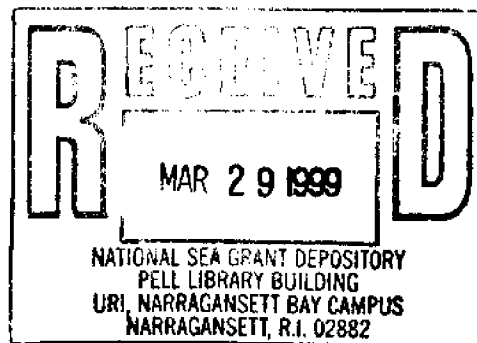


Designing the “Attitudes Toward Marine Wildlife Survey”

By
Lyndell Nelson Whitley, Unna Lassiter,
and Jennifer R. Wolch

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Department of Geography
University of Southern California
Los Angeles, CA 90089-0255




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**DESIGNING THE “ATTITUDES TOWARD MARINE WILDLIFE
SURVEY”**

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Cultural Diversity and Attitudes Toward Marine Wildlife
Jennifer R. Wolch • PRINCIPAL INVESTIGATOR

FUNDED BY SEA GRANT

WORKING PAPER #2***DESIGNING THE "ATTITUDES TOWARD
MARINE WILDLIFE SURVEY"*****By Lyndell Nelson Whitley, Unna Lassiter and Jennifer R. Wolch****1998****1. INTRODUCTION**

Nature-society relations are often manifest in attitudes expressed toward animals. A lack of understanding of the diversity in attitudes towards animals and behavioral practices to which they are linked, stemming from cultural heterogeneity, can result in cross-cultural conflict. For example, the collection of tidepool animals by Southeast Asians with a rural fisher folk background not only produces environmental impacts but also fodder for cross-cultural misunderstandings, as other cultural groups who witness the practice and are aware of the ecological effects may not understand or be empathetic toward the Southeast Asians' traditional practices. Thus practices toward animals employed by one group are often misunderstood and judged by another group to be harmful or improper, and cause outrage. These misunderstandings can, in turn, intensify the racialization of one group by another.

Culturally-specific practices are one of the key elements of the conceptual framework used in this thesis to theorize attitude formation. The framework illustrates several factors that range from global to local to individual level influences which ultimately combine to form a person's

attitudes toward animals. Culture-specific nature-society relations, along with global economic restructuring, environmental degradation, and social movements arising around animals all form a global level influence. These interrelate with local institutional influences and specifically with personal characteristics to shape attitudes at the individual level. It is primarily when we assess personal characteristics that we can trace cultural influences: what are an individual's knowledge, preferences, experiences, and values about animals, and how do these characteristics link to their cultural background?

In this working paper we explicate the methodology used to operationalize the conceptual framework. While all levels of the model are important, it is not practical or possible to thoroughly explore all of them in one study. For our purposes, the individual level of the model is investigated. At this level questions can be asked which solicit information about an individual's knowledge, experiences, preferences and values concerning marine wildlife. In addition, cross-cultural perspectives can be explored through questions inquiring about an individual's response to traditional animal practices by a cultural group of which this individual is a non-member. Moreover, personal characteristics, as shown by demographic variables, reveal some aspects concerning a person's cultural heritage. This information can be related to the data on knowledge, preferences, interactions, values, and cross-cultural perspectives, to provide insight on how diverse nature-society traditions across cultures can affect attitudes toward marine wildlife.

The methods utilized here included a survey and in-depth interviews with science and community experts. The survey was done in cooperation with a major metropolitan museum. First, the following section presents background information on the nature of the project, the role of the museum partner, and the overall process of the survey. The second section explains the survey logic, construction and administration, and provides a description of design principles, layout and production. The third section outlines the specific design of the survey, with subsections describing in-depth the design principles of each major theme of the survey instrument. The approach to data analysis is outlined in the fourth section, and the final section discusses the major issues and problems involved in the survey design.

2. BACKGROUND

2.1 PARTNERSHIPS

This survey was conceived as a pilot survey for a large-scale telephone survey of attitudes toward marine wildlife among residents of Southern California's urbanized coastal zone, the results of which are to be utilized for coastal zone management purposes. The National Sea Grant program funded the project, which involved interested partners from museums, aquaria, the National Park service, and coastal environmental managers. While the present survey was primarily an undertaking of the principal investigator at the University of Southern California and one

local museum, the other project partners were also involved to varying degrees; thus the project has a strong collaborative nature.

The museum partner, a large urban institution, had a specific interest in better understanding residents' attitudes toward marine wildlife, because it was in the process of a major renovation and expansion. Plans for the museum complex include an environmental science learning center which would contain living marine habitat exhibits. Their location in a culturally diverse area of the city made them a logical partner for the pilot survey. According to the statistics provided by the museum, the museums' diverse visitor pool is generally representative of the greater Los Angeles area (see Table 1), a desirable feature.

*Table 1
Race/Ethnicity in Los Angeles County and Museum Visitors Pool.*

<i>Race/Ethnicity</i>	<i>Population Characteristics Los Angeles County, 1990</i>	<i>Museum visitor pool</i>
White	40.8%	35%
Black	11.2%	15%
Hispanic	36.4%	40%
Asian	11.5%	10%

In addition, the museum's location near a university made it logistically easier to get student volunteers to help with administration of the survey.

As a collaborative partner the museum had an interest in specific information concerning attendance patterns and previous experiences at

other museums and aquaria. By finding out how often visitors attended and what they liked least and best about exhibits, they could better meet their visitors needs. They also had a special interest in what their clientele was interested in learning, for example, what do people want to know about local marine animals or marine animals that live in other parts of the world? This information could then be directly applied in the planning of future exhibits and educational outreach.

The museum staff participated in question design and in the review process of the survey. The collaboration of their experts will be discussed more fully in the next subsection, which overviews the survey process.

2.2 THE SURVEY PROCESS

Survey collaborations and reviews

The basic survey process consisted of: reviewing drafts of earlier surveys, discussing the purposes and elements of the survey with our museum partner, and creating a draft based on this information and a variety of critiques of past surveys. The draft survey instrument was then taken to experts in several fields, revised and pre-tested. A cover letter was created and the entire package was translated into Spanish.

The goals of the survey design process were two-fold:

- 1) to determine accuracy of the content of questions concerning knowledge, interactions, preferences, and values/or specific attitudes about marine wildlife and
- 2) to make the survey relevant to its culturally diverse respondents.

