

# A socioeconomic study of surfers at Trestles Beach

By

Chad Nelsen

*Doctoral Candidate*

*Environmental Health Sciences*

*Environmental Science and Engineering Program*

*University of California, Los Angeles*

*46-071A CHS, Los Angeles, California 90095-1772*

*chadnels@ucla.edu*

Linwood Pendleton

*Senior Fellow and Director of Economic Research*

*The Ocean Foundation*

*Adjunct Associate Professor*

*Environmental Health Sciences,*

*University of California, Los Angeles*

Ryan Vaughn

*Doctoral Candidate*

*Environmental Health Sciences*

*Environmental Science and Engineering Program*

*University of California, Los Angeles*

*46-071A CHS, Los Angeles, California 90095-1772*

## ABSTRACT

An Internet-based survey instrument was used to characterize the demographics, visitation patterns and expenditures of surfers who visit Trestles Beach in San Clemente, CA. We dispel the traditional stereotype of surfers and establish a baseline for surfer demographics at a high-quality surfing area near a large urban population. We show that surfers are demographically similar to beach users, but have distinct visitation patterns. Surfers are more avid than other beachgoers and use the beach earlier in the day. Surfers make local expenditures that are similar to other beachgoers and extend the hours of tourism business in the local community. Surfers are important, but behaviorally distinct, coastal users who should be considered when management decisions are made that may affect environmental conditions at surfing areas.

In 2000, the most recent year for which data are available, Californians spent more days surfing in local coastal waters (22.6 million days) than they spent fishing, diving, or kayaking<sup>1</sup> (Leeworthy and Wiley 2001). Modern surfing was invented by Polynesians and popularized in the United States in the early 1900s by Hawaiian surfers Duke Kahanamoku and George Freeth. By the 1930s, small surfing communities developed in Southern California and Santa Cruz. During the 1950s and 1960s, surfing rapidly increased in popularity in the United States and around the world. During this time the surfing subculture was stereotypically characterized as a fringe group that lacked worthwhile contributions to society. Surfing is still often considered “among the lower social status beach users” (Johnson and Orbach 1986).

<sup>1</sup> Fishing, diving, and kayaking correspond to 20.3 million days, 3.8 million days, and 0.43 million days of recreation, respectively.

Despite the popularity of surfing, it is often challenging for the sport to be taken seriously in coastal management decisions. Part of the problem lies in the fact that little is known about surfers and their impact on local economies. The mass media often perpetuates a stereotype of surfers as mostly young, unemployed, uneducated and on the fringes of society (Johnson and Orbach 1986). There is little academic research about the demographics and spending patterns of surfers, despite over 130 peer-reviewed articles identified by the National Ocean Economics Program on the economics of fishing, diving, and beach going (For exceptions see Chapman and Hanneman 2001; Dolnicar and Fluker 2003; Markrich 1988).

To make informed decisions, coastal professionals require complete information about the users and constituents that will be affected by coastal policies and activities, especially those that involve

## ADDITIONAL KEYWORDS:

Economic impact, surfing, recreational beach use

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development and pollution. Surfing is particularly sensitive to environmental changes that can result from development or coastal pollution. Surf breaks are the result of complex interactions of shoreline structure, bottom conditions, and wave energy (Scarfe *et al.* 2003; Walker 1974). Small perturbations in the local bathymetric conditions can change the quality of surf breaks. In the last four decades, world-famous California surf breaks at Dana Point, State Beach in Santa Monica, Long Beach, Ventura, and elsewhere have been completely destroyed by coastal development. Many other locally popular surf breaks have disappeared or been degraded following coastal development or erosion response projects. Surfers are also uniquely affected by water pollution in coastal waters. Unavoidably, surfers are literally bathed in coastal water and many surfers leave the ocean with their sinuses filled with seawater. These waters often contain pollutants, including human pathogens, that are known to cause illnesses in swimmers generally (see Given *et al.* 2006; Wade *et al.* 2006 for a review) and surfers specifically (Dwight *et al.* 2004).

One reason so little is known about surfers is that surfers are difficult to survey. Random telephone surveys are impractical because surfers are not present at sufficiently high densities in the general population (Hanemann *et al.* 2004; Shaw and Jakus 1996). Surfers have also proven difficult to intercept during in-person interviews at beaches (P. King, personal communication, 17 April 2007). As a result, surfers have been grouped within the general class of beach goers in coastal economics research. Distinguishing surfers from other beachgoers is important because surfers have unique interests, visitation behaviors and demographics that affect the economic impacts of surfers on local economies.

