

A MULTISTAKEHOLDER PERSPECTIVE ON HUMAN INTERACTIONS
WITH THE WEST INDIAN MANATEE (*Trichechus manatus*) IN CRYSTAL RIVER,
FLORIDA, U.S.A.

A Thesis
by
MICHAEL GREGORY SORICE

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE

August 2001

Major Subject: Recreation, Park & Tourism Sciences

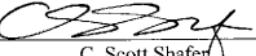
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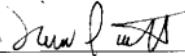
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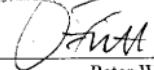
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ABSTRACT

A Multistakeholder Perspective on Human Interactions with the West Indian Manatee
(*Trichechus manatus*) in Crystal River, Florida, U.S.A. (August 2001)

Michael Gregory Sorice, B.A., Miami University

Co-Chairs of Advisory Committee: Dr. C. Scott Shafer
Dr. David Scott

Wildlife tourism can be problematic as managers are faced with the dual responsibility of developing products and programs for visitors while simultaneously protecting the resource. This study focused on encounters with the endangered West Indian manatee (*Trichechus manatus*) in Crystal River, Florida. The primary goal was to explore stakeholder perspectives on balancing the use of manatees as a recreational resource with their protection. Specific objectives were to (1) provide a descriptive account of the physical, social, and managerial setting; (2) understand the context in which decisions regarding harassment and negative impacts are made and their influence on the acceptability of manatee encounters; and (3) identify agreement, divergence and the resulting implications.

Stakeholder perspectives on manatee encounters varied based on the benefits of allowing encounters (e.g., increased manatee protection constituency), the costs of potential negative impacts, and scientific evidence for negative impacts. These perspectives corresponded with each group's interpretation of formal policy prohibiting harassment. Groups with stricter interpretations tended to perceive physical contact as harassing, whereas other groups interpreted harassment as direct harm to the animal.

The management of manatee encounters can be characterized as a "wicked problem." The problematization of encounters is not the result of scientific evidence; rather, it is an issue of divergent values. Consequently, there is no technical or "right" solution. The relationship between the Crystal River business community and the Crystal River National Wildlife Refuge was one of coexistence but is currently moving through the early stages of the conflict process. In order to move toward a symbiotic relationship, where both needs are satisfied, two conditions must be met: (1) the business

community must willingly invest in manatee protection, and (2) management decisions on manatee encounters must incorporate stakeholder input. Planning processes, which have been successfully implemented to balance use and recreation in other settings (e.g., the Limits of Acceptable Change in wilderness areas), provide a proactive consensus-based management framework that can be tailored for decision-making regarding manatee encounters as well as other wildlife encounter settings.

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My appreciation also goes to the U.S. Fish and Wildlife Service, Crystal River National Wildlife Refuge volunteers, USGS Sirenia Project, Florida Marine Research Institute, Save the Manatee Club, manatee tour operators, Crystal River businesses, and manatee-encounter participants who voluntarily participated in my study.

A very special thank you to my mother and father for their never-ending understanding, support, and encouragement.

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CHAPTER I

INTRODUCTION

A significant challenge to wildlife managers is to provide visitors opportunities to observe rare and endangered wildlife while simultaneously protecting the target species from potential deleterious impacts. The U.S. Fish and Wildlife Service has recently delineated the vision for its National Wildlife Refuge System through the National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57). This legislation emphasizes the system's commitment first to conservation and then to priority public uses—those wildlife-dependent recreational uses that are considered “compatible” with its wildlife protection mission. This legislation defines six activities as having priority use by the public: hunting, fishing, wildlife observation, wildlife photography, environmental education, and interpretation. However, some of these uses defined as “compatible” are potentially incongruent with the Service's mission if not properly managed.

In general, wildlife observation occurs over a diverse range of settings from captive areas (e.g., zoos) to natural habitats (e.g., wildlife refuges; Orams 1996). As one moves along this continuum from captive to natural, human-wildlife interactions can become more precarious, not only for humans but for the wildlife as well. Interactions with wildlife in their natural environment cannot only impact an individual animal or a small number of animals, it can affect population and community dynamics (Knight and Cole 1995b). Thus, it is the responsibility of wildlife managers to monitor these interactions and determine to what extent they cause deleterious impacts.

When protecting an endangered animal, it is often helpful to create public support by promoting interest and appreciation for the species. Engendering support can lead to an increased constituency for that species' recovery efforts. Many refuges promote species recovery by providing opportunities to observe wildlife at special viewing areas, through tours, and through interpretive programs. For humans, the greatest appreciation for endangered animals may come from up-close encounters; yet,

these encounters may stress or be otherwise detrimental to the animal (see Roe, Leader-William, and Dalal-Clayton 1997).

Such is the concern regarding manatee watching in Crystal River, Florida. An estimated 100,000 people visit the Crystal River annually to observe West Indian manatees (*Trichechus manatus*; pers. comm. Eileen Nuñez 2000), which are listed as endangered on the federal endangered species list (50 CFR 17.11). Many people also enjoy participating in manatee encounters, which involves snorkeling and interacting with manatees. There is anecdotal evidence to suggest that these encounters result in participants becoming avid supporters of manatees and conservation efforts. Concerns do exist, however, that this more intimate interaction constitutes harassment of an endangered species and, therefore, should be prohibited.

Each time humans interact with wildlife they impact it in some way be it positive or negative. Wildlife biologists have historically addressed questions surrounding the impacts of human-manatee interactions and their significance. At present, however, answers remain elusive. Just as elusive is an understanding of the social and political context surrounding human-manatee interactions. Given the lack of information on the long-term effects of human-manatee interactions as well as economic pressures to allow encounters as a part of wildlife tourism, managers need to incorporate stakeholder values in order to find a balance between use and protection.

Purpose

The primary purpose of this study was to explore and understand stakeholder perspectives on balancing public use of the manatee, an endangered species, with its protection. The underlying research question was how human-wildlife interactions are managed when there is a lack of scientific information on a species' response to encounters. Specifically, this research sought to obtain a better understanding of how stakeholders define harassment; identify impacts of encounters on manatees; and to reveal where similarities and differences exist, where common ground can be developed, and where disagreement can be reconciled.

This study also is a descriptive account of manatee encounters including the range of participants' behaviors during interactions; the physical, social and managerial setting in which interactions occur; the level of use (e.g., density); and the spatial location of the issues (i.e., in the resource area). Once key indicators of levels of disturbance, as perceived by stakeholders, have been identified, they will provide valuable information for better management decision making as well as further research that may occur in the setting.

Finally, this study identifies how much change from present policies stakeholders might accept. This project provides a good basis for the implementation of specific policies related to minimizing harassment (Objective 28; U.S. Fish and Wildlife Service 1995) and suggests the utility of proactive consensus-based management programs specifically designed to assist an agency in making decisions on resource-related public use issues.

Definitions

The following are the definitions of terms used in this study:

Encounter or Interaction: In-water, up-close manatee viewing in which one or both parties influences the behavior of the other. Physical contact may or may not occur.

Harassment: As defined by regulations under the Endangered Species Act of 1973:

An intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering (50 CFR 17.3).

Harassment is also defined by the Marine Mammal Protection Act of 1972 and the Florida Marine Sanctuary Act of 1978. The latter legislation specifically identifies feeding as a form of harassment. The MMPA differentiates levels of harassment, including the potential to "disturb" as well as the potential to "injure" marine mammals in its definition.

Impact: A positive or negative change to an individual, a population, or a species caused by human behavior.

Manatee Season: Refers to the manatee tourism season in Crystal River and directly correlates to the time period between November and March in which manatees congregate in Crystal River for the purpose of thermoregulation.

Manatee Tourism: For the purpose of this research, manatee tourism is limited to tourism that involves purposeful encounters with non-domesticated manatees in their natural environment.

Operator: Private commercial businesses through which participants without personal watercraft access manatees via guided tours or rental boats.

Participant: A person who engages in manatee encounters. This includes tourists as well as local residents.

Passive Observation: Observing manatees from a distance (from the shore, a boat, or in-water). The visitor's presence may or may not be perceived by the animal; however, this type of encounter is not believed to affect the animal's behavior. Implicit in this definition is that no physical contact occurs.

Sanctuary: Areas in which "any waterborne activity would result in a taking of one or more manatees, including but not limited to taking by harassment" (50 CFR 17.102). Waterborne activities include, "swimming, diving (including skin and scuba diving), snorkeling, water skiing, surfing, fishing, the use of water vehicles, and dredging and filling operations" (50 CFR 17.102).

Stakeholder: Any person or group that is affected by the outcome of a decision. In this research, stakeholder groups included: tour operators and tourism-related businesses, participants, state and federal research and management agencies, and an advocacy group.

Take: As defined by the Endangered Species Act of 1973 it means, "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct" (16 USC 35 §1532.19).

Limitations

This study is bounded by a unique setting, wildlife species, and the unique interaction that occurs. Consequently, the ability to generalize to the management of

other human-wildlife interactions is very limited. Generalizations to other settings where these interactions occur may be limited as well.

While research questions helped to focus the investigator's attention, the amount of time I spent in the field was limited to four months during one season of data collection making it difficult to obtain a complete understanding of human-manatee interactions in Crystal River.

I obtained entry to the setting through the cooperation of the Crystal River National Wildlife Refuge—housing was provided in exchange for working as an intern. Consequently, other participants may have perceived me as a refuge employee. This may have potentially affected how they interacted with me.

The results of this study are based on an intensive study of a small group of stakeholders. Study subjects were limited to those reached through the snowball sampling technique. Consequently, not every perspective is included. For example, snowball sampling did not lead to interviews with residents of Crystal River. Additionally, I found participants difficult to approach in the setting and, consequently, their perspectives may be underrepresented. Study participants also were limited to those who were willing to take part in the study so there may be an inherent bias.

One final caveat the reader must understand is that perspectives can and often vary within stakeholder groups. Because an effort to interview everyone in a particular group would have been cumbersome and unmanageable, I tried to interview people identified by others as key representatives of a particular stakeholder group. Bear in mind, however, that when I give voice to an entire group I am actually ascribing the values of those with whom I interviewed and interacted in that group.

CHAPTER II

LITERATURE REVIEW

This chapter reviews the paradox of use and protection by examining the literature on the nature of wildlife tourism, the impacts of tourism and recreation on wildlife, and wildlife and recreation management. Additionally, this chapter addresses specific research relating to manatee tourism in Crystal River, Florida, U.S.A. Tourism and environmental conservation can move among one of three relationships: conflict, coexistence, and symbiosis (Budowski 1976). Conflict occurs in wildlife tourism when use is perceived to have a detrimental effect on the target species or its habitat. Coexistence occurs when tourism and wildlife protection exist separately but without conflict. Symbiosis is a mutualistic relationship in which the tourism industry and wildlife managers work in concert to meet the needs of both parties.

As wildlife tourism opportunities have increased, there has been increased an increased potential for conflict and thus growing concern in natural resource areas over the management of human-wildlife interactions. Simultaneously, however, many natural resource agencies are being challenged to develop products and programs for nature tourists (McFarlane 1994).

Wildlife Tourism

Wildlife tourism is a subset of nature-based tourism where tourists specifically seek “encounters with non-domesticated animals either in their natural environment or in captivity” (Cooperative Research Centre for Sustainable Tourism 2001). Often, rare species are the target of wildlife tourists (Shackley 1996). Some authors limit wildlife tourism to non-consumptive uses (Barnes, Burgess, and Pearce 1992) while others include consumptive uses (Roe, Leader-William, and Dalal-Clayton 1997). Non-consumptive use is sometimes erroneously confused with zero impact; however, this type of tourism can negatively affect wildlife. Duffus and Deardon (1990) define non-consumptive wildlife tourism or recreation as, “human recreational engagement with wildlife wherein the focal organism is not *purposefully* removed or *permanently* affected

by the engagement" (215, emphasis added). Non-consumptive uses usually include wildlife viewing, observation, and wildlife photography.

The positive economic impact of wildlife tourism is significant. One estimate suggests that between 40 and 60 percent of international tourists are nature tourists and, of these, 20 to 40 percent are wildlife tourists (see Reynolds and Braithwaite 2001). In the United States, nonresidential wildlife watching increased 63 percent between 1980 and 1995 (U.S. Department of Interior 1999). In 1995, of 62.9 million U.S. wildlife watchers, 23.7 million participated in nonresidential wildlife-watching activities¹ (U.S. Department of the Interior 1997). Of the nonresidential wildlife watchers, almost 15 percent (3.5 million) specifically participated in marine mammal viewing. Total wildlife-watching expenditures, including trip-related, equipment, and other expenditures, were estimated at \$29.2 billion (for both residential and nonresidential participants). Gauthier (1993, cited in Reynolds and Braithwaite 2001) noted that there is an increasing value being placed on seeing animals in their natural habitat. Thus, opportunities for encountering wildlife in their natural habitat are worldwide and diverse.

