

## **Beach Recreation, Cultural Diversity and Attitudes toward Nature**

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Studies of recreation patterns have rarely focused on beach-going behavior and its determinants. This paper develops a conceptual model emphasizing relationships between beach-going, and individual characteristics, geographical access, coastal knowledge, interaction with coastal environments, and attitudes toward nature. We use a survey of Los Angeles County residents to explore beach-going in this urban coastal region characterized by cultural diversity, large immigrant populations, and a rich assemblage of marine wildlife. Findings from tobit analysis suggest beach use rates vary significantly by age, race/ethnicity, class, and immigrant status, by distance between home and beach, and by beach recreational activity preferences. Attitudes toward nature also shape decisions about spending leisure time at the beach, and warrant more attention in leisure research.

**KEYWORDS:** *Beach recreation patterns, race/ethnicity, assimilation, environmental attitudes, Southern California.*

### **Introduction**

Situated on the southern California coast, Los Angeles is a magnet for worldwide immigration and home to one of the largest, fastest growing, and most culturally diverse populations in North America. The region's coastal zone environment is one of the most important economic and aesthetic assets of the region. The urbanized coast is increasingly threatened by human activities, and there is tremendous economic pressure to develop the few remaining parcels of open space. This situation has fueled controversy between environmentalists, developers, and local governments. Moreover, the burgeoning population places heavy demands on coastal resources, including recreational facilities such as beaches and boardwalks, and ecological attractions such as tidepools, kelp forests, and coastal marshes. These de-

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mands are fostered by cross-cultural pursuits of both residents and visitors who use the coastal zone.

The field of leisure research has paid increasing attention to relationships between cultural diversity and participation in various types of leisure activities, especially recreation (Baas, Ewert & Chavez, 1993; Bowker & Lee-worthy, 1998; Carr & Williams, 1993; Cheek, Field & Burdge, 1976; Dwyer & Hutchinson, 1990; Edwards, 1981; Hutchison & Fidel, 1984; Hutchison, 1987, 1988; Johnson, Horan & Pepper, 1997; Johnson, Bowker & English, 1998; McMillen, 1983; Philipp, 1993; Stamps & Stamps, 1985; Washburne, 1978; Washburne & Wall, 1979; Woodard, 1988). Observed variations in leisure activities have typically been explained by reference to either "ethnicity" or "marginality" perspectives (Gramann & Allison, 1999; Johnson et al., 1997). Increasingly, greater sophistication with concepts of race, ethnicity, and marginality has led to studies exploring how extent of assimilation or perceptions of inter-racial tensions, for example, influences particular forms of recreational participation and site utilization (Floyd, 1998; Floyd, McGuire, Shinew & Noe, 1994; Floyd & Gramman, 1993; 1995; Irwin, Gartner & Phelps, 1990; Juniu, 2001; Loukaitou-Sideris, 1995; Philipp, 1998; Shaull, 1998; Shaull & Gramman, 1998; Stodoloska, 1998; Yu & Berryman, 1996). However, no studies have focused specifically on beach recreation, although many of the most populous and diverse metropolitan regions of the U.S. are located in coastal zones, such as southern California. Beaches regularly draw large numbers of visitors, and beach visitation is often critical to local economies. Thus, a greater understanding of how different groups relate to the beach and to coastal environments is long overdue.

Drawing on a 2000 telephone survey of 850 Los Angeles County residents, this research documents race/ethnic differences in beach use rates and types of activities pursued while at the beach. Based on a conceptual model of beach use, we explore how the frequency of beach going is related to attitudes toward the marine environment, views on marine wildlife protection policies, membership or participation in coastal environment or wildlife oriented organizations, use of information about the coastal environment, and past or present employment in a beach-side locale. We also document perceived barriers to beach use, how such perceived barriers vary by race/ethnicity, and what, if any, impact such perceptions have on beach use rates. We also consider the influence on distance between home and beach on beach going behavior. Lastly, we present results of multivariate tobit models designed to explain reasons for observed race/ethnic variations in beach-related recreation.

### Past Studies of Cultural Diversity and Leisure

While some past studies found few significant racial differences in recreation patterns (see, for example, Cheek et al., 1976), others have revealed race and ethnic differences in leisure and recreational pursuits. Past studies explaining variation in leisure activities and recreation patterns on the basis

of individual characteristics have typically hypothesized that differences were due to either race or class—or, as often termed in the literature, ethnicity or marginality. Some authors have argued that differences in cultural background, norms, and values, typically related to past histories of racism and discrimination (and the fear of harassment and violence associated with this heritage of oppression), are central reasons for leisure preferences and observed patterns. Others, in contrast, have focused on marginality in terms of income, social class, and political power, to explain such variations. This debate was neatly framed in a review by Floyd (1998).

Although some of this research has focused on outdoor recreation more generally, and urban areas in some instances, the sites of study have more typically been wildland sites—national forests or parks, for example. This focus is certainly warranted, due to long-standing concerns that wilderness areas are perceived as being the purview of White middle-class visitors, with other groups having less interest in nature, environmental protection, or visiting the great outdoors (Ewert, Chavez & Magill, 1993; Hester, Blazej & Morre, 1999). But many beaches are both wildlands and urban sites. At the beach, one may encounter high-density crowds, traffic, and noise but also experience wild nature such as pelicans or dolphin. Yet only a few studies deal with beach-going. For example, using a methodology that involved asking respondents to react to a series of photographic images of potential tourist destinations and their attributes, Philipp (1993) found that African Americans and Whites both ranked “beaches” among their top 5 choices of destinations. However, the African Americans were—as expected from the literature—less attracted to images of “mountains” than were Whites. But there are no studies of cultural diversity and beach use per se, despite the reality that beaches in metropolitan areas of the country are some of the most heavily used sites for recreation and leisure by diverse urban populations. For example, during 2000-2001 an estimated 15 million people visited southern California’s beaches, and beach visitation rates rose 25% between 1997-98 and 2000-2001 (State of California, 2001).

Research on cultural diversity and recreation provides examples of how differential patterns of recreation and leisure pursuits have been conceptually framed and investigated empirically. For example, Floyd et al. (1994) addressed the question of if and/or how racial and class differences were related to reported frequency of recreational activities among a large-scale survey of U.S. adults. They found significant racial difference in patterns but little variation by class. Using an interaction term, however, they did find that poor African Americans were less likely to engage in leisure activities than other subgroups. This finding reinforced the idea that race and class together determined the extent to which particular groups experience marginalization.

Looking only at African Americans, Woodard (1988) considered reasons for variation in the distribution of leisure activities. Using a survey of Black Chicago residents, he employed discriminant analysis to understand the linkages between demographic and socioeconomic measures. The study also

used region-socialization variables (related to regional upbringing, ideas about race and discrimination, etc.) to better understand patterns of three types of leisure activities—"metropolitan activities" such as going to museums, parks, etc., "informal domestic activities" including visiting family or playing cards, and various types of night-life. Findings indicated that in addition to demographic characteristics, socioeconomic status and region of origin were related to rates of participation in different types of leisure activities; for example, those who engaged in "metropolitan activities" were more likely to be middle class, from urban areas in the North, and to reside in families in which there were two or more full-time workers than the sample as a whole.

Johnson et al. (1997) found that rural African Americans were less likely to go to wildland recreation areas than were rural Whites, and that the cultural meanings associated with wildlands differed between the two groups. African Americans were more apt to view wildlands as places for subsistence activities such as hunting and fishing. These understandings were interpreted as being rooted in African Americans' history of oppression and poverty. Wildlands hence had a lower status on their hierarchy of recreational preferences, reducing the likelihood of visitation.

In a second study using multivariate techniques, Johnson et al. (1998) investigated White and African American participation in wildland recreation, focusing on the roles of race versus economic marginality. They modeled variation in responses to three alternative visitation questions—moving from general (do you visit any wildland recreation area?) to more specific (do you visit a specific recreation site?). The independent variables were race, sex, income, age, and a race/poverty interaction term (to assess impact of being both Black and poor, a measure of dual marginality). They also asked about visitation constraints (lack of money, time, transport, information etc.). The survey also assessed latent demand; that is, if given the opportunity, whether a respondent would visit wildlands. Blacks were less likely to visit, as were women and older people. Income was not significant, undermining the marginality hypothesis. The race/poverty interaction term was marginally significant, and positive. Poor Blacks were more likely than non-poor Blacks to visit wildlands. This latter finding was consistent with the earlier study regarding the meanings African Americans attribute to wildlands. With respect to visitation constraints, and latent demand, economic/marginality variables were more important for Blacks.