In order to insure accuracy in these two areas both science experts and "experts"/informants from the ethnic/racial communities were interviewed. After first researching and reviewing the existing literature and past surveys we created initial survey questions. This first draft was reviewed by experts in this question-forming stage. Other expert interviews took place in the final review stage of the survey design, and many of the experts were interviewed in both stages.

Science Experts

Science experts were involved as both collaborators in the design and creation of the survey as well as integral participants in the review process. Our museum partner had an active part in both collaboration, design and the final review. Their personnel included marine biologists and other scientific experts who reviewed the survey at various stages and were interviewed on several occasions concerning their comments. Specific suggestions were made not only for some additional questions but in the phrasing of the language. Although the survey would be translated into Spanish, there would be many second language speakers whose needs had to be taken into consideration both for language and clarity of layout. Additionally, our sample would encompass individuals who may not have lived in the United States very long or who may not have had marine/aquaria experiences in their country of origin, as well as individuals who might be unfamiliar with various terms due to low educational background. Therefore certain terms and phrases had to be addressed. For instance, in the cover letter "marine wildlife" and the

word "marine" were both defined and described with examples. In the actual survey questions the word "aquarium " was defined when it was used for the first time. At-home aquariums were also described as fish bowls. Whenever possible the word "ocean" or "sea" was substituted for "marine" throughout the survey.

In addition, interviews were held with other science experts: a National Park Service ecologist, the head of a major aquarium, and a second marine biologist. Each science expert received a copy of the survey. After reviewing it, in-depth personal interviews were conducted with each individual and the resulting suggestions and corrections were incorporated into the survey instrument. These experts were of particular help in the knowledge section and in choosing appropriate animals for questions about preferences, as well as making suggestions about the interactions section and the attitude questions . For example, science experts not only confirmed the accuracy of the questions in the knowledge section but were instrumental in making sure that the questions were not too difficult for the target audience. The head of a major aquarium who works with many urban visitors was exceptionally helpful in this area and also in providing details of possible interaction experiences (for example, one of her suggestions was to use "bait" as a reason for tidepool collecting). Animals in the preference section were carefully chosen, not only for coverage of taxonomic categories and types, but also to ensure they were mostly local and therefore were more likely to elicit a response. We also wanted to confirm that we had both common and less common

species to provide an appropriate range, as well as including animals that were likely to be seen or experienced during specific activities (fishing, aquaria visits, whale watching, etc.).

Community Experts

Since a major focus of the survey was cultural diversity, it was important to also work with community experts from various cultural groups. Our museum partner provided access to their cultural community liaisons. In addition, community experts were found through contacts with a university professor, environmental organizations, church groups, and political organizations. The same review process occurred with each expert/informant from the Asian, Hispanic, and African-American communities. After initial telephone contact and explanation of the project, a letter and a copy of the survey was mailed to each individual. When the individual finished reading and making notes on the survey, an appointment was made for an interview. During an in-depth personal interview of usually one hour, the expert made comments on content, survey design, and layout, as well as on specific questions. Problems were discussed and suggestions made. New questions about the survey arose and were addressed at that time. This process also produced several insights. For example, the layout of the "Have you seen this animal" and "like/dislike and why" section was totally re-designed based on feedback from both the Hispanic and African-American consultants/informants. The original design was confusing and suggestions were made to simplify it. Also certain questions were

unnecessarily complex and re-written accordingly based on their suggestions. Additionally, community experts were asked to notice if an attitude relevant to a particular group was overlooked, or if there were other issues brought up within the survey that might prove problematic for a particular group.

Cover Letter

The survey was accompanied by a cover letter to introduce survey administrators, researchers and supporting institutions. This letter offered free tickets, introduced the topic of the survey, communicated the priority of response accuracy and assured respondents of their anonymity. The letter was deliberately designed to let respondents know that giving their "real" response will be "OK/safe" and that their individual response is very important to the success of the project. These are specific steps to reduce response distortion and bias (Fowler 30, 1995). As recommended by Bourque and Fielder (106-7, 1995), the letter was dated, signed and printed on official stationary. An address and contact telephone number were included at the bottom of the page, where an attractive illustration indicated the topic and made the prospect of filling out the survey more inviting.

Pre-Testing

After reviews and interviews with the science and community experts, the survey was pre-tested with a small group of people consisting of a few students, office workers, friends, casual acquaintances, and strangers. Hispanics, African-Americans, Asians and whites were

represented in this small group. They were asked to keep track of the time needed to complete the survey, and to note any questions or comments. The survey was also pre-tested with museum staff and with the volunteer group from the university who would be administering the survey.

Translation

Upon completion of testing and final reviews, the survey was translated into Spanish by a certified translator recommended by one of the community experts. Artwork was added to make it visually pleasing.

3. SURVEY LOGIC, CONSTRUCTION AND ADMINISTRATION

3.1 DESIGN PRINCIPLES AND CONSTRUCTION

While the conceptual framework used in this study involves several levels of analysis, as previously stated, the design of the survey draws heavily from the individual level of the framework. At this level we can design precise questions to explore the specific components of an individual's: *knowledge, interactions, preferences, and values* concerning marine wildlife and how these aspects relate to personal characteristics of individuals. Thus, at the individual level, we have the following underlying model:

$$\begin{aligned} \text{Attitudes} = & \text{function of knowledge } (k), \text{ preferences } (p), \text{ interactions } (i), \text{ values } (v) \\ & + \text{personal characteristics } (pc) \end{aligned}$$

Values, however, are problematic. Basic values, generalized environmental attitudes, and specific attitudes appear to be significantly

and hierarchically related, but there are severe problems in designing an adequate values scale (Heberlein 1981, Oskamp 1991, Fulton et al. 1996, Tarrant et al. 1997). Thus, for the purposes of this study, we assume that values and attitudes are closely linked, but that attitudes are also moderated by knowledge, preferences, interactions, and personal characteristics. The latter are intervening variables that alter any hypothesized direct correspondence between values and attitudes. These moderating or intervening variables are therefore what we are most interested in examining, and which we have attempted to measure and relate to one another.¹

In the design of the survey, *attitudes, knowledge, interactions, and preferences* constitute the main themes and are incorporated into the major sections of the survey. Other sections of the survey include two short introductory sections dealing with information relevant to the museum, and a final section which includes demographic questions relating to *personal characteristics* (e.g., socio-cultural background).

The design of the survey is based on key principles established by Fowler (1995) which include:

- Asking people about their firsthand experiences.
- Asking one question at a time.
- Clarity of wording of survey questions so all respondents are answering the same question.

¹ Since we are not actually calibrating a statistical model, leaving out this variable does not constitute a severe problem.