The popular website, Great Outdoor Recreation Pages (GORP), lists almost 400 opportunities to participate in wildlife viewing tours (Great Outdoor Recreation Pages 2001). Operators provide opportunities to view and encounter wildlife, such as polar bears (*Thalarctos maritimus*), Asian rhinos (*Rhinoceros unicornis*), brown bears (*Ursus arctos*), chimpanzees (*Pan troglodytes schweinfurthi*), and mountain gorillas (*Gorilla gorilla*), up close in their natural environment (Johns 1996; Lott and McCoy 1995; Olson, Gilbert, and Squibb 1997; Shackley 1996).

There are also many opportunities to encounter marine wildlife. Whale watching is still a very popular form of marine wildlife tourism. In the last decade, the number of whale watchers worldwide—defined as people who “see, swim with, and/or listen to any...species of whales, dolphins and porpoises”—has increased from over 4 million in 1991 to 9 million in 1998 (Hoyt 2000). The May 2001 issue of *Skin Diver* magazine is

¹ Nonresidential is considered to be activities that occur at least 1 mile from home.

illustrative of the growing number of opportunities to encounter marine wildlife. The feature of this issue, "big animal encounters," included articles on swimming with humpback whales (*Megaptera novaeangliae*), orcas (*Orcinus orca*), great white sharks (*Carcharodon carcharias*), West Indian manatees (*Trichechus manatus*), dolphins, and manta rays (*Manta birostris*). In addition to the magazine's overview, swimming with whale sharks (*Rhincodon typus*) in Australia (Davis et al. 1997) and southern stingrays (*Dasyatis americana*) in the Cayman Islands (Shackley 1998) are also documented tourist attractions.

Wildlife Tourism Impacts

As people place increasing value on experiencing animals in the wild, there is increased concern over the resultant negative impacts that may occur to the target species as well as its habitat (Roe, Leader-William, and Dalal-Clayton 1997). Human disturbance of wildlife can result in changes in wildlife physiology, behavior, reproduction, population levels, and species composition (Hammitt and Cole 1998). However, the relationship between recreation and tourism to wildlife impacts is not well understood because of the lack of systematic examination that explores the effect of varying numbers of visitors on wildlife, as well as comparative studies examining pre- and post-recreation wildlife populations (Hammitt and Cole 1998). In addition, impact studies have been unable to adequately control for natural environmental variables (e.g., population dynamics; Hammitt and Cole 1998; Shackley 1996).

Wildlife responses to recreation and tourism are difficult to study because they are influenced by a number of variables: the type of activity; the behavior of the recreationist as well as the behavior's predictability; and the frequency, magnitude, timing, and location of the activity (Knight and Cole 1995a). In addition, the characteristics of the wildlife species itself have an significant influence on the magnitude of an impact. Time of year (e.g., breeding season), age, habitat type, and an individual's level of habituation to recreationists influences its tolerance level (Hammitt and Cole 1998). Knight and Temple (1995) note that wildlife responses to recreational activities may change over time, moving between habituation, attraction, and avoidance.

The ability to understand interactions and their impacts can be difficult. For example, during Wooding's (1997) study on human-manatee interactions at a site in Crystal River, he noted that manatees tended to leave when boats arrived in the morning. However, in a few instances no manatees left the area when boats arrived and in some cases they left "well before" the first boat arrived. Thus, wildlife responses to disturbance are highly complex, lacking uniformity and consistency. This intricate relationship between recreation and its resultant negative impacts poses a significant challenge for wildlife managers who seek to balance use of wildlife as a resource with its protection.

Classifying Impacts

Impacts to wildlife can be classified along two dimensions. First, impacts may be direct or indirect (Hammitt and Cole 1998). Direct impacts involve primary disturbances from interactions with humans. Indirect impacts result from disturbance to a species' habitat that inevitably occur as a result of recreational use. Second, impacts can be classified as selective or nonselective (Hammitt and Cole 1998). The former is associated with activities that focus on a specific wildlife species (e.g. white-tailed deer hunting). Nonselective impacts include activities in which interactions with wildlife occur incidental to the recreational activity (e.g., hiking).

Wildlife impacts can result indirectly from changes in soil, vegetation, or aquatic systems that occur as a result of habitat modification and pollution (Cole and Landres 1995). While indirect impacts are mostly restricted to habitat modification, direct impacts can be further divided into harvest and harassment (Hammitt and Cole 1998; Figure 1). Harvest includes hunting and fishing activities in which an individual is actually removed from the environment. Harassment is altogether more ambiguous.

Although the term is used synonymously with "disturbance," harassment differs in that it has a connotation of lasting harm to the animal. Defined by Neil, Hoffman and Gill (1975), harassment is "any activity of man...which increases the physiological costs of survival or decreases the probability of successful reproduction of wild animals" (1). Ream (1980) conceptualized harassment more generally as human "disturbance" that

"produces stressful situations for wildlife" resulting in a myriad of negative outcomes for an individual or species. She specifically defined it by the negative outcomes it produces: "harassment...refers to events which cause excitement and/or stress, disturbance of essential activities, severe exertion, displacement, and sometimes death" (Ream 1979). The common focus of these harassment definitions is on the potential for human behavior to have a significant negative effect on an individual's fitness. Both of these authors distinguish between intentional and unintentional harassment (Hammitt and Cole 1998).

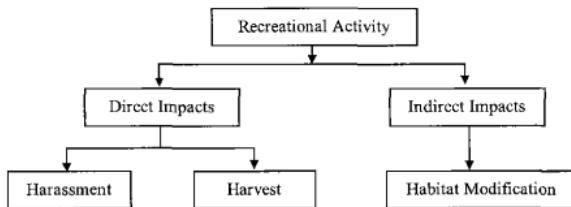


Figure 1 Classification of wildlife impacts resulting from recreation. *Source.* Adapted from Hammitt and Cole (1998).

Harassment is a significant concern and has been incorporated into policy pertaining to wildlife protection. Both the Endangered Species Act of 1973 and the Marine Mammal Protection Act of 1972 prohibit the "take" of animals under their jurisdiction. The term "take" includes harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, or collecting protected animals (see the ESA, 16 USC 35 §1532.19). Thus, because significant impacts can occur, wildlife managers seek to protect wildlife from the negative impacts associated with recreation and tourism.

Furthermore, understanding the formal policy on harassment in the context of human interactions can be problematic. For example, in a discussion of whale watching, Atkins and Swartz (1989) discussed that the problem of the MMPA harassment

regulation is that it defines harassment as “disturbing or molesting” animals, disrupting their “normal” behavior, but it provides no further definitions of “normal” behavior, “disturbance,” or “molestation.” Beach and Weinrich (1989) also discussed harassment in terms of the MMPA definition as it applies to whale watching. While it works well for instances where direct harm occurs, “most whale-vessel interactions don’t cause direct physical injury. Rather they produce avoidance behavior by the whale...or changes in such activities as feeding, resting, or socializing. In these circumstances, it becomes more difficult to assess a vessel’s effect on whales” (86). It would be ideal, they suggest, if whales exhibited a behavior that could unequivocally interpreted as harassment, but the same behaviors that may indicate disturbance are also components of social displays.

Regardless of the difficulty of identifying cause and effect as well as the ambiguity associated with harassment policy, interactions with wildlife and their resultant impacts are a concern for managers because both direct and indirect impacts have long-term and short-term effects on wildlife. These impacts can affect individuals, populations, and even wildlife communities (Anderson 1995; Gutzwiller 1995). Figure 2 is a conceptual model developed by Knight and Cole (1995b) that distinguishes the long- and short-term impacts of recreation.

Impact Studies

Negative impacts on wildlife due to recreation have been a concern for decades. A review conducted by Neil, Hoffman, and Gill (1975) focused primarily on literature describing the effects of unintentional harassment on wildlife and argued that wildlife managers need to minimize it. Ream’s (1980) review of the wildlife impact literature explored wildlife harassment by species, with most studies showing a negative impact. Likewise, Boyle and Samson (1985) reviewed 166 articles on the effects of non-consumptive outdoor recreation on wildlife and found that authors determined impacts to be negative in 81 percent of the studies. Similarly, research on nature tourism has shown that it directly impacts wildlife (Giongo, Bosco-Nizeye, and Wallace 1993; Haysmith and Hunt 1995).

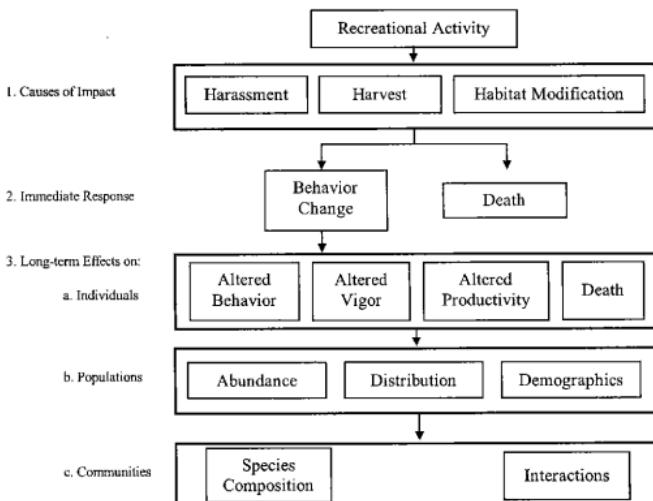


Figure 2 Conceptual model of long-and short-term wildlife responses to impacts caused by recreational activities. *Source.* Adapted from Knight and Cole (1995a).

Direct Impacts

Because the scope of my research is limited to harassment, I will not address the impacts of harvest on wildlife. Direct harassment of wildlife is a concern because it can affect a species' behavior, reproductive success, and fitness. For example, Johns (1996) found that group size directly influenced the responses of chimpanzees (*Pan troglodytes schweinfurthi*) to tourists in Uganda. The simple presence of people has been found to affect breeding success in shorebirds and bird rookeries (Burger, Gochfeld, and Niles 1995). The presence of tourist buses was found to be a negative factor in cheetah (*Acinonyx jubatus*) hunting success, but may aid the success of other species such as hyenas (Haysmith and Hunt 1995 and references therein). A study on Asian rhinos

(*Rhinoceros unicornis*) found that close approaches of less than 10 meters by elephant-riding tourists disrupted the rhinos' feeding behavior and frequently displaced the animals (Lott and McCoy 1995). Another study examined habituation, comparing the impacts on habituated and non-habituated brown bears (*Ursus arctos*) in Alaska (Olson, Gilbert, and Squibb 1997). It found that, when human activities extended a week longer (than usual) into the bear's fall salmon feeding period, non-habituated bears reduced their activity while habituated bear use remained similar to past years.

Gabrielsen and Smith (1995) reviewed the physiological responses of wildlife to human disturbance concluding that the most "dramatic" responses occur as the result of human out-of-vehicle approach. A study on wading birds at J.N. "Ding" Darling National Wildlife Refuge in Florida also showed birds were affected by the level of use (Klein, Humphrey, and Percival 1995) and that they were more likely to flee when approached on foot—photographers were the most likely user group to approach them (Klein 1993).

Similar concerns have been raised with regards to marine wildlife tourism. For example, tourist activities in the Great Barrier Reef Region include reef walking, snorkeling, diving, coral and fish viewing, and boating. Concern here relates to the physical damage done to the reef as well as the impacts of collecting reef organisms, overfishing, and the disturbance of seabirds, whales, and fish (Hammitt and Cole 1998). Additionally, concern exists over the growing worldwide popularity of whale watching as well as dolphin observation and swim-with programs (see Samuels, Bejder, and Heinrich 2000 for a review). Watkins (1986) noted from 25 years of observations that human activities have caused whale species to change behavior over time. In 1988, in an effort to create policy, a conference on whale watching addressed its impacts on whales (Atkins and Swartz 1989). Concerns in this case surrounded the vulnerability of whales to injury and disturbance by boats. For example, increased vessel traffic in Hawaii is blamed for female humpbacks (*Megaptera novaeangliae*) and their calves abandoning certain areas.

Recreational interactions between humans and dolphins can affect the health and welfare of the animal. Over time, bottlenose dolphins (*Tursiops truncatus*) have habituated to human presence in Panama City, Florida, spending 77% of the time researchers observed them engaged in interactions with humans (Samuels and Bejder 1998). This behavior decreases the time they spend foraging, increases their dependency on human food, and makes them more susceptible to injury from boats (Bryant 1994). In addition, Spradlin et al. (1999) notes the public safety issue that surrounds swim-with-dolphin programs. Dolphins may become aggressive in response to interactions, and instances of human injury and even death have been reported (Frohoff and Packard 1995).