Other studies have focused on assimilation among immigrant populations. Carr and Williams (1993) investigated Whites and Latinos at southern California forest recreation sites to determine whether reasons for visits, social group organization of visit (with family, friends, alone, etc.), and reasons for respecting the forest differed according to White/Latino status. These comparisons were also made within the Latino group by degree of acculturation. Results indicated that forest visitors who were Whites and more acculturated Latinos with longer tenure in the U.S. differed from visitors of Central American ancestry and less acculturated Latinos of Mexican ancestry

in regard to social group composition, the main reason for their visit, and their perspectives on respecting the forest. Similarly, Shaull and Gramann (1998) focused on the role of acculturation in assessments of outdoor recreation benefits, which they characterized as related either to family solidarity or nature appreciation. In a survey of Whites and Latinos in central and southern California, they investigated recreational benefits among three groups of Latinos differentiated by their "acculturation" levels (defined on the basis of comprehension and use of Spanish versus English), and compared them to Whites with very low comprehension of Spanish. The analysis controlled for income, education, and number of children. The least acculturated Latinos did not rate family-related benefits more highly than Whites. Bicultural Latinos placed somewhat more importance on these benefits. This suggested that new immigrants lacked nearby family; as their kinship network expanded with duration of residency, the importance of familism was reasserted. Nature-related benefits were higher among least-assimilated respondents, tapering off with increasing assimilation. Contrary to expectation, Whites placed the least value on such benefits.

One study that did focus on beach going was Martin and Pendelton (2002). This study did not explain beach use but rather perception of environmental quality and pollution-related risk associated with going to the beach. The authors conducted a mail survey in southern California to assess public knowledge about beach pollution (e.g., trash, industry) and respondent perceptions of risk associated with these types of beach contamination. The data were examined using a series of probit models. Findings suggested past illness following swimming in the ocean was significant in determining the importance of ocean water quality (compared to other types of social or environmental problems). Also, exposure to the media influenced whether respondents felt ocean contamination was getting worse. African Americans and non-Mexican Latinos were less apt to see beach contamination as an important problem. The same was true for women and higher income respondents. With respect to risk perception, several factors affected whether people saw a specific source of pollution linked to more or less severe risk. There were relatively inconsistent links between ethnicity and perceived severity of pollution risk from different sources. Both media reports and beach signage were important in influencing perceptions of risk. Also, those with negative perceptions of water quality trends were more apt to see risk as more severe. The results suggested that beach use rates were significant in explaining the perceived importance of ocean contamination compared to other problems and also to whether such contamination was getting worse. Those going to the beach were more likely to indicate contamination as a more important social problem, but less likely to think that pollution had worsened.

### *Summary*

There has been a notable lack of research on beach recreation in general, and virtually no studies comparing race and ethnic beach use. There

have, however, been numerous studies of cultural diversity in outdoor recreation and leisure activities. This body of work suggests that both class and race interact to produce differential recreation patterns. With some notable exceptions, people of color are less apt to engage in outdoor recreation than Whites, especially in wildland locales, because of lower income and education, and varying values and attitudes toward certain forms of recreation that can be explained by past histories of racism and discrimination. The few available studies of immigrants and recreation suggest that degree of assimilation may influence recreation activity rates as well as the values attached to participation in recreation, such as familism and nature-orientation. Lastly, there is evidence to suggest cultural differences in assessments of risk, such as exposure to pollution, associated with beach recreation.

Besides a lack of focus on beach recreation, there are other gaps in the literature worth noting. Few studies of cultural diversity and recreation behavior explore the ways in which differential environmental values or attitudes might influence recreation choices. This is despite the fact that race/ethnic differences in environmental attitudes have been documented (Noe & Snow, 1989/90), and that past research provides some support for a relationship between outdoor recreation participation rates, environmental attitudes, and pro-environmental behavior (Dunlap & Heffernan, 1975; Jackson, 1986; Theodori, Luloff & Wilitis, 1998).

Also, it might be expected that knowledge of recreation zones, especially wildlands or coastal areas, could foster appreciation and interest in spending time at such sites, while access to information about recreation opportunities could influence behavior. And indeed, several studies reveal a relationship between recreation and education (Bultena & Field, 1978; Cheek et al., 1976; Kelly, 1983; White, 1975). But no studies have explored the connection between education levels as reflective of knowledge and appreciation of a recreational environment (such as wildlands or deserts) and recreation patterns, and how this varies by race/ethnicity.

Lastly, although a growing literature documents race/ethnic inequities in access to parks and recreation opportunities, very few studies of actual recreation behavior control for geographic accessibility across groups. Do Latinos or African Americans, for example, go to the local mountains less because they are more likely to live in central cities situated further from those mountain zones, or because they are more likely to be dependent upon public transport that offers few opportunities for visiting urban-proximate wildland areas?

### A Model of Beach Use

The studies reviewed above suggest a basic conceptual model of beach utilization (see Figure 1). Beach use is believed to vary by race and class, as well as other demographic characteristics such as age, family and socioeconomic status, and among immigrants, degree of assimilation. Many of these variables are correlated. In addition, to the extent that there are systematic differences in attitudes toward nature and/or policy related to coastal envi-

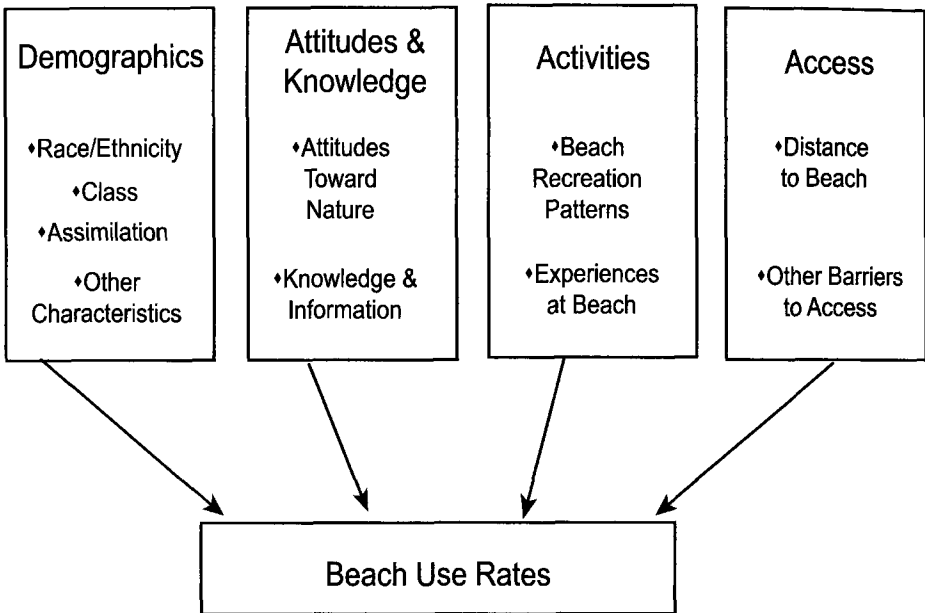


Figure 1. A model of beach use

ronments, beach use may be influenced by environmental attitudes. Such attitudes, in turn, may be shaped by information potential users obtain about the beach and their knowledge levels about certain aspects of the beach, such as pollution. In addition, experience with the beach and preferred activity patterns may affect beach use. Those who have worked on or near the beach would presumably have a different relationship to the coastal zone than others. Also, those actively involved in volunteering activities oriented toward the marine environment also might use the beach more often. Recreation patterns at the beach could influence frequency of beach use; an individual interested in periodic activities such as whale watching may be less likely to visit the beach as frequently as someone who relishes sunbathing or engages in subsistence fishing. Lastly, there are also accessibility considerations. Some people may face logistical as well as distance-related barriers to beach going. People living farther from the beach can be expected to visit the coast less often, all things being equal.

