives of other organizations, are the foundation for most of the bridging work that facilitates delivery of recreation, environmental education, and service-learning opportunities.	• Seasonal interns require supervision and need to be placed into pre-designed and supported programs. Requests from other organizations to place interns or start new internship programs often must be turned away because refuges lack staff time to design service-learning programs or supervise interns.
	• With very limited staff, many refuges are not able to engage actively with local community organizations (e.g., local school districts); competing time demands limit their availability to participate in community meetings or develop interpersonal relationships with potential partner agencies or organizations.
	• The administrative practice of transferring refuge or visitor services managers from one location to another within the refuge system can make it more difficult to establish interpersonal relationships between refuge staff and representatives of local organizations.
	• Some staff are more willing than others commit to (i.e., invest time and energy into) developing interpersonal relationships or partnerships with representatives of local organizations.

Table 2. (Continued.).

Funding

<table>
<tr><td align="center">Enabling traits</td><td align="center">Inhibiting traits</td></tr>
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- A select few refuges receive additional funding as part of the Urban Wildlife Refuge Initiative, creating opportunities to expand staff, facilities, infrastructure and programming in ways that greatly enhance the capacity of refuges to work with other organizations to deliver education and volunteer service opportunities.
- A subset of refuges are permitted to charge entrance fees, creating opportunities to expand staff and programming in ways that greatly enhance the capacity of refuges to work with other organizations to deliver education and volunteer service opportunities.

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- Lack of funding for staff, volunteers, programming, and materials impede the ability of refuges to work with other conservation organizations to provide recreation, education or volunteer opportunities.

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Information

<table>
<tr><td align="center">Enabling traits</td><td align="center">Inhibiting traits</td></tr>
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- Although refuges recognize that information on the effectiveness of collaborative environmental education programming is needed to improve those programs, they don't have the capacity (staff, funding) to implement full and carefully-designed evaluation.
- Although refuge staff recognize a need to measure and evaluate the impacts of new collaborative programs created to address the Service's urban refuge initiative (in order to defend those investments to refuge system leaders and legislators), the refuge system does not have local or national staff capacity to conduct rigorous program evaluations.

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Table 2. (Continued.).

Facilities, equipment, infrastructure

<u>Enabling traits</u>   <u>Inhibiting traits</u>

- Having a dedicated environmental education building (i.e., a building with classrooms, meeting spaces, exhibits, restrooms, teaching materials, etc.) increases the capacity of a refuge to work with other organizations to deliver education and volunteer service opportunities
- Infrastructure additions (e.g., expanding a community bike trail into a refuge, creating a bike lane to a refuge, working with state DOT to place a city bus stop at the refuge entrance, improving parking lots, improving a refuge road to allow school bus traffic, improving trailheads, developing bathroom facilities) can increase capacity of refuges to work with community organizations to increase visitation by nontraditional audiences.
- Building facilities (e.g., an intern "bunkhouse") to house seasonal interns can increase refuge capacity to work with other organizations to deliver service-learning opportunities to student interns.
- Acquiring a multi-passenger vehicle (e.g., 12-passenger van) can increase refuge capacity to provide guided refuge tours for selected audiences, creating opportunities to train classroom educators, build interpersonal relationships with potential community partners, or recruit prospective refuge volunteers.
- Having a low-maintenance building (e.g., a simple, 3-season, steel building) that can accommodate groups up to 50 is a relatively inexpensive means of increasing capacity of refuges to partner with organizations that wish to provide environmental education experiences on a refuge.

Table 2. (Continued.).

Inter-institutional linkages

<u>Enabling traits</u>   <u>Inhibiting traits</u>

- Formalized institutional coalitions formed around landscape-scale conservation initiatives (e.g., Great Marsh Coalition) lead to multiple opportunities for refuges to work with other organizations to deliver recreational, educational, and service-learning opportunities.
- Formalized institutional coalitions formed around the goal of connecting urban youth to nature (e.g., Providence Parks Urban Refuge Partnership) lead to multiple opportunities for refuges to work with other organizations to deliver recreational, educational, and service-learning opportunities.
- Inter-institutional agreements that provide office space in a refuge's visitor or environmental education center for staff of partner organizations increases the capacity of partner organizations to deliver environmental education and service-learning opportunities at a refuge.

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Table 2. (Continued.).

Leadership within USFWS

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<tr><td align="center">Enabling traits</td><td align="center">Inhibiting traits</td></tr>
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- Connecting people to nature is a high-level goal, supported by leaders in USFWS Region 5.
- USFWS provides very good training and staff development opportunities; that helps staff seize opportunities to get grants and build partnerships.
- Leadership has provided resources to urban refuges to implement the objectives articulated for the urban refuge program, demonstrating their commitment to the goals of the initiative.
- Leadership has articulated clear goals and objectives for the urban refuge initiative and documents (e.g., "Standards of Excellence" document, "Conserving the Future" document) that give staff clear guidance on what standards need to be applied in urban refuges.

- Refuge managers are given wide latitude to determine directions with respect to visitor services; they have freedom to choose how they want their refuge to move forward with respect to visitor services.

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- Partnerships are a high priority to USFWS leaders, but may not be realized because of staffing constraints.
- Some refuge managers may perceive that new or expanded visitor activities will impede their ability to achieve their primary wildlife conservation goals.
- Partnerships are a high priority to USFWS leaders, but the partnership concept is not clearly defined; it is not always clear what relationships leaders want the refuges to establish with "partners."
- Some refuge managers perceive that new initiatives oriented toward working outside the boundaries of a refuge or striving to become more relevant to urban residents are management fads that will pass with a change in agency director, so they are tentative in their support of such initiatives.