Many individual dolphins and dolphin groups are habituated to humans through food provision, but the spinner dolphin (*Stenella longirostris*) is an example of a species that may be disturbed or harassed by entrepreneurial tourism operators without food provisioning. The spinner dolphin uses protected bays in Hawaii to rest and socialize out of reach of larger predators. Tourism operators have discovered this pattern and now regularly provide swim-with tours. Research on this species has raised concern that swim-with-dolphin tours may have permanently displaced some spinner dolphins and may repeatedly disrupt the resting behavior of those that use these areas, causing reduced energy levels (Samuels, Bejder, and Heinrich 2000, and references therein).

Despite concerns for wildlife, few studies have addressed the long-term impacts of different scales of encounters. For example, Samuels, Bejder, and Heinrich (2000) reviewed 151 articles on swimming with wild cetaceans and concluded that, for animals habituated to human interactions, “there is virtually no research that specifically addresses the short- or long-term impacts of regular swim-with operations on the behavior and well-being of habituated individuals or affected cetacean communities” (16). For unhabituated cetaceans, they say some studies provide “anecdotal” evidence that swim-with operations disrupt the behavior of the targeted species. Further longitudinal studies are beginning to show that tourist activity has a “detrimental” effect

on targeted dolphin species; however, no research has specifically examined in-water interactions (Samuels, Bejder, and Heinrich 2000).

Indirect Impacts

Wildlife tourism can have significant indirect impacts on wildlife by changing their habitats. These impacts affect wildlife by altering food availability and the quality of living space (Roe, Leader-William, and Dalal-Clayton 1997). Wildlife tourists can directly contribute to habitat modification, or impacts can occur through the development of tourist infrastructure in destination sites.

Recreational activities can directly alter characteristics of soil, vegetation, or aquatic systems and are mediated by the extent, intensity, and timing of the activity as well as the vulnerability of the habitat (Cole and Landres 1995). For example, alteration of vegetation can also alter food availability. Cole and Landres (1995) cited a study of New Hampshire's foliage-gleaning birds, noting that all 10 species used preferred yellow birch and avoided beech and sugar maple trees. Thus, recreation that results in changes to forest composition can have a negative impact. In addition, littering may also influence wildlife. Roe, Leader-Williams and Dalal-Clayton (1997) discussed a study in which Galapagos Island turtles have died after ingesting plastic bags. Finally, modification of living space may affect the way in which, and the ability of, wildlife to use certain areas (Hammitt and Cole 1998; Roe, Leader-William, and Dalal-Clayton 1997).

Indirect impacts may also result from an increase in infrastructure for tourists. In general, Pearce (1981, cited in Roe, Leader-William, and Dalal-Clayton 1997) identified four major sources of environmental stress created by tourism:

- permanent environmental restructuring due to construction;
- waste generation;
- direct and indirect effects of associated recreational activities; and
- seasonal changes in populations at destination sites.

Thus, tourism can influence all environmental components including aquatic systems, the atmosphere, vegetation, and wildlife.

Relationship between Tourism Areas and Wildlife Impacts

As an attraction gains popularity and thus increases its infrastructure to accommodate demand, both direct and indirect impacts may increase in magnitude. Butler (1980) identifies stages through which a tourism destination progresses in response to its level of popularity. These stages are characterized by low demand at first, followed by a rapid rate of growth, stabilization, and subsequent decline.

Concomitant with this evolution of a tourism area is a progression of the type of tourist that visits a destination. Duffus and Deardon (1990) posit, based on Cohen's (1972) and Plog's (1994) tourist typologies, that the type of wildlife tourist changes from "wildlife specialists," who require little management intervention, to "wildlife generalists," who, in contrast, have little "special interest in the site's attraction, relying heavily on the development of supportive infrastructure," and thus require greater management intervention (Duffus and Dearden 1990, 222). They suggest that over time the character of the wildlife tourist shifts from expert/specialists to novice/generalists. Higham (1998) examined this idea in the context of New Zealand wildlife tourism to an albatross colony. Based on this study, Higham concluded that in the absence of management the destination evolved over time to the detriment of the wildlife as well as the visitor experience; and, wildlife species may show a high tolerance for tourism even though significant impacts occur.

As a wildlife tourism attraction increases in popularity it also moves toward its "saturation point" or carrying capacity, where a threshold is reached for which further use has an irrevocable impact on the target species (Budowski 1976; Martin and Uysal 1990). This is a problem for wildlife tourism and natural resource managers who seek to maintain the quality and ecological integrity of the resource and face the issue of maintaining the quality of the experience for the tourists (Boyd and Butler 1996).

In response to this dual concern for use and protection, natural resource managers adopted the concept of carrying capacity as a management technique (see Hendee, Stankey, and Lucas 1990). Applied to recreation, the carrying capacity concept attempted to identify the optimal level of use in natural settings. Ultimately, researchers

and managers intended to use the carrying capacity framework to set limits on the numbers of users who would be permitted to access a resource.

The concept itself originated in the range and wildlife sciences as the result of attempts to establish the maximum number of cattle a pasture could accommodate on a long-term basis (Hammitt and Cole 1998). Rangeland scientists originally defined carrying capacity as the limitation on the use of an area based on various natural factors of environmental resistance including food, shelter, or water. Beyond this natural limit no major increases in the dependent population could occur (Odum 1959).

While the carrying capacity concept worked in theory, it was nearly impossible to implement. There were significant limitations to using the framework. For example, it was difficult to establish reliable indicators. Research conducted on the ecological and social dimensions of the concept yielded unwieldy results that could not be applied in concrete terms. Additionally, knowing the amount of use does not directly help to establish a carrying capacity. It was logical for managers to conclude that the relationship between use and impact was linear; however, the rate of increase is curvilinear (Frissell and Duncan 1965; Wagar 1964). The rate of impact is also influenced by the natural resistance of the ecosystem (e.g., Cole and Fichtler 1983). Thus, studies revealed that limiting numbers in a natural area will not effectively reduce ecological and social impacts unless use levels are kept at a very low, often impractical number. Because carrying capacity and tourism development are inexorably linked, Martin and Uysal (1990) argued that an understanding and integration of both are important for sound planning, management, and policy development.

Manatee Tourism

Concern in Crystal River, Florida exists over the impacts of boating, fishing, as well as feeding, and swimming with manatees (Shackley 1992). Potential negative impacts to manatees include changes in the population or in the fitness of an individual. For example, manatees may be displaced from preferred habitat as a result of interactions with humans. When animals are displaced they usually move from familiar to unfamiliar, and often inferior quality habitat (Hammitt and Cole 1998). This is of

particular concern because manatees can be displaced into colder waters and long-term displacement can ultimately result in death (O'Shea et al. 1985).

Manatees are federally listed as endangered (50 CFR 17.11) and are afforded protection from potential impacts under three separate laws: the U.S. Endangered Species Act of 1973 (ESA; Public Law 93-205; 16 USC 1531 et seq., as amended), the Marine Mammal Protection Act of 1972 (MMPA; Public Law 103-238; 16 USC 1361 et seq., as amended) and the Florida Manatee Sanctuary Act of 1978 (FMSA; Florida Statute §370.12(2)). Under the ESA, some interactions may be classified as harassment, which is defined as "an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, feeding or sheltering" (50 CFR 17.2). The concern in Crystal River is that, under this definition, normal manatee behavioral patterns may be "significantly disrupted," through human-manatee interactions, resulting in long-term harm to the species.

Furthermore, the Florida Manatee Recovery Plan (Objective 28) has explicitly addressed the minimization of harassment (U.S. Fish and Wildlife Service 1995). It recognizes the need to plan for user groups that can potentially "alter natural behavior and movement of manatee," (90) and suggests three tasks to manage forms of disturbance: 1) regulate the development of manatee viewing areas, 2) create regulations on feeding and watering manatee, and 3) develop and review regulations regarding "close approaches" to manatees. In this third task (Task 283), Crystal River is listed by name as an area of "particular concern." In addition, Task 283 suggests that regulations governing close approaches should be modified if they are found to inadequately protect manatees.

Some previous studies have addressed recreational use of Kings Bay and manatee encounters in relation to issues of disturbance and harassment. In a study on public use patterns and manatee distribution, Buckingham (1990) concluded that boating activity in Kings Bay constituted harassment under the ESA because it "significantly alters the way manatee use...critical habitat by disproportionately confining them to

[sanctuaries]" (22). More importantly, however, the study showed that manatees responded to boating activity by retreating to the warm-water sanctuaries rather than by leaving Kings Bay. Wooding (1997) investigated manatee displacement at the Three Sisters Spring encounter area in Crystal River and reported that the number of manatees generally declined in response to increasing numbers of boats and people. During his study, Wooding (1997) observed photographers approach resting manatees and taking flash photographs from within 0.5 meters. He also described instances of "rough contact" that included a tour guide pushing a manatee toward his group, a swimmer accidentally kicking a resting manatee, and a participant who posed for a photograph by sitting on the head of a resting manatee. Survey research in Crystal River found that 37% of visitors witnessed harassment of manatee even though 90% of respondents said they had been informed of protective regulations (Buckingham 1989). Abernathy (1995a) observed manatee encounters and concluded that manatees may be hyperstimulated by interactions, resulting in greater frequencies of sexual behaviors, and Abernathy (1995b) found a positive correlation between human presence and increased manatee activity: resting decreased while swimming behaviors increased. Thus, human interaction may result in greater energy expenditure.

Tourism and Wildlife Management

Interactions with manatees create dilemmas for wildlife managers who, according to Manfredo et al. (1995), face three broad mandates: 1) to conserve and protect wildlife and their habitats, 2) to provide opportunities for the public to enjoy and learn about wildlife, and 3) to protect the public from potential hazards caused by wildlife. The challenge is to balance use (i.e., manatee encounters) with resource protection (i.e., manatee recovery).

Achieving this balance of use and resource protection is fraught with obstacles. First, negative impacts from human interactions are difficult to discern. There can be temporal and spatial discontinuities between interactions with wildlife and the impacts that may occur (Knight and Cole 1995a). Studies in this area have focused primarily upon immediate impacts that are associated with human-wildlife interactions; however,

the immediate responses of wildlife usually apply to individuals of a species rather than populations or communities (Knight and Cole 1995a). Longitudinal studies of wildlife impacts are often limited by economic constraints and many other natural variables that play a role in wildlife impacts for which there may not be adequate controls (Shackley 1996). Additionally, other dimensions influence wildlife responses to recreationists. Characteristics of disturbance include human behavior as exemplified in the type of activity as well as its predictability, frequency, magnitude, timing, and location. Characteristics of wildlife including the type, its age and sex and the size of the group that the animal is in may also influence the response to disturbance (Knight and Cole 1995b).

Second, resource managers often face the challenge of having to make decisions before scientifically valid data on wildlife responses to human interactions can be determined by research (Duffus and Dearden 1990). Wildlife tourism management decisions cannot wait until research discerns definite impacts of human-wildlife interactions. Managers use available biological research in decision making but this information is often inadequate. Thus, managers have to *make judgments* when choosing a management strategy.

Third, as noted by Decker, Brown, and Knuth (1996), management decisions have far-reaching ecological, economic and political consequences. The ecological component in decision making sets limits on resource use based on the best available scientific information. The economic component includes the forces that influence the "valuation" of the resource. The political component creates policies, laws, and codes of government agencies while incorporating the values of the natural resource managers who implement and interpret these laws. These components include a diversity of stakeholders within each. Recently, the natural resource management community has realized that effective management decisions rely on a firm understanding of each of these components and the diversity of stakeholders involved (Decker, Brown, and Knuth 1996).

Research on endangered species management programs generally finds that these social variables are often ignored, inadequately considered, or viewed as marginally important (Kellert 1994). Kellert explains that the major causes of this are the biases of wildlife professionals, the difficulty of understanding the behavior of humans and organizations, and the political risks associated with managing socioeconomic and cultural factors. Thus, “the success of most, if not all, endangered species programs depends greatly on systematic consideration of various human dimensions rather than just assessing biological and technical elements” (371).

However, stakeholder perspectives are increasingly receiving recognition from the natural resource community as essential to effective (i.e., politically sound) management. In general, human dimensions of wildlife research can assist natural resource managers in the decision-making process by “clarifying the management environment and identifying human-related problems and opportunities...[while enhancing] public input to management and agency responsiveness/adaptiveness to a variety of stakeholders” (Decker, Brown, and Knuth 1996, 42). Human dimensions research identifies and incorporates issues that stakeholders present as a means of improving the effectiveness of decision making in wildlife management. Alternative management frameworks provide a basis for sound management decisions by incorporating the social values of stakeholders. These frameworks have evolved from the carrying capacity concept and have been applied primarily to wilderness settings in an attempt to identify the optimal level of recreational use (see Stankey, McCool, and Stokes 1986). Historically, managers sought to adopt carrying capacity as a way to set limits on the numbers of users allowed in a particular setting based on the amount of impact the resource incurred; however, there were significant limitations to using the framework (see Hendee, Stankey, and Lucas 1990).

