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Beach Carrying Capacity: Has it been exceeded on the Gold Coast?

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ABSTRACT

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Australia has more than 70,000 kilometres of coastline, 7000 km of those in Queensland. The beach has long occupied a special place in the Australian identity. The beaches are not only important to the Australian people but they are also a highly valuable tourist resource and with the number of tourists visiting the Gold Coast steadily increasing each year, determining their carrying capacity is an essential factor for their effective use and management. This study explored the concept of social carrying capacity, as well as the way Gold Coast beaches are used by locals and visitors. For the social carrying capacity concepts, several user counts using beach web camera images and more than 160 personal interviews were conducted at four different Gold Coast beaches, exploring coastal perception and beach usage. Preliminary results have revealed details including that while the majority of people surveyed thought beach crowds were perfect in their current state, 79% of the remaining respondents indicated carrying capacity had already been exceeded; that is that with Gold Coast beaches were perceived as either over-crowded or that they could do with fewer people. Through the analysis of interviews with beach users during April, 2006 and previously with University students in 2005, this paper explores the perception of beach users, with the aim of creating an understanding of their behaviour and attitudes and liaising with them in future planning and management processes used by local councils.

ADDITIONAL INDEX WORDS: *Coastal Management, Usage, Perception*

INTRODUCTION

Beach carrying capacity is a term used for the measurement of how many people can fit comfortably on a beach. It is a fundamental concept in natural resources and environmental management, which refers to the ultimate limits to growth as constrained by environmental factors (MANNING 1999). Studies on the carrying capacity of beaches have been conducted over the years but little work has focused on Australian beaches. This paper presents new knowledge on the current management and measurement techniques used in Australia to determine beach usage and carrying capacity.

Present-day use of the carrying capacity term can be applied to the sustainability of the coastal tourism industry. According to CLARK (1996), the carrying capacity within a beach environment can be viewed from two different aspects. In one sense, *carrying capacity* refers to the limitations on the number of people who can use the area at any given time for different purposes. On the other hand, carrying capacity refers to a certain threshold of people activity beyond which damage to the environment will occur.

The main limitation of the carrying capacity concept is its application to determine use limits. The relationship between resource use levels, management and the impacts of use is neither simple nor uniform. User limits may be avoided or made more

effective by alternative management solutions such as user education, investment in user facilities and other strategies designed to enhance the sustainability of resource use. However, before these management solutions can be structured and applied, the beach usage and users must be determined for individual locations.

Study Area

The Gold Coast region (Figure 1) is famous for its sun, surf and sand. The region spans across 1402 square kilometres and features over 70 kilometres of beautiful coastline from South Stradbroke Island to Rainbow Bay (GCCC, 2005). The subtropical climate, attractive surf beaches and savvy marketing have attracted millions of domestic and international tourists and a large industry has arisen to support them.

The pocket beaches studied in this paper are located at the southern end of the Gold Coast and, being among the most popular for coastal tourism and in very high demand during the summer and holiday months. Although the study area is relatively small (approximately 15 kilometres long) it is possible to find a diversity of situations that differentiate the existing beaches significantly (Table 1).

Table 1: Main characteristics of the beaches (* Photo source GCCC Website, 2005) Location of these beaches are presented in Figure 1.

<u>Beaches</u>	<u>Characteristics</u>
<p>1. Kirra Beach*</p> 	<ul style="list-style-type: none"> • Excellent conditions for experienced surfers • Extensive sand stretch • Gentle swimming conditions at North Kirra • Surf club • Life guards • Limited kerbside parking
<p>2. Coolangatta/Greenmount Beach*</p> 	<ul style="list-style-type: none"> • Protected beach • Beachside cafes and shops • Life guards • Gentle surf conditions • Two-hour car park
<p>3. Rainbow Bay</p> 	<ul style="list-style-type: none"> • Extensive sandy beach • Sheltered swimming area • Children's playground and bbq facilities • Short walk to shops and facilities • Surf club • Life guards • Limited kerbside parking
<p>4. Burleigh Heads</p> 	<ul style="list-style-type: none"> • Excellent surf conditions • International surfing competition venue • Beachside cafes and shops • Children's playground and bbq facilities • Walking paths • Surf Club • Life guards

Survey Questions
Q. Would you consider the number of people you usually encounter at the beach as: a) Too many b) Should be <50% to be satisfying c) Should only be 50% to be satisfying d) Perfect as it is e) Could accommodate 50% more people f) Could accommodate twice as many people g) Could accommodate three times as many people
Q. What importance do the following issues have on the beach you attend: distance from home, parking, traffic, access to beach, shops & restaurants, tourism, cleanliness, beach management, activities, lifeguards, surf conditions, natural beauty, and privacy
Q. From the photographs presented which is the most attractive beach for holidays?
Q. From the photographs presented which is the least attractive beach for holidays?

Figure 3: Four survey questions used to analyse beach perception

increasing population and popularity of Gold Coast beaches privacy was not possible or expected but would be preferred.

The last two questions used to analyse beach perception related to participants' choice of favourite and least favourite beach for a holiday. Participants were provided with photographs of six different beaches and asked to choose which they preferred most and least. Beach F, the most popular holiday destination with 43%, was chosen for its privacy and seclusion as well as its natural beauty. Beach B was the least popular with 45%, and was closely followed by Beach A with 36%, with respondents commenting on the beaches lack of privacy and large crowds. This sort of exercise shows the types of beaches people in Queensland prefer, adding to their perception that Gold Coast beaches are crowded and lack the privacy people would like on their visits to the beach.

CONCLUSION

Determining the types of users and beach uses is an important factor in determining an area's carrying capacity as it can aid the implementation of strategies to help maintain the population and the potential impacts on its surrounding environment.

Survey work on the Gold Coast revealed some interesting results, including that the majority of people surveyed thought beach crowds were perfect in their current state. More than half of the remaining respondents indicated carrying capacity had already been exceeded, with Gold Coast beaches being perceived as either over-crowded or that they could do with fewer people. This shows that carrying capacity by people's perceptions has already been reached on the Gold Coast's most popular beaches. This conclusion is also evident from the photo choices made by participants.

With the aim of this research to provide new knowledge on the current management and measurement techniques used on the Gold Coast to help determine beach usage and carrying capacity, it is thought that once usage and carrying capacity has been determined, Gold Coast City Council can establish improved development and conservation programs. This potentially forms the basis for a future study on how to determine beach usage and possible carrying capacity involving the method of web based camera pictures.



Figure 4: Photos presented to people surveyed – Participants chose their most and least favorite beach as a holiday destination (Source: Da Silva, 1998)

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