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experience, and you train them but they just can't do as much, and they're never going to have the responsibility of the higher graded person who used to be in that position before it was changed due to a vacancy, you have stuff that's going to fall through the cracks."
[Eastern Massachusetts NWR]

Due to small staff size, many refuges are not able to place personnel on the refuge grounds, so visitors generally encounter no USFWS staff when they visit a refuge. Staff size also limits the ability of refuges to actively engage with local communities; staff are fully committed to higher priority tasks, so they aren't available to participate in community meetings or make time to develop interpersonal relationships with potential partner organizations who could provide refuge visitors with recreation, education, or service opportunities.

> *" I believe the idea of refuges as collaborative brokers is a good description. It is what we do. However, with each budget cut and workforce planning initiative we lose capability. One Freeholder recently said to me, 'I know you but I've never seen anyone else from your refuge or agency, are you guys serious about nature recreation and conservation?' "* [Blackwater NWR]

<u>Interpersonal relationships with actors in other organizations</u>. Interviewees from 7 different refuges described interpersonal relationships as a critical part of their ability to work with other organizations who can create and deliver visitor opportunities. Some interviewees believed interpersonal relationships are nearly as important as funding and staffing in their ability to facilitate visitor experiences.

> *"I think it's where it all starts. I think they're absolutely critical [relationships]. You know, I started off when I got here [a year ago], we set up monthly meetings, we just automatically do that. They are sort of open agenda, we talk about what things are going on, and we're able to get to know each other, and what motivates us and how we are, you know, that sort of thing. So that when an issue comes up, or might come up, I'm able to call her, she is able to call me, and it's no big deal. Because we've got that interpersonal relationship. And I think that's helped a lot with the county, as well with some issues. I've gotten to know the county manager, networked with him on some things, and that interpersonal relationship has helped so much, because he'll help me before a county council meeting. He'll say 'this is what this person is interested in, this is what this person is going to say. ... those sorts of things. So he helped, so that I could do the best that I could do when I talked to them about things. But then also whenever there's issues, like a county road that goes through the refuge, and everybody is upset with both of us, nonprofits are upset with both of us and the county, because it is a county road but it goes through the refuge ... and they are having trouble getting their buses back there. They call us in, and the county in, and we were able to get a solution—we paid for the gravel, they [the county] did the work, and we got that done just this week, and that's something they haven't been able to get done for years. And that was a lot because of our relationship—I know the manager, he knows me, I say hey I can put this money on the table can you do this?—and we got it done without issue. Whereas before it was just a*

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really negative type of thing, both for the county and for us. And I attribute that directly to people just helping each other out." [Chesapeake Marshlands NWR]

"For us it is really that targeted education, in the communities that are closest to us, and building up those relationships over time. You know, tonight I'm going to a community meeting, tomorrow I'm going to a community meeting, and the next day I'm going to an after school night. And that's the way that it works. Because if you don't show up at those meetings you're not going to gain any of the trust from the people who are really being influential in those communities. And I'm not the only one who is going to any of those. Other staff members are attending each one of those, as well. That's a commitment we've made, to kind of reach out to the community. It's a big step." [John Heinz NWR]

Transferring personnel from one location to another within the refuge system was noted as a practice that can make it more difficult to establish interpersonal relationships between refuge staff and representatives of the local community.

"...But if you do keep moving people around, or force them to move around the community hates that. They say that. For me they say things like, 'how long are you going to stay? The only problem is you're gonna leave; that's what you do, you move up'" So that's a negative. I really believe that. At least with the community, because they see you coming and going and not being a permanent fixture. I see why they [FWS] sometimes move people and do that, so you get those different experiences and perspectives, but I do think it should not be an expected thing. And I've seen that change. It definitely seems like there's been a change over the past several years to where that's not such the push than it used to be." [Chesapeake Marshlands NWR]

Several interviewees noted that USFWS staff generally get along well with others and can work effectively with others wherever there are common interests across organizations. One interviewee noted that USFWS needs to have (and attempts to hire) creative, outgoing people who are willing to get out and interact with people and build relationships. But interviewees recognized that some staff are more willing than others commit to (i.e., invest time and energy into) developing interpersonal relationships or partnerships with representatives of the local community.

"I think personal contact goes so much further than a brochure or a sign or even our cell phone tour. I think that's why our MARSH volunteer program is so valuable, because there is repeat personal contact [volunteers come back more than one time to do habitat work]. So I think it comes down to a matter of staff time. We have just me in visitor services, we have a fulltime permanent biologist, and then we have some part-time technicians that will be gone soon because all the budget decreases. And one of those guys [technicians] is solely responsible for the refuge's part on the MARSH volunteer program, ... He's the one generally that is side-by side with our volunteers. ... but I have very few people who can be out on the trails and encountering people when they're out on the refuge, and people that talk with them there...if you don't go into our visitor center or you don't call us on the phone or you don't email us, then we don't have a chance to, because we don't have the staff time, to have that personal contact. ...And we found that

you can build relationships …I've been very adamant about keeping our hunting program, the check in …having our staff at the hunter check station when hunters are arriving [etc.] …because that's how we get to know them and how they get to know us. And then when you build that kind of rapport they're more comfortable to talk to you about good things or issues. We've had a few hunters on our Friends Board now because they were hunting, they loved it, they wanted to give back because we worked so hard to give them a good experience …so they do some volunteer work and things like that. And it's because of that personal contact. If they just came and hunted, and they had a nice time and got their deer or their ducks, that would be a whole different experience for them." [Montezuma NWR]

How staffing impacts environmental education opportunities. Several interviewees noted that capacity to deliver environmental education has been significantly reduced through long-term staff reductions.