To better capture information about surfers, we employed an Internet-based approach to collect data on surfers at Trestles Beach, a famous surf break near San Clemente, CA. Using these data, we described the demographics of surfers who surf Trestles, their unique visitation patterns, and estimate their economic impact on the city of San Clemente. We established a demographic baseline of surfers at Trestles that shows surfers are highly affluent, fully employed, well-educated coastal visitors who visit Trestles almost exclusively to surf. We found that these surfers visit with high frequency and at different times during the day from other beach users. While conflict management between surfers and swimmers exists at some beaches, this temporal differentiation by surfers at Trestles means that surfers here do not congest beaches and are consumers who make additional expenditures that are important for local beach businesses. This is likely to be a general characteristic of high-quality surf breaks that are often prohibitively difficult for beginner surfers — a finding that places further importance on maintaining the quality of a surf break.

#### SITE DESCRIPTION

Trestles Beach is located on a prominent point within the Southern California Bight that straddles the border of Orange and San Diego Counties. Trestles Beach, so named for a railroad trestle at the entrance to the beach, is south of the city of San Clemente and north of the San Onofre Nuclear Generating Station. The area includes the San Mateo lagoon, a blind estuary protected from the Pacific by a sandbar, that is fed by San Mateo Creek (CCC

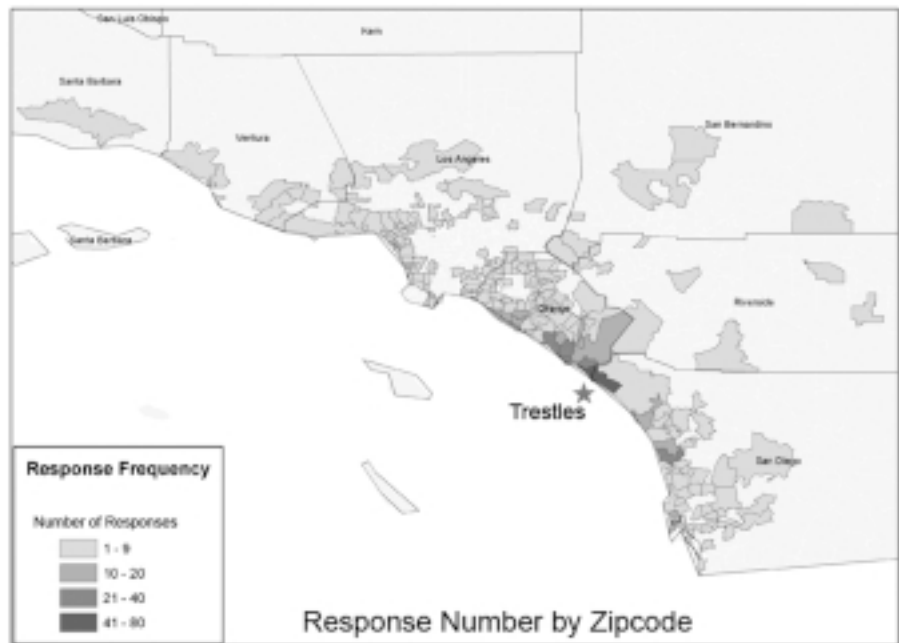


Figure 1. Response to Trestles survey instrument by zip code.

2001). The lagoon is breached only during heavy storms. San Mateo Creek is one of the last undammed streams in southern California. It flows from its headwaters in the Cleveland National Forest to the Pacific Ocean (CCC 2001). The beach is a 1.5-mile stretch of San Onofre State Park and includes five primary surfing breaks (Cottons, Uppers, Loweres, Middles, and Church) that are collectively called Trestles.

#### METHODS

##### Survey Instrument

The data used in this study were collected using an Internet-based user survey, conducted during the summer of 2006. The survey was developed with input from academic researchers and from a small focus group of San Clemente surfers. A paper version of the survey was pre-tested in the spring of 2006 and modified to more accurately reflect surfers' travel behavior and memory of previous visits. We determined that surfers have difficulty accurately remembering their specific surf behavior more than two weeks prior to the survey date. After two weeks surfers tend to only remember the average number of visits per month. These insights were incorporated into the final survey that was constructed as an Internet-based survey with an anonymous Web address. A copy of the survey is available at: <http://www.coastalvalues.org/2006trestlessurvey.pdf>.