Working primarily in wilderness settings Stankey (1990) suggested three premises upon which the changes in natural settings can be described. First, ecological and social change in these settings is inevitable. Ecological impacts due to use will occur on some scale regardless of management actions. Second, some of these changes

may be caused by local activity (e.g., manatee encounters) or by regional or global activities (e.g., habitat destruction and pollution, respectively). Third, managers have the ability to influence (both positively and negatively) the nature and level of change induced by local activity. Because change is expected as an inevitable result of use, Stankey (1985) shifted the managerial question from one of how much use is too much to one of how much change is acceptable. The result is the incorporation of both a technical and a valuational component in management decisions.

Over the past two decades a variety of frameworks reflecting this shift have been developed as management tools to balance use with resource protection. These frameworks are all based on the understanding that a compromise must be reached between absolute protection of resources and unfettered access to resources for recreational use (U.S. Department of the Interior 1997). Graefe, Kuss, and Vaske (1990) developed the Visitor Impact Management (VIM) framework for the National Parks and Conservation Association. The National Park Service has since incorporated the Visitor Experience and Resource Protection (VERP) process into its general management plan, and Parks Canada has also employed a similar framework (U.S. Department of the Interior 1997). The Limits of Acceptable Change (LAC) planning process, a "framework for establishing acceptable and appropriate resource and social conditions in recreation settings", was developed for the U.S. Forest Service (Stankey et al. 1985, i).

These frameworks differ depending on the mission of the managing agency but they all share common elements (U.S. Department of the Interior 1997). First, by understanding stakeholder values and relying on the expertise of each, they achieve consensus and set management goals by describing desired future biophysical and social conditions. Then standards identifying the minimum acceptable conditions and key indicators of those conditions are determined. Finally, indicators are monitored and alternative management actions are developed to maintain conditions within the desired standards.

Conclusion

This chapter provided an outline of human-wildlife interactions in the context of wildlife tourism. People are increasingly interested in encountering wildlife in their natural habitats. This is a concern for wildlife managers whose primary mission is wildlife protection. Impacts vary depending on the amount of use; the frequency, magnitude, timing, and location of the activity; the type of activity; the behavior of the participants; and the characteristics of the target species. Most studies investigating the use of wildlife as a resource conclude that human interaction has a negative outcome for the target species. This is because impacts that result from interactions with wildlife can have both short- and long-term effects on the target species. Detecting these impacts, however, as well as applying regulations can be problematic. In other cases where the impacts of recreational use on wildlands were a concern, such as U.S. Forest Service wilderness areas, alternative management frameworks were developed that incorporated stakeholder values in determining how much change in these use areas were acceptable.

CHAPTER III

METHODS

Manatee encounters are unique due to the peculiarity of the physical and managerial setting, the species, and the history of manatee tourism. Because of this, an in-depth, detailed analysis of the current setting was a logical approach to inquiry. Furthermore, because no previous in-depth research has been conducted on manatee encounters, there also was a need to describe the setting and to observe and interact with the participants. Because qualitative research embodies these characteristics, it can provide meaningful insight into the understanding of manatee encounters and their management.

Data Collection

Qualitative methods were used to obtain an understanding of the setting and issues surrounding the encounters from the perspectives of the interested parties. Between January and March of 2000 data on manatee encounters were collected in Crystal River through participant observation, interviews, and document analysis using the snowball sampling method (Babbie 1998).

Participation and Observation

Participant observation allows the investigator to obtain an “insider perspective” of a setting. Throughout data collection, I moved between roles as a complete participant, participant-as-observer, observer-as-participant, and complete observer (Lindlof 1995). As defined by Lindlof, a complete participant is “a fully functioning member of the scene, but is not known by others to be acting as a researcher” (141). This was the case on days in which I would spend my time as a snorkeler, swimming with manatees in Kings Bay. If I was not snorkeling I would kayak the bay observing and listening to the participants.

My participant-as-observer role was my largest role, which involved being known as an investigator but being able to observe from a role within the membership (Lindlof 1995). In my case, I negotiated a role as an intern with the U.S. Fish and Wildlife Service’s Crystal River National Wildlife Refuge. As an intern, I was obligated

to 20 hours per week working for the refuge. I devoted my free time to my own research. This role was of great value because it allowed me constant access to the refuge personnel in both work and social settings.

Aside from my role as a refuge intern, I was able to temporarily occupy roles as a manatee tour participant. Two operators granted me access to their trips as a full participant. The boat captains knew of my research while the other participants initially did not. The participants usually would recognize my note taking and a subsequent discussion would reveal my role; however, this always occurred on the return trip after encounters with manatees had occurred.

The observer-as-participant role, in contrast to the participant-as-observer role, emphasizes observation as the investigator's primary agenda (Lindlof 1995). This was the role I assumed most when interacting with tour operators. One operator allowed me to accompany any trip that was not full. As a known investigator, I could observe the trip and its participants as well as other participants in the areas in which we stopped. Additionally, I accompanied refuge law enforcement personnel around the bay observing their interactions with the tour operators and the public.

Finally, the complete observer role can be contrasted with the complete participant role. In both roles the participants are unaware of the research conducted; however, the complete participant engages directly in the setting while the complete observer remains unobtrusive (Lindlof 1995). This is best exemplified by my mornings sitting in the backyard of a private home recording observations at one of the encounter areas.

Data recorded focused on human-manatee interactions. For each site visited, the number of boats in the area was recorded for use as a reference point. Then, I recorded what people were doing and saying about the experience including comments about manatees, operators, as well as social and resource conditions.

Formal Interviews

Thirty-four unstructured and semi-structured in-depth interviews were conducted with state and federal wildlife research and management agency employees, agency

volunteers, manatee tour operators, other manatee-related businesses in Crystal River, tourism officials, advocacy groups, and participants. Interviews averaged about one hour in duration. The emphasis of the interviews was on trying to understand how the manatee encounter experience was perceived by interested parties, including the current physical, managerial, and social setting in which it occurs, with an emphasis on identifying the areas of social and resource concern.

Document Analysis

Document analysis was used to enhance observations, to verify interview data and to provide historical context (Babbie 1998; Marshall and Rossman 1999).

Newspaper archives from the Citrus County Chronicle and the St. Petersburg Times were analyzed from 1996 to the present. The county's Tourism Development Council provided general tourism literature and tour operators provided advertising materials. Videotapes also were analyzed including the informational video, "Manatee Manners," and documentaries filmed in or relevant to Crystal River.

Data Analysis

Data were initially analyzed by conducting a preliminary domain search (Spradley 1979) to create categories. Domains are defined by Spradley as "any symbolic category that includes other categories" (100). That is, domains serve as a way to group similar items identified in the field. Domain analysis provides a systematic way to analyze the terms and ideas used by subjects to describe their world. Domains consist of three elements. A cover term is the name of a category. Included terms are the words informants use that belong to a category. Finally, cover terms and included terms are linked by a semantic relationship.

For example, I discovered that there are different ways in which an encounter participant can harass a manatee. Some behaviors described by informants included crowding, riding, feeding, touching a resting manatee, and grabbing the snout. In Figure 3, the cover term and the included terms are linked by a means-end semantic relationship (X is a way to Y).

The preliminary domain search was conducted by reading field notes and interview transcripts, searching for what Spradley calls “names of things.” For example, informants described operators as “old timers” and “good ol’ boys.” This term was contrasted with “new” operators. Thus, “operator” was identified as the cover term and “old timers,” “good ol’ boys,” and “new” operators were included in a strict inclusion semantic relationship. Once initially identified, I could review my notes for other types of operators.

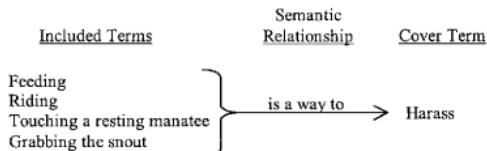


Figure 3 Creating a domain for ways to harass a manatee.

From the domain analysis procedure, I constructed taxonomies for some categories. A taxonomy is a set of categories “organized on the basis of a single semantic relationship” (Spradley 1979, 137). For example, I discovered there are various ways in which people can interact with manatees in the water (Figure 4). They can swim with them, which includes observing and following the manatee. They can touch, pet (which includes rubbing and scratching), or they can play with a manatee. Playing can involve diving down, water acrobatics, and follow-the-leader (in this case the manatee follows the participant).

I used domain analysis as a tool to assist in the initial organization of data. Once I was comfortable identifying relationships, I input the data in Atlas Ti, a qualitative data analysis software package (Muhr 2000). Categories such as “harassing behaviors” were then used to code interviews and field notes. During this coding process I wrote analytical memos, which served to identify inchoate themes. I then analyzed my data

looking for instances that supported or negated the validity of the emerging themes. For example, I wrote a memo describing Save the Manatee Club's definition of harassment. After doing so, I then re-read the interviews and field notes that involved Save the Manatee looking for evidence to which I could compare my interpretation.

Ways to Interact with a Manatee	Swim with	Observing Following (the manatee)
	Touch	Feel Poke Prod
	Pet	Rubbing Scratching
	Play	Diving down
		Water acrobatics
		Barrel rolls
		Follow-the-leader

Figure 4 An example taxonomy of ways to interact with a manatee.

Validity

The issue of validity centers on the ability of the researcher to accurately report what occurs in the setting. I increased the validity of this study through the use of triangulation, "the act of bringing more than one source of data to bear on a single point" (Marshall and Rossman 1999, 194). Methods triangulation is the use of multiple methods to obtain data (Patton 1990). It serves as a way to crosscheck the consistency of the information obtained. In this study, I used observation, interviews, and documents to collect data. Interviews allowed me to verify my own observations and vice versa. I used document analysis to validate informant references to past events.

In addition, to identify consistency of information obtained through the same method of inquiry, I used different data sources during the investigation. Patton (1990) describes this as triangulation of sources. For example, in investigating the creation of the Three Sisters Sanctuary, I asked all informants to "tell me about the creation of

Three Sisters Sanctuary," in order to obtain the most accurate historical account of this event as possible. Validity was also enhanced by assuring study participants that identities would be kept confidential. To do this, I assigned all participants first and last name pseudonyms. This allowed participants to speak more candidly about their perceptions and attitudes. One caveat of qualitative research, however, is that, despite the use of pseudonyms, people familiar with the setting may be able to discern the identities of the study participants.

Additionally, despite efforts to increase validity through formal training in research methods, triangulation, and rigorous data collection techniques, it is important to acknowledge that my personal history and perspectives shaped the way I interpreted the setting and, thus interpreted the data. For example, my undergraduate training in zoology has influenced my perspectives on wildlife protection and therefore the line of inquiry I pursued (i.e., the questions I asked) during my investigation. In addition to my own biases, it is important to note that it is inevitable that others will interpret this research based on their own perspectives and biases.

Validity is also affected by factors associated with the research process itself. For research on human subjects, Texas A&M University requires that study participants sign a formal document acknowledging the research and authorizing their voluntary involvement. In one instance I was denied an interview not because of my research but because the participant had to sign the informed consent document. He responded angrily that he "wasn't signing nothing"—he had "learned his lesson a long time ago."

My roles in the setting also influence how I was perceived by study participants. For example, in my participant-as-observer role I worked as a volunteer intern with the Crystal River National Wildlife Refuge. While this role provided me membership within this group and served to increase the validity of information collected from the refuge on one hand, it also may have influenced how other study participants perceived me. For example, I met Operator 11 while volunteering at the refuge. In our subsequent interview he referred to the refuge as "you guys," meaning that he perceived me as part of the refuge. Thus, my role at the refuge may have affected how he interacted with me.

CHAPTER IV SETTING

The single most popular thing of course is the manatee snorkel. It is what put Citrus County on the map; and, in fact, Citrus County is not on the map. Crystal River is on the map. But the number one draw and what makes us really unique is the manatee snorkel.

— County Tourism Agency Employee

Crystal River

The city of Crystal River is situated six miles inland from the Gulf of Mexico approximately 70 miles north of Tampa Bay and 60 miles northwest of Orlando (Figure 5). Kings Bay is adjacent to the city. It contains more than 30 artesian springs that serve as the headwaters for the Crystal River (Figure 6). The temperature of the water from these springs remains between 23-24°C (73-75°F) throughout the year (Hartman 1979). It is in these headwaters that a large population of manatees congregates from November through early March. In fact, Crystal River serves as the largest natural refuge manatee aggregation site (Kochman, Rathbun, and Powell 1985).

