Regulating "Nirvana": Sustainable surf tourism in a climate of increasing regulation

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ABSTRACT

Indonesia's Mentawai Islands are widely regarded as a surfer's "Nirvana." This paper uses qualitative interviews and participant observation to explore the politics of surf tourism recreational capacity management in the Mentawais, and the wider implications for Mentawaian host communities' involvement in the surf tourism economy. While much of the Mentawaian surf tourism industry was vehemently opposed to a recently introduced capacity management model, the market responded favourably. There appear to be immediate advantages for government and local communities in incentivising low-volume, high-yield land-based surf tourism development, and social carrying capacity measures such as vocational training and cultural interchange emerge as viable adjuncts to purely physical carrying capacity regulation.

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1. Introduction

In recent decades, much research has addressed crowding with reference to outdoor sport and recreation (Budruk et al., 2008; Manning, 2007; Navarro-Jurado, Mihaela-Damian, & Fernández-Morales, 2013; Vaske & Shelby, 2008). One strategic response to crowding is to install mechanisms for monitoring and enforcing a recreational carrying capacity. The notion of "recreational carrying capacity" refers to, "the level of use . . . which a natural resource can sustain without an unacceptable degree of deterioration of the character and quality of the resource or the use of that resource" (Davis & Tisdell, 1995, p. 34). Davis and Tisdell (1995) demonstrated how scuba diving tourists were discouraged from visiting focal areas due to the overcrowding and congestion they experienced. This has implications for resource sustainability and the place it holds in the lives of host communities. In the sport tourism literature, work on recreational carrying capacities and their implications for stakeholders is growing (Buckley, 2002b; Martin & Assenov, 2012; Ponting & O'Brien, 2014).

Many adventure sport tourism products such as snowboarding, ice climbing, and surfing, take place in remote corners of developing countries. For these regions and the sport tourism operations they support, sustainability requires careful consideration of recreational carrying capacity; that is, how many enthusiasts can the host community and/or resource viably accommodate in a given period? Hinch and Higham (2011) note that overcrowding and environmental damage are interrelated and may, "compromise the quality of the sport tourist experience (particularly) where naturalness forms an

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important, perhaps central, element" (p. 129). One burgeoning sport tourism niche market in which naturalness forms a central element is surf tourism (Martin & Assenov, 2012).

Recent estimates of the global surfer population range from 23 million (International Surfing Association cited in Warshaw, 2004), to 25 million (Aguerre, 2009), through to 35 million participants (O'Brien & Eddie, 2013). Indeed, it is safe to say that participation in surfing is large and growing (Buckley, 2002a) in at least 161 countries (Martin & Assenov, 2012). The resultant surf crowding in urban settings is currently driving demand for surf tourism to less crowded destinations (Dolnicar & Fluker, 2003a,b; George, 2000; Hugues Dit Ciles, 2009; Ponting, 2008; Preston-Whyte, 2001, 2002). Consequently, surf tourism has become a significant niche within the adventure/sport tourism sector (Barbieri & Sotomayor, 2013; Buckley, 2002a). One destination that is enduringly popular with travelling surfers is the Mentawai Island chain, 130 miles off the central west coast of Sumatra, Indonesia.

Much of the surf tourism market in the Mentawais has evolved around charter vessels (Ponting & McDonald, 2013). Surf tourists pay for all-inclusive 7–12 day surfing holidays on vessels that cruise around the various surf breaks with up to 12 surfers aboard. By the time the Macaronis Surf Resort opened in 2005/2006 on Pasangan Island near the village of Silabu, approximately 50 surf charters were operating in the Mentawais. The resort is adjacent to the surf break called "Macaronis" which has been voted the world's "funnest" wave (Warshaw, 2004; Waterways_Travel, 2013).

In 2002, Buckley (2002b) warned that the Mentawai Islands were, "particularly vulnerable to crowding and downmarket competition … recreation capacity is hence particularly critical to maintain an economically, social and environmentally sustainable tourism industry" (p. 440). More than 10 years later, crowd saturation in the islands is extreme. For example, 11-time world surfing champion Kelly Slater tweeted, "If there was any question as 2 whether we've ruined the Mentawais, the sobering reality of 16 boats @ 1 average break tonight confirmed it" (Slater, 2012, July 8th).

In response to levels of crowding threatening viability, in April 2010 Macaronis Surf Resort introduced a unique model to manage recreation carrying capacity. The model has been extremely controversial with the Mentawai charter fleet; however, the Mentawai Government sees potential in its broader application across the archipelago. The overriding question guiding this research is, how does the introduction of carrying capacity regulation impact upon the sustainability of surf tourism in a developing country? This paper, for the first time, applies common pool resources literature to the notion of crowding in international surf tourism and through the Framework Analysis for Sustainable Surf Tourism (FASST) (O'Brien & Ponting, 2013; Ponting and O'Brien, 2014) provides the first structured analysis of the impacts and issues of existing and proposed regulations to manage crowding and how they influence the sustainability of surf tourism in the Mentawais. The premise being that the more the FASST principles are incorporated into the management of a destination, the more sustainable a surf tourism system is likely to be.

2. Theoretical background

2.1. Surf tourism

Surf tourism is, "generating sufficient economic, social and environmental significance to justify academic attention" (Barbieri & Sotomayor, 2013, p. 112). Martin and Assenov (2012) cite 156 individual pieces of surf tourism research published between 1997 and 2011 and claim that surf tourism now has its own distinct, multidisciplinary literature. Previous surf tourism research has explored the sustainability of management plans, policies, and regulations in a range of geographical settings including Indonesia (Buckley, 2002b; Hugues Dit Ciles, 2009; Ponting et al., 2005; Ponting, 2001; Ponting, 2008), Thailand (Martin, 2012), Costa Rica (Tantamjarik, 2004), Fiji (Hugues Dit Ciles, 2009; Ponting, 2007; Ponting and O'Brien, 2014) and Papua New Guinea (O'Brien & Ponting, 2013; Ponting, 2007).

