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Protected Area Planning and Management: Supporting Local Stakeholder Participation with an Asset-Based, Biocultural Approach

Nicole M. Wengerd
Antioch University, New England

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The undersigned have examined the dissertation entitled: "Protected Area Planning and Management: Supporting Local Stakeholder Participation with an Asset-based, Biocultural Approach," presented by Nicole Wengerd, candidate for the degree of Doctor of Philosophy, and hereby certify that it is accepted*

Committee Chair: Beth Kaplin, Ph.D.
Core Faculty, Antioch University New England; University of Rwanda

Committee Member: Jean Kayira, Ph.D.
Core Faculty and Associate Director Doctoral Program in Environmental Studies, Antioch University New England

Committee Member: George Kajembe, Ph.D.
Professor of Forestry and Nature Conservation, Sokoine University of Agriculture

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*Signatures are on file with the Registrar's Office, Antioch University New England.

Protected Area Planning and Management: Supporting Local Stakeholder Participation

with an Asset-Based, Biocultural Approach

by

Nicole Wengerd

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"A tree has roots in the soil yet reaches to the sky" (Maathai, 2008, p. 293).

Abstract

Given the uncertainties and risks of anthropogenic climate change, the urgency to conserve biodiversity has renewed urgency that has prompted a number of international forums, treaties, and agencies to advocate for the establishment of new and/or expansion of existing protected areas. One of the most broadly recognized efforts to expand the global protected area network can be found in the Aichi Biodiversity Targets, outlined in the Convention on Biological Diversity Strategic Plan for 2011-2020, adopted in 2010 by 196 countries. Target 11 calls for the expansion of terrestrail and inland water areas, as well as coastal marine areas.

While the number of designated protected areas has more than doubled in less than 25 years, how to achieve the more qualitative elements of Aichi Biodiversity Target 11, specifically how to manage protected areas effectively and equitably has been a more challenging task. This research focuses on supporting quality local stakeholder participation in protected area planning and management as a method of achieving these elements. Using key components of a biocultural approach and the principles and methods of asset-based community development, the following articles examine if and how an approach that combines these concepts can be a useful tool in achieving Target 11's mandate of more effective and equitable PA management.

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Chapter 1: Introduction

Protected areas (PAs) are not a modern conception. Societies have long recognized the need to safeguard natural resources. For thousands of years areas were set aside for hunting, grazing, collecting resources and a host of cultural pursuits and activities (Infield & Mugisha, 2013). If we look back to civilizations of the distant past, the Persians, the Greeks, and Romans all played a significant role in the formal conception and maintenance of sacred landscapes and sanctuaries (Gillespie, 2007). Today a PA is defined as "a clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve the long term conservation of nature with associated ecosystem services and cultural values" (Dudley, 2008, p. 8). The traditional PA paradigm was predicated on the belief that biodiversity protection is best achieved by isolating ecosystems from human disturbance (Doolittle & Robbins, 2007). The approach promoted the ideals of a people-free landscape with a top-down, governmental-led, exclusionary focus (Brockington, Duffy, & Igoe, 2008; Niedziałkowski, Paavola, & Jędrzejewska, 2012). It wasn't until the 1970s-1980s that a movement to decentralize control and shift to a more participatory, human-centered model of biodiversity conservation gained momentum.

This paradigm shift emphasized cooperation among stakeholders and viewed local communities not as passive recipients of "top-down guidelines, directives, and prohibitions," but rather as active partners (Niedziałkowski et al., 2012, p. 3). This growing trend challenged the notion that enforcement is the cornerstone for the success of conservation in PAs (Bruner, Gullison, Rice, & Fonseca, 2001; Locke & Dearden, 2005), building recognition that local communities are more likely to commit to long-term conservation strategies when their

knowledge and opinions are incorporated into PA decision-making processes (Andrade &

Rhodes, 2012; Phillips, 2003; Pretty & Smith, 2004). Despite this recognition, limited scope and

level of participation by local stakeholders continues, creating ongoing challenges in the

management and co-management of PAs (Baral & Heinen, 2007; Barrett, Brandon, Gibson, &

Gjertsen, 2001; Pimbert & Pretty, 1997). More authentic participatory approaches for decision-

making and direct communication strategies between managers and local stakeholders are

required to improve communities' involvement in conservation (Ruiz-Mallen et al., 2014).

Central Research Question

The broad goal of this research was to understand how local stakeholder participation

could be supported in PA planning and management. Specifically, I sought to explore the

potential for an approach that combines principles and methods of asset-based community

development (ABCD) with central tenets of biocultural approaches to conservation to support

stakeholder participation. Combining these two components departs from traditional people-

centered approaches which neglect to recognize the interconnectedness between culture and

ecological systems, and views communities not primarily as threats, but as assets.

What sets the biocultural approach apart is its ability to highlight the interconnectedness

between socio-cultural and ecological systems, while stressing the importance of a locally

relevant cultural perspective (Sterling, Filardi, et al., 2017). Using this perspective as a guide,

this research used participatory mapping methods to identify biocultural resources to uncover a

culturally grounded understanding of what factors drive resource use. What primarily sets asset-

based community development (ABCD) apart from other participatory development practices is

its focus on the appreciation and utilization of community strengths and assets (Ware, 2013).

Kretzmann and McKnight (1993) define assets as the "gifts, skills and capacities" of

"individuals, associations and institutions" (p. 25). Utilizing the principles and methods of ABCD, this research used a host of participatory processes, including asset-mapping, community visioning, and stakeholder meeting to counter the consequences of the familiar 'deficit' or needs-based approach typically used in participatory conservation to identify human induced ecological threats and livelihood deficiencies (Campo & Wali, 2008).

The chapters that follow present the potential of each of the components separately (Chapter 2- Biocultural Approach, Chapter 3- Asset-Based Community Development) and then explore how the combined approach can support local stakeholder participation (Chapter 4). A short conclusion (Chapter 5) summarizes key arguments and the utility of the approach overall.

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Chapter 2: Participatory Biocultural Mapping as A Tool in Navigating Conservation Trade-Offs

Abstract

The desire to simultaneously address the well-being of local people while also mitigating the destruction of ecosystems resulted in a variety of "win-win" approaches, including popular approaches such as community-based conservation (CBC), and integrated conservation and development projects (ICDPs). More than 20 years of international conservation experience show that win-win outcomes are decidedly mixed and the need for trade-off thinking needs to be integrated into these approaches to make them more effective and sustainable. This article will assess whether a biocultural approach could provide relevant information to better understand and navigate trade-offs in protected area planning and management processes. Using these central tenets, this research uses participatory mapping methods to identify biocultural resources and uncover a culturally grounded understanding of what factors drive resource use. The results indicate that a biocultural approach can identify not only geographic boundaries and spatial biocultural resource use patterns, but also the cultural relevance of those resources, which could be used to inform trade-off discussions.

Introduction

Much of the world's biodiversity is found in countries inhabited by communities who are highly dependent on those natural resources for their livelihood (Sunderlin et al., 2005). The early protectionist paradigm of biodiversity conservation promoted the ideals of a people-free landscape, with a top-down, governmental-led, exclusionary focus (Brockington et al., 2008;

Niedziałkowski et al., 2012). However, the model generated sharp criticism, whether due to the

detrimental impacts for local people (Sunderlin et al., 2005; West, Igoe, & Brockington, 2006),

the environment (Nagendra, Pareeth, & Ghate, 2006) or social justice issues (García-Frapolli,

Ramos-Fernández, Galicia, & Serrano, 2009). This criticism fueled a movement to decentralize

control and shift international policy and practice to a more participatory, human-centered

model.

The desire to simultaneously address the well-being of local people while also mitigating

the destruction of ecosystems resulted in a variety of what were called "win-win" approaches,

including popular approaches such as community-based conservation (CBC), and integrated

conservation and development projects (ICDPs) (McShane et al., 2011). More than 20 years of

international conservation experience show that win-win outcomes are decidedly mixed

(Sunderland, Ehringhaus, & Campbell, 2007; Wells & McShane, 2004), and the need for trade-

off thinking needs to be integrated into these approaches to make them more effective and

sustainable (McShane et al., 2011).

The central idea of trade-off thinking is that when some things are gained, other things

are lost. One of the primary weaknesses of the win-win premise is that it implies that everyone

will "win" instead of acknowledging that there will be unequal impacts and trade-offs among

stakeholders (Chaigneau & Brown, 2016). McShane et al. (2011) stated that acknowledging

trade-offs means recognizing that hard choices are being faced. They emphasize "hard choices"

because amongst all of the possible arrangements and outcomes, even the best option involves

loss in some way, loss that is likely to be significant for at least some of those affected (McShane

et al., 2011). This is especially relevant for developing countries which are expected to endure

the bulk of development burdens in the coming years, but also host the most biodiversity-rich

areas of the planet (Beauchamp, Clements, & Milner-Gulland, 2018). To not explicitly acknowledge these hard choices leads to unrealized or dashed expectations, and ultimately unresolved conflict and disengagement from the process (Chaigneau & Brown, 2016; McShane et al., 2011). There is a need for methods and approaches that can more effectively communicate in terms of trade-offs as opposed to the reverting to the popular language of win–win (Carpenter et al., 2009; McShane et al., 2011). This research proposes the first step in achieving this is by having a better understanding of the value of the resources used by local stakeholders. One approach that could facilitate that understanding and navigating those trade-off discussions comes from the concept of Biocultural Diversity (BCD).

A term coined in the early 1990s, BCD is a way to express the concept of an "inextricable link" between cultural and biological diversity (Posey, 1988), and a principle through which the implications of this link could be explored (Maffi, 2005; Pilgrim & Pretty, 2010). Over the last twenty-five years, there has been a growing body of literature supporting the link between biological and cultural diversity (Agnoletti & Rotherham, 2015; Loh & Harmon, 2014; Maffi & Woodley, 2010; Mulder & Coppolillo, 2005; Posey, 2011; Pungetti, Oviedo, & Hooke, 2012; Stevens, 2014). The earliest evidence can be found in the global macro-geographic distribution of languages (used as a proxy for culture) and areas of high biodiversity (Chapin, 1992; Gorenflo, Romaine, Mittermeier, & Walker-Painemilla, 2012; Stepp et al., 2004). While these studies and others have established regional, national and global scale correlations between biological and cultural diversity, researchers are now engaging in detailed case studies at the local level to understand the nuanced links between environment, cultural values, beliefs, institutions, knowledge systems, practices and languages (Maffi & Woodley, 2010).

As the link between biological and cultural diversity evolves, researchers have been working to articulate how to define a biocultural approach to conservation and what components are critical for its successful implementation. In a pivotal work, Gavin et al. (2015) defined a biocultural approach to conservation as "conservation actions made in the service of sustaining the biophysical and sociocultural components of dynamic, interacting, and interdependent social-ecological systems" (p. 140). Another key contribution, Sterling, Filardi, et al. (2017) describe biocultural approaches as those that "explicitly start with and build on place-based cultural perspectives — encompassing values, knowledges, and needs — and recognize feedbacks between ecological state and human well-being" (p. 1800). One step further than simply defining the approach, scholars and practitioners alike have begun to deconstruct what elements are critical for the successful implementation of the approach.

Maffi and Dilts (2012) present some of the earliest attempts at synthesizing key components to a successful biocultural approach. They outline recurring factors that contribute to positive outcomes for bioculturally-oriented conservation, including things like maintaining and restoring the strength of local institutions, establishing genuine, equitable partnerships, and strengthening cultural identity. More recently, Gavin et al. (2015) work proposes eight principles of biocultural approaches to conservation based on a synthesis of prior work. Not surprisingly, there are some overlapping themes between Maffi and Dilts' (2012) best practices and the principles laid out by Gavin et al. (2015), including the recognition of intergenerational planning and institutions for long-term adaptive governance, the importance of partnership and relationships, and the recognition that the dynamic nature of culture shapes resource use and conservation.

The dynamic ways in which culture shapes resource use and conservation have recently received attention in the literature as researchers move from biocultural principles to indicators that capture both ecological and social factors, and the interconnection between them. Sterling, Filardi, et al. (2017) argue that these types of indicators can capture both the "ecological underpinnings of a cultural system and the cultural perspective of an ecological state" revealing useful feedbacks between communities and the environment (p. 1800). An example of such a social indicator is how the percentage of elders or parents transmitting traditional harvesting knowledge to their children could help explain why a harvested species has healthy populations (Sterling, Filardi, et al. (2017). Caillon, Cullman, Verschuuren, and Sterling (2017) emphasize that current indicators, such as the United Nations Sustainable Development Goals, include people-focused and ecological goals, but fail to integrate these domains.

Whether in definition, principles, or development of indicators, the common thread in the utility and application of biocultural approaches is the ability to highlight the interconnectedness between socio-cultural and ecological systems, while stressing the importance of a locally relevant cultural perspective. Using these central tenets, this research used participatory mapping methods to identify biocultural resources to uncover a culturally grounded understanding of what factors drive resource use. My objective was to assess whether this approach could provide relevant information to better understand and navigate trade-offs in the PA planning and management processes. The approach was guided by the early biocultural diversity literature of Maffi and Woodley (2010) and subsequent principles of Gavin et al. (2015), while aligning closely with much of what is stressed in the most recent work by Sterling, Filardi, et al. (2017) and Caillon et al. (2017). The methods were modeled after Gilmore and Young's (2012) participatory mapping research in Peru.

Methods

Site location. The field site where this approach was implemented is biologically diverse and carried a long history of conservation challenges. Located in the southern highlands of Tanzania, Magombera forest was declared a Forest Reserve under the custodianship of the Forest and Beekeeping Division in 1955 (Harrison & Laizer, 2007). Originally contiguous with the forest of the Udzungwa Mountains, which is part of the Eastern Arc Mountains, the area is internationally recognized for its rich biodiversity and as a hotspot for unique endemic species (Newmark, Leonard, Sariko, & Gamassa, 1993). Following a variety of events, including the construction of the TAZARA railroad, the establishment of two villages, and the expansion of Kilombero Sugar Company, the Forest Reserve status was deemed inadequate for long-term conservation (as cited in Marshall, 2008). Management authorities agreed that the southern area of Magombera forest should be degazetted and annexed into the adjacent Selous Game Reserve (as cited in Marshall, 2008). The de-gazettement of the Forest Reserve status took place in 1981; however, it was never formally annexed, leaving it without a protected status. Magombera forest remains threatened because of its unclear protected area status and lack of proper management (Harrison & Laizer, 2007), a point that has been re-emphasized by regional government in recent years, as management authorities and conservation advocates engage with the protection of the forest.

Data collection and analysis. Two Tanzanian field assistants were selected based on their previous research experience, English language abilities, and familiarity with the study site area. Both field assistants participated in a week-long training session, where I reviewed the theoretical underpinnings of the research as well as a detailed account of the proposed methods to be used. Following this, we all spent time revising the methods, based on their knowledge of

the communities (e.g. community meeting procedures) and reviewed, revised, and translated the surveys into Ki-Swahili. While I was present and available, the field assistants lead the data collection, alternating leading the sessions and recording responses. Following each day, my lead assistant and I would debrief and prepare for the following day, making any necessary adjustments.

Data were collected in Ki-Swahili in the four Magombera forest-adjacent villages in the Kilombero district: Magombera, Katurukila, Kanyenja, and Msolwa Station. These villages were identified because they collectively surround Magombera forest, meaning the impending protection status and governance structure deliberations play an important role in their access to and usage of the forest, and subsequently the conservation of Magombera forest biocultural resources. Prior to the data collection process, permission was sought from the appropriate local government representatives, which in this case included the village chairman, village executive and sometimes members of the village council. Following this, a community meeting was held with each village to review the objectives and logistics of the study as well as to recruit voluntary participants. The meeting was held outside in central location in each village and facilitated in Ki-Swahili primarily by my field assistants, although I did give a short introduction at the beginning and was available for questions throughout the meeting. All community members were invited to the meeting, which included the local government officials. The data collection was a six-step process, starting with a participatory biocultural mapping session to map resource use, then an asset mapping inventory, followed by a session to identify the connections (influences) between the resources and assets mapped, a community visioning workshop, surveys, and finally stakeholder meetings. In total, there were 94 participants that contributed through the end of the data collection process, 40 females (F) and 54 males (M) (Magombera

(F=10, M=15), Katurukila (F=8, M=12), Kanyenja (F=11, M=14), and Msolwa Station (F=11, M=13)). This chapter will focus exclusively on the biocultural mapping process and results; however, more detail can be found on the entire process in Chapter 4.

Participatory biocultural mapping. Generally known as counter-mapping, social mapping, or most recently participatory mapping, this method has roots in participant observation and collaborative research methodologies (Herlihy & Knapp, 2003). Participatory mapping is a method ''that recognizes the cognitive spatial and environmental knowledge of local peoples and transforms this into more conventional forms'' (Herlihy & Knapp, 2003, p. 306). The method has been used by indigenous and traditional communities throughout the world for a variety of reasons, including to set priorities for resource-management plans, establish boundaries of occupied land (both past and present, and to gather and guard traditional knowledge (as cited in Gilmore & Young, 2010). We use this method primarily to document biological and cultural resources used by the communities.

Following a community meeting, participants were separated by gender into two groups. The groups were separated by gender to ensure the women's voice was heard throughout the mapping process, a decision made from past research experience and cited as a potential problem if men and women were together by my field assistants. Each group was given a blank high-resolution Google Earth map of Magombera Forest and the surrounding area and asked to identify their village as well as any major geographic and hydrological features (rivers, ponds, mountains). Following this, each group was asked to identify, and map biocultural resources used from the forest. Once each group was content with their map, the men and women's maps were synthesized and put onto one map by the field assistants. All participants then had the chance to discuss and debate locations, names, symbols of mapped features and important sites

to ensure that the final map was as accurate as possible and agreed upon through what Gilmore and Young (2012) call negotiated consensus. In all, the biocultural mapping process took a full day, which is when a focus group discussion was facilitated with all participants of the mapping activity to understand and record how, when, and why each resource is used. The discussion details were recorded by hand by the field assistants in Ki-Swahili and later reviewed and translated into English.