"… It's such a complex situation of the needs, whether it's my time or the facility or a visitor center or whatever. That it's sort of like all of those essential needs that keep us from doing as much as we can. We are a very large refuge …that lies within two large cities, so we have the opportunity of providing environmental education for all of those communities …there is a tremendous amount of opportunity, but the needs …facility and staff, have been the real limiting factors. When I first came to work here 17 years ago there were 3 visitor services people. And for the past 10-11 years it's only been me. So, that really curtailed how much I could go out to the community." [Great Dismal Swamp NWR]

In order to offer a substantive and sustained environmental education program, a fulltime environmental education Coordinator (within USFWS or the NGO with which USFWS contracts) is essential. Teachers need training and they need to be able to tap into well-designed and supported programs (many cannot design their own lessons or programs). That work needs to be done by a program coordinator. Interviewees noted staff in NGOs who were providing environmental education coordination and programming on some refuges are ending those services due to lack of funding. The programs those organizations provided will disappear and will not be provided by USFWS due to lack of staff.

Many refuges lack the staff and volunteers to simply open their doors to let a community or school group hold a conservation-related meeting or environmental education experience in a refuge building. These are activities that are routinely allowed in refuges where staff are available.

Refuges find it difficult to attract, train, and supervise volunteers to deliver environmental education programs. The volunteer base limits the amount and quality of environmental education programs that a refuge can offer. Refuges located in an affluent area can find nonprofit organizations (e.g., Audubon) that will provide environmental education services, so if they can fund such organizations the refuge can overcome lack of (obviate the need for) staff and volunteers to provide environmental education. These opportunities are not availablt to Refuges

in less affluent and more rural areas; their potential volunteer base is very limited, so their potential to deliver visitor services is also very limited.

> *"I think refuges can play stronger roles in areas that have a robust staff and robust budget, and a wide and deep support net in their volunteer community. Versus some refuges, that are kind of like ours, which is very small, very small staff, very rural, very shallow volunteer pool. Just your ability to reach out and connect can be really affected by those very basic things."* [Missisqoi NWR]

How staffing impacts volunteer opportunities. Interviewees noted that they rely on a Volunteer Coordinator to train, supervise, and manage volunteers. Volunteers and refuge project proposals must be turned away if there are no staff available to fulfill the volunteer coordinator role. For example, seasonal interns require supervision and need to be brought into designed and supported programs. Coastal refuges frequently receive requests to add interns or internship programs that must be turned away because the refuges have insufficient staff capacity to design service learning programs or supervise interns.

Some refuges rely heavily on volunteers to complete basic functions (one interviewee reported that his refuge depends on volunteers for over 20% of their annual work load). But refuge staff reductions make it more and more difficult to train, supervise and support volunteers, which may contribute to volunteer base attrition.

> *...we don't really have enough staff to really manage our volunteer program to its potential, so we're either not able to recruit new volunteers or we manage them, we can't orient them. You can't just have a volunteer come, they need training they need orientation, they need to be supervised. They need to be told when they are not doing something correctly, or they need to be given tools, you've got to meet them at a certain time to give them the tools that they need to do a job, and that means you have to have a staff person who can meet them or have to have another volunteer who can meet them, who's got keys to the building or access to a vehicle. And all that takes a tremendous amount of time. ...Even when somebody wants to volunteer, we're turning away volunteers right now because we're telling them we don't want you to be disappointed, because we're not going to be able to help you to help us. ...you need people to manage volunteers, and if you are cutting the people who manage volunteers then you are not going to have volunteers being able to do what needs to be done."* [Montezuma NWR]

Trying to add, nurture, and retain volunteers is an ongoing challenge. Some refuge staff report concerns about an aging volunteer base (they observe dedicated volunteers in their 80s and wonder how to recruit new volunteers to fill in behind them). There is a strong social component to volunteering, so current volunteers recruit the people who become the next volunteers. Staff express interest in attracting some younger (pre-retirement age) volunteers.

> *"A lot of my volunteers are starting to age out. That could end up being a common theme for you, for your research, is that a lot of volunteers are aging out, and there's not necessarily a lot of new or younger volunteers stepping up. Because a lot of people are working longer now, and they're employed now. I mean, we had more volunteers during*

the recession when people didn't have work. But now they're back to work, and a lot of people are working longer, because they haven't saved enough." [Montezuma NWR]

Robust, funded volunteer programs can make up for lack of USFWS staff or reductions in USFWS staff, though that shifts the challenge into another category of constraints (funding).

Funding

Interviewees from 10 different refuges stated that amount and types of funding are critical in determining the degree to which refuges can be bridging entities as they deliver recreation or environmental education, or as they work with refuge volunteers. One interviewee believed that efforts to build capacity at refuges that lack funding is perceived as "a patch, a BandAid or a facsimile of the real thing" rather than a serious effort to expand recreation, education or volunteer opportunities.

