Chapter 16: Outdoor Recreation and Environmental Stewardship: The Sustainable Symbiosis

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> The affective, functional, and cognitive bonds with a place may be important precursors to individuals' choosing to protect or fight for that particular place.
>
> —Elizabeth A. Halpenny

Purpose

This chapter discusses ways in which recreation on public lands can serve as a resource for environmental conservation, highlighting the role of recreationists as stewards of the land and key contributors to sustainable landscapes.

Problem Statement

The presence of recreationists on public lands is sometimes viewed as a threat to ecosystem integrity. Recreation can alter ecosystems, especially if not managed effectively (Larson et al. 2019, Monz et al. 2010). Likewise, inadequately managed recreational use has the potential to detract from the experience of public lands by other users (Manning 2010). However, people interacting with their public lands through outdoor recreation can, and often do, act as stewards for these lands. In many cases, nature-based recreational experiences help to foster connections to place, thereby strengthening environmental values and promoting conservation behaviors (Larson et al. 2018). In this respect, the use of public lands for recreation also adds value to these lands, potentially enhancing environmental health and the human experience of public lands, and contributing to the conservation and appreciation of the ecosystems protected within their boundaries.

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Stewardship can be defined in multiple ways, ranging from high-effort group activities that take place in parks, such as habitat improvement volunteer projects, to low-effort individual tasks that can be completed at home, such as recycling or reducing energy consumption (Larson et al. 2015). Here, we focus on stewardship behaviors that take place in protected area contexts, whether they involve a high

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or low level of effort and are performed in a group or by individuals. In chapter 4 of this report (Armstrong and Derrien 2020), the roles of power and dominion connected to some interpretations of stewardship are discussed. We emphasize the dimensions of stewardship that foster intimate connections between humans and the landscapes they inhabit—connections that are strengthened via outdoor recreation. Finally, we suggest that participation in such actions may carry over to pro-environmental behaviors outside of parks, and emphasize the broader benefits of fostering an interest in environmental stewardship through the recreation context.

There is a demand for participating in the kinds of stewardship activities described above, and satisfaction of that demand generates many diverse benefits. In addition to the ecological benefits that often directly result from stewardship activities, these activities also provide health benefits for the people who engage in them (Wolf and Housley 2017, Wolf et al. 2020). Engagement in various forms of environmental stewardship also create opportunities for a more diverse array of human-nature connections that support human well-being (Blahna et al. 2020a). Developing and maintaining stewardship capacities via recreation is increasingly important considering the state of land management agency budgets and the accumulation of large maintenance backlogs associated with recreational infrastructure on public lands (GAO 2013). Connections between people and public lands through technologies such as social media (Valenzuela 2019) and the potential for engaging stewards through such technology provide unprecedented opportunities for building stewardship capacity. Acknowledging these connections and opportunities, recreation-related stewardship activities are a critical element of the National Strategy for a Sustainable Trail System (NSSTS) (USDA FS 2017). By recognizing the symbiotic relationship between outdoor recreation and environmental stewardship, we can position recreation as a primary product of management that advances both agency goals and human well-being.

Growth in outdoor recreation participation underscores a paradigm shift in recreation management toward a model that positions recreation as a key cog in a sustainable social-ecological system.

Dimensions of the Problem

Outdoor recreation participation has increased in recent decades, and its growth is projected to continue (Outdoor Foundation 2018, White et al. 2016). As stated in the prologue (Cerveny et al. 2019), we encourage this increase in outdoor recreation, appreciate its benefits for the land and its users, and support stewardship as a positive human-nature interaction and as a form of recreation. This growth underscores a paradigm shift in recreation management toward a model that positions recreation as a key cog in a sustainable social-ecological system. Because of its popularity, outdoor recreation contributes substantially to the U.S. economy, making up 2 percent of the 2016 U.S. gross domestic product (USDC BEA 2018). This continued

increase in outdoor recreation participation can be leveraged to benefit ecosystems protected within public lands. Weaver and Lawton (2017) asserted that we need to reframe the current biocentric outlook, which repositions visitors from being seen as inherent threats to protected areas (i.e., "parks with people") to the view that visitors are an opportunity (i.e., "parks and people"). This shift will enable a more effective approach to managing escalating recreation demand in the midst of budget cuts, motivating visitors themselves to participate in activities that support the integrity of public lands, enhancing recreational experiences, and strengthening the relationships between people and these important places (Weaver and Lawton 2017).

