

Measuring the Importance of Social, Economic, Environmental and Governance Indicators for the Surf Resource Sustainability Index

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Abstract

Attention to coastal surfing resources has gained considerable momentum in the twenty-first century. Scholars, graduate students, not-for-profit organizations, and commercial and governmental sectors have entered the research field in order to better understand and manage all types surf sites. This research seeks to measure the importance of social, economic, environmental and governance indicators for a previously developed *Surf Resource Sustainability Index* (SRSI) and secondly to clarify existing SRSI criteria and implications for sustainability indicators relevant to socioeconomics and environmental management. Surfers were chosen for in-depth interviews based on their position as key stakeholders and for their practical experience, knowledge and interaction with the resource. The study finds that out of 26 indicators for ‘conservation aptitude’, surfers placed the highest importance on beach quality, water quality, legislative status, biodiversity, and history. Overall, environmental and governance indicators were slightly more significant than social indicators, and economic indicators were the least significant. Appendices offer the revised criteria and implications for the SRSI indicators and an exhaustive record of comments and suggestions provided by interviewees. The research contributes to the field of sustainable surf resource management through the development of sustainability indicators and the discernment of indicator importance by surfers.

Key words: coastal surfing resources; surf tourism; sustainable management; indicators; index

1. Introduction and Rationale

Surfing and surf tourism have gained significant attention in the public and private sectors for some time. However, research in this area is little more than a decade old and is for the most part grey literature, such as graduate studies and a variety of reports from commercial, government, and not-for-profit sectors (Assenov & Martin, 2010; Martin & Assenov, 2011). In order to create concise and global model for the assessment and sustainable management of coastal surfing resources, a system of standard indicators was developed by Martin and Assenov (2012). When placed into four indices (social, economic, environmental, and governance),

these indicators comprise the *Surf Resource Sustainability Index* (SRSI) (Martin & Assenov, 2012).

The current research serves to refine the definitions and implications of SRSI indicators and to advance the methodology by introducing a ‘weighting schema’ based on personal interviews with surfers from diverse backgrounds and levels of experience. Weights represent the level of importance which stakeholders place on indicators with a given index and can be used to gauge the psychometric values of a particular group. Surfers were chosen for this study for two reasons. First, they are a definitive group of stakeholders, and secondly for their personal

experience and potential to generate in-depth discussions on existing SRSI indicators.

The rationale for the study includes the clarification and improvement of the overall SRSI structure the contribution of knowledge useful in the socioeconomic and environmental management of coastal surfing resources.

1.1 Surfing and Surf Tourism

Surfing is generally defined as the act of riding an ocean wave while standing on a surfboard, and broadly includes other aspects of wave riding, such as riding prone on a 'bodyboarding' or simply 'bodysurfing'.

Surf sites around the world are under ever-increasing pressures from tourism, coastal development, pollution and other anthropogenic factors. Surf tourism is a rapidly expanding market segment of the wider tourism industry gaining significant attention in the academe during the previous decade (Martin & Assenov, 2011). Surf tourism research is an outgrowth of the research literature related to the activity of surfing framed in the discipline of tourism.

Two practical and theoretical areas of consideration are most evident in the surf tourism research literature. First, there are the positive and negative effects that surf tourism activities have on the developing world (Buckley, 2002a,b; 2007; Martin, 2010a,b; Ponting, 2009a,b; Wearing & Ponting, 2009; Ponting, McDonald & Wearing, 2005). Secondly, there are other concerns for age-old surfing locations in developed countries in mainly urban settings which experience high-use, high-impact tourism from predominantly domestic surfers seeking recreational space (especially in the USA, UK and Australia) (Lazarow, Miller & Blackwell, 2008; Marchant & Mottiar, 2011; Shipway, 2007; Shaw & Williams, 2004; Phillips & House, 2009). Whereas research in the former is directed toward capacity management in relation to social, economic, and cultural interaction with impacts on rural host communities; research in the latter areas is focused toward the threats and impacts of urbanization (including coastal development) with negative implications for

the resource, as well as the intricacies of small business developments and economics.

1.2 The Surf Resource Sustainability Index

The *Surf Resource Sustainability Index* (SRSI) is a methodology aimed at developing and defining the indicators most relevant to gauging a surf site's aptitude for conservation management (Martin & Assenov, 2012). The SRSI identifies the management of coastal surfing resources as an important global issue in terms of integral non-renewable natural resources. SRSI is based on the premise that the sustainability and conservation of surfing sites can benefit from the innovation of a policy-orientated metric assessment placed in an index framework (Martin & Assenov, 2012).

2. Methods

Structured interviews were adopted in order to make certain that interviewees understood the concept and context of indicators relative to the function of the index. Surfers were chosen for in-depth interviews based on their position as key stakeholders and for their practical experience and knowledge of the resource. While the approach seeks to measure the importance of social, economic, environmental and governance indicators of surfers, it also serves to generate an argument on the existing SRSI concept and process.