Availability of funding for the following specific purposes was discussed as a challenge/limitation or opportunity/catalyst:

- Funding to support specific types of staff positions (e.g., visitor services manager, community liaison). A need for funds to hire a Visitor Services Manager was identified repeatedly.
- Funding to support education or outreach.
- Funding to support transportation of students (especially urban and low-income students) to a refuge so that they could participate in environmental education, internship, or service-learning programs.
- Funding to support nonprofit organizations, who then supply volunteers to serve in roles important to a refuge (e.g., volunteer beach stewards, interpretation docents, environmental educators, hiring youth community work crews).
- Funding to support internships at a refuge.
- Funding to purchase materials needed for volunteer or intern projects (e.g., funding to purchase building supplies for a boardwalk project or tools needed for habitat restoration work).

Opportunities: It was clear from interviewee comments that additional funding provided as part of the urban refuges initiative creates opportunities to expand staff, facilities, infrastructure and programming in ways that greatly enhance the ability of refuges to bridge visitors to members of the conservation community.

> *"The funding is key. The funding enables us to expand the programming. We knew what the needs were. And we had a good plan and strategy in place. The idea was, we were asked what would you do with the additional funding. And what was done here was invest in staffing, and the staffing had very specific goals, with each one of those new staff members that were brought on. ...We have to stay relevant and active in people's lives in order for them to appreciate these conservation resources. ...that kind of stuff only happens with funding."* [John Heinz NWR]

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Several interviewees described programs, activities, and actions refuges have taken only because of additional funding provided to them as part of the urban refuges initiative. Examples included:

- building a visitor center;
- updating interpretive displays in a visitor center;
- adding staff positions;
- adding special event programming (e.g., building boardwalks, holding additional trash pick-up events);
- expanding volunteer programming;
- expanding environmental education programming;
- Infrastructure repairs or expansions (e.g., bike paths, road repairs, repaving parking areas for school bus use;
- hiring summer interns;
- hiring local high school youth for work crews (Student Conservation Association).;
- making formal funding agreement with a nonprofit that pays beach stewards to patrol and protect piping plover nesting areas;
- Providing schools with funding for bus transportation costs associated with school field trips to a refuge ($50,000 provided annually for this purpose at John Heinz NWR).

Refuge entrance fees also create opportunities to expand staff and programming in ways that greatly enhance the ability of refuges to facilitate recreation, education, or volunteer service opportunities by working with other members of the conservation community. Interviewees described programs, activities, actions they are able to take only because of their ability to charge a visitor entrance/use fee.

> *"This refuge has a huge advantage…we are a fee program refuge. We are part of the federal recreation fee program. You pay a fee or buy a pass to get to Parker River [National Wildlife] Refuge. …and we keep 80% of the money we get at the gatehouse. And that is a HUGE benefit, or advantage over most of the refuges. …There aren't too many refuges that have a robust fee program like we do, …when it comes to visitor services, we are very, very lucky here."* [Parker River NWR]

Information

Refuges recognize that information on the effectiveness of environmental education programming is needed to incrementally improve those programs. Although they understand the value of full and carefully-designed evaluation, they lack the capacity (staff, funding) to conduct such evaluations themselves.

Refuge staff recognize that they need to measure and evaluate the impacts of new programs created to address the Service's urban refuge initiative, in order to defend those investments to refuge system leaders and legislators. For example, interviewees from 2 different refuges mentioned that evaluative information is needed to determine effectiveness of their new programs directed at serving urban youth. However, neither the refuges where programs are implemented, nor the national offices (e.g., Human Dimensions Branch of the Refuge System) have the staff capacity to conduct rigorous program evaluations.

Facilities, Equipment, and Infrastructure

Interviewees from 7 different refuges described how upgrades in facilities, equipment, or infrastructure can enhance the degree to which refuges can be bridging entities (or conversely, how their absence limits bridging capacity).

Facilities. A dedicated environmental education building (i.e., a building with classrooms, meeting spaces, exhibits, restrooms, teaching materials, etc.) was identified an invaluable asset to deliver environmental education experiences, but interviewees also noted that such facilities require a substantial budget for upkeep and maintenance.

Simple, low-maintenance buildings (e.g., a simple, 3-season, steel building) with capacity to seat groups up to 50 were identified as an inexpensive means of creating space for environmental education experiences facilitated by refuge staff or partner organizations.

> *"...even just an outdoor pavilion or a shelter (seasonal) that partners can use to deliver programs. The idea is the program, the opportunity not necessarily who delivers it. We can use the capacity of our lands as a bridge with infrastructure alone and limited staff."*

Facilities that allow refuges to house seasonal interns (e.g., an intern "bunkhouse") can increase refuge capacity to provide service learning opportunities. One interviewee noted that lack of housing is a major problem in beach towns where the rent costs make it prohibitive for students to participate in volunteer programs.

Infrastructure. Infrastructure additions (e.g., expanding a community bike trail into a refuge, creating a bike lane to a refuge, working with state DOT to place a city bus stop at the refuge entrance, improving parking lots, improving a refuge road to allow school bus traffic, improving trailheads, developing bathroom facilities) can increase visitation by nontraditional audiences, creating opportunities to introduce a more diverse audience to USFWS, refuge volunteers, and refuge partners.

> *"I would say who uses the refuge is a wide variety [of people], especially since that bike trail [was extended from the town into the refuge]. A wide variety of people. Some of them go in the nature store [and are exposed to members of the Friends Group] and some don't. ...So some people just park their bike [where the bike trail ends] and there is a trail over to the dune-they can look over the dune and see the ocean. So some people do that, or they just turn their bikes around and go back. They are just there for a workout. But it's families now. I think before it was a lot of birders and it was a lot of white baby boomers, middle class well-off. Now we are getting a more diverse group of younger people, different ethnicities, because they rent the bikes and ride all the way down to until they can't go any further. So we've expanded that [trail] and that's been a good thing. Now it may take a few years for that to morph into, 'hey, let's take one of those bird walks.' I don't know. That's been an issue on refuges for awhile. You may hear this as you conduct your calls, ...you go to the Delaware Water Gap, the Appalachian Trail up there, you'll see cars from New York City, you'll see Indians, black Americans, Hispanics. You'll see all flavors of people. But you go in a wildlife refuge and you see*

mostly white, Caucasians. And we've had that on refuges for quite some time, so. That's part of the urban refuge push" [i.e., to diversify visitor demographics]. [Cape may NWR]

Acquiring a multi-passenger vehicle (e.g., 12-passenger van) can increase refuge capacity to provide guided refuge tours to selected audiences, creating opportunities to train classroom educators, build interpersonal relationships with potential community partners, or recruit prospective refuge volunteers. One interviewee noted that having a dedicated RV camper can expand refuge capacity to provide environmental education opportunities.

Institutional linkages

Interviewees from 5 different refuges described how inter-agency coalitions and collaborations create opportunities for bridging activities. Organization coalitions formed to address shared goals (e.g., landscape-scale conservation initiatives) lead to multiple opportunities to link area residents to USFWS and other organizations in those coalitions. Interviewees believed that the ability of their organization to collaborate with other organizations was a natural strength.

> *"The thing about working with partners is, in any area of commonality—I think that might be the definition of a partnership—in that area we work successfully together [with partners]. That doesn't mean that we are the same organization that they are, or that we have the same goals, or beliefs or thought structure, or whatever. But we find we can work effectively [with partners]. We get along pretty well with people in general, I think. ...we've got these informal working groups."* [Rachel Carson NWR]

Utilizing a refuge visitor or environmental education center to provide office space for staff of partner organizations, or to provide meeting or event space for community organizations, leads to multiple bridging opportunities.

> *"So when you talk about partners, they are embedded in our building, that shared vision [expressed in the vision statement created when the visitor center was built, with money secured by Senator Chaffee]. I like that—not everyone [not every refuge] does that, but I really truly love the support from the local community and the local organizations."*

> *"...I think if you work with the local community, they become, it becomes their refuge. You give them a sense of ownership in the refuges."* [Rhode Island NWR]

Organization coalitions formed around the goal of connecting urban youth to nature (e.g., Providence Parks Urban Refuge Partnership) leads to multiple opportunities to link area residents to USFWS and other organizations in those coalitions. For example, Providence Parks (Rhode Island) has a network of over 100 parks, and they have 32 friends groups. They have a great network and locations throughout an urban area, but they did not know anything about offering environmental education or interpretation, so that is where USFWS could come in a useful partner once they had funding through the urban refuge program.

"They were able to offer us an office, staff support in understanding the parks, the use of the parks, the maintenance, to help manage the parks if we did any wildlife interpretation. And of course the support of those friends [groups], and those groups had hundreds to thousands of volunteers. So what we did was, we began to offer that support and <u>we hired an urban coordinator</u> that bridges everyone together. So that's huge. The partnership was bringing everyone together that wanted to work in Providence, had the same mission of bringing in awareness of wildlife conservation. We really all have the same mission, but what our urban partnership did was bring in several of these organizations in the community, to get those parts to become .. to be able to share their message. [Rhode Island NWR]

Leadership within USFWS

Several interviewees pointed out how leadership at the local and national level of USFWS expands their capacity to be a bridging organization. Leadership was identified as instrumental to addressing staffing and funding constraints, and developing institutional linkages and partnerships.

"One of the biggest barriers that I have seen, from just my time here [1 year as Refuge Manager], in wanting to do a lot of this [bridging] is, and I hate to sound whiney, but it is staff time. There is so much that is going on, that they [staff] are just trying to keep all the basics just rolling. It takes time, it does. It takes time to build opportunities for people [visitors]. But it is something that is not just Visitor Services job, and that's something that I've been trying to instill here, and I do believe they [staff] get that. And it's my job [as Refuge Manager], as well. So at my level I'm working with the Common Council, politicians, state leaders, you know, that kind of level. Because I see that as an opportunity to create those partnerships, where perhaps we can have that on the ground-level [interaction] with individuals, with visitors." [Blackwater NWR]

Yeah, it can be either [bottom-up or top-down leadership] depending on who. I guess, just thinking about at the national scale, back when we launched the urban wildlife refuge program. ...we were effective in that as the refuge system, in really sending that message out. And I had people who worked for me who said, oh that's just a fad, that's going to pass when the next director leaves or whatever. And they were working for me, so of course they didn't say that to my face, but I heard it, and it was obvious in their actions or lack of support. And I had others that jumped on board with it, like this is the way to go. But, if it hadn't been from both that top down –this is the way, we've got the 'Conserving the Future document', this is the way we've got to go for the future of the refuge system—that was just hammered from the top down, over and over, and from the director down, as well. Which people on the ground needed to hear. But then what needed to happen was from the ground up to come, and we did that with our pilot urban refuges and the right people and so forth to start doing this. And then have those messages and those examples start to swell up from the ground up. But you needed both. If it had just been top down or just from the bottom up, it wouldn't have as much longevity as it should have. But because of that we got a new policy in place, we got new

*funding in place, a million dollars in place for three refuges every single year towards this, and that spoke more than anything I think. When you put the money behind what you're saying, then suddenly everybody wanted to jump on board. So that was I think extremely important, and helps the others who would not have come around or even thought about it, to re-think their position. Um, and to see that, and hear from their peers, I think that's where the real credibility comes in—besides 'OK, they're giving us money', that means something—but that credibility to hear from your peers about what it's doing, why it's working and why they're making those choices to put their staff time into doing these sorts of things or to looking at things differently, or to allowing different types of recreational uses on the refuge that had never been allowed before. So that's very important. ...And at the actual station level, at the refuge level, of course that comes into play as well, because folks pay attention to what I say is a priority or not, and I want to give them the clear sideboards to say, OK, here's where I think we can play, within these sideboards and I'm really super open to all of this and if you want to stray outside there let's talk, but otherwise go ahead, this is our ultimate vision on this. And so, we've been able to do some new things, to say yes to some things quicker, or things that were said no to even just the year before." [*Chesapeake Marshlands NWR]

"I feel like the leadership in Region 5, that they are very anxious for us to establish these urban refuge partnerships. And are providing extra funding for those of us who choose to do so, and show that we can put in place a program that will work. So I think that provides [local] leadership with an incentive to get their refuge involved with that type of program. I mean I definitely feel it's a top-down promotion. Just because I would be busy doing 50 other things if someone didn't say to me—'this is the direction that we want you to go in.'" [Great Dismal Swamp NWR]

"...we have this urban initiative, for the past few years, and they're really saying this is what we want to do. I think this is the best thing that they've followed through with. Because there were so many years where you'd talk about, or there would be talk about diversity and diversifying our audience, and diversifying our workforce and all of this, but there wasn't a lot done. And so finally, and I think it's great, and I think it's because of this cadre of leadership that we've had for the past few years, that there's action now behind it. So there's this urban initiative, now we're actually going out and we're giving support and funding to these urban areas, where our refuge staff can, are encouraged to, go off the refuge and engage with people in the community, and figure out what's going to help them connect with conservation." [Montezuma NWR]

DISCUSSION

Our findings suggest that visitor services managers, volunteer coordinators, and refuge managers in USFWS Region 5 are extensively engaged in activities to catalyze, expedite, and facilitate inter-organizational collaborations that provide opportunities for visitors to participate in nature-dependent, pro-environmental activities on NWRs. We found that Refuge personnel take on these bridging roles most frequently to increase capacity for environmental education programming, but to a lesser degree bridging activity is occurring to facilitate trial experiences in wildlife-dependent recreation (i.e., hunting, fishing, bird watching) and service learning experiences and internships. Our findings also illuminate the breadth and depth of intensive

bridging activities that are occurring at urban-initiative refuges striving to build programs that engage local residents and ethnically-diverse, underserved audiences. This study helps to document *how* Refuge personnel are operationalizing long-standing recommendations to expand partnerships and collaborations.

We documented examples of how six facets of organizational capacity—staff resources; funding; information; facilities, equipment, and infrastructure; institutional linkages, and leadership— determine capacity for Refuges to serve as bridging entities. The broad categories of factors are not surprising; these categories of factors are known to influence a wide array of organizations in many different contexts. However, our findings provide specific empirical evidence of how organizational capacity plays out with respect to facilitating nature-based recreation and pro-environmental activity by refuge visitors.

Staffing and funding levels were identified as the most important factors inhibiting Refuges' capacity to facilitate compatible recreation, environmental education, and service learning opportunities. Interviewees' perceptions of staffing and funding constraints at their particular refuges are consistent with reports about funding and staffing levels as perennial organizational constraints across the refuge system, and throughout the organization's history (Braun et al. 1978). It has been reported that since 2010, the refuge system's budget has dropped approximately 20 percent when adjusted for inflation (Smith 2017).

Recent levels of budget appropriations have limited or reduced staff of NWRs. The National Wildlife Refuge Association reports that about half of all refuges lack their own refuge manager and more than one-third of refuges have no onsite staff. Smith (2017) reports that 13% of the workforce has left or retired from the Service without being replaced. Persistent concerns about staffing and funding constraints are evident in past surveys of Service personnel. In 2007, the organization Public Employees for Environmental Responsibility surveyed 337 NWR managers (response rate 52%, n=176). They found that 84% of respondents disagreed or strongly disagreed with the statement, "My refuge is adequately staffed to meet its core conservation mission" (14% agreed or strongly agreed, 1% had no opinion) (PEER 2018). The National Conservation Training Center (NCTC), Division of Education Outreach (DEO) surveyed USFWS employees interested in environmental education (n=604, 320 responses; 55% survey response rate). They found that 63% of respondents disagreed (slightly or strongly) with the statement, "The Fish and Wildlife Service dedicates adequate resources (staffing, time, materials) to efforts to connect children with nature" (Ratz and Schuster 2011, page 27).

Volunteer involvement at refuges has expanded greatly in recent decades, outstripping levels of funding and staffing to support volunteer management. Between 1982 and 2011 the number of refuge volunteers grew from 4,950 to 41,600 (U.S. Fish and Wildlife Service 2012, page 11). The Service's 2012 national strategy for coordination and utilization of volunteers (U.S. Fish and Wildlife Service 2012) identifies long-standing funding and staffing challenges echoed in comments from our interviewees. The plan states that the Service has the legislative authorities to expand volunteer and partnership programs, but "new funds to support the effort have been modest" (page 13). The plan noted that the 2012 budget allocation for volunteer and partnership programs funded 23 full-time equivalents (FTEs) for the Refuge System's 560 refuges and 38 wetland management districts. The plan notes that at refuges without a volunteer coordinator,

oversight of volunteer and partnership activities becomes an added duty for a staff member with many other assigned regular duties. The plan notes that funding for volunteer coordinator positions remains modest even though "…field stations that have volunteer coordinators report an average of roughly six and a half times more volunteer hours than those stations that do not" (U.S. Fish and Wildlife Service 2012, page 13).

> *"The overwhelming problem for field stations is that effectively coordinating with and assisting Friends, volunteers and community partnerships, takes significant time, and many refuge managers feel they do not have sufficient staff to take advantage of the potential opportunities offered by these groups and individuals. The top reason for not having a Friends organization or community partnership was lack of staff to take on these responsibilities. In addition, lack of staff was the top reason selected for not having a volunteer program, and lack of staff or staff time to train and supervise volunteers was overwhelmingly selected as the biggest challenge for those who had volunteer programs."* (U.S. Fish and Wildlife Service 2012, page 20)

Interview comments about the importance of (and challenges to) building facilities and maintaining infrastructure also echo well-known documented concerns. The National Wildlife Refuge Association (https://www.refugeassociation.org/advocacy/funding/refuge-system/o-m/) argues that the Service is funded at about half the amount needed to adequately administer the refuge system. Some authors estimate that the Service has a $2.7 billion maintenance backlog (Smith 2017).

Study limitations. Our findings come from a small number of interviews in a sample of NWRs within a single USFWS region. Generalizations from our study to the entire refuge system should be made cautiously. Our conclusions that Refuges' capacity to facilitate provision of nature-based recreation is influenced by funding, staffing, facilities and infrastructure, leadership, and institutional linkages are consistent with conclusions from previous program evaluations by USFWS, supporting the proposition that our findings are generalizable beyond the region where we collected data.

Suggested Future Research

The refuge system attracts millions of visitors annually to observe wildlife, hunt or fish, or participate in educational and interpretation programs (Sexton et al. 2012). Fortunately, bridging activities are not necessary for the Service to provide hunting, fishing, or wildlife-viewing opportunities at Refuges; thus, it is reasonable to expect that refuges will continue to accommodate compatible wildlife-dependent recreation opportunities for large numbers of traditional visitors. But monitoring efforts suggest that 96% of recent Refuge visitors are white and their median income and education levels are higher than the U.S. national average (Sexton et al. 2012, 2015). What remains in question is whether the Service can engage a more diverse array of visitors and volunteers.

USFWS staff recognize that changes in practice will be necessary to substantially increase engagement with more diverse, underserved audiences. So, as a basis for programmatic interventions to achieve that goal, USFWS took the initiative to develop a theory of change and

strategies for effecting change in engagement of diverse, underserved audiences. To inform this effort, the Service sponsored a review of research and a set of regional workshops (Sexton et al. 2015, Floyd et al. 2016). The Urban Wildlife Refuge Initiative is especially interesting as a model. The conceptual theory underlying the program is oriented toward removing barriers or constraints to wildlife-dependent recreation. Rates of participation in wildlife-dependent activities have been correlated with socioeconomic status, age, race, gender, health status, and partner status (Shores et al. 2007). Shores et al. provided evidence that combining more than one status associated with low participation in wildlife-dependent recreation (e.g., being nonwhite, low socioeconomic status, female, and older) multiplies the likelihood of nonparticipation. Urban refuges face the daunting challenge of engaging such audiences.

Despite, or perhaps because of these challenges, we believe the most promising areas for future research on bridging activity and nature-dependent recreation relate to evaluation of the Service's Urban Wildlife Refuge Initiative (Sexton et al. 2015), particularly evaluation of pilot programs at regional priority refuges within that initiative. Regional priority refuges include some of the most urban units in the refuge system (e.g., Rocky Mountain Arsenal NWR, John Heinz NWR). The USFWS recognizes that stable funding, sufficient staff numbers and skill sets, and sustained community partnerships will be necessary for regional priority refuges to achieve their goals (USFWS 2014). Pilot projects have been established in some of these refuges to address factors that constrain the capacity of refuges to reach underserved populations. Service leadership recognizes that it is critical to monitor and evaluate these pilot projects to determine which investments in organizational capacity have the greatest promise as a means to help the Service achieve its aspiration of engaging more diverse, underserved audiences (Sexton et al. 2015, Floyd et al. 2016). Given what we learned in these interviews, we agree that efforts to evaluate the outcomes associated with Urban Wildlife Refuge Initiative investments should be a high priority.

Staff diversity has been identified as one of several factors that impede the Service from engaging underserved (urban, minority, low socioeconomic status) populations in outdoor recreation (Floyd et al. 2016, USFWS 2011). Staff diversity has been addressed at several urban refuges. Qualitative research is needed to assess how increasing staff diversity affected interpersonal relationships, interagency relationships, and social networks, especially identification of ways that staff diversification lead to increased capacity to engage underserved audiences.

Facilities and infrastructure may be key to reaching nontraditional Refuge visitors. In their review of publications that addressed race, ethnicity, urban populations, and wildlife-dependent recreation between 1999 and 2014 (n=56 publications), Floyd et al. (2016) found that one of the most frequent recommendations for attracting minority populations to wildlife-dependent activities and outdoor recreation areas was to "develop facilities and amenities that support urban fishing and urban recreation experiences (e.g., fishing platforms, picnic tables and restrooms)" (Floyd et al. 2016, pp. 4). We learned that John Heinz NWR has used additional resources provided through the urban refuge initiative to make substantial investments in infrastructure, and in community engagement designed to catalyze municipal investment in infrastructure, that facilitate Refuge visitation by local, low socioeconomic status, minority youth. Evaluating

systematically the outcomes associated with this type of infrastructure investment should be a high priority.

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Study Questionnaire

National Wildlife Refuge (NWR) Staff Interview Guide

Interview date and time:

Name of interviewee:

Job title: ___ Refuge Manager   ___ Visitor Services Manager   ___ Other:

Note: Interviews will be voluntary, scheduled at a convenient time for the participant, and range in duration from 30 to 60 minutes. In advance of each interview, we will contact the subject by email or regular mail. The subject will be given background information on the purpose and objectives of the study, anticipated time commitment, and how the information provided will be used. They will be informed that their participation is voluntary, and if they agree to participate, they can refuse to answer any specific question or stop participating in the study at any time they choose. Some of that information will be repeated at the opening of each interview.

Introduction

Thank you for making the time to meet with me!

As we start, I just want to remind you that you can decline to answer any specific question, and you can end the interview at any time.

All of my questions relate to what refuges are doing to provide compatible wildlife-dependent recreation [hunting, fishing, wildlife observation or photography, environmental education, and interpretation], or volunteer service opportunities that facilitate delivery of compatible wildlife-dependent recreation. I'll refer to those seven things generically as "nature-dependent activities."

There are just two research objectives behind my questions. The first objective is to characterize how refuges in USFWS Region 5 are working with other organizations to deliver recreation and volunteer opportunities, and the degree to which refuges are linking local residents to the broader environmental conservation community.

And the second objective is to identify barriers to, and opportunities for, collaborations to encourage more nature-based activities and to make connections between local residents and the conservation-minded organizations in communities across USFWS Region 5.

How Refuge Personnel Interact/Work with Conservation-Minded Groups:

So let me get started by asking you some questions about how you interact with other organizations to facilitate nature-based recreation.

1. Could you tell me about the kinds of organizations you work with to offer opportunities for hunting, fishing, or wildlife watching?

2. Could you give me an overview of the ways that you and others at [REFUGE NAME] interact or work with other Conservation organizations to provide opportunities for <u>activities like hunting, fishing, and wildlife observation</u>?
   (e.g., What kinds of processes, relationships, partnerships are in place?)

3. What kinds of organizations do you work with to offer opportunities for <u>environmental education or interpretation</u>?

4. How do you and others at [REFUGE NAME] work with other conservation organizations to provide opportunities for <u>environmental education or interpretation</u>?
   (e.g., What kinds of processes, relationships, partnerships are in place?)

5. What kinds of organizations do you work with to offer <u>volunteer opportunities</u>?

6. How do you and others at [REFUGE NAME] work with other conservation organizations to provide <u>volunteer opportunities</u>?
   (e.g., What kinds of processes, relationships, partnerships are in place?)

<u>How</u> **They Link Residents to The Broader Conservation Community:**

Now I have a few questions about how you might be linking local residents to the broader conservation community.

7. What kinds of activities or events does your refuge offer that give local residents a chance to be introduced to (or engage with) the conservation organizations that you work with to provide <u>opportunities for recreation</u> like hunting, fishing or wildlife observation?

8. What kinds of activities or events does your refuge offer that give local residents a chance to be introduced to (or engage with) the conservation organizations that you work with to provide <u>environmental education or interpretation</u>?

9. What kinds of activities or events does your refuge offer that give local residents a chance to be introduced to (or engage with) the conservation organizations that you work with to provide volunteer service opportunities?

Barriers and Opportunites to Linking Residents to
The Broader Conservation Community:

Great! Now I'd like to finish with a few questions about the challenge and opportunities you have at your refuge with respect to encouraging nature-based activities.

10. What do you see as the most important challenges and opportunities to working with, and introducing local residents to, conservation organizations you could collaborate with to deliver compatible wildlife-dependent recreation like hunting and fishing?

11. What do you see as the most important challenges and opportunities to working with, and introducing local residents to, conservation organizations you could collaborate with to deliver environmental education and interpretation programs?

12. What do you see as the most important challenges and opportunities to working with, and introducing local residents to, conservation organizations you could collaborate with to create volunteer service opportunities at your refuge?

Close the interview:

That's all the questions I have.

Do you have any other comments or thoughts you want to add before we close?

Thanks so much for your time. This interview has been very helpful.

Here is what will happen next:

- o I'll synthesize comments from all those interviewed, organizing all the feedback under a few broad headings.

- o In the near future, I'll send you an email with the list of challenges and opportunities. I'll ask you and the others to provide input on what you see as the most important barriers and opportunities to engaging local residents in recreation, education, and volunteer service that are identified on that aggregated list.

  - o Then, I'll send results of that process to all of those who were interviewed.