Since the landmark definition of sustainable development by the Brundtland Commission in 1987, the concept has been applied widely to tourism. UNESCO (2012, p. 3) defines sustainable tourism as, "tourism that respects both local people and the traveller, cultural heritage and the environment." The notion of sustainable surf tourism fits with this conception of sustainable touristic activity centred on the sport of surfing, where the needs of surf tourists are met whilst also respecting the current and future social, cultural, economic, and ecological welfare of local people. Ponting et al. (2005), O'Brien and Ponting (2013) and Ponting and O'Brien (2014) initiated a normative framework for analysing the sustainability of surf tourism development in developing countries based on five broad principles designed to be applicable across different geographical, cultural, political, policy, and regulatory settings. While the FASST is explained later in the paper, the ensuing sections address the related issues of common pool resources and recreational carrying capacities in the context of the communities where adventure sport tourism takes place.

2.2. Common pool resources, recreational carrying capacity and host communities

Common pool resources (CPRs) are those resources from which it is difficult to exclude users and where exploitation by one user reduces availability to others (Moore & Rodger, 2010; Ostrom, 1990). Early theorists pointed out that individuals acting in self-interest leads to unfavourable collective outcomes; they concluded that the assignation of property rights was the appropriate response to ensure that common pool resources were not subject to over-use and under-investment (Hardin, 1968; Olson, 1965). Hardin (1968) assumed that CPRs are always open access (Bromley, 1978, 1992; Powell, 1998; Wade, 1987) and presented a binary choice between open access and tragedy, versus private property and prosperity (Gibson, 2009). In reality,

socially constructed and culturally bounded ethics often prevent over exploitation by free-riders (those who exploit a resource without paying the cost). However, in the absence of such ethics, open access to natural resources leads to crowding and resource depletion (Hardin, 1968; Healy, 2006; Manning, 2007; Olson, 1965; Ostrom, 1990).

Several researchers have explicitly explored surf breaks as CPRs. Rider (1998) introduced the notion of the 'surfer's dilemma' to describe issues related to surfers sharing waves. Nazer (2004) outlined the norms surfers employ to achieve efficiency in the use of surfing resources (waves). Nazer usefully pointed out some of the similarities and differences between standard CPRs and surf breaks. In one sense, surf breaks are like fisheries in that the resource is common pool right up to the point at which it is caught, then both fish and wave become a private good. However, overuse of standard CPRs can lead to resource collapse (e.g. overfishing leading to species decline) whereas crowded surf today has no impact on how many waves will break tomorrow. Similarly, under-investment in standard CPRs (e.g. a failure to research and restock a declining fishery) can lead to resource decline; meanwhile, under-investment by surfers in the resource has no bearing on how many waves will break in the future.

Understanding surf breaks in economic terms requires an assumption that the most effective way to manage a surf break is to ensure that as many waves as possible are ridden, and that each is surfed by only one surfer (Nazer, 2004; Peterson, 2013) – more than one surfer on a wave greatly diminishes the enjoyment of both. Surfers are thus under-invested in the resource when a quality wave goes unridden and are overusing the resource when more than one surfer rides the same wave (Nazer, 2004). The works of Rider (1998), Nazer (2004), Kaffine (2009) and Peterson (2013) all suggest that collective action decreases with group size – in other words, crowding in the surf leads to overuse of the resource (more than one person riding a wave) and a decline in the recreational experience. Peterson (2013) notes that social norms, unwritten rules, and external punishments for non-compliance may actually contribute to favourable collective outcomes. That is, if everyone abides by the established surfing etiquette of waiting one's turn and not taking another surfer's wave, then the perception of crowding may be reduced. This is an important finding in surf tourism because the absence of crowding is central to marketing and absolutely key to guest satisfaction (Buckley, 2002a,b; Buckley, 2010; Hugues Dit Ciles, 2009; Ponting, 2008; Ponting, 2009a,b).

Crowding in outdoor recreation has been the subject of much research. Studies show that, as crowding increases, visitors with lower crowding thresholds and higher daily spending patterns are displaced by those with higher crowding thresholds and a concomitant lower daily spend (Budruk et al., 2008; Manning, 2007; Navarro-Jurado et al., 2013; Vaske & Shelby, 2008). The preference for uncrowded conditions is directly linked to the economics of CPR over-exploitation. As Ponting (2008) demonstrated, there is a clear relationship between the number of surfers at a surf break and the numbers of waves available to any one surfer: fewer surfers equals more available waves. The only study to date of crowding in surf tourism advocated recreational capacity capping of surfing areas, citing indicative examples from the Grand Canyon and Ugandan gorilla tourism (Buckley, 2002b).