- Designing the survey instrument to make the tasks of reading questions, following instructions, and recording answers as easy as possible for the respondent.

Guidelines for constructing questions were drawn from Bourque and Fielder (58, 1995) who state that questions should:

- Be short
- Be specific
- Avoid abstract terms and jargon
- Be asked in logical order
- Begin simple and progress to more difficult

In addition, one of the key concepts in survey design is funneling (Fowler 1995). A funnel is a series of questions based on a theme. There can be sub-funnels (sections) within the overarching funnel of the entire survey. The purpose of the funnel technique is to engage the respondent in the subject matter, encourage recall and stimulate thinking, and ultimately, produce key answers. Starting with relatively simple uncomplicated questions, the questions increase in complexity and focus to guide the respondent to produce accurate in-depth answers. A funnel often culminates in a specific or a few targeted questions.

Questions in each section of the survey were funneled. With the exception of the two short introductory sections, the themes used for the main funnel in each major section drew directly from the individual level of the conceptual framework model: knowledge, attitudes, interactions, and preferences regarding marine wildlife. The survey consists of eight sections (see survey instrument *Appendix A*):

- Section One: "We would like to know about your museum and aquarium experiences!"
- Section Two: "What do you like to learn?"
- Section Three: "What do you like to do when you go to the beach?"
- Section Four: "How much do you know about marine wildlife?"
- Section Five: "Speak your mind! (Give us your opinion!)"
- Section Six: "What about the ways different cultures traditionally treat marine animals?"
- Section Seven: "Pick your favorite critter!"
 - Two subsections:*
 1. "Have you ever seen these animals, and if so where?"
 2. "Which animals do you like, and why?"
- Section Eight: "Almost done! Now just some quick questions about you!"
 - Two subsections:*
 1. Pet ownership and animal/environmental welfare organization membership.
 2. "And finally, just a few background questions." (demographics)

These survey sections relate to the underlying themes as explained in Table 2, which follows:

Table 2:
Underlying Themes of the Attitudes Towards Marine Wildlife Survey

<i>Introduction:</i>	Includes questions in Section One: (museum and aquarium experiences) and Section Two (what do you like to learn)
<i>Interactions:</i>	Questions concerning interactions are found in both Section Three (beach activities) and Section Seven (sub section about animal sightings and location)
<i>Knowledge:</i>	Knowledge questions are found in Section Four (Knowledge about marine wildlife)
<i>Attitudes:</i>	<p><i>A) Towards animals:</i> Attitude questions found in Section Five (Speak your mind) concern attitudes toward marine wildlife</p> <p><i>B) In cross-cultural perspectives:</i> Attitude questions found in Section Six inquire about traditional cultural practices toward animals</p>
<i>Preferences:</i>	Preference questions occur in Section Seven (second sub section) inquiring about "Like/Dislike" of particular animals and "why"
<i>Personal Characteristics:</i>	Background information and demographics questions

Before further discussion of the major themes of the survey, it is necessary to digress briefly to explain the purpose of the order of the survey sections (Section One, Section Two, Three, etc.). The order of both the questions and the sections in a survey is an important element of established methods of survey design. Question order creates funnels. Furthermore, the questions and the layout of the sections literally lead the respondent through the survey, and enhance the accurate completion of all questions and parts of the survey. It is very easy through poor survey design for respondents to become tired, bored, or intimidated and therefore not complete the survey or not answer questions accurately.

The overall idea of the survey design is to "warm up" the respondent to the topic with easy friendly questions, stimulate recall, and then build to harder and more complex issues. Questions that take quick thinking or may be a bit tiring in their structure or section length are placed towards the end of the survey. Perfunctory "quick answer" questions (such as basic demographics) should be placed at the end of the survey (Bourque and Fielder 1995, Fowler 1995). The following describes how this was done in our survey design.

The first two sections are "warm-up" for the respondent. The purpose is to bring respondents "into" the survey, to stimulate thinking in the content area, and at the same time to elicit specific information related to the museum. Section Three: "What do you like to do when you go to the beach?" stimulates recall about interactions and activities in the marine environment. At this level of the survey respondents begin a transition

into slightly more precise questions, yet the questions are still simple straightforward and relatively "fun." Section Three concludes the first sub-funnel by specifically asking about significant marine wildlife experiences.

Section Four: "How much do you know about marine wildlife?" is a true/false test on a small number of knowledge items. At this stage in the survey respondents are beginning to "work" a little harder as they think about what they know about marine animals. Questions become more complex as respondents enter Section Five: "Speak your mind! (Give us your opinion!)." The questions in Section Five are soliciting opinions about complex issues concerning marine animals and the marine environment. By responding to these questions, which are designed as attitude statements, the respondents also reveal underlying values which manifest in their attitudes about specific topics.

An additional funnel culminates in Section Six: "What about the ways different cultures traditionally treat marine animals?" with questions inquiring about traditional animal practices of various cultures. Respondents are asked to think about their own personal reaction to the practices of specific cultural groups. For most questions, respondents will not be a member of the group that is involved in the question. Both Section Five and Section Six are soliciting information about respondents attitudes and values and contain the most complex and thought provoking questions in the survey. The difficulty level peaks at this point of the survey while the respondent is still relatively fresh.

Section Seven: "Pick your favorite critter!" addresses preferences and interactions. Although composed of simple straight-forward questions, which do not require in-depth thinking, this is a more complicated section structurally and therefore is placed near the end of the survey to encourage respondents to move quickly through it and elicit reactions to specific animals. Using the same animals for both parts allows respondents to "warm up" to the animal, recognize it and identify their opinions and preferences for the animals.

According to Bourque and Fielder, in survey design it is important to decide where to place the demographic questions and to understand why one is choosing that location (58, 1995). Fowler states that questions that require quick responses or very little analysis are placed at the end (Fowler 1993). In this case demographic questions were placed at the end of the survey in Section Eight: "Almost done! Now just some quick questions about you!". They are quick and do not require a lot of thinking. Thus respondents are asked the more complex and strategically important questions in the beginning of the survey when they are fresher.

A more detailed description of the questions and underlying structures in these sections as related to the themes is given later in Section 4. In the remainder of the paper the survey questions and survey sections will be organized under and referred to according to the major themes: Interactions, Preferences, Attitudes, and Knowledge.

3.2 LAYOUT AND PRODUCTION

In addition to the design principles employed in the creation of the survey instrument, the layout and overall visual appeal of the survey is critical to response. According to Fowler, the priority in survey design is to create an instrument that is easy to read and easy to use for the respondent (92, 1995). For example, if the layout is confusing the respondent might become discouraged and skip parts of the survey or quit entirely.

