Article

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Philanthropic Support of National Parks: Analysis Using the Social-Ecological Systems Framework

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Abstract

Ostrom's social-ecological systems (SES) framework infrequently has been applied to civil society research. But its focus on collective action may help explain why some national parks are more successful at attracting philanthropic resources to supplement stagnant public funding. We examine two types of charitable supporting organizations: "Friends of" Groups (FOGs), which typically emphasize fundraising, and Cooperating Associations (CAs), which typically emphasize visitor support. We identify their partnership patterns across more than 300 national park units. Our findings suggest that FOGs and CAs fill different niches. CAs are drawn to more popular parks or memorials, and FOGs are found in parks with smaller budgets or offering fewer activities. Actor characteristics play a secondary role in explaining nonprofit incidence. The holistic approach of the SES perspective demonstrates the importance of connecting resource systems to institutional settings and actor attributes.

Keywords

social-ecological systems, SES framework, nonprofit formation, public goods provision, national parks

Introduction

Within both the natural resource management and nonprofit literatures, a key question is how people work together to provide public goods (be it voluntary fire protection or

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conservation of productive fishing ground, etc.). In this article, we combine these lessons with a structure provided by one of Ostrom's later insights, the social-ecological systems (SES) framework (McGinnis & Ostrom, 2014; Ostrom, 2007, 2009). The purpose is to demonstrate how the SES framework can be used in conjunction with the existing nonprofit literature. Specifically, we explore the key issue of nonprofit formation by examining what variables in both the SES and the civil society literatures best explain the presence of nonprofits created to support national parks. In this process, we explicitly draw on lessons about the governance of common-pool resources (Ostrom, 1990) and how situational variables affect the likelihood of cooperation (Poteete, Janssen, & Ostrom, 2010).

Philanthropic Support for the National Park Service (NPS)

For some time, public parks have looked beyond government appropriations for philanthropic and voluntary support. While some efforts reflect public policy shifts (such as the privatization era), they also reflect government responses to fiscal stress (Brudney & Warren, 1990). For example, considerable scholarship about citizen coproduction[1] of public services including parks maintenance was generated from the economic recession of the early 1980s (e.g., Brudney & England, 1983). More recently, in 2011, California law was changed to facilitate charitable support for state parks by allowing nonprofit organizations to bypass competitive bidding (Soares, 2011).

At the national level, the NPS's experience offers a noteworthy example of a federal program that has built inter-sectoral philanthropic relationships under a stagnant budget. According to the NPS (2009), appropriations decreased from 1999 to 2008, producing a deferred maintenance backlog of US$11 billion (U.S. Senate Committee on Energy & Natural Resource Management, 2013). Altogether, the NPS is responsible for 401 park units, representing a budgetary responsibility of US$2.98 billion dollars in Fiscal Year (FY) 2012, situated across 84 million acres of land in all U.S. states and territories, and employing approximately 22,000 permanent, temporary, and seasonal workers (NPS, 2013).

The National Park Foundation (NPF) serves as the "official charity of America's National Parks" and a source of nearly US$20 million in cash and in-kind support in 2011 (NPF, 2013). One of the newest National Park sites, the Flight 93 National Memorial in Somerset, Pennsylvania, would not exist without US$9 million in private support from the NPF. As part of its mission, the NPF makes grants to national parks, monuments, preserves, recreation areas, historical battlefields, libraries, and other sites.

The NPS also actively encourages park sites to create or attract "friends" organizations, whose support can supplement appropriations and user fees (NPS, 2013). Organized as individual 501(c)3 charities, some operate through Cooperative Agreements (CAs) as the interpretive associations for national parks and provide program support funded largely from bookstore and gift shop sales inside parks. Others serve as "Friends of" Groups (FOGs) with broader missions to support their park

through membership and volunteer recruitment, external fundraising, and advocacy, in addition to or in lieu of income generation inside parks. These sites vary widely in their experiences attracting philanthropic and voluntary support. Of all national parks, most have CAs but less than half have FOGs.[2]

Ostrom's SESs Framework

While Elinor Ostrom's work is primarily associated with natural resources, the nonprofit literature and Ostrom's research both address the same fundamental question: How do groups of people manage to voluntarily work together to overcome collective action dilemmas and work together for a larger common good (Crawford & Ostrom, 1995). Thus, Ostrom's fundamental insights have already been applied to topics of relevance to civil society such as child care (Bushouse, 2011), charitable fundraising (Christensen,Clerkin, Nesbit, & Paarlberg, 2009), and open-sourced projects (Schweik & Kitsing, 2010). Scholars also have observed that Ostrom's work has strong connections to the study of nonprofit governance as a form of collective action (Stone & Ostrower, 2007).

The SES framework itself is grounded in Ostrom's earlier work on the design principles for long-lived institutions and the Institutional Analysis and Design (IAD) framework. Ostrom is perhaps best known for the eight design principles of the multilayered IAD framework she and her colleagues outlined in the 1990s (e.g., Crawford & Ostrom, 1995; Ostrom, Gardner, & Walker, 1994). This IAD framework is useful because it

> emphasizes the careful consideration of contextual factors. It draws attention to the full range of transaction costs. It contains no normative biases and does not presume *a priori* that one type of institutional arrangement is preferred to another. It also uses a variety of criteria to assess institutional performance. (Imperial & Yandle, 2005, pp. 502-503)

The SES incorporates Ostrom's more well-known IAD framework, and develops it into a comprehensive set of variables researchers can use to explain relationships between human (social) and ecological systems.

In laying the groundwork for the SES framework, Ostrom et al. (2007) warned of the dangers of panaceas or "recommendations that a single governance-system blueprint . . . should be applied to all environmental problems" (p. 15176). They argued that scholars should understand the particulars of each problem they are studying, using a consistent set of criteria (the SES framework) to "diagnose which deeper-tier variables are relevant to a particular class of problem" (p. 15177). To do this, Ostrom (2007) argues, "one needs to build upon the work of scholars who have undertaken careful, well-documented and theoretically sound" work (p. 15181). The SES framework offers such a structure by "building a common vocabulary and a logical linguistic structure that would facilitate communication among scholars all of whom confront the daunting problem of developing a coherent mode of analysis to apply to complex, nested systems operating at multiple scales" (McGinnis & Ostrom, 2014, p.1).

Table 1 summarizes the variables included in the SES, combining Ostrom's (2007, 2009) original conceptualization with a more recent modified framework (McGinnis &

Table 1. Variables in Ostrom's SES Framework.