Carrying capacities have a long history in recreational resource management (c.f. Stankey & McCool, 1984; Washurne, 1982). Getz (1983) proposed six different types of carrying capacities: physical, economic, perceptual, social, ecological, and political. Of most relevance to this research are physical carrying capacity—a measure of the spatial limitations of a given area (e.g. the number of berths at a marina); and social carrying capacity—". . . the maximum visitor density at which recreationists still feel comfortable and uncrowded" (Ruyck, Soares, & MacLachlan, 1997, p. 822). The physical and social carrying capacities of a particular surf break are interrelated. Physical factors include local bathymetry; swell size, period, and direction; wind strength and direction; tidal variations; currents; swell shadowing; and the frequency of larger 'set waves'. Meanwhile, social carrying capacity in surfing is a function of the physical factors mentioned above, combined with the compliance of surfers to established surfing behavioural norms and etiquette regarding right of way. These variables, particularly the physical ones, are subject to change quickly, which renders responsive capacity management a difficult proposition. Nevertheless, at popular surf breaks, crowding is of central concern, as it often leads to deleterious impacts on participants' enjoyment and, in some cases, in-group conflict—"conflict between participants in the same activity" (Tynon & Gomez, 2012, p. 532).

A number of destinations have sought to manage surf break capacity including Fiji (Ponting and O'Brien, 2014), Papua New Guinea (O'Brien & Ponting, 2013), and the Maldives (Ponting, 2013, 2014). This paper draws comparisons with other destinations in a structured analysis of surf tourism capacity management in the Mentawais and its implications for sustainability in host communities.

3. Research methods

3.1. Research context: a regulatory history of surf tourism in the Mentawai Islands

In 2003, the regency government of the Mentawais announced legislation known as Perdah 16 (Ponting, 2012). The legislation required all charter boats (capped at 30 boats) to fall under one of only five marine tourism licenses. Licenses were only to be issued to companies that either had completed a resort in the islands or had secured land for a resort and were in construction. Charter operators were to be given six months to fall into line. Resorts were to be granted exclusive "support territories" in which resort management could then control visitation and recreational capacity with a radius of 1000 m from the resort site for maximum occupancies of 25 guests or over; and 750 m radius for maximum occupancies of under 25 guests. In addition, "tourism facilities" within the support territory radius may exercise a 250 m-support

territory radius of their own. In essence, this legislation provided some tour operators with exclusive access, or at least management rights, to surf breaks adjacent to their resorts. Perdah 16 was due to be enforced after a brief socialisation period in 2003, but at the beginning of the 2014 season, Perdah 16 had not yet been enforced. Nonetheless, in theory, Perdah 16 remains in place at the time of writing, in so much as it has not been revoked. Indeed, it is the legal foundation on which the Macaronis Surf Resort established its mooring system to manage crowding in 2010, and forms the context of this study.

3.2. Framework analysis for sustainable surf tourism (FASST)

The FASST has its genesis in an analysis of data gathered in the Mentawais in 2003 (Ponting et al., 2005). These recommendations were then formalised into a framework in the context of a successful model of surf tourism development in Papua New Guinea (O'Brien & Ponting, 2013), and further refined and coined as the Framework Analysis for Sustainable Surf Tourism in the context of deregulation of the Fijian surf tourism industry (Ponting and O'Brien, 2014). The five inter-related principles of the FASST are: (1) a distinct move away from economically neo-liberal approaches to development (for a discussion on neoliberalism in relation to surfing and commodification see O'Brien & Ponting, 2013); (2) the need for formal, long-term, coordinated planning that recognises limits to growth; (3) systematic attempts to foster cross-cultural understanding; (4) village-level surf-sport development; and, (5) contribution to poverty alleviation (Ponting & O'Brien, 2014). The principles are normative rather than prescriptive and are designed to provide a framework for analysing sustainable surf tourism development in less developed countries across different geographical, cultural, political, policy, and regulatory settings. While interconnected, principles one and five relate primarily to economic sustainability, principle two to social and environmental issues and principles three and four to socio-cultural concerns. The fundamental premise is that the more deeply these principles are enmeshed with the management and regulatory mechanisms of a destination, the more sustainable a surf tourism system is likely to be.

3.3. Data collection

Primary data included 30 in-depth interviews that were collected in three phases over three years. The first phase of the research took place in July 2011 and involved interviews with resort owners and tour operators in Indonesia (4 participants), surf tourists (6), and Mentawaian surf tour guides (2). Interviews took place concurrently with participant observation onboard a surf charter boat for a period of one week followed by two weeks of participant observation at a surf resort. The second phase took place in March 2012 and involved interviews with surf tour operators (4), surf tourists (5), one Mentawaian surf guide, and the Mentawai Minister for Tourism, Ibu Desti Seminora, concurrent with two weeks of participant observation onboard a surf charter boat. The third phase took place in March 2013 and involved interviews with tour operators (4), surf guides (2), surf tourists (5), and Minister Seminora, concurrently with participant observation onboard a surf charter boat for a period of two weeks.

In all cases, semi-structured interviews were undertaken and, with permission, were digitally recorded and transcribed verbatim. With the exception of Minister Seminora and Macaronis Surf Resort founder, Mark Loughran (both of whom agreed to be identified), names have been changed to protect anonymity. Tour operators and local surf guides were encouraged to speak to any philosophical or operational issues they had with the mooring system. Surf tourists were asked about their perceptions of the need for regulation and their impressions of the mooring system. Minister Seminora, was asked about her impressions of the mooring system and her vision for the future of surf tourism in the Mentawais. A research journal of field notes was kept throughout to note important points that arose outside of formal interviews and participant observation. This was then incorporated into the collection of data to create a "convergent line of enquiry" (Yin, 1989, p. 98).