Principles described by both Fowler (1995) and by Bourque and Fielder (102-3, 1995) were applied to the design of the questionnaire format. Examples are:

- Ask enough questions to obtain the information needed.
- Use space between questions.
- Use vertical format, space, boxes, arrows, and other devices to maximize clarity and order of questions.
- Use bold, underlining, and capitals judiciously and consistently for emphasis and instructions.
- Make instrument clear and complete.
- Do not split instructions or questions between pages.

The survey made extensive use of these guidelines, for instance, vertical formatting, space, and arrows were used consistently to visually guide the respondent from one question to the next.

Headings were designed to be informative and entertaining in order to encourage the respondent to proceed into the next section of the survey. They were also designed to let respondents know what is expected in terms of responses in the section. For example, in Section Five, the heading: "Speak your mind! (Give us your opinion!)" is designed to make respondents feel comfortable in expressing their opinion/attitude on the topic. Some of the questions in this section involved controversial topics, such as, "It is wrong to concern oneself with saving dolphins and whales when so many people need jobs, food and health care." It was important to make respondents aware that we were interested in their frank responses.

In addition, artwork was strategically placed throughout the survey. The purpose was not only to be visually appealing, but also informative. In Section Seven: "Pick your favorite critter" small illustrations were placed next to the name of each animal for additional clarification and to promote quick recall of the animal in question. Two respondents wrote in their overall comments that they found the survey visually pleasing.

3.3 SURVEY ADMINISTRATION

Survey Sample

The museum site was observed over a weekend to estimate attendance and locate the best areas to set up survey posts. A weekend was suggested by the museum personnel, as during the week most of the visitors are students on school tours. Based on weekend counts and

museums estimates (of 1000 visitors per weekend day) it was decided that the goal of 200 surveys could be attained in a single weekend. According to Fowler (p. 35, 1993) the first pre-requisite for determining a sample size is an analysis plan, the key component of which is an outline of the subgroups within the total population for which separate estimates are required. The purpose of the survey was to glean information on diverse cultural attitudes. Therefore, we chose to sample at least 200 visitors in order to get statistically significant numbers and numerical representations of the diverse visitor groups; sampling too few might produce an insignificant number of each grouping, and yet due to budget constraints we were unable to greatly increase the sample size. The actual survey sample consisted of 253 people who were attending the museum on the day of the survey, Saturday November 16, 1996.

Administrative Process

A group of volunteers, students from the university near the museum, were trained to administer the survey. The group included volunteers from a variety of ethnic groups. Tickets to a nearby theater (donated by the museum) were to be given out to each visitor who completed an entire survey (two tickets per "outing" group). By only offering two tickets per "outing" we attempted to reduce the number of surveys from couples and entire families and thus obtain a greater variety of respondents. Surveys were visually scanned for completeness before movie tickets were released. Lemonade was available as were coloring pages (of marine life) and crayons for the children. According to museum

policy respondents had to be 18 years or older or have their parents permission. Since parental permission was not practical, only respondents who were over 18 years old were accepted . The survey was administered on a Saturday between 10AM and 4PM. Most respondents seemed motivated by the theater tickets, but some seemed genuinely interested in the topic. The average time taken to complete the survey was between 15 and 30 minutes.

Two sites were chosen on the museum grounds. Culturally diverse volunteers (Asian, Hispanic, African-American and white) and bilingual Spanish/English speakers were available at each of each of the sites. It was hypothesized that there might be a slight difference in the clientele because admission to one of the sites was free, and there were ticket charges for the other site. Also, a random survey of 33 visitors was taken as a check on the two tables. The random sampling was done by placing a volunteer at the parking area where people first arrive. Every fifth person was approached. No signs were visible referring to marine wildlife or offering free tickets. The idea was to say that the museum was interested in its visitors responses and would the person be willing to answer a few questions in order to provide the museum with information. Non-respondents were noted and recorded as to basic demographics. The volunteer tried not to mention marine wildlife or free tickets, as both of those were attractants to the visitor clientele. Later these surveys were compared with the surveys from the other sites to see if and to what degree there were differences. In general, the random respondents were

not that different from the other respondents. It should be noted that obviously this is a somewhat self-selected group of people, as they have taken the initiative to come to a museum. ²

The following section presents an in-depth analysis of each of the major sections of the survey. It too, is organized according to the major themes of the survey: knowledge, attitudes, interactions, and preferences. Introduction and background sections are also discussed.

4. OVERVIEW OF THE "ATTITUDES TOWARD MARINE WILDLIFE SURVEY"

4.1 INTRODUCTION

Although short in length, the first two sections of the survey serve as warm-ups that solicit information relevant to the science museum, while at the same time encourage respondents to think about their marine experiences. After an "icebreaker" and general questions, the first section becomes more specific and culminates in a question regarding aquaria experiences. Specifically, this section asks about frequency of visits to the museum, the purpose of visit, and how often respondents visit other similar places. Questions about previous experiences at museums and aquaria are also included. All of these questions funnel into the last

² The response was so positive that the goal of 200 (actually 253) surveys was reached on that Saturday. We had such a good response that we gave out only one ticket per respondent during the last 1-2 hours in order to get a "cushion" of surveys and ensure that we ultimately had 200 viable surveys.

question of the section: what respondents liked least and best about their last visit to an aquarium.

The next set of introductory questions ask respondents about what they are most interested in learning and what are their specific areas of interest (for example: whole marine communities vs. specific marine plants and animals)? These responses will provide information for exhibit design and marine science/environmental education. The funnel process is applied to the question design, encouraging the respondent to think about their own learning and culminates by asking them where they get their information on science (including museums and aquaria and other choices). Many of these questions were created in collaboration with museum personnel, others were derived from the literature (Sea Frontiers 1993, Kreger and Mench 1995).

4.2 INTERACTIONS

Questions designed to reveal information about interactions/experiences are found in two different parts of the survey. Early in the survey specific marine questions are introduced and inquiry begins into the respondents "interactions" in the marine environment and with marine wildlife. The questions are intended to engage recall of these activities and inquire as to where, when and how interactions occurred. For example, respondents are asked if they go to the beach and how often. Questions are also asked concerning particular experiences such as: does the respondent go whale watching, own an aquarium, or collect tidepool animals? Some questions inquire into the care of injuries of marine

mammals by the respondents and participation in beach clean up: two experiences which may well contribute to one's view on the marine environment.