These conceptual considerations allow us to pose a basic empirical model designed to explain variations in beach utilization rates as a function of demographic characteristics, information and knowledge about beach environments, attitudes toward nature and related policy issues, beach activity patterns, and barriers to beach going, including geographic location. This model permits us to test three central hypotheses derived from the more general literature on leisure and outdoor recreation:

- a. Whites are more likely to engage in beach recreation than other racial/ethnic groups (“ethnicity” hypothesis).
- b. More assimilated immigrant groups will have beach recreation rates more similar to the native-born population compared to less assimilated immigrants (“assimilation” hypothesis);
- c. Lower socioeconomic status groups are less likely to engage in beach recreation (“marginality” hypothesis).

In addition, the literature suggests that attitudes toward the environment influence outdoor recreation patterns, and that such attitudes may vary by race or ethnicity. Thus, this conceptual model allows us to test a fourth hypothesis:

- d. Groups with biocentric attitudes toward the marine environment issues may visit the beach more frequently than those with anthropocentric attitudes (“attitudes to nature” hypothesis).

Relationships between anthropocentric and biocentric attitudes and outdoor recreation have not been directly tested. There are reasons one might expect more anthropocentric attitudes to be linked to more beach use. For example, those with strong aesthetic attitudes might be attracted to the beach’s beauty, while those who are more utilitarian might be drawn to the beach due to its low cost. On the other hand, those with more biocentric attitudes might have higher rates of beach use, if their attitudes lead them to value outdoor experiences and interactions with wildlife and the elements more highly than others. It is also possible that because such attitudes themselves may be determined by underlying factors such as personal characteristics and experiences, they may not have a strong direct effect. Our hypothesis about attitudes and beach use is therefore not grounded in past research results and thus we lack strong expectations.

With respect to other variable relations, based on past research we would expect that younger people and families with children visit the beach more often, although this may be mitigated by constraints on parental time (Streather, 1989). Because of the second shift phenomenon, or the effects of male “entitlement,” women may also be less frequent beach goers (Bittman & Wajcman, 2000; Green, Hebron & Woodward, 1990; Henderson, 1994a, 1994b, 1996; Henderson & Bialeschki, 1991; Shaw, 1994, 2001). Those facing barriers to beach access—whether they derive from external constraints such as lack of time, money, information, or transportation, or emerge from conditions at the beach itself (e.g., crowding, pollution, traffic)—may be expected to be less frequent beach users. Also, those living closer to the beach may visit more often, because they have better access—although research is only beginning to emphasize this geographical factor (Lindsey, Maraj & Kuan, 2000; Talen, 1998; Tarrant & Cordell, 1999).

How, if at all, nonrecreational interactions with the beach zone (for example, working on the docks, or participation in a nonprofit marine environmental organization) influence beach utilization, or how recreation ac-



tivity patterns are linked to beach going, are more ambiguous questions. These issues have not been investigated. Most work has been devoted to understanding styles of recreation. For instance, this research shows Latinos tend to be more family oriented and use recreation sites for family picnics and other group activities more than others, while Whites are more likely to engage in solitary, contemplative or exercise activities (e.g., jogging, walking alone, reading a book; Floyd & Shinew, 1999). African Americans have been observed in some studies to be more likely to engage in peer group activities (young men hanging out together or playing basketball in a city park, for example). But no prior studies investigate ethnic or racial differences in beach recreation.

The factors in this model may not be completely independent. For example, it would make sense if those with more anthropocentric, utilitarian attitudes were linked to consumptive recreation (e.g., fishing, collecting tidepool animals for food), and those who were more biocentric showed higher frequencies of whale or other wildlife watching activities. Similarly, those with poor access to the beach may be less knowledgeable. And almost certainly, demographic factors shape environmental attitude formation and play a role in accessibility.

### Survey Methods

Our conceptual model of beach use was tested using data from a telephone survey conducted in 2000 in Los Angeles, California. Responsive Management, Inc., a national survey research firm specializing in studies of attitudes toward wildlife and wildlife management administered the survey. This survey included a variety of questions on beach use and attitudes toward the environment, as well as demographic and socioeconomic status questions.

#### *Sampling*

The survey was conducted by telephone. A randomly selected sample of Los Angeles residents over 18 years of age was contacted. The sample was designed, in part, to emulate the racial/ethnic composition of Los Angeles County, with over-sampling of certain groups to allow group-specific statistical analysis, particularly of African Americans, Latinos, and Asian-Pacific Islanders. First, a resident sample was generated through a random digit dialing procedure. Random telephone numbers were matched to household names, and letters were mailed on University of Southern California letterhead to inform potential respondents of the study and ask that they participate. Also, supplemental samples that targeted demographic subgroups were obtained. The African American subsample was selected by randomly sampling geographic areas in Los Angeles with a known density of African American households of at least thirty-one percent. Other minority samples were constructed by randomly selecting households with Latino, Chinese, Korean or Filipino surnames. Any potential respondent drawn from a particular race/

ethnic group subsample on the basis of residential location or surname, who did not self-identify as a member of that group, was ineligible to continue with the survey. The sample of eligible survey participants totaled 1635 individuals.

### *Survey Administration*

Interviews were conducted Monday through Friday from 9:00 a.m. to 9:00 p.m. and on Saturday from 10:00 a.m. to 4:00 p.m., local time. A multiple-callback design was used to maintain the representative character of the sample and avoid bias toward people easy-to-reach by telephone. Subsequent calls were placed at different times of the day and on different days of the week. To overcome language barriers the survey questionnaire was translated in advance into Spanish, Chinese, and Korean and pilot tested with native speakers. Hence no back-translation was required. The survey was administered by bilingual interviewers as necessary and entered directly into survey data entry software (Questionnaire Programming Language or QPL Version 4.0), a comprehensive system for computer-assisted telephone interviewing. The survey instrument was programmed so that QPL branched, coded, and substituted phrases in the survey based on previous responses to ensure the integrity and consistency of data collection.

The overall response rate was 52%, for a sample size of 850. Of the remaining 48%, approximately half were never contacted successfully, and half refused to participate. The response rate is consistent with other studies in this research area (see, for example, Johnson et al., 1998; Lee, Scott & Floyd, 2001; Philipp, 1993). It was not possible to determine within group response rates; if interviewers encountered telephone answering machines or busy signals, they were unable to tell if that potential respondent was, in fact, a member of a particular race/ethnic group. Non-response bias was estimated through a comparison with both the 1990 U.S. Census of Population and Census 2000 data on basic demographic characteristics of Los Angeles County, which revealed that the sample was roughly similar to that of the overall county population in terms of these characteristics (see below for a detailed comparison). All data reported reflect unweighted survey responses. In the absence of definitive data on relationships between any particular demographic subgroup and variables of interest (such as attitudes toward nature), weighting would have implicitly assumed a within-group uniformity of views that is currently ungrounded.

The survey consisted of 100 close-ended questions, designed according to key principles established by Fowler (1995). Question construction principles were drawn from Bourque and Fielder (1995). Questions in each segment of the survey were funneled from the general to specific. The survey consisted of seven sections. One focused on experience/interactions with the coast and items regarding beach utilization, access, frequency, and interactions with marine animals and the environment. Other sections contained demographic and locational characteristics of respondents, knowl-

edge about local marine wildlife, attitudes toward marine wildlife, and tolerance toward controversial animal practices associated with different race/ethnic groups.

### *Variable Specification*

A subset of variables was selected for the present analysis. The question on beach utilization asked respondents to indicate how often they had visited the beach over a two-year period (BEACHDAYS). The selection of this period was arbitrary. We assumed that a sizable share of the sample would have made at least one trip to the beach over two years (compared to a shorter period of time such as one year), and that this time period was sufficiently short to allow respondents to recall their experiences. Reported distances traveled to the beach were grouped to create a new variable (DISTANCE), using a geographic information system (GIS), into four broad bands of respondent zip codes: less than 3 miles from the nearest coast; 3 to 5 miles; 6 to 10 miles; and more than 10 miles. Data on several different barriers to access were assessed, and ultimately collapsed into a dichotomous variable indicating presence or absence of a barrier to access (ACCESS).