Eleven interviews were conducted in September and October, 2012. Face-to-face interviews were conducted during the annual Phuket Surfing Contest at Patong Beach, Thailand. Interviews were also held via *Skype* with individuals in Hawaii and California, USA. The average interview time was between one and two hours. Participants were chosen based on their diverse backgrounds and years of experience. Interviews conducted at the Phuket surfing contest were opportunistic (i.e. if and when contest participants had time) while *Skype* interviews were prearranged with experience watermen (e.g. veteran lifeguards and surfers in Hawaii and California).

Each indicator was discussed with each informant to ensure the clarity and context of

their decision (i.e. the importance of the indicator in terms of the 'conservation aptitude'). While informants were given a survey sheet to hold and review during the interview, the researcher made all markings and notes on an original survey sheet for each participant. For interviews conducted via *Skype*, documents (survey sheet and a copy of the SRSI) were emailed prior to the appointment.

Interviewees were asked to provide the level of importance for the conservation aptitude of each indicator. The measurement scale is based on a 1-5 number value (*Likert* scale) such that high values or qualities reflect a high importance for conservation. Thus, the minimum and maximum index values are 1 and 5 respectively and fall into the following five categories: very low (1.00-1.80); low (1.81-2.60); medium (2.61-3.40); high (3.41-4.20); very high (4.21-5.00). The interviewer needed to manage the context of discussion for each indicator relative to the corresponding index to which it belongs (e.g., surfing events in terms of their economic importance or surfing events in terms of social importance). Discussion was required in all cases to ensure that informants gave objective answers (rather than merely offering their personal feeling toward the indicator). Detailed notes were taken during the discussion regarding each indicator. Comments and suggestions were encouraged, including suggestions for new indicators which could be incorporated in the future indices.

Twenty-six indicators were discussed from the original SRSI, plus one additional indicator for water temperature. For practical reasons, the original SRSI framework (Martin & Assenov, 2012) is not presented in this paper, rather key results are discussed in the findings and the revised criteria and implication summaries and statistical data have been integrated into Appendix 1.

Although individual informants did not provide commentary for each indicator, Appendix 2 provides an exhaustive list of interviewee comments and ratings.

2.1 Interviewee Profile

The 11 interviewees included surfers from different backgrounds, such as lifeguards, lifesaving club members, surf instructors, international surf tourists, a professional junior surf competitor's father, and a professional surfer. The interviewee profile is as follows: five Australians, three Americans, one South African, one Malaysian, and one Singaporean. Combined years of experience were 268 (an average of 24 years each) and combined travel experience was 71 countries (although many interviewees had visited the same countries).

3. Findings

The interview process revealed a difficulty in the discernment of the subjective and objective nature of measuring indicators by informants. Interviewees preferred to give answers based on personal preference rather than judging the implications of each indicator in terms of 'conservation aptitude' and the importance of the indicator in terms of surf site integrity. For example, the social indicator 'history' was often perceived as being of very low personal importance but of very high importance once participants considered the implication of documenting surf site history in the schema of conservation aptitude. Secondly, the context of indicators had to be clearly delineated (e.g. social, economic and environmental) and this was controlled by the researcher. Therefore, SRSI research interviews became unexpectedly highly structured in order to generate meaningful results, and the length of interview time expanded considerably to as long as 2 hours each. However, this is a finding in its own right in terms of the development of the SRSI methodology; it also generated unexpected results in terms of extensive discussion notes (see Appendix 2).

3.1 Quantifying Indicator Importance

Based on the mean value for each of the 27 indicators, 5 indicators were of very high importance; 17 were of high importance; 5 were of medium importance; and no indicators were ranked as being of low or very low

importance. Therefore, the mean value of SRSI indicators is 'high importance'. The five indicators which received a rating of 'very important' are as follows: beach quality (4.90); water quality (4.72); legislative status (4.63); biodiversity (4.45); and history (4.36). Three of these indicators are from the environmental index, one from the social index and one from the governance index.

Altogether 17 indicators were ranked as 'high importance', and the top five in this category are public access (4.18); coastal engineering, education and community (each rated at 4.09); and public safety (4.0).

Ranked at 'medium importance' were surfer expenditures (3.36); water temperature (3.27); surf site amenity (3.27); marine and physical hazards (3.09); and the lowest ranked was boardriders' clubs (3.0).

Within the SRSI composite index we found very little differentiation among the four indices as all four indices were of 'high' importance as follows: (1) Governance (4.04); (2) Environment (4.01); Social (3.80); and Economic (3.57). Nonetheless, governance and environmental indicators were slightly more important than social indicators, and economic indicators were least significant.

The importance rating for each indicator has been calculated and provided in Appendix 1.

3.2 Revision of the SRSI

Appendix 1 offers a revised version of the SRSI and while the key indicators remain consistent with Martin and Assenov's (2012) original work, criteria and implications have been updated or rebuilt based on the information gained from this research (i.e. interviews provided the impetus to improve the SRSI framework and clarify assessment criteria). In several cases the terminology for indicators has been restructured or relocated to another index. For example, the criterion "parking lots and bathrooms" previously used to measure the indicator "beach quality" (in the environmental index) was shifted to the economic index to join other criteria for "surf site amenity." In another example, the indicator

"marine and physical hazards" was split to form 2 indicators (marine life hazards and physical hazards).