The questions funnel from frequency of beach visits at the beginning through both observational and hands-on interactive activities such as snorkeling and tidepooling. The ultimate objective of this section's funnel is to elicit the recall of a marking experience that has potentially significantly shaped the respondent's attitude towards marine wildlife. Thus the final question in this section is open-ended, inquiring about a significant marine wildlife experience.

A different group of questions concerning interactions is found in a later section of the survey. Respondents were asked if they had seen certain animals ("yes/no") and if so, where? A variety of places was listed to choose from, ranging from "live" viewing such as aquarium or museum, at the beach, or in the ocean; to "non-live" or "remote" viewing such as in movies/TV or in Books/newspapers/magazines. Respondents were asked to check all of the places where they had seen the animal. Animals included birds, invertebrates, marine mammals, and fish, and ranged from the more well-known such as starfish and seas lions to the less well-known, for example, cormorants. In all cases where there was a familiar name and a technically correct name, the familiar name of the animal was used. For example, most people know what a starfish is, even though it is technically called a sea star. If the term "sea star" had been used it may have skewed the results.

4.3 *KNOWLEDGE*

Knowledge of marine animals is the theme of the section which asks "How much do you know about marine wildlife?" An animal knowledge scale was developed based on 10 true/false questions. Dozens of questions were considered and over 40 questions were created in developing this section. Through testing and interviews with science experts these questions were pared down to ten. Questions progress from simple to more complex. Responses to the questions provide information on a respondent's knowledge in five categories: taxonomy of marine species, biological characteristics, endangerment, local issues, and ecological issues. Three of these categories were based on Kellert and Berry's (1980) work (taxonomy, biological characteristics, and endangered species) and others were created specifically for this survey. A few questions cover more than one category. For example, responses to "Grunion runs occur at low tide" demonstrate awareness of both biological characteristics and local issues/knowledge. In addition, specific animal groups were represented: fish, birds, marine mammals, and invertebrates. Animals chosen as representative of these groups are all found in the Southern California coastal zone.

4.4 *ATTITUDES*

There are two attitude components in the survey: 1) attitudes toward animals, in this case, marine wildlife; and 2) attitudes toward how various cultures treat animals. Questions about attitudes regarding traditional cultural practices toward animals are fundamentally different

from the questions on personal attitudes toward animals themselves. The cross-cultural attitude questions are aimed at assessing how people look at the practices of groups of which they may or may not be members (in most cases, they are not). Attitudes toward other groups and their animal practices are determined by a range of variables, clearly beyond the immediate scope of this study. However, we can explore the nature of differences at a descriptive level and investigate relationships with respondent characteristics. The presumption is that an individual's own cultural group affiliation, and their attitudes toward animals, knowledge levels, preferences, and interactions, may be related to attitudes toward other groups, along with many other influences on such attitudes, for example, travel experience, residential environment, or if they have friends from that group. Addressing this cross-cultural issue is innovative; previous survey work has not considered how animal practices of one group influence attitudes that other groups may have toward them, and thus how they might fuel racialization. Therefore, we have included cross-cultural attitude questions in the survey, to inform future research on this complex issue. Further discussion of this topic and how the questions were specifically designed follows below in the section on *Attitudes: Cross-Cultural Perspectives*.

First, it is appropriate to discuss values and attitudes as they relate to the "attitudes toward animals" section of the survey, where respondents are encouraged to "Speak Your Mind" concerning marine wildlife issues. Earlier in this chapter the difficulty of defining and measuring values was

discussed. In addition, as previously stated in the earlier chapters, there are two basic levels of values: highly focused or "assigned" values, such as placing monetary value or "contingency values" on an animal or a specific environmental management issue (see Stevens et al. 1994), and "grand," abstract, or held values (Tarrent et al. 1997) which can be societal or culturally based. This study is concerned with the "grand," abstract or held values—the values which are central in a person's belief system and that transcend objects ("equality" may be applied to many different situations, issues or objects). These held values underlie a person's attitude about a topic. Technically attitudes do differ from values in that an attitude is held about a particular object and values transcend objects, however attitude statements and questions can be a direct way to reveal values. Heberlein, for example, writes that: "a value is a particular kind of attitude..." (245, 1981). Thus the specific questions used in this section to reveal values are designed as attitude statements and questions. Moreover, designing and implementing specific attitude questions within a survey is an established procedure in a variety of attitudinal studies (for examples see Bath 1991, Bright and Manfreda 1994b, 1996, Kellert 1993, Reading et al. 1994, Pifer 1996).

On a one to five-point Likert scale, respondents circled a number to indicate to what degree they agreed or disagreed with the attitude statement. Underlying each question/statement was a specific attitudinal category. Attitude categories are constructed to assess general perceptions of the topic being analyzed (Reading et al. 1994). In our case the attitude

categories are created in order to assess general perceptions of marine wildlife among varying demographic groups, specifically varying ethnic/racial groups. Specific statements are representative of a particular attitude category, therefore if the respondent agrees with the statement, it is indicative of a particular underlying attitude. Certain question/statements are designed so that disagreement will also reveal a particular attitude category.

Attitude categories and typologies .

Attitude categories or typologies are not static. While Kellert laid the ground work in animal attitude typologies his basic categories³ are often problematic. Many researchers have found the categories too repetitive, or unclear in their meaning or labeling, for instance does the term "humanistic" actually bring to mind "a primary interest and strong affection for individual animals, principally pets and a highly emotional perspective of the natural world" (Kellert 1984)? If anything the term is similar to other phrases used in social science discourse, such as "humanism" and can prove confusing.

Many researchers have collapsed or reformed these categories. For example Kellert did this himself in a 1994 study with Reading and Clark in which they used three attitude categories: ecosystem management, utilitarian, and libertarian. The last category, libertarian, was used to assess strong support for individual rights and freedoms within the Greater Yellowstone Ecosystem about which the study was conducted.

³ see Appendix B

This category was relevant to their topic while other categories were not useful. Other researchers have also found that categories needed to be combined or new ones created. For example, Herzog, Betchart, and Pittman (1991) combined Kellert's categories with other scales (the Bem Sex Role Inventory, the "Willingness to take Action" and the "Willingness to Touch" scales) for their work on gender and attitudes toward animals. In a study on attitudes toward wildlife among visitors to the Santa Monica Mountains National Recreation Area, Wolch et al. 1996 used sophisticated statistical tree models, with results indicating that Kellert's categories of attitudes are not independent, leading them to suggest a revision of the original Kellert typology of attitudes to arrive at a smaller number of independent attitudinal dimensions (42). In a further example, a study by Brunson and Steel both combined and created new categories: dominion (reflecting religious or materialistic modes of conduct), ethics (reflecting biocentrism and natural harmony), and science (rationalist-technical modes of conduct) (73, 1996).