Social, economic, and political settings (S)

S1 Economic Development, S2 Demographic Trends, S3 Political Stability, S4 Other Government Systems, S5 Markets, S6 Media Organization, S7 Technology

Resource system (RS)	**Governance system (GS)**
RS1 Sector (e.g., water, forest, pastures, fish)	GS1 Government organizations
RS2 Clarity of system boundaries	GS2 Nongovernment organizations
RS3 Size of resource system[a]	GS3 Network structure
RS4 Human-constructed facilities	GS4 Property rights system
RS5 Productivity of system[a]	GS5 Operational-choice rules
RS6 Equilibrium properties	GS6 Collective-choice rules[a]
RS7 Predictability of system dynamics[a]	GS7 Constitutional-choice rules
RS8 Storage characteristics	GS8 Monitoring and sanctioning
RS9 Location	
Resource units (RU)	**Actors (A)**
RU1 Resource unit mobility[a]	A1 Number of relevant actors[a]
RU2 Growth or replacement rate	A2 Socioeconomic attributes
RU3 Interactions among resource units	A3 History or past experiences
RU4 Economic value	A4 Location
RU5 Number of units	A5 Leadership/entrepreneurship[a]
RU6 Distinctive characteristics	A6 Norms (trust-reciprocity)/social capital
RU7 Spatial and temporal distribution	A7 Knowledge of SES/mental models[a]
	A8 Importance of resource (dependence)[a]
	A9 Technologies available

Action situations: Interactions (I) → outcomes (O)

I1 Harvesting	O1 Social performance measures (e.g., efficiency, equity, accountability, sustainability)
I2 Information sharing	O2 Ecological performance measures (e.g., overharvesting, resilience, biodiversity, sustainability)
I3 Deliberation process	O3 Externalities to other SES
I4 Conflicts	
I5 Investment activities	
I6 Lobbying activities	
I7 Self-organizing activities	
I8 Networking activities	
I9 Monitoring activities	
I10 Evaluative activities	

Related ecosystems (ECO)

ECO1 Climate patterns, ECO2 Pollution patterns, ECO3 Flows into and out of focal SES

Note. SES = social-ecological systems.

[a]Subset of variables found to be associated with self-organization.

Source. Adapted from Ostrom (2009) and McGinnis and Ostrom (2014).

Ostrom, 2014). The SES shares the nonprofit scholarship's interest in community-level, organizational-level, and human-level dynamics (e.g., Gazley, 2008), but conceptually and analytically this interest is differently framed as a series of related subsystems. The SES envisions that within a particular setting, four subsystems (resource systems, resource units, governance systems, and actors) interact and produce various outcomes which themselves continue to influence the subsystems in an ongoing cycle (Ostrom, 2009). The result is a theoretically grounded comprehensive systems model that incorporates not only the sociodemographic variables most often explored in the social sciences but also key physical and biological characteristics of the natural environment that previous research has shown to be vital to understanding how groups of people interact with natural resources (e.g., Agrawal, 2001). These characteristics are described as "first-tier" variables (settings, related ecosystems, resource systems, governance systems, actors, resource units, interactions, outcomes) as illustrated in Figure 1, and "second tier" variables are contained within each first tier.

The SES framework can be used to more readily identify which variables are broadly similar or different between cases under analysis, allowing studies to be designed in a way that helps explain differences in outcomes. For example,

> [A] social scientist may want to hold the resource system and its units constant for a particular study . . . while . . . trying to understand the impact of diverse rules on user behavior leading to outcomes. An ecologist, on the other hand, might want to hold governance systems and attributes of users relatively constant in choosing cases to study so that differences in the resource systems can be examined without substantial simultaneous interactions with social structure. (Poteete et al., 2010, p. 235)

It is also important to note that no single study could effectively incorporate all variables into its analysis. Instead, researchers draw on earlier work to select appropriate cases and variables.

As a framework, the SES provides an organizing structure in which to test theories and hypotheses. Poteete et al. (2010) observe that

> a list of variables is not a theory. The intention of developing the SES framework is to help scholars, officials, and citizens understand the *potential* set of variables and their subvariables that can be important in analyzing diverse theoretical questions related to the governance of resources. (p. 236)

Thus, in this study, we are using the SES framework in concert with prior nonprofit research framed by coproduction theories to guide us in the development of our questions and selection of variables.

Applying the SES Framework to Civil Society Questions

Scholars have argued that coproduction's traditional definition as citizen involvement in public service provision through volunteerism should be extended to include the

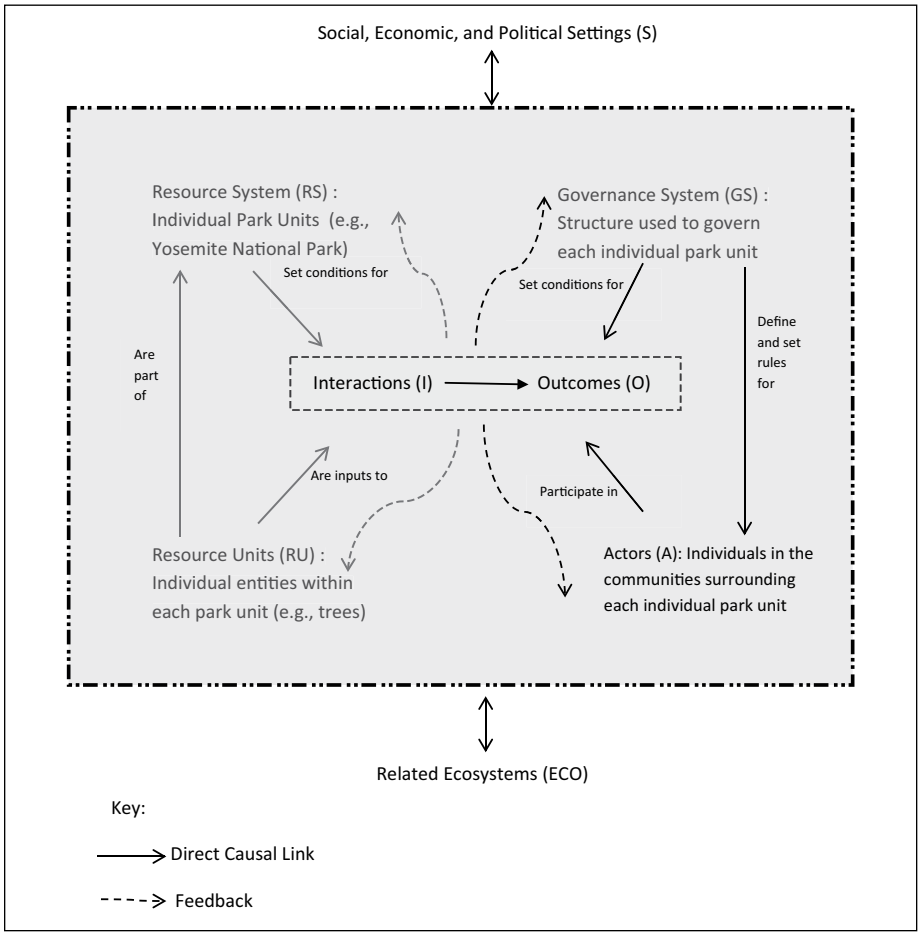

Figure 1. Visualization of first-tier SES variables (McGinnis & Ostrom, 2014; Ostrom, 2007) as applied to the friending of national parks.
Note. SES = social-ecological systems.

participation of entire nonprofit organizations (Jetté & Vaillancourt, 2011; Nelson & Gazley, 2014). Modeling coproductive nonprofit organizational activity requires an understanding of complex community dynamics, as it is driven by both governmental and community needs as well as community resources (Paarlberg & Gen, 2009). The advantage of the SES framework in this context is its flexibility, its ability to analyze systems at different spatial and political levels—from cross-national relationships to very small localized communities (Ostrom, 2007).