3.3 Dialogue on Indicator Development

Extensive notes were taken for each indicator during interviews and although we are not able to list these complete results in the text of this short paper, an exhaustive list of comments has been compiled and presented as Appendix 2. Individual comments are listed for each indicator followed by the corresponding 1-5 rating to ensure completeness in presenting the results of the interviews. The following example for the social indicator 'carrying capacity' provides insight in measuring the integrity of the surf site:

- "Carrying capacity is good because it means that the site is successful." (4)
- "Competition [crowdedness] is good; individuals may agree it is crowded yet they benefit in some way." (4)
- "Crowded beach is a good beach – it indicates that people are happy." (3)
- "Carrying capacity really depends on the day and the spot, especially with regard to wave frequency; also, today SUP [Stand-up Paddling] is a consideration." (3)
- "The safety issue is relevant in carrying capacity." (5)
- "Crowdedness is one of the things that drove me to travel and generally look for new alternative sites." (4)

4. Discussion

This research indicates that there is room for adjustment and improvement in the Martin and Assenov (2012) SRSI, and that the in-depth structured interview process was plausible to this end. We found that the levels of importance among indicators within a given index (e.g. the weighting schema) are an applicable metric to improve the SRSI methodology. Furthermore, we found that individuals from diverse backgrounds placed different levels of importance on surf site sustainability indicators. For example, lifesaving club members placed higher

significance on lifesaving clubs relative to other interviewees.

As the overall average score of indicators was 'high' and there were no 'low' or 'very low' mean values, surfer-stakeholders identify the SRSI indicators are of an overall high importance, and this may indicate that Martin and Assenov's (2012) initial choice of indicators was appropriate. However, we must bear in mind that the development of SRSI indicators were the product of a previous research which sought to identify key conservation markers. Additionally, as very few informants gave a rating of 'very low' to any of the indicators, this may indicate that the 1-5 *Likert* scale can be adjusted to four choices in the future (low, medium, high, and very-high). Such a four-level ranking system is already in use by The Nature Conservancy (2007) in order to keep the scale simple and applicable in the wider conservation planning schema.

5. Conclusion and Recommendations

Developing sustainability indicators requires a wide view which covers time and circumstance, and unforeseen situations are problematic to estimate, leaving us with a somewhat myopic understanding even under the best research conditions. However, as SRSI indicators are defined through itemizing criteria and corresponding implications, the current study was instrumental in refining the process and content of the index.

The research is representative of a particular group of stakeholders, a group of surfers with extensive international experience. It is logical to conclude that other stakeholder groups could be interviewed to gauge the relative differences in importance that they place on the resource and the conservation aptitude of surf sites. A group of scholars from the surf-research community would be particularly interesting as a focus group.

As a concluding thought to our study, an interviewee from California, USA, offers his personal insight on development of the SRSI for surf site conservation:

"I suggest that the strongest argument is for the preservation of existing high-quality surf sites and environments; these sites are significant, unique, and irreplaceable gifts of nature; each one with one-of-a-kind characteristics that once lost can never be recovered by future generations of surfers; once it's gone – it's gone." (J. McAlpin, personal communications, October 1, 2012)

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APPENDIX 1

Amended Surf Resource Sustainability Index with Indicator Importance

Very Low (1.00-1.80); Low (1.81-2.60); Medium (2.61-3.40); High (3.41-4.20); Very High (4.21-5.00)

SOCIETAL INDEX (SocSRSI)

Indicator	Assessment Criteria	Implications	Importance
Boardriders clubs	Identify the number of private or public clubs or organizations who access and use the site, including the number of members in a given club. Identify the activities and actions undertaken by the club.	Boardrider clubs can provide a level of organized communication and collaboration among surfers. In some cases they are not-for-profit organizations which may provide custodianship of the site.	3.00
Social carrying capacity (psychological)	Estimate the number of surfers the area can accommodate in terms of crowdedness (i.e. gauge the size of the surfing area and type of wave relative to usage). Determine the site characteristic, such as a beach, reef or point.	Use and satisfaction are strongly influenced by the number of surfers as well as the local ethics of surfers at the site. A high carrying capacity may increase the argument for surf site conservation.	3.81
Social experience	Gauge the societal conditions surrounding the surfing experience at the site. Account for local ethics. Seek local knowledge on the integrity and use at the site.	As surf sites provide benefits in terms of health, well-being, and community spirit, these difficult to measure attributes are increasingly relevant.	3.72
History	Document the number of years that the surf site been surfed. Assess the usage, popularity, number and types of surfing activities occurring at the site over time.	History provides context to the surf site background and culture and serves as a key factor in the argument for site recognition and protection, particularly in the process for surfing reserve status.	4.36
Lifesaving clubs	Identify the number of private or public lifesaving organizations, such as the number of members, types of services provided, including education for youth or the community.	Lifesaving clubs instill public water safety awareness, including the health and education for local youth. They may signify the benefit of surfers as surf lifesavers and indicate site custodianship.	3.90
Public safety	Assess the presence of crime, such as vehicle safety, theft, violence, or local gangs. Consider the past record and present account of public safety at the site.	A safe and secure atmosphere contributes to site integrity and attracts or detracts community use and participation accordingly.	4.00
Surf events	Assess the number and size of contests per year, including the number and types of participants (i.e. identify the number and types of local and international competitors, such as amateurs, professionals and levels of sponsorship).	Surf events generate awareness of the surf site and the significance of surfing. Events may help to identify surfers and the surfing community as stakeholders of the resource and to facilitate communication.	3.54
Surfing community	Estimate the number of surfers in the community and identify any surfing community-supported actions or activities at the site.	A strong surfing community can provide a social base and structure for surf site custodianship.	4.09