Attitude Categories in this Study

The categories used in this study were based on a review of previous studies coupled with the particular issues of this survey. In some instances Kellert's categories were collapsed and reformed (utilitarian/dominionistic = Utilitarian and negativistic/neutralistic = Negativistic) or used in a similar manner (Aestheticism). In other instances new categories specific to this survey were created (Animal Rightist and Environmentalist). These five attitude categories were used,

with two to four questions in each category. The categories are briefly described as follows:

- *Animal Rightist*: interest in the rights and welfare of individual animals and on the right and wrong treatment of animals and nature by humans.
- *Negativistic*: avoidance of animals due to indifference, dislike, or fear.
- *Environmentalist*: interest in animal-related issues, based on ecology, science, or an interest in nature.
- *Utilitarian*: concern for the practical value of animals and/or the mastery or control of nature.
- *Aestheticism*: interest in the artistic/beauty and symbolic characteristics of animals.

Each category will be more fully described in the following paragraphs.

Animal Rightist

In this survey, the "animal rightist" category represents individuals whose primary interest and focus is on the rights and well-being of individual animals and/or on the right and wrong treatment of animals and nature. Moralistic attitudes were demonstrated by 20% of respondents in Kellert and Berry's survey (1980), making it (along with utilitarian) the second highest category thus substantiating an interest in the moral and ethical treatment of animals. In addition, many

respondents who scored highly on the humanistic scale (interest in individual animals) also had high moralistic scores, reinforcing the perceived affinity between these two categories. "Animal rights," however, did not come into the American mainstream until the 1980's. Thus the survey's "Animal Rightist" category combines Kellert's categories of Humanistic and Moralistic, and also includes the rights perspective and contains questions relevant to that issue. (For example: "It is wrong to kill sharks because they have as much right to live as people do.")

Negativistic

In Kellert's original typologies he refers to a "negativistic" attitude, in which the primary orientation is an active avoidance of animals due to indifference, dislike, or fear. He then also notes that hypothetically, this attitude can be subdivided into two attitude types: a neutralistic attitude reflecting a passive avoidance of animals due to indifference; and a negativistic attitude characterized by dislike and fear of animals (Kellert and Berry 42, 1980). In this survey a "Negativistic" attitude reflects both negativistic and neutralistic attitudes as described by Kellert. There were two questions in this category: "Fish are slimy and smelly," and "Jellyfish should be eliminated because they sting people."

Environmentalist

Based on Kellert's separate categories representing ecologicistic, scientific, and naturalistic attitudes this survey uses a single category "Environmentalist," which combines all three. An "Environmentalist" attitude signifies interest in an animal or animal-related issues, based on

ecology, science and/or interest in nature. Individuals with this attitude are concerned with the environment as a system (the interrelationship between wildlife species and natural habitats, in this case, the ocean environment), and/or the physical attributes or biological functioning of animals. Focus on affection for wildlife and nature is also part of this attitude. Since one of the goals of the survey was to provide information to coastal managers and environmental educators, most of the four questions in this category had an ecological emphasis (for example: "It is wrong to collect tidepool animals because tidepools are delicate environments that are easily damaged"). Questions in this category were closely reviewed by marine science experts.

Utilitarian

The fourth underlying category is "Utilitarian" and represents both utilitarian and dominionistic attitudes. Kellert found that utilitarian attitudes were one of the top four attitudes represented in the United States (20%) while dominionistic were some of the least prevalent (although mildly present for some large groups of people, they were infrequently evident for the great majority of Americans) (Kellert and Berry 46, 1980). As used in this survey, utilitarian attitudes are represented by a primary concern for the practical and material value of animals and the natural environment (utilitarian) and/or by a primary interest in the mastery and control of animals (especially in sporting situations) (dominionistic) (Kellert and Berry 42, 1980). Questions such as "Animals were created by God to benefit people" or "Pelican populations

should be controlled because they steal fish from fishermen trying to make a living," are representative of the three questions that reflect the utilitarian category.

Aesthetic

Aesthetic attitudes are represented by an interest in artistic/beauty and symbolic characteristics of animals. Initially it was decided to not include the aesthetic category based on Kellert's own comments (he noted that the aesthetic attitude did not yield an adequate empirical measure when calculating attitude scales (Kellert and Berry 43, 1980, Kellert 1993). But ultimately, we included one question in this category as a test to find if respondents demonstrated this attitude toward animals in the marine environment. It turned out to be a relevant category. "Whales are beautiful and majestic and should be protected" was the question used for the aesthetic category.

In general all of the attitude questions progressed from the simpler to the more complex. The majority of questions were developed on the basis of earlier surveys and analysis and collaboration with our expert/informants; a few of the questions were derived from the literature (Cairns and Lackey 1992, Sea Frontiers 1993, Curtin 1993).

4.5 *ATTITUDES: CROSS-CULTURAL PERSPECTIVES*

As discussed at the outset of this section, another group of attitude questions deals with respondent attitudes concerning treatment of marine wildlife, by specific cultural groups in society. The intent of the questions was to find out if the respondent thought it was right or wrong for

(typically) other cultural groups to engage in their traditional animal practices, regardless of whether the respondent agreed with the practices or not. The section title "What about the ways different cultures traditionally treat marine animals?" prepares the respondent for the section. Then a reminder phrase prefaces the actual questions: "Keeping in mind that various cultures treat animals differently, is it OK with you if they:". This is immediately followed by short specific questions; for example, Is it OK with you if "they": "hunt and kill whales" or "keep animals (such as fish and seafood) alive until they are ready to be cooked and eaten" ?

The purpose of the section was to reveal respondent attitudes toward traditional practices of other cultural groups. Questions reflect both attitudes toward animal issues and attitudes toward cultural integrity, i.e. the right to use traditional practices. Simple "yes/no" responses were all that was required on the cross-cultural questions. Ultimately, this group of attitude questions served as the culmination of the funnel created by the initial attitudes section (Section Five: "Speak your mind!").

4.6 *PREFERENCES*

In the preference section respondents are asked to quickly indicate their reaction (like/dislike) to specific marine animals. A 5-point scale was employed to measure the degree of "like" or "dislike" or "no opinion." Respondents then indicated the word or phrase that best described what motivated their preference (for example: "interesting," "attractive,"

"harmful," etc.). Choices for "why" were presented in two columns with words representing the positive and negative side of the same underlying category.