Barriers and Challenges

Although some federal agencies have incorporated elements of stewardship into land management, barriers to integration of recreation and stewardship persist. Some of these barriers are due to the orientation of existing planning and management tools, the need to better apply our understanding of recreationist motivations for stewardship activities, and limited agency and partner capacities, focus, and prioritization.

One barrier to engaging recreationists as stewards stems from existing planning and management tools, which perceive recreationists to be a threat to ecosystems and regard natural resource conservation as the top priority (Blahna et al. 2020b). This thinking can be restrictive, however, because recreationists represent a key piece of dynamic social-ecological systems in protected areas (Armstrong and Derrien 2020). As Wolf et al. (2013) noted, a human's ecological footprint can be negative, but it can also be positive. Indeed, the very concept of visitor use and recreation management is shifting to emphasize collaborative planning processes, stakeholder input, and a focus on broader outcomes for both visitors and park resources (Verbos et al. 2017).

Decades of research on visitor experiences, attitudes toward conservation, and motivations for participating in both outdoor recreation and stewardship activities have created a large body of knowledge in each of these respective areas of inquiry, but integration of these concepts is rare. Better application of this interdisciplinary knowledge could build capacity for both stewardship and recreation management. Many initiatives engage recreationists and the general public as volunteers for programs that enhance public land management, but these programs have met differing levels of success and sustainability (Miller et al. 2012). For example, in the case of citizen science, research suggests that collaborative or "bottom-up" efforts to address an issue valued by visitors can be far more sustainable—and fulfilling—than an agency-led approach (Conrad and Hilchey 2011). As our understanding of

both recreation preferences and stewardship motivations grows, this information could be used to facilitate public engagement in conservation activities that is more adaptive, fluid, and malleable.

Although recognition of the sustainable symbiosis of recreation and stewardship may be growing, progress is currently hindered by the limited capacity of public land management agencies to develop, use, and maintain stewardship partnerships to address common goals. The need to increase these collaborative capacities and volunteer engagement in land stewardship programs is widely acknowledged (Cerveny et al. 2020, Selin et al. 2020). These collaborative capacities are also central to the NSSTS, which has identified volunteer stewards as critical to achieving Forest Service objectives related to trail system management (National Forest System Trails Stewardship Act 2016, USDA FS 2017). In some cases, agency practitioners already select partners and cultivate partnerships strategically to accomplish tasks, provide public service, and foster land stewardship (Seekamp and Cerveny 2010). For example, Seekamp et al. (2011) described the many different partnerships the Forest Service has developed to achieve its mission and meet management objectives, including connections with civic groups, youth organizations, guides and outfitters, nongovernmental organizations, and other government agencies. These opportunities could be expanded to explicitly integrate and foster a public stewardship ethic (Seekamp et al. 2011).

Because the recreation experience is shaped by expectations, belief systems, motivations, and prior experiences (Driver 2008, Manfredo et al. 1996, Wagar 1974), understanding the relationship between these concepts and environmental stewardship could promote conservation as a form of recreation (Larson et al. 2018). Planning and management should therefore consider the ways in which the public wants to engage with public lands to encourage long-lasting and fulfilling stewardship programs. To institutionalize these changes, recreation tools and frameworks can be adapted, or new ones developed, to fuse recreation and conservation and explicitly incorporate public stewardship as a method for addressing authentic management challenges. Key elements of stewardship and ideas for further integrating these elements into public land management are presented below.

Environmental stewardship, particularly when viewed as a form of recreation, is a mechanism that can translate the challenge of increasing demand for outdoor recreation into a conservation solution for agencies and programs threatened by dwindling budgets.