Historically, the manatee is a tropical species and, because it is a marine mammal, must maintain its body temperature above 20°C (68°F) to avoid physiological stress that can ultimately lead to death (O'Shea 1995). Consequently, manatees congregate in Crystal River primarily for thermoregulation purposes.

Early records in Crystal River show very little use by manatees (Hartman 1979). This has steadily increased as development in southern Florida displaces them northward. Additionally, a proclivity to travel long distances and the presence of both natural and artificial (e.g., power plant effluent) warm-water sites have aided their migration north (R. Bonde pers. comm. 2000). Over the past three decades the number of manatees wintering in Crystal River has increased from 114 in 1981-82 (Powell and Rathbun 1984) to over 350 in 2001 (U.S. Fish and Wildlife Service, unpublished data). According to the U.S. Fish and Wildlife Service Kings Bay "constitutes one of the most important natural warm-water refuges for manatees, a federally listed endangered species" (Turner 1998, 55553).

Human use of the bay has increased dramatically along with increased manatee use. As the greater Tampa Bay area expands northward, Floridians are choosing the Citrus County as a site for vacation homes. Additionally, Citrus County is attractive to retirees because of its near pristine state. Almost one quarter of the county is comprised of coastal swamps and water systems including six rivers, seven lakes, and, bordering the entire west coast, the Gulf of Mexico. The county boasts 19.1% of its total area as state and federally protected lands (Citrus County Tourist Development Council 1999).

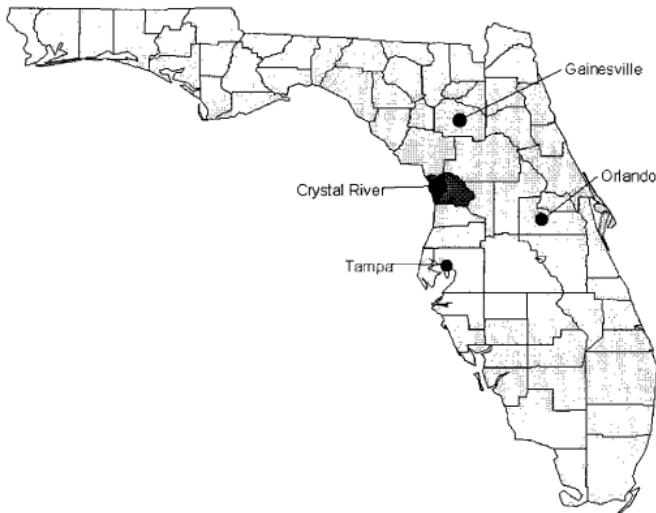


Figure 5 Location of Crystal River, Florida.

Within the county approximately 90% of the county's 116,111 people are distributed in unincorporated areas of the county (Citrus County Economic Development

Council Inc. 1999). Crystal River, with a population of 4,347 is one of two incorporated cities in the county (U.S. Bureau of the Census 1993).

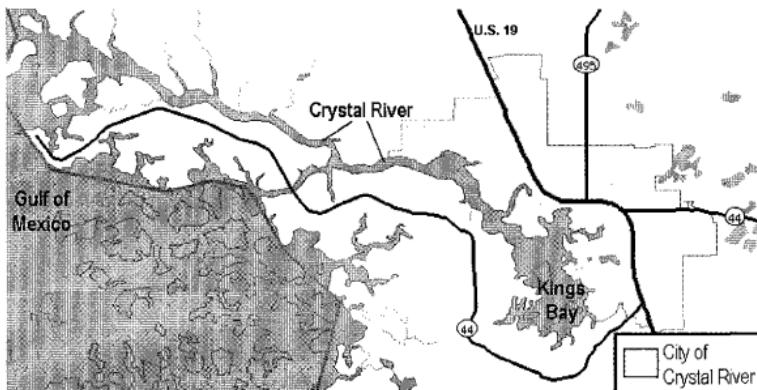


Figure 6 Relationship of the City of Crystal River to Kings Bay and the Crystal River.

Increased human use of Kings Bay is also directly related to the increased manatee presence. That is, the manatees themselves have become a popular attraction. This is because the manatees predictably occur in the bay in the winter; they are approachable, readily viewable, and tolerant of human intrusion; they are rare yet locally abundant in the winter; and they have diurnal activity patterns (Reynolds and Braithwaite 2001).

Aside from the setting's attractiveness to manatees, it also is attractive to visitors who want to see manatee. The open bay and clear water allow for good visibility of the animals yet the manatees can find areas to avoid people. Manatees are concentrated into the specific areas within the bay where springs produce the warm water. Additionally, visitors have relatively easy access to the animals (Reynolds and Braithwaite 2001).

Consequently, dive shops have established a successful industry providing tours that allow customers to have, as one operator describes, a "for-real wildlife encounter." A manatee encounter involves more than just the passive observation involved in many other wildlife tourism experiences. One tour operator describes the difference between "seeing" and "encountering" manatees during an educational seminar in which he provided suggestions to his participants on how to have a successful manatee encounter:

Now encountering manatees is different than seeing manatees. If you want to see manatees today you can probably stand on the front of the boat and I'll point out some manatees. You'll see their noses coming up. You'll see their backs porpoising. They'll probably swim past the boat at some point. So you'll be able to see them. But, if you want to encounter a manatee, which is to have it roll around and take it's picture and rub it's belly and stuff, then there's a couple of things you need to do...

Because the occurrence of manatees in Crystal River waters is tied to the winter season, the time in which manatee are present in the area and tours are offered is referred to as the "manatee season." The season may begin as early as October and usually runs into the first week of March. The season may be extended if significant cold fronts continue through March and into April. Historically, manatees are generally absent from the Crystal River area from April through October, although occasional sightings of individuals do occur in the "off season." In 1999 and 2000, however, a significant population of manatees—between 40 to 70 individuals—remained in the Crystal River area and tour operators capitalized on this by providing summertime manatee encounters.

Still, the best time to encounter manatees is during the manatee season because of the large concentrations of manatees. Visitation is busiest during the second half of January and the entire months of February and March. Peak visitation coincides with holidays: the week between Christmas and New Years, Martin Luther King Day weekend (January 18th), and Presidents' Day weekend (February 20th). Although the manatee population may be considerably lower during the month of March (because of the warmer weather) this month is still popular because most schools have a week-long

spring vacation. Additionally, visitation peaks on the weekend with relatively lower use during the weekdays.

According to the Crystal River National Wildlife Refuge's listing of operators in 2000, there are at least 13 operators currently providing manatee encounter tours (U.S. Fish and Wildlife Service 2000). This number had increased within the past two years. Seven of these operators do not rent boats but only provide guided tours. One operator provides only rental boats and the remaining five offer both. Of those listed, four run their operations from outside the county. In 2000, an operator typically charged \$27.50 per person for a guided manatee encounter tour, but they were as low as \$15.00 per person. Snorkel gear rentals usually increased the price by \$15.00. A guided tour generally lasted 2 to 3 hours and may have begun as early as 6:15 A.M. Some operators ran two guided tours each day with the second tour beginning around 9:30 A.M. Participants could also rent pontoon boats, jon boats, canoes and kayaks, and go out on their own. Costs varied depending on the type of boat and the amount of time for which it was rented.

Manatees as a tourism attraction have been actively promoted by the county's tourism development agency. The county promotes its significant amount of open space as "Mother Nature's Theme Park." One brochure sports a picture of a manatee with the heading, "Want a different kind of vacation?" Opening the brochure one finds a picture of a manatee resting on the bottom with a snorkeler floating on the surface observing it. The page reads, "How about swimming with a manatee?" The brochure then continues addressing other opportunities including diving, fishing, boating, golfing and other sports, shopping, and local historic attractions.

The Citrus County Vacation Guide (1999) promotes the county as offering a "crowd-free environment with a wide range of sightseeing and recreational options" (6). In this list manatee viewing is described as a subset of snorkeling and diving, "...Citrus County's spring-fed rivers and coastal waters offer a splendid range of options to observe Florida's manatee and other abundant marine and aquatic life close up" (7).

Because of the marketing and use of manatees as a tourism attraction, the community now capitalizes on it. Many businesses listed in the area phonebook use the term "manatee" in their title. The city's welcome sign has two replica manatees in front of it. One gift shop in Crystal River is devoted to manatees while another sells mostly manatee merchandise. Manatees are on the cover of most of the general tourism literature including the Citrus County tourism web site².

Encounters in Crystal River generally occur in Kings Bay where manatees congregate around the warm-water effluents of the large springs. There are two primary areas of occurrence and two secondary areas: the Main Spring, Three Sisters Spring, Gator Hole (also referred to as Magnolia Spring), and Warden Key respectively (Figure 7). The Main Spring refers to a combination of two springs, King Spring and Mullet Gullet, around which manatees congregate. The Main Spring is adjacent to Banana Island and is only accessible by boat. Over 100 manatees have been counted in this area at one time. Because the site is used for manatee encounters, SCUBA, fishing, and pleasure boating, it receives the most human use.

The second area of primary use is the Three Sisters Spring area. It is composed of three springs that feed into the bay. A navigable channel leads from the bay proper back to the area. The springs themselves are closed to motorized watercraft. Manatees began using this area in significant numbers as recently as 1994. The area is popular with operators because of the crystal clear water produced by the springs that maximizes the ease of viewing and photography opportunities. Additionally, the area is relatively shallow, allowing people to stand and rest during their outing. The drawback to the water depth, however, is that snorkel fins stir up the water bottom and reduce visibility. This encounter area is located in a narrow canal lined by residential homes, and snorkelers along with their boats can clog the channel. Three Sisters Springs is also a popular recreation area for residents. The land surrounding the spring is privately owned and contains picnic areas and docks extending into one of the springs; however, most of this recreational use occurs in the warmer weather and is not available to the public.

² www.visitcitrus.com

Of the secondary encounter areas, I was more familiar with the area referred to as Magnolia Springs or Gator Hole. This area is found en route from the bay to Three Sisters along the navigable waterway. This area is more open than Three Sisters but human use also extends into the navigation channel during high-use periods. This area is considered secondary because, while the predictability of manatee here is fairly constant, the manatees are often in the sanctuary or they are transient, passing between the sanctuary and the bay. In addition, the water is deep resulting in reduced ease of observation and visitors, especially inexperienced snorkelers, may find the lack of shallow water unsettling.

A volunteer with Fish and Wildlife compares the amount of human and manatee use between Gator Hole and the Main Spring:

A lot of times you go up there [to Gator Hole] and there might be like one private boat, you know, one small jon boat and maybe a dive boat or two. I never see a bunch of manatees out from in there. You know, they kind of like it back in that sanctuary but you will see 3 or 4 of them out once in a while. It's not like at Kings Bay [Main Spring] where, you know, you get out there some mornings and those dive boats are putting the anchor down and the manatees are already surrounding the boats first thing in the morning, you know, "We're here. We want to play" [Laughs]. But I don't think you see that up there.

Warden Key is the other secondary manatee encounter area. This is classified as a secondary area because it does not receive as much use by manatees until the weather warms. One refuge employee explained that it was an indicator that manatees were "thinning out." It is similar to Gator Hole in that it is relatively deep. This area is in the bay and is adjacent to a set of small islands. Encounters occur on the west side of the islands. Human use here is low compared the other sites. In my observations, I never saw more than three boats engaged in manatee encounters at any one time; whereas, at Three Sisters, a smaller encounter area, I observed up to 18 boats at one time. Fishing occurs here but pleasure boaters tend not to use the area.

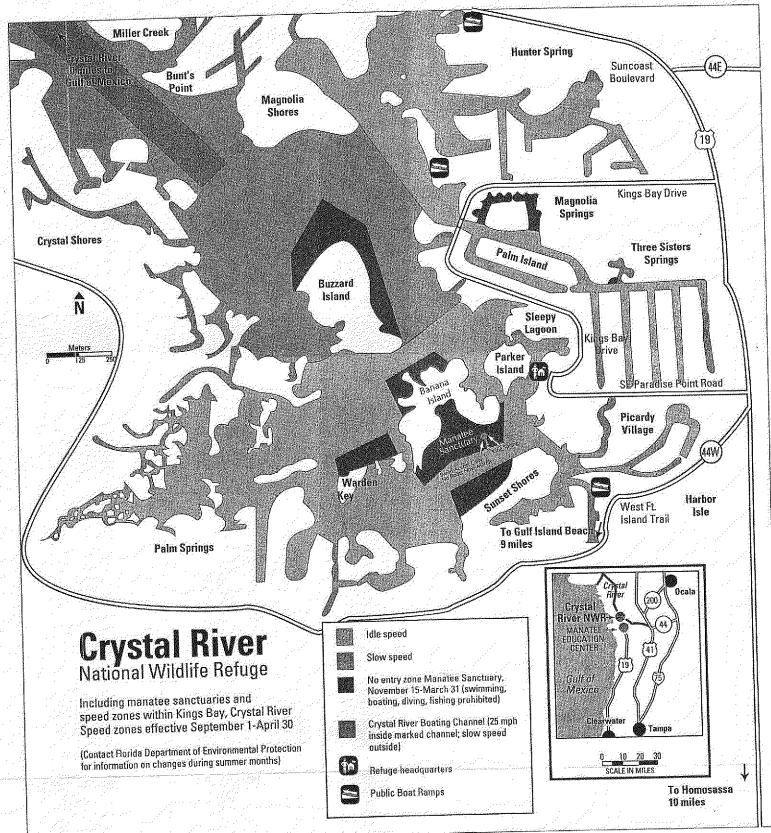


Figure 7 Manatee encounter areas in Kings Bay. Source. USFWS, Crystal River National Wildlife Refuge informational handout.