Pifer, Shimizu, and Pifer's (1994) study on public attitudes toward animal research, raised the issue that when survey questions address topics which the respondent may not have previously thought very much about, "...respondents are cued, or sensitized to the topic, and may give answers that would be quite different..." (96). These researchers addressed the problem by re-stating questions or repeating the same animal species, for example, placing different animal species in the same situational question, and also by repeating the same species choices in different situations. In this survey we have made use of a modified version of this technique by using the same animal species (even in the same order) in two areas of the survey: "interactions" (where respondents were asked if they had seen certain animals and if so, where) and "preferences" (where respondents indicate how they feel about certain marine animals).

The underlying categories to explain preferences were linked to those in the attitude section of the survey thus enabling us to assess preferences for marine wildlife based on attitude categories. The responses for "why?" one might like or dislike an animal were represented by the following underlying categories:

- "Fellow being/lesser animal" (Animal Rightist)
- "Harmless/harmful" (Negativistic)
- "Ecologically important, ecologically unimportant"
(Environmentalist)
- "Useful/not useful" (Utilitarian)
- "Attractive" or "unattractive" (Aesthetic)

The category of environmentalist corresponded to response choices of: "ecologically important, ecologically unimportant," but it also included a sub-category which related to scientific/nature interest (choosing "interesting/uninteresting"). Ecological issues were pertinent to the goals of the survey and yet the sub-category allowed for responses from individuals who might like or dislike an animal for "scientifically /interesting" reasons or simply because the animal interested them. This decision was made with the understanding that we could collapse the categories later if appropriate. There was also a box for "no opinion."

4.7 *PERSONAL CHARACTERISTICS*

The final section of the survey was composed of two subsections. The first contained questions about specific animal relations—pet ownership, animal related injury (requiring medical attention due to being injured by an animal), and membership or participation in animal welfare/rights or environmental/wildlife organizations and activities. These questions were designed to reveal not only other aspects of

interactions but also past history of injuries that might influence attitudes, as well as commitment to animal related causes.

A range of questions covering basic demographics and socioeconomic characteristics of respondents formed the final subsection of the survey. These questions enable empirical investigating of the cultural factor of the conceptual model in the context of a survey. Specifically, variables such as "race/ethnicity," "home language," "other language spoken," "religion," "country of birth," and "duration of residence" are the bundle of cultural indicators that are used in the survey. While imperfect, these variables are the keys to measuring cultural background. Ideally questions assessing the specific aspects of a person's cultural background would be asked (such as: Are you black?, Mixed racial background?, Family were slaves?, From the South?, Rural or urban?, Africa or Caribbean? How would you describe your ethnicity? Are you first, second or third generation?, etc.). However, due to constraints of length and logistics it is not possible to ask every relevant question that is needed to more adequately reveal an individual's cultural background.

Therefore the variables used in this survey provide basic indicators only! While dramatically simplified shorthand variables, they do reveal the respondents' choice of "race/ethnicity" as a self-description. Responses showing a non-English home language imply a greater influence of culture or ancestral traditions on the participants. The combination of home language and "other language spoken" can indicate

the percentage of respondents who are more comfortable communicating in the language of the dominant society or another. Religion often influences an individual's world-view of nature and environment. Country of origin and duration of residence queries point to the recency of immigration, and suggests the general cultural background linked to origin country. In addition, these variables are the most readily and commonly used in survey research. To understand more fully how culture intersects with attitudes, etc., more ethnographic work would be required.

Where possible, wording of questions was derived from the 1990 U.S. Census of Population so as to facilitate comparison of sample characteristics and population features in the Los Angeles region.

5. DATA ANALYSIS

Survey results were input into a computer program called "Access." The program allowed a duplicate survey to be designed on screen. By clicking on the appropriate response boxes survey results were directly entered into the computer program. The data was output into Excel and then into SAS format.

All questions in the survey were closed-ended except for one open-ended question inquiring about a significant marine wildlife experience. Before creating the computer data program all surveys were read for responses to this question. Responses were noted and eleven categories were created which described the most common experiences of the

respondents. This allowed the majority of responses to be entered into specific categories which later could be analyzed appropriately.

In the Knowledge section, which consisted of "true/false" answers, scores were coded to reveal correct and incorrect answers to each question. In addition, indices were used to create separate variables for the overall knowledge scores for each respondent. Therefore respondents would have a separate score for their overall percentage of correct answers in the knowledge section. Underlying categories of: biological characteristics, taxonomy, endangerment, ecological and local issues knowledge were coded in order to reveal levels of knowledge in these areas.

Underlying categories were coded into the attitude questions and statements in order to reveal animal rightist, environmentalist, utilitarian, aesthetic, and negativistic attitudinal responses. Five-point Likert scales used for the agree/disagree in the attitudes section were also converted into coding. Scores were coded in the following way: Strongly Agree = +2, Agree = +1, No Opinion = 0, Disagree = -1, and Strongly Disagree = -2. Two of the questions representing Animal Rightist attitudes were considered "reversal" questions, because a respondent who displayed an Animal Rightist attitude would disagree with the questions. Reversal questions were also taken into account and coded appropriately.

The Interaction section (in which respondents were asked: "Have you seen these Animals and if so, Where?") categorized the marine animals by major phyla: invertebrates, birds, fish, and mammals.

In the Preferences section, responses for "why" the animal was liked or disliked, the attitudinal categories found in the Attitudes section were applied (Animal Rightist, Environmentalist, Utilitarianism, Aestheticism, and Negativistic). The only difference was the breaking of Environmentalist into two sub-categories: 'scientific/naturalistic' and 'environmentalist/ecologicistic.' In this way these two categories could be collapsed if needed, but would allow the opportunity to explore in-depth the reasons for the "like/dislike" response. The "like/dislike" responses in this section were similarly coded as the "agree/disagree" in the values section: Strongly Like = +2, Like = +1, No Opinion = 0, Dislike = -1, and Strongly Dislike = -2. In addition an index was created for percentage of respondents who like or dislike an animal. By collapsing the data into more convenient indicators a new variable is created which allows for summary comparisons.

Survey data were analyzed using univariate and bivariate statistics. Cross tabulations were done for specific comparisons, and where appropriate, chi-square significance tests were run.

6. CONCLUSION

Designing the survey and interviews in order to operationalize the conceptual framework was not without challenges. Four key issues were encountered in survey design and construction: 1) length, 2) language and structure of the survey given the target audience, 3) unambiguous

question design, and 4) going beyond "like/dislike" in investigating the nature of preferences.