New Conceptual Approaches and Opportunities

Environmental stewardship, particularly when viewed as a form of recreation, is a mechanism that can translate the challenge of increasing demand for outdoor recreation into a conservation solution for agencies and programs threatened by dwindling budgets. This subject has received increasing attention recently in environmental management and policy (e.g., Interagency Visitor Use Management

Council, the 1998 National Trail Systems Act, and the NSSTS). Bennett et al. (2018) synthesized the literature on environmental stewardship to define the term, develop a framework to better understand mechanisms behind environmental stewardship, and focus future research in the area. According to this framework (fig. 16.1), three elements are central to environmental stewardship: (1) actors, (2) motivations, and (3) capacity to participate in stewardship activities. Actors can be individuals, groups, or networks of stewards (e.g., recreationists or visitors to public lands). Prior to action, these actors must be intrinsically or extrinsically motivated to steward their resources. Additionally, they must have the ability or capacity to steward resources. Actors' capacities are influenced by local community assets as well as broader governance factors. Public land managers can also foster motivation and build the capacity of recreationist-stewards to effectively engage in environmental stewardship across different contexts.

Stewardship itself is a motivation and a benefit for many visitors to protected areas.

Stewardship itself is a motivation and a benefit for many visitors to protected areas (Bruyere and Rappe 2007). For example, in a study in which local community members near the Deschutes National Forest were asked open-ended questions about the benefits they derived from the national forest, stewardship and volunteer opportunities

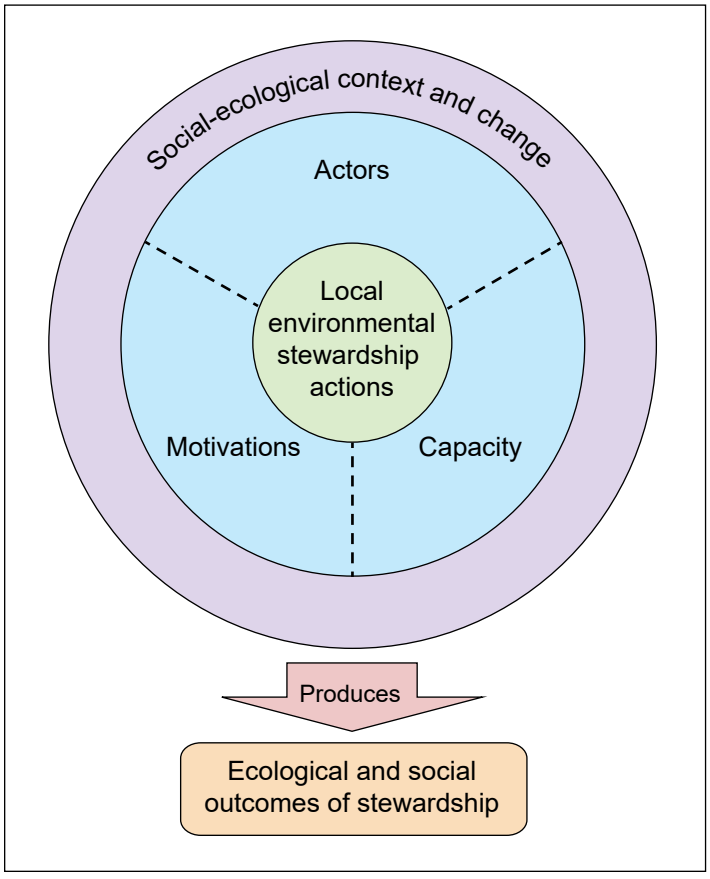

Figure 16.1—A conceptual framework for local environmental stewardship (adapted from Bennett et al. 2018).

emerged as a significant category of benefits (Asah et al. 2014). Other research suggests that both intrinsic (e.g., personal interest and enjoyment) and extrinsic (e.g., group relatedness) factors influence public engagement in ecological monitoring activities (Tiago et al. 2017). In many cases, volunteer or stewardship groups often form around a focal point such as a favorite recreational activity, location, ecosystem, or ecosystem component. An individual's connection to place may play a critical role in this process (Halpenny 2010, Larson et al. 2018). Blahna et al. (2020a: 66) included "participation in shared stewardship and voluntary restoration activities" as one important way that "people interact with and value public lands," an aspect that is not incorporated in the traditional definition of recreation. Moving toward a broader conceptualization of recreation with distinct dimensions related to "human connections" (Blahna et al. 2020a: 66) would include stewardship and volunteer activities, making stewardship a priority for recreation management. But how could that be accomplished?