The survey sample was grouped according to broad race/ethnic categories: White, African American, Latino, and Asian-Pacific Islander. Dummy variables were also created for three of these groups (BLACK, LATINO, ASIAN). All such categorizations are problematic because of within-group diversity of background and experience, but the Asian-Pacific Islander grouping contained respondents with the most diverse ethnic heritage. Most were of Chinese origin (54 or 56% of the Asian-Pacific Islander group), with smaller samples sizes and proportions of Koreans (18 or 18.6%) and Filipinos (12 or 12.4%). The share of those from other origin groups was even smaller. A limitation of the study is that the small number of respondents in any one of these groups necessitated their aggregation in order to obtain statistically meaningful results.

Five demographic measures in addition to race/ethnicity were included. These were age in years (AGE), gender (GENDER, with 0 = female and 1 = male), presence of children in the household (KIDS), a dichotomous indicator of immigrant status (BORN) and an assimilation measure (LANG). The last variable had 3 levels, each related to both immigrant status and language spoken at home ("native-born" or native born English speakers, "long-term immigrant" or immigrants speaking English at home, and "recent immigrant" or immigrants speaking a language other than English at home). Two socio-economic variables were an education variable (EDUC) with 3 levels (Less than High School, High School, College), and an income variable (INCOME), with 5 levels (\$19,999 or less; \$20-49,999; \$50-99,999; \$100-140,999; \$150,000 and above). Since education and income measures were correlated, only INCOME was used in our modeling. Measures of beach experience/interaction were a dichotomous measure of beachside employment (WORK) and participation in three beach activities: water sports

(WATERSP), fishing (FISH), and tidepool collecting (TIDEPOOL). Knowledge of marine wildlife was measured by a question on endangered species (KNOW) and number of information sources about the marine environment (INFO). In addition, a measure of environmental activism—whether respondents had donated funds or time to an ocean-oriented voluntary organization—was included (DONATE).

With respect to attitudes, the survey asked respondents a set of 35 attitudinal items, each one a statement about how people think about animals and human treatment of animals and their habitats. Items were based on past surveys of attitudes toward animals (Kellert, 1984; 1996), adapted to the marine context, and modified in light of earlier focus group research (Griffith, Wolch & Lassiter 2002; Wolch, Griffith, Lassiter & Zhang, 2001; Wolch, Brownlow & Lassiter, 2000). These items were measured with a 5-point Likert scale, with 1 defined as strongly disagree, 5 defined as strongly agree, and 3 being neutral; see the Appendix. Each of these items were linked to a set of ten attitude dimensions arising from past research on attitudes toward animals. Six dimensions were associated with anthropocentrism and four with biocentrism that captured attitudes ranging from, for example, utilitarian-dominionistic, to animal rights (see Table 1). These ten attitude dimensions were, in turn, further collapsed to form two index variables measuring the strength of biocentric and anthropocentric attitudes (BIOCEN and ANTHRO).

#### *Statistical Analysis of Scale Variables*

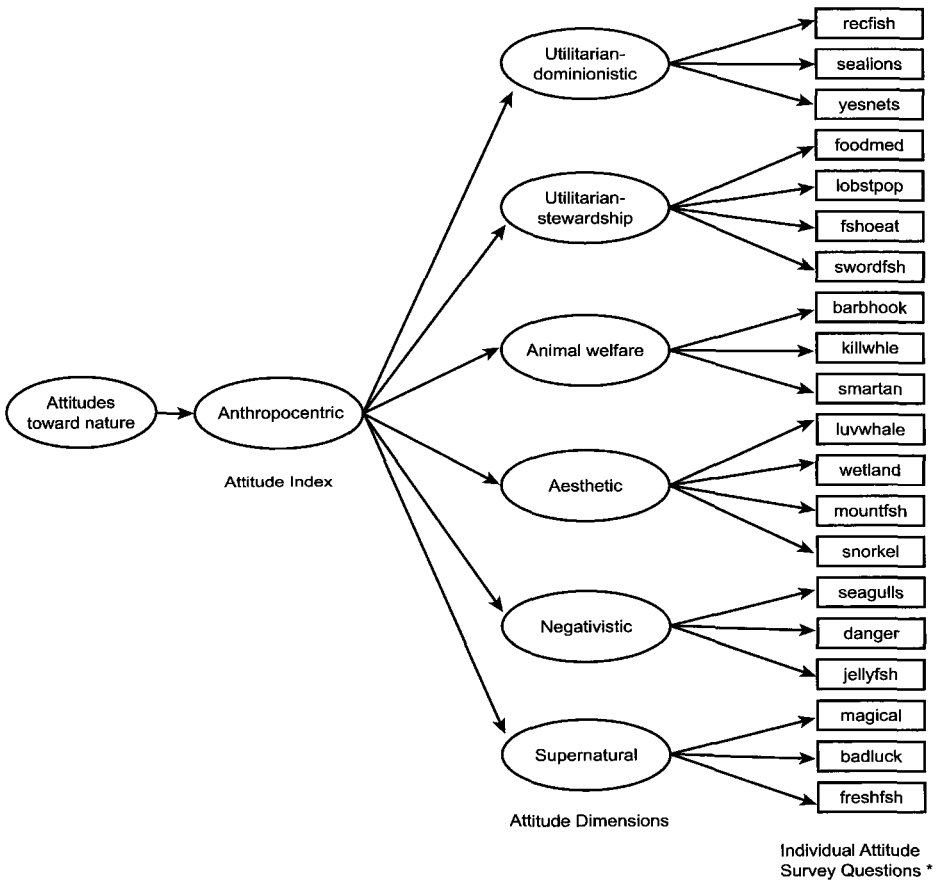
A confirmatory factor analysis using LISREL 8.5 for Windows was conducted to explore the two attitude scale variables as well as the ten underlying dimensions built from the attitude items in Table 1. The covariance matrix was analyzed. The theoretical model for this confirmatory factor analysis was composed of the 35 manifest attitude variables directly measured in the survey, as listed in the Appendix. Latent variables included the two second-order factors, Anthropocentric and Biocentric. The ten first-order factors were (see Appendix): Utilitarian-Dominionistic, Utilitarian-Stewardship, Negativistic, Aesthetic, Animal Welfare, Spiritualistic-Supernatural, Environmental-Naturalistic, Environmental-Stewardship, Animal Rights, and Coexistence. In *Model I*, the relationships among factors and manifest variables are identical to those in the theoretical model (see Figures 2 and 3). Based on the results of a confirmatory factor analysis (CFA), we modified the original model by adding a covariance between the error terms of two variables: *sea-gulls* and *stealfsh* (*Model II*). Then, we modified the original model adding two paths from Aesthetic to *yeshnets* and from Utilitarian-Dominionistic to *bad-luck* (*Model III*).

There are several indicators of model fit. One is chi-square, which is expected to be nonsignificant ( $p > .05$ ). However, chi-square values are more likely to be significant with a large sample than with a small sample (Marsh, Balla & McDonald, 1988). Thus, this criterion should be used only as a very

*TABLE 1*  
*Anthropocentric and Biocentric Attitude Measures*

Anthropocentric Attitude Dimensions	Example Survey Item
<i>Utilitarian-dominionistic</i> : principal concern for the mastery or control of animals and nature.	"I think that recreational fishing is fine, regardless of whether you eat the fish you catch."
<i>Utilitarian-stewardship</i> : foremost interest in the practical value of animals and the natural environment.	"Restaurants shouldn't serve swordfish if their numbers are significantly declining."
<i>Negativistic</i> : fundamental interest in avoidance of animals due to indifference, dislike, or fear of animals	"I find seagulls to be a real nuisance."
<i>Aesthetic</i> : primary interest in the physical attraction or beauty of animals and nature.	"If I had to choose, I'd rather snorkel than surf because snorkeling allows me to see beautiful fish".
<i>Animal welfare</i> : principal concern for the right and wrong treatment of animals and nature.	"Catching fish with barbed hooks is cruel."
<i>Spiritualistic/supernatural</i> : fundamental interest in the supernatural properties of animals and nature.	"Seeing wild animals like dolphins in the surf would give me a magical feeling."
Biocentric Attitude Dimensions	Example Survey Item
<i>Environmental-naturalistic</i> : primary interest in direct contact with wildlife in undisturbed, natural settings.	"It's unfortunate to see whales beach themselves but that's nature's way."
<i>Environmental-stewardship</i> : principal concern for ecological characteristics of wildlife and natural habitats.	"The most important reason to avoid over-fishing is to make sure there's enough food left in the oceans for other animals."
<i>Animal rightist</i> : foremost concern for the rights and well-being of individual animals.	"The fates of individual animals matter to me, not just what happens to endangered species."
<i>Coexistence</i> : primary interest in the harmonious coexistence between humans and animals.	"It's OK when pelican steal fish from commercial fishermen because pelicans have to eat too".