Balancing the number of questions and the amount of information we wished to acquire, versus the survey length was quite difficult. For example, there were many knowledge questions that were deemed important and relevant to the tasks at hand, yet we could only put in ten knowledge questions. A long process of interviewing experts and pre-testing resulted in choosing the best ten to use. In addition to dealing with a potentially lengthy survey which might prove too cumbersome for our target audience, the wording of the questions and the directions had to be carefully considered. Both the vocabulary and sentence structure were carefully scrutinized to be sure that they would be compatible with an audience that would possibly consist of many second language speakers. Working with our community experts and actual second language speakers, as well as people who were of a similar educational and socioeconomic background as the potential respondents, served as the best method for clarifying the language of the survey.

Another significant challenge was to design unambiguous attitude questions. This turned out to be quite difficult. In an attempt to design questions that would reveal attitudes toward cross-cultural issues, such as how one responds to the animal practices of another cultural group, many drafts and designs were attempted. The final solution was to completely separate them into their own section and clearly state the goal of the section, i.e., what exactly was being asked. Difficulties also arose in the

general attitude questions/statements. In order to keep from misleading the respondent, careful wording of the questions was imperative. Many questions were reworded and restructured several times, and many were discarded. Again, a process of consulting with experts and pre-testing proved to be the best way to determine the adequacy of the questions.

And lastly, in the Preferences section, a response section was designed in order to get more information out of the Likert Scale of "like/dislike." This was done by requesting respondents to indicate "why" they liked/disliked an animal, by checking a phrase or word that best described why they felt this way. In the process of designing the layout of this particular model, we went through several models in order to decide what would and would not work. Much review and pre-testing was involved in order to arrive at the final design that was clear and uncomplicated for the respondent.

These four areas of difficulty are important not only in this particular survey design but to others who use this type of methodology. Appropriate length, language, clear questions, and layout are issues that everyone who designs survey instruments must struggle with. In this case, the consistent process of review amongst colleagues and experts, both scientific and community, coupled with pre-testing allowed the resolution of each of these problems.

BIBLIOGRAPHY

Bath, Alistair J. "Public Attitudes in Wyoming, Montana, and Idaho Toward Wolf Restoration in Yellowstone National Park. Transactions of the 56th North American Wildlife and Natural Resource Conference. (1991): 91-95.

Bourque, Linda B. and Eve P. Fielder. *How To Conduct Self-Administered and Mail Surveys*. Thousand Oaks, London, New Delhi: Sage Publications, 1995.

Bright, Alan D., and Michael J. Manfredo. "The Quality of Attitudinal Information Regarding Natural Resource Issues: The Role of Attitude-Strength, Importance, and Information." *Society and Natural Resources* 8 (1994b): 399-414.

---. "A Conceptual Model of Attitudes Toward Natural Resource Issues: A Case Study of Wolf Reintroduction." *Human Dimensions of Wildlife* 1.1 (Spring 1996): 1-21.

Brunson, Mark W. and Brent S. Steel (1996) "Sources of Variation in Attitudes and Beliefs about Federal Range and Management." *Journal of Range Management* 49 (January 1996): 69-75.

Cairns, Michael A. and Robert T. Lackey. "Biodiversity and Management of Natural Resources: The Issues." *Fisheries* 17.3 (May-June 1992): 6-10.

Curtin, Charles G. "The Evolution of the U.S. National Wildlife Refuge System and Doctrine of Compatibility." *Conservation Biology* 7.1 (March 1993): 49-57.

Fowler, Jr., Floyd J., *Survey Research Methods (Second Edition)*. Thousand Oaks, London, New Delhi: Sage Publications, 1993.

---. *Improving Survey Questions: Design and Evaluation*. Thousand Oaks, London, New Delhi: Sage Publications, 1995.

Fulton, David C., Michael J. Manfredo, James Lipscomb. "Wildlife Value Orientations: A conceptual and Measurement Approach." *Human Dimensions of Wildlife* 1.2 (Summer 1996): 24-47.

Heberlein, Thomas A. "Environmental Attitudes." *Zeitschrift fur Umweltpolitik* 4 (June 1981): 241-269.

Herzog, Jr., Harold A., Nancy S. Betchart, Robert B. Pittman. "Gender, Sex Role Orientation and Attitudes Toward Animals." *Anthrozoos* 4.3 (1991): 184-191.

Kellert, Stephen R. "Urban American Perceptions of Animals and the Natural Environment." *Urban Ecology* 8 (1984): 209-228.

---. "Attitudes, Knowledge, and Behavior Toward Wildlife Among the Industrial Superpowers: United States, Japan, and Germany." *Journal of Social Issues*. 49.1 (1993): 53-69.

Kellert, Stephen R., and Joyce K. Berry. "Knowledge, Affection, and Basic Attitudes Towards Animals in American Society." Phase III U.S. Department of the Interior and Fish and Wildlife Service funded study of "American Attitudes, Knowledge, and Behaviors Toward Wildlife and Natural Habitats". New Haven, Conn.: Yale School of Forestry and Environmental Studies, 1980.

Kreger, Michael D. and Joy A. Mench. "Visitor and Animal interactions at the Zoo." *Anthrozoos*, 8.3 (1995): 143-158.

Pifer, Linda, Kinya Shimizu, and Ralph Pifer. "Public Attitudes Toward Animal Research: Some International Comparisons." *Society and Animals* 2.2 (1994): 95-113.

Reading, Richard P., Tim W. Clark, and Andrew Arnold. "Attitudes Toward the Endangered Eastern Barred Bandicoot." *Anthrozoos* 7.4 (1994): 255-269.

Sea Frontiers "Musings From the Oceanic Crystal Ball." (March/April 1993): 6-7.

Stevens, Thomas H., Thomas A. More, Ronald J. Glass. "Public Attitudes about Coyotes in New England." *Society and Natural Resources* 7 (1994): 57-66.

Tarrant, Michael A., Alan D. Bright, and H. Ken Cordell. "Attitudes toward Wildlife Species Protection: Assessing Moderating and Mediating effects in the Value-Attitude Relationship." *Human Dimensions of Wildlife* 2.2 (Summer 1997): 1-20.

Wolch, Jennifer R., Lynn C. Gale and Unna Lassiter. "Attitudes Toward Wildlife in the Santa Monica Mountains National Recreation Area." A Report to the Southwest Parks and Monuments Association. Volume 1: Summary of Findings. February 1996.