3.4. Data analysis

Transcribed interviews and field notes were collated, content analysed and coded manually to themes aligning with the five elements of the FASST. For example, data related to surf tourism and its contribution to poverty alleviation (or lack thereof) were placed into Theme 5: Contribution to poverty alleviation. Content analysis is useful in the analysis of verbal, visual or written communications (Sarantakos, 2005), and it is used extensively in both quantitative and qualitative research (Finn, Elliott-White, & Walton, 2000). However, it is imperative that the incorporation of emerging ideas is not constrained by existing theoretical concepts and that a "continuing dialogue" (Hargreaves, 1986) between theory and the data under analysis is facilitated. The researchers were alert to emerging themes outside of the five principles of the FASST and several are discussed in the conclusion as further refinement of our understanding of the dynamics of surf tourism capacity management and its contributions to social change agendas in host communities.

4. Findings and discussion

The study's findings are structured and discussed in the context of the five FAAST principles:

4.1. A distinct move away from economically neoliberal approaches to development

In the 2011 round of interviews, the founder of Macaronis Surf Resort explained that the Macaronis Moorings Management (MMM) system was initiated in 2007 when he asked the Mentawai Government to honour the content of Perdah 16. He pointed out that,

> As per the laws, we built our resort buffer zone, which is 1000 m. That's what it says in the licensing laws. By putting the mooring buoys in at the edge of the resort buffer zone, we get an extra 250 m, and that puts the wave within our license . . . The government said OK, and they licensed the moorings as facilities of the resort. The license states that we get a 1000 m buffer zone, which is pretty much the whole bay. If you're going to conduct tourism in that buffer zone, you are supposed to have our permission. (Mark Loughran, personal communication, July 26th, 2011)

Attempts were made by the resort founder to engage the various charter boat associations in the management of the MMM system; however, only six boats out of 40 responded (Mark Loughran, personal communication, July 26th, 2011). As such, Macaronis Resort reached a Memorandum of Understanding (MOU) with Silabu village authorities regarding the management of the moorings. This gave Silabu a sense of ownership of the operation and a modest source of income.

> The Kepla Desa (village head) employs the village police. They used to come down and collect "unofficial payments" off the boats. Then . . . the Kepla Desa formulated a system, wrote to all the charter boats and socialised [circulated among stakeholders as required by Indonesian law] a statement saying, "All boats must now use moorings at 300,000 rupiah a day. You must book in advance by email or by radio. Any boats not using moorings will not be tolerated and will be asked to leave. You must arrive by 8am, otherwise the mooring can be given to somebody else. The maximum time at Macaronis per boat is two days. However, if there is no boat on the third day you are welcome to stay longer." (Mark Loughran, personal communication, July 26th, 2011)

The system worked reasonably well in the 2010 season, although there was considerable tension with some charter boat operators who were abusive and threatening towards resort management. Then, on October 25th 2010, a tsunami triggered by a 7.7 magnitude earthquake ripped through the southern Mentawai Islands claiming over 400 lives, completely destroying Macaronis Resort and dragging the moorings out to sea (Pasandaran, 2010). The resort rebuilt and reopened for the full 2012 season and the Silabu Kepla Desa advised the charter fleet of the reinstatement of the mooring system. This time, several boats refused to make bookings and flagrantly broke the regulations. A video appeared on YouTube in which one boat operator attempted to provoke a violent response from the village police while frightened guests looked on (Stanley_Badger, 2012, July 31st). The international attention this video received caused the Mentawai Government to accelerate a new round of regulations that would see the government take over administration and enforcement of the MMM and expand it into additional areas.

> The Mentawai Government has proposed new laws to the senate that will have the Mentawai Government in control of each spot rather than a company. The plan is to define the carrying capacity of each area and then the government will manage who can surf there, between the boats and the resorts, to make it work efficiently and so everybody enjoys their experience. (Ibu Desti, Mentawai Minister for Tourism, 2013)

Interestingly, the data suggest that any shift away from what is by default an economically neo-liberal investment climate in the Mentawais could lead to greater investment and a potential diversification of the islands' sport tourism base. For example, a surf resort operator commented that

> There's great kayaking potential in Siberut and it could really blow up (gain in popularity) in the next five years. But what's the point if Joe Blow next to me does the same thing and we just end up having a price war? It's not sustainable; you have to have some road map for development and planning. Logically, it seems like, why would you want to invest where there is no fairness in the playing field? I don't think it matters what facet of tourism you're talking about, if you don't have a rulebook to play by, and if you don't have enforcement of the rules, then it's a free for all. The investors here are getting screwed. (Chris, surf resort owner, 2011; parentheses inserted)

More proactive recreational capacity management should also increase the quality and consistency of the Mentawais surf tourism product experience. Illustrating the link between physical capacity regulation and the stability/volatility of the regional investment climate, a surf guide told the story of a friend who was looking to invest in property adjacent to a surf break in Lombok (another Indonesian island):

> I had a mate telling me six weeks ago, "I went to Deserts (a world-class surf break) last week – only 20 guys there, pumping waves, insane time." He had it like that two or three times and told me there was a house there for 40 million (rp) that he was going to buy. He's just been back to Deserts and said, "I'm never going back there ever again. There was 200 people, 20-30 pros, it was a nightmare." He's definitely not buying that house. There's no control. It'll be like that for a month and everyone will be like, "fuck it, I'm not going there again!" There's just no regulation, no consistency, no incentive to invest.

Clearly, the laissez-faire approach to surf tourism development in the Mentawais has resulted in crowding, negative reputation, and thus far, has been counter-productive to industry sustainability and the livelihoods of locals. This has led to distinct moves away from neo-liberal approaches to development in the form of Perdah 16, the MMM, and new legislation before parliament. However, given local geographical and political challenges and a culture of non-compliance among many operators enforcement will remain problematic. This highlights a need for formalised strategic planning that has in-built limits to growth at its core.

4.2. Formal, long-term, coordinated planning incorporating limits to growth

Rural sport tourism destinations must retain relatively uncrowded conditions in order to guarantee consistency and to remain competitive (Buckley, 2002b; Costa & Chalip, 2005; Hinch & Higham, 2011; Hugues Dit Ciles, 2009). Previous research has established the importance of strategic planning to ensure that sport tourism is an agent for positive social change (Mair & Reid, 2007; O'Brien & Ponting, 2013; Okazaki, 2008; Wray, 2011). These ideas incorporate limits to growth, and advocate qualitative growth over quantitative expansion (Daley, 2008). Ponting and O'Brien (2014) showed that deregulation of surf breaks in Fiji led to crowding and diminution of the surfing experience, as well as increased pressure on the environment. In the current study, the data also reveal a need for planning and limits to growth in the Mentawais. For example, in 2011, before the Macaronis Resort was rebuilt post-tsunami, one surf tourist explained his views on crowding at Macaronis without regulations. He observed that,

> I wouldn't particularly want to go back to Macaronis with that many boats. It was not enjoyable. It's a fantastic wave, one of the most unbelievable waves I've come across, but to have that many people there just takes the fun out of it. A limit on the numbers would make me more likely to re-visit, definitely. I'm definitely in favour of managing surf breaks after what I've seen on this trip, you can't have mayhem on it, it just destroys it. (Mike, surf tourist, 2011)

A number of Macaronis Resort guests were interviewed in early March 2012 before the mooring system had been initiated for the season. The following quote indicates the importance of capacity management as a pull factor and the fragility of Macaronis' reputation as a surfing "Nirvana" in the face of crowding.

> One of the things that prompted me to want to stay at the resort was that I heard they had a mooring system there because the crowd was getting out of hand. I thought OK, you've got two boats with 12 on each boat, 24 guys plus 24 in the camp. 48 guys all up. That's manageable. But today there was a lot more than that, nine boats, so between 90 and 100 in the water. It only takes one dickhead and the vibe is gone. (Andy, surf tourist, 2012)

Perdah 16 was designed to incentivise investment in land-based resorts, so it is not surprising that the charter fleet was resistant to it. Issues with the programme fall into three broad thematic areas. First, the MMM created a great deal of conflict between village authorities and openly defiant charter boat captains. Charter boat captains claim that the local authorities were officious and rude; while local stakeholders claim that after failing to bribe local officials, some captains simply defied the system. A charter boat surf guide explained, "People might pretend their boat is broken down because they want to surf the wave. Dishonesty is everywhere. It's all around us" (Christian, surf guide, 2011).

Second, issues were raised about social impacts on the Silabu community. One charter operator encapsulated the response of several boat captains and resort owners in his comment that, "It's created levels of hierarchy in the village that aren't healthy. There's no transparency as to how it filters through the community. It's created a powerful Mafia-like element in the community that didn't exist before" (Bob, surf charter operator, 2011).

Third, much discontent was voiced about the booking system. Double bookings were apparently common and more "favoured" boats were able to book for the entire season. Despite these concerns, the Mentawai Government supports the MMM and intends to expand the system. The Tourism Minister explained that, "Under the new regulations, there will be government posts in Macaronis, Katiet, NyangNyang, Pipi and Karamajet. The boats have been complaining about the booking system, so it will go to a first come, first served basis" (Desti Seminora, Mentawai Tourism Minister, 2013).

Demonstrating the industry's recognition of the need for regulation, a report was prepared by a resort owner with input from five charter boat operators in 2012. The "ideal" number of surfers in the Mentawais for any day in normal conditions was set at 475 (Carter, 2012). However, this number assumes that all surf breaks will be surfable under these conditions and that all surfable breaks will be utilised simultaneously. In reality, this is rarely, if ever, the case. Regardless, the report urged the government to cap numbers at or below this level. As of pre-season 2014, the new regulations are yet to clear the Mentawai Parliament. When they do, implementation and enforcement will be critical success factors (c.f. Ponting & McDonald, 2013). With industry and community support, increased government involvement in recreational capacity implementation seems a positive move to ease the burden of enforcement and related social impacts on villages.

An important additional theme emerged from the data in relation to the crowding of surf resources: the role of surfers' behavioural norms in perceptions of crowding. The Mentawai Government responded to the crowding issue by establishing physical carrying capacities for surf breaks, and has been supported by some industry stakeholders in this effort (Carter, 2012; Ponting, 2012). However, physical carrying capacity regulation should perhaps not be the sole mechanism for managing crowding in this instance, given its inability to factor in visitor behaviour and social norms (Buckley, 2002b; Butler, 1997, 2010; Lindberg et al., 1997; McCool & Lime, 2001). Indeed McCool and Lime's (2001) criticism of physical carrying capacities, and their call to, "bury the concept of a numerical tourism and recreation carrying capacity – and the search for

the 'magic numbers' that such concepts inevitably lead to" (p. 385). Our findings fall short of recommending "burial" of physical carrying capacities, but suggest a blend of physical and social carrying capacity may be effective in this context.

