



AN ANALYTICAL FRAMEWORK AND CONCEPTUAL OVERVIEW OF ENVIRONMENTAL SUSTAINABILITY VIA STEWARDSHIP

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ABSTRACT

In conservation and environmental sustainability policies and programs around the world, local environmental stewardship has received more attention and funding. However, environmental stewardship has not gotten enough conceptual focus. Our capacity to comprehend the elements that contribute to environmental stewardship's success or failure in various contexts and the best ways to assist and facilitate local initiatives may be improved by establishing a precise definition and thorough analytical framework. Here, we provide such a definition and framework. We first define local environmental stewardship as the actions taken by individuals, groups, or networks of actors with a range of objectives and capacities to preserve, care for, or responsibly use the environment in order to achieve environmental and/or social outcomes in a variety of social-ecological contexts. Following a study of the literature on governance, management, and environmental stewardship, we dissect this definition's elements to produce an analytical framework that can facilitate local environmental stewardship research. Finally, we discuss how the framework could be used to guide descriptive, evaluative, prescriptive, or systematic research on environmental stewardship, as well as potential initiatives and leverage points to promote or assist local stewardship. Further application of this framework in diverse environmental and social contexts is recommended in order to refine the elements and offer insights that will guide and improve the outcomes of environmental stewardship initiatives and investments. Our ultimate objective is to raise awareness of environmental sustainability through stewardship, as a practical and all-encompassing concept for guiding durable and comprehensive idea for directing long-lasting and fruitful interactions with the environmental stewardship.

Keywords: Environmental sustainability, Stewardship of the environment, Conservation, Capacity Management

INTRODUCTION

Creating protected areas, replanting trees, restricting harvests, lowering hazardous activities or pollutants, establishing community gardens, recovering degraded areas, or buying more sustainable products are just a few examples of the wide range of activities that have been referred to as environmental stewardship. It is used to characterize active restoration efforts, strict sustainable conservation measures, and/or resource management and use that is sustainable. Additionally, stewardship activities can be implemented in both rural and urban settings, at a variety of scales, from local to global initiatives. It may be believed that local efforts are no longer sufficient to address the global scope of many contemporary environmental problems. However, taking part in local environmental stewardship activities and projects is one way that people may use their own skills and knowledge to respond to external forces of change and promote sustainability. This article's framing of environmental stewardship implicitly emphasizes the often-central role of local people in protecting the ecosystem that they are close to, connected to, and, in some cases, rely on for their livelihoods and subsistence needs.

Community-based conservation (CBC), community-based management (CBM), community-based natural resource management (CBNRM), indigenous and community conserved areas (ICCAs), integrated conservation-development projects (ICDPs), locally managed marine areas (LMMAs), "other effective area-based conservation measures" (OECMs), and urban stewardship initiatives (Cinner and Aswani 2007; Govan *et al.*, 2009; Krasny and Tidball 2012; ICCA 2013; Jupiter *et al.*, 2014; Jonas *et al.*, 2014; Riehl *et al.*, 2015; Campos-Silva and Peres 2016). This

emphasis on local stewardship is also in line with the growing emphasis on local communities and resource users in conservation and environmental management policies, programs, and practices worldwide.

These examples demonstrate how, in both rural and urban settings, locally focused stewardship practices, regulations, and programs have arisen in the fields of wildlife, protected areas, forestry, fisheries, ecosystem service, and water management. The role, rights, and responsibilities of small-scale fishermen in managing local resources, for instance, have become increasingly important in fisheries management. This is demonstrated by initiatives like Chile's Territorial Use Rights Fisheries program (TURFs) (Gelcich *et al.*, 2015), the growth of community-supported fisheries programs worldwide (Brinson *et al.* 2011; McClenachan *et al.*, 2014), the publication of the global "Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries" (FAO 2015), and increased funding of non-governmental organizations that concentrate on small-scale fisheries (e.g. the Fish Forever Program (Barner *et al.* 2015)).

In the agriculture sector, community supported agriculture initiatives—which reward farmers for stewardship-oriented practices—have emerged over the last few decades (Fish *et al.*, 2003; Campbell *et al.*, 2014; Raymond *et al.*, 2016). Community based forestry programs have grown in popularity since the 1980s, and have spread from the global south to the global North (McDermott and Schreckenberg 2009; Baynes *et al.*, 2015). Municipalities can create and support projects like community gardening, shellfish reintroduction, tree planting, invasive species removal, and soil, water, and green space conservation in urban settings, or they can support civic-led efforts (Krasny and Tidball 2012;

Connolly *et al.*, 2014; Krasny *et al.*, 2015). To illustrate how local environmental stewardship is encouraged for a variety of natural resources in all settings and regions, these are but a few instances.

Numerous insights into environmental stewardship that could direct these local initiatives can be found in the scholarly literature. Grasslands and rangelands (Sayre *et al.*, 2013; Henderson *et al.*, 2014), freshwater (Kreutzweiser *et al.*, 2011), forests (Adhikari *et al.*, 2007; Messier *et al.*, 2015), rural agricultural landscapes (Worrell and Appleby 2000; Plummer *et al.*, 2008; Ellis 2013; Gill 2014; Raymond *et al.*, 2015), urban, environments (Krasny and Tidball 2012; Connolly *et al.*, 2014; Romolini *et al.*, 2016), fisheries (van Putten *et al.*, 2014) and coastal or marine habitats (Sharpe and Conrad 2006; Silbernagel *et al.*, 2015).and more have all been the subject of research on the phenomenon of local environmental stewardship. Either a subset of the various elements that might either strengthen or weaken stewardship—such as ethics, motivations, capacity, institutions, networks, and context—or the question of whether or not environmental stewardship is being practiced are the usual subjects of these research. Only a small percentage of these papers define stewardship, and those that do frequently concentrate on the ethical aspect of stewardship or just stewardship as actions or behaviors. To the best of our knowledge, no scholarly book has offered a thorough definition and integrative analytical framework that would integrate the various aspects of environmental stewardship that have been explored and addressed across the literature.

That being said, there are numerous existing frameworks for related concepts that can guide such an endeavor, including social-ecological systems, sustainable livelihoods, CBNRM, adaptive co-management, and environmental governance (Scoones 1998; Plummer and Fitzgibbon 2004; Tyler 2006; Ostrom 2009; Armitage *et al.* 2010). Specifically, these frameworks offer helpful approaches to considering the institutional elements and capacities that could facilitate stewardship initiatives. To enable varied groups of interdisciplinary scholars to conduct descriptive, evaluative, diagnostic, and prescriptive investigations on a topic of shared interest, sustainability science frameworks aim to bring together the fundamental components of a phenomenon. (McGinnis and Ostrom 2012).

Our capacity to methodically examine case studies, develop theory, and generate useful recommendations on topics like: How can local stewardship programs be planned or supported to be appropriate and successful in various contexts? What promotes or hinders environmental stewardship's effectiveness, is limited by the absence of an integrative framework for environmental stewardship. How can consumers, governments, and outside groups effectively support or encourage local stewardship initiatives? Thus, by offering such a thorough definition and integrative analytical framework to guide future research and enhance initiatives to promote environmental stewardship, this paper closes a gap in the literature. In order to accomplish this, we examine and reframe ideas from many empirical and theoretical works on environmental stewardship, management, and governance in order to identify and comprehend the key elements influencing stewardship results.

This paper X-rays the analytical framework and conceptual overview of environmental sustainability via stewardship.

Moving Towards an All-Inclusive Structure for Regional Environmental Management

The activities performed by people, organizations, or networks of actors with different goals and capacities to preserve, care for, or use the environment responsibly in order

to achieve social and/or environmental objectives in a variety of social-ecological situations are referred to as local environmental stewardship. According to this concept, the three "central elements" of stewardship actions—actors, motivations, and capacity—are impacted by the social-ecological context and come together to produce social and environmental consequences.

In order to analyze the components of this definition and provide an analytical framework for comprehending local environmental stewardship, we can pull from a variety of literature on environmental stewardship, management, conservation, and governance from various contexts.