Linking recreation and conservation behaviors—
Understanding factors that affect recreationists' conservation attitudes and behaviors can help us determine how to better engage visitors as stewards. As several recent studies suggest, recreation itself may informally influence people's conservation ethos and actions. In their study of residents in rural areas in upstate New York, Cooper et al. (2015) found that wildlife recreationists were four to five times more likely than nonrecreationists to participate in conservation behaviors (i.e., donating to support local conservation efforts, enhancing wildlife habitat on public lands, advocating for wildlife recreation, and participating in local environmental groups). Comparing hunters, birdwatchers, and hunter-birdwatchers, researchers found that individuals who identified with both activities (i.e., hunter-birdwatchers) reported the highest likelihood for engaging in conservation behaviors (Cooper et al. 2015). Another study by Teisl and O'Brien (2003) found that outdoor recreation participation was positively correlated with environmental behavior and concern and that impacts varied by activity. Wildlife watchers reported the highest rate of environmental behaviors and a high level of interest in forest management. Zaradic et al. (2009) discovered that certain nature-based activities (e.g., hiking) were linked to financial support for conservation organizations, while Larson et al. (2011) found that past and present outdoor recreation participation were strong predictors of pro-environmental behavior among state park visitors. Collectively, these studies suggest that there may be significant benefits for enhancing conservation protection by encouraging multiple forms of nature-based recreation for long-term conservation gains inside and outside of parks. However, more research is needed to understand mechanisms driving these relationships and the potential for synergistic feedback loops. In many cases, those loops may center on connections to place.

The powerful role of place attachment—
Recreationists' propensity to engage in conservation behaviors may be strongly linked to the attachments they develop to the places where they recreate. Place attachment is a multidimensional construct broadly defined as "the collection of meanings, beliefs, symbols, values, and feelings that individuals or groups associate with a particular locality" (Williams and Stewart 1998: 19). This attachment is derived from place meanings that can be environmental (e.g., scenic beauty, ecological functionality) or social (e.g., community relatedness, belonging) in nature (Ardoin et al. 2012). Outdoor recreation can foster both. A study at Shelburne National Wildlife Refuge in Minnesota found that visitors who were emotionally attached to the place were more likely to engage in civic actions such as donating their time, effort, and resources to the wildlife refuge. Trust partially mediated this relationship, with increased levels of trust corresponding to increased engagement in civic actions (Payton et al. 2005). Positive relationships between place attachment and pro-environmental behaviors like volunteering have been demonstrated in many settings (Gooch 2003, Hinds and Sparks 2008, Walker and Ryan 2008), including protected areas (Halpenny 2010, Ramkissoon et al. 2013, van Riper and Kyle 2014). For example, place attachment was found to be a strong predictor of park visitors' intentions to pick up other visitors' litter within the park (Walker and Chapman 2003). Larson et al.'s (2018) Conservation-Recreation Model, based on a study of wildlife-dependent recreationists, emphasizes the powerful associations between place attachment, community involvement, and stewardship behavior. Monitoring and promoting place attachment, such as by emphasizing the connection between groups and their attachment to and concern for the resource, may lead to increased levels of stewardship among park visitors and the general public (Payton et al. 2005). These actions could, in turn, foster stronger connections to place and additional recreation experiences, nurturing a sustainable symbiosis of recreation and stewardship.

Monitoring and promoting place attachment may lead to increased levels of stewardship among park visitors and the general public, thereby fostering stronger connections to place and nurturing a sustainable symbiosis of recreation and stewardship.

Examples of formal stewardship engagement programs—
Examples of how recreationists engage in public land stewardship in a variety of informal and formal contexts can highlight ways in which public land managers might facilitate these connections. As illustrated above, outdoor recreation is associated with many forms of conservation behavior across public and private spheres. Examples of formal volunteer stewardship programs with more targeted outcomes also abound in parks and protected areas. Focusing stewardship efforts on recreation infrastructure is one way to engage recreationists who have a special interest in a particular recreational activity or setting (Miller et al. 2012). Several activity-oriented groups exist that have national and regional presence to

foster stewardship and assist land managers in maintenance and development of recreational infrastructure related to their particular use (e.g., American Hiking Society, Back Country Horsemen of America, International Mountain Bicycling Association, National Off Highway Vehicle Conservation Council). These groups maintain a general interest in preserving and developing trails and access for their type of use, and promote sustainable trail building through provision of professional services and educational resources on sustainable trail design to land managers and local user communities and advocates.