An important behavioural norm in surfing is that the surfer closest to the breaking curl of the wave has priority to ride the wave. As suggested by the literature on surf breaks as common pool resources (c.f. Kaffine, 2009; Nazer, 2004; Peterson, 2013; Rider, 1998), in crowded conditions the tendency for less patient surfers to "drop in" on surfers with priority escalates, thus increasing the danger of collision and injury. The dangers are exacerbated at more dangerous reef breaks. One resort owner commented that,

> When you're taking off on a 6 foot left at Kandui's, you can't have anybody even paddle for your wave. Everyone else has to give you the benefit of the doubt and let you try and make the section. If one person even paddles for it and then pulls back, then you're done. It's going to snowball you. You're going to end up on the reef and seriously hurt. These waves are not joking. You're out in the middle of nowhere and there's no hospital out here. (Chris, surf resort owner, 2011)

What has emerged clearly from the data is the significance of surfers' adherence to the sport's established social norms, and how these behaviours have the potential to reduce perceptions of crowding and the in-group conflict identified by Tynon and Gomez (2012). The following quote is indicative of these data:

> This morning there was a nice little wave at Maccas and there were probably only 15 people in the water. But it just was *not* a good vibe ... guys were paddling on top of people, paddling for the inside, taking every wave and it was pretty ordinary. The waves were great but the vibe wasn't. We surfed the day before and everyone was taking their turn, there were more people in the water then, but it was a much better vibe. (Marty, surf tourist, 2013)

The breakdown of established behavioural norms and transgressions of the unwritten rules of surfing happen in the absence of external punishment or consequences (Peterson, 2013). Thus, tourist behaviour can be influenced to maximise crowding thresholds and reduce in-group conflict, while individuals still perceive the experience to be relatively uncrowded. This has direct implications for increasing social carrying capacity. Such an approach is at the core of surfing subculture, and could form a key part of cross-cultural communication.

4.3. Systematic attempts to foster cross-cultural understanding

Sport tourism can facilitate exposure and interaction between sport tourists and people from local communities (Buckley & Ollenburg, 2013; Hinch & Higham, 2011; O'Brien & Ponting, 2013). In the Mentawais, a number of non-government organisations (NGOs) have worked with land-based surf camps to facilitate cultural interaction between surf tourists and local communities (c.f. A Liquid Future http://www.aliquidfuture.com/). Programmes have included English language instruction to facilitate locals' communication with surf tourists, while other programmes have encouraged participation in the sport by local youth, particularly girls (this is discussed further in the context of the fourth FASST principle). Interestingly, no comparable programmes have been instigated or participated in by stakeholders from the charter fleet, possibly due to their largely nomadic existence and lack of formal ties to individual communities. Regarding the extant programmes, where tourists were exposed to Mentawaian culture in surf camp environments, responses were positive. For example, one surf tourist commented,

> We got to see these tiny little shamans doing their traditional dancing. At the end, they invited us to get up and perform with them, so we were dancing around with these wizened little old guys, you know, having a laugh with them. We heard a bit about their lives, their struggles. It really makes you think, you know ... After the waves, that was the coolest part of this trip. (Jim, surf tourist, 2011)

Tour operators and surf tourists also understand the value of tacit cross-cultural information exchange in opening new opportunities for local people (Buckley & Ollenburg, 2013). Another surf resort owner explained that,

> We need to be giving something back to the community that is more than just tax because the taxes are not filtering down to the villages and they're starting to get pissed off. Why don't we come together and make a school for surf guides that we can fund and promote? We can bring in foreigners, lifeguards, medics; we can have our star boat drivers give lessons. It's something that could be international, an international set of standards for surf guiding, not only for the safety stuff, but etiquette too. (Chris, surf resort owner, 2011)

Interestingly, this is where cultural exchange can be facilitated that not only provides vocational skills for host community members, but could also provide an added mechanism for social carrying capacity management by reinforcing the surfing behavioural norms referred to in the previous section. Trendafilova and Chalip (2007) demonstrate how sport subculture can be a tool to address negative sport-related behaviours, while Trendafilova (2011) showed how a sport subculture intervention resulted in participants modifying certain behaviours to decrease their negative environmental impacts. In the same way, negative social behaviours of surf tourists that transgress surfing behavioural norms could potentially be addressed through interventions aimed at education and training of surf guides, who are key gatekeepers in this context. Mentawai boat Captain Jody Perry noted how these norms were eroded with the growing popularity of the destination:

Myself and others tried hard to tune our guys to share over the years, and to keep the Mentawai experience as civil and as enchanting as we could. We took responsibility for our guests' behavior in the water, threatening free-surfers and pros alike that they would be pulled from the water and steamed away if they didn't play well with others. It worked to a point. It works if everyone complies, but others didn't. It only takes one person to fuck that up. In the end, it was too much to ask. (Jody Perry, as quoted in Baker, 2007, p. 79)

Another surf guide explained that,

Crowding is not just a matter of numbers; it's a matter of behaviour. It's not the guests' fault when they fight with another guest; it's the guide's fault . . . I tell them when they arrive: "If you're unhappy with someone and you're not comfortable talking to them directly, come and tell me and I'll do it. It's part of my job." (Mick, surf guide, 2012)

Additional opportunities for fostering cross-cultural interaction and understanding of the local environment were also noted by a resort owner, who commented that,

It's natural for surfers to care more about the environment they're surfing in than to care about people living in villages that are one hour away by speedboat. For us, the surfers can see 2-3 times a week when we drive by a dugout with a compressor that people are using potassium cyanide and destroying the reef. They care about that because they're surfing over that reef . . . All our staff are Mentawaian and through them, our guests also come to love the Mentawaian people. (Kevin, surf resort owner, 2013)

The data in this section indicate that the industry and tourists understand the benefits to the Mentawaian people of cross-cultural understanding. Additionally, tourists express the extent of the value added to their experience. The incorporation of behaviour management techniques into formalised training programmes for local surf guides would impart transportable tacit knowledge and vocational skills (Buckley and Ollenburg, 2013) to local Mentawaians and enculturate them into the surfing subculture and etiquette. With trained local guides influencing appropriate behaviour, perceptions of crowding may be reduced and social carrying capacity thresholds increased. Despite this, current attempts to foster cross-cultural understanding are ad hoc at best. There are, however, exceptions in the NGO community. These are outlined in the following section.