Although the SES is not widely recognized in nonprofit and civil society literature, its systems perspective on organizational behavior is most definitely of broad contemporary interest in the social sciences. A systems perspective offers a holistic strategy

for understanding the related dynamics of human and organizational behavior (Von Bertalanffy, 1950). For example, scholars have been actively applying systems views of nonprofit behavior to the context of governance, where board performance can be understood as a contingent function of human behavior and both internal and external organizational capacity (e.g., Cornforth, 2012).

From a systems perspective, of particular public policy value is the ability to identify both the external and internal drivers of nonprofit activity. Andrews, Ganz, Baggetta, Han, and Lim (2010) found that variances in Sierra Club chapter performance reflected differences not only in community social capital and other conditions that could generate committed members but also each chapter's capacity for effective leadership, a strong local network, and successful fundraising. In the context of public–private partnerships between parks and charities, external drivers might include citizen demand for services while internal drivers might include the organizational and managerial capacity to collaborate. The SES framework is helpful here in its ability to account for both internal capacity and external variables such as sociodemographic differences that explain nonprofit formation and growth. For example, scholars have ascribed differences in nonprofit activity to rural/urban differences (Komp, van Tilburg, & van Groenou, 2012), educational attainment (Grønbjerg & Paarlberg, 2001), and income (Isham, Kolodinsky, & Kimberly, 2006). Determinants of volunteering rely generally on similar external conditions (Musick & Wilson, 2008).

Thus, the SES framework is well suited to an examination of the collective action that happens in the context of national parks management, where voluntary nongovernmental organizations (coded GS2 in Table 1) must work alongside public managers of important natural resources such as parks. The framework also incorporates relational dynamics such as governance systems, which have also been found to influence the health of nonprofit–government partnerships (Babiak & Thibault, 2009). It is within this SES framework that we test whether the presence of charities to support park operations is a function of characteristics of the park's resource system and institutional setting as well as the sociodemographic characteristics of park users that traditional nonprofit formation studies would emphasize.

Research Model

The substantial variation in local conditions, actors, and park characteristics, whose missions and operations are each geographically bound, offers an ideal opportunity for a multivariate analysis. A place-based analysis also contributes to our understanding of the drivers of place-based volunteering, where citizens have finite choices about how their labor is used.

One of the immediate challenges we encountered in applying the SES framework is that some of the first-tier variables (Table 1) do not have data available in this context (e.g., A7) or are not relevant to this study (e.g., RU2). But they illustrate the flexibility of the SES framework and its complementarity to the existing nonprofit literature. In addition, many variables are effectively held constant in this study, such as the fact that all parks operate within the United States. Using the SES framework,

Poteete et al. (2010) identify 12 "most frequently identified variables in empirical studies as affecting whether users will self-organize" (pp. 238-239). Table 2 displays the variables used in this study, which combine some of Poteete et al.'s key variables with others from the nonprofit literature (e.g., mission complexity) to enhance comparability across other studies in the future.

The abbreviated mapping of these relationships displayed in Table 2 emphasizes governance system variables, which is also where our dependent variable resides, and (federal) government investment activities in the park units. Variables can map into multiple categories, such as the Antiquities Act indicator. Parks created via presidential proclamation under authority derived from this 1906 Act may have qualitatively different histories where locals often initially resist national park designation (because it limits their access or control). Especially for earlier parks, the different property rights and autonomy issues this situation generates fall under the GS category. Naturally, causal inferences should not be made as some variables operate concomitantly.

Data

The unit of interest is each national park unit, whether they have the name "National Park" in their title or not. Sites operating under other NPS-administered programs such as National Heritage Corridors are excluded.[3] Variable definitions and descriptive statistics for these data are summarized and mapped to their first-tier variables in Table 4. Note that "DV" denotes the dependent variables found in the "Governance System" section of the table. This illustrates how the dependent variables are an integral part of the SES.

National Park, FOGs, and CA Characteristics

Data from several sources measure various characteristics of each NPS unit. The NPS Public Use Statistics website, now reorganized as the Integrated Resource Management Applications (IRMA) Portal, provided data on key park attributes such as acreage, budget, employees, and visitation. The NPS.gov website lists park units by various themes and activities in each park (e.g., Civil War themes, camping activities, and others mentioned in Table 4). Park unit websites and NPS histories available through IRMA provided important background history information on parks, including the year and mechanism of their creation. Founding date refers to the year the park was "set aside" or specially designated, even if it had not yet formally joined the NPS system. The analyzed count is 308 U.S.-based parks after accounting for closures, parks extending beyond the 50 states (e.g., Virgin Islands), and jointly administered and reporting parks (e.g., the National Mall parks).

FOGs and CAs were found in the directories and membership lists of the NPS (2011), the Association of Partners for Public Lands (appl.org), and the NPF through their Friends Alliance as well as contacting many national parks directly. Although some parks may have more than one such organization, mapping the supporting organizations to each park unit yields the following cross-tabulation (Table 3):

Table 2. Mapping Study Variables to SES Framework and Nonprofit Literatures.