Manatee encounters are not limited to these areas of the bay; however, operators focus on these areas during the cold weather because they are manatee aggregation sites. During the winter manatees disperse throughout the bay and down into the river in warmer weather. In these cases manatee operators can be seen dispersed throughout the bay.

Homosassa Springs

Manatee encounters also are not limited to Kings Bay. Seven miles south in the town of Homosassa Springs (Population: 6,271; U.S. Bureau of the Census 1993), a small but steady manatee encounter industry occurs. A warm-water spring serves as the headwaters for the Homosassa River and manatees congregate in the spring's flow for thermoregulation purposes. The Homosassa experience is different from Crystal River. Operator 14, who works almost exclusively in Homosassa, explains the difference as one of size and water quality. First, encounters in Homosassa occur in a narrow river, concentrating the manatees in a single area: "In Crystal River you have all these big spread out springs that are, you know, half a mile apart so they congregate in all these different areas." Second, there is a disparity in water clarity because the Homosassa River continually flows, removing the sediment that can affect visibility. Overall, he concluded that, "it's a straight shot so the water's cleaner, shallower, and there's more manatees basically."

Some operators in Crystal River do not utilize Homosassa because of accessibility, perceived crowding, and perceived issues with participant behavior. The waterways are not connected and operators must either rent dock space or constantly transport boats. Because of the relatively small area perceived crowding can be very high in Homosassa. In addition, some Crystal River operators perceive human behavior in Homosassa to be unregulated and troublesome. However, Operator 4 has shifted its primary focus from Crystal River to Homosassa. Additionally, Operator 14 and Operator 11 work almost exclusively in Homosassa.

Managerial Setting

Because manatees are protected under the Endangered Species Act, the U.S. Fish and Wildlife Service maintains a presence in the area. Within the county there are two national wildlife refuges. The Chassahowitzka National Wildlife Refuge comprises 31,000 acres, of which 16,630 acres are located in Citrus County. The Crystal River National Wildlife Refuge is comprised of approximately 46 acres specifically acquired as critical manatee habitat (see Figure 7, page 37).

Crystal River National Wildlife Refuge is under the administration of the Chassahowitzka National Wildlife Refuge Complex, which is responsible for the management of 5 refuges between Crystal River and Tampa, Florida. Winter management efforts focus on Crystal River National Wildlife Refuge and summer efforts on its Egmont Key National Wildlife Refuge in Tampa.

The National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57) explicitly states that the primary mission of the refuge system is to focus on wildlife conservation. The Refuge Recreation Act of 1962 (Public Law 87-714) requires that all recreational uses on a refuge be compatible with the purposes for which the area was acquired. Crystal River National Wildlife Refuge was acquired for the primary purpose of manatee protection. Thus, any activity occurring on the refuge must be compatible with this goal.

The Crystal River National Wildlife Refuge is comprised of 18 non-contiguous parcels of land (Figure 8). These parcels consist of islands within the bay and lands surrounding it. For the parcels in or bordering the bay refuge boundaries are at the shoreline. The only exception to this is the Banana Island parcel of the refuge. The Fish and Wildlife Service owns the water bottom extending out from the south side of the island. This area is considered critical manatee habitat because it contains two high-magnitude warm-water springs. Because of this, most of the water bottom owned by the refuge is closed to public use as a manatee sanctuary. However, the King Spring, is highly utilized by the diving community and the refuge has created a public use or swim corridor (Figure 9). The corridor is closed between 7:00 P.M. and 7:00 A.M. each night to

allow manatee to use the spring undisturbed. The swim corridor is the only area where manatee encounters occur on refuge property and provides an example of Fish and Wildlife Service willingness to work with local tourism interests.

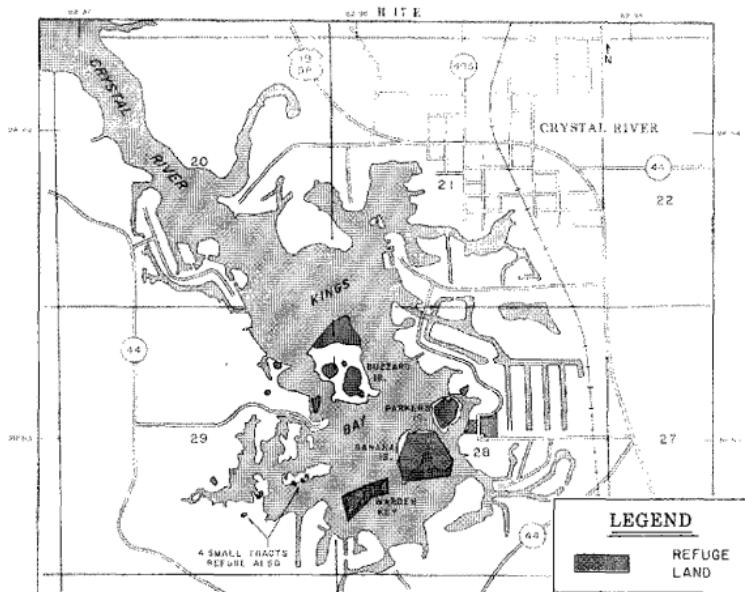


Figure 8 Property owned by Crystal River National Wildlife Refuge. *Note.* Sanctuaries are not necessarily on refuge land and are not included in this figure.

Because of the refuge's relatively urban location there are multiple access points. Marinas rent boats to visitors and provide ramps for private watercraft. Private property lines the bay and canals and most homes have boat docks. In addition, boats may enter from the Gulf of Mexico via the Crystal River. Participants seeking to interact with manatees either rent boats, use their private boat, or hire private operators to provide

manatee encounter tours. Consequently, the refuge uses indirect approaches to reach users with its educational messages on speed zones, sanctuaries and manatee harassment.

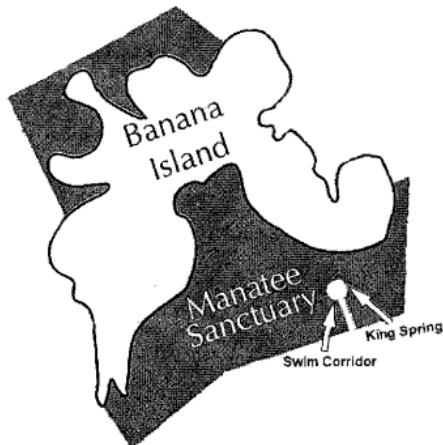


Figure 9 Swim corridor to King Spring.

Currently, signs at public boat ramps notify users of boat speed regulations and manatee encounter guidelines. The refuge has increased its outreach by requiring operators who provide guided tours and rental boats to show a nine-minute "Manatee Manners" video (Gentry 1995), which also discusses proper boat speeds and manatee encounter guidelines. This was accomplished by requiring the operators who utilize the public swim corridor—whether for SCUBA in the Main Spring, snorkeling, or manatee encounters—to obtain a special use permit to operate on refuge property. Operators pay \$100 fee and must comply with the requirements for the permit (Appendix A). Because

the corridor is a popular site for SCUBA as well as manatee encounters, all operators in Crystal River are permitted.

In addition to these indirect methods, the refuge has a “Manatee Watch” volunteer program. Volunteers spend four-hour shifts at the encounter sites interacting with and educating the public on the manatees, the refuge, and the rules and guidelines of encounters.

Because the refuge cannot regulate activities that do not occur on a refuge it falls back on the U.S. Fish and Wildlife Service’s power to protect endangered species. Hence, the management tools used in Crystal River to deal with public use are all enacted under the authority of the Endangered Species Act. The Citrus County Manatee Protection Plan has set multiple speed zones in the bay during the manatee season. Within the bay boats are restricted to idle and slow speeds. Idle speed is defined as the “minimum speed that will maintain the steerage of a motorboat.” Slow speed is “the speed of a motorboat when it is completely off plane, is settled into the water and is producing no wake or minimum wake. A motorboat operated with an elevated bow is not proceeding at slow speed” (U.S. Fish and Wildlife Service 1999). In the river channel a maximum speed of 25 mph is permitted and idle speed is required outside the channel. The slow and idle speed zones are seasonal, beginning September 1st and ending April 30th each year. In the summer the county designates a part of the bay as a sports zone. In this area waterborne sports such as water-skiing and jet skiing are permitted.

In addition to speed zones, manatees are protected by sanctuaries, areas in which “any waterborne activity would result in a taking of one or more manatees, including but not limited to taking by harassment” (50 CFR 17.102). In Crystal River manatees congregate because of the natural warm springs. Sanctuaries prohibit swimming, diving, snorkeling and use of water vehicles because these activities may displace manatees from this critical habitat.

The refuge has one full-time officer and two collateral duty officers. These federal officers also have the authority and duty under the Endangered Species Act to

minimize “take” (16 USC 1538). Under this authority, refuge officers regulates manatee encounters by citing people who speed, violate sanctuary boundaries, and harass manatees. Additionally, the refuge’s Manatee Watch volunteer program, while not an enforcement entity, provides physical presence for the Fish and Wildlife Service in the absence of formal law enforcement.

Other Manatee Viewing Opportunities

Those interested in simply viewing manatees may also rent boats or participate in a guided tour without getting in the water. Because the areas in which manatee congregate are limited to the warm-water springs, which occur either in the middle of the bay or next to private property, there are few opportunities to view manatees from land. Tourists can visit the refuge headquarters located directly on the bay and watch for manatees. Additionally, a bridge spanning the channel between Three Sisters Spring and the bay has a pedestrian walkway on which visitors can watch as manatee pass underneath. The bridge is located in the middle of an upscale neighborhood and there is no official parking. A vacant lot next to the bridge permits two or three cars to park off the road.

Other visitors interested in seeing manatees up-close without getting wet can travel seven miles south of Crystal River to Homosassa, which is home to the Homosassa Springs State Wildlife Park. The park is a reclaimed private zoo that has been converted into a home for permanently injured native wildlife. One of the most popular exhibits is the spring run containing injured manatees. This same spring serves as the source of the Homosassa River. It is just outside of the park boundary that the operators bring visitors for manatee encounters.

The exhibit itself is unique. The crystal-clear spring water provides visitors with an excellent viewing opportunity to not only see manatee but hundreds of fish including sheepshead (*Archosargus probatocephalus*), jack crevalle (*Caranx hippos*), mangrove snapper (*Lutjanus griseus*) and snook (*Centropomus undecimalis*). A sidewalk winds around the perimeter of the spring area and a walkway across the water has been built overtop the gate separating the wild and captive manatees.

Additionally, an observation platform about 30 feet from shore permits visitors to get a closer view of the manatee. The visitor walks out to a round pavilion and can look directly down onto the manatee. Furthermore, the visitor can descend the steps of this observation area to get a unique underwater view of the spring, the hundreds of fish, and the manatees. The underwater viewing area has windows that permit a 360-degree view. One can watch as manatees circle the observation platform, feed, or rest underwater. On the surface the visitor can watch as the manatees swim in and out of the "salad bar," a floating cage lined with nylon cord. Three to four times a day employees feed the manatee boxes of romaine lettuce in this enclosure.

Feeding is done in front of the public as part of a program held three times each day. During the program an interpreter in a wetsuit stands thigh-deep in the water. The seven manatees gather around the interpreter, constantly jostling for position. The interpreter feeds carrots and specialized pellets to the congregated manatees while educating the public seated in the bleachers about manatees and the history of the park's individuals. At the conclusion of the program the public is invited to move over to the observation platform to watch as the manatees are fed in the salad bar.