rough rule of thumb. A Comparative Fit Index or CFI (Bentler, 1990), or a Goodness-of-Fit Index or GFI (Joreskog & Sorbom, 1984) equal to or greater than 0.90 is representative of a good model (Marsh, 1994; Schumacker & Lomax, 1996). Browne and Cudeck (1993) suggested that a Root Mean Square Error of Approximation or RMSEA value of less than or equal to 0.05 represents a good model fit; a RMSEA value near 0.08 indicates fair fit; and a value above 0.10 indicates poor fit. Last, the Expected Cross-Validation

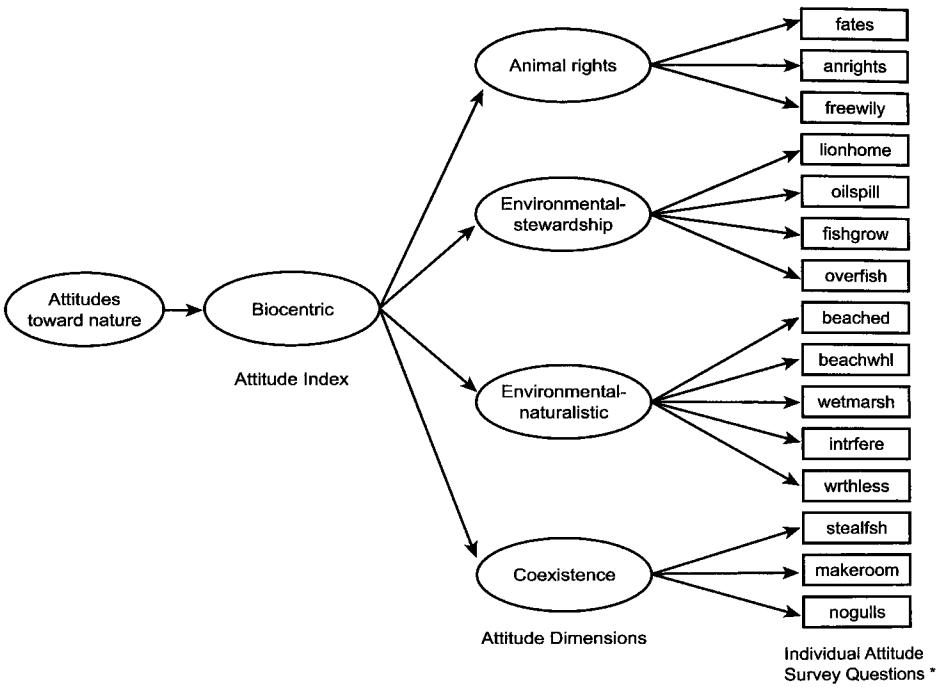


\*See Appendix A for variable definitions.

Figure 2. Measurement model I: anthropocentric attitude index

Index or ECVI (Browne & Cudeck, 1989) is a measure of overall discrepancy between a hypothesized model and the true model in the population.

Comparison of fit indices across the three measurement models revealed inconsistent but predictable results for our confirmatory analysis (Table 2). A significant  $\chi^2$  ( $p < .001$ ) value and a small CFI ( $< 0.90$ ) indicated that model fits were poor. However, as stated, chi-square has been criticized as an index of model fit because it is difficult to achieve a non-significant chi-square value with sample sizes over 100. On the other hand, a relatively large GFI value (above 0.80) and a small RMSEA value (close to 0.05) showed that these models were fairly good. The lower ECVI indicated the Model III is somewhat more stable than others (Schumacher & Lomax, 1996). However, since there were no significant differences among the three measurement



\*See Appendix for variable definitions.

Figure 3. Measurement model I: biocentric attitude index

TABLE 2  
Confirmatory Factor Analysis Model Summary

Model	N	df	$\chi^2$	GFI <sup>a</sup>	CFI <sup>b</sup>	RMSEA (CI)	ECVI <sup>d</sup>
Model I (Original)	850	547	2812.86	.75	.51	.070 (.067, .072)	3.52
Model II (Revised)	850	546	2808.02	.78	.51	.069 (.067, .070)	3.51
Model III (Revised)	850	543	2502.34	.82	.58	.065 (.063, .068)	3.16

<sup>a</sup>GFI is a Goodness-of-Fit Index (Joreskog & Sorbom, 1984).

<sup>b</sup>CFI is the Comparative Fit Index (Bentler, 1990).

<sup>c</sup>RMSEA is the Root Mean Square Error of Approximation (Browne & Cudeck, 1993), with confidence intervals in parentheses.

<sup>d</sup>ECVI is the Expected Cross-Validation Index (Browne and Cudeck, 1989).

models, we retained the original Model I, which fit the data fairly well. Results of the confirmatory factor analysis overall indicated that relationships between first- and second-order latent factors and manifest variables corresponded to our theoretical model and measures of fit were reasonable, if not optimal.

Scale reliability was also assessed by calculating Cronbach's alpha, and found to be within acceptable ranges for exploratory research. Raw reliability estimates were 0.632, and 0.584 for anthropocentric attitude index and biocentric attitude index (with standardized alphas being 0.629 and 0.610 respectively). Scale reliability coefficients for the two sub-scales were not very high, but sufficient for a general survey scale. Pedhazur and Schmelkin (1991) indicate that an alpha of 0.5 is not necessarily low, acceptability being a function of the amount of error variance that users would tolerate, with tolerance apt to be higher in exploratory research. Deleting items did not result in a higher reliability for the anthropocentric index. For the biocentric index, deleting one of the following three items—*anrights*, *nogulls*, and *beachwhl*, caused the reliability coefficient to go up but not by a significant amount. In future studies, alternative items should be considered as replacements for these three items.

#### Descriptive Dimensions of Beach Use

Respondents were divided between the relatively well educated and affluent and those who had less education and lower incomes. Although over half had completed at least some college, over 15% lacked a high school diploma and almost 25% held only a high school degree. Not surprisingly, then, about 30% had household incomes over \$50,000 or over per year, while almost a fifth had household incomes of less than \$20,000 per year. With regard to race and ethnicity, the sample was 37% White ( $n = 303$ ), 12.9% African American ( $n = 102$ ), 37.5% Latino ( $n = 301$ ), and 12.1% Asian-Pacific Islander ( $n = 97$ ). This distribution lies between the 1990 U.S. Census breakdown, on which the original sample stratification was based, and Census 2000 figures for Los Angeles County (Myers, 2001). The 2000 figures reflect the decade's rapid growth of Latino population (which grew from 37.3% to 45.6%), decline of Non-Hispanic Whites (32.1%, down from 41% in 1990), slight decline in African Americans (from 10.7% to 9.4%), and growth in Asian-Pacific Islanders (from 11% to 12.9%). Almost 60% of respondents were born in the U.S., with the largest share of immigrants being from Mexico (18%). Almost 40% reported speaking a language other than English at home (overwhelmingly Spanish). Over two-thirds had lived in the U.S. for more than 20 years, and over 55% had lived in southern California for that long. The sample was nearly equally divided in terms of gender, mostly under forty-five years of age, and over 60% had no children living in the home.

Four dimensions of beach use were measured by the survey: frequency of use, adequacy of access (reflecting presence or absence of one or more



barrier to access), types of barriers to access, and type of recreational activity. The mean number of days at the beach was 13.9 over a two year period and ranged from no days to 720 days. Almost 80% of respondents indicated that they had adequate access to the beach. Of those who did not, between 20% and 25% indicated that they faced one or more barriers in accessing the beach. These barriers related to transportation, time, parking, beach pollution, and crowding. The most common beach activities were sunbathing, swimming, and walking (over 80% of the sample reported engaging in these activities), followed by active sports (e.g., volleyball, frisbee; 36%), whale or wildlife watching activities (35%), and water sports such as boating, surfing, or scuba diving (26%).