ECONOMIC INDEX (EconSRSI)

Indicator	Assessment Criteria	Implications	Importance
Surf-related user contributions	Estimate the economic significance or value of the site, such as surfers' economic contributions or expenditures. If possible conduct valuation research, such as market or non-market studies (i.e. appropriate methodologies from the coastal resource literature). The affects or changes in real estate values may be considered.	Through new approaches in understanding the broad economic implications of surf sites, their value and significance have become increasing effective in the argument for conservation and protection.	3.36
Surf site amenity	Account for the presence of beneficial infrastructure and amenities at the site, such as parking areas, walkways and bathrooms. Identify amenities for public safety (e.g. fences for unstable cliff areas or stairs on slopes). Recognize <i>Artificial Surfing Reefs (ASRs)</i> * if any.	Surf site amenities may provide convenience, safety, and create awareness of the site, allowing communities improved interaction with the site; may be particularly relevant for families with children.	3.27
Surf events	Identify the key stakeholders' economic interests and	Surf events create a focal point for	3.72

	relationship with the site. If possible, estimate the short-term and long-term economic contributions of surf events, such as conducting studies by established methods (i.e. economic impact studies, <i>Hallmark Events</i> , or event leveraging studies).	economic assessment and stakeholder presence. Literature, methodologies and results on surf event economic impact studies are progressively of interest to stakeholders.	
Surf industry	List the number of surf shops, clothing outlets or other business catering directly to surfers at or near the site. Consider aspects of 'surf-corporate' presence at the site; estimate direct values to the local economy.	Surf sites are increasingly exploited in terms of surf-related enterprise, including surf-entrepreneurs and corporate interests; the presence of surf industries at the site may provide an impetus for the protection of the site.	3.72
Surf tourism	Estimate the number of domestic and international competitors and tourists who interact with the site. Gauge the economic impacts related to the surf tourism experience, including hotels available to surf tourists, surf lessons, and surfboard rentals. Consider various market segments (i.e. 'hard' surf tourists, 'soft' surf tourists, and friends and families of surf tourists).	Given the limited literature on the economic benefits and impacts surrounding domestic and international surf tourism in rural and urban environments, research in this area is foundational and significant for the sustainable use and development of sites.	3.81

* Artificial Surfing Reefs (ASRs) may be treated separately as a unique indicator

ENVIRONMENTAL INDEX (EnvSRSI)

Indicator	Assessment Criteria	Implications	Importance
Beach quality	Assess the overall aesthetic condition, including cleanliness and presence of beach litter; identify aspects of urbanization and/or encroachment; document signs of erosion or other degradation of the site.	The quality and integrity of the site are key indicators for the value, concern and custodianship at time of assessment. In terms of natural quality and conservation, visible human impacts and development are significant factors to be weighed along with other, less-explainable aspects of degradation, such as coastal erosion.	4.90
Biodiversity	Assess the overall health and vitality of the littoral as a natural environment. Evaluate the condition of the coral reef and the presence of marine life. Seek local knowledge, access literature or conduct research if/when applicable.	The overall existence and health of flora and fauna are relative to the pressures from external forces and the estimated site resilience. While measuring biodiversity may be scientific in nature, careful observation can prove a sufficient indicator of the broad issues.	4.45
Natural carrying capacity (eco-physical)	Document the level of usage in relation to user impacts in order to determine the natural carrying capacity of the site (i.e. how many surfers or visitors can the site accommodate before negative environmental consequences are likely to occur).	Impacts on local flora and fauna, such as foot traffic over sand dunes, encroachment on bird nesting areas, or surfers stepping on coral reefs, etc. are indicators of the site's aptitude for human interaction and conservation.	3.90
Coastal engineering	Identify the significance and effects on the environment from coastal engineering projects or structures (i.e. groynes, seawalls, piers, breakwaters, artificial reefs), including sand management projects, such as beach fill, dredging, and/or grooming. Document changes to the site.	Coastal engineering projects are a significant factor affecting the resource base with the high potential to change the natural dynamics of the surfing area. While in some cases surf sites have been created as a result of various projects, there are a considerable number of surf sites which have been permanently altered or destroyed entirely.	4.09
Marine life hazards	Document the known or reported presence of aquatic life or marine predators which may pose hazardous to site users, including sharks, sea urchins, jellyfish, man-o-war, caiman or saltwater crocodiles, sea snakes, etc. Seek local knowledge.	Marine life hazards are highly relevant to the human interaction with the resource and are inherent to conservation planning. While on one hand marine hazards may pose threats to site users, they are also a component to biodiversity.	3.09
Physical hazards	Identify and document moving and stationary physical hazards. The former being the presence of dangerous ocean currents (such as rip currents and headland currents, the latter being the presence of features such as rocks (submerged or near shore), unstable cliffs, unsafe access on trails, etc.	Physical hazards at surf sites are a public safety issue which can, if identified, can be managed. Implications for identifying hazards may include intervention, such as signage or constructing fences above unstable cliff areas to protect visitors.	<i>New indicator (split from marine hazards)</i>

Surf type and quality	Identify and document the local wave types, average wave frequency during the year or season, and the overall seasonality of the site for surfing. Estimate the average wave heights alongside the number of available surfing days per year. Consider various skill levels and stakeholders when estimating 'quality'. Seek local knowledge.	The implications of wave types and overall wave quality include a number of aspects and considerations, including the diverse surfer skill levels and stakeholders and are therefore somewhat subjective. For example, easy-to-ride point breaks, fun beach breaks or dangerous thick-grinding barrels (Ponting, 2000) are all of 'quality' to each distinct group.	3.72
Water quality	Identify point and non-point sources of pollution. If possible, assess the turbidity and levels of nutrient loading at the site. Secondly, document the presence of marine debris and plastics in the water and consider their sources. When appropriate and possible, conduct water testing using test kits or other suitable methods. Interview surfers regarding health issues.	The research literature indicates that water quality is a highly significant factor in the integrity and sustainability of surf sites. Issues may stem from surrounding watersheds, urban runoff and sewage, construction sites, agriculture, aquaculture, golf courses, industrial discharge, and the general levels of nutrients or bacteria including <i>Escherichia coli</i> .	4.72

GOVERNANCE INDEX (GovSRSI)

Indicator	Assessment Criteria	Implications	Importance
Beach and water safety	Estimate the number of lifeguards (if any) as well as lifeguard towers and facilities (if any). Determine the seasonality of services. Gather drowning statistics (if possible).	Beach and water safety are highly relevant to the sustainable use of the area. Beaches with lifeguard presence may have a higher degree of safety management, particularly in developed countries.	3.90
Education	Identify the types, numbers and visibility of signage at sights as well as printed materials which acknowledge the site and any relevant issues or aspects. Determine if there is currently or have been any community meetings, workshops, research, or advocacy for site integrity.	The successful petition for conservation of natural sites is enhanced through the development and availability of information to stakeholders, including the public. The participation of the general public and various stakeholders in the education process is an indication of the conservation aptitude of the site.	4.09
Legislative status	Define type or level of governance at the site, including entities or branches of government level, such as local, state or federal. Seek clarity on existing conservation policy or protection status (if any).	The implications of legislative status are wide ranging and may be anchored to the indicator for 'management'. Determining the conservation status is a key starting point and strong indicator for site conservation. Examples of legislation status for surf sites include national park, marine protected area, national surfing reserve, and world surfing reserve.	4.63
Management	Identify the existence of guidelines or standards for activities at the site and assess, as best of possible, the effectiveness of enforcement (i.e. gauge the active policy measures in context and practice).	Implications of management include aspects of multi and mixed use areas alongside beach and ocean safety. Research literature indicates that conservation management is tied to planning, enforcement, and stakeholder engagement.	3.90
Not-for-profit Organizations	Determine the number or type of not-for-profit or related activity affecting authority and activity at the site (if any). Identify past and present successes and failures.	Not-for-profit organizations may help to identify, monitor, report, and support issues related to the integrity of the site and usage. These organizations are an indicator of conservation aptitude as they signify stakeholder engagement. However, successes and failures must be determined jointly and in context.	3.54
Public access	Identify the level of accessibility alongside laws or other issues surrounding public right of entry, such as hotels which prohibit access or infrastructure which inhibits entry to sites.	As conservation normally considers the interaction of stakeholders with the resource as a component to sustainability, the implications of entities inhibiting access (such as public, private, or governmental) is an indicator of conservation aptitude.	4.18

APPENDIX 2

Comments on 27 Surf Resource Sustainability Indicators

Very Low (1); Low (2); Medium (3); High (4); Very High (5)

SOCIAL INDICATORS

1. Boardriders club

- “They are so tribal that they can be deleterious.” (2)
 - “It’s good to have these groups.” (4)
 - “Boardriders clubs bring people together.” (3)
 - “It’s better to say ‘boardriders club’, rather than ‘surf club’; they may be different things. Boardrider clubs get things rolling (such as the *Kirra Boardriders Club* [Australia]), they are also not-for-profit and they bring some benefit.” (3)
 - “It’s good, but not too many (it may be not good if there are too many).” (3)
-

2. Social carrying capacity (psychological)

- “Carrying capacity is good because it means that the site is successful.” (4)
 - “Competition [crowdedness] is good; individuals may agree it is crowded yet they benefit in some way.” (4)
 - “Crowded beach is a good beach – it indicates that people are happy.” (3)
 - “Carrying capacity really depends on the day and the spot, especially with regard to wave frequency; also, today SUP [Stand-up Paddling] is a consideration.” (3)
 - “The safety issue is relevant in carrying capacity.” (5)
 - “Crowdedness is one of the things that drove me to travel and generally look for new alternative sites.” (4)
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3. History

- “If history has some benefit for conservation then it has importance.” (3)
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4. Lifesaving club

- “Lifesaving clubs are where people gather and educate about the benefits, dangers and beauty of sites.” (5)
 - “Governments are often absent, and lifesaving clubs are the ocean-awareness substitutes – done out of love.” (5)
 - “Good for kids and community.” (4)
 - “I am a member and teach water safety, and clubs are mainly good; but there are also many idiots in the clubs.” (5)
 - “Lifesaving clubs may provide some backing for the conservation argument.” (4)
 - “Lifesaving clubs are volunteers and we don’t think so much of them; there are feuds between surfers and lifesavers; some lifesavers come from inland and are not part of the surfing culture; conversely, lifeguards are paid professionals and they are okay.” (1)
 - “This is very social to me – the lifesaver volunteers; however, paid lifeguards are more significant.” (3)
 - “We need this; it is good for all beachgoers.” (5)
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5. Public safety

- “I haven’t experienced crime at surf sites.” (3)
 - “Issues are increasing these days with drugs, etc.” (4)
 - “Fights or getting robbed at a site – then you won’t want to go.” (5)
 - “I don’t really go to sites if there are a lot of problems.” (4)
 - “Some places I don’t surf because of this [crime].” (3)
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6. Social experience

- “This has to do with an individual’s behavior; a jerk brings out more, adding or taking away the ‘psychic kitty’ of the place.” (3)
 - “If it is not friendly I won’t stay around, but I may still go surfing.” (3)
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7. Surf events

- “Corporate sponsors are more focused on their bottom line [advertising] than the site.”
 - “The issue of the ‘surf grom’ contest at Kata Beach [Thailand] was messed up due to selfish reasons; some wanted Rip Curl to pay for travel expenses to have it at Ko Phayam [Ranong Province, Thailand].”
 - “Surf events bring economy and moral fellowship; it opens up a network for surfing – among many aspects – ‘relationships’.” (5)
 - “Good for the public; they are good for kids.” (4)
 - “Once you have a successful surf contest at a site, you will want to continue it annually and keep it the way it is.” (4)
 - “It can mean different things; I don’t see it as a negative; it may depend on the type of event; we do small events that teach safety and value; if the event is aimed at educating the community (the teaching approach), then I see this as very important” (3)
 - “It creates an awareness of the activity.” (5)
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8. Surfing community

- “Surfers are the ‘default’ lifesavers at surf sites.” (3)
 - “Depends on who and how many.” (3)
 - “The surfing community is very important because they will care; community is good.” (5)
 - “Community is very important; I think of the SUP (stand-up paddle) vs. regular surfers conflicts which have led to heated
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debates in Hawaii – it showed the backing of the community in East Hawaii [Big Island of Hawaii] - also the community stopped the surf lessons which had become a point of contention at the site.” (5)

- “Surfing community is very important; for example there was a huge outcry regarding the THYSPUNT nuclear plant near Jeffery’s Bay, South Africa.” (5)
 - “The Gold Coast [Australia] has a strong community movement; also the surfers’ families get involved.” (4)
 - “Not in terms of numbers; but more in terms of the like-mindedness at the site and the sport; the surfing community encompasses everything.” (4)
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ECONOMIC INDICATORS

9. Surf-related visitor contribution (market and non-market values)

- “For community growth, surfing is a foot in the door – surfers are cool and people follow.” (4)
 - “In an economic way the visitors bring benefit and they benefit themselves (such as through a better lifestyle); but I dislike when it brings crime and corruption.” (4)
 - “Tourism is key – if it is a good group.” (5)
 - “It is good for many others (all) around the area, not just for the surfers.” (5)
 - “The more money people spend, the higher the chance for conserving the spot.” (4)
 - “It depends on the area, for example, the economic implications in Hawaii may be large (clothes, tourism, etc.), but maybe in Thailand it is less significant.” (4)
 - “Of course surfers’ spending is good for the industry, such as on the Gold Coast [Australia] and I think of Angourie [Australia]; but I like limited commercialism, such as in Nias [Indonesia] where there is no commercialism.” (2)
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10. Surf site amenity

- “With the amenity people will come.” (5)
 - “The need for amenity (showers etc.) may be higher for families; I personally don’t require it.” (3)
 - “Most spots in Hawaii now have amenities, and this may mean more use and more community.” (5)
 - “The Gold Coast [Australia] has showers, and that’s good, especially when you have kids, it’s a place to wash the sand off etc.; However, parking can go either way, it can bring crowds and other issues.” (2)
 - “Especially when you have kids! For example, we need roads.” (5)
 - “Artificial Surfing Reefs (ASRs) bring economic benefits; people like that kind of comfort” (5)
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11. Surf events

- “Indirect benefits; increases public awareness.” (3)
 - “I disagree with corporate leveraging of surf events.” (2)
 - “Economics are very important today; it is a full circle – boosts economy and awareness – we see new products – there is so much more to say – it’s an avenue.” (5)
 - “Surf events lift the economic spirit of the community; but may depend on how international they are (i.e. hotels for visitors, etc.)”
 - “People will know there is a surf comp; they will want to share in the experience (including non-surfers); from the event, the word and participation grows year by year (annual events); Charating and Desaru [Malaysia] has grown year by year, and now at Tiomen [Malaysia].” (5)
 - “The economics may not go back to the sport – the money goes elsewhere.” (3)
 - “Surf events bring an international economic aspect.” (4)
 - “Hmmm, are there any real economic benefits?” (3)
 - “Depends on how much is actually going back.” (4)
 - “It’s a means to build your way and your dream; a linkage through surfing, including corporate; we have done this with surfing in Desaru [Malaysia].” (5)
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12. Surf industry

- “We must consider more people and overcrowding.” (4)
 - “This will increase the level of support for the spot.” (4)
 - “We have outlet shops near our beaches so that’s okay for us (as a family).” (3)
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13. Surf tourism

- “Personally, I don’t like crowds, but we can’t deny that others have benefit from surf tourism which is good for their likelihoods.” (4)
 - “Tourists are the supporting base to the event; tourism may bring some government support.” (5)
 - “Some support for conservation may come from tourism, but it may not be local support.” (3)
 - “It depends on the area; for example it may be important in Indonesia.” (4)
 - “Economically it brings a lot of benefit, but personally I don’t like all the surf schools and students.” (4)
 - “Although I gave a low importance score, surf lessons put bread on the table; and the community contribution aspect is also very important, so this takes precedence.” (2)
 - “We travel to surf; and it brings other surfers and creates a social network.” (5)
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ENVIRONMENTAL INDICATORS

14. Beach quality

- “The first impression is how it looks; it can tell a lot about an area.” (5)
 - “A spots value is its cleanliness.” (5)
 - “I was taken aback by the garbage on the surf beaches in Phuket [Thailand].” (5)
 - “It is so important to keep things as best we can.” (5)
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15. Biodiversity

- “The aspect of living or dead may be significant in the argument. However, there are surf spots that are ‘dead’ yet they are still good spots.” (3)
 - “River mouths may kill a spot due to silt.” (3)
 - “We must consider the chain reaction of effects to the ecosystem.” (5)
 - “We should consider the effects of global warming on biodiversity.” (3)
 - “The environment needs vitality for tourism and integrity.” (5)
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16. Natural Carrying capacity (eco-physical)

- “High capacity may be good for the argument.” (3)
 - “Capacities should be determined.” (5)
 - “The ocean changes the landforms.” (4)
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17. Coastal engineering

- “It depends very much on the type of the structure; the type of work or reason – who are the stakeholders and supporters for the work.” (4)
 - “The glass is half full – this is because we don’t understand coastal engineering that well.” (4)
 - “The least the better.” (5)
 - “ASR [Artificial Surfing Reefs] are not sustainable; they can be negative as they break down.” (3)
 - “Jetties may create surf spots; seawalls can destroy them. We must weigh the positive and negative effects, and this is difficult, it can go either way.” (5)
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18. Marine and physical hazards*

- “If there are issues such as sharks it will affect the decision; shark attacks or other hazards may make it difficult to argue for the site.” (4)
 - “My friend died of a shark attack in South Africa.” (4)
 - “It doesn’t matter to surfers so much; it’s the ‘surf risk’.” (1)
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19. Surf type and quality

- “The better the wave, the more important the spot; there are sites that everyone wants to surf or to visit in other capacities.” (5)
 - “We can consider sites which serve all levels of surfing – the most versatile (versatility), such spots attract a wider-range of surfers and a larger degree of skill levels.” (5)
 - “Although I like big waves, this is of low importance because we [my family and I] will go surfing anyways, despite the conditions.” (2)
 - “For me, it’s just about being in the water.” (1)
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20. Water quality

- Water quality is very important, for example, take the klong [canal] at Kata Beach [Thailand], it has a terrible black oily scum that is released periodically.” (5)
 - “I have gotten sick at Patong Beach [Phuket, Thailand] too many times.” (5)
 - Patong Beach [Phuket, Thailand] water today – I can smell it; Charating Malaysia is actually better.” (4)
 - “No one wants to risk catching something from the water; however, if the wave is very good you may take the risk.” (5)
 - “Water quality may not stop me from surfing, but I lose the ‘wow’ factor and I may not stay so long.” (5)
 - “It may depend; even if the water quality is poor we still may go. In Malaysia, we often have poor water quality due to rivers and runoff at surf sites.” (5)
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*As an outcome of this paper, this indicator has been split to form two indicators: physical hazards and marine life hazards

GOVERNANCE INDICATORS

21. Beach and water safety

- “It depends on the location [type of beach/conditions] as a factor.” (4)
 - “For example, Yokohama [Oahu, Hawaii] had no lifeguards before, so there were serious accidents and drowning; also it is far away so there was a long response time for EMS.” (5)
 - “Lifeguards create awareness and serve as an advisory (it’s a full circle); you never know when conditions change; lifeguarding is employment.” (5)
 - “Lifeguards watch the surfers and this adds sustainability to the site; I think of Kahaluu and Honolii beach parks on the Big Island of Hawaii.” (5)
 - “A lifeguard presence on the beach is good; the construction of towers and infrastructure is not important so much, but I think more about the human aspects.” (4)
 - “Lifeguarding is very important, at Desaru [Malaysia] there were 10 drownings last surf season. The new highway has brought more tourists. I am pushing for lifeguards; Management in the ‘pre-developed’ area has no idea about it.” (5)
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22. Education

- “At the Newcastle Council [Australia], surfer and liability issues are key, to ourselves and the public; occupational health and safety – ‘were massive on it [education].’” (5)
- “Education is foundationally important.” (4)
- “Education keeps impacts down.” (4)
- “Makes everyone to be more aware.” (4)
- “If people know more, they might make a difference.” (5)
- “The sea in general is more important, rather than the site.” (3)

23. Legislative status

- “The ocean is for everyone.” (5)
- “The site should be shared; if it is not shared by other [non-surfer] groups, then legislative status is less important.” (5)
- “If you have existing legislation, this is obvious, but legislation without enforcement negates it.” (5)
- “One needs the other – legislation needs management.” (4)
- “It can go either way: once you start creating laws and policy you limit opportunity; however, protection is good.” (3)

24. Management

- “There needs to be some level of management.” (3)
- “We have seen that regulating anything at surf spots is very hard to do – how do we regulate surfing activities (schools, stand-up paddling, as well as kayakers, boogie-boarders, etc.; I think of ‘Point Panic’ at Kewalo Basin, Oahu [Hawaii], where bodysurfing and surfing are regulated, yet individuals still do what they want. So I believe this is of medium importance because of the difficulties involved; it is simply not the nature of the sport – it’s like ‘herding cats’ – regulating surfing is hard to do. Surfers want to be ‘self-governing’.” (3)
- “Management may be more significant than legislation.” (5)

25. Not-for-profit

- “Given that there are 60 million people eating from the sea, I think their [not-for-profit organizations] impact is low.” (2)
- “Not-for-profits have a pretty good impact; and it is great to see organization among surfers.” (4)
- “If they are actually doing anything, then it is of high importance.” (4)
- “They are more positive than negative.” (4)

26. Public access

- “Private ownership of beaches is odious.” (4)
- “We need public access; I am very concerned wheelchair access to the beach park for my son.” (5)
- “Development can cut off our access and relationship to the sites; our kids and grandkids should get to experience it.” (5)
- “If you can’t access a surf site then that is a real bummer.” (5)
- “From the Hawaii point of view, access is very important; access would solicit support for conservation, we have this right – ‘Hawaiians have their rights’.” (5)
- “Limited access may be okay; but if it’s a hotel that is blocking, that is not good.” (3)
- “Surfers will find a way [to access a site].” (2)
- “You need infrastructure [to access a site].” (5)

ADDITIONAL COMMENTS AND INDICATORS

27. Water Temperature (Optional indicator added at the suggestion of an interviewee as “highly significant for tourism”)

- “If you come from the cold, this may be an issue; but this is not so easy to discern in terms of conservation; very high in term of tourism, in most cases we will seek a ‘no wetsuit’ environment (and not too warm as well).” Medium importance for conservation (3); Very high importance for tourism (5).
- “A change in water temperature may bring sharks.” (3)
- “With global warming, organisms have changed.” (3)
- “Water temperature may affect my decision to go surfing.” (3)
- “It has to be warm!” (5)

General Comments

- “Standing for / and the protection of surf sites is very important – ‘preservation’; once the beauty is gone it’s too late.”
 - “I suggest that the strongest argument is for the preservation of existing high-quality surf sites and environments; these sites are significant, unique, and irreplaceable gifts of nature; each one with one-of-a-kind characteristics that once lost can never be recovered by future generations of surfers; once it’s gone – it’s gone.”
 - “Personal opinion and in terms of conservation, the indicators are the same [level of importance] for me; I grew up around tourism and I understand.”
 - “Personal and conservation ratings for indicators will be similar for me [in terms of importance].”
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