CHAPTER V

STAKEHOLDER PERSPECTIVES

Different stakeholders and stakeholder groups maintain diverse views on manatee encounters. These perspectives are derived from their fundamental views on wildlife protection and issues surrounding manatee encounters arise from clashes between these views. Thus, effective management of manatee encounters requires an understanding of these different viewpoints. The purpose of this chapter is to define stakeholder perspectives on encounters by examining their attitudes and the way they operationalize their perspectives. This context is important for understanding how groups identify and prioritize issues surrounding manatee protection.

In Table 1, stakeholders are classified into four groups according to the role they serve in the manatee encounter arena. First, participants provide insight into the attraction that is the manatee encounter. They describe this experience as sometimes spiritual but always “unique” because it is an opportunity to interact with a wild, rare, and charismatic marine mammal. Further, they feel that it provides benefits to manatees through increased awareness and attitude and/or behavior change. For those participants with a negative perspective, they generally believe that the encounters have negative outcomes for manatees.

Table 1 Stakeholders interviewed.

Participants	Business Community	Research/ Management Agencies	Advocacy
14-year veteran	Citrus County tourism agency	U.S. Fish and Wildlife Service	Save the Manatee Club
3-year veteran	Gift Shop managers	USGS Sirenia Project	
	Encounter tour operators	Florida Marine Research Institute	

Second, the business community serves as the experience facilitator. Private operators provide the experience while gift shops, restaurants, and hotels support manatee tourists. The draw of the manatee provides benefits not only for Crystal River but for the county tourism industry. To varying degrees, operators function in the setting as de-facto on-site managers. In addition to providing the encounter experience, they also have varying degrees of desire to protect the resource. They do this by educating participants, enforcing behavior, and acting as stewards toward manatees. However, not all operators act with the manatees' interests in mind and this results in a spectrum of encounter-providers.

State and federal agencies exclusively work to protect the manatee from extinction and must make decisions regarding manatee encounters in light of their manatee protection mission. At the federal level the U.S. Fish and Wildlife Service functions in this capacity. Currently it has implemented sanctuaries, speed zones, and enforces harassment regulations to minimize negative impacts to manatees in Crystal River. The refuge is the mechanism by which the Service maintains a presence in the area. Despite its effort, the refuge cannot manage encounters as effectively as it would like. Efforts are complicated by: the location of the refuge itself and the off-refuge location of the encounters, the characteristics of the species, the lack of sound data regarding outcomes of encounters, and the political context surrounding the decision-making process. Additionally, enforcement efforts are diluted by ambiguous regulations that lead to officers that are reluctant to cite violators.

The USGS Sirenia Project and the Florida Marine Institute are the primary research entities at the federal and state level respectively that collects information that aids in manatee recovery. Hence, it is their responsibility to examine manatee encounters, evaluate the potential negative consequences, and advise state and federal wildlife managers, including the refuge.

Finally, the Save the Manatee Club is the main advocacy group in the manatee protection arena. While its manatee protection mission is similar to the federal and state agencies, SMC serves more as a "watchdog" group. Because it is not influenced by

outside pressure, the Club is able to take a stricter stance on manatee protection. Consequently, its position is that manatee encounters provide relatively few real benefits to manatees in comparison to the potential costs.

A group that is absent from the stakeholders list is the local residents. Although many study participants are also residents of Crystal River, the snowball sampling technique did not lead to any contacts with residents who were not directly related to the manatee encounter arena. This suggests that residents are not incorporated as a major stakeholder in the manatee tourism arena.

Overall, manatee encounters are considered beneficial by some stakeholders because they have the potential to increase the manatee's constituency; however, not all interested parties believe this to be true. The costs of encounters could potentially manifest themselves in long-term negative impacts to the species that may be undetectable and/or untraceable. Thus, perspectives on manatee encounters diverge over the benefits encounters provide to manatee protection as well as to the stakeholders themselves, and the costs to manatees associated with them. In this chapter, the perspectives are detailed beginning with the group that creates the demand for the experience—the participants. Then the business community is examined to understand the nature of their manatee-as-a-tourism-attraction perspective. Research and management agencies, as well as advocacy groups provide context surrounding current efforts to protect manatees and the priority manatee encounters plays in those efforts.

Participants

I begin with an examination of the people who seek manatee encounters in order to understand why people are drawn to the attraction. Participants demand opportunities to view rare and endangered species but expect management agencies to prohibit interactions that harm the species. Participants who engage in this behavior seek personal benefits from the experience, whether it is education, adventure, or communing with nature.

The number of manatee-encounter participants has increased dramatically over the past few years and operators attribute much of this to the Internet. Despite the high

number of visitors, I found participants were difficult to approach in this a setting due to the environment. Cold morning air temperatures, masks and snorkels, and the aquatic environment made it difficult to engage participants. Instead, I collected field notes from participants while accompanying or participating in guided tours. For this study two participants were interviewed in depth. These participants represent perspectives on the manatee encounter experience ranging from a life-altering experience (i.e., connecting with nature on an emotional or spiritual level) to participating in a unique experience.

Tim and Alicia

Tim, a 15-year veteran of manatee encounters, is from New Orleans, Louisiana. During his first experience in 1985 he stayed in the water well beyond any of his co-participants. This experience was important enough to him to return and share it with his wife. In fact, for their honeymoon they swam with manatees in Crystal River. Now he says jokingly, “if I don’t take her now...she’ll leave me...She has to come see these animals every year.” This experience is important enough that when they once missed a year they came twice the next “to make up for the year that we missed.”

They are annual repeat visitors, first coming for long weekends and now taking weeklong vacations. At first, Tim and Alicia came to Crystal River during a Super Bowl weekend in January, spending a long weekend (Thursday through Saturday) and saying that it was a “very short kind of rushed trip.” Now, they come and “relax” for a whole week in Crystal River, specifically to swim with manatees. They carefully choose the time of year they come to swim with manatees based on their perceptions of crowding. Tim tells me they come the second week in January, “figuring that it’s a good week to come when there’s not a lot of people down here. Everybody’s getting back off of vacation from the holidays and going back to school and all that kind of good stuff. So, it’s not quite as crowded this week as if we would come the week before or the week after we think...”

What is it that makes them want to come back each year? They say it’s the “unique experience.” First, it is an authentic experience. Encounters are with wild

manatees in their natural environment. The natural attributes of the manatee also make the experience unique. Participants can get close to a large marine animal and there is no perceived threat to human safety. Manatees are herbivorous creatures whose only defense mechanism is to avoid a potential threat. Manatees are also inquisitive, sometimes approaching participants. Thus, participants can achieve a high degree of intimacy during an encounter. Tim and Alicia, as well as other participants describe encounters as touching, petting, or playing. Each term implies a greater degree of intimacy. In fact, Alicia says that it is possible to "bond" with individual manatees. When this occurs, a manatee distinguishes a person from the rest of the people in the water and actively engages them. These types of encounters with a single manatee may last for hours.

In addition to the type of experience, Tim says the environment in which encounters take place is novel: "You're in an environment totally strange to us as humans because we're not fish. We're not supposed to be in the water, you know." Also, the availability of this type of an experience is limited. Alicia explains, "There are not a lot of places you can go where you can interact with...a wild animal." They also say that the fact that this activity may someday be prohibited by law because the manatee is endangered, or the fact that it may end if the manatee goes extinct, makes this experience unique.

Sylvia, "Sirenian Sister"

Sylvia is a thirty-something mother of four who was exposed to manatees as a child and has always been "fascinated" by them. Although she lost touch with the species for a period, she renewed her interest in them a few years ago via the internet. In 1997, interested only in viewing them, she planned a trip to Crystal River. Once in Crystal River she discovered that tours provided opportunities to swim with manatees. During her first experience she bonded with a manatee she named "Sweetie." As a result of this "intense" experience Sylvia explained: "When I got back to the dive shop I spent like \$300 in the gift store buying everything." Now, she has over 80 manatee items in her house: "They're hanging from the ceiling fans and I've got a stuffed animal

collection and they're in almost every painting in the house...I'm just like addicted and it's all because of my encounter when I was at Crystal River." Because of this experience she has nicknamed herself "Sirenian Sister" and has started a web site in which she plans to provide "virtual vacations" and sell manatee items. However, she has not joined any wildlife conservation organizations as a result explaining, "that isn't really because I don't believe in them. It's more that we can't really afford to support anything because I still have four little ones at home and my husband works two jobs and I stay home and watch the kids all day. So I don't have any right to give away our money."

Tim and Alicia believe that manatee encounters generally do not cause participants to change attitudes or behavior. Despite heightening awareness Tim says that it would take a more dramatic experience to really affect behavior, "maybe if you run around on your boat like a wild man and all of a sudden you run across a manatee that's all busted up and dying, you know, then maybe it might register. But I think it would take something extreme to register a change in somebody's heart."

In contrast, Sylvia believes the chief benefit of the encounter is its ability to increase awareness. She personally works to increase awareness within her boating social circle. In 2000, she brought a friend to Crystal River and describes how the experience changed her friend, "now she's got manatees all over her house. She's got a protect the manatee sticker on her truck...It changed her whole outlook towards the sea and respect for the creatures that God made." It also has opened Sylvia to endangered species issues in general, "since I became aware of the word 'extinct' and 'endangered species' and all this, mainly because of the manatee, every time I see it or hear it regarding any other species I'm perked up just to hear, you know, what else is going on in the world and the rainforests and all that kind of stuff." Finally, she asserts that some participants "are emotionally moved and transformed" by manatee encounters and that the ability to touch the animal is integral to this transformation:

[By prohibiting touching] you're going to diminish the awareness level and also diminish the spiritual connection that the human touch has. I mean, it was so different when I was swimming around in the water

before I saw one. I thought I was excited then, you know, just to see one. And then when I touched it and it turned around and looked at me, I mean, a chill went through my body. It was just such a connection...Before that they were just ugly and awkward. But then once the touch happened and then the thing turned around and came to me and it was like, "Oh my God, you know, how could anyone in their right mind harm one of these beautiful creatures?"

Manatee Encounter Discussion on the Internet

Because the participant perspective is valuable to understanding the context of manatee encounters I subscribed to an e-mail listserver. On two occasions I solicited input from list members, asking for a description of their experience in the first instance and giving them a set of questions to guide their answers in the second posting (Appendix B).

Responses to e-mails mostly contained positive responses saying their experience was "emotional," "rewarding," "moving," and "one of the most memorable occasions of my life." Some said they left with a greater understanding and appreciation of the manatee. Despite the positive encounters had by the participants many also included factors that had a negative influence on their overall experience. Witnessing harassing behaviors by others was the prevalent negative influence:

I believe that after that type of experience, there is a greater understanding of the mysterious creature. I know that my interaction greatly touched me. I have the utmost respect for the manatees and would not do anything to harm them...I was sad to see others harassing and not following the rules and I was not tolerating it. I reported it to one of the instructors or confronted the person directly.

Despite the behavioral problems of others, some participants believe that the interaction and the ability to touch manatees results in significant benefits. One respondent said that people never forget their experience and "spread the word" to their friends: "You come to respect them, once you've met them. And if [participants] operate a boat, they will be more likely to slow down in the shallow grassy areas."

Listserver members with a negative perspective on manatee encounters believe that interactions have negative impacts for manatees, and for some it also is an ethical issue of keeping wildlife wild. On respondent wrote:

Why do people think they have to swim with and touch manatees? I go out on the Chassahowitzka River [Citrus County, FL]. I observe birds, alligators, raccoons, otters , fish, and manatees. I feel privileged to see these creatures. But I do not feel I have to touch them, swim with them or perch with them. Why can't we just observe, appreciate, and enjoy? We do not go to human events and touch the people who entertain us. Just leave the manatees alone.

Others feel that there are negative impacts associated with manatee encounters.

One respondent who used to swim with manatees changed her attitude and behavior after witnessing a boat hit a manatee:

We have witnessed one incident near a power plant where a boat hit a manatee. It was dark, and I must say that the boat was going very slowly and cautiously. But it literally rode upon the back of the manatee. This was about 12 years ago, and I have never forgotten it. Maybe if they hadn't been so used to us humans, some of these accidents could be avoided.

Although discussions with participants reveal manatee encounters as predominantly beneficial to themselves and the species, there are visitors who leave the Crystal River setting dismayed with the experience. An employee of Save the Manatee Club explains, "We've even had people who called us after the experience and—people in tears about what a mess it is over there and why aren't we doing something to stop it?"

One letter received by the refuge is illustrative of a negative experience (Appendix C). Jenny, from New York, canoed Kings Bay and witnessed "a number of violations." These included harassment, sanctuary trespass (by both people and boats), and speeding violations. In addition she cited problems with inexperienced boat renters when a group of people in a pontoon boat "threw their hands up in the air and decided to let their pontoon crash into our canoe" because they were unable to maneuver their boat. Witnessing inappropriate participant behavior and the substandard social conditions resulted in a negative experience for this visitor.