This information was later compiled into a database, coded initially by resource. Using a deductive approach those coded resources were then grouped into larger, broader, resource categories. And finally, the data were organized by larger themes based on whether the resource was considered cultural, biological, or both.

Surveys. Following the community visioning process, surveys using Likert-type (Clason & Dormody, 1994) questions were administered to participants by my field assistants to illuminate possible trends and relationships in the perceptions of the data collection processes and utility in their application to PA planning and management. The survey specifically targeted information about stakeholder transparency, empowerment and local institutions building, themes identified in the literature. The ordinal data were analyzed using descriptive statistics, including mode, frequency, and proportions (Trochim & Donnelly, 2001).

Results. The results show that the participatory mapping process and focus group discussion can identify not only geographic boundaries and spatial biocultural resource patterns, but also the cultural relevance of those resources. The information provided valuable insight into how and why participants use different resources and how and why they would want to use them in the future.

Participatory Biocultural Mapping Results. There were two data sources collected during the participatory biocultural mapping sessions. One source came from the list of biocultural resources mapped, and the second was the accompanying usage details for each of the biocultural resources mapped, collected through focus group discussions. Maps created by each village showing the resource use, mapped on large printed Google Earth images, were then combined into one map to visually represent biocultural resource usage for all four villages. Through the discussions, the Kiswahili and English names of resources, the biological and cultural classification and use of each of the resources, and what time of year they are used were documented and compiled in a database.

Geographic boundaries. The mapping process revealed a detailed understanding of the geographical boundaries of resource usage within Magombera Forest. While the outer boundaries in the case of this study were already clearly outlined, demarcating those boundaries could play an essential role in setting borders in proposed conservation areas.

Spatial resource use patterns. Following the identification of local roads, rivers, and ponds on the Google Earth map, each community then clearly identified areas where biological and cultural resources are collected or used. Figure 2.1 presents an example of a map created during this exercise with one of the villages, although only a portion of the map has been reproduced here and the legend removed to protect the biocultural resources and rights of the participants. The identification of biologically and culturally significant sites is useful in identifying a comprehensive understanding of the resources being used as well as areas of high impact, for example areas of overlap in resource use among the four communities.
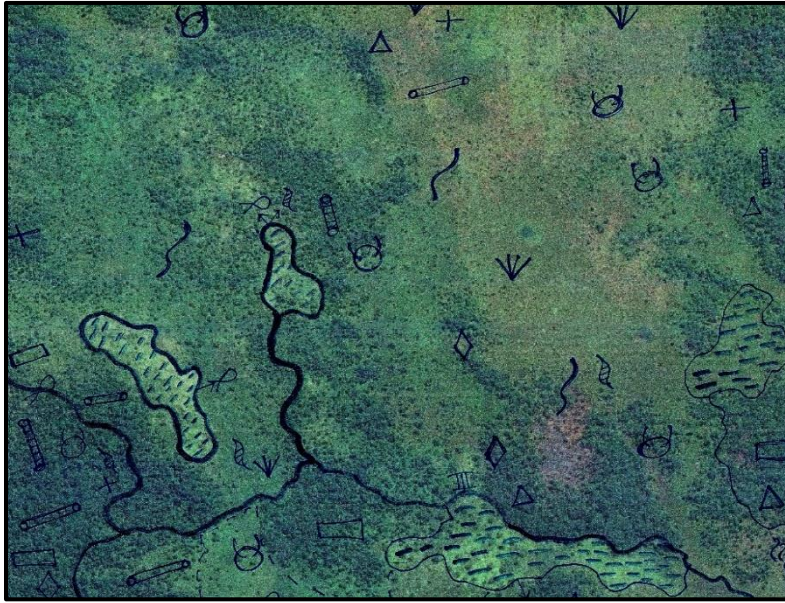
Figure 2.1. Example of a map with biocultural resources created by participants of a participatory mapping exercise in one village adjacent to Magombera Forest, Tanzania

Classification of resource usage. The discussion with participants following the mapping

of biocultural resources added context to how and why different resources are used. Information

from these discussions revealed that some resources were viewed distinctly as a necessity for

everyday living while others were associated with strong cultural norms and traditions. This

information went into the creation of a database of resource usage among the four communities

(Table 2.1).

Table 2.1

An example of resource use information gathered from the participatory biocultural mapping exercise in a village adjacent to Magombera Forest, Tanzania

Kiswahili Name	English Name	Classification	Use	Time Harvested
Mbao	Timber	Biological	Timber is harvested for the primary purpose of building material. The most common items mentioned included roofing and furniture. Additionally, timber is harvested for income.	year-round
Dawa za asili	Traditional Medicine	Cultural	There are many different traditional medicines found in the forest. Community members utilize roots, barks, shoots, and leaves. For example, the leaves from the Mnepa (*Pseudolachnostylis* sp) are grinded into a powder which is used to cure a wound from a fire.	year-round
Asali	Honey	Both	Biological: Harvested as food; in many households used as an alternative to sugar. Cultural: Harvested for its medicinal uses. For example, honey is being used if someone is burned by fire, they spread the honey around the wound and this helps to relieve the pain and cures the wound faster. Another common use is to treat a cough. The honey is taken orally to relieve coughing.	year-round between four villages; July-October most commonly

Willingness to negotiate future resource usage. In analyzing the list of biocultural resources and the preferred use for the future, there was a pattern in the willingness to restrict access and/or offer alternatives to resources that had limited cultural utility (Table 2.2) verses resources that played a primary role in cultural traditions (Table 2.3).

Table 2.2

Example of resources labeled as "primary biological use" resulting from the joint community vision exercise carried out in communities adjacent to Magombera Forest, Tanzania

Resource	Participant quotes representing the preferred or negotiated future use	Proposed alternatives presented by participants
Timber	"It is strictly no timber harvest since it has strong negative impact to the forest as it changes the habitat type from dense forest to grassland and can lead to desertification. The forest is very important as it gives good habitat to the animals."	The alternative of forest timber should be planting timber species outside the forest.
Pole	"No permission to cut poles as it is explained in timber. It kills immature small trees which are the good for ecological system of animals living in the forest."	The alternative to this, people should use bricks and bamboo in their buildings.

Table 2.3

Example of resources labeled as "primary cultural use" taken from the joint community vision exercise carried out in communities adjacent to Magombera Forest, Tanzania

Resource	Participant quotes representing the preferred or negotiated future use	Proposed alternatives presented by participants
Traditional medicine	"The medicine collection system should not have specific time but should have some procedures (see "proposed alternative"). This is because diseases can happen any time and they patients will need to be treated immediately. For instance, a person bitten by a snake needs fast rescue."	• There should be a free committee established by members from the government and traditional healer. These are the ones who will administer all traditional medicine issues. • The traditional healer should report to the committee before and after medicine collection. • The Village Game Scout (VGS) should accompany the traditional healers during medicine collection to restrict any destruction. • The tools allowed during medicine collection are machete and hoes only. • The committee should meet several times to discuss the progresses of the forest condition from medicine harvesting. • Medicines should be harvested or collected rotationally to avoid high destruction of the same area. • Medicinal trees from the forest should be taken and planted outside the forest to reduce frequencies of the forest entry.
Sacrifices	"The community members need to keep their believe in sacrifices. Sacrifices exist even before the coming of foreign religions. They help to solve several problems in the communities."	• The free committee through the village government will administer the permits. • Elders should be involved in administering the sacrifices as they know better the traditions and customs. • VGS will enforce by assessing if there are no environmental destruction. • The sacrifices will be done anytime and anywhere in the forest depending on believes of different tribes.

Participant Support for the Biocultural Mapping Process. The survey data revealed overwhelming support for the overall mapping process among the community participants. Figure 2.2 shows that 78% of participants strongly agreed with the statement, "I found the mapping of biological and cultural resources to be valuable," while 22% somewhat agreed.
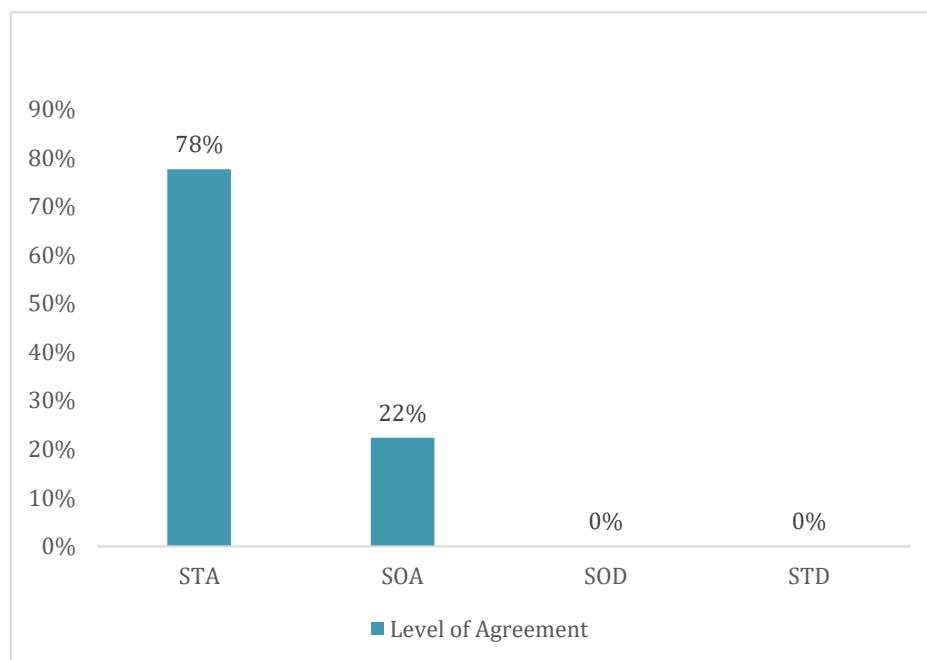
Figure 2.2: Participant survey results following the participatory mapping exercise showing responses to the statement: I found the mapping of biological and cultural resources to be valuable.
STA=Strongly Agree, SOA= Somewhat Agree, SOD= Somewhat Disagree, STD= Strongly Disagree.

Discussion

Participatory biocultural mapping can show the interconnectedness between socio-cultural and ecological systems, while uncovering a locally relevant, culturally grounded understanding of what factors drive resource use. The mapping process and focus group

discussions gave context to not only how resources are used, but why. When this critical insight was later used to guide discussions about future resource use, one important finding that emerged was the willingness to restrict access to and/or use alternative resources based on their cultural connections. Participants repeatedly offered suggestions for how to replace resources, such as timber, that was said to have little cultural value, while access to resources associated with cultural traditions and norms were consistently emphasized as important. For example, when talking about activities participants were willing to give up (sacrifice activities), one participant said, "The community members need to keep their believe in sacrifices. Sacrifices exist even before the coming of foreign religions. They help to solve several problems in the communities." Another key example of this is traditional medicine, where strong cultural norms were continually reemphasized. Anecdotally, participants communicated time and time again that the use of traditional medicine collected from the forest was consistently used before turning to modern medicine options, such as a clinic.

Just as Sterling, Filardi, et al. (2017) suggest that social indicators, such as the percentage of elders or parents transmitting traditional harvesting knowledge to their children, could help explain why a harvested species has healthy populations, I would argue that understanding the cultural values and norms associated with resource use could help explain a community's willingness to engage in and sustain conservation efforts, which may help overall effectiveness and ensure sustainability of PA management compliance. This is most relevant in navigating trade-offs between conservation goals and community well-being. Daw et al. (2015) explains that all communities have what they call "taboo" trade-offs, or activities that they are unwilling to sacrifice or give up. The most widely used tools for dealing with trade-offs are analytical approaches, such as cost and benefits or the quantification of ecosystem services values

(Galafassi et al., 2017). These tools weigh pros and cons of different courses of action; however, they tend to offer a limited appreciation for the range of social and cultural linkages between people and ecosystems, and they often disregard the distribution of benefits and costs (Lele & Srinivasan, 2013). Knowledge of which trade-offs hold stronger cultural values or norms could help to understand how those trade-offs may trigger conflicts, and could promote discussion, support deliberation, and potentially identify and reduce obstacles to management compliance in the face of hard choices (Daw et al., 2015).

Limitations and Conclusion

There are two important limitations and compromises inherent in the results of this work that should be noted. The most important is the location of the biocultural resources. The maps created were the product of negotiated consensus on the location of rivers, lakes, and resources, transferred from eight maps (four women's maps and four men's maps) to four maps (four combined men's and women's maps) to one map representing all resource use. Each community had time to debate and alter the combined men's and women's maps, but in negotiating the four agreed upon community maps to one map, compromises regarding resource location were inevitable. The correct locations of rivers and lakes were mapped by a local expert, then the approximate locations of the biocultural resources indicated by each of the village maps were placed on the map. For a more precise map of resource locations, in the future, researchers or participants could visit and fix the location of as many of the mapped resources as possible using hand-held GPS units (participatory GIS), as implemented by Gilmore and Young (2012); however, time and resources did not allow for this in this study.

The second methodological limitation is one that is inherent in any research where language translation is necessary. Because of the nature of the data collection site and process, the sessions were not recorded and transcribed. Two local field assistants were used, one to facilitate the activity with community members, and another to record the responses in Swahili. At the end of each day, each session was translated into English by the local field assistants and summarized. Despite the careful selection of field assistants and training, there will always be an inherent bias in how information is translated from the field and from one language to another. From a broader lens, conservation and the decision-making processes do not take place in a vacuum but are embedded within a pre-established power structure and social-political context (Brechin, Wilshusen, Fortwangler, & West, 2002; Young et al., 2013). While this research shows the utility of this approach to gain a locally relevant cultural perspective on resource use, how that perspective is applied is primarily dependent on the meaningful sharing of power. Gavin et al. (2015) emphasized that one of the key challenges in power-sharing comes when local priorities, goals, and institutions are in conflict with those at other spatial and institutional levels, driven most often by poor relations among stakeholders. The success of biocultural approaches, as with any approach, will depend on relationship building, based on trust, accountability, open communication, and deliberative processes that promote empowerment and local stakeholder capacity (Gavin et al., 2015).

Although these challenges exist, this shouldn't discount the value of the biocultural resource mapping approach and the information gained from this process. The participatory mapping process is an inclusive method that creates a powerful visual of resource use in a locally relevant context. The creation of a list of resources used based on the mapping and focus group discussions can identify cultural norms and values associated with those resources, powerful

information to have when navigating the path toward conservation tradeoffs. Linking this methodology with a biocultural approach makes a distinct effort to sustain the conservation of the ecological system while encompassing the values, knowledge and needs of the community. Recognizing these feedbacks can contribute to the start of critical and meaningful dialogue between multi-institutional stakeholders, necessary for the success of any conservation endeavor. Future research could look to identify quantifiable indicators of cultural value to resources. It would be interesting to see the connection between "cultural value" or the association between that value and the willingness to negotiate future usage.

Chapter 2 References

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Chapter 3: The Potential of Asset-Based Community Development to Support Equitable Local Stakeholder Participation in Protected Area Planning and Management

Abstract

Well documented over the last three and a half decades, there is strong consensus that, overall, protected areas can be effective at conserving biodiversity and should remain a central component of conservation strategies. This consensus is qualified, however, by the parallel agreement that the establishment of protected areas alone cannot safeguard biodiversity, but that protected areas also need to be managed *effectively and equitably* if they are going to meaningfully contribute to the mitigation of biodiversity loss. Using the recently proposed Equity Framework for assessing equity in protected area governance and management and the principles of good governance outlined by the IUCN as a guide, the objective of this paper is to explore how asset-based community development principles and methods can be applied to address the core issue of how best to support more equitable protected area planning and management practices. The findings indicated that an asset-based community development approach does reflect the criteria highlighted in the equity and good governance principles, with emphasis on legitimacy and voice, accountability, and fairness and rights.

Introduction

Compelled by the urgency of the current biodiversity crisis and mounting pressures from anthropogenic climate change, many have advocated for the expansion of the global protected area (PA) network, viewed as the last safe havens for large tracts of critical ecosystems

(Brandon, Redford, & Sanderson, 1998; Bruner et al., 2001; Juffe-Bignoli et al., 2014; Kramer, Schaik, & Johnson, 1997; Laurance et al., 2012; Oates, 1999; Rodrigues et al., 2004; Terborgh, 1999). One of the most broadly recognized efforts to do this can be found in the Aichi Biodiversity Targets, outlined in the Convention on *Biological Diversity* (CBD) Strategic Plan for 2011-2020, adopted in 2010 by 196 countries (Hermoso et al., 2017). Target 11 specifically mandates, "at least 17% of terrestrial and inland water areas and 10% of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well-connected systems of protected areas…" (CBD, 2011). Currently covering 15.4 percent of the planet's terrestrial and inland water areas, and 3.4 percent of the oceans, this renewed commitment to PA expansion has brought on deeper scrutiny of the effectiveness of PAs, both in their capacity to conserve biodiversity, as well as their ability to confront broader tensions with surrounding communities (Chape, Harrison, Spalding, & Lysenko, 2005; Coetzee, Gaston, & Chown, 2014; Mulder & Coppolillo, 2005; West et al., 2006; Wilshusen, Brechin, Fortwangler, & West, 2002).

Just as the demands on PA systems have grown, so too has our desire and ability to measure their effectiveness. Well documented over the last three and a half decades, there is strong consensus that, overall, PAs can be effective at conserving biodiversity and should remain a central component of conservation strategies (Bruner et al., 2001; Coetzee et al., 2014; Geldman et al., 2013; Joppa, Loarie, & Pimm, 2008; Rodrigues et al., 2004). This consensus is however qualified by the parallel agreement that the establishment of PAs alone cannot safeguard biodiversity, but that PAs also need to be managed *effectively and equitably* if they are going to meaningfully contribute to the mitigation of biodiversity loss (Andrade & Rhodes,

2012; Chape et al., 2005; Geldmann et al., 2015; Leverington, Costa, Pavese, Lisle, & Hockings, 2010; Pretty & Smith, 2004; Watson, Dudley, Segan, & Hockings, 2014; Wilshusen et al., 2002). This argument is not only echoed in international conservation targets, such as Target 11, but also in academic literature, where many scholars are calling for renewed scrutiny of management practices, suggesting that PAs are well justified and can be effective at conserving biodiversity if they are "well-managed" (Andam, Ferraro, Pfaff, Sanchez-Azofeifa, & Robalino, 2008; Clements & Milner-Gulland, 2015; Dudley et al., 2007; Geldmann et al., 2015; Joppa & Pfaff, 2010; Watson et al., 2014).

While there has been progress on assessing the extent to which PA management is achieving goals and objectives, or their *effectivenss* (Hockings, 2006), defining, assessing and tracking progress toward more *equitable* conservation has proven to be a more challenging task. While there have been many attempts to right the wrongs of the once popular exclusionary approach to biodiversity conservation, people-centered approaches have historically struggled to strike a balance between the benefits and burdens incurred in the planning and management processes (Schreckenberg, Franks, Martin, & Lang, 2016). Using the recently proposed Equity Framework for assessing equity in PA governance and management (Schreckenberg et al., 2016) and good governance princples (Borrini-Feyerabend et al., 2014) as a guide, this objective of this paper is to explore how asset-based community development (ABCD) principles and methods can be applied to address the core issue of how best to support equitable PA planning and management practices. The paper uses data from a case study conducted in rural Tanzania with four forest-adjacent villages to show the ABCD process, benefits, and limitations.

Literature Review

Outlining equity. Based on existing research, an Equity Framework for assessing equity in PA governance and management has been developed (UNEP-WCMC & IUCN, 2016). The framework comprises three key dimensions (recognition, procedure, and distribution) of equity and 16 principles embedded in a set of enabling conditions (Schreckenberg et al., 2016). Recognition can be described as the status afforded to different social and cultural values or identities, and to the social groups who hold them; procedure refers to how decisions are made and by whom; distribution is concerned with who realizes benefits or incurs costs (as cited in Dawson, Martin, & Danielsen, 2017). Zafra-Calvo et al. (2017) move this framework one step further, creating a proposed indicator system to facilitate an understanding of how the different dimensions of social equity are denied or recognized in PAs globally.

Much of what is detailed by Schreckenberg et al. (2016) and Zafra-Calvo et al. (2017) in the context of equity is echoed in the governance quality or "good governance" literature since the 1990s. Appendix E outlines the similarities starting with the United Nations Development Program (UNDP) list of five characteristics (legitimacy and voice, direction, performance, accountability, and fairness) of good governance in reference to development and human rights (UNDP, 1997). Universally recognized, the UNDP characteristics were adapted into the context of meeting PA objectives (Borrini-Feyerabend, Johnston, & Pansky, 2006; Dudley et al., 2007; Eagles, 2009; Graham, Amos, & Plumptre, 2003; Lockwood, 2010), followed by a number of variations over the years from scholars including Lockwood (2010), who incorporated not only the governance principles, but also performance outcomes, and Borrini-Feyerabend et al. (2014) who offer a more condensed version, representing the list of principles most widely accepted internationally in conservation circles and used by the International Union for Conservation of Nature (IUCN).

Of those evolving criteria, when looking to characterize equitable governance in PA management, the most crossover is found between legitimacy and voice, fairness and rights, and accountability (Appendix E). The IUCN reflected these same themes at the 2014 World Parks Congress, highlighting the criteria of legitimacy, voice, fairness and (procedural and substantive) rights as contributing to equitable governance, although saw the criteria of accountability as contributing primarily to governance effectiveness (Borrini-Feyerabend et al., 2014). The early human rights work through the United Nations (UN) also advocated that "legitimacy and voice" and "fairness" have the most universality and recognition (Graham et al., 2003), while trends throughout the PA good governance literature highlighted "participation" and "consensus-oriented decision-making", which are closely linked to legitimacy and voice (Borrini-Feyerabend & Hill, 2015; Eagles, 2009; Graham et al., 2003; Lockwood, 2010; UNDP, 1997).

Like the good governance principles, the participation "best practice" literature echoes many of the same themes such as: stakeholder participation, sharing information openly with clear objectives, satisfying multiple interest positions, and a philosophy that emphasizes empowerment, equity, trust and learning (Reed, 2008; Webler & Tuler, 2006) It isn't surprising to find similarities between governance and participation, because the two are so closely aligned. In general terms, governance refers to the *arrangements* for decision making and power sharing (Brechin et al., 2002). Participation is the *process* where individuals, groups, and organizations take an active role in the decision-making process (Wandersman, 1981; Wilcox, 1994). Participation may improve the quality of environmental decisions (Beierle, 2002; Sultana & Abeyasekera, 2008), but Reed (2008) notes that it's important to recognize that the quality of the decision is strongly dependent on the quality of the process that leads to it. Critical to the success of all of the criteria and principles outlined above are more effective approaches to local

stakeholder participation in decision making (Borrini-Feyerabend et al., 2013). One approach that has only rarely been been applied in the context of PA conservation is Asset-Based Community Development (ABCD) (Wali, Alvira, Tallman, Ravikumar, & Macedo, 2017).

Asset-based community development. According to the ABCD Institute at Northwestern University, ABCD can be defined as "…a strategy for sustainable community-driven development" (Northwestern, 2009). Green, Moore, and O'Brien (2006) define ABCD as "a powerful approach focused on discovering and mobilizing the resources that are already present in a community" (p. 12). Here I focus specifically on an ABCD *approach*, verses a strategy. The difference may seem insignificant, but the distinction can be important. Mathie and Cunningham (2003) propose that ABCD can be understood as an *approach*, as a set of methods for community mobilization, and as a *strategy* for community-based development. An ABCD *approach* to community-based development encompasses the principles (Table 2.1) and methods (Table 2.3) used to help a community to mobilize community assets and capacities. An ABCD *strategy* focuses beyond the mobilization of the community, and is concerned with how to link micro-assets to the macro environment (Mathie & Cunningham, 2003).

Much like the shift to participatory conservation approaches, in the early 1990s, the ABCD served as an important paradigm shift in the development community. The new approach moved interactions with communities from a deficiency, needs and problem-based orientation to an asset-based approach, built on a foundation that communities can drive the development process by identifying and mobilizing existing assets (Mathie & Cunningham, 2003). Building on the early conceptualizations of participatory action research (Chambers, 1983; Fals Borda & Rahman, 1991), McKnight and Kretzmann (1993) coined the term in the early 1990's after observing that most development initiatives relied heavily on external people and agencies, while

community assets were under recognized and under-utilized (Ware, 2013). McKnight and

Kretzmann (1993) also wrote the seminal work in the field, *Building Communities from the*

Inside Out. The book is written as a guide, defining ABCD, outlining its foundational principles

(See Table 3.2) and summarizing lessons learned by studying successful community-building

initiatives across the United States (Northwestern, 2009).

Table 3.1

Principles of ABCD as outlined by Kretzmann and McKnight (1993)

Principle	Description
Asset-based	A community development strategy that starts with what is present in the community, the capacities of its residents and workers—not with what is absent, or with what is problematic, or with what the community needs.
Internally Focused	Concentrates first on the agenda building and problem-solving capacities of local residents, local associations, and local institutions. Not meant to minimize the role of external forces, but rather intended to stress the importance of local definition, investment, creativity, hope and control.
Relationship Driven-	Striving to constantly build and rebuild the relationships between and among local residents, local associations, and local institutions.

The ABCD approach can be found in a wide range of fields, including: community

development (Mathie & Peters, 2014), poverty alleviation (Moser, 2006; Ssewamala, Sperber,

Zimmerman, & Karimli, 2010), mental health (Boyd, Hayes, Wilson, & Bearsley-Smith, 2008),

housing and environment (Chirisa, 2009), corporate social responsibility (Fisher, Geenen,

Jurcevic, McClintock, & Davis, 2009), indigenous development (Hipwell, 2009), community

based tourism (Dolezal & Burns, 2015), and wellbeing (Nel, 2015), among others. Because of

the wide reach of the approach, ABCD principles are frequently integrated with a

complementary concept or framework to create a unique approach. Dolezal and Burns (2015)

explored the potential relationship between ABCD and community-based tourism (CBT), with the goal of improving CBT's inconsistent record in delivering community development. This was the first study to apply ABCD to tourism for development and the authors suggest that ABCD can, and should, be applied to CBT (Dolezal & Burns, 2015). Similarly, Nel (2015) offers an integrated framework and model of sustainable livelihoods (SL) and the ABCD approach. Using a household survey in a rural village in South Africa, the integrated SL/ABCD framework was shown to be useful in understanding the strengths of a vulnerable community in order to plan and implement sustainable community development strategies (Nel, 2015).

In the context of conservation, the application of ABCD has been relatively scarce. One study that specifically applied ABCD to PA planning and management is the work of Campo and Wali (2008). These authors applied an asset-mapping activity to a buffer zone management issue in the Cordillera Azul National Park in north-central Peru and found that the exercises empowered communities, improved transparency among stakeholders, and overall, increased dialogue to inform park management and resource allocation. Campo and Wali (2008) noted that by focusing on social assets, this approach demonstrates the ways that positive, pre-existing cultural characteristics could be used to plan and guide the management of PAs. These findings were a strong catalyst for what inspired a closer look at the feasibility of applying an ABCD approach to improve local stakeholder participation.

Potential Role of an ABCD Approach: Principles and Methods

Applying ABCD principles. What sets ABCD apart from other participatory development practices is its focus on the appreciation and utilization of community strengths and assets (Ware, 2013). Kretzmann and McKnight (1993) define assets as the "gifts, skills and capacities" of "individuals, associations and institutions" (p. 25). As mentioned earlier, the focus

on assets verses needs represents a significant paradigm shift in the development arena. In a traditional needs-based approach, community development practitioners initiate a needs assessment that would identify the problems and weaknesses of the community. Campo and Wali (2008) noted that standard approaches to participatory conservation begin with needs-based assessments that identify human induced ecological threats and livelihood deficiencies. This information can be helpful in some areas; however, the focus on "threats' and 'needs' tends to reinforce perceptions of rural people as predatory, poor and dependent" (Campo & Wali, 2008, p. 25). While the rationale behind community-based conservation methods, such as integrated conservation and development projects (ICDPs), was a notable shift to a more human-centered approach, the needs-based development component means they may have also inherited the many consequences of the model. The primary consequence, amongst others, of this approach is the tendency for residents to look to others outside the community for help (Green & Haines, 2015; Kretzmann & McKnight, 1993). By relying on outside experts and professionals, communities become dependent on outside resources, lose control over the process (Green & Haines, 2015), and weaken the very resources that are necessary for sustainable solutions (Kretzmann & McKnight, 1993).

To avoid this, in addition to being asset-based, the ABCD approach strives to remain "internally focused", which means concentrating first on the capacities of the local residents, associations, and institutions to build an agenda and problem-solve (Green et al., 2006; Kretzmann & McKnight, 1993). The process should stress the importance of local knowledge and perspectives, looking for expertise inside the community first, before looking for expert knowledge and skills outside the community by using what is referred to in ABCD language as working from the inside out or an "inside out" emphasis (Butterfield & Abye, 2013; Kretzmann,

McKnight, & Puntenney, 2005). This is an established argument in the traditional ecological knowledge literature (Berkes, 2004; Gadgil, Olsson, Berkes, & Folke, 2003; Ruiz-Mallén & Corbera, 2013), and a growing theme in biodiversity conservation (Berkes & Henley, 1997; Salick, 2014). Kretzmann and McKnight (1993) are quick to point out that this is not an attempt to minimize the role of external forces, but rather intended to "stress the importance of local definition, investment, creativity, hope and control" (p. 9). Mathie and Peters' (2014) recent work reinforces that idea noting that by encouraging and recognizing local community initiative, external support could invest in rather than drive the process, building strategic linkages for more sustainable initiatives.

If ABCD is asset-based and internally focused, then it will also be, by necessity, relationship driven (Kretzmann & McKnight, 1993). While other community development literature has certainly focused on relationships, usually in the context of "community building" (Block, 2008), ABCD pays particular attention to the assets inherent in social relationships (Mathie & Cunningham, 2003). For example, assets can be tangible, such as land or tools, or intangible, such as human capacity and values (Nel, 2015). Nel (2015) identified well supplied school buildings and access to water and electricity as examples of tangible assets, whereas formal schooling and an active community spirituality as intangible assets. The ABCD approach highlights the intangible assets as one of the most critical resources a community can have because it provides access to other capital and assets, such as social capital (Mathie & Cunningham, 2005). Social capital is a term used to describe the value of social networks; it represents social organization, trust, cooperation and reinforces social cohesion, which promotes a sense that people can count on each other in times of need (Aiyer, Zimmerman, Morrel-Samuels, & Reischl, 2015). The term has come into more frequent use in conservation literature

in reference to Payments for Environmental Services (PES), which has been praised for its short-term results, but also criticized as having sustainability issues, because of how little social capital is generated during PES projects (García-Amado, Pérez, & García, 2013).

Said to be essential for long-term success of participatory processes (Reed, 2008), another form of social capital that the ABCD approach focuses on is society's institutions (Wells, 1998). In the broadest sense, institutions can be understood as the set of rules and constraints that governs human behavior (Parsons, 1985; Wells, 1998). Institutions, at any level (local, national, international), can be formal (such as laws or formal organizations) or informal (such as customs or norms of behavior)(Wells, 1998). Although ABCD tends to focus on local, formal institutions, many of the "associations" that are engaged in ABCD projects could be viewed as informal institutions.

In the context of biodiversity loss, institutions can play an important role in threat reduction and protection. Institutional capital can be defined as "the stock of rules and underlying human organizational skills which coordinate human behavior in its interaction with natural resources" (Wells, 1998, p. 816). The necessity of utilizing and rebuilding institutions, especially local institutions, to better protect biodiversity has been echoed throughout the conservation literature (Barrett et al., 2001; Berkes, 2004; Kajembe, Luoga, Kijazi, & Mwaipopo, 2003; Mulder & Coppolillo, 2005; Reed, 2008; Richards, Carter, & Sherlock, 2004). Ostrom's (1990) seminal work on common pool resources (CPR) is one of the earliest arguing for a management design based on "durable cooperative institutions" that are organized and governed by the resource users (p. 415). Wells (1998) explains that without effective local institutions, it will be difficult to develop "the variety of institutional capacity needed to match the diversity of biological systems" (p. 819). More recent work also highlights the effectiveness

of local, informal institutions in CPR management, suggesting the importance of joint decision making processes (Degefa, 2010) and mobilization of collective action (Yami, Vogl, & Hauser, 2011).

Methods

This study set out to explore how asset-based community development (ABCD) principles and methods can be applied to address the core issue of how best to support equitable PA planning and management practices. This article has already reviewed how the principles can be appied in the previous section and the following section will explore the potential role of ABCD methods.

Site location. The field site for this research was located in the biologically diverse a southern highlands of Tanzania, Magombera forest, which was declared a Forest Reserve under the custodianship of the Forest and Beekeeping Division in 1955 (Harrison & Laizer, 2007). Originally contiguous with the forest of the Udzungwa Mountains, which is part of the Eastern Arc Mountains, the area is internationally recognized for its rich biodiversity and as a hotspot for unique endemic species (Newmark et al., 1993). Following a variety of events, including the construction of the TAZARA railroad, the establishment of two villages, and the expansion of Kilombero Sugar Company, the Forest Reserve status was deemed inadequate for long-term conservation (as cited in Marshall, 2008). Management authorities agreed that the southern area of Magombera forest should be degazetted and annexed into the adjacent Selous Game Reserve (as cited in Marshall, 2008). The de-gazettement of the Forest Reserve status took place in 1981; however, it was never formally annexed, leaving it without a protected status. Magombera forest remains threatened because of its unclear protected area status and lack of proper management (Harrison & Laizer, 2007), a point that has been re-emphasized by regional government in recent

years, as management authorities and conservation advocates engage with the protection status of the forest.

Data collection and analysis. Prior to data collection, two Tanzanian field assistants with previous research experience, English language abilities, and familiarity with the study site were recruited. I held a week-long training session for the assistants in which I reviewed the theoretical underpinnings of the research as well as in depth discussion of the methods to be used. Following this, we collaboratively revised the methods, based on their knowledge of the communities (e.g. community meeting procedures) and reviewed, revised, and translated the surveys into Ki-Swahili. While I was present and available, the field assistants lead all of the data collection activities, alternating leading the sessions and recording responses. Following each day, my lead assistant and I would debrief and prepare for the following day, making any necessary adjustments.

Data were collected in Ki-Swahili in the four Magombera forest-adjacent villages in the Kilombero district: Magombera, Katurukila, Kanyenja, and Msolwa Station. These villages were identified because they collectively surround Magombera forest, meaning the impending protection status and governance structure deliberations play an important role in their access to and usage of the forest, and subsequently the conservation of Magombera forest resources. Prior to the data collection process, permission was sought from the appropriate local government representatives, which in this case included the village chairman, village executive and sometimes members of the village council. After permission was granted, a community meeting was held with each village to review the objectives and logistics of the study as well as to recruit voluntary participants. The meeting was held outside in central location in each village and facilitated in Ki-Swahili primarily by my field assistants, although I did give a short introduction

at the beginning and was available for questions throughout the meeting. All community members were invited to the meeting, which included the local government officials.

Prior to applying the ABCD methods, my field assistants verbally reviewed a consent form with community members participating in the study (Appendix A). Community participants were required to sign if they wanted to participate. Financial compensation was also negotiated with participants based on what was considered culturally appropriate. Following this, an inventory of natural resources used from Magombera forest by the communities was mapped and the context of the use of those resources was discussed. Although the ABCD method recognizes physical assets as component of the inventory process, in this case, the inventory is being treated as separate and distinct because it is identifying the resource, not an asset to contribute to its protection. See Chapter 2 for details on the collection process.

Applying ABCD methods. Accompanying the ABCD principles is a set of methods used to facilitate the process of identifying and mobilizing community assets and capacities (Mathie & Cunningham, 2003). As a guide for implementation, Kretzmann and McKnight (1993) created five steps to help communities mobilize around a common vision or plan (Table 3.2). The steps include: participatory asset-mapping, building relationships, mobilizing community assets, building a community vision and plan, and leveraging outside resources to support asset-based, locally defined development. Applying the methods Kretzmann and McKnight (1993) outline, data collection for this study utilizes a similar five-step process, starting with a participatory biocultural mapping session to map resource use, then an asset mapping inventory, followed by a session to identify the connections (influences) between the resources and assets mapped, a community visioning workshop, surveys, and finally stakeholder meetings (Table 3.2).

Table 3.2

ABCD methods proposed by Kretzmann and McKnight (1993, p. 345) and application for this study

Step	Kretzmann and McKnight (1993) Methods	Application in this study
1	Mapping completely the capacities and assets of individuals, associations, and local institutions	**Asset Mapping:** A participatory mapping process utilized the ABCD asset mapping inventory method. The session was facilitated in all communities to identify the capacities and assets of individuals, associations, and local institutions in the context of natural resource use.
2	Building relationships among local assets for mutually beneficial problem-solving within the community.	**Identifying Relationships:** Following the asset mapping process, each community drew connections between the biocultural resources mapped and local assets that influence their use.
3	Mobilizing the community's assets fully for economic development and information sharing purposes	**Community Visioning:** Understanding the relationships between the resources used and capacity/assets, a community vision was created with each community and then a joint community vision created from those. The vision included a plan for resource usage, monitoring, and management, as well as discussion on key partnering stakeholders, the role of the communities, how to improve communication and transparency.
4	Convening as broadly representative group as possible for the purposes of building a community vision and plan	
5	Leveraging activities, investments and resources from outside the community to support asset-based, locally defined development	**Engaging External Stakeholders:** The joint community vision was presented to both the regional and national outside stakeholders and potential partners. The presentation portion of this approach was designed to highlight unity of voice amongst the communities as well as their local capacity to participate in a joint-forest governance designation.

In total, there were 94 participants from the four communities that contributed in the data collection process, 40 females (F) and 54 males (M) (Magombera (F=10, M=15), Katurukila (F=8, M=12), Kanyenja (F=11, M=14), and Msolwa Station (F=11, M=13)). Regional and national stakeholder meetings were held to present the results of the ABCD data gathering process to managers and decision-makers; 10 representatives in total participated from four agencies, including: the Tanzania Forest Service, Kilombero District Council, Tanzania Wildlife Authority, Ministry of Natural Resources and Tourism (Wildlife Division). At a regional level, with the exception of the Ministry of National Resources and Tourism, these agencies represent the potential partners if Magombera forest was to be designated with a joint forest management governance structure.

Asset mapping. A half-day asset mapping inventory was facilitated by my two field assistants in each community. The asset mapping process was conducted in separate men and women's groups to ensure the voice of the women was heard. The session opened by defining what is considered an asset. The word "asset" is often associated with financial worth or capital, so to ensure our participants understood the full breadth and depth of the concept, local field assistants, whom had gone through a pre-training, defined and gave examples of each asset category (asset category definitions can be found in Appendix 1). Once the concept was clear, an inventory of assets was collected using large poster paper, broken down into the following categories: individuals, associations/organizations, and local institutions. At the end of the asset mapping inventory, the data were compiled into a database by myself and my lead field assistant. The database coded all the identified assets by category (individual, associations/organizations, local institution), then by village and gender.

Connections and community visioning. Once the community assets were identified, the next step was to understand how they are connected to the biocultural resources mapped previously. Equipped with a combined list (men and women) of biocultural resources and a combined list (men and women) of assets for each village, my field assistants guided an in-depth discussion on the connections between the two with both the mend and the women, together. Starting with each of the biocultural resources listed, participants were asked which assets influenced/controlled the use of that resource. Note that in some cases participants were asked to identify the top five assets if there seemed to be a broad response. Myself and my field assistants then grouped the listed assets based on the frequency in which they were identified, both the number of times and number of resources. After each village grouping was complete, general themes of influential assets were identified based on the cumulative responses for all four villages. The themes were then used to inform a community visioning process focused on joint biocultural resource management.

The community visioning process was the culmination and application of the asset mapping activities. The visioning involved all of the participants (men and women) and started by reviewing and identifying the most influential assets in terms of resource use in each category. Following this, in a focus group setting, participants used this information to outline a joint forest management community vision. There were four questions presented that were used to guide the discussion and focus on future community participation, highlighting the connection with resources, accountability, partnerships, and transparency. The questions were heavily grounded in the early good governance principles outlined earlier (Borrini-Feyerabend et al., 2014).

- How will you, meaning the individual village, manage the assets and who will hold the community accountable?

- In the case of a shared governance structure, which outside stakeholder would you want to partner with and why?

- What measures do you think would improve communication and transparency with an outside stakeholder/partner?

After each of the villages created a vision, two representatives from each village met for a two-day session to create one joint community vision based on information from the asset mapping process. A biocultural mapping process was also conducted during this project; results are presented elsewhere. Using a deductive approach, trends and patterns related to the utility and application of the participatory asset-based approach were identified. This joint vision was then presented orally to both regional and national stakeholders by two representatives from the two-day session in two separate meetings. Paper copies of the community vision were provided in Ki-Swahili to all who attended, which included the two representatives from each village, local government officials, and the outside stakeholders.

Stakeholder meetings. The stakeholder meetings were an effort to start the conversation about an asset-based, internally-focused governance structure and management plan. The meetings did this in two ways: by showing the unified engagement of the villages and by identifying their capacity to be part of the process. The first meeting was held with the regional stakeholders who represented the potential future partners with the community if a joint forest management governance structure was to be implemented as well as the representatives from each of the villages mentioned earlier. The second meeting was held with the corresponding national representatives from the equivalent offices and departments in Dar es Salaam, but only included the two representatives presenting the joint community vision. In both meetings I gave short welcome and introduction to the research process, followed by my field assistants

reviewing the agenda for the meeting before turning it over to the community representatives. Both meetings were facilitated in Ki-Swahili and attendees were compensated according to what was cultural appropriate for their time and engagement.

Surveys. Two surveys using Likert-type (Clason & Dormody, 1994) questions were administered in person by my field assistants to community participants as well as the stakeholders that attended the stakeholder meeting to illuminate possible trends and relationships in the participants' and stakeholders' perceptions of the data collection processes and the usefulness and application of the results. The community participant survey specifically targeted information about stakeholder transparency, empowerment and local institutions building, themes identified in the literature as possible areas of connection. The surveys for the outside stakeholders focused on their perceptions of the asset-based and biocultural mapping processes and whether it is useful for improving local stakeholder participation in PA planning and management. The ordinal data were analyzed using basic descriptive statistics, including mode, frequency, and proportions (Trochim & Donnelly, 2001).

Results

How the study is asset-based. The intention of the asset mapping activity was to identify capacities and assets relevant to resource use at the individual, association/organization, and local institutional levels. More specifically, the end goal of the asset-mapping process was to uncover who, at these multiple levels, was most influential when it came to resource usage. This information was later utilized in the community vision to identify key local players that should be included in the management plan. The communities collectively mapped 109 assets, ranging from individual carpenters to football clubs to local government. When we organized these assets in the context of resources the community uses, there were clear patterns within each group.

Table 3.3 outlines the assets in each category that were mentioned with the most frequency,

meaning named as important for the most number of resources. For further specification, Table

3.4 lists an example individual resource and the original list of influential assets.

Table 3.3

Assets prioritized as they related to resource use, separated by three levels the assets were collected (individual, association/organization, and local institution)

Individual	Association/Organization	Local Institutions
Witchdoctors	Association for witchdoctors	Family
Fisherman	Fisherman's group	Witches
Elders (related to sacrifice activities)		Tribes
Hunters		

Table 3.4

Example of an individual resource and the influential assets identified.

Kiswahili Name	English Name	Classification	Use	Influential assets starting with most influential (from asset mapping activity)	Time Harvested
Kuni	Fuelwood	Biological and Cultural	Primary use is for cooking (firewood), for selling or business, and some species used for medicine.	Family Local Brewers Witchdoctors Funeral associations Brick makers/mason Sacrifices Fisherman Palm oil makers	year-round

How the study is internally focused. The connections between the resources identified

and the assets influencing their use was a key component going into the community visioning.

The intention was to have a better understanding of the relationship between the resources the

communities use and who influences their use. Understanding this relationship, ideally, would

inform who would be involved in the planning and management processes. The community

visions created in this process offered a comprehensive outline of the following: which resources

the communities wished to use in the future, proposed alternatives to resources they didn't think

should be harvested in the future, procedures for restricted/monitored use to resources they see as

vital for survival, the roles of the community in monitoring and accountability, who they would

like to partner with in a joint forest management governance arrangement, and the suggested

roles of both the communities and the partnering organization. The major of observations from

those community vision documents include the participants willingness to negotiate usage and

utilizing influential assets in the management plan.

Influential assets and forest management plans. In the individual community visions,

there were direct connections between the influential assets listed and the management and

accountability of resource use. The most popular example of this was the idea to form new or use

an existing Village Environmental Committee (VEC) that would manage the forest usage and

protection. One vision suggested the VEC should be independent, through an election in the

village assembly and should be comprised of different village actors such as elders (mentioned

regarding activities that involved sacrifice), hunters, and others not attached with any particular

institution. Another suggested participant was a Village Game Scout (VGS) to be on the VEC to

be responsible for enforcement measures. The opinions of the VEC would be presented to the

village leader, who would then present that information to the village assembly. The participants believed this composition would bring transparency to the management process.

In the joint community vision, communities rely heavily on the VGS, and there is no mention of the VECs. It can be observed that when moving from the individual community visions to the joint community vision some of the details and depth is lost. For example, there was less connection and utilization of the assets outlined in the combined community vision. This could have been a product of the smaller amount of time spent (2 days) working on the plan or simply the nature of negotiating four plans down to one community vision.

How the study is relationship driven. The first stakeholder meeting held was comprised of the three potential stakeholders in a joint forest management structure: the Tanzania Forest Service (TFS), Selous Game Reserve (SGR), and the District Council. In the joint community vision, participants identified which partner they would like to work with and why. In this case the villages indicated that they would like to work with TFS. The comments from the community vision outlined three general themes I have categorized as: inclusiveness, accountability, and sustainability.

There were several comments in community vision that indicate being included in the decision making and management processes as an important reason for wanting to partner with TFS. For example, participants highlighted in the community visioning document that "TFS values the importance participatory management" and "involves the communities in decision making". There was also discussion about TFS including the needs of the communities with the conservation goals of the forest. For example, the community vision document says, "TFS will care about the communities" highlighting that in the past the SGR has traditionally not been sympathetic to human-animal conflict, like crop raiding.

Most of the discussion surrounding accountability focused on negative past interactions with the SGR or District Council, mostly surrounding the allocation of funds to the villages from fines. There was also an instance where a resident was clearing forest. The communities noted, ''We need TFS because we have been with SGR and District Council, very little they have done. They are accountable enough, for instance we informed them regarding encroachment of the forest, their efforts were very low. The existence of one guy continuing to degrade the forest reaching 800 acres is weakness, this shows that their corruption grounds.''

And lastly, the communities commented, at length, about how they believe TFS is better equipped to create a sustainable partnership. For example, the community vision document talks about allowing students to learn and train in the forest and how to conserve for future generations. Participants also stressed teaching sustainable use of resources and how TFS would be better at balancing how to benefit the communities without destroying the forest.

Perceptions of process from community participants. The survey data revealed overwhelming support for the process among the community participants. Of the eighteen Likert scale statements, more than seventy percent of the participants strongly agreed with half of the statements, supporting the process (Table 3.5). Most relevant to stakeholder participation, over seventy percent of participants said that this process better prepares their community to participate in PA planning and management and values their ideas and inputs. Similarly, over seventy percent also strongly agreed that the process provided valuable information that could contributed to more effective participatory forest management. And lastly, over seventy percent of participants recommended using this model with future communities. One participant remarked, "The future community should use this vision for the betterment of forest and their

livelihood. The village government should stay together with local communities and discuss again this process".

In probing those that disagreed with statements, participants acknowledged that this process alone cannot guarantee involvement and decision-making power in the PA planning and management process, but that the partnering agency plays a large part in supporting the communities' involvement. As one participant put it, "Our expected partner in forest management should keep our agreement (community vision) and obey it. If he will not obey, then people will no longer participate in conversation". Not knowing who that partner will be yet led these participants to disagree with those statements.

Table 3.5

Community participant survey frequency table

Statements	Strongly Agree	Somewhat Agree	Somewhat Disagree	Strongly Disagree	Total (n=94)
1a. I found the mapping of biological and cultural resources to be valuable.	78%	22%	0%	0%	100%
1b. I found the mapping of my community assets to be valuable.	64%	35%	1%	0%	100%
1c. I better understand the resources in my community and how they are governed.	80%	20%	0%	0%	100%
1d. This process helps me better understand the interconnections between my community and stakeholders involved in the protection of Magombera Forest.	81%	19%	0%	0%	100%
1e. This process increases my awareness of the importance of biocultural	74%	26%	0%	0%	100%

resource management in Magombera Forest.					
1f. This process better prepares my community to participate in PA planning and management.	73%	26%	0%	1%	100%
2a. This process allows me to be involved in decisions about Magombera Forest that affect me.	63%	35%	0%	2%	100%
2b. This process values my ideas and inputs.	72%	28%	0%	0%	100%
2c. This process allows me to contribute to the vision and future of my community.	72%	28%	0%	0%	100%
2d. This process motivates me to take a more active role in the management of Magombera Forest.	67%	33%	0%	0%	100%
3a. This process will improve communication between my community and stakeholders involved in the protection of Magombera Forest.	69%	28%	2%	1%	100%
3b. This process will improve transparency between my community and stakeholders involved in the protection of Magombera Forest.	62%	34%	3%	1%	100%
4a. This process is a useful tool in mobilizing local institutions.	64%	34%	1%	1%	100%
4b. This process supports capacity building of local institutions.	55%	40%	3%	1%	100%
4c. This process helps me to understand the function of local institutions in maintaining sustainable use of biocultural resources.	65%	35%	0%	0%	100%
5a. This process provided valuable information that can be used to inform the Magombera Forest governance planning process.	68%	31%	1%	0%	100%

5b. This process provided valuable information that could contribute to more effective participatory forest management.	71%	29%	0%	0%	100%
5c. I would recommend using this model with future communities.	71%	29%	0%	0%	100%

The stakeholder surveys indicate strong support for the process while also offering valuable feedback to improve the process (Table 3.6). Components that the outside stakeholders found most valuable include the ability to improve communication and transparency between stakeholders, and promotion of full (better quality) participation from communities to promote more effective PA management. Most of the stakeholders would recommend using the approach in future communities; however, there was one reoccurring recommendation in how to improve the process- a resource assessment or inventory. There was widespread agreement that having baseline data on the status of resources in the forest, as well as trends of decline, and details on the cause of destruction, would improve the community visioning process. While there was wide-spread agreement on the utility of this added data, it should be noted the time and cost of adding this component to this particular research study was not feasible.

Table 3.6

Representative outside stakeholder survey responses

Statements	Percent in agreement (strongly and somewhat)	Representative Comments from Stakeholders
1a. This process can be used to improve communication between local stakeholders and my organization/department.	100% n=9	"A common understanding on conservation issue. It helps to know that conservation is for all stakeholders at grassroot and my department." "Because of the full participation of the communities on managing the resources." "All stakeholders will be well informed about needs and problems of communities and in which way to solve the problems." "This method gives the community chance to participate in resource management."
1b. This process can be used to improve transparency between local stakeholders and my organization/department.	100% n=8	"This process of involving adjacent communities it makes things clear to both parties, who is doing what, my department and local level." "By better cooperation between the stakeholders with my department everything done will be seen by themselves." "Through communication it will be easier to share information among stakeholders and therefore the two actors involved become aware of what is going on the other side."
2a. As an outside stakeholder, I view this as a useful process.	100% n=9	"Because direct conversation with the stakeholders will lead me to know what they want and what they don't (their problems) and this will help me to know what to do."

"This helps in achieving PA Management and Planning because when there is a participation of local community in planning and management it will aid in reducing negative attitudes of local community towards PA Management."

"There was no stock assessment that was one. There is important to know the gap of resources and who cause the gap (destruction of species). There you can start with vision. The one who cause the destruction is community or the government?"

"It is a good process, but some more information need to be added such as drivers for changes of resource based (ex. What is the trend of the resource. Previous situation of forest resources map- just general, not much details)."

"Accountability intervention at the village level is not well informed. Transparency emphasis brings/leads to good governance."

2b. This process provided valuable information that can be used to inform the forest governance planning process.	86% n=6	"By involving the communities can avail information about the policies and legislation which allow this."
		"Informing the forest governance planning process on what is present in the forest (resources) and stakeholders in place."
		"The model hasn't been founded in the actual dynamics of forest governance planning process at hand."
2c. This process provided valuable information that could contribute to more effective community forest management.	100% n=9	"Through participatory decision making among stakeholders."
		"This helps in achieving PA Management and Planning because when there is a participation of local community in planning and management it will aid in

reducing negative attitudes of local community towards PA Management."

"Identifying the stakeholders within the villages as well as how they accept the concept of community forest management."

"By involvement of local community joint management."

"Through encouraging PFM (participatory forest management)."

2d. In the case of participatory forest management structures, this process could increase the *quality* of local stakeholder participation.	100% n=9	"Because there is fully participation of community from forest resource assessment to the utilization." "Because it will raise institutional capacity/capacity building among communities." "By giving the community more empowerment." "By inviting the community on participation in forest management."
2e. I would recommend using this model with future communities.	100% n=9	"It involves the element of community participation. However, it needs some more improvement such as inclusion previous information on species richness status. They should be included on mapping process." "This is because there was not assessment of resource, because we don't know what is in the forest. Therefore, part of model is useful but another part is not useful." "It will help in gaining support from locals in PA Management because it will create a sense of ownership."

"It is a good model as it consider a community being
part of beneficiaries of resource management."

Discussion

These findings, and the broader ABCD approach, reflect an approach that emphasizes the

criteria highlighted in the equity and good governance principles. While equity in conservation is

often described as a moral argument, there is also growing acknowledgement that more equitable

conservation practices, such as the empowerment of local people and equitable sharing of

benefits, contribute to more effective conservation outcomes (Oldekop, Holmes, Harris, &

Evans, 2016). Ignoring the rights and needs of communities can drive threats to PA conservation

(Schreckenberg et al., 2016), fuel conflict (Lele, Wilshusen, Brockington, Seidler, & Bawa,

2010), and create higher PA management costs (Barnes, 2015; Pascual et al., 2014).

Connections between being *asset-based* and good governance principles. The ABCD

approach gives voice and ownership of the process, and empowers local stakeholders to engage,

all things that have been cited as important factors in the good governance of PAs. Some of the

comments from the community participant survey speak to this:

"I'm happy- as like we came from dark/not knowing anything- and now we are opened-

we know our right and give our voice."

"Good practice and went on a very independent, community members were free to give

their views/opinions."

"It opened up our mind- it gives voice and sense of ownership."

"Will help very much, the generation because brings real participation, it shows good management plan for the forest."

"It is a better process by sitting together and discuss things. It challenged us to know our rights in participating forest management."

From an applied lens, this approach could allow for more targeted management strategies for resources that are more threatened than others. For example, "witchdoctors" were listed as influential assets in 70% of the resources in the database. The asset-based nature process can allow information to emerge that is not typically included in PA management considerations, such as the identification of "witchdoctors", which could lead to new paths of inquiry for understanding influence of resource use and could be valuable information for management of specific resources.

These are important findings because one of the primary consequences of the familiar 'deficit' or needs-based approach is that a community can feel disempowered and dependent; people can become passive recipients of services rather than active agents in their lives (Foot & Hopkins, 2010). The ABCD approach fosters empowerment and ownership of the process (Cunningham & Mathie, 2002), both fundamental to participation processes in development (Richards et al., 2004) and conservation (Andrade & Rhodes, 2012). There have been a number of studies published in recent years exemplifying the empowering outcomes of the ABCD method (Campo & Wali, 2008; Hipwell, 2009; Nel, 2015; Ssewamala et al., 2010). Alcorn et

al.'s (2006) work in Bolivia is one example, expressing that the data collected empowered the communities by making them aware of the ways their individual and collective capacities represent important tools for negotiating and sustainability. A more recent study conducted in Ethiopia reports community members' ability to "seize" opportunity and a strengthened capacity to organize and create linkages (Mathie & Peters, 2014). Campo and Wali's (2008) work on buffer zone management issues in north-central Peru used the asset-mapping process and noted that the asset-based participatory aspect of their project fostered an environment where local residents were "armed with knowledge about their capacities and visions for the future", and empowered the communities by making them aware of the ways in which their individual and collective capacities represent key tools for negotiating and achieving sustain futures (p. 33).

 Connections between being *internally focused* and good governance principles. An equitable process facilitates participation in the early stages of decision making so that the decisions are meaningful and common ground between local stakeholders and conservation actions and plans can be found (as cited in Zafra-Calvo et al., 2017). Not only does the ABCD approach advocate for early participation, it concentrates first on the capacities of local residents, local associations and local institutions. Kretzmann and McKnight (1993) say that this isn't meant to minimize the role of external forces, but rather the intention is to stress the importance of local meaning, investment, hope and control. This internal focus prepares local stakeholders not only for the importance of their voice and vision, but also that trade-offs are inherent to the decision-making process. The community visioning deliberations provided a space where communities could safely debate how and why they wanted to use each resource, which in turn provides valuable information about "negotiable" and "non-negotiable" resources in the eyes of the communities. For example, traditional medicine is a resource that, despite previous efforts to

provide alternative options (e.g. clinics) is tied to strong cultural traditions and beliefs. In PA

conservation management trade-offs are inevitable, making this information critical for

sustainable, quality decisions.

   Connections between being *relationship driven* and good governance principles.

ABCD pays particular attention to the assets inherent in social relationships (Mathie &

Cunningham, 2003). Everything about this approach is intended to build relationships, starting

with the community visioning process, where participants are asked to articulate who they would

want to work with in a joint forest management governance structure and why. The themes that

arose highlight what is important in a meaningful relationship with an outside partner:

inclusiveness, accountability, and sustainability. The community vision also specifically

addressed how to improve transparency with an outside partner. The communities advocated for

more involvement of the village government, improved representation at meeting where

decisions and activity involving decisions about the forest are made, and improved information

dissemination to village representatives. And lastly, the vision also guided communities through

the process of assigning roles and responsibilities for both the communities and the outside

stakeholder.

   Limitations and constraints of ABCD approach. The three limitations or challenges of

this study fit into three broad categories: participation inclusiveness, education, and power. First,

while in principle ABCD is an inclusive process, in practice this can be more challenging to

achieve, especially in communities where social hierarchy excludes or marginalizes some groups

(Mathie & Cunningham, 2003). It can be easy to assume that communities are made up of

homogeneous groups of people with common struggles and goals; however, it's been well

documented that communities tend to be divided by gender, generation, and economics (Barrett

et al., 2001). In this study, for example, my field assistants anticipated that traditional gender norms may make it more difficult for women to engage. By holding certain activities with men and women separate, we could ensure that the women's perspective and voice were included in the data collection process.

The second major constraint is formal education. This limitation is specifically in reference to stakeholder education. Depending on the application of the model, simply providing stakeholders with the opportunity to participate in decision-making may not be enough for them to actually participate. Reed (2008) pointed out that when decisions are highly technical, it may be necessary to educate participants, so they are able to develop the knowledge and confidence that is necessary for them to meaningfully engage in the process. For example, in this study regional stakeholders pointed out that some of the community proposed management strategies for particular resources were in conflict with national regulations, suggesting a limitation of the study that could have been overcome through an education component focused on the national regulations.

Power is another limitation in the ABCD approach. Stakeholder participation and decision-making processes do not take place in a vacuum but are embedded in a pre-established power structure (Young et al., 2013). The most immediate and obvious constraint is that participation may represent or reproduce the existing privileges and group dynamics, discouraging the perspectives of the marginalized (Cooke & Kothari, 2001). This can include macro-structures of inequality, such as gender, ethnicity, and class, as well as local power structures, which can be difficult to identify, being heavily ingrained in daily life (Cooke & Kothari, 2001). Klein, McKinnon, Wright, Possingham, and Halpern (2015) also suggest that conservation success probably peaks at a point that matches the power structure of a society. In

other words, if decisions are often made by, or favor, a single gender, conservation success would peak at the point that reflect this power structure (Klein et al., 2015). In this case, again, gender power dynamics was something we tried to account for by separating men and women in some of the data collection activities. In addition, the power dynamic between the communities and outside stakeholders became apparent in discussions about potential partners in a joint forest management structure.

Conclusion

The study presented here explored the complex topic of equitability in management of PAs and explored the potential of the ABCD approach to improve the quality of participation. The unique asset-based principles of the ABCD approach, although applied to a wide range of fields, has seen limited use in conservation initiatives. My own speculation as to why this might be, especially in developing countries, is because of the continued heavy focus on needs-based development strategies still being implemented (Sachs, 2006). I believe ABCD could be a useful lens for recognizing and mobilizing resources and capacities of communities previously overlooked in conservation planning. Recognizing and mobilizing these assets gives people the capacity to act (Nel, 2015), which is the central tenet of ABCD, that community development will be more effective and sustainable when it's predicated on the identification and utilization of community strengths and assets (Cunningham & Mathie, 2002; Green & Haines, 2015; Kretzmann & McKnight, 1993). The "internal focus" and "relationship driven" principles of ABCD also contribute to building and strengthening social capital within communities, creating more *sustainable* linkages, whether in development or conservation. In addition, the methods of the ABCD approach have been celebrated as a process facilitating empowerment and ownership. These celebrations, of course, should be weigh against the limitations of the process in areas with

marginalized groups, limited education on the topic of concern, and contentious power

dynamics. Further research would be helpful to investigate the assets identified as influential to

see how they could be utilized in management plans in more detail.

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Chapter 4: Protected Area Planning and Management: Supporting Local Stakeholder Participation with an Asset-Based, Biocultural Approach

Abstract

Given the uncertainties and risks of anthropogenic climate change, the urgency to conserve biodiversity has renewed urgency that has prompted a number of international forums, treaties, and agencies to advocate for the establishment of new and/or expansion of existing protected areas. One of the most broadly recognized efforts to expand the global protected area network can be found in the Aichi Biodiversity Targets, outlined in the Convention on Biological Diversity Strategic Plan for 2011-2020, adopted in 2010 by 196 countries. Target 11 calls for, "at least 17% of terrestrial and inland water areas and 10% of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well-connected systems of protected areas…" (CBD, 2011). While the number of designated protected areas has more than doubled in less than 25 years, how to achieve the more qualitative elements of Aichi Biodiversity Target 11, specifically how to manage protected areas effectively and equitably has been a more challenging task. This research focuses on supporting quality local stakeholder participation in protected area planning and management as a method of achieving these elements. Using key components of a biocultural approach and the principles and methods of asset-based community development, this article examines if and how an approach that combines these concepts can be a useful tool in achieving Target 11's mandate of more effective and equitable PA management by supporting quality local stakeholder participation. The results highlight how the approach represents an equitable and empowering participatory process, how it gives the opportunity for

early engagement with local stakeholders and how that can be beneficial, and leads with a local, culturally relevant perspective, but allows for scientific and outside knowledge to be heard and incorporated.

Introduction

In a world adapting to the uncertainties and risks of anthropogenic climate change, the urgency to conserve biodiversity has renewed significance (Felton et al., 2016). That urgency has prompted a number of international forums, treaties, and agencies to advocate for the establishment of new and/or expansion of existing protected areas (PA), viewed as the last safe havens for large tracts of critical ecosystems (Brandon et al., 1998; Bruner et al., 2001; Juffe-Bignoli et al., 2014; Kramer et al., 1997; Laurance et al., 2012; Oates, 1999; Rodrigues et al., 2004; Terborgh, 1999). One of the most broadly recognized efforts to expand the global PA network can be found in the Aichi Biodiversity Targets, outlined in the Convention on *Biological Diversity* (CBD) Strategic Plan for 2011-2020, adopted in 2010 by 196 countries (Hermoso et al., 2017). More specifically, Target 11 calls for, "at least 17% of terrestrial and inland water areas and 10% of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well-connected systems of protected areas…" (CBD, 2011).

Considered one of the most stunning conservation successes of the 20th century (Ervin, 2003), the number of designated PAs more than doubled in less than 25 years. According to the Protected Planet Report (2016), currently, just under 15% of the world's terrestrial and inland water, excluding Antarctica, and 10.2% of the coastal and marine areas are protected, gaining significant ground in meeting the PA coverage component of Target 11. Despite this success,

research continues to document further biodiversity loss globally (Newbold et al., 2016; Tittensor et al., 2014), demonstrating the need to focus attention on other elements of Target 11. One component that has gained significant attention recently is the need for PAs to be managed *effectively* and *equitably* (UNEP-WCMC & IUCN, 2016). The lack of quantifiable markers, ambiguity of wording, and underutilized or underdeveloped assessment tools have all contributed to the slow progress and achievability of the more qualitative aspects of Target 11 (Butchart, Di Marco, & Watson, 2016). For example, despite a broad number of Protected Area Management Effectiveness (PAME) assessment tools available, by 2015, only 17.5% of countries had completed and reported at least one Management Effectiveness assessment for 60% of the reserves within their protected area estate (UNEP-WCMC & IUCN, 2016). Likewise, the Protected Planet Report (2016) notes that progress towards measuring and assessing equity in PA governance and management is still in the framework stage, comprising of 16 principles (Schreckenberg et al., 2016), from which, indicator systems are being developed (Zafra-Calvo et al., 2017), but are not yet ready to facilitate assessment.

While assessment is an important factor in achieving effective and equitable management, methodologically, achieving this means approaches with a stronger focus on what the IUCN refers to as "good governance" principles, which advocate for a variety of components, including a strong emphasis on full and effective participation of relevant stakeholders (Borrini-Feyerabend et al., 2014; Schreckenberg et al., 2016; UNDP, 1997). Something of a mantra in environmental governance (Paavola & Hubacek, 2013; Wesselink, Paavola, Fritsch, & Renn, 2011), the concept of participation has a wide range of typologies, some gaining more standing than others. For example, Arnstein's (1969) well-known ladder of participation, which focuses on eight levels of participation, from "manipulation" to "citizen

control", each category corresponding to the extent of citizens' power in determining the end product or decision. Despite criticism of the linear, hierarchal, and simplistic nature of the model (Collins & Ison, 2009), Arnstein's (1969) gradient helps illustrate an important point about the quality, or authenticity, of participation and served as an important jumping off point for later models. For example, Davidson's (1998) "wheel of participation" is a popular variation of Arnstein's (1969) work, which highlights four overarching approaches to community involvement: information, consultation, participation, and empowerment. Davidson's (1998) wheel promotes community involvement, but without suggesting that the aim is always to climb to the top of the ladder (Collins & Ison, 2009).

Other participation typologies concentrate on the theoretical basis, like the popular classification dichotomy Cleaver (1999) describes as *efficiency* verses *empowerment*, also referred to as *pragmatic* verses *normative* (Beierle, 2002; Thomas, 1993), or more simply, *ends* verses *means*. Normative participation focuses on process, highlighting that stakeholders have a democratic right to participation in environmental decision-making, while a pragmatic argument focuses on participation as a means to an end (Reed, 2008). Mannigel (2008) summarizes the two approaches succinctly:

- As a *means* to improve the efficiency of management interventions, participation is used as a tool for achieving better project outcomes.
- As an *ends*, seen as necessary for equity and empowerment, participation is used as a process, which enhances the capacity of individuals to improve their own lives and facilitates social change to the advantage of marginalized groups.

As an *ends,* participation has become a central component of international discussion and research. The theme of the landmark global forum on PAs, the 2014 IUCN World Parks

Congress (WPC), was "Parks, People, Planet- Inspiring Solutions," highlighting the role PAs

play in broader economic and community wellbeing. The priority objectives of the Congress

highlighted effective and equitable governance, pledging that the 2014 WPC, "will foster the

equitable governance of parks and protected areas to empower communities (including

indigenous peoples) to become involved and to benefit" (IUCN, 2014). For the purposes of this

study empowerment can be understood as a process where communities become aware of their

individual and collective capacities representing important tools for negotiation and

sustainability (Alcorn et al., 2006). Recent research has also emphasized the importance of

equity and empowerment, claiming empowerment and engagement of a wider variety of actors

has the potential to deliver a more just system of PA, wider and deeper acceptance and

mainstream support (Lockwood, 2010; Roughley & Williams, 2007), allow the PA to benefit

from the skills and knowledge of local actors (Berkes, Colding, & Folke, 2000; Roughley &

Williams, 2007), promote a sense of ownership (Andrade & Rhodes, 2012; Pretty & Smith,

2004), and motivate stakeholders to contribute on a voluntary basis to concrete projects and

initiatives in the various PAs (Weixlbaumer, Siegrist, Mose, & Hammer, 2015).

As a *means* to improve efficiency of management intervention, there is ample consensus that

successful long-term protection is unlikely in PAs without the inclusive, and authentic,

participation of local stakeholders and that greater inclusion of local communities in

management should be a key strategy moving forward (Beierle, 2002; Brody, 2003; Koontz,

2005; Newig & Fritsch, 2008; Pimbert & Pretty, 1997; Sultana & Abeyasekera, 2008; Wells &

McShane, 2004). Recent studies have reached similar conclusions. A seminal work, Leverington

et al.'s (2010) study of over 8000 assessments of PA management effectiveness across the world

concluded that in all regions communication, community involvement and programs of

community benefit were generally inadequate and were strongly correlated with both overall effectiveness and good management outcomes. One of the more recent meta-analyses, conducted by Andrade and Rhodes (2012), found that local community participation in the PA decision-making process was the only variable that was significantly related to the level of compliance with PA polices. The study reviewed 55 published case studies from developing countries and used six variables, including the level of local community participation in PA management, to determine whether the level of compliance of local communities with PA regulations were related. The study found the higher the level of participation, the higher the level of compliance (Andrade & Rhodes, 2012).

These typologies and studies are important because they highlight the danger of painting participation as a broad stroke solution to complex situations (Cooke & Kothari, 2001; Kesby, 2005) and the importance of the quality, or degree, to which participants are involved in the decision-making process. Reed (2008) emphasizes that the quality of a decision is strongly dependent on the quality of the process that leads to it, highlighting a list of key features in best practice participation, collated through a grounded theory analysis of the literature, is still used as a marker of what the ideal participatory approach would include. Röckmann, Kraan, Goldsborough, and van Hoof (2017) offer a condensed summary of Reed's (2008) list, including:

- Stakeholder participation needs to be underpinned by a philosophy that emphasizes empowerment, equity, trust and learning.
- Where relevant, stakeholder participation should be considered as early as possible and throughout the process.
- Relevant stakeholders need to be analyzed and represented systematically.

- Clear objectives for the participatory process need to be agreed among stakeholders at the outset.

- Methods should be selected and tailored to the decision-making context, considering the objectives, type of participants and appropriate level of engagement.

- Highly skilled facilitation is essential.

- Local and scientific knowledges should be integrated (to provide a more comprehensive understanding of complex and dynamic socioecological systems and processes).

- Participation needs to be institutionalized (creating organizational cultures that can facilitate processes where goals are negotiated, and outcomes are necessarily uncertain).

I incorporated the key features of participation best practices in my research to explore the utility of a combined asset-based, biocultural approach in supporting local stakeholder participation in PA planning and management.

The study incorporates elements of a biocultural approach, an approach that explicitly starts with and builds on place-based cultural perspectives that include values, knowledges, and needs and the feedbacks between ecological state and human well-being (Sterling, Betley, et al., 2017). By focusing on the central philosophy of a biocultural approach, this research is able to uncover culturally grounded understanding of what factors drive resource use that can be used to tailor the decision-making context for management. The approach also uses principles and methods of asset-based community development (ABCD), a strategy conceptualized from early participatory action research and coined by Kretzmann and McKnight (1993), after observing that most development initiatives relied heavily on external people and agencies, while community assets were under recognized and under-utilized (Ware, 2013). The methods emphasize early and meaningful participation, utilizing a five-step process Kretzmann and McKnight (1993) created

to help communities mobilize around a common vision or plan. Using the theory and methods outlined above, this paper examines if and how an approach that combines asset-based concepts with a biocultural approach can be a useful tool in achieving Target 11's mandate of more effective and equitable PA management by supporting quality local stakeholder participation.

Methods

Site location. Considered an important, biologically diverse area, the field site includes the surrounding area to Magombera forest, located in the southern highlands of Tanzania. Magombera forest was declared a Forest Reserve under the custodianship of the Forest and Beekeeping Division in 1955 (Harrison & Laizer, 2007). Originally contiguous with the forest of the Udzungwa Mountains, which is part of the Eastern Arc Mountains, the area is internationally recognized for its rich biodiversity and as a hotspot for unique endemic species (Newmark et al., 1993). Following a variety of events, including the construction of the TAZARA railroad, the establishment of two villages, and the expansion of Kilombero Sugar Company, the Forest Reserve status was deemed inadequate for long-term conservation (as cited in Marshall, 2008). Management authorities agreed that the southern area of Magombera forest should be degazetted and annexed into the adjacent Selous Game Reserve (as cited in Marshall, 2008). The de-gazettement of the Forest Reserve status took place in 1981; however, it was never formally annexed, leaving it without a protected status. Magombera forest remains threatened because of its unclear protected area status and lack of proper management (Harrison & Laizer, 2007), a point that has been re-emphasized by regional government in recent years, as management authorities and conservation advocates engage with the protection of the forest.

Data collection and analysis. After an initial visit to the field site, two Tanzanian field assistants were selected based on their previous research experience, English language abilities,

and familiarity with the study site area. Both field assistants participated in a week-long training session, where I reviewed the theoretical underpinnings of the research as well as a detailed account of the proposed methods to be used. Following this training time, we revised the methods together, based on their knowledge of the communities (e.g. community meeting procedures) and reviewed, revised, and translated the surveys into Ki-Swahili. My field assistants led the data collection, alternating leading the sessions and recording responses, although I was always present and available. Following each day, my lead field assistant and I would debrief and prepare for the following day, making any necessary adjustments.

Data were collected in Ki-Swahili in the four Magombera forest-adjacent villages in the Kilombero district: Magombera, Katurukila, Kanyenja, and Msolwa Station. These villages were identified because they collectively surround Magombera forest, meaning the impending protection status and governance structure deliberations play an important role in their access to and usage of the forest, and subsequently the conservation of Magombera forest biocultural resources. Prior to the data collection process, permission was sought from the appropriate local government representatives, which in this case included the village chairman, village executive and sometimes members of the village council.

Following this, a community meeting was held with each village to review the objectives and logistics of the study as well as to recruit voluntary participants. The meeting was held outside in central location in each village and facilitated in Ki-Swahili primarily by my field assistants, although I did give a short introduction at the beginning and was available for questions throughout the meeting. All community members were invited to the meeting, which included the local government officials.

Table 4.1

Methods adapted and applied from Gilmore and Young (2012, p. 12) (step 1) and Kretzmann and McKnight (1993, p. 345) (steps 2-6) and the application for this study (right column)

Step	Gilmore and Young (2012) and Kretzmann and McKnight (1993) Methods	Application in this study
1	Each community was asked to identify, locate, and map biological and cultural sites that they deem significant. During mapping sessions, semi-structured interviewing techniques were used to document traditional cultural knowledge pertaining to the biologically and culturally significant sites and their associated resources.	**Participatory Biocultural Mapping:** The first step in data collection in this study was a biocultural mapping exercise, intended to identify biocultural resources used in the adjacent forest. Following the mapping, a focus group discussion was used to give context to how and why community members used each resource. Particular attention was paid to ties to cultural norms and traditions.
2	Mapping completely the capacities and assets of individuals, associations, and local institutions	**Participatory Asset Mapping:** The second mapping process utilized the ABCD asset mapping inventory methods. The session was facilitated in all communities to identify the capacities and assets of individuals, associations, and local institutions.
3	Building relationships among local assets for mutually beneficial problem-solving within the community.	**Identifying Relationships:** Following the asset mapping process, each community drew connections between the biocultural resources mapped and local assets that influence their use.
4	Mobilizing the community's assets fully for economic development and information sharing purposes	**Community Visioning:** Understanding the relationships between the resources and capacity/assets, a community vision was created with each community and then a joint community vision created from those. The vision included a plan for resource usage, monitoring, and management, as well as discussion on key partnering stakeholders, the role of the
5	Convening as broadly representative group as possible for the purposes of building a community vision and plan	

		communities, how to improve communication and transparency.
6	Leveraging activities, investments, and resources from outside the community to support asset-based, locally defined development	**Engaging External Stakeholders:** The joint community vision was presented to both the regional and national outside stakeholders and potential partners. The presentation portion of this approach was designed to highlight unity of voice amongst the communities as well as their local capacity to participate in a joint-forest governance designation.

The data collection was a six-step process, starting with a participatory biocultural mapping session to map resource use, then an asset mapping inventory, followed by a session to identify the connections (influences) between the resources and assets mapped, a community visioning workshop, surveys, and finally stakeholder meetings. In total, there were 94 participants that contributed through the end of the data collection process, 40 females and 54 males (Magombera (F=10, M=15), Katurukila (F=8, M=12), Kanyenja (F=11, M=14), and Msolwa Station (F=11, M=13)). As a guide for implementation, step 1 is modeled after Gilmore and Young's (2012) use of participatory mapping in their ethnobiological research. Steps 2-6 are modeled after the five steps Kretzmann and McKnight (1993) created to help communities mobilize around a common vision or plan. Table 4.1 gives a brief description of each of the steps, as outlined by the authors, as well as the adaptation and application in this study.

Participatory biocultural mapping. Participatory mapping is a method ''that recognizes the cognitive spatial and environmental knowledge of local peoples and transforms this into more conventional forms'' (Herlihy & Knapp, 2003, p. 306). Sometimes called counter-mapping, social mapping, or most recently participatory mapping, this method has roots in participant observation and collaborative research methodologies (Herlihy & Knapp, 2003). The method has been used by indigenous and traditional communities throughout the world for a

variety of reasons, including to set priorities for resource-management plans, establish

boundaries of occupied land (both past and present, and to gather and guard traditional

knowledge (as cited in Gilmore & Young, 2010). This study uses this method primarily to

document biological and cultural resources used by the communities.

Following a community meeting, my field assistants read and reviewed an informed

consent form that all community participants had to sign in order to be part of the research study.

Participants were then separated by gender into two groups to ensure the women's voice was

heard throughout the mapping process. This decision was made from past research experience

and cited as a potential problem if men and women were together by my field assistants. Each

group was given a blank high-resolution Google Earth map of Magombera Forest and the

surrounding area and asked to identify their village as well as any major geographic and

hydrological features (rivers, ponds, mountains). Following this, each group was asked to

identify, and map biocultural resources used from the forest.

Once each group was content with their map, the men and women's maps were

synthesized and put onto one map by the field assistants. All participants then had the chance to

discuss and debate locations, names, symbols of mapped features and important sites to ensure

that the final map was as accurate as possible and agreed upon through what Gilmore and Young

(2012) call negotiated consensus. In all, the biocultural mapping process took a full day, which is

when a focus group discussion was facilitated with all participants of the mapping activity to

understand and record how, when, and why each resource is used. The discussion details were

recorded by hand by the field assistants in Ki-Swahili and later reviewed and translated into

English. The information was later compiled into a database, coded initially by resource. Using a

deductive approach those coded resources were then grouped into larger, broader, resource

categories. And finally, the data were organized by larger themes based on whether the resource was considered cultural, biological, or both.

Asset mapping. Following the biocultural mapping, a half-day asset mapping inventory was facilitated by my two field assistants. The asset mapping process was also done in separate men and women's groups to ensure the voice of the women was heard. After facilitating the process in the first village, the session opened by defining what is considered an asset. The word "asset" is often associated with financial worth or capital, so to ensure our participants understood the full breadth and depth of the concept, local field assistants, whom had gone through a pre-training, defined and gave examples of each asset category (asset category definitions can be found in Appendix 1). Once the concept was clear, an inventory of assets was collected using large poster paper, broken down into the following categories: individuals, associations/organizations, and local institutions. At the end of the asset mapping inventory, the data were compiled into a database by myself and my lead field assistant. The database coded all the identified assets by category (individual, associations/organizations, local institution), then by village and gender.

Connections and community visioning. The next step in the process was to understand how the coded assets were connected to the biocultural resources mapped previously. Equipped with a combined list (men and women) of biocultural resources and a combined list (men and women) of assets for each village, my field assistants guided an in-depth discussion on the connections between the two with both the mend and the women, together. Starting with each of the biocultural resources listed, participants were asked which assets influenced/controlled the use of that resource. In some cases, participants were asked to identify the top five assets if there seemed to be a broad response. I and my field assistants then grouped the listed assets based on

the frequency in which they were identified, both the number of times and number of resources. After each village grouping was complete, general themes of influential assets were identified based on the cumulative responses for all four villages. The themes were then used to inform a community visioning process.

The community visioning process allowed an integration of the biocultural and asset mapping activities. The visioning involved all of the participants (men and women) and started by reviewing the biocultural resources list and by identifying the most influential assets in terms of resource use in each category. In a focus group setting, participants used this information to outline a joint forest management community vision. There were four questions (listed below) presented by my field assistants that were used to guide the discussion and focus on future community participation, highlighting the connection with resources, accountability, partnerships, and transparency. The question were heavily grounded in the early good governance principles outlined earlier (Borrini-Feyerabend et al., 2014).

- How does your village want to use each of the biocultural resources listed in the future?

- How will you, meaning the individual village, manage those resources and who will hold the community accountable?

- In the case of a shared governance structure, which outside stakeholder would you want to partner with and why?

- What measures do you think would improve communication and transparency with an outside stakeholder/partner?

After each of the villages created their own community vision, two representatives from each village met for a two-day session to create one joint community vision. In most cases the representatives were voted in by the fellow participants. Again, we tried to have both male and

female representation. Ideally the joint community vision would serve as one voice for all four communities, but it's important to note here that to assume the needs and use of biocultural resources for all four communities were uniform would neglect to truly address what effective participation is.

This joint vision was presented orally to both regional and national stakeholders by two representatives from the two-day session in two separate meetings. Paper copies of the community vision were provided in Ki-Swahili to all who attended, which included the two representatives from each village, local government officials, and the outside stakeholders.

Stakeholder meetings. The stakeholder meetings were an effort to show the unified engagement of the villages and to identify their capacity to be part of the process. The first meeting was held with the regional stakeholders who represented the potential future partners with the community if a joint forest management governance structure was to be implemented as well as the representatives from each of the villages mentioned earlier. The second meeting was held with the corresponding national representatives from the equivalent offices and departments in Dar es Salaam, but only included the two representatives presenting the joint community vision. In both meetings I gave short welcome and introduction to the research process, followed by my field assistants reviewing the agenda for the meeting before turning it over to the community representatives. Both meetings were facilitated in Ki-Swahili and attendees were compensated according to what was cultural appropriate for their time and engagement.

Surveys. Two surveys using Likert-type (Clason & Dormody, 1994) questions were administered in person by my field assistants to community participants (Appendix B) as well as the stakeholders (Appendix C) that attended the stakeholder meeting to illuminate possible trends and relationships in the participants' and stakeholders' perceptions of the data collection

processes and the usefulness and application of the results. The community participant survey

specifically targeted information about stakeholder transparency, empowerment and local

institutions building, themes identified in the literature as possible areas of connection. The

surveys for the outside stakeholders focused on their perceptions of the asset-based and

biocultural mapping processes and whether it is useful for improving local stakeholder

participation in PA planning and management. The ordinal data were analyzed using basic

descriptive statistics, including mode, frequency, and proportions (Trochim & Donnelly, 2001).

Results

The results suggest an asset-based, biocultural approach can support local stakeholder

participation by providing a locally relevant, culturally grounded understanding of resource use,

identifying influential local stakeholders, and utilizing the connections between the two. The

valuable insight gained from assessing the application of both an asset-based and a biocultural

approach can be used to create a community vision of conservation management and planning

that can be used to engage with outside stakeholders.

Locally relevant, culturally grounded understanding of resource use. The

participatory biocultural mapping sessions resulted in two data sources. The first source came

from the list of biocultural resources mapped. Maps created by each village showing the resource

use were mapped on large printed Google Earth images. The maps indicated local roads, rivers,

and ponds, followed by areas where biological and cultural resources are collected or used.

Figure 4.1 presents an example of a map created during this exercise with one of the villages,

although only a portion of the map has been reproduced here and the legend removed to protect

the biocultural resources and rights of the participants.
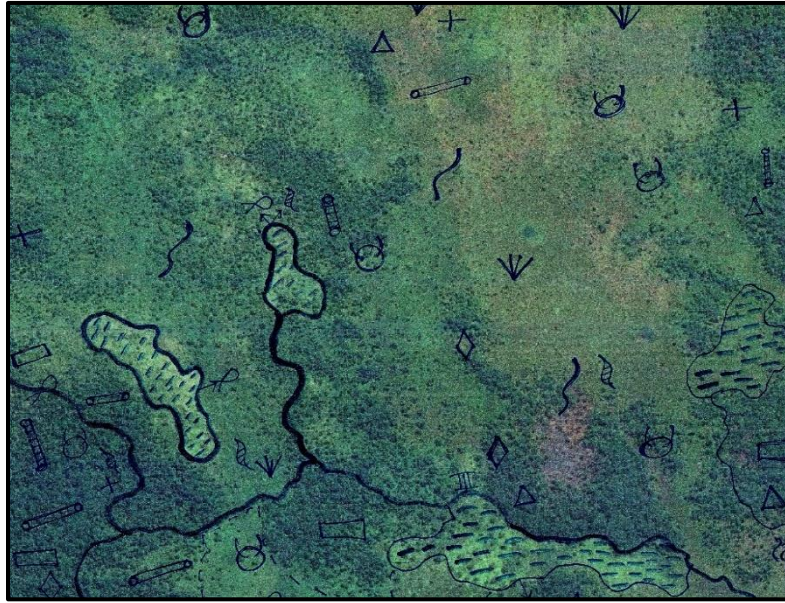
Figure 4.1. Example of a map with biocultural resources created by participants of a participatory mapping exercise in one village adjacent to Magombera Forest, Tanzania

The mapping process not only revealed a detailed understanding of the geographical boundaries of resource usage within Magombera Forest, but also identified biologically and culturally significant sites, useful in identifying a comprehensive understanding of the resources being used as well as areas of high impact. For example, areas of overlap in resource use among the four communities. From this activity a database listing all the resources being used was compiled, leading to the second data source.

The second data source was the accompanying usage details for each of the biocultural resources mapped, collected through focus group discussions. Through the discussions, my field assistants and I documented the following: the Kiswahili and English names of resources, use of each of the resources, and what time of year they are used. In addition, the database also documented whether each resource was used primarily for biological and cultural use, which added context to how and why different resources are used. Information from these discussions revealed that some resources were viewed distinctly as a necessity for everyday living but had

little cultural value (classified as biological use), while others were associated with strong cultural norms and traditions. Table 4.1 shows an example of how this this information was compiled in the database.

Using this database, community participants also outlined their preferred use of each resource for the future. In analyzing this, there was a pattern in the willingness to restrict access and/or offer alternatives to resources that had limited cultural utility versus resources that played a primary role in cultural traditions. For example, timber was identified as primarily used for building purposes and little to no cultural value. When asked about future use of timber, communities had little hesitation to the idea of using alternative timber species planted outside the forest or alternative materials (Table 4.2), as long as the primary need was met. In contrast, access to resources related to traditional medicine, provoked lengthy discussions about access and, in general, rejection of the idea that modern medicine (such as a clinic) could replace these resources (Table 4.3).