Other programs emerge that are more site-specific. Many of these efforts are associated with individual trails such as National Historic or Scenic Trails (e.g., Appalachian Trail Conservancy, Continental Divide Trail Association) or specific parks or forests (e.g., Friends of Acadia National Park, Friends of Rothrock State Forest), thereby providing stewardship resources in a variety of contexts. These organizations—often local conservancies or "friends" groups—can form complex networks of volunteers and leverage them to complete significant projects related to infrastructure maintenance and development. The same groups often play key roles in fundraising and fiscal activities that complement public land managers' budgets to address shortfalls that are key to operation, improvement, and conservation.

Recreationists in San Francisco, California, and Portland, Oregon, with a special interest in maintenance of urban-proximate parks can contribute by reporting issues through the ParkScan mobile application or website.

Recreation and stewardship in urban areas—
Stewardship projects are not confined to rural or remote parks and protected areas. In many cases, urban centers present an ideal context for park-based public engagement. Urban-proximate parks have also developed infrastructure-oriented programs to broadly source information from users to inform management and maintenance. For example, recreationists in San Francisco, California, and Portland, Oregon, with a special interest in maintenance of urban-proximate parks can contribute by reporting issues through the ParkScan mobile application or website. ParkScan is used by park and recreation departments in these two cities to efficiently address maintenance issues and geographically analyze the types of problems encountered. Although the San Francisco Recreation and Parks Department is responsible for responding to reports, it also coordinates volunteer workdays and clean-ups (San Francisco Parks Alliance 2012). Similar community-based park monitoring and assessment tools are now being used in other locations as well, highlighting the many ways in which the general public can directly enhance park management (Kaczynski et al. 2012).

The evolving field of civic ecology describes the many ways in which city dwellers engage in recreation-based stewardship practices that promote environmental, community, and individual outcomes (Krasny and Tidball 2012). These activities often include small, self-organized efforts centered on such activities

as community gardening, tree planting and care, and volunteer efforts to restore native habitats. Research is also beginning to highlight factors driving these recreation-based urban stewardship actions and the outcomes they generate (Silva and Krasny 2016). For example, a project conducted in Seattle, Washington, showed that urban conservation stewards were more highly motivated by personal, social, and community functions (all common drivers of outdoor recreation behavior) than by environmental motivations. However, environmental motivations significantly increased in reported commitment to and frequency of participation in urban conservation activities when such activities also aligned with personal, social, and community-building goals. Based on these results, strategies focusing on ecology may be less effective for retaining stewardship participation than those appealing to visitors' personal and social motivations for conservation (Asah and Blahna 2012, 2013). In other words, it might be prudent to promote stewardship itself as a recreation activity (Blahna et al. 2020a). However, there is still some uncertainty about the outcomes such activities generate for urban parks themselves and the quality and health of the ecosystems within these parks (Fors et al. 2015).

Despite growing interest in these urban initiatives, resources are limited. Most environmental stewardship projects in cities operate with minimal staff and meager budgets that are rarely backed by municipal funding (Svendsen and Campbell 2008). They rely heavily on fragmented populations of dedicated volunteers, which limits their capacity to develop and expand. Collaborative partnerships that promote agency and autonomy within communities and across different sectors are key to the long-term success and sustainability of any stewardship program, particularly those that rely on volunteers (Barnes and Sharpe 2009). Citizen science projects, for example, highlight the potential for recreation activities to contribute to larger conservation goals (McKinley et al. 2017). Urban parks provide a place where such partnerships can evolve and mature, with outdoor recreation as the catalyst.

Gamification of stewardship in outdoor settings—
Increased use of technology such as social media and smartphones by recreationists (Valenzuela 2020) can facilitate the gamification of stewardship on public lands. For example, Volunteers for Outdoor Colorado has created a mobile phone application that encourages people to participate in acts of stewardship ranging from picking up trash to trail building. This app provides a gamified means of motivation, allowing users to earn badges that can be shared on social media. Stewardship is sometimes thought of as a large commitment, such as spending a weekend day trail building with a group. This idea highlights the importance of "smaller" acts of stewardship that can be completed individually, both within public lands (e.g., picking up

trash) and at home (e.g., turning off lights) (Volunteers for Outdoor Colorado 2018). Recent enthusiasm for Pokémon Go in parks demonstrates the potentially influential role that technology can play in fostering positive relationships between recreation activities and conservation attitudes and behaviors (Dorward et al. 2017). This phenomenon suggests lessons that the parks and conservation world could learn by including a user-friendly experience requiring only commonly owned equipment, no start-up costs, and no specific location, as well as an anthropomorphized story line to appeal to a wider public. As more studies reveal the potential benefits of gamifying nature and conservation through digital technology (Arts et al. 2015, Sandbrook et al. 2015), park and protected-area managers seeking to advance stewardship goals via recreational pursuits would be wise to respond to this trend.

Compelling Questions

1. What are the key obstacles to effective stewardship of outdoor recreation settings and related infrastructure? How can agencies and stewards efficiently develop capacities (including partnerships) to address these obstacles?
2. Why is recreation viewed as a threat in some contexts but as a stewardship opportunity in others? For what types of problems and issues are recreationist-stewards an efficient, effective, and desirable solution?
3. What are key factors mediating the relationship between outdoor recreation and conservation behavior, and how can this link be strengthened?
4. What elements help transform recreation into stewardship, and vice versa? Elements may be tangible (e.g., formal programs and management infrastructure) or intangible (e.g., cognitive factors and motivations).
5. How do agencies shift priorities to place strong emphasis on development and engagement of volunteer stewardship partners? What data and structures are required to integrate stewardship at the local, regional, and national levels?
6. How can existing outdoor recreation planning and management frameworks or models be modified to explicitly integrate stewardship and encourage public engagement in conservation?
7. How might current and future trends in outdoor recreation (e.g., shifts in demographics of visitors, new and emerging recreational activities, rise of technology) be used to emphasize recreation as stewardship, perhaps even before detrimental impacts arise?
8. How might the concept of recreation as stewardship be leveraged to support urban park planning and management in an environmentally and socially just fashion?

Conclusions

Based on recent research on the connections between outdoor recreation and stewardship, we suggest that public land managers view recreationists as stewards of, rather than as threats to, the lands they manage. Such a realignment follows Weaver and Lawton's (2017) call for a paradigm shift from "parks with people" (creating impacts) to "parks and people" (operating in harmony). Following the environmental stewardship framework proposed by Bennett et al. (2018), we encourage a focus on actors, motivations, and capacities to develop sustainable stewardship opportunities—both informal and formal—linked to outdoor recreation contexts. A growing body of research is improving our understanding of people's motivations to initiate and remain involved in stewardship activities. How do we build the capacities of recreationists to carry out these stewardship actions while simultaneously developing land managers' capacity to leverage these actions to support management goals?

To institutionalize the shift toward viewing recreationists as stewards of the land and to improve the sustainability of recreation-based stewardship programs, we benefit from continued examination of conservation-recreation-stewardship linkages.

To institutionalize this shift and improve the sustainability of recreation-based stewardship programs, we benefit from continued examination of conservation-recreation-stewardship linkages. Further exploration of the public's demand for integrating recreation and stewardship into planning and management frameworks also may be warranted. Informally, this could be accomplished by creating positive place-based recreation experiences for diverse audiences (Sanchez et al. 2020). Formally, it could be done through the creation of volunteer programs and initiatives, the development and support of local conservancies and friends groups, and enhanced partnerships with other stakeholders who foster collaboration and public engagement (Cerveny et al. 2020, Selin et al. 2020) to address authentic ecological and social management challenges. Through better understanding of recreationists, we can find new ways to appeal to visitors and make stewardship-related activities an integral part of the recreation experience. In doing so, we can help cultivate a symbiotic relationship between parks and people. It is important to consider whether this symbiosis, and associated opportunities for both outdoor recreation and stewardship, are equitably distributed across all communities and park settings (Holifield and Williams 2014). Ultimately, the explicit incorporation of stewardship into outdoor recreation planning and management frameworks could help land management agencies and organizations proactively and efficiently produce quality outdoor recreation experiences and positive conservation outcomes.

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