Bivariate analysis (all-way Chi-Square tests and ANOVA) indicated that there were significant variations in beach use by race/ethnicity. The mean number of days spent at the beach over a two-year period was 22.3 for Whites, more than twice that of any other race/ethnic group. Asian-Pacific Islanders reported 9.8 days, African Americans 9.4 days, and Latinos 7.8 days. Similarly, the share of respondents with inadequate access to beach and types of beach use barriers reported also varied by race/ethnicity. Overall, 18.2% reported some barrier to access but the rate varied significantly by race/ethnicity at the 0.05 level. It was highest among Latinos (23%) and Asian-Pacific Islanders (26%), and lowest amongst Whites (13.3%). Only about 11% of the African American respondents reported difficulties with access as a barrier (half transport-related). The subsample of African American respondents reporting any sort of access barrier was so small, however, that they were not included in statistical comparisons of barriers by type. The types of barriers reported varied significantly by the other race/ethnic groups. Whites who reported barriers indicated that difficulties with transportation were the most common type (25.6%), with other barriers reported by 20% or less. In contrast, Latinos reported pollution (44.1%), crowding (38.3%), and parking (23.5%) more often, as well as indicating time constraints (32.4%) as a barrier to beach use. Asian-Pacific Islanders reported transportation and time constraints more often than either of the other two groups (44% and 40% respectively).

Race/ethnic groups also engaged in different types of beach recreation activities. Latinos were twice as likely to spend time playing volleyball, Frisbee, flying kites, or building sand castles than Asian-Pacific Islanders or African Americans. Asian-Pacific Islanders were far less likely to sunbathe, swim or walk on the beach than other groups. Asian-Pacific Islanders were, moreover, far less likely to watch for whales or other wildlife than were any other race/ethnic group (12% compared to a quarter of Latinos, 42% of African Americans and 50% of Whites). Latinos were more oriented toward water sports, African Americans toward fishing, and collecting tidepool animals (although percentages for tidepool collection were low across all groups). Immigrants were significantly less likely to watch for whales or other wildlife, and to fish, compared to native-born respondents. There were no significant differences with respect to other activity choices.

Turning to the question of how beach utilization rates vary with factors other than race/ethnicity, a series of cross-tabulations produced some expected outcomes but also revealed a series of intriguing results. Based on crosstabulation and Chi-square tests, there were no significant gender differences in beach use rates, but those with more education and income were more frequent beach goers. So were those without children, and younger people, although these differences were not significant. Immigrants visited the beach at significantly lower rates than native-born respondents. Recent immigrants, defined as those speaking a language other than English at home (almost 40% of the sample), were less likely to go to the beach at all than either longer-term immigrants or native-born respondents, although this difference was not statistically significant.

Reported barriers to access were not linked to variations in beach going, although beach going and distance were inversely related. However, knowledge and information were related to beach use. Those who were less knowledgeable about endangered species, reasons for Brown Pelican endangerment, and the possibility of fish contamination were more likely to be beach users. With respect to information, those who indicated that they obtained information on the beach/coastal environment from television were less likely to frequent the beach than those who did not get their information from this source. In contrast, those reporting that teachers and zoos/aquaria were information sources were more likely to go to the beach.

Activities were clearly and statistically significantly related to beach use. Those who reported playing beach sports (such as volleyball or Frisbee), or sunbathing, swimming, or visiting with friends were somewhat more frequent beach users. Those reporting whale or other wildlife watching, fishing, or engaging in water sports indicated that they went to the beach far more often than those who did not partake in such activities. Survey respondents who reported seeing marine mammals, birds and other marine wildlife were more likely to frequent the beach than those having no interactions with marine wildlife. Those who worked (or had in the past worked) near the ocean, or who belonged or donated funds to organizations devoted to marine wildlife or ocean protection also visited more often than others.

Based on an analysis of Pearson's coefficients, respondents with higher biocentrism scores visited the beach more often, while those who were more anthropocentric were less frequent beach-goers. But these correlations were weak (0.018 and  $-0.087$  for biocentrism and anthropocentrism, respectively). Only the relationship between anthropocentrism and days at the beach was statistically significant at the .05 level.

### Modeling Cultural Diversity and Beach Use Rates

These bivariate results were further explored through a series of tobit regression models (estimated with the LIFEREG procedure in SAS). A tobit specification was utilized because the dependent variable, days at the beach, is limited to a certain range (or truncated). The number of days respondents

spent at the beach ranged from 0-720 but a large share of the group reported no days at the beach (29.2%). In this type of situation, tobit models are the preferred specification, to avoid biased results and provide information on the effect of independent variables on days at the beach among beach goers (non-zero cases), and on the probability that non-users (zero cases) will make a beach trip. OLS versions of the models were also estimated as a basis for comparison.

We tested the ethnicity, assimilation, marginality, and attitude hypotheses outlined above. Models used dummy variables for race and ethnicity, with Whites serving as the base group. The basic model was specified as follows:  $BEACHDAYS = f(AGE, GENDER, INCOME, KIDS, BORN, KNOW, INFO, WORK, DONATE, ACCESS, DISTANCE, ACTIVITY, ANTHRO, BIOCEN, BLACK, LATINO, ASIAN)$ . A more detailed specification, including the ten attitude dimension variables, was also estimated.

An examination of the correlation matrix revealed that multicollinearity was not a major problem. For example, of the 351 correlation coefficients among the 27 independent variables included the detailed model, only 40 were significant, none of these correlations was high, and inspection of OLS results did not reveal problems typically linked to multicollinearity (e.g., high R-Square values with insignificant independent variable coefficients).

### *Expectations*

There are some expectations with respect to the nature of model relationships. For example, we would expect beach use to vary negatively with distance from the beach. Similarly, beach use could also be expected to be lower among those reporting access barriers. However, we have only weak expectations about other variables. For example, older people may go to the beach more because they have more time, although beach use is typically linked to youth. Higher income people (and thus typically more educated residents) may go less often because they have other recreational outlets (for which they can pay), or more often because they could have more leisure time.

Additionally, beach use rates might vary positively for respondents with children, but those without children may have more free time to go to the beach. The attractiveness of the beach as a site for recreation may vary by race/ethnicity due to differences in cultural orientation or a perceived cultural coding of the beach as dominated by one or another racial group. Those who have worked at, or currently work at, the beach may or may not want to spend leisure in this environment.

Either biocentric or anthropocentric attitudes could conceivably lead to more beach use—utilitarian-minded people might be drawn to the beach because it is cheap, enjoyable or beautiful, while those with a more biocentric orientation might go in order to be close to nature and be able to observe ecosystems and ocean processes they believe to be intrinsically valuable. Our working hypothesis is that those who score higher on biocentrism are more

apt to be beachgoers, since the beach is closely linked with iconic southern California animals such as whales and dolphin, and is one of the more readily accessible natural environments in the region. And those with more information sources and knowledge might be more apt to go to the beach, but it is possible that information acquisition (e.g., movies, TV watching) substitutes for actual experience. No research has been done on these questions.

Conceptually, there may be several sources of endogeneity in this model. For example, patterns of beach activity might arise as a function of beach utilization rates, with frequent beach-goers being more apt to engage in certain beach activities than those who rarely go to the beach. Similarly, information and knowledge may be a function of beach utilization. The degree of perceived barriers may be due to beach utilization frequency. And involvement in ocean-oriented nonprofits might be explained by high rates of beach utilization, for example, love for the ocean leads to activism.

### *Model Results*

Model results are presented below in Tables 3 and 4. Table 3 shows the model with the two attitude index variables (BIOCEN and ANTHRO), and Table 4 provides results using the ten attitude dimension variables. All variables suggested by our theoretical model are included in both specifications.

The overall model was statistically significant, as determined by the large log likelihood statistic. Likelihood Ratio Tests show that a number of model variables are significant at the 0.05 level (Table 3). All things being equal, beach use was significantly higher among younger people, those with higher income, the native born, and those who fish when they go to the coast but do not collect tidepool animals. Distance to the beach was also significant, with those living closer more likely to be more frequent beach goers. Those who were more biocentric went to the beach more often. Lastly, African Americans and Latinos were less likely to frequent the beach than others.

When measures of our ten attitude dimensions were included in the model, results were stable (Table 4). The overall model was again significant, and all variables significant in the prior model remained significant. In addition, an additional demographic variable, KIDS, became significant, indicating that those with fewer children used the beach more often. Only two of the ten attitude dimension variables were significant, but they reinforced the more aggregate findings. Those with stronger animal rights attitudes, and environmental-naturalistic attitudes—both encompassed within our more aggregate biocentric index variable—visited the beach more frequently. The two other biocentric dimensions, environmental-stewardship and coexistence, were also positive although not significant.

A detailed analysis of tobit coefficients provides additional insight into beach going behavior. First, standardized coefficients (analogous to standardized regression coefficients) were computed to compare relative effects of independent variables on the dependent variable (Roncek, 1992). For example, in the first model specification, income, age and degree of bio-

**TABLE 3**  
*Tobit Regression Analysis for Variables Predicting Log of Days at the Beach (BEACHDAYS) with Aggregate Attitude Index Measures (N = 413)*

Dependent Variable	$B^a$	SE	$\beta^b$
Constant	-6.068	4.545	
AGE	-0.018	0.004	-0.123**
GENDER	0.094	0.126	0.017
INCOME	0.377	0.074	0.134**
KIDS	-0.238	0.128	-0.042
BORN	0.445	0.158	0.081**
KNOW	-0.062	0.140	-0.010
INFO	0.086	0.055	0.032
WORK	-0.113	0.149	-0.017
DONATE	-0.013	0.177	-0.002
ACCESS	0.061	0.160	0.009
DISTANCE	-0.020	0.005	-0.074**
WATERSP	0.109	0.131	0.017
FISH	0.632	0.151	0.089**
TIDEPOOL	-0.650	0.197	-0.069**
ANTHRO	-0.100	0.159	-0.015
BIOCEN	0.778	0.149	0.127**
BLACK	-0.724	0.212	-0.086**
LATINO	-0.548	0.172	-0.096*
ASIAN	0.013	0.248	0.002
Log Likelihood		-667.56	
<i>Sigma</i> <sup>c</sup>		2.74	

<sup>a</sup>Unstandardized tobit coefficient.

<sup>b</sup>A standardized tobit coefficient is defined as the normalized tobit coefficient (the unstandardized tobit coefficient divided by the *sigma* for the tobit model) multiplied by the standard deviation of the corresponding independent variable (Roncek, 1992).

<sup>c</sup>Standard deviation of the model error term.

\* $P < .5$  \*\* $P < .01$

centrism had the largest effects on beach use (with standardized coefficients of -0.12, 0.13, and 0.13 respectively). Other statistically significant predictors had lower impacts (for example, distance (-.07) and fishing (-.07). Standardized coefficients for race/ethnic variables were -0.09 for African-American and -0.1 for Latino. In the second model, standardized coefficients for the two statistically significant attitude variables, animal rights and environmental-naturalistic, were both 0.07.

Second, tobit coefficients reflect both the effect on the values of the dependent variable for cases with a non-zero value, and the effect on the probability of having a nonzero value for cases with zero values of the de-

TABLE 4  
*Tobit Regression Analysis for Variables Predicting Log of Days at the Beach*  
 (BEACHDAYS) with 10 Attitude Measures (N = 409)

Variable	B <sup>a</sup>	SE	β <sup>b</sup>
Constant	-4.152	5.321	
AGE	-0.019	0.004	-0.130**
GENDER	0.119	0.132	0.022
INCOME	0.381	0.076	0.136**
KIDS	-0.270	0.131	-0.048*
BORN	0.400	0.158	0.073*
KNOW	-0.046	0.142	-0.007
INFO	0.100	0.056	0.038
WORK	-0.122	0.150	-0.018
DONATE	-0.010	0.181	-0.001
ACCESS	0.103	0.164	0.015
DISTANCE	-0.018	0.005	-0.067**
WATERSP	0.136	0.133	0.022
FISH	0.615	0.153	0.087**
TIDEPPOOL	-0.622	0.200	-0.066**
SUPERNATURAL	0.030	0.097	0.008
UTILITARIAN-DOMINIONISTIC	-0.032	0.078	-0.012
UTILITARIAN-STEWARSHIP	-0.140	0.088	-0.038
ANIMAL WELFARE	-0.106	0.080	-0.039
AESTHETIC	-0.035	0.108	-0.008
NEGATIVISTIC	0.066	0.076	0.024
ENVIRONMENTAL-NATURALISTIC	0.318	0.105	0.073**
ENVIRONMENTAL-STEWARDSHIP	0.074	0.105	0.019
ANIMAL RIGHTS	0.213	0.086	0.067*
COEXISTENCE	0.149	0.095	0.038
BLACK	-0.765	0.218	-0.092**
LATINO	-0.539	0.177	-0.095**
ASIAN	-0.160	0.253	-0.019
Log Likelihood		-665.96	
Sigma <sup>c</sup>		2.71	

<sup>a</sup>Unstandardized tobit coefficient.

<sup>b</sup>A standardized tobit coefficient is defined as the normalized tobit coefficient (the unstandardized tobit coefficient divided by the *sigma* for the tobit model) multiplied by the standard deviation of the corresponding independent variable (Roncek, 1992).

<sup>c</sup>Standard deviation of the model error term.

\* $P < .5$  \*\* $P < .01$

pendent variable. Following McDonald & Moffitt (1980) and Roncek (1992), tobit coefficients were decomposed in order to be able to identify these two types of marginal effects. Overall, for both models, 51% of the total effect of each independent variable was attributable to the effect of being nonzero (i.e., going to the beach), meaning 51% of the total effect of an independent variable is on increasing the number of days at the beach and 49% was associated with increasing the probability that a zero value case (no beach use) would actually become a beach user.

With respect to individual independent variables, decomposition analysis of aggregate model results revealed that a one unit increase in the African-American dummy variable (in other words, going from non-Black to Black) reduced beach days by 36.7% among those who went to the beach at all, and decreased the probability of going to the beach among the non-beach users by 8.9%. Results for the Latino dummy variable were roughly similar, reducing beach days by 27.8% among beach users and lowering the probability of beach use among non-users by 6.8%. Being an immigrant reduced beach days by 22.6% among beach users, and lowered the probability of beach use by non-users by 5.5%. A one-unit increase in the biocentric index variable (which ranged from  $-2$  to  $+2$ , with a mean value of 0.65), increased beach days by 39.5% among beach goers, and raised the probability of beach use among non-users by 9.6%. Income had lower marginal effects, with a one-unit increase in income (for example, moving from the \$20,000-\$49,000 category to the \$50,000 to \$99,999 category) being associated with a 19% rise in days at the beach among beach users, and a 4.7% increase in probability of going to the beach among non-users. A one-unit increase in distance from the beach (1 mile) reduced days at the beach by 1% among beach users, revealing a modest distance-decay effect, while having a negligible impact ( $-0.2\%$ ) on the probability of beach use by non-users. Reported beach activities also had a sizable impact on beach days among beach users, with fishing being associated with a 32% increase in beach days among beach users, and tidepool collection reducing beach days by 33% among beach users. Impacts of these activities on probability of beach use for non-beach users were 7.8% and  $-8\%$  respectively.

In the second model specification, results were similar. However, here the presence of children was significant. Having children reduced the days at the beach by 13.7% among beach-goers, and reduced the probability of beach use among non-users by 3.3%. The two significant attitude dimensions, reflecting animal rights and environment-naturalistic attitudes, increased days at the beach among beach users by 10.8% and 16.1%, and the probability of use by non-users by 2.6% and 3.9%, respectively.

Tobit model results were compared to OLS estimates for both specifications. OLS models performed reasonably (with R-Square values in the 0.25-0.3 range). Many, but not all, of the same variables were statistically significant at the 0.01 and 0.05 levels. These findings reinforce the importance of utilizing tobit procedures given a truncated independent variable such as BEACHDAYS.

### Discussion

The survey data and analysis provide some support for our conceptual model of beach use, as well as the specific hypotheses we tested. Both the ethnicity and marginality perspectives are supported by our findings. Survey results reveal that Whites were more frequent beach-goers, and that economic class exerted an independent influence on how often people go to the beach for outdoor leisure, recreation, and interaction with nature. Since Latinos and African Americans are also more apt to have modest incomes compared to Whites, these findings help explain the significant differences in beach going across groups. Simply put, both race and class matter.