Table 4.2

An example of resource use information gathered from the participatory biocultural mapping exercise in a village adjacent to Magombera Forest, Tanzania

Kiswahili Name	English Name	Primary Use Classification	Use Example	Time Harvested
Mbao	Timber	Biological	Timber is harvested for the primary purpose of building material. The most common items mentioned included roofing and furniture. Additionally, timber is harvested for income.	year-round
Dawa za asili	Traditional Medicine	Cultural	There are many different traditional medicines found in the forest. Community members utilize roots, barks, shoots, and leaves. For example, the leaves from the Mnepa (Pseudolachnostylis sp) are grinded into a powder which is used to cure a wound from a fire.	year-round
Asali	Honey	Both Biological and Cultural	Biological: Harvested as food; in many households used as an alternative to sugar. Cultural: Harvested for its medicinal uses. For example, honey is being used if someone is burned by fire, they spread the honey around the wound and this helps to relieve the pain and cures the wound faster. Another common use is to treat a cough. The honey is taken orally to relieve coughing.	year-round between four villages; July-October most commonly

Table 4.3

Example of resources labeled as "primarily biological use" resulting from the joint community vision exercise carried out in communities adjacent to Magombera Forest, Tanzania

Resource	Participant quotes representing the preferred or negotiated future use	Proposed alternatives presented by participants
Timber	"It is strictly no timber harvest since it has strong negative impact to the forest as it changes the habitat type from dense forest to grassland and can lead to desertification. The forest is very important as it gives good habitat to the animals."	The alternative of forest timber should be planting timber species outside the forest.
Pole	"No permission to cut poles as it is explained in timber. It kills immature small trees which are the good for ecological system of animals living in the forest."	The alternative to this, people should use bricks and bamboo in their buildings.

Table 4.4

Example of resources labeled as "primarily cultural use" taken from the joint community vision exercise carried out in communities adjacent to Magombera Forest, Tanzania

Resource	Participant quotes representing the preferred or negotiated future use	Proposed alternatives presented by participants
Traditional medicine	"The medicine collection system should not have specific time but should have some procedures (see "proposed alternative"). This is because diseases can happen any time and they patients will need to be treated immediately. For instance, a person bitten by a snake needs fast rescue."	• There should be a free committee established by members from the government and traditional healer. These are the ones who will administer all traditional medicine issues. • The traditional healer should report to the committee before and after medicine collection. • The Village Game Scout (VGS) should accompany the traditional healers during

		medicine collection to restrict any destruction.
		• The tools allowed during medicine collection are machete and hoes only.
		• The committee should meet several times to discuss the progresses of the forest condition from medicine harvesting.
		• Medicines should be harvested or collected rotationally to avoid high destruction of the same area.
		• Medicinal trees from the forest should be taken and planted outside the forest to reduce frequencies of the forest entry.
Sacrifices	"The community members need to keep their believe in sacrifices. Sacrifices exist even before the coming of foreign religions. They help to solve several problems in the communities."	• The free committee through the village government will administer the permits.
		• Elders should be involved in administering the sacrifices as they know better the traditions and customs.
		• VGS will enforce by assessing if there are no environmental destruction.
		• The sacrifices will be done anytime and anywhere in the forest depending on believes of different tribes.

Identifying influential local stakeholders. The asset mapping activity identified

capacities and assets relevant to biocultural resource use at the individual,

association/organization, and local institutional levels. More specifically, it uncovered who, at

these multiple levels, was most influential when it came to biocultural resource usage. The

communities collectively mapped 109 assets, ranging from individual carpenters to football clubs

to local government. When my field assistants and I organized these assets in the context of

biocultural resource conservation, there were clear patterns within each group. Table 4.4 outlines

the assets in each category that were mentioned with the most frequency, meaning named as important for the most number of resources. For example, "witchdoctors," who were distinguished from traditional healers, were listed in 70% of the resources in the database as influential individual assets and "family" was listed in 100% of the resources as an influential asset at the local institution. For further specification, Table 4.5 lists an example individual resource and the original list of influential assets.

Table 4.5

Assets prioritized as they related to biocultural resource use, separated by three levels the assets were collected (individual, association/organization/local institution)

Individual	Association/Organization	Local Institutions
Witchdoctors	Association for witchdoctors	Family
Fisherman	Fisherman's group	Witches
Elders (related to sacrifice activities)		Tribes
Hunters		

Table 4.6

Example of an individual resource and the influential assets identified

Kiswahili Name	English Name	Classification	Use	Influential assets starting with most influential (from asset mapping activity)	Time Harvested
Kuni	Fuelwood	Biological and Cultural	Primary use is for cooking (firewood), for selling or business, and some species used for medicine. The most common species listed include: mswehile, mtalawanda, mfulu, mlingoti, mfupa wa kuku, and mbala.	Family Witchdoctors Local Brewers Funeral associations Brick makers/mason Sacrifices Fisherman Palm oil makers	year-round

The connections between the biocultural resources identified and the assets influencing their use was a key component going into the community visioning. The intention of the mapping process was to go into the community visioning process with a better understanding of the relationship between the biocultural resources communities use and who is knowledgeable about and influences their use. Understanding this relationship, ideally, would inform who would be involved in the planning and management processes. The community visions created in this process offered a comprehensive outline of the following: which biocultural resources the communities wished to use in the future, proposed alternatives to resources they didn't think should be harvested in the future, procedures for restricted/monitored use to resources they see as

vital for survival, the roles of the community in monitoring and accountability, who they would like to partner with in a joint forest management governance arrangement, and the suggested roles of both the communities and the partnering organization.

In the individual community visions, there were direct connections between the influential assets listed and the management and accountability of biocultural resource use. The most popular example of this was the idea to form new or use an existing Village Environmental Committee (VEC) that would manage the forest usage and protection. One vision suggested the VEC should be independent, through an election in the village assembly and should be comprised of different village actors such as elders (mentioned regarding activities that involved sacrifice), hunters, and others not attached with any particular institution. Another suggested participant was a Village Game Scout (VGS) to be on the VEC to be responsible for enforcement measures. The opinions of the VEC would be presented to the village leader, who would then present that information to the village assembly. The participants believed this composition would bring transparency to the management process.

In the joint community vision, communities rely heavily on the VGS, and there is no mention of the VECs. It can be observed that when moving from the individual community visions to the joint community vision some of the details and depth is lost. For example, there was less connection and utilization of the assets outlined in the combined community vision. This could have been a product of the smaller amount of time spent (two days) working on the plan or simply the nature of negotiating four plans down to one joint community vision. Although the joint community vision aimed to represent a unified voice to the outside stakeholders, there were differences in the needs and realities of resource use between the communities. For example, charcoal making was one area where three of the four villages agreed

it was a practice that should not be allowed; however, one village relied heavily on charcoal for their livelihood. For this process to be sustainable, these types of negotiations will need to be discussed in more depth.

Perceptions of process from community participants. The survey data revealed overwhelming support for the process among the community participants. Of the eighteen Likert scale statements, more than seventy percent of the participants strongly agreed with half of the statements, supporting the process (Table 4.6). Most relevant to stakeholder participation, over seventy percent of participants said that this process better prepares their community to participate in PA planning and management and values their ideas and inputs. Similarly, over seventy percent also strongly agreed that the process provided valuable information that could contributed to more effective participatory forest management. Additionally, over seventy percent of participants recommended using this model with future communities. One participant remarked, "The future community should use this vision for the betterment of forest and their livelihood. The village government should stay together with local communities and discuss again this process."

In probing those that disagreed with statements, participants acknowledged that this process alone cannot guarantee involvement and decision-making power in the PA planning and management process, but that the partnering agency plays a large part in supporting the communities' involvement. As one participant put it, "Our expected partner in forest management should keep our agreement (community vision) and obey it. If he will not obey, then people will no longer participate in conversation". Not knowing who that partner will be yet led these participants to disagree with those statements.

Table 4.7

Community participant survey frequency table

Statements	Strongly Agree	Somewhat Agree	Somewhat Disagree	Strongly Disagree	Total (n=94)
1a. I found the mapping of biological and cultural resources to be valuable.	78%	22%	0%	0%	100%
1b. I found the mapping of my community assets to be valuable.	64%	35%	1%	0%	100%
1c. I better understand the resources in my community and how they are governed.	80%	20%	0%	0%	100%
1d. This process helps me better understand the interconnections between my community and stakeholders involved in the protection of Magombera Forest.	81%	19%	0%	0%	100%
1e. This process increases my awareness of the importance of biocultural resource management in Magombera Forest.	74%	26%	0%	0%	100%
1f. This process better prepares my community to participate in PA planning and management.	73%	26%	0%	1%	100%
2a. This process allows me to be involved in decisions about Magombera Forest that affect me.	63%	35%	0%	2%	100%
2b. This process values my ideas and inputs.	72%	28%	0%	0%	100%
2c. This process allows me to contribute to the vision and future of my community.	72%	28%	0%	0%	100%
2d. This process motivates me to take a more active role in the management of Magombera Forest.	67%	33%	0%	0%	100%

3a. This process will improve communication between my community and stakeholders involved in the protection of Magombera Forest.	69%	28%	2%	1%	100%
3b. This process will improve transparency between my community and stakeholders involved in the protection of Magombera Forest.	62%	34%	3%	1%	100%
4a. This process is a useful tool in mobilizing local institutions.	64%	34%	1%	1%	100%
4b. This process supports capacity building of local institutions.	55%	40%	3%	1%	100%
4c. This process helps me to understand the function of local institutions in maintaining sustainable use of biocultural resources.	65%	35%	0%	0%	100%
5a. This process provided valuable information that can be used to inform the Magombera Forest governance planning process.	68%	31%	1%	0%	100%
5b. This process provided valuable information that could contribute to more effective participatory forest management.	71%	29%	0%	0%	100%
5c. I would recommend using this model with future communities.	71%	29%	0%	0%	100%

The stakeholder surveys indicate broad support for the process while also offering valuable feedback to improve the process (Table 4.7). Components that the outside stakeholders found most valuable include the ability to improve communication and transparency between stakeholders, and promotion of full (better quality) participation from communities to promote more effective PA management. Most of the stakeholders would recommend using the approach in future communities; however, there was one reoccurring recommendation in how to improve

the process—a resource assessment or inventory. There was widespread agreement that having

baseline data on the status of resources in the forest, as well as trends of decline, and details on

the cause of destruction, would improve the community visioning process. While there was

wide-spread agreement on the utility of this added data, it should be noted the time and cost of

adding this component to this particular research study was not feasible.

Table 4.8

Representative outside stakeholder survey responses

Statements	Percent in agreement (strongly and somewhat)	Representative Comments from Stakeholders
1a. This process can be used to improve communication between local stakeholders and my organization/department.	100% n=9	"A common understanding on conservation issue. It helps to know that conservation is for all stakeholders at grassroot and my department." "Because of the full participation of the communities on managing the resources." "All stakeholders will be well informed about needs and problems of communities and in which way to solve the problems." "This method gives the community chance to participate in resource management."
1b. This process can be used to improve transparency between local stakeholders and my organization/department.	100% n=8	"This process of involving adjacent communities it makes things clear to both parties, who is doing what, my department and local level." "By better cooperation between the stakeholders with my department everything done will be seen by themselves."

		"Through communication it will be easier to share information among stakeholders and therefore the two actors involved become aware of what is going on the other side."
2a. As an outside stakeholder, I view this as a useful process.	100% n=9	"Because direct conversation with the stakeholders will lead me to know what they want and what they don't (their problems) and this will help me to know what to do." "This helps in achieving PA Management and Planning because when there is a participation of local community in planning and management it will aid in reducing negative attitudes of local community towards PA Management." "There was no stock assessment that was one. There is important to know the gap of resources and who cause the gap (destruction of species). There you can start with vision. The one who cause the destruction is community or the government?" "It is a good process, but some more information need to be added such as drivers for changes of resource based (ex. What is the trend of the resource. Previous situation of forest resources map- just general, not much details)."
2b. This process provided valuable information that can be used to inform the forest governance planning process.	86% n=6	"Accountability intervention at the village level is not well informed. Transparency emphasis brings/leads to good governance." "By involving the communities can avail information about the policies and legislation which allow this." "Informing the forest governance planning process on what is present in the forest (resources) and stakeholders in place." "The model hasn't been founded in the actual dynamics of forest governance planning process at hand."

		"Through participatory decision making among stakeholders."
2c. This process provided valuable information that could contribute to more effective community forest management.	100% n=9	"This helps in achieving PA Management and Planning because when there is a participation of local community in planning and management it will aid in reducing negative attitudes of local community towards PA Management."
		"Identifying the stakeholders within the villages as well as how they accept the concept of community forest management."
		"By involvement of local community joint management."
		"Through encouraging PFM (participatory forest management)."
2d. In the case of participatory forest management structures, this process could increase the *quality* of local stakeholder participation.	100% n=9	"Because there is fully participation of community from forest resource assessment to the utilization."
		"Because it will raise institutional capacity/capacity building among communities."
		"By giving the community more empowerment."
		"By inviting the community on participation in forest management."
2e. I would recommend using this model with future communities.	100% n=9	"It involves the element of community participation. However, it needs some more improvement such as inclusion previous information on species richness status. They should be included on mapping process."
		"This is because there was not assessment of resource, because we don't know what is in the forest. Therefore, part of model is useful but another part is not useful."

"It will help in gaining support from locals in PA Management because it will create a sense of ownership."

"It is a good model as it consider a community being part of beneficiaries of resource management."

Discussion

Achieving more effective and equitable PA management, a key component in Aichi Biodiversity Target 11, means a stronger focus on what the IUCN refers to as "good governance" principles, which advocate for a variety of components, including a strong emphasis on full and effective participation (Borrini-Feyerabend et al., 2014; Schreckenberg et al., 2016; UNDP, 1997). Reed's (2008) seminal work emphasizes that not all forms of participation are equal and that the quality of stakeholder participation is strongly dependent on the quality of the process that leads to it. Using Reed's (2008) participation best practice list, the results of this study show how this approach supports quality participation, and thus more effective and equitable PA management, by emphasizing equity and empowerment, bringing local stakeholders into the planning process early on, and integrating diverse sets of knowledge.

Emphasis on equity and empowerment. While equity in conservation is often outlined as a moral argument, there is growing acknowledgment that more equitable conservation practices, such as the empowerment of local people and equitable sharing of benefits, contribute to more effective conservation outcomes (Oldekop et al., 2016). On the contrary, ignoring the rights and needs of communities can drive threats to PA conservation (Schreckenberg et al., 2016), fueling conflict (Lele et al., 2010) and higher PA management costs (Barnes, 2015;

Pascual et al., 2014). What sets ABCD apart from other participatory development practices is its focus on the appreciation and utilization of community strengths and assets (Ware, 2013).

The best example of this can be found in the connections made between the biocultural resources mapped and the influential assets inventory, later used in the community visioning. For example, in analyzing the connections made with the individual community visions, participants suggested the formation of new or use of existing Village Environmental Committees (VEC) that would manage forest use and protection. One vision suggested the VEC should be independent, through an election in the village assembly and should be comprised of different village actors such as elders (mentioned regarding sacrifice activities), hunters, and others not attached with any particular institution. The opinions of the VEC would be presented to the village leader, who would then present that information to the village assembly. The participants believed this composition would bring transparency to the management process. The inclusion of actors that were identified as influential during the asset inventory in the VEC indicates the value and utilization of the asset inventory process.

Results also suggest that the ABCD component of this study gives voice and ownership of the process and empowers local stakeholders to engage. The strongest evidence that this process as a whole empowers and promotes equity can be found in the survey feedback from those that participated. The participant survey results indicated most participants strongly agreed that the process provided valuable information that could contribute to more effective participatory forest management and recommended using the model with future communities. The majority of participants also strongly agreed that the process valued their ideas and inputs and allowed them to contribute to the vision and future of their community. Some of the comments included:

"I'm happy- as like we came from dark/not knowing anything- and now we are opened- we know our right and give our voice."

"Good practice and went on a very independent, community members were free to give their views/opinions."

"It opened up our mind- it gives voice and sense of ownership."

"Will help very much, the generation because brings real participation, it shows good management plan for the forest."

"It is a better process by sitting together and discuss things. It challenged us to know our rights in participating forest management."

Participation early in the planning stages. ABCD methods facilitate participation in the early stages of decision making so that the decisions are meaningful and common ground between local stakeholders and conservation actions and plans can be found (Zafra-Calvo et al., 2017). This study was intentionally conducted with local stakeholders prior to formal discussions with regional and national stakeholders. The reasoning for this was to allow the communities the time and space to safely debate how and why they wanted to use each resource. This also allowed for the time to document their voice in a written community vision, as evidence of their engagement and interest to be part of the conversation.

This provided a unified voice of valuable information about "negotiable" and "non-negotiable" resources that can be used for later tradeoff discussions. For example, proposed alternatives suggested for traditional medicine (Table 4.4) indicated, despite previous efforts to provide alternative options (e.g. clinics), traditional medicine are resources tied to strong cultural traditions and beliefs that community members are less likely to replace. In PA conservation management tradeoffs are inevitable, making this information critical for sustainable, quality decisions. In addition, bringing local stakeholders into the conversation early on also uncovered assets and information that could allow for more targeted management strategies. For example, "witchdoctors" were listed as influential assets in 70% of the resources in the database. Traditionally not a group included in PA management, this process could lead to a new inquiry in understanding influence of resource use and could be information later applied to the management of these resources.