Business Community

The business community is the main stakeholder influencing the visitor experience and includes those commercial entities in Citrus County that benefit from the

attraction of the manatee. During this research, tour operators, area gift shops, and the county's tourism agency were interviewed. The main theme here is that the draw of the manatee is perceived to be imperative to the economic success of Crystal River. To this end, the encounter is an integral part of the attraction. Thus, the business community expects that any further regulation by the federal government to have a negative effect on the economic welfare of the area.

In terms of the area, snorkeling with the manatee is, according to Bethany, an employee of the county's Tourism Development Council (TDC), "What put Citrus County on the map; and, in fact, Citrus County is not on the map. Crystal River is on the map. But the number one draw and what makes us really unique is the manatee snorkel." Because of the manatees' draw the county has implemented a 2% bed tax, which established the TDC, allowing the county to promote itself as part of Florida's "Nature Coast." With the tax, the county provides trips for travel writers who experience the county's attractions and then return home to write about them. Thus, the manatee is economically important not only to Crystal River but to the entire county.

The draw bringing tourists to the county is the manatee encounter and this is based on the physical interactions that occur with wild manatees. One restaurant/gift shop manager said, "to swim and not touch is not the same thing." She feels that prohibiting interaction would affect her because touching is part of the draw of the manatee: "It would affect me tremendously since I'm involved in two businesses that have to do with the draw of the manatee—financially, yeah." A second gift shop operator, while she acknowledges that there are economic benefits (e.g., it has helped put her daughter through school), the primary benefits for her center on an increased quality of life: "Money-wise, it's never been a great moneymaker but very few could say they love their work everyday."

Despite the positive influence manatee tourism has had on Crystal River, not all economic interests benefit from the regulations in place for manatees. Fishing guides tend to resent manatee tourism simply because it slows them down getting from the bay to the Gulf. The wife of a fishing guide, who also has commercial interests related to

manatee tourism, describes the fishing community's attitude toward manatee protection efforts:

Kim: ...All of the guides were affected when they went to the no-wake zones. When they have a group that has hired them to take them out, it slows them down.

Mike: Oh, getting from Point A to Point B?

Kim: Exactly. And so that's the grumblings of all the fishing guides. So, if you talk to a fishing guide, probably their opinion is going to be pretty negative to the manatees. They could care less whether they're here or not...

Operators

Operators provide access to manatees through guided tours and the provision of rental boats. They are usually the first and sometimes the only contact a participant has with the manatee encounter community. Moreover, operators often act as de-facto managers at the encounter areas. In this capacity they educate participants, enforce regulations, and act as stewards for manatee protection. However, operators vary widely in their respect for manatees and manatee protection. This is evident by how they educate participants, behave on the water, and what they say about manatees as a resource.

Operators as Educators

As de-facto managers, operators serve as educators in the setting. Because participants use them as the primary contact in Crystal River, they are responsible for ensuring that their customers are aware of the regulations and guidelines surrounding the encounter. A spectrum of educational efforts occur across operators from no effort, to the most basic (only showing the required "Manatee Manners" video) to a comprehensive interpretive seminar on manatees.

Buddy Allen provides this comprehensive program to K-12 classes as part of a "hands-on" educational tour. Each session begins with a one-hour sit-down seminar, the majority of which is devoted to the manatee's natural history, threats to its survival, and steps to its recovery. The last fifteen minutes of the talk focus on the rules and guidelines of the encounter itself.

Buddy provides the most extensive education in Crystal River. In fact, he is the only operator I observed that has incorporated manatee natural history and survival as a standard part of the program. Still, other operators consider themselves to be educators. They focus on the encounter itself—the rules of engagement and additional suggestions for success. For example, Operator 1 is regarded by some stakeholder groups (e.g., the refuge and SMC) as one of the best educators in Crystal River. As a participant on one of its tours, I gathered with the other participants in the dive shop where we suited up. Once we were prepared we watched the “Manatee Manners” video and listened to one of the owners reinforce the behavioral guidelines. We were told how to interpret manatee behavior as receptive or aloof, and how and where to touch them. Behavioral guidelines were reinforced throughout the trip.

Operators as Enforcers

One role some operators assume in manatee encounter areas is that of an enforcer. They supervise the behavior of their own participants and, in some cases, the behavior of all participants in an area. Operators may pull their participants from the water if they consistently behave inappropriately, or they may alert law enforcement about misbehaving participants from other groups.

Steve, owner of Operator 3, and his wife, Marta have a small 1-boat operation with a maximum capacity of 10 participants and serve as a model enforcers. They are generally regarded as the “police men” of the sanctuaries because they monitor the behavior of all participants in an encounter area. One Manatee Watch volunteer told me, after passing their boat, that the operator was a “staunch conservationist,” not afraid to “tell anybody off.”

After managing another operation for almost 20 years, Steve consciously chose to restrict the size of his current operation to reduce the “headaches” involved with a larger operation, to provide an intimate environment for the participants, but mostly out of respect for manatees. He says that it wasn’t handling large numbers of people that bothered him, it was putting those large numbers on very few manatees, “I used to run a

36-foot charter with 36 people on it; and, to take 36 people out and put them on one manatee—I refused to do it.”

Steve and Marta remain on the boat during encounter excursions, monitoring not only their participants but also the behavior of all participants in the area. During my first observation at the Three Sisters encounter area I watched Steve blow a whistle to get the attention of a swimmer that entered the sanctuary area. It pierced the tranquility of the setting immediately capturing everyone’s attention. He then asked the swimmer to leave the sanctuary. I watched as they yelled to a boat to slow down and received a discourteous response from the boat operator. At this, Marta wrote down the boat’s registration number. I participated in their tours and watched them monitor participant behavior. When Marta saw inappropriate behavior, such as diving down to touch a resting or feeding manatee, she would yell to get the attention of the wrongdoer, or she would get a nearby swimmer to get the violator’s attention. She would then state the rule: “Sir, you cannot free dive down to the manatee. That disturbs them and is harassment, which is illegal.”

Operators as Stewards

Some operators show individual concern for manatees and the encounter environment in general. In addition to reporting sanctuary maintenance problems, operators will report injured manatees. In one instance, an operator reported an injured manatee to the refuge. As the refuge biologist prepared to investigate, the operator reported over the radio that they were videotaping the manatee in case the manatee left the area. In addition to enforcing proper behavior, operators will contact the refuge to report maintenance problems with the sanctuaries or to report people who misbehave. They will also assist with maintenance. For example, the sanctuary markers at Three Sisters Springs are anchored to the bottom by concrete blocks. The sanctuary loses shape when crowds hang on the markers. Operators often will restore sanctuary boundary to its original configuration when this occurs.

Operators as Indifferent

Not all operators have genuine concern for manatee protection efforts, including the control of human behavior. Some operators, for example, do not take seriously the requirement to show participants the "Manatee Manners" video. While shadowing a refuge law enforcement officer we stopped two college students who were pursuing a manatee. They had rented the boat from Operator 8 and did not see the video, receive any instruction, or even a map of the refuge. After this incident, the officer informed me that Operator 5 was the "step-child" of the operators, implying that it had the least concern and the least compliance. This was corroborated by Tim, the 14-year repeat customer, who informed me during an interview that his family almost did not see the video this year: "The only reason we saw the video this time around was because we said, 'Well we have to watch the video now.' And the guy—I don't even know if the guy knew how to operate the doggoned television. And we sat down and watched it because we knew we had to."

Another indicator of operator indifference is their actual behavior during guided tours. It is generally known among all stakeholders that some operators may harass manatees themselves. During my data collection one operator expressed concern for Operator 4 saying they were "notorious" for harassing manatees especially to get video of participants interacting with manatee (videos are then sold to participants for \$30). This same operator was recently cited for harassment in March 2001 for pursuing a manatee and not allowing it to leave an area (Ross 2001).

A Spectrum of Operators

Not all operators uniformly enforce, educate, or act as stewards. Rather, there is a spectrum that provides manatee encounters. According to one operator, two general camps have evolved in the setting based on how they educate participants and cooperate with the Service's management efforts. "Old timers" are less concerned about manatee protection efforts and more concerned with the economic boon provided by manatee tourism. "New" operators are more concerned with manatee protection as a way to protect the proverbial "goose with the golden egg" and thus preserve the future of

manatee encounters. The creation of the Three Sisters Spring Sanctuary in 1997 illustrates the different perspectives of the two camps.

The history of sanctuary creation in Crystal River is filled with contention. Sanctuaries were first established in the early 1980s. In 1994, three additional sanctuaries were added and the Main Spring sanctuary was expanded. Each of these efforts were met with fierce resistance from the business community. In 1996, stimulated by harassment concerns and with the backing of the Marine Mammal Commission, the Save the Manatee Club called for a sanctuary at the Three Sisters Springs.

Immediately, the old timers voiced opposition to the sanctuary focusing on the devastating impacts of such a measure, "It will probably put us out of business...When they...(impose sanctions), we're not talking about just dive shops...we're talking about taking dollars from restaurants and motels and other retail businesses that rely on the springs" (Munn 1996, 2A). Five months later the *St. Petersburg Times* reported a story in which a two dive shops, Operator 1 and Operator 4, advocated a sanctuary at Three Sisters Spring (Behrendt 1996). But, instead of a federally created and administered sanctuary, they proposed the creation of a sanctuary controlled by the county.

While anti-government sentiment was palpable in their proposal, they recognized a need to be cooperative in efforts to protect the manatee. The motivation for this protection, however, may not have been altruistic as one involved employee from Save the Manatee Club recalled: "[Operator 1 and Operator 4] said that if it wasn't done they were afraid that they were going to just shut the whole spring down."

In May 1997, the Times reported that there was no consensus among manatee tour operators: "When dive shop owners discussed options for Three Sisters...there were differences in how the owners felt...Each had a different perspective on how rules might affect them" (Behrendt 1997b, p. 1). There had only been two letters received in support of the locally administered sanctuary. Hence, the dive shop proposal was held up because of the old timers' opposition. A "new operator," Operator 7, recalls the old timers' fight against the sanctuary:

Four years ago...the old-time camp here fought tooth and nail not to have a sanctuary. Tyler Simpson, who used to own Operator 5...he personally took out Karen Thurman, from the House of Representatives...on a boat with [Operator 6] and [Operator 8] and they drove to Three Sisters. And he drove there and said, "If you put in a sanctuary no one can take pictures. No one can look. No one can do anything. This would be absolutely devastating to our business."

Eventually, after a series of meetings, all operators agreed to support a local effort to establish and maintain a city-administered sanctuary at Three Sisters in order to avoid federal regulation (Behrendt 1997a), but it stalled when the city gave it low priority. Finally, the onset of the 1997-98 manatee season forced the Fish and Wildlife Service to intervene and create the sanctuary under ESA regulations (Behrendt 1997c).

This scenario provides an example of the disparity among the perspectives of operators. The new operators sought to cooperate with Fish and Wildlife, while the old timers reacted vociferously against the proposed sanctuary. The implementation of the Three Sisters sanctuary ironically resulted in greater benefits for the operators. At Three Sisters before the sanctuary, the first boat would often displace all the manatees. Manatees would move to Gator Hole and by midday there were no manatee. Now, he said, the manatees have a place to go and they stay all day. It's now a "great place to see manatees" regardless of whether participants can interact with them: "It's perfect. You can see them all day long. You go there at two o'clock in the afternoon and there are still some in there...It's a great location."

Whether for the manatees' sake or self preservation, new operators, as Operator 7 discussed, are characterized as realizing the value of protecting the resource:

What we need to protect is the manatees. And so we need to enact laws that are protectable for the manatees. And those are the things that [old timers] just don't want because it controls people's behavior. And they want to be able to rent people boats and let them go out there and just, you know, go crazy...because they think that next year they'll come back and rent a boat again...To me that's really the distinction between the old-time people and the educators out here. The old people are trying to protect their territory. It's like a territorial thing, you know, "We own the area." And, the newer generation is just trying to protect the manatees. We're trying to do things that are right for manatees.

Research/Management Agencies

The U.S. Fish and Wildlife Service, the USGS Siren Project and Florida Marine Research Institute all focus on a “what’s best for the manatee” or a manatee benefits perspective. This perspective is based on biological information and the needs of this endangered species. While there is a common orientation, the groups differ on their beliefs about the costs and benefits manatee encounters provide.

U.S. Fish and Wildlife Service, Crystal River National Wildlife Refuge

The mandate of the Fish and Wildlife Service is to protect wildlife and provide for public enjoyment. In cases where the two conflict, wildlife protection receives priority. Crystal River National Wildlife Refuge's main concern is the protection of the wintering manatee population. It understands the concern underlying manatee encounters yet finds no biