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AN UNCERTAIN REALITY: USING RESILIENCE CONCEPTS TO INVESTIGATE THE IMPACTS OF PROTECTED AREA TOURISM ON COMMUNITIES

Abstract

Protected area tourism is a growing trend worldwide. It has an enormous potential to impact on local communities. Traditional assessment methods tend to focus on current conditions using sustainability indicators that are often poorly chosen resulting in the misidentification and misinterpretation of impacts. Research in systems thinking and resilience suggest that future conditions may be different, more extreme and rapidly changing than previously experienced, requiring very different approaches to assessment. New methods acknowledging uncertainty and change are required. Here we present a novel approach to investigating the impacts of protected area tourism on communities by framing such tourism as a social-ecological system and adopting resilience assessment principles.

Keywords: community, impacts, monitoring, protected area tourism, resilience, thresholds, uncertainty

INTRODUCTION

The power of nature and natural settings in attracting tourists is widely recognised, with protected areas offering a significant attraction to tourists (Pedersen 2002; Reinius and Fredman 2007). Increasingly, tourism is one of the most common uses of such areas (Walpole and Goodwin 2001). Protected areas are comprised of land or sea, managed through legal or other effective means, where biological diversity and cultural resources are protected (IUCN 1994). Very often, these areas and tourism are intertwined and their respective impacts on local communities are difficult to separate. The sustainability of protected areas is accepted as dependent on due attendance to the social, economic and cultural contexts of neighbouring communities (Fortin and Gagnon 1999; McCleave, Booth and Espiner 2004).

Conflicts between protected areas and communities remain common and the impacts of management and tourism in protected areas on local communities are manifold. Plummer and Fennell (2009) propose that multi-stakeholder conflict, complexity and uncertainty are issues that remain unresolved and persistent. When problems persist and are not resolved by current interventions they may be classed as “messy” or “wicked” (Allen and Gould 1986; Rittel and

Webber 1973) and require a new paradigm to understand them. Before exploring a new paradigm or way of thinking about and investigating the relationships (and associated impacts) between protected areas, tourism and local communities, it is useful if not essential to review current methods using a “whole system” perspective.

This whole system perspective is being actively pursued in current research on tourism as a complex adaptive system (Farrell and Twining-Ward 2005; Lacitignola, Petrosillo, Cataldi and Zurlini 2007). Such systems, where the social components are explicitly acknowledged (as is the case with tourism), are known as social-ecological systems (Allison and Hobbs 2006; Gunderson and Holling 2002; Schianetz and Kavanagh 2008; Walker and Salt 2006). Many interacting variables are characteristic, with the systems behaving according to three principles: order is emergent as opposed to predetermined; the system’s history is irreversible; and the system’s future is unpredictable (Waldrop 1992).

Systems thinking is required to bridge the social and biophysical sciences (Allison and Hobbs 2004) to help understand, for example, how to link social and ecological systems for sustainability (Berkes and Folke 1998). Fennell (2004) and Dredge (2006) highlight that issues associated with tourism and protected areas are inherently complex, multi-scaled (local, regional, national and global) and involve vertical and horizontal linkages. Management of sustainable tourism relating to protected areas should anticipate system dynamism and transformative changes (Plummer and Fennell 2009). Communities, whether local or further afield, are an integral part of the protected area tourism system.

This paper provides a novel approach to investigating the impacts of protected area tourism on local communities. The approach draws on the resilience assessment guidelines as outlined by The Resilience Alliance (2007a; 2007b) modified for application to protected area tourism. Resilience thinking provides a management approach based on recognising human and natural systems as complex systems that are continually adapting (Allison and Hobbs 2004; Walker and Salt 2006). The resilience guidelines are underpinned by an acknowledgement of the complexity, uncertainty and dynamism that characterise social-ecological systems (Allison and Hobbs 2006; The Resilience Alliance 2007b). The description of this approach is necessarily preceded by a review of existing methods and

explanatory detail on systems and resilience thinking. Local communities are also defined to provide a focus for the analysis. The paper concludes with comments on the benefits of this novel approach through its explicit recognition of system change, complexity and uncertainty. The difficulties in determining the system boundaries are also addressed.

EXISTING METHODS FOR DETERMINING THE IMPACTS OF PROTECTED AREA TOURISM

In many areas tourism is seen as an answer to economic development, particularly areas of natural beauty such as Purnululu National Park, Australia and spectacular wildlife such as Kruger National Park, South Africa. However, increasing numbers of people brings with it a range of socio-cultural and environmental problems. Currently, the selection of indicators in the context of tourism assessment is directly related to the identification of the most important issues or impacts from the perspective of stakeholders (Miller and Twining-Ward 2005) or on the assessment of experts (Bossel 2001). This can lead to a thematic approach directed by the sector making the assessment and their specific interest such as socio-cultural or environmental.

There is a substantial literature regarding methods for measuring socio-cultural impacts. In the tourism field, impacts are commonly measured quantitatively using a Likert scale to investigate residents' perception of impacts and attitudes to tourism (Deery, Jago and Fredline 2005). Qualitative perceptual research, involving community attitudes and self-evaluation of impacts along with the setting of benchmarks and indicators, are other common impact assessment methods.

A number of indicator-based frameworks have been proposed to conceptualise, predict and manage visitor impact on the environment. Those applied to visitor use of protected areas include the Limits of Acceptable Change, Visitor Impact Management, Visitor Activity Management Process, Recreational Opportunity Spectrum and the Visitor Impact Management Model (Newsome, Moore and Dowling 2002). These frameworks focus on the current state of a system without considering complex interactions and interdependencies between resources and stakeholders (Sirakaya, Teye and Sonmez 2002). The nature of the

indicators associated with these frameworks makes management of protected area tourism, when viewed as a complex adaptive system, particularly problematic as both social and ecological systems continue to change over time.

Assumptions of reductionism and sector bias inherent in many existing indicator-based frameworks do not fit with new ideas embracing complexity and uncertainty (Miller and Twining-Ward 2005; Plummer and Armitage 2007). Therefore, indicators developed for current system conditions will likely not be applicable when system conditions change (Carpenter, Walker, Anderies and Abel 2001). Recognition of changing conditions and uncertainty has given further impetus to the need for new assessment methodologies. Farrell and Twining-Ward (2004) argue the need for greater integration of systems thinking in tourism planning frameworks. This concept is discussed further below.

Commonly, tourism researchers imply that the surroundings within which tourism is positioned exist as a separate entity (Farrell and Twining-Ward 2005; Russell and Faulkner 1999). These existing tourism approaches are largely confined to mathematical and economic outlooks where interactions with other systems are not considered or made explicit (Lacitignola et al 2007) and social and cultural concerns are marginalised (Hampton 2005). The growing sustainable livelihoods approach emphasises the need to consider a range of direct and indirect impacts arising from tourism (Ashley 2000). Current thinking, therefore, conceptualises tourism as a complex adaptive system, consisting of multiple interacting components (Farrell and Twining-Ward 2005; Lacitignola et al 2007; Russell and Faulkner 1999) in line with the emerging resilience approach.

As expressed by Lepp (2008), residents' attitudes in relation to tourism are often unpredictable or contrary to researcher expectations. Explanation of this lies in complex systems theory, which imparts that unpredictability is to be expected owing to multiple, complex factors that interact in ways that are often historically pre-determined. Such is this case with residents' attitudes to tourism. Therefore, any tourism study conducted without explicit recognition of interacting variables e.g., political, social, cultural, historic, ecological and legal, will reveal an incomplete and possibly confusing picture, as the complex interactions between system components will not be apparent (Farrell and Twining-Ward 2005; Lepp 2008).

One of the elements of the tourism social-ecological system most affected by and intimately involved in protected area tourism is local residents (i.e. those residing in or more often adjacent to or in close proximity to protected areas). The protected area and associated tourism impacts on these communities both directly and indirectly through its existence and capacity to attract tourists. The involvement of local people in analyzing and understanding protected area tourism systems has been noted as crucial as these people are most likely to be affected by policy development (Plummer and Fennell 2009). As such, local community provides the focus in this paper for using resilience thinking to develop a framework to investigating the impacts of protected area tourism on communities.

What, however, is ‘local community’? The broader term ‘community’ is an ideal (Blackstock 2005) rather than a reality. Additionally, it is highly contested and subject to multiple interpretations (Blackstock 2005; Fabricius 2004). Leach, Mearns and Scoones (1999) suggest that the term is defined relative to a researcher’s perspective of interest or analysis. Typical perspectives include geographical (based on commonality of location); ethnic or clan affiliation (Fabricius 2004; Leach et al 1999); communities of interest, resource or land usage (Beeton 2006; Fabricius 2004); and local administrative units (Hampton 2005; Leach et al 1999).

For simplicity in this paper, the first of these perspectives is used –geographical or local communities – while acknowledging that other communities associated with protected areas exist and are also essential parts of the social-ecological system. This choice is supported by the spatially restricted nature of protected area tourism and the assumption that geographically adjacent communities will experience the greatest impacts arising from that area. The tourism literature also reveals a predilection for geographical perspective of community (Beeton 2006) although this should be treated with caution as the boundary is very porous allowing a range of social, economic and political factors that may impact from scales above and below (Novelli and Scarth 2007).

NEW DIRECTIONS FOR ASSESSING PROTECTED AREA TOURISM

These identified shortcomings in existing indicator-based frameworks and the potential benefits of recognising tourism as a complex adaptive system are further echoed by Farrell

and Twining-Ward (2004) who highlighted the potential applicability of systems thinking to tourism research, while noting such applications are largely untested. More recently, the value of systems thinking, specifically for research in protected area tourism, has been emphasised because of its value in aligning the aims of sustainability and fostering system resilience to withstand disturbance and cope with uncertainty (Plummer and Fennell 2009). This approach is oppositional to optimising selected system components under current linear processes (Schianetz and Kavanagh 2008).

System thinking also provides the opportunity to consider and include uncertainty in managing protected area tourism. Uncertainty is a 'situation in which there is not a unique and complete understanding of the system to be managed' (Brugnach, Dewulf, Pahl-Wostl and Taillieu 2008:4). Farrell and Twining-Ward (2004) note that current approaches to tourism research are incomplete as they can not adequately deal with unexpected processes and events. There is ample evidence from case studies on the interactions of people and nature where current theories are capable of explaining system behaviour in times of stability (Allison and Hobbs 2004; Allison and Hobbs 2006; Gunderson and Holling 2002). However, in times of crisis and ensuing uncertainty these theories are unable to deal with periods of sudden change (Allison and Hobbs 2004; Allison and Hobbs 2006). At best they replace inherent uncertainty with the veiled certainty of disciplinary knowledge and precise numbers. At worst the theories ignore the possibility that slowly changing variables (ecological or social) can suddenly cause a rapid change and flip a system into a functionally different state that may be effectively irreversible (Allison and Hobbs 2006).

Uncertainty is now a given, as evidenced by current global conditions including widespread economic recession and concerns over climate change, both of which impact directly on tourism (Bramwell and Lane 2009). Quick (2008) concurs, mentioning a number of major uncertainties currently prevalent in the popular media, such as oil supply/prices and increases in extreme weather conditions. As an unpredictable and interconnected system, tourism is vulnerable to outside disturbances (Mill and Morrison 2006; Russell and Faulkner 1999) such as the current global economic recession (UN World Tourism Organization 2009), acts of terrorism (such as the 2002 Bali bombings, 2005 London bombing or September 11) and climate change (UN World Tourism Organization 2003). Novelli and Scarth (2007) elaborate, citing instability in visitor numbers, exchange rates, political volatility, natural

disasters and weather as further disturbances to which a protected area tourism system may be susceptible.

Rather than view the system as in equilibrium we now conceptualise many systems, including tourism, as being far from equilibrium where small changes in one factor may cause the system to cross a threshold or tipping point (Gladwell 2002). These changes may be abrupt, unexpected and cause surprise. Resilience thinking provides a way to understand such changes. As well as embracing complex changing systems that include both human and natural parts (Walker and Salt 2006), this thinking also acknowledges the importance of multiple, cross-scale interactions (Berkes, Colding and Folke 2003). The characteristics of these complex systems include: multiple, interacting components; cause and effect relationships are often non-linear and unclear; system dynamism; 'butterfly effects' (being disproportionately affected by external events); and vulnerability to multiple shocks (Allison and Hobbs 2006; Lacitignola et al 2007; Walker and Salt 2006).

Resilience itself confers a measure of the capacity of a system to absorb disturbance and reorganise, while undergoing change, with the same or similar system retained (Folke 2006). Carpenter et al (2001) ascribe three properties to help define social-ecological resilience: the amount of change a system can experience and remain in the same state; the degree to which a system is capable of self-organisation; and the degree to which a system can build capacity to learn/adapt. The following features of the broader resilience perspective, as it relates to complex adaptive systems, are of direct relevance to assessing the impacts of protected area tourism on local communities: change is normal and to be expected; cause and effect are often non-linear and unclear; systems move adaptively through different developmental stages; thresholds accompany most variables and demarcate between different system states; and multiple, interacting scales are the norm (Folke 2006; Gunderson 2000).

Adaptability is needed to cope with such disturbances. Resilience affords a system the capability to adapt (Folke 2006), enabling a buffer effect by which the system can better absorb or withstand disturbances (Adger 2000), as exemplified by current global uncertainties. Adaptability is determined by the absolute and relative amounts of capital: social, financial, human, natural, physical and technological, as well as by systems of governance and institutions (Walker, Gunderson, Kinzig, Folke, Carpenter and Schultz

2006). Social-ecological systems with lower levels of institutional and social capacity to adapt and shape change will be less resilient as they lack alternative options to pursue when facing disturbance (Lacitignola et al 2007).

Adaptability of a protected area tourism system is related to drivers. Elucidating drivers, those factors causing change either directly or indirectly in a system, is crucial to assessments of resilience (Walker et al 2006). Drivers can move a system closer to a threshold (Allison and Hobbs 2006; Walker and Meyers 2004). Thresholds are the critical levels separating different patterns of operation and functioning for the protected area tourism system. Both conceptual thinking and empirical evidence intimate the likelihood of severe negative consequences consequent to a threshold being crossed (Lyytimäki and Hilden 2007). Examples of social-ecological systems crossing thresholds are evidenced by loss of biodiversity, degradation of ecosystem services, loss of socio-cultural identity/ heritage or change in economy basis (Petrosillo, Zurlini, Grato and Zaccarelli 2006). An example of a threshold being irreversibly crossed is that of species extinction (Lyytimäki and Hilden 2007).

APPLYING RESILIENCE THINKING TO INVESTIGATE PROTECTED AREA TOURISM SYSTEMS

Given the preceding rationale, protected area tourism as a social-ecological system clearly require new assessment methods to account for its inherent dynamism and uncertainty. Non-linear approaches are called for, drawing upon non-traditional spheres of thinking such as resilience, adaptive management, systems modelling and scenario planning, integrated with social science and ecology (Farrell and Twining-Ward 2005). The following conceptual framework (Figure 1) provides an alternative to existing linear impact assessment methods by explicitly considering complex interactions and interdependencies between system components as well as investigating the causes and rates of system change. Qualitative in nature, the framework draws on process-orientated approaches from resilience and systems thinking, building progressively on stakeholder perceptions in order to develop an overall picture of conditions, impacts, system interactions and rates of change, potential thresholds and possible future scenarios.

Insert Figure 1 about here

This framework, based upon the resilience assessment guidelines of The Resilience Alliance (2007a; 2007b) explicitly considers interactions between system components across multiple scales using multiple worldviews. The Resilience Alliance Framework is consistent with the principles of the general system dynamics process and resilience assessment process adopted by Allison and Hobbs (2006). Although the framework components themselves are not new, using this framework to develop an assessment tool for protected area tourism systems represents a novel trans-disciplinary approach appropriate for times of increasing uncertainty and change, an approach increasingly advocated in the literature. This framework also draws on work by Walker, Abel, Anderies and Ryan (2009), Carpenter et al (2001) and Walker, Carpenter, Anderies, Abel, Cumming, Janssen, Lebel, Norberg, Peterson and Pritchard (2002). Parallels present in research by Berkes (2007) and Carlsson and Berkes (2005) in relation to adaptive co-management and governance also contributed.

The proposed framework is designed to be progressed through iterative participatory processes with local communities, who provide a focus and point of contact (i.e. unit of analysis) for investigating the wider protected area tourism system. Several other provisos also apply, in particular that only the initial assessment stages of The Resilience Alliance guidelines (2007a; 2007b) are used in the paper, for the sake of brevity and focus. A full application of the principles contained in the guidelines would be recommended in practice (four are detailed here). Also case studies seem an important next step to verify the practical utility of the framework outlined here. Lastly, although the focus here is on local communities, other stakeholders are also critical to understanding the system, including protected area managers, scientists and the tourism industry plus others. Determining stakeholder saliency is aided by attention to property/use rights, the institutional frameworks in which system use is regulated, and decision-making hierarchies (Walker et al 2002).

Four principles are explored in Figure 1 and encompass: (1) system definition; (2) information on drivers and shocks; (3) details on key players; and (4) system development and thresholds.

1. Define the protected area tourism system

The protected area tourism system must be defined, incorporating key issues and system boundaries as perceived by the community (Allison and Hobbs 2006; Cumming, Barnes, Perz, Schmink, Sieving, Southworth, Binford, Holt, Stickler and Holt 2005). Owing to the fragmented and complex nature of communities, the distorting effect of inherent power inequities is perhaps best dealt with by the approach taken by Kayat (2002), who advocates engaging both 'power' (those with access to resources by which greater tourism benefits can be gained) and 'no power' respondents in order to gain balanced views. Such an approach will aid in overcoming issues associated with the overt or implicit marginalisation or elevation of certain groups and individuals within the framework. Berkes (2007) and Plummer and Fennell (2009)(who build upon Berkes 2007) similarly propose clarification of system participants and power relations in their adaptive co-management assessment frameworks.

Current system conditions are ascertained initially, with impacts then defined in relation to these conditions. The identification of key issues (what is it about protected area tourism that the community want to maintain or are concerned about) point to the main impacts being experienced. Key issues with respect to the impacts of protected area tourism, from a community perspective may include but are not limited to economic benefits, crowding, aesthetics, litter, access and resource usage restrictions, employment, decision-making powers, communication with protected area staff, tourist presence and biodiversity conservation. It is important to note, however, that issues important to a community may not be those that are crucial to how the protected area tourism system functions. For example, issues related to less obvious components which provide social benefits, such as species conservation or carbon absorption, are commonly unrecognised, at least initially (The Resilience Alliance 2007b) when viewed through a local community lens.

Identification and demarcation of system scale - how far the boundaries of the protected area tourism system extend for research purposes - is in large part likely to be pre-determined owing to values and research objectives and which conceptualisation of 'community' is adopted. It is crucial to explicitly note assumptions and reasons for scalar enquiry. For example, the privileging of a geographical community notion over a community of interest in relation to protected area tourism must be justified. The authors contend that geographical conceptualisations will, with regards to this framework, provide a sense of centrality or

‘boundedness’ that will aid in defining system boundaries and further, that the negative impacts of protected area tourism are likely to be highly localised to nearby communities.

System definition is further explored through the determination of community perceptions of interactions between themselves, the protected area and tourism in terms of power relations, interrelationships, social values and benefits, impacts and influence. Perspectives relating to conflicts, issues and challenges currently facing the community as a result of protected area tourism and those predicted to occur in the future are investigated. Constructing conceptual maps, be they oral or physical drawings, can provide clues as to cross-scale interactions and system boundaries perceived by the community in question.

2. What affects the system?

The second phase of the framework focuses on historical and contemporary factors affecting the protected area tourism system. This second phase provides greater understanding of the drivers causing change in components and interactions of the protected area tourism system as well as influences on these drivers. An historical profile, through which significant causal factors and events underlying the current conditions and impacts can be identified, allows exploration of historical contingency (Allison and Hobbs 2006; Berkes 2007; Walker et al 2002). Major external events affecting protected area tourism can be categorised as political (e.g., land rights, government policies or blacklisting such as the apartheid-era South Africa), economic (e.g., economic downturns, significant currency fluctuations, access to new markets, welfare structures), infrastructure (e.g., construction of access roads, tourist accommodation and recreation facilities), technology (e.g., increased access to Internet resources and online booking systems, sophisticated marketing techniques), demographic (e.g., flux in visitor numbers, population density in protected area surrounds) and environmental/ecological (e.g., floods, droughts, species extinction).

Through this historical profile, how the protected area tourism system (of which the local community is an integral part) has been affected by major external events in terms of opportunities, constraints and development becomes evident (The Resilience Alliance 2007b; Walker et al 2002). Characteristically slowly changing variables that may play an important role in controlling the protected area tourism system (Allison and Hobbs 2006; Walker et al 2002), for example population growth or cultural variables like religion or taboo systems, can

be identified in part from this profile. These slow variables are a crucial aspect of the overall assessment as they may critically impact on protected area tourism. Often these slow variables are crucial in determining how the system will react following major external disturbances (Carpenter et al 2001).

In their assessment of sustainability of the Goulburn-Broken catchment in Australia, Walker et al (2009) found the major slow variables influencing the system to include values, economy, infrastructure, biophysical function and biodiversity. The Catchment Management Authority had only a small influence on these key slow variables, suggesting that control lies outside the influence of the local area. Control of land/water use and infrastructure instead rested with State and/or Federal Governments, with attendant (and significant) implications for system resilience and adaptive capacity. These findings are significant for the resilience of community within protected area tourism systems, who are hypothesised as being similarly poorly disposed in terms of influence over such key slow variables, with control dictated at higher scales. Research by Balint (2006) draws attention to the unique nature of commons issues in protected areas, noting that in most cases, governments own and/or run the area with attendant rules and regulations. Local people are disempowered to effect change, as found by Walker et al (2009).

Initial ideas regarding drivers can be elucidated through exploring community perceptions of the factors influencing key issues or impacts of protected area tourism. Again, however, community perceptions of drivers may differ from core underlying drivers facilitating change (The Resilience Alliance 2007b). The utility of historical analysis in aiding determination of slow variables is great, as their discovery is generally difficult owing to inadequate data and/or understanding. As such, significant uncertainty regarding such variables exists (Walker et al 2009). Historical analysis is similarly useful for ascertaining disturbances influencing the protected area tourism system. The spatio-temporal frequency and nature of characteristic disturbances taking place in the protected area tourism system can be explored through a combination of community engagement and historical analysis, again utilising a cross-checking measure to account for subjective preferences in community perceptions.

Commonly grouped into physical, biological, economic, social or policy domains, disturbances affect how the protected area tourism system functions. Physical shocks,

frequently related to weather events, may be regular occurrences such as monsoonal flooding, irregular events such as flooding and drought (Allison and Hobbs 2006) or they can be one-off unexpected occurrences, such as earthquakes. Biological shocks commonly refer to diseases, economic shocks to events such as slumps in the global tourism market or exchange rates, social shocks to changes in visitor preferences and population issues (e.g., instability in visitor numbers) and events such as employee strikes and policy shocks to disturbances associated with governments (such as political turmoil) (Novelli and Scarth 2007; The Resilience Alliance 2007b; Walker et al 2002). Other shocks, such as those associated with terrorism, span several of these groupings.

3. Key people in the system and understanding their institutions

Owing to human primacy in social-ecological systems, leadership is a crucial aspect underpinning system interactions, providing opportunities for building trust, managing conflict, linking key individuals and initiating group partnerships (Olsson, Gunderson, Carpenter, Ryan, Folke and Holling 2006). The third phase of the framework is therefore concerned with determining systems of governance and key individuals influencing the protected area system either formally or unofficially, particularly in relation to resources and access, their interactions and the implications of such interactions on impacts experienced by a community. The identification of key authority figures or organisations in directive roles is concerned with identifying power relations within the protected area tourism system, in terms of influence on the system, either indirectly or directly (Ribot and Peluso 2003; The Resilience Alliance 2007b).

According to Plummer and Fennell (2009:150), the ‘root cause of conflict between local people and government is...power’. Directly linked to governance, power inequities can manifest in perceptions of protected areas as representative of government power, casting them as crux points of local dissatisfaction. For most situations except those where a highly participatory governance structure is employed, it is hypothesised that protected area/tourism authorities and government will be key power holders in both a direct and indirect sense through the setting and enforcement of policy and practice as dictated by government control operating at higher scales, in contrast to the community (although in practice this may not be the case, as in many ‘paper parks’).

Ascertaining governance of a protected area tourism system concerns issues such as property rights, tenure conflicts, access matters and their transparency and acceptance by communities. Verification of authority regarding resource use and regulations and relationships between these individuals/organisations is critical (The Resilience Alliance 2007b). Protected area tourism resources include, for example, key attractor species such as lion, medicinal plants, fuel wood, cultural sites, tourism spaces and infrastructure, the use and regulation of which affects local communities. As outlined by Ribot and Peluso (2003), the ability to benefit is dependent on access to resources, which is in turn affected by spatially and temporally dynamic individual and institutional relationships to those resources.

Emerging land and property rights are likely to be confounding issues in determining authority. Such claims are liable to impact on intra-community power relations as well as those within the protected area tourism system. Property and tenure are highlighted as only one group of factors affecting benefit derivation; others include access to technology, capital, markets, labour and labour opportunities, authority and knowledge, as well as access derived through social identity or negotiation of other social alliances (such as friendship or reciprocity) (Ribot and Peluso 2003). Analysis of these interacting factors and their effect on impacts can be assisted by the historical profile developed previously.

Key policies, regulations and legislation facilitating or constraining resource use within the protected area tourism system need to be ascertained. For communities, these may include facilitative aspects such as protected area community liaison and benefit sharing policies, land rights legislation and sustainable and/or responsible tourism guidelines that are likely to enhance collaborative resource management. Conversely, the commonly enclave nature of protected area tourism (Mill and Morrison 2006; Novelli and Scarth 2007), protected area regulations concerning human habitation and resource extraction and existing communication channels act in a constraining manner, minimising or prohibiting interaction between communities and the wider protected area tourism system.

Finally, an awareness of scales above (e.g. State, national) and below (e.g. households/businesses) the focal protected area tourism system is required. Cross-scale linkages, be they horizontal (geographical links, i.e. across communities) or vertical (across levels of organisation i.e. local to international) (Berkes 2007) can have crucial ramifications for the

focal system. As Peterson (2007) notes, state organisations (such as protected area authorities) are positioned within a network of other state organisations, similar organisations in other states, media and scientific/ international organisations. The complexity inherent in such cross-scale linkages is immediately discernable. The existence of cross-scale influences demands attention, for example issues associated with reconciling European land tenure systems with traditional ownership systems, and traditional authorities with western style management boards (The Resilience Alliance 2007b).

4. Adaptive cycle and thresholds

The final phase of the framework rests on exploring the current as well as projected future state of the protected area tourism system. Thresholds may be investigated. Resilience assessment proposes appraisal of the position of the protected area tourism system within the adaptive cycle. For example, does the protected area tourism system appear to be expanding in the forward loop (in a growth to conservation phases) or undergoing significant changes, the back loop (the release and reorganisation phases) (Walker and Salt 2006)? Largely based on the historical profile developed previously, patterns of behaviour in the protected area tourism system can be observed (e.g. exploration, consolidation, decline, rejuvenation) (Allison and Hobbs 2006). Evolutionary cycles are ubiquitous in nature and have been identified in systems created by human society including the economy (De Greene 1993). These stages and the cyclical nature inherent in their discovery are analogous to that presented in Butler's long-standing tourism destination life cycle model (Petrosillo et al 2006). These two approaches differentiate around the more explicit detail given in the resilience material about adaptation.

Where the tourism system is positioned within the adaptive cycle is of interest as it relates to its likely stability (and hence the persistence of the impacts currently occurring) or conversely, propensity to change (Walker and Salt 2006). Conceptualisations of the adaptive cycle were used by Walker et al (2009) in their resilience assessment to argue that the Goulburn-Broken system is on the cusp of a release phase and regime shift or transformation. Allison and Hobbs (2006) similarly used the adaptive cycle metaphor to understand the history of the Western Australian wheat belt highlighting that some regions may not follow an adaptive path but enter maladaptive states such as the 'Lock-in Trap'. Similarly, Bramwell

and Lane (2009) discuss the current economic recession in terms of an adaptive cycle for tourism, as exemplified by historical patterns of boom/bust.

Possible developmental pathways, or future scenarios, for the protected area tourism system can then be theorised in order to assist managers with future decision making, by necessity conducted within a context of high uncertainty and difficulty of system control (Allison and Hobbs 2006; Cumming et al 2005). Based on key issues of concern for the protected area tourism system as defined by local communities, such as sustainable resource harvesting by locals or an increase in visitor numbers, conceivable alternative development pathways based on interactions between existing system dynamics and possible future events can be developed. Alternative pathways are constructed by selecting a few uncertain or uncontrollable driving forces around which scenarios can be developed, for example a fall in tourist numbers. Each scenario is essentially a brief account that connects past and present events with hypothetical future actions, tracking key indicator variables (Peterson, Cumming and Carpenter 2003).

Through constructing future protected area tourism scenarios, it is possible to investigate various 'non return' points or system thresholds. Thresholds refer to some critical level which, once reached, results in a change in behaviour of the protected area tourism system, preventing further progress along a particular developmental pathway (The Resilience Alliance 2007a), for example, changes from a primary to tertiary economy or from productive soils to non-productive soils (Allison and Hobbs 2006). Such thresholds can be tangible (physically observable) or behavioural, although owing to human primacy within protected area tourism systems, thresholds are likely to be behavioural in nature. In their resilience assessment, Walker et al (2009) identify ten possible, likely and suspected thresholds for the Goulburn-Broken system.

For example, consider Indigenous Australian connection to land. After decades of institutionalised non-recognition, a threshold was reached in regards to Indigenous non-involvement in land management. Official positions changed to reflect new more inclusive attitudes, which have had marked flow-on effects for protected area and tourism management in Australia. Joint management arrangements between park authorities and traditional Aboriginal custodians initiated in many Australia protected areas (Langton, Rhea and Palmer

2005), for example Kakadu National Park, provide evidence of system behavioural change following the reaching of a tolerance threshold.

To date however, the discovery of system thresholds in the wider resilience arena has proven challenging, with no instances of thresholds being discovered prior to actually being experienced or derived from historical analysis (Walker and Meyers 2004). While this may seem disheartening, it is important to note that it may be more crucial to discover factors moving a protected area tourism system towards thresholds, than it is to precisely define the thresholds themselves (The Resilience Alliance 2007a). These weak signals, or ‘thresholds of potential concern’, are probably of greater concern as, once a threshold has been reached, a system is already at crisis point and management to return the system to a previous state is made much more problematic, if at all possible (Rogers 2003).

CONCLUSION

This paper proposes a novel, transdisciplinary conceptual framework for investigating the impacts of protected area tourism on communities. ‘Community’ (using a geographical conceptualisation) is employed as the focus for determining impacts of the wider protected area tourism system, via application of the ecologically-based principles of resilience assessment. The novel contribution of the framework lies in its transdisciplinary and distinctly stakeholder-driven approach to assessing protected area tourism, with community (and broad stakeholder) assessment of system interactions, functioning and issues of concern (impacts) deemed appropriate for assessing resilience in a future assured of increasing uncertainty and change.

The benefit of this framework lies in the ability to explicitly recognise and work with system change, complexity and uncertainty, in contrast to traditional indicator-based tourism impact methods that are based on linear assessment approaches. Highly exploratory in nature, the framework is intended to act as a starting point for further explorations into the utility of resilience and complex systems thinking to protected area tourism. In this paper we have attempted to progress the application of resilience assessment to new sectors, as the application of resilience thinking to protected area tourism is in an embryonic stage. In resilience thinking, it is typically only biophysical changes which are attributed as being slowly changing or of a delayed nature, and therefore in ultimate control of the system.

A key insight available from this conceptual framework concerns the potentially slowly changing nature of socio-cultural factors that may act as key drivers. Evaluation of tourism impacts has explicitly recognised the difficulty of attributing cause and effect in regards to the impacts of tourism (Deery et al 2005), as well as the complex and often slowly emerging recognition of impacts. Resilience and complex systems thinking can assist in conceptualising these attributions as well as providing a systems context for better understanding how and where impacts emerge.

Issues associated with the framework include difficulties in defining and bounding the system of inquiry. Part of the complexity lies in the close participation of stakeholders inherent in this approach, as system boundaries developed are largely based on stakeholder worldviews. While not unique to protected area tourism, the issue of system definition requires careful consideration. The short term timeframes within which humans operate pose another quandary for the framework, in that many of the issues and interactions raised will be of an immediate nature. Care must be exercised to ensure longer term impacts and interactions are also considered.

Protected area tourism, and tourism itself, are immensely complex, dynamic systems. A resilience and complex systems-based approach allows for explicit recognition of this complexity, uncertainty and change and as such, the conceptual framework presented here is positioned to act and take advantage of emergent systems thinking. The practical value of the framework seems high. However, while conceptually illuminating, the practical application of this conceptual model requires validation to truly assess its methodological value and applicability to investigating the impacts of protected area tourism on communities. Research guided by, or to test components of the framework developed through this paper, will greatly assist progress in the field with regards to advancing resilience and complex systems thinking in the tourism sphere.

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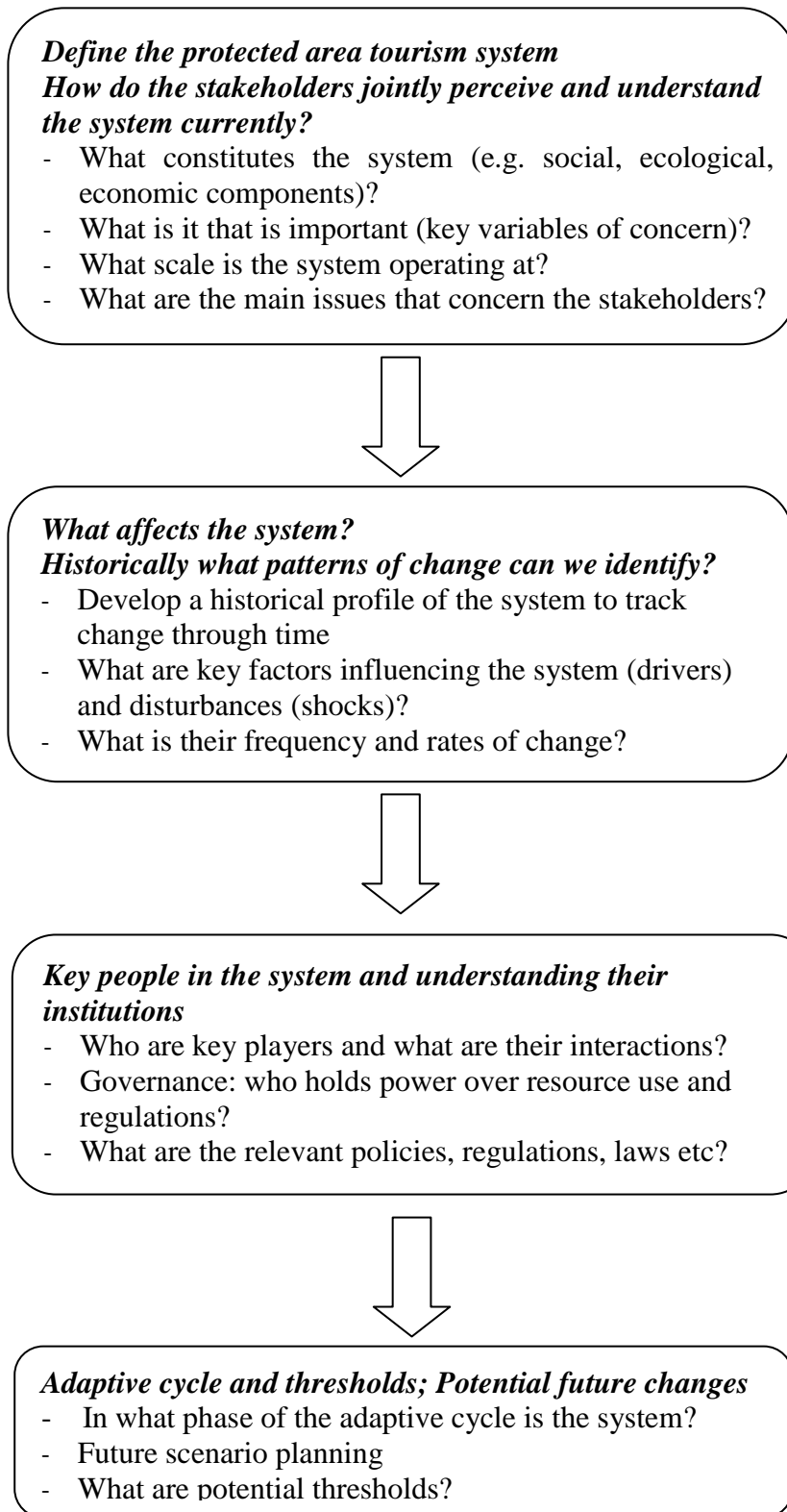


Figure 1. Conceptual framework: Using the resilience assessment process to investigate protected area tourism impacts on community (After The Resilience Alliance 2007a, b)