Integration of local and scientific knowledges. Reed (2008) discovered a growing body of literature supporting a combination of local and scientific knowledge that can empower local communities to monitor and manage environmental change easily and accurately (e.g. Reed and Dougill, 2002; Thomas and Twyman, 2004; Stringer and Reed, 2007; Reed et al., 2007, 2008; Ingram, 2008). By focusing on the central philosophy of a biocultural approach, this research was able to uncover a locally relevant, culturally grounded understanding of what factors drive resource use that can be used to tailor important decision-making context for management. The willingness to restrict access to and/or use alternative resources is a good example of how that context is important. Participants repeatedly offered suggestions for how to replace resources, such as timber, that were said to have little connection to cultural norms or values, while access

to resources associated with strong cultural connections were consistently emphasized as important.

For example, when discussing sacrifice activities, one participant said, "The community members need to keep their believe in sacrifices. Sacrifices exist even before the coming of foreign religions. They help to solve several problems in the communities." Another key example of this is traditional medicine, where strong cultural norms were continually reemphasized. Anecdotally, participants communicated time and time again that the use of traditional medicine was frequently used before turning to modern medicine options, such as a clinic. These distinctions demonstrate the strength of the cultural connection to resources and how that context could inform the approach to PA management.

With this input, the community vision was presented as the *start* of a conversation with potential outside stakeholders. The ABCD approach would emphasize the importance of the start of the conversation beginning with the community's voice as an empowering feature of the participatory process. Following this presentation, certain gaps in policy knowledge were pointed out regarding how the communities wanted to manage certain resources (e.g., fishing licenses). From the regional outside stakeholder surveys, valuable feedback was gathered on where the process might be improved by integrating the type of scientific knowledge Reed (2008) talks about. For example, two respondents emphasized the need for a stock assessment of the resources being used or a historical trend of each of the resources. The direct comments can be seen below:

"There was no stock assessment that was done. There is important to know the gap of resources and who cause the gap (destruction of species). There you can start with vision. The one who cause the destruction is community or the government?"

"It is a good process, but some more information need to be added such as drivers for changes of resource based (Ex. What is the trend of the resource. Previous situation of forest resources map- just general, not much details)."

I believe that the communities should create the community vision prior to this information being introduced, because it allows the time and space to reflect on how and why communities use the biocultural resources mapped. However, the valuable information the outside stakeholders advocated for is an important next step and emphasizes what Reed (2008) found in the literature, which was a partnership in local and outside knowledges. Once an assessment of the resources being used can be done, a more genuine conversation about tradeoffs can be initiated.

Limitations

Despite these important findings, this chapter would be incomplete without a review of the limitations and constraints of this approach. The three limitations or challenges fit into three broad categories: participation inclusiveness, education, and power.

Participation. While in principle ABCD is an inclusive process, in practice this can be more challenging to achieve, especially in communities where social hierarchy excludes or marginalizes some groups (Mathie & Cunningham, 2003). It can be easy to assume that communities are made up of homogeneous groups of people with common struggles and goals; however, it's been well documented that communities tend to be divided by gender, generation, and economics (Barrett et al., 2001). In this study, for example, my field assistants anticipated that traditional gender norms may make it more difficult for women to engage. By holding

certain activities with men and women separate, we could ensure that the women's perspective and voice were included in the data collection process.

Education. The second major constraint is education. This limitation is specifically in reference to stakeholder education. Depending on the application of the model, simply providing stakeholders with the opportunity to participate in decision-making may not be enough for them to actually participate. Reed (2008) pointed out that when decisions are highly technical, it may be necessary to educate participants, so they are able to develop the knowledge and confidence that is necessary for them to meaningfully engage in the process. For example, in this study regional stakeholders pointed out that some of the community proposed management strategies for particular resources were in conflict with national regulations, suggesting a limitation of the study that could have been overcome through an education component focused on the national regulations.

Power. Power is another limitation in the ABCD approach. Stakeholder participation and decision-making processes do not take place in a vacuum but are embedded in a pre-established power structure (Young et al., 2013). The most immediate and obvious constraint is that participation may represent or reproduce the existing privileges and group dynamics, discouraging the perspectives of the marginalized (Cooke & Kothari, 2001). This can include macro-structures of inequality, such as gender, ethnicity, and class, as well as local power structures, which can be difficult to identify, being heavily ingrained in daily life (Cooke & Kothari, 2001). Klein et al. (2015) also suggest that conservation success probably peaks at a point that matches the power structure of a society. In other words, if decisions are often made by, or favor, a single gender, conservation success would peak at the point that reflect this power structure (Klein et al., 2015). In this case, again, gender power dynamics was something we tried

to account for by separating men and women in some of the data collection activities. In addition, the power dynamic between the communities and outside stakeholders including government representatives became apparent in discussions about potential partners in a joint forest management structure.

Conclusion

The primary goal of this research was to explore how an asset-based, biocultural approach could support local stakeholder participation in PA planning and management. This research comes at a time when there has been a shift in focus to the more qualitative elements of Aichi Biodiversity Target 11, specifically how to manage PAs effectively and equitably. Whether looking at the good governance literature (Borrini-Feyerabend & Hill, 2015; Eagles, 2009; Graham et al., 2003; UNDP, 1997) or the endorsements of international conservation organizations, participation of local stakeholders is a central theme in achieving this. Looking at the broad participation literature and typologies (Arnstein, 1969; Davidson, 1998) it's important to highlight the danger of painting participation as a broad stroke solution to complex situations (Cooke & Kothari, 2001; Kesby, 2005), and the importance of the quality, or degree, to which participants are involved in the decision-making process.

While this approach isn't without limitations, using Reed's (2008) seminal work on PA participation best practice as a guide, I think there are many ways this approach supports local stakeholder participation in PA planning and management. The results highlight how the approach represents an equitable and empowering participatory process, how it gives the opportunity for early engagement with local stakeholders and how that can be beneficial, and how it leads with a local, culturally relevant perspective, but allows for scientific and outside knowledge to be heard and incorporated.

Chapter 4 References

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Chapter 5: Conclusion

Participatory conservation efforts are widespread in regions of high biodiversity (Campo & Wali, 2008), and there is growing academic consensus on the importance of involving local communities into conservation strategies (Rodriguez-Izquierdo, Gavin, & Macedo-Bravo, 2010; Tole, 2010). Despite this recognition, local stakeholder participation remains low and limited in scope, creating ongoing challenges in the management and co-management of PAs (Baral & Heinen, 2007; Barrett et al., 2001; Méndez-López et al., 2014; Pimbert & Pretty, 1997). Literature also suggests that full and effective participation may improve the quality of environmental decisions (Beierle, 2002; Sultana & Abeyasekera, 2008); however, it's important to also recognize that the quality of the decision is strongly dependent on the quality of the process that leads to it (Reed, 2008). More authentic participatory approaches for decision-making and direct communication strategies between managers and local stakeholders are required to improve communities' involvement in conservation (Ruiz-Mallen et al., 2014).

In their most recent work, Wali et al. (2017) suggest that an asset-based approach to environmental conservation and human well-being operating within a biocultural framework can support sustainable and adaptive management of natural resources by communities in regions adjacent to PAs. They make the argument that for environmental conservation to be successful and sustainable, initiatives must engage with local people (as cited in Chapin 2004, Cernea and Schmidt-Soltau 2006, West and Brockington 2006, Otto et al. 2013). This is particularly relevant now, as much of the world's biodiversity is found in countries inhabited by people who are highly dependent on those natural resources for their livelihood (Sunderlin et al., 2005). While there have been many attempts to do this over the years, people-centered approaches have

historically struggled to strike a balance between the benefits and burdens incurred in the planning and management processes (Schreckenberg et al., 2016).

Although not without limitations, the results from this research suggest an asset-based, biocultural approach can contribute to effective and equitable protected area planning and mangement by supporting quality local stakeholder participation. The participatory biocultural mapping activity and focus group methods were useful in identifying biocultural resources and in uncovering a culturally grounded, locally relevant understanding of what factors drive resource use. This information can be significant when facing the inevitable tradeoffs and hard choices that need to be acknowledged and made between conservation and the well-being of the community. McShane et al. (2011) notes that to not do so leads to unrealized expectations and ultimately unresolved conflict.

The ABCD approach reflects a part of the process that emphasizes the good governance principles and equity criteria, something that has been continually highlighted as central in achieving more effective conservation by scholars and leading international organizations alike. The ABCD principles and methods mobilize and recognize capacities of communities which could lead to more targeted management strategies. Survey results indicate the process gives voice and ownership of the process, which can serve to empower community members to engage in conservation efforts. ABCD principles and methods also advocate for participation of local stakeholders early on in the process, which was the case here, to ensure that decisions are meaningful and common ground between local stakeholders and conservation actions and plans can be found (as cited in Zafra-Calvo et al., 2017). And lastly, ABCD methods draw attention to accountability and thoughtful consideration of outside partnership.

While each of these components are useful on their own, the strength of the approach is when they are combined. The ability of this asset-based, biocultural approach to uncover local and culturally relevant understanding of resource use while also highlighting key features of the outlined good governance principles, makes for a strong argument that this approach not only supports local stakeholder participation, but supports quality participation.

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Appendices

Appendix A: Asset-Mapping Categories

INDIVIDUALS: At the center of ABCD are residents of the community that have gifts and skills. Everyone has assets and gifts. Individual gifts and assets need to be recognized and identified. In community development you cannot do anything with people's needs, only their assets. Deficits or needs are only useful to institutions (Northwestern, 2009).

ASSOCIATIONS: An association is a group of people, who come together and get organized for the fulfillment of specific goals or purpose. This can be formal organizations or informal networks and ways that people come together (for example, a women's group or sports club) (Foot & Hopkins, 2010).

INSTITUTIONS: I am using the term institution in the sociological sense. One of the early definitions by Anthony Giddens says, "Institutions by definition are the more enduring features of social life" (Giddens, 1984, p. 24). A more detailed definition by Jonathan Turner explains institutions as: "a complex set of positions, roles, norms and values lodged in particular types of social structures and organizing relatively stable patterns of human activity with respect to fundamental problems in producing life-sustaining resources, in reproducing individuals, and in sustaining viable societal structures within a given environment" (Turner, 1997, p. 6).

PHYSICAL ASSETS: Physical assets such as land, buildings, space, and funds are other assets that can be used.

Appendix B: Informed Consent Form

Informed Consent Form

Study Title: Exploring local stakeholder participation in protected area planning and management: an asset-based, biocultural approach

Researcher: Nicole Wengerd, Antioch University New England

PURPOSE
The purpose of this project is to inform and empower community engagement in forest governance deliberations.

PROCEDURES
If you agree to be in the study, you will participate in two participatory mapping exercises, followed by a brief survey. Each of the mapping activities will be completed over multiple days. The survey will be completed at end of this process. During the mapping processes, you may be asked to elaborate on certain points. Written notes will be taken.

RISKS
The risk in participating in this study is very low. You will be asked questions about resource usage, community assets, and your opinions of the process. If you find any of the questions uncomfortable you can decline to answer any questions or to stop being involved at any time.

BENEFITS
Each community will receive the results from the mapping activities. The information that we collect could be used to negotiate community engagement in forest governance deliberations. We hope this process will be helpful to you and could be used with future communities.

EXTENT OF CONFIDENTIALITY
Your name will not be used in any written reports or publications. Data will be kept for three years after the study is finished and then will be destroyed.

PARTICIPATION IS VOLUNTARY
You do not have to be in this study, if you do not want to. If you volunteer to be participate in this study, you can withdraw from the study at any time.

QUESTIONS
If you have any questions about this study, please contact Nicole Wengerd, nwengerd@antioch.edu, or Fadhili Njilima through the Udzungwa Forest Project.

If you have any questions about your rights as a research participant, you may contact Dr. Kevin Lyness, Chair of the Antioch University New England IRB, (603) 283-2149 or Dr. Melinda

Treadwell, Vice President for Academic Affairs at Antioch University New England, (603) 283-2444.

DOCUMENTATION OF CONSENT

I have read this form and decided that I will participate in this project. I understand that I can withdraw at any time.

_____   _____
Printed Name of Study Participant   **Signature/Finger Print** of Study   Date
                                     Participant

_____   _____
Signature of Person Obtaining Consent   Date

Appendix C: Participant Survey

Village: _____ **Gender:** _____

Based on the participatory mapping processes that you have experienced, use the chart below to indicated how strongly you agree with the following statements.

Statement	Strongly Agree	Somewhat Agree	Somewhat Disagree	Strongly Disagree
1. General				
1a. I found the mapping of biological and cultural resources to be valuable.				
1b. I found the mapping of assets to be valuable.				
1c. I *better* understand the resources in my community and how they are governed.				
2. Empowerment				
2a. This process allows me to be involved in decisions about Magombera Forest that affect me.				
2b. This process values my ideas and inputs.				
2c. This process allows me to contribute to the vision and future of my community.				
3. Stakeholder Communication and Transparency				
3a. This process will improve communication between my community and outside stakeholders (Example: TANAPA, TWA)				

|				
3b. This process will improve transparency between my community and outside stakeholders. (Example: TANAPA, TWA)				
4. Local Institution Mobilization and Capacity				
4a. This process is a useful tool in mobilizing local institutions. (Examples of local institutions)				
4b. This process supports capacity building of local institutions. (Examples of local institutions)				
5. Participation in PA Planning and Management				
5a. This process provided valuable information that can be used to inform the forest governance planning process.				
5b. This process provided valuable information that could contribute to more effective community forest management.				
5c. I would recommend using this model with future communities.				
6. List any additional comments you have here. You may comment on any of the above topics.				

Appendix D: Stakeholder Survey

Representing Organization: _____ Village: _____

Based on the community presentation and discussions with community members on the mapping processes, use the chart below to indicated how strongly you agree with the following statements.

Statement	Strongly Agree	Somewhat Agree	Somewhat Disagree	Strongly Disagree	Comments
1. General					
1a. I found the mapping of biological and cultural resources to be valuable.					
1b. I found the mapping of assets to be valuable.					
1c. This process would allow local stakeholders to be more effectively involved in decisions about forest governance decisions.					
1d. This process values the ideas and inputs of local stakeholders.					
2. Stakeholder Communication and Transparency					
2a. This process can be used to improve communication between communities and my organization/department.					

2b. This process can be used to improve transparency between communities and my organization/department.					
3. Local Institution Mobilization and Capacity					
3a. This process is a useful tool in mobilizing local institutions. (Examples of local institutions)					
3b. This process supports capacity building of local institutions. (Examples of local institutions)					
4. Participation in PA Planning and Management					
4a. This process provided valuable information that can be used to inform the forest governance planning process.					
4b. This process provided valuable information that could contribute to more effective community forest management.					
4c. I would recommend using this model with future communities.					
5. List any additional comments you have here. You may comment on any of the above topics.					
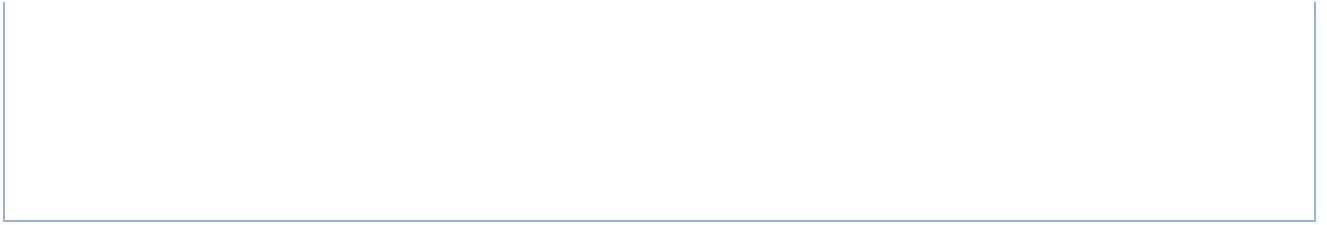
Appendix E: Common themes in good governance and equity literature.

Themes	UNDP (1997) Human Rights Good Governance Principles and related UNDP text on which they are based	UNDP (1997) Principles Adapted to PAs (Borrini-Feyerabend et al. (2014)	Schreckenberg et al. (2016) Equity Principle Framework	Zafra-Calvo et al. (2017) Equity Criteria
Legitimacy and Voice	**Legitimacy and Voice** Participation Consensus orientation	Legitimacy and Voice	Full and effective participation of all relevant actors in decision-making Recognition of different identities, values, knowledge systems and institutions Recognition of all relevant actors and their diverse interests, capacities, and powers to influence	Effective participation in decision-making Cultural identity Knowledge diversity
Direction	**Direction** Strategic vision, including human development and historical, cultural, and social complexities	Direction		
Performance	**Performance** Responsiveness of institutions and processes to stakeholders Effectiveness and efficiency	Performance		

Accountability	**Accountability** Accountability to the public and to institutional stakeholders Transparency	Accountability	Clearly defined and agreed responsibilities of actors Accountability for actions and inactions Transparency supported by timely access to relevant information in appropriate forms	Accountability Transparency
Fairness	**Fairness** Equity Rule of Law	Fairness and Rights	Recognition and respect for human rights Recognition and respect for statutory and customary property rights Recognition and respect for the rights of Indigenous peoples, women, and marginalized groups Non-discrimination by age, ethnic origin, language, gender, class, and beliefs Access to justice, including an effective dispute-resolution process Free, prior, and informed consent for actions that may affect the property rights of Indigenous peoples and local communities	Statutory and customary rights Access to justice Free, prior, and informed consent Benefits Burdens

Identification and assessment
of costs, benefits and risks and
their distribution and trade-offs

Effective mitigation of any
costs to Indigenous peoples
and local communities

Benefits shared among
relevant actors according to
one or more of the following
criteria: equally between
relevant actors or according to
contribution to conservation,
costs incurred, recognized
rights and/or the priorities of
the poorest

Benefits to present generations
do not compromise benefits to
future generations.