Actors: People, Organizations, or Stewardship Networks

It cannot be assumed, as is sometimes the case, that local actors—individuals and communities—have the drive or ability to engage in stewardship activities. Stewardship is a phenomenon that is dependent on both internal and external reasons (such as ethics or incentives) and the ability to act (such as assets and institutions), which can be distinguished by individuals and organizations, as will be discussed below. Different situations will affect whether and how people, organizations, or networks of multi-stakeholder partners mobilize to do stewardship activities. Understanding the institutional, economic, and social barriers that various actors or groups face, as well as their characteristics (such as levels of resource dependence, socioeconomic status, race, gender, etc.), and how these relate to stewardship motivations, capacity, and actions, can therefore be beneficial (Henderson *et al.*, 2014). Additionally, stewardship is a dynamic phenomena that can evolve over time. Individual actors or groups of actors may acquire or lose the will and/or capacity to act as stewards if incentive structures, social norms, levels of resource reliance, or access. However, supporting governance and local resources by themselves are insufficient because they may be used to support initiatives that either strengthen or weaken stewardship. In fisheries, for instance, more sophisticated or creative technology (physical capital) may have two opposing effects: either it leads to overfishing (e.g., through more efficient gears) or it promotes more sustainable resource harvesting (e.g., through gears that reduce by-catch) (Finkbeiner *et al.*, 2017). According to Allison and Ellis (2001) and Torell *et al.* (2010), access to more financial resources may also be utilized to intensify fishing efforts or create alternative livelihoods that would lessen the strain on resources, sources and right change.

Furthermore, actors do not necessarily stew and resources just because they have capacity and agency. People and organizations having the capacity to do so must also be inspired to take stewardship measures, as will be covered below.

Motivators: The Justification and Will to Be Stewards

In summary, both internal and external incentives can supply willpower (i.e., vigor and perseverance), impact decisions, and guide the activities taken by stewards. The aid in defining the "of what?", "why?" and "for what or whom?" of stewardship as well as the steward's responsibilities, duties, and obligations. Stewardship behaviors are generally encouraged by a complex combination of extrinsic and internal motivations (Tabernero and Hernandez 2011; Asah *et al.*, 2014; Krasny *et al.*, 2014). However, some motivational styles may be more powerful than others. Asah and Blahna (2012) and Asah *et al.*, (2014), for instance, demonstrate how social and personal incentives are more reliable indicators of people's involvement in volunteer urban stewardship activities than environmental ones.

Additionally, when it comes to encouraging environmental action, intrinsic motivation may be more resilient than extrinsic ones (Ryan *et al.*, 2003; Cecere *et al.*, 2014, Cetas and Yasue 2017). When extrinsic incentives—such as financial rewards for stewardship or ecosystem services—are used in situations where there are already significant intrinsic incentives for stewardship, motivational crowding out may result (Rode *et al.* 2015, Sorice and Donlan 2015). Therefore, it's critical to comprehend the variety and potency of the various incentives that actors may have for practicing environmental stewardship in various circumstances.

Stewardship Activities: Preservation, Maintenance, or Long-Term Use

Some activities that are referred to as environmental stewardship function indirectly, even though our focus here is on direct stewardship acts. Among these stewardship-supporting activities are systems of rewards and punishments (Hauzer *et al.*, 2013), scientific or participatory monitoring and research (Shirk *et al.* 2012; Silva and Krasny 2016), environmental governance or policy reforms (Gel-cich *et al.*, 2010), network building activities (Alexander *et al.*, 2015; Blythe *et al.*, 2017), transmission of traditional ecological knowledge (Bussey *et al.*, 2016), and environmental education of resource users or youth (Stem *et al.*, 2008; Tidball and Krasny 2011).

These kinds of activities are essential to local stewardship, but they don't improve the environment on their own. The idea is that by increasing capacity and motivating people, these activities can indirectly support and facilitate direct actions by actors to preserve, restore, or use the environment sustainably. Local groups can carry out stewardship-supporting initiatives, or as will be addressed later, outside organizations can start them.

The Context of Social-Ecological Stewardship

Stewardship can be effectively discouraged by negative views of governance and decision-making, which can result in resistance to conservation or management (Gelcich and O'Keeffe 2016). Therefore, it can be useful to know how well stewardship practices and the decision-making process fit within the local ecological and social environment (Wilson 2006; Epstein *et al.*, 2015).