Three methods were used to advertise the survey instrument. A link to the survey was placed at online services that

provide forecasts and reports of surfing conditions, participation was encouraged through viral email efforts, and through the distribution of posters and postcards at surfing locations and surf shops.

Respondents were required to answer three pre-qualifying questions to enter the survey site. To complete the survey, respondents needed to answer the affirmative the following questions: 1) Are you over 18 years of age? (University of California regulations required that all respondents were over 18); 2) Are you a surfer, body boarder, or body surfer? And 3) Did you surf on the day you responded? Respondents were not allowed to continue if they reported they already had taken the survey. The respondents were assured that all information collected would remain anonymous.

The survey instrument gathered a wide variety of information from the respondents. This information included surfing experience and preferences, visitation and travel behavior, local expenditures and demographic information. The survey instrument included over 40 questions; many were multi-part and resulted in 127 data points per respondent. The survey instrument was available on the Internet from late June to early September 2006. During this period 1,006 responses were collected.

Surfers represent a unique challenge to survey research. They are hard to identify in random samples of the population

**Table 1: Demographics of surfers, beachgoers and their communities**

Data Source	Median age (years)	Education (% college & above)	Income (median individual)	Employment (% Full time)	Unemployment (2006 dollars)
Trestles surfers	34	65%	\$50-70,000a	76%	1%
San Clemente beachgoers <sup>1</sup>	35-44a	52%	\$75,000-99,999b	—	—
CA beach users <sup>2</sup>	39	54%	\$52,682	69%	7%
Census <sup>3</sup>	36.3	40%	\$40,657	—	3.2%

1) King 2001 2) Hanemann *et al.* 2004 3) 2000 Census (weighted by % of respondents per city)

a) Median within range b) 51.1 percentile household income

**Table 2: Trip characteristics**

Data source	Distance traveled (median)	Average departure time	Duration of visit (up to 3 hours)	Local origin (San Clemente)
Trestles surfers	46 miles	7:33 a.m.	72.6%	16.5%
San Clemente Beach <sup>1</sup>	48 miles	—	32.6%	23.4%
CA beach users <sup>2</sup>	82 miles	—	14%	—

1) King 2001 2) Hanemann *et al.* 2004

and they have a low response rate to in-person interviews. This study was able to facilitate responses from surfers through the use of an Internet-based survey. Internet-based surveys are becoming increasingly popular because of their ease of use and cost savings, but they have known issues that limit the ability to generalize responses to a larger population (Couper 2000). Couper (2000) identifies sampling error, coverage error, non-response error as the major limitations to extrapolating results from Internet-based surveys to a larger population. As more households give up wired telephone service and exclusively use cellular phone service, telephone surveying faces similar challenges. Nevertheless, given our still growing understanding of the potential biases of Internet-based surveys, we limit our descriptions to those captured by our survey instrument.

#### DATA

Responses to the survey were automatically entered into a database. They were then exported to Microsoft Excel. In Excel these data were checked for duplicates based on similarity of responses and addresses. All responses with less than 100 data points (out of a possible 127) were carefully reviewed for quality control. From the 1,006 survey responses captured, a total of 973 (96%) were deemed usable. These responses were then reviewed for data input errors and coded numerically and imported into the statistical software Stata. A random

sample of responses was compared with the original data to ensure that the data had maintained its integrity through the review and coding process.

#### RESULTS

We find that contrary to that common stereotype that surfers are young, poorly educated, marginally employed and unmotivated (Johnson and Orbach 1986), the survey respondents to the Trestles survey instrument are largely the opposite (Table 1). The data collected reveal that surfers visiting Trestles average 35.6 years of age, are well-educated (42% of respondents have a minimum of a college degree), work full time (72% of respondents work full time), earn a high wage (41% earn \$80,000 or more in individual income) and recreate in the early morning hours (average departure time is 7:33 a.m.). Surfers who use Trestles are experienced surfers. They average 19.7 years of experience and 84% report being advanced surfers, meaning they are competent in most wave conditions.