Tests of the assimilation hypothesis yielded more ambiguous outcomes. Although more recent immigrants visited the beach less often than either long-term immigrants or native-born respondents, these differences were not statistically significant in the bivariate analysis. But bivariate results showed that immigrants overall were less apt to go to the beach than native-born respondents. Moreover, immigrant status played a significant role in our tobit regression models, indicating that immigrants were less likely to be frequent beach users.

Other results point to the complexity of factors responsible for patterns of beach recreation. Basic demographic characteristics play a role, with younger people and those without children being more likely to visit the beach. Physical access, measured by distance to the beach, was also significant. As expected, those living farther from the beach were less apt to use this recreational resource, despite the low share of respondents claiming that transportation-related problems constituted a barrier to beach access. Activity preferences also played a role, with those who fished being more frequent beach-goers, and those who collected tidepool animals visiting the beach less often.

Perhaps our most striking set of findings relates to the important role played by attitudes toward nature and marine wildlife in patterns of beach leisure. Clearly, such attitudes influence beach recreation behavior. More biocentric respondents, where biocentrism was measured by attitudes toward marine wildlife, were more frequent beach users. Models incorporating finer grained indicators of attitudes supported this finding. Respondents with higher rates of beach usage, for example, more strongly supported the well-being and rights of individual animals. They were also more powerfully drawn by the prospect of direct contact with wildlife in undisturbed, natural settings.

Knowledge and information about the marine environment, coastal area work experience, and participation in an ocean-oriented environmental organization did not significantly influence beach use rates. Such factors may, however, play an indirect role in attitude formation (Kellert, 1984).

Our study raises theoretical questions, points the way to better empirical analyses and data, and has policy implications. Theoretically, the findings suggest the importance of developing more broadly based conceptual mod-



els of recreation that not only incorporate traditional factors such as ethnicity, marginality, and assimilation but that also capture other aspects of an individual's experience that condition recreation. Attitudes toward the environment—and for some recreational resources, toward animals specifically—also warrant more theoretical inquiry and incorporation into explanatory models of recreation behavior (especially outdoor recreation).

To improve empirical studies of beach and other types of recreation patterns, future survey research could employ trip logs rather than retrospective data, since the latter are apt to be less accurate, and use more sophisticated access variables, such as actual travel time. Finer measures of assimilation and race/ethnicity would help to reduce the essentialism associated with categorical measures of immigrant status, and categories such as "Asian-Pacific Islander" that combine groups that may be profoundly dissimilar. Environmental attitude measures, particularly those related to animals, which have received less attention in the literature, also need further refinement. Such measures are especially challenging to develop since theoretical distinctions between various attitudes are subtle, and may be place- and time-specific. Qualitative work could explore in more depth how such environmental attitudes are linked to recreational choices.

Lastly, beach utilization rates varied by race/ethnicity, and immigrant status, even when holding income constant. Such patterns could thus reflect preferences and hence be an inappropriate target for recreation policy. But lower beach use rates by African Americans and Latinos may reflect regional histories of racism and perceptions of places as coded by race/ethnicity in ways that discourage beach use. For example, during the Jim Crow era, southern California's beaches were rigidly segregated by color (DeGraaf, 1970). During the early decades of the 20<sup>th</sup> century, municipal authorities, as well as the Ku Klux Klan, enforced the exclusion of people of color from area beaches, at times through the use of violence (Garcia, 2003; Rasmussen, 2002). African Americans were restricted to a Black-only beach in Santa Monica known as the Inkwell, and were threatened and harassed if they ventured into other sections of the beach, and their beach resorts burned (Foster, 1999). Prior to the civil rights era, other public recreational venues such as swimming pools and golf courses were also largely off-limits to Latinos and African Americans (Moss, 1996). This history may underlie a continuing perception of the beach as White-dominated space, and have long-lasting impacts on recreational use—perceptions that could usefully be explored through oral histories, interviews, or focus group research.

In terms of policy, decision makers should be pleased that a large majority of respondents did not report overt barriers to beach access. However, Latinos and Asian-Pacific Islanders were more apt to perceive barriers to beach utilization. In the case of Latinos the most important perceived barrier was pollution. Since this perception is not always backed by reality (cf. Martin & Pendelton, 2002), it may be important for coastal zone managers to develop additional avenues for providing accurate information about beach safety and closures.

It is also true that those living farther from the coast were less frequent beach-goers. Since inland communities, dominated by people of color, are the poorest, have a disproportionate share of the region's children, and are most bereft of parks and open space, increasing public transportation from such areas to the beach might be critical for those residents who experience access barriers related to geography.

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### Appendix: Individual Attitude Items and Labels in Survey

Attitude Dimension	Survey Item and Variable Label
Utilitarian-dominionistic	I think that recreational fishing is fine, regardless of whether you eat the fish you catch. "recfish"
	Populations of sea lions should be reduced if they eat too many fish that people eat. "sealions"
	Since mile-wide fishing nets are so efficient, they should be used even though they cause ecological damage. "yesnets"
Utilitarian-stewardship	It is okay for sharks and other marine animals to be used for food and medicines so long as the animals are not endangered. "foodmed"
	As long as the lobster population is healthy, commercial lobster fishing is no different than harvesting apples each year. "lobstpop"
	The most important reason to protect areas where fish mature and reproduce is to insure that people will have enough fish to eat in the future. "fshtoeat"
	Restaurants shouldn't serve swordfish if their numbers are significantly declining. "swordfsh"
Negativistic	I find seagulls to be a real nuisance. "seagulls"
	Seaweed and kelp are dangerous to swimmers. "danger"
	When I go to the beach, I don't go in the water because there might be unpleasant animals like jellyfish or crabs there. "jellyfsh"

Attitude Dimension	Survey Item and Variable Label
<i>Aesthetic.</i>	<p>One of the most striking things about whales is their grace and beauty. "lovhwhle"</p> <p>If I were to visit a marsh or wetland, it would be to watch the colorful birds and other wildlife that live there. "wetland"</p> <p>I don't like the idea of mounting fish on the wall as trophies. "Mountfsh"</p> <p>If I had to choose, I'd rather snorkel than surf because snorkeling allows me to see beautiful fish. "snorkel"</p>
<i>Animal welfare</i>	<p>Catching fish with barbed hooks is cruel. "barbhook"</p> <p>Killing whales is a cruel act. "killwhle"</p> <p>Keeping smart animals like seals and killer whales in aquariums is cruel. "smartan"</p>
<i>Spiritualistic-supernatural</i>	<p>Seeing wild animals like dolphins in the surf would give me a magical feeling. "magical"</p> <p>I avoid some kinds of animals because they bring bad luck. "badluck"</p> <p>It gives your body more energy to eat fish that's just been caught fresh. "freshfsh"</p>
<i>Environmental-naturalistic</i>	<p>When stranded animals wash up on the beach, we should let nature take its course and not intervene. "beached"</p> <p>It's unfortunate to see whales beach themselves but that's "nature's way". "beachwhl"</p> <p>If I were to support the protection of coastal marshes or wetlands, it would be to allow seabirds to live in their natural habitat. "wetmarsh"</p> <p>It's never OK for people to interfere with wild animals, who should be free to lead their lives without interference from people. "intrfere"</p>
<i>Environmental-stewardship</i>	<p>It is important for sea lions to exist in Southern California because that's where they've historically lived. "lionhome"</p> <p>The most important reason to prevent oil spills is because local populations of sea birds could be wiped out. "oilspill"</p> <p>If we decide to protect coastal marshes, it should be because that's where many young fish populations grow up. "fishgrow"</p> <p>The most important reason to avoid over-fishing is to make sure there's enough food left in the oceans for other animals. "overfish"</p>
<i>Animal rightist</i>	<p>The fates of individual animals matter to me, not just what happens to endangered species. "fates"</p> <p>The idea of marine animals, like whales or dolphins, having legal rights just like people do is absurd. "anrights"</p> <p>We should not keep marine animals in aquariums because they have the right to be free. "freewily"</p>
<i>Coexistence</i>	<p>It's OK when pelicans steal fish from commercial fishermen because pelicans have to eat too. "stealfsh"</p> <p>Sea lions shouldn't be removed from beaches just to make room for people. "makeroom"</p> <p>Although the beach is the seagull's natural habitat, when I'm there I don't want them around me because they are messy. "nogulls"</p>