The Results of Taking Charge

If stewardship is not yielding positive ecological and societal results, it is pointless. One of the main reasons to practice stewardship may be environmental goals, such as enhancing the sustainability of resources, repairing damaged habitats, reviving animals, boosting fish populations, or protecting a wilderness. According to Donatuto *et al.* (2014), Biedenweg *et al.* (2016), Bre-slow *et al.* (2016), Kaplan-Hallam and Bennett (2017), and others, these environmental goals are frequently closely tied to or correlated with intended societal outcomes, which may be social, cultural, economic, health, physical, or governance-related.

Process issues, such as how stewardship choices are made and the responsibilities that various players play in stewarding the property, are also included in social aims. Bennett and Dearden 2014; Jupiter *et al.* 2014). Communities and local resource users may concurrently pursue ecological and social goals (Kittinger *et al.* 2016).

Therefore, an examination of the results of environmental stewardship should aim to comprehend the ways in which stewardship impacts ecological and societal components, as well as if the results align with the intended goals.

Since stewardship takes place in intricate social-ecological systems, planning processes for stewardship as well as monitoring and evaluation frameworks must pay attention to feedbacks, synergies, and trade-offs between social and ecological considerations (Chan *et al.* 2006; Kareiva *et al.* 2007; Oteros-Rozas *et al.* 2013). In order to fully comprehend the impact of environmental stewardship, it is necessary to investigate the following additional factors: (a) the intended and unintended consequences of stewardship actions (Larrosa *et al.* 2016); (b) potential benefits that occur outside the scope of environmental stewardship schemes (Courtney *et al.* 2013); (c) the allocation of costs and benefits of stewardship initiatives among various groups (Pascual *et al.* 2014); and (d) the effects of initiatives across spatial and temporal scales, as well as for the present and future generations (Chan and Satterfield 2013).

Gaining insight into how well results align with goals and yield additional (positive or negative) results can help assess and modify local stewardship strategies, compile lessons learned, and enhance more general policies and initiatives aimed at enhancing stewardship. Furthermore, to prove the validity of local stewardship initiatives, stewardship may need to provide observably beneficial results.

A Key Concept and Framework for Analysis in Environmental Stewardship

All things considered, we combine these diverse components into an integrated conceptual framework for environmental stewardship to offer a framework for analysis, a shared vocabulary to encourage additional involvement, and a roadmap for initiatives meant to strategically advance environmental stewardship. The following is how the various components of the framework interact together: The collection of methods, practices, behaviors, and technologies used to preserve, repair, or use the environment sustainably is known as stewardship actions. Stewardship activities are initiated and carried out by individuals, organizations, or networks of actors; the justifications, moral obligations, and willpower for implementing stewardship tasks are determined by both internal and external reasons; The ability of local actors to carry out stewardship activities is influenced by capacity, which is established by both local resources and larger governance; In addition to determining what actions will be appropriate and/or effective, broader social and ecological contextual factors, such as the speed and complexity of change, can also support or undermine stewardship capacity. These factors then combine to either enable or undermine actions and to produce social and ecological outcomes.

Promoting and Investigating Environmental Stewardship at the Local Level

After laying out a framework, we take a quick look at how various organizations could utilize it to direct interventions meant to encourage or support local stewardship and how it could be used in upcoming studies.

Stewardship Interventions and Leverage Points

Existing local environmental stewardship initiatives are frequently developed or supported by various entities, including governments, non-governmental organizations, the commercial sector, and individuals. In order to support or empower local stewardship potential and enhance outcomes through various "leverage points," these external entities advocate for and carry out particular policies, programs, and market mechanisms—what we refer to as "interventions" in

this context. The word "leverage points" describes the levers or locations.

There is continuous discussion over the overall suitability and efficacy of the several interventions and related leverage points, which takes up more room than we have here. Let's just say that every sustainability intervention should be viewed as a "work in progress" that necessitates ongoing observation, assessment, and modification.

To determine if these various interventions and leverage points are genuinely bolstering or hindering local stewardship efforts, their efficacy needs to be better understood and experimentally tested. The aforementioned conversation also emphasizes how crucial it is to comprehend the local context and to properly articulate and continuously update a "theory of change" for any externally advocated actions aimed at fostering stewardship.