4.4. Village level sport development

Ponting (2008) found that in the first decade of Mentawais surf tourism, tour operators actively discouraged local participation in surfing. The echoes of this philosophy can still be heard in the Mentawais a decade later. One surf tourist explained the prevailing attitude towards local sport development in surfing,

For a long time around here, a lot of the boat captains didn't want tourists to give boards to the young kids. They thought they would clutter the lineup and there'd be too many surfers, which was going to happen anyway. Why shouldn't the locals be involved? It's their backyard! (Dave, surf tourist, 2012)

Indeed, there is evidence that attitudes are changing. As an indicative quote, one surf tourist commented that,

I think it's fantastic [Mentawaian children learning to surf] because if it helps them have a better understanding of their environment through surfing. That's all good. They get to meet people from overseas. You don't know what could come of it if one of the kids becomes a good surfer. It might open doors for them, you know? (Marty, surf tourist, 2011)

While the Mentawaian Government supports surfing development indirectly through its cooperation in staging the Rip Curl Pro Mentawai for Indonesian surfers, there are currently no formal programmes to encourage community-level surfing participation. Despite this, groups of local surf enthusiasts have emerged. There is evidence that the government may soon participate in supporting these groups with, for example, surf lifesaving training. A tour operator noted that,

The Ag'gau Boardriders have been pretty active in the last few years organising comps, beach cleanups and building a little clubhouse down the end of Tuapejat in front of a little wave called Ombak Gereja. There was actually a guy out here this week talking with Desti (Mentawai Minister for Tourism) and the Ag'gau kids about doing surf lifesaving training sessions. Of course, there's a bunch of other kids from across Mentawai who have picked up the surfing bug but no others I know of have organised themselves to that extent. (Tom, tour operator, 2013)

Additionally, an NGO called, "A Liquid Future" is actively supporting the development of the sport, particularly among girls. Positive results are apparent after just one year of operations. Village youth have been empowered by "A Liquid Future" encouraging engagement with the sport, as the following quote from the NGO's website suggests:

The girls have improved a lot, not surprising considering the number of hours they spend in the water now. What a change from a year ago when they rarely went in the water. They are stronger, more confident and visibly proud of the skill they have now mastered. Surfer Girl Bali also sent a video of the girls they sponsor in Bali, surfing and telling a bit about themselves . . . . The Mentawai girls loved this nearly as much as their boards. They now feel part of something beyond the shores of their island and see that other Indonesian girls surf too. This is a powerful sentiment that broadens horizons and the concept of what is possible for these three amazing girls. (A Liquid Future, 2013, p.3-4)

To date, there has been little help from the government or the surf tourism industry to support these initiatives. Again, the lessons learnt in the Papua New Guinean (PNG) context are prescient here. Part of the remit for land-based surf tourism operations in PNG is the establishment of regional clubs for village-level surfing development. This approach has resulted in the establishment of 10 surfing clubs and more than 500 indigenous surfing participants across the country, with a large percentage of these participants being female (Abel and O'Brien, 2014; O'Brien and Ponting, 2013). Though modest in scope, the success of the NGO development initiatives described above suggests there is demand for development of the sport of surfing at the village level. Once a critical mass of local surfers has developed, the sport is likely to grow rapidly through the islands increasingly placing local people in a position to work in and own businesses in related industries.

4.5. Contribution to poverty alleviation

While poverty reduction is implicit in the first four principles of the FASST, the fifth principle makes it explicit. Ponting (2008) and Ponting and McDonald (2013) found that complementary myths of "benevolent disengagement" and "happy simple locals" in the Mentawais helped to assuage any guilt felt by tourists for failing to engage economically with people who are clearly struggling with poverty. These myths caused resistance to the development of land-based surf tourism operations for fear of changing the way of life for Mentawaian people (Ponting, 2008). However, both myths are detached from the realities of life in coastal Mentawaian communities. The following comment from a resort owner illustrates this point:

> People say that they like seeing the guys in their canoes and that we shouldn't disrupt their lifestyle, we should just let them be like that. They didn't like that the resort would change their way of life and I said, "Mate, if you could speak these guys' languages, what they really want is to be in your position looking at you. They're not just there for your amusement so you can think about how poor they are and how rich you are." (John, surf resort owner, 2013)

The data suggest that resorts and land-based developments have indeed changed the way of life of the Mentawai people by raising their economic well-being. In six years of operation, Macaronis Resort has changed the standard of living for those in Silabu, whereas the previous 20 years of charter boat traffic had little positive impact.

> When we started, there was one motorbike in the village. Now there's probably 30. Back then, there was one satellite dish at the chief's house. Now there's probably 10 or 15. We put in lights and powerpoints in the village in 2006. The community has flourished a lot over that time. That's why malaria is now pretty much unheard of. (Mark, Macaronis Resort founder, 2013)

While resorts were investing heavily in tangible infrastructure improvements, many surf charter boats were avoiding taxes and operating illegally in the Mentawais. One charter boat operator explained that,

> Boats have been coming in on a touring license to travel around and they're operating businesses on that license. People are paying in Australia, showing up here, jumping on the boat, and the money goes straight back to Australia. The Indo operators were getting pissed off. (Jim, charter boat operator, 2013)

Additionally, the Mentawai Government has become frustrated with an inability to collect taxes from charter boats at the same level as resorts. There is a recognition that resorts also create economic interactions and backward linkages into local communities; whereas, the charter boats' main interactions are in Padang on the Sumatran mainland that have no benefit whatsoever for local Mentawaians. One resort owner explained,

> They [Mentawai government] brought in a 10% tax on two separate incomes on the resort business: on accommodation and on restaurants. So, for all income derived from accommodation and restaurant, I pay 10% of that to the Mentawai Government directly. Boats have separate regulations. As of last year, a boat that wanted to operate had to pay two million rupiah (AUD$200), a one time fee and then 3000 rupiah [AUD$0.50] per person per day which is nowhere near the equivalent of a 10% tax on resorts. (Chris, resort owner, 2011)

Given the disparity in tax revenues and multipliers through local businesses, charter boats may not be the most efficient use of the Mentawais' surf resources. The surf tourism industry in the Maldives is analogous to the Mentawais in that it is largely charter-based with some land-based operations. A recent study of the Maldives' surf tourism industry showed that 180% more tax revenue is generated per resort tourist as compared to a charter boat tourist (Ponting, 2013, 2014). In terms of jobs for local people, 300–500% more jobs are generated in the resort model per additional surf tourist; and, in terms of general jobs, 180% more employment is generated from resorts than charter boats on a per surfer basis (Ponting, 2013, 2014). Similar issues are being experienced in the Mentawais, as this quote from the Minister for Tourism illustrates:

> Boats in Indonesia can't be taxed as a hotel or restaurant, even though this is the function they serve. Legally, boats are seen as a mode of transport from one port to another. Resorts and villages have a lot more interaction; whereas, the boat buys all its supplies from Padang. So with regional autonomy, the people of the Mentawai get very little. They only get donations because there is no law that can regulate to tax the boats. (Desti, Mentawai Minister for Tourism, 2013)

As a result, the Mentawaian Government wants to actively incentivise resorts and low-volume, high-yield models of surf tourism, while simultaneously scaling down the live-aboard charter fleet. The Mentawai Minister for Tourism commented that,

> The government wants to encourage the mid-to-high end tourists, not the mass market. We don't think the Islands are suited to mass tourism as it will be too difficult to manage in terms of infrastructure. We want to encourage a more exclusive model of surf ecotourism. We need to see how many boats can visit each area and then install the moorings to manage that . . . We plan to cap numbers (of charter boats) and as numbers reduce, we will not issue any more licenses. (Desti, Mentawai Minister for Tourism, 2013)

Despite the pivotal role of live-aboard charter boats in popularising the islands, tax revenues and employment are higher with resort-based tourism. Locally run homestay-style accommodation is increasingly prevalent throughout the Mentawais but few of these establishments are officially registered and paying taxes. While the government plans to reduce the number of charter boats in favour of land-based developments, it does not appear to be factoring in the organic growth of local homestays, which has resulted in a boom and bust economy in many other Indonesian surfing destinations. There is a need for planning and regulation to avoid a "race for the bottom" and rapidly dwindling profit margins, service quality, and ability to contribute to adequate environmental management and social development programmes.

5. Conclusions

This research addressed how the introduction of recreational carrying capacity regulation in the Mentawai Islands, a global surfing "Nirvana," has impacted upon the sustainability of the region's surf tourism industry. This was undertaken using the Framework Analysis for Sustainable Surf Tourism and incorporating common pool resources theory and theoretical notions of carrying capacity to frame the key issue of resource crowding and management. In so doing, theoretical applications of CPR and carrying capacities in the specific context of surf tourism have been advanced by clarifying the singularly idiosyncratic nature of surf breaks as common pool *tourism* resources and by forging new links between theory, regulatory mechanisms and sustainability.

It was identified that the region's social carrying capacity is a function of surfers' perceptions of crowding, which itself is a function of levels of adherence to established social norms that are deeply ingrained in the surfing subculture. This finding suggests that future planning and regulation in the Mentawais should incorporate social carrying capacity augmentation measures to encourage positive tourist behaviour in a way that raises the crowding thresholds of individual surf tourists. Training and deploying a cohort of "surf guides" through the existing surf tourism industry seems a promising way forward, and fertile ground for future research. The FASST assessment of surf tourism in the Mentawais revealed that while sustainability of the tourism system is being enhanced by implementation of a physical recreational carrying capacity, the following measures aligned with the five principles of the FASST would further increase the industry's sustainability: more effective enforcement of regulations and the development of a more stable investment climate; formalised strategic planning and implementation of carrying capacity regulation that incorporates both physical and social mechanisms and contributes to cross-cultural understanding; additional government and surf tourism industry support for village-level sport development; and, a further shift towards incentivising land-based surf tourism supply options in the Mentawai Islands.

The theoretical applications and lessons derived for surf tourism management in this study could usefully be applied in many surf tourism settings and potentially other sport tourism destinations which rely on access to quality experiences utilising common pool resources. Future research could usefully look to resolve the disconnect between the apparent need to limit growth of surf tourism to high-end, and therefore largely foreign funded/joint venture operations, while growing tourism markets for local entrepreneurs. Additionally, the Mentawai Government's plan to reduce the number of surf charter boats raises serious questions for those operators, many of whom were instrumental in growing the surf tourism market in the first instance. Answers may lie in diversifying the tourism base of the islands to include less crowd-sensitive forms of tourism such as backpacker level "sun, sand and sea" tourism popular throughout Indonesia, cultural tourism and other forms of marine-based adventure/sport tourism. However, these would need to be markets accessible to local businesses to avoid a situation where local people are left out of the tourism economy, and would need to operate in parallel with physical and social carrying capacity regulations. These potential models of tourism growth require further economic scrutiny and feasibility testing and should be the basis of future research.

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