#### SURFER DEMOGRAPHICS ARE COMPARABLE TO OTHER BEACH USERS

We compare the Trestles respondents with other sources that describe the demographic characteristics of beach goers and beach city residents. King (2001) used in-person surveys to characterize beachgoers who visit San Clemente beaches, which are immediately adjacent to Trestles beach. Hanemann *et al.* (2004) surveyed beachgoers throughout South-

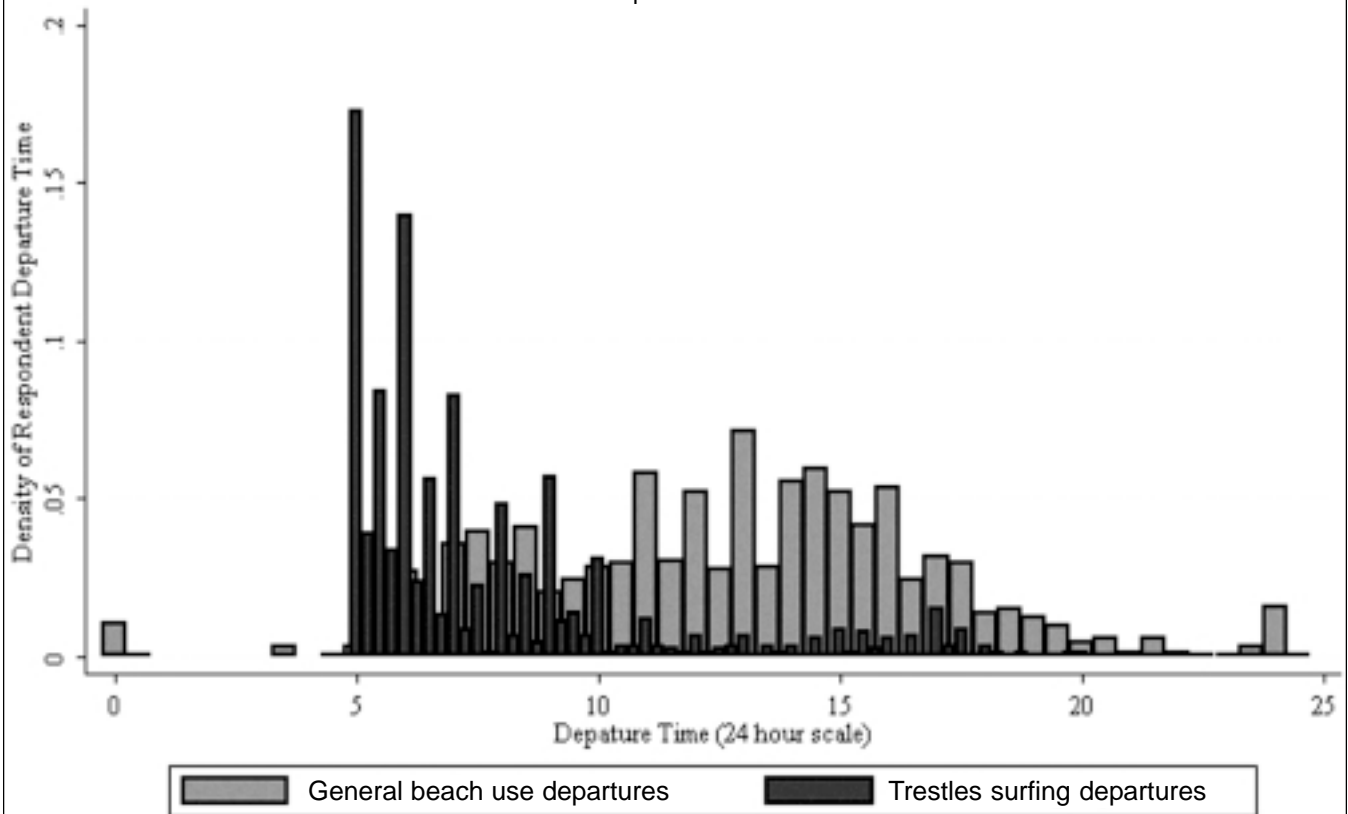
ern California, generating the most comprehensive demographic profile of California beach going to date. The United States Census Bureau's Census 2000 provides demographic data for the general population in beach cities. To make the U.S. Census data comparable to the data for Trestles visitors, we created weighted averages of Census figures for only the cities from which we counted more than 10 respondents in our survey. These data were weighted for each city by the relative number of respondents who visited Trestles. Comparison across these sources shows that surfers visiting Trestles exhibit demographic characteristics that are comparable to San Clemente and California beach goers. Trestles surfers are better educated, earn higher wages and are more fully employed than the average resident of the beach cities in which they live (Table 1). Our survey results may not be representative of all households or beach users because the national online population is younger, wealthier and better educated than the public as a whole (Taylor 2000). Because there are no recent demographic studies of the population of surfers, we do not know how the online population of surfers differs from the overall population of surfers.

#### SURFER BEACH VISITATION PATTERNS ARE DIFFERENT FROM OTHER BEACH USERS

Trestles Beach attracts an avid group of surfers to San Clemente who visit frequently and travel from throughout Southern California to recreate at Trestles. Surfers who visit Trestles average 56 miles (median of 46 miles) for a round trip visit. The distance is comparable to beach users coming to San Clemente beaches (Table 2). Trestles surfers originate from all counties in the Southern California Bight, but the most avid surfers originate from four distinct regions: the Los Angeles South Bay, Huntington Beach, South Orange County

## General beach use and surfing departure times

Sample fractions



Source: SCBVP, 2007 and C. Nelsen, 2007

and San Diego (Figure 1). All of these regions have local high-quality recreational surfing. Like other recreational areas that require high levels of technical competence by visitors (e.g. premiere rock climbing or skiing locations), Trestles attracts experienced users who are highly avid and choose to live near the recreational resource (Shaw and Jakus 1996). The nonrandom distribution of surfers, and the relatively small proportion of overall beach users that surf, could explain why random statewide surveys have failed to capture a representative sample of recreational surfers in the state (Hanemann *et al.* 2004).

Surfers who visit Trestles Beach are more avid than beach goers generally and visit the beach at a different time of day than the typical beachgoer (Table 3). Of surfers who visit Trestles 38.1% make over 100 visits per year. In comparison, 7.1% of San Clemente beach goers make over 100 visits per year. Surfers visiting Trestles average 109 visits per year. Local residents visit significantly more often (average of 180 visits per year) than visitors from outside the city of San

Clemente (average of 83 visits per year). The average departure time to Trestles is 7:33 a.m., with the majority of visitors leaving to visit Trestles before 9 a.m. Early-morning visitation is common in surfing because weather conditions are often better in the morning. This shows that Trestles surfers are a distinct group from other beachgoers who visit the beach during the middle of the day (Figure 2). Having distinct temporal waves of surfers and beach visitors minimizes congestion and user conflicts while increasing expenditures. This may not be characteristic of all surfing areas. It may be an added value of having a high quality surfing area near a community.

### ECONOMIC IMPACTS

It is important to make the distinction between economic impact and economic value. Economic impact describes the flow of money through an economy and the associated jobs, wages, salaries and taxes associated with these flows. Included in economic impacts are the expenditures by visitors to beaches who spend money locally on food, beverages, parking, and beach-related activities.

These expenditures partially represent a transfer of expenditures that may have been made elsewhere in the state (e.g. gas and auto), but are largely expenditures that would not have been made in the absence of the beach trip (Pendleton and Kildow 2005). Economic value, in contrast, is the net value added to society that the resource provides. From the perspective of the coastal user, economic value often is referred to as a “non-market” value or the consumer surplus associated with a resource. Our focus is on economic impacts but economic values are important and should not be ignored when management decisions are made (Pendleton and Kildow 2006).

Surfers attracted to Trestles generate economic impacts that contribute to the local economy of the city of San Clemente. Surfers visiting Trestles provide economic input to the local economy by spending money at restaurants, shopping, buying gas, rentals and other beach-related incidentals. Over 83% of the surfers visiting Trestles originate from outside the city of San Clemente and represent an import of expenditures to the city

**Table 3: Summary of economic impacts**

Data source	Average expenditure	Annual visits (2006 dollars)	Percent over 100 (average)	Total visits	Economic impact
All Trestles surfers Surveyed Trestles surfers (total)	\$25-\$40 <sup>a</sup>	—	—	330,000 <sup>b</sup>	\$8-12 million
From San Clemente	\$40.07	109	38.1%	106,000 <sup>c</sup>	\$4.2 million
Outside San Clemente	\$58.72	180	73.4%	19,511	\$1.4 million
San Clemente Beach <sup>1</sup>	\$37.58	83	32.7%	58,220	\$2.2 million
CA beach users <sup>2</sup>	\$54.79	—	7.1%	1,900,000	~\$100 million
	\$27.78 <sup>d</sup>	—	—	29,600,000 <sup>d</sup>	~\$1 billion <sup>d</sup>

1) King 2001 2) Hanemann *et al.* 2004

a) Range based on Hanemann *et al.* 2004 and our survey results b)CA State Parks Trestles attendance estimate for 2006 c) Number of visits captured by Internet-based survey d) For Orange County and Los Angeles County beaches June-August 2000

(Table 3). The average surfing-related expenditure per-person per-visit for surfers visiting Trestles was \$40.07 (in 2006 dollars). This is comparable to other recent studies on beach-related expenditures. Hanemann, *et al.* (2004) found that per-person per-trip expenditures were \$25.18 (in 2006 dollars) for beachgoers who took at least one trip to the beach. King (2001) found that beach-related expenditures generated by San Clemente beaches were \$54.79 (\$62.37 in 2006 dollars) per-person per-trip. For surfers visiting Trestles, residents of San Clemente have a higher average per-person per-trip expenditure (\$58.72) than those from outside San Clemente (\$37.58). For local residents it is difficult to distinguish between every day expenditures and those directly related to surfing. Total expenditures by visitors outside San Clemente exceed that of local visitors because of the larger number of total visitors from outside San Clemente (83.5% are non-resident visitors).

Based on an average expenditure of \$40.07 and a total of 106,000 visits (the total visits captured in this survey) we estimate that the expenditures of the small subset of surfers that we sampled were \$4.2 million (in 2006 dollars). The San Onofre State Park keeps attendance records of surfers and beach-goers visiting Trestles using a methodology that bases the daily attendance on head counts, a turnover rate and weather and surf conditions. They report that in 2006 there were approximately 367,000 visits to the Trestles; 90% were surfers (California State Parks, personal communication, 23 August 2007). Annual surfer visits for 2006 was approximately 330,000.

We cannot extrapolate our findings to the total population of surfers because our sample is not random. Using \$25 as a conservative value from Hanemann *et al.* (2004) and \$40 found in our survey, we estimate a range for the annual economic impact to the city of San Clemente from surfers visiting Trestles that could be from \$8 million/year to \$13 million/year.

### CONCLUSIONS

There is a stereotypical surfer who visits Trestles Beach, but it is not the commonly held stereotype of a young, poor, uneducated and unemployed free-loader. Instead, Trestles surfers reflect the general demographic characteristics of coastal beachgoers and have above average levels of income, employment and education. The time of day that Trestles surfers use the beaches suggests that they represent a distinct user group from other San Clemente beach goers. They use the beaches early in the morning, when the beaches are otherwise empty. They also spend money at local businesses adding expenditures to the local economy that would not otherwise result from normal beach use.

The fact that so many of our respondents are willing to travel considerable distances to visit with Trestles with regularity, from areas that also have well-known surf breaks, indicates that the surf breaks at Trestles are of unusually high quality. The quality of surfing locations depends largely on fragile and easily changed environmental conditions (Scarfe *et al.* 2003; Walker 1974). Surfers have many choices in their surfing destinations. Surfline, a popular surf forecasting Web page, lists 83 surf spots in Los Angeles, Orange and San Diego

counties.

Water quality is also important to surfers. Dwight *et al.* (2004) and Wade *et al.* (2006) show that increased exposure to water with high bacteria levels (as measured by water quality indicators Coliform and *Enterococcus*) increase the likelihood of contracting gastrointestinal illness. Surfers spend more time immersed in the ocean than any other user group (Leeworthy and Wiley 2001) so they are the user group most affected by poor water quality. With so many substitute sites in the area, changes in either water quality or the quality of the surf break at Trestles could lead surfers to go elsewhere. A loss of these highly affluent and avid beach visitors could result in substantial economic impacts to the city of San Clemente, perhaps far in excess of the \$4 million we estimate were spent by our group of respondents.

Traditionally, economic impacts are calculated by using estimated daily expenditures and multiplied by an accurate measure of attendance. Daily expenditures can be estimated through survey techniques and compared with other research efforts to determine a reasonable estimate (Pendleton and Kildow 2006). Our expenditure estimates were based on 973 responses to an online survey of Trestles visitors and are within the range of other studies (Hanemann *et al.* 2004; King 2001). Use of an Internet-based survey proved to be a successful method of capturing a recreational user group that has, heretofore, proven difficult to capture in person or through random telephone surveys. Unfortunately, this method may have resulted in non-random and possibly biased sample. Further re-

search using short, randomized on-site surveys could be used to “ground truth” the Internet surveys and to provide a basis to extrapolate the Internet-based surveys to better characterize surfer demographics, visitation patterns, and economic impacts.

We find that surfers are an important and poorly understood segment of the beachgoing population. They can add economic expenditures to coastal communities without conflicting with other coastal tourism. While they are demographically similar to beach goers generally, their preferences and use patterns differ significantly from other beach goers. Previously studies have shown that surfing is highly sensitive to environmental conditions and surfers have many choices, so changes in the environmental and surfing quality of a beach site will likely result in reduced visitation, especially by these highly skilled surfers. Coastal management decisions that will impact surfing areas and water quality should explicitly consider the impacts to surfing and recognize that surfing areas attract an important user group that contributes expenditures to the local community.

## REFERENCES

- Chapman, D.J. and W.M. Hanneman 2001. “Environmental Damages In Court: The American Trader Case,” in: “The Law and Economics of the Environment.” A. Heyes, ed., pp. 319-367.
- California Coastal Conservancy (CCC), 2001. San Mateo Watershed, California Coastal Conservancy, A description of the San Mateo watershed. San Francisco, California.
- Couper, M.P. 2000. “Web Surveys: A Review of Issues and Approaches,” *The Public Opinion Quarterly*, 64(4), 464-494.
- Dolnicar, S. and M. Flucker 2003. “Behavioural market segments among surf tourists: investigating past destination choice,” *J. of Sport Tourism*, 8(3), 186-196.
- Dwight, R.H., D.B. Backer and B.H. Olson 2004. “Health Effects Associated With Recreational Coastal Water Use: Urban Versus Rural California,” *American J. of Public Health*, 94(4), 565-567.
- Given, S., L.H. Pendleton and A.B. Boehm 2006. “Regional Public Health Cost Estimates of Contaminated Coastal Waters: A Case Study of Gastroenteritis at Southern California Beaches,” *Environ. Sci. and Technology*, 40, 4851-4858.
- Hanemann, M., L. Pendleton, C. Mohn, J. Hilger, K. Kurisawa, D. Layton, C. Busch and F. Vasquez 2004. “Southern California Beach Valuation Project,” 74 p.
- Johnson, J.C. and M.K. Orbach 1986. “The Role of Cultural Context in the Development of Low-Capitol Ocean Leisure Activities,” *Leisure Sciences*, 8(3), 319-339.
- King, P.G. 2001. Economic Analysis of Beach Spending and the Recreational Benefits of Beaches in the City of San Clemente, San Francisco State University.
- Leeworthy, V.R. and P.C. Wiley 2001. “Current Participation Patterns in Marine Recreation,” U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Ocean Service, Special Projects, 53 p.
- Markrich, M. 1988. “Economic Effects of Surfing Activities in Hawaii,” UH Sea Grant College Program.
- Pendleton, L. and J. Kildow 2005. “The Economic Impact of California Beaches: Expenditures and Non-Market Values for Day Use Visitors,” in: *California Ocean Economics Report*, California Resources Agency.
- Pendleton, L. and J. Kildow 2006. “The Non-market Value of Beach Recreation in California,” *Shore & Beach*, 74(2), 34-37.
- Scarfe, B.E., M.H.S. Elwany, S.T. Mead and K.P. Black 2003. “Science of Surfing Waves and Surfing Breaks — A Review,” *J. of Coastal Res.*
- Shaw, W.D. and P. Jakus 1996. “Travel Cost Models of Demand for Rock Climbing,” *Agricultural and Resource Economics Review*, 25(2), 133-142.
- Taylor, H. 2000. “Does Internet research work? Comparing electronic survey results with telephone survey,” *International J. of Market Res.*, 42(1), 51-63.
- Wade, T.J., R.L. Calderon, E. Sams, M. Beach, K.P. Brenner, A.H. Williams and A.P. Dufour 2006. “Rapidly Measured Indicators of Recreational Water Quality Are Predictive of Swimming-Associated Gastrointestinal Illness,” *Environ. Health Perspectives*, 114(1), 24-28.
- Walker, J.R. 1974. “Recreational Surf Parameters,” University of Hawaii, Look Laboratory, 331 p.