Use of the Stewardship Framework in the Future

Future research that aims to: (a) descriptively evaluate the components of stewardship in case studies in various contexts; (b) direct decision-making and the design of environmental stewardship initiatives or interventions; (c) assess the efficacy of local initiatives or external interventions that seek to promote stewardship; and (d) thoroughly examine questions pertaining to particular aspects of stewardship in order to provide essential theoretical and practical insights may use the analytical framework we present here.

Descriptive Evaluations of Stewardship in Various Settings

Researchers, local stewardship groups, and/or outside organizations can better understand how the various components of stewardship are configured by conducting a descriptive analysis of localized environmental stewardship activities in various situations. For instance, it may be discovered that local communities are very successful at protecting their own resources, and as such, external organizations should acknowledge and support their efforts rather than undercutting them by imposing external conservation approaches (Jupiter, 2017). On the other hand, local community organizations might be highly motivated to engage in stewardship activities, but they might not have the necessary resources (Bennett et al. 2014; Barratt et al. 2015). To fully understand how the many components of stewardship work together, however, a thorough examination of stewardship in various situations can necessitate prolonged involvement. When it comes to traditional resource harvesters, various stewardship motivations are shaped by culture, customs, harvesting methods, and traditional knowledge. These motivations are expressed in group norms and rules of engagement and show up as interconnected management actions (Reo and Whyte 2011). Analyzing case studies can contribute to the development of a body of research on the subject, guide the investments of outside organizations interested in funding environmental stewardship in various places, or inform local discussions about how to (re)design local stewardship initiatives in other places.

Assessing the Success of External Interventions, Local Stewardship Programs, and Related Leverage Points

Monitoring and evaluation, either by scientists or through participatory processes (Driscoll et al. 2012; Silbernagel et al. 2015; Silva and Kransy 2016), and subsequent adaptation based on this knowledge (Armitage et al. 2010; Plummer et al. 2012) can increase the efficacy of local stewardship. As was previously said, there are numerous external

interventions that focus on various leverage points to encourage and support environmental stewardship in all areas of environmental policy. However, it is frequently unclear how effective these various policies, initiatives, or market mechanisms are at improving stewardship outcomes.

Monitoring and assessing the success of both external and local initiatives is therefore necessary, as is comprehending the effects of concentrating efforts on various leverage points (motivations, capacity, governance, etc.) in various situations. Each can expand on earlier studies that concentrate on particular components—such as actors, activities, local capacity, governance, or motivations—and combine these results to gain a deeper understanding of how various components affect stewardship outcomes. Evaluation results can be used to oversee stewardship interventions, review an organization's "Theory of change," and even re-formulate entire interventions if they prove ineffectual. They can also be used to direct strategic investments made by outside groups.

Additional investigation to produce theoretical or practical insights

Last but not least, the framework we have shown here may be used as a guide for more thorough examination to produce useful insights or focused theoretical investigations into the various components and their relationship to environmental stewardship in general. Practically speaking, it is necessary to gain a deeper understanding of the elements or combinations of elements that are either supporting or impeding environmental stewardship.

Our paradigm can facilitate the methodical examination of the ways in which contextual aspects, extrinsic and intrinsic motivations, and different components of local capacity or institutions impact the stewardship decisions of actors and their efficacy. By using this methodology across a suite of research case study locations, it would be possible to compare findings across sites and scale up ideas to create more broadly applicable insights or lessons learned that might direct future projects. Theoretically, many of the components of the stewardship framework require further investigation and testing of theories.

CONCLUSION

One method that people can participate in the promotion of sustainability is through environmental stewardship. By providing a definition and an integrative analytical framework that covers significant aspects of local environmental stewardship, this research fills a vacuum in the literature. The framework can be used in a variety of ecological and social settings. To encourage more involvement and contribute to the development of a more substantial corpus of scholarly research and theory on environmental stewardship, a common vocabulary for the components of stewardship is suggested. Important practical insights into how to create and promote more meaningful and successful environmental policies and programs will also be provided by this more thorough understanding and analytical framework for environmental stewardship. Our ultimate goal is to promote environmental stewardship as a useful and comprehensive idea for directing fruitful and long-lasting interactions with the environment.

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