SES variables	Civil society literature variable	Variable in NPS friends analysis
Resource system (RS): Individual park units (e.g., Yosemite National Park, Ocmulgee National Monument)		
Size of RS (RS3)[a]		Acres of park
Human-constructed facilities (RS4)		Type of park (natural, historic, recreation, activities, etc.), ability to track visitors
Productivity of RS (RS5)[a]	Number of students (Nelson & Gazley, 2014)	Number of park visitors
Location (RS9)	Ruralness (Isham, Kolodinsky, & Kimberly, 2006)	Distance to nearest hub airport
Resource unit (RU): Individual entities within each park unit (e.g., trees, fish, buildings)		
Resource unit mobility (RU1)[a]		Wildlife themes in the park
Number of units (RU5)[a]		Number of activities in the park
Actors (A): Individuals in the communities surrounding each individual park unit		
Number of actors (A1)[a]	City size (Isham et al., 2006)	Total population in surrounding counties
Socioeconomic attributes (A2)[a]	Retirement and volunteerism (Komp, van Tilburg, & van Groenou, 2012); wealth (Isham et al., 2006); community diversity as proxy for citizen demand and immigration and racial diversity (Paarlberg & Gen, 2009)	Population share below age 18, unemployment, median income, share in top quartile of U.S. income, share White, age of surrounding buildings
History or past experience (A3)	Gazley (2008)	Year park was founded, whether park was created using presidential power in the Antiquities Act of 1906
Norms/social capital (A6)[a]	Educational attainment (Isham et al., 2006); social capital (Saxton & Benson, 2005)	Years of educational attainment, voter turnout
Governance system (GS): Structure used to govern each individual park unit		
Nongovernment organization (GS2)	Nonprofit density studies (e.g., Lecy & Van Slyke, 2013)	Presence of FOGs, CAs
Network structure (GS3)		Whether park is administered via a consortium of other units
Interaction (I)		
Investment activities (I5)	Government spending on social services (Grønbjerg & Paarlberg, 2001), school spending on students (Nelson & Gazley, 2014)	Park budget (in dollars per visitor), park FTEs

Note. SES = social-ecological systems; NPS = National Park Service; FOG = "Friends of" Group; CA = Cooperating Association; FTEs = full-time employees.
[a]Identifies key variables from Poteete, Janssen, and Ostrom (2010).

Table 3. Cross-Tabulation of National Parks With and Without Supporting Organizations.

	CAs		
FOGs	Absent	Present	Total
Absent	49	156	205
Present	33	149	182
Total	82	305	387

Note. FOG = "Friends of" Group; CA = Cooperating Association.

Surrounding Community Characteristics

Community characteristics derive from the 2007-2011 American Community Survey (ACS) 5-year averages provided by the U.S. Census. With park size ranging from 0.02 acres to 13 million acres, park units' relationships with their neighboring community—and what defines that community (especially in the context of a park mission that is overtly national in its audience)—resist simple approaches. The analysis here begins with the smallest available geographic unit with relevant Census data, the block group,[4] and builds from there. Each park is in one or more block group; most are in multiple counties and some in multiple states. Accordingly, each park is assigned the demographic characteristics of its immediate surroundings as an aggregation of the characteristics of the block groups it crosses. Several alternative aggregations are explored, including a (population- and area-weighted) mean, median, maximum, and minimum. Although weighted averaging is a conventional approach, the context of voluntarism for national parks suggests the possibility that the tails of the distributions of demographic characteristics may be more relevant. For instance, overall average community income may predict active FOGs, but the income of the wealthiest neighborhood may be a better predictor.

In addition to assigning each park the demographics of its attached block groups, a parallel approach is taken for each park's host counties. Alternative geographic scales (block group or county) and aggregations (population-weighted mean or maximum) were explored as they embed different notions of "community." They also pose a degrees-of-freedom problem, with each demographic characteristic being measurable in numerous plausible ways. The results are sensitive to which construction of "community" is chosen, and not all constructions can be included in the same model. The results presented here are the result of extensive specification searches and reflect the most parsimonious models that also fit the data well. In the end, county-level measures of community perform the simplest and best. The article's "Conclusion" section revisits what these results imply about defining parks' "communities."

Table 4. Definitions and Descriptive Statistics (N = 308).

Variable	Definition	M	SD	Minimum	Maximum
Resource system (RS)					
Park acreage	ln(park acreage)	7.751	3.793	−3.912	16.394
Memorials	Dummy for park classifications containing the word "memorial" (i.e., National Memorials, the Memorial Parkway)	0.049	0.216	0	1
Recreation	Dummy for park classifications with the word "recreation" (i.e., National Recreation Area, Scenic and Recreational River, National Recreational River)	0.065	0.247	0	1
History	Dummy for historic parks—Those NPS associated with heritage areas, historic parks and sites, American presidents, battlefields and military parks, early explorers	0.565	0.497	0	1
Nature	Dummy for nature parks—Those NPS associates with caves, coral reefs, endangered species, geysers and hot springs, glaciers, mountains, seashores and lakeshores, volcanoes, wildflowers	0.458	0.499	0	1
Visits	ln(average park visitation, 2008-2012)	12.154	1.732	7.948	16.554
Exercise	Dummy for parks featuring biking, climbing, hiking, horseback riding, hunting, skiing, or trails	0.740	0.439	0	1
Airport distance	ln(distance to nearest hub airport)	11.921	1.317	7.061	14.828
Resource units (RU)					
Wildlife themes	Dummy for living parks—Those NPS associates with coral reefs, endangered species, wildflowers	0.357	0.480	0	1
Wildlife activities	Dummy for parks with wildlife activities—Those NPS associates with fishing, hunting, and wildlife watching	0.662	0.474	0	1
Activities count	Count of activities that NPS associates with this park	4.036	3.285	0	12
Actors (A)					
Population	ln(total population in host counties)	12.522	2.204	7.197	20.384
Kids	Mean percentage of population below age 18	0.203	0.033	0.026	0.323
Unemployed	Mean percentage of population unemployed	0.084	0.031	0.011	0.220

(continued)

Table 4. (continued)

Variable	Definition	M	SD	Minimum	Maximum
High income	Mean percentage of population with income more than US$100,000 per year	0.192	0.104	0.047	0.547
Household income	ln(mean of host counties' median household income)	10.868	0.295	10.239	11.692
White	Mean percentage of population with race as White in host counties	0.759	0.197	0.155	0.992
Antiquities	Dummy indicating whether the president used the Antiquities Act of 1906 originally on the park	0.221	0.415	0	1
Education (years)	Mean of imputed average years of schooling	13.182	0.691	10.638	14.697
Year community built	Mean of surrounding neighborhoods' median year built for residences (block-group-level data)	1,972.2	14.504	1,939	2,005
Year park founded	Year the park was first established, designated, or otherwise protected (even if prior to NPS stewardship)	1,948.5	32.23	1,790	2,007
Veterans	Mean percentage of adult population who are veterans	0.110	0.032	0.029	0.213
Seniors	Mean percentage of adult population who are seniors	0.147	0.041	0.057	0.378
Rentals	Mean percentage of housing units as rentals	0.313	0.102	0.132	0.916
Governance system (GS)					
Friends of group	Parks that have only "Friends of" Groups (dummy variable)	0.094	0.292	0	1
Cooperating agreement	Parks that have only Cooperating Associations (dummy variable)	0.435	0.496	0	1
Both	Parks that have both "Friends of" Groups and Cooperating Associations (dummy variable)	0.399	0.491	0	1
Consortium	Dummy indicating whether the park is managed by a consortium of parks	0.036	0.186	0	1
Interactions (I)					
Park budget	ln(average park operating budget, 2008-2012, per visitor)	−4.502	1.207	−7.863	−0.750
Park employees	Average number of FTEs, 2008-2012	51.212	78.449	0	693.600

Note. NPS = National Park Service; FTEs = full-time employees.

Data Analysis

The data in Tables 3 and 4 indicate that considerable variation exists. FOGs and CAs are both common but hardly universal—about one eighth of parks have neither. Parks range widely in themes (nature, wildlife, history), age, budget, staffing, and character of surrounding populations. The *t* tests, as displayed in Table 5, indicate that parks with and without supporting organizations are significantly different across many dimensions, and the presence of FOGs and CAs is predicted in different ways. For example, in terms of park acreage (*lnacres*), parks with CAs tend to be much larger than other parks, while parks with FOGs are not significantly larger on average.

Table 5 reveals some important patterns. Parks with FOGs are more popular, have larger staffs, tend *not* to be created via presidential decree (or to be memorials) or managed in a group, and are in wealthier and more populous areas. Their communities tend to be older and more educated. Parks with CAs are much bigger, more natural, more rural (and thus have older parks and were more likely to be designated via the Antiquities Act powers), and are surrounded by poorer and less educated residents.

Next, multinomial logit models estimate (with robust errors) which factors are associated with greater likelihoods of having a FOG, a CA, both, or neither. In Table 6, Model 1 offers a more parsimonious set of predictors of having a FOG, a CA, or both (omitted variable is "neither"). Model 2 provides results for a less restricted model with additional covariates. Individually, many variables are insignificant at the 5% level, but collectively they do possess substantial explanatory power. Even with this limited set of variables describing the parks, their actors, and their governance systems, most variables are significant predictors in at least one model.

The strongest indicators of nonprofit support involve the content of the resource system itself and the resource units. Nonprofits—both FOGs and CAs—are mobilized to support park missions when the park is less recreation oriented, possibly because more support is needed. CAs are particularly drawn to more popular parks or memorials, consistent with their docent services, whereas FOGs tend to be found alone in parks offering fewer activities. This connection points to a "preservation" rather than "use" orientation for FOGs, away from commercializable recreational activities. Model 2 results clarify how recreation themes, rather than exercise (e.g., skiing, hiking) options, matter, while remoteness does not.

Table 6 also reveals that while higher average incomes are not associated with more FOGs or CAs, an upwardly skewed income distribution does provide actors more likely to engage in FOG activities. But in contrast to studies finding higher education associated with more voluntary activity, community education levels are not associated with FOGs or CAs. (Only in predicting "Both" relative to "None," in Model 2, are *eduyrs* and $eduyrs^2$ jointly significant.) Communities with more children are less likely to host CAs alone or CAs and FOGs. Greater surrounding populations and a greater percentage of unemployed both predict the presence of CAs, with or without FOGs, relative to no support organizations—a result consistent with CAs' dependence on available labor supply. Interestingly, *White* race is significantly related to the incidence of FOGs but not the absolute probability of parks having CAs. Newer housing and older parks predict CA formation, with or without FOGs, relative to no supporting organizations.

Table 5. Comparison of Means for National Parks With and Without FOGs and CAs.

	Parks with FOG		Parks with CA		Parks with FOG and CA		All parks
Variable	M	Significance	M	Significance	M	Significance	M
Resource system (RS)							
Park acreage	7.762		8.136	***	8.415	***	7.541
Memorials	0.033	**	0.036	***	0.013	***	0.072
Recreation	0.044		0.056		0.047		0.057
History	0.607		0.564		0.607		0.555
Nature	0.446		0.491	***	0.519	**	0.429
Visits	12.486	***	12.131		12.533	**	12.153
Resource units (RU)							
Wildlife themes	0.387		0.392	***	0.467	***	0.338
Wildlife activities	0.685	*	0.670	**	0.733	***	0.625
Activities count	3.830		3.974	***	4.208	**	3.636
Actors (A)							
Population	12.937	**	12.500		12.934	**	12.524
Kids	0.195	*	0.203	**	0.197		0.200
Unemployed	0.085		0.089	*	0.087		0.087
Household income	10.921	*	10.86	***	0.203		10.890
High income	0.215	*	0.189	***	10.892		0.201
White	0.733		0.740		0.733		0.732
Antiquities	0.143	***	0.282	***	0.170	*	0.231
Education (years)	13.311	*	13.155	***	13.235		13.240
Year community built	1,972.293		1,974.214	***	1,974.411		1,972.641
Year park founded	1,947.455		1,947.652	**	1,946.619		1,950.175
Governance system (GS)							
Consortium	0.055	**	0.072	*	0.047	**	0.096
Interactions							
Park budget	−4.611		−4.458		−4.563		−4.526
Park employees	65.237	***	52.658	*	68.143	***	48.274

Note. Two-sample *t* test for difference in (unequal) means between group of parks with friends (FOG, CA, or both) and other parks. FOG = "Friends of" Group; CA = Cooperating Association. Significance at the 5%, 1%, 0.1% levels indicated with *, **, ***, respectively.

Table 6. Determinants of NPS Unit "Friendship."

	Model 1			Model 2		
	FOG	CA	Both	FOG	CA	Both
Variable	Coefficient (error)	Coefficient (error)	Coefficient (error)	Coefficient (error)	Coefficient (error)	Coefficient (error)
Resource system (RS)						
Park acreage	0.1907 (0.1930)	0.0873 (0.1532)	−0.0372 (0.1605)	0.2147 (0.2222)	0.1309 (0.1852)	0.0091 (0.1930)
Memorials	−0.9426 (1.1955)	0.4871 (1.1637)	−1.1204 (1.3263)	−1.6303 (1.2407)	0.0343 (1.0834)	−1.5250 (1.1931)
Recreation	−14.8216 (1.6424)	−1.9341 (1.0404)	−3.3615** (1.2149)	−15.8251*** (1.8012)	−2.1744* (1.0968)	−3.6233** (1.2418)
History	1.2543 (0.7354)	1.5716** (0.5778)	1.5628** (0.6060)	1.1381 (0.8157)	1.5492* (0.6349)	1.5742* (0.6583)
Nature	−0.4079 (1.2528)	0.2906 (0.9824)	−1.0233 (1.0974)	−0.6960 (1.3610)	0.0726 (1.0136)	−1.2829 (1.1512)
Visits	0.3057 (0.4417)	0.9244* (0.3758)	1.3647** (0.4279)	0.4125 (0.4875)	1.1102** (0.3939)	1.5361*** (0.4354)
Exercise				2.1451 (1.1601)	1.5265 (0.9584)	1.1567 (0.9886)
Airport distance				−0.1412 (0.5809)	−0.0577 (0.5088)	0.1095 (0.5317)
Resource units (RU)						
Wildlife themes	−2.0599 (1.4526)	−1.2366 (1.1206)	0.3420 (1.2148)	−2.2946 (1.6123)	−1.5911 (1.1316)	−0.0393 (1.2386)
Wildlife activities	0.8250 (0.9646)	−0.7277 (0.7852)	0.1976 (0.8209)	0.2220 (1.1061)	−1.2114 (0.9088)	−0.1689 (0.9572)
Activities count	−0.4794* (0.2396)	0.0713 (0.1815)	0.1538 (0.1859)	−0.7097* (0.2867)	−0.0471 (0.1867)	0.0588 (0.1885)
Actors (A)						
Population	0.3881 (0.2981)	0.4963* (0.1992)	0.5040* (0.2081)	0.3061 (0.4069)	0.4816 (0.2633)	0.5242 (0.2737)
Kids	−28.3788* (11.4956)	−15.8044 (8.9830)	−25.4799** (9.2687)	−51.8839** (19.6058)	−32.4365* (16.0441)	−44.7869** (16.7862)
Unemployed	20.5862 (21.7310)	28.7954* (13.8631)	31.8781* (14.4520)	16.9507 (21.3058)	25.2961 (13.9947)	29.3845* (14.5716)
High income	25.5875* (11.6989)	−0.0258 (7.8269)	13.0325 (8.1784)	19.5747 (12.3385)	−8.4418 (9.3101)	4.6118 (9.2581)
Household income	−9.3312 (4.7786)	−2.8326 (3.2764)	−6.2021 (3.3853)	−8.8183 (4.9177)	−0.9674 (3.4041)	−4.3117 (3.4264)
White	7.0454** (2.3581)	4.0458* (1.9095)	3.6568 (1.9547)	9.4013** (2.9172)	5.0595* (2.3761)	5.0864* (2.3685)
Antiquities	−1.9742 (1.9773)	0.9392 (1.4654)	−0.1997 (1.5035)	−2.1987 (1.7900)	0.7762 (1.4231)	−0.3758 (1.4729)
Education (years)	25.1560 (24.7000)	4.3740 (8.5823)	16.0142 (9.1283)	24.9283 (25.5770)	4.8647 (9.0414)	18.7939 (9.9342)

(continued)

Table 6. (continued)

	Model 1			Model 2		
	FOG	CA	Both	FOG	CA	Both
Variable	Coefficient (error)	Coefficient (error)	Coefficient (error)	Coefficient (error)	Coefficient (error)	Coefficient (error)
Education (years) squared	−0.9181 (0.9152)	−0.1398 (0.3379)	−0.5910 (0.3545)	−0.8982 (0.9462)	−0.1504 (0.3564)	−0.6852 (0.3850)
Year community built[a]	0.0417 (0.0248)	0.0728*** (0.0215)	0.0917*** (0.0220)	0.0372 (0.0267)	0.0733*** (0.0217)	0.0951*** (0.0225)
Year park founded	−0.0384 (0.0199)	−0.0420* (0.0187)	−0.0468* (0.0189)	−0.0378 (0.0214)	−0.0424* (0.0200)	−0.0491* (0.0204)
Veterans				−11.6640 (17.1237)	−18.6287 (14.8566)	−28.0343 (14.6763)
Seniors				−33.0651 (20.2238)	−17.6502 (14.6425)	−18.4581 (14.5012)
Rentals				−4.0437 (5.9459)	−3.7302 (4.0998)	−4.6684 (4.2957)
Governance system (GS)						
Consortium	−0.1698 (1.4827)	−2.3643 (1.2957)	−2.4417* (1.2202)	−0.5453 (1.4789)	−2.7750* (1.3506)	−3.0262* (1.2796)
Interactions						
Park budget	0.3593 (0.5823)	1.9845*** (0.5217)	2.4402*** (0.5569)	0.6102 (0.6574)	2.3340*** (0.5599)	2.7662*** (0.5880)
Park employees	0.0141 (0.0173)	−0.0015 (0.0171)	0.0001 (0.0171)	0.0187 (0.0181)	0.0007 (0.0174)	0.0018 (0.0174)
Constant	−89.8355 (174.5080)	−72.1182 (76.2965)	−141.8118 (79.1449)	−73.8882 (184.0122)	−86.8217 (74.1968)	−175.1995* (81.4086)
N		308			308	
LR (*df*)		204.693 (69)			214.121 (84)	
Pseudo-R^2		.2916			.3050	
AIC		2.082			2.149	
BIC		−854.982			−778.460	

Note. NPS = National Park Service; FOG = "Friends of" Groups; CA = Cooperating Associations; LR = likelihood ratio; AIC = Akaike information criterion; BIC = Bayesian information criterion.

[a]Indicates block-group-level data.

Significance at the 5%, 1%, 0.1% levels indicated with *, **, ***, respectively.

More popular parks in terms of numbers of visitors (but not acres) predict CAs (with or without FOGs) relative to no support organizations. Joint governance of park systems (consortia) is also negatively related to the existence of FOGs and CAs. But government resources poured into the park itself, FTEs or budgets on a per visit basis, play a complicated role in explaining FOG and CA formation. They are not associated with greater relative probabilities of FOG formation but CAs (alone or with FOGs) appear drawn to larger budgets. In absolute terms, however, smaller budgets and larger staffs are associated with greater likelihood of FOG (alone) formation, and larger budgets increase the odds of hosting both types of organizations. In a sense, poorer parks and FOGs tend to go together, while richer sets of "friends" organizations and better funded parks go together.

Whether the park was originally created via the president declaring it a national monument and exercising his powers under the Antiquities Act of 1906 does not predict the presence of "friends" groups relative to no groups. Interestingly, the possibility that Antiquities Act parks lack local stakeholder support, and hence the need for presidential rather than congressional designation, manifests clearly in the large difference in the *antiquities* coefficient between the FOG and CA columns when compared horizontally (*antiquities* is associated with a lower likelihood of having a FOG alone rather than a CA alone, $p < .05$ in Model 2). Having been established via the Antiquities Act, ceteris paribus, significantly lowers the predicted probability of having only a FOG. If it is the case that existing FOGs help build support for parks to eventually become officially designated, then it appears that these FOGs achieve national park status through Congress and not through presidential decree.

Discussion and Implications

From an academic perspective, employing the SES framework was productive because it helped frame variables already found to be important in other civil society studies. When our findings are mapped to the SES first-tier variables, surprising patterns emerge. Across both FOGs and CAs, Actor (A) characteristics are (on the whole) less likely to be significant and have smaller substantive effects. However, variables for resource systems (RS), resource units (RU), and governance systems (GS) explained the bulk of the variation and frequently had larger substantive effects. Our finding is therefore consistent with a dominant theme in nonprofit scholarship, where organizational behavior is too complex to ascribe to any single agent (Herman & Renz, 2008), or is dependent on a range of both internal and external characteristics such as market dynamics, client demand, demographic characteristics of a community, or financial or organizational capacity (e.g., Baruch & Ramalho, 2006). Thus, taking a more holistic "systems perspective" allows us to incorporate both the nature of any resource (broadly interpreted) and the institutional setting in which users are acting. Using the SES framework shows the importance of opening our thinking to new variables.

The nonprofit FOGs and CAs offer an excellent empirical application of SES to better understand what conditions foster voluntary organizations forming to support public goals of conservation and education. The empirical setting is rich with variation across park units (as "resource systems") but is conveniently embedded in a larger system that provides useful structure for analysis. The FOGs and CAs as nonprofits

conform to certain common legal standards. Moreover, national parks possess some universally common features, such as operating rules, funding sources, and hierarchy. National parks have the same mission and bureaucracy, enhancing comparability across otherwise rather different resources. Across hundreds of ostensibly equivalent units in the greater national park system, we can leverage the variation in their local characteristics to explain why some have partner nonprofits and others do not.

The analysis reveals some important distinctions between parks with nonprofit "friends" groups and those without. First and foremost, the parks with FOGs differ greatly from those with CAs. Parks with FOGs or CAs differ from parks without any supporting organizations. FOGs follow preservation-oriented nonrecreational parks located in areas with more wealthy residents.

CAs are, however, drawn to popular, well-funded historical parks surrounded by abundant labor. They have ample opportunities to raise funds and provide interpretive services. Likewise, the fact that 95% of presidentially created monuments have CAs is consistent with CAs stepping in to provide visitor center services when the NPS could not, because invoking the Antiquities Act does not necessarily bring funding as Congress often only reluctantly supports Antiquites Act-created parks (Rettie, 1995).

The divergence between FOGs and CAs is particularly striking in the broader context of the NPS mission, history, and politics. The tension between preservation and use was built into the Organic Act of 1916. (The NPS's " purpose is to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.") Over the years, the NPS and its units became increasingly urban and faced mounting recreational and consumptive pressures. It also expanded its holdings, often far faster than its budget, and portrays itself in a constant state of funding "crisis." The dual roles of FOGs and CAs identified here fit into these themes. FOGs can advocate for preservation against more commercial pressures while assisting with capital funding shortfalls (Rettie, 1995). Meanwhile, CAs can provide services for visitors streaming through their gift shop, especially in parks lacking Congressional support.

From the nonprofits' perspective, the results reflect circumstances that better accommodate voluntary solutions to collective action problems. Some parks have more need (e.g., few employees), some have more valuable public goods (e.g., not recreation parks), and some parks have more able volunteers (e.g., very wealthy, unemployed, adults). One of our strongest findings is how important the resource and governance systems are for explaining the ability of volunteer organizations to overcome collective action problems in national parks.

The insignificance of some "actor" results underscores the challenge of identifying the community of actors engaged with national parks as resource systems. Measuring community characteristics at the neighborhood level or at the county level may be capturing the "wrong" community. As *national* parks, it might well be that variation in local demographics ought not explain much about these supporting organizations. Or, statistics may be too highly aggregated to detect those rare individuals who drive the organizations. Some parks' communities might be very local while others are much larger.

Conclusion

Why are some national park units more successful at attracting philanthropic and volunteer resources to supplement stagnant public funding? Our findings have significant implications from both academic and applied perspectives. The academic implications are discussed above and focus on the value added by the SES framework and the importance of carefully examining resource characteristics (broadly construed) and institutional setting. In this study, these variables were often more important than the "actor" variables on which studies of civil society often focus. For example voter turnout, a common proxy for civic engagement or social capital, was never significant.

The SES framework provides a structure or a common language in which research can occur. It enhances communication of results across research communities and increases the chances that cumulative progress can be made across disciplines (McGinnis & Ostrom, 2014). The cross-fertilization of ideas supports more rapid advance in the development of theory. The SES framework can also be used to generate questions that may otherwise be missed in a more narrowly defined field of research. But the broader scope of this framework also introduces some variables that are difficult to quantify for analyses such as these. Here, qualitative research holds the potential to provide insight. We hope that in the future, ethnographic, observational, or other studies can explore the roles of these variables in the nonprofit sector and will provide the basis for more sophisticated quantitative research based on collected case studies.

Our findings also help parks' managers understand where productively they can find voluntary support. They also suggest that FOGs and CAs fit different niches. FOGs appear to serve as advocates and gift-givers to support the preservation goals of parks as public goods, whereas CAs offer (and generate funding from) volunteer staffing of visitor centers to enhance parks' educational services.

These findings should be taken with some caution. Results are based on a large-scale statistical, cross-sectional analysis with rather limited scope. We are studying where "friends" groups are found not their impacts on funding, volunteering, park quality, or other outcomes. But our analysis helps understand the broad pattern and which major variables appear to be important, and helps guide future qualitative or mixed-methods research to provide richer details on the formation of these groups and their dynamics. Care should be taken about generalizing beyond this subsector. Future work would do well both to broaden the inquiry by applying this approach to nonprofit formation beyond the NPS and to deepen the investigation by further enriching the measures of nonprofits to include size, longevity, and functions (e.g., content of support agreements) beyond the limited measures used here. Additional application of this SES framework can improve our understanding of coproduction and charitable activities in public parks and other sectors (e.g., libraries, schools, disaster relief).

Authors' Note

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Notes

1. Coproduction describes situations in which the users of a public service participate in its creation and/or delivery, such as through voluntary labor.
2. "The fundamental differences between Friends Groups and Cooperating Associations are the focus of their mission and the source of their income." "Friends of" Groups (FOGs) generally have a mission to provide support for the overall mission of the park partner. Funds to support their work come from donations, membership dues, events, and perhaps earned income (e.g., off-site, online sales). Cooperating Associations (CAs) have a specific mission focus to provide program and financial support to the National Park Service (NPS) in the areas of education, interpretation, and research. Income is generated in large part from the sale of interpretive and educational items in park visitor center bookstores. Only CAs may operate these facilities (NPS, 2009).
3. The classification of national parks as "National Parks" or "National Memorials" or any of more than a dozen other designations carries few statutory distinctions. They all possess identical legal standing, although National Preserves allow for consumptive (e.g., hunting, mining) activities not typically allowed elsewhere.
4. Roughly speaking, a block group averages in population around 4,000 people and is drawn with local input to match local perceptions of neighborhood when possible.

References

Agrawal, A. (2001). Common property institutions and sustainable governance of resources. *World Development*, *29*, 1649-1672.

Andrews, K. T., Ganz, M., Baggetta, M., Han, H., & Lim, C. (2010). Leadership, membership and voice: Civic associations that work. *American Journal of Sociology*, *115*, 1191-1242.

Babiak, K., & Thibault, L. (2009). Challenges in multiple cross-sector partnerships. *Nonprofit and Voluntary Sector Quarterly*, *38*, 119-143.

Baruch, Y., & Ramalho, N. (2006). Communalities and distinctions in the measurement of organizational performance and effectiveness across for-profit and nonprofit sectors. *Nonprofit and Voluntary Sector Quarterly*, *35*, 39-65.

Brudney, J. L., & England, R. E. (1983). Toward a definition of the coproduction concept. *Public Administration Review*, *43*, 59-65.

Brudney, J. L., & Warren, M. (1990). Multiple forms of volunteer activity in the public sector: Functional, structural, and policy dimensions. *Nonprofit and Voluntary Sector Quarterly*, *19*, 47-58.

Bushouse, B. (2011). Governance structures: Using IAD to understand variation in service delivery for club goods with information asymmetry. *Policy Studies Journal*, *39*, 105-119.

Christensen, R. K., Clerkin, R. M., Nesbit, R., & Paarlberg, L. (2009). Light and dark sides of nonprofit activities and the rules to manage them: The case of charitable bingo. *Administration & Society*, *41*, 213-234.

Cornforth, C. L. (2012). Nonprofit governance research: Limitations of the focus on boards and suggestions for new directions. *Nonprofit and Voluntary Sector Quarterly*, *41*, 1116-1135.

Crawford, S. E., & Ostrom, E. (1995). A grammar of institutions. *American Political Science Review*, *89*, 582-600.

Gazley, B. (2008). Inter-sectoral collaboration and the motivation to collaborate: Toward an integrated theory. In L. B. Bingham & R. O'Leary (Eds.), *Big ideas in collaborative public management* (pp. 36-54). Armonk, NY: M.E. Sharpe.

Grønbjerg, K.A., & Paarlberg, L. (2001). Community Variations in the Size and Scope of the Nonprofit Sector: Theory and Preliminary Findings. *Nonprofit and Voluntary Sector Quarterly*, *30*, 684-706.

Herman, R., & Renz, D. O. (2008). Advancing organizational effectiveness research and theory: Nine theses. *Nonprofit Management & Leadership*, *18*, 399-415.

Imperial, M. T., & Yandle, T. (2005). Taking institutions seriously: Using the IAD framework to analyze fisheries policy. *Society & Natural Resources*, *18*, 493-509.

Isham, J., Kolodinsky, J., & Kimberly, G. (2006). The effects of volunteering for nonprofit organizations on social capital formation: Evidence from a statewide survey. *Nonprofit and Voluntary Sector Quarterly*, *35*, 367-383.

Jetté, C., & Vaillancourt, Y. (2011). Social economy and home care services in Quebec: Co-production or co-construction? *Voluntas*, *22*, 48-69.

Komp, K., van Tilburg, T., & van Groenou, M. (2012). Age, retirement, and health as factors in volunteering in later life. *Nonprofit and Voluntary Sector Quarterly*, *41*, 280-299.

Lecy, J. D., & Van Slyke, D. M. (2013). Nonprofit sector growth and density: Testing theories of government support. *Journal of Public Administration Research and Theory*, *23*, 189-214.

McGinnis, M. D., & Ostrom, E. (2014). Social-ecological systems framework: Initial changes and continuing challenges. *Ecology and Society, 19*, Article 30.

Musick, M. A., & Wilson, J. (2008). *Volunteers: A social profile*. Bloomington: Indiana University Press.

National Park Foundation. (2011). *Form 990 for the National Park Foundation*. Available from http://www.guidestar.org

National Park Service. (2009). *Making friends: An introduction to building National Park Service friends groups*. Retrieved from http://www.nps.gov/partnerships/making_friends_handbook.pdf

National Park Service. (2011). *NPS friends group directory FY 2011*. Retrieved from http://www.nps.gov/partnerships/Friends_Groups_Directory.pdf

National Park Service. (2013). *Frequently asked questions*. Retrieved from http://www.nps.gov/faqs.htm

Nelson, A., & Gazley, B. (2014). The rise of school-supporting nonprofits. *Education Finance and Policy*, *9*, 541-566.

Ostrom, E. (1990). *Governing the commons: The evolution of institutions for collective action*. Cambridge, UK: Cambridge University Press.

Ostrom, E. (2007). A diagnostic approach for going beyond panaceas. *Proceedings of the National Academy of Sciences*, *104*, 15181-18187.

Ostrom, E. (2009). A general framework for analyzing the sustainability of social-ecological systems. *Science*, *325*, 419-422.

Ostrom, E., Janssen, M.A., & Andries, J.M. (2007) Going beyond panaceas. *Proceedings of the National Academy of Sciences*, *104*, 15176-15178.

Ostrom, E., Gardner, R., & Walker, J. (1994). *Rules, games, and common-pool resources*. Ann Arbor: University of Michigan Press.

Paarlberg, L. E., & Gen, S. (2009). Exploring the determinants of nonprofit coproduction of public service delivery: The case of K-12 public education. *The American Review of Public Administration*, *39*, 391-408.

Poteete, A. R., Janssen, M. A., & Ostrom, E. (2010). *Working together: Collective action, the commons, and multiple methods in practice*. Princeton, NJ: Princeton University Press.

Rettie, D. F. (1995). *Our national park system*. Chicago: University of Illinois Press.

Saxton, G. D., & Benson, M. A. (2005). Social capital and the growth of the nonprofit sector. *Social Science Quarterly*, *86*, 16-35.

Schweik, C. M., & Kitsing, M. (2010). Applying Elinor Ostrom's rule classification framework to analysis of open source software commons. *Transnational Corporations Review*, *2*, 13-26.

Soares, J. (2011, October 5.) California State Parks: New Law Allows Nonprofits to Help Keep Them Open. Northern California Hiking Trails. Retrieved from: http://northerncalifornia-hikingtrails.com/blog/2011/10/05/california-state-parks-nonprofits/

Stone, M. M., & Ostrower, F. (2007). Acting in the public interest? Another look at research on nonprofit governance. *Nonprofit and Voluntary Sector Quarterly*, *36*, 416-438.

U.S. Senate Committee on Energy & Natural Resource Management. (2013, July 25). Wyden calls for creative fixes for national park maintenance backlog. *Democratic News*. Retrieved from http://www.energy.senate.gov/public/index.cfm/democratic-news?ID=eba37706-d66b-457b-a07c-652c967892b6

Von Bertalanffy, L. (1950). An outline of general system theory. *British Journal for the Philosophy of Science*, *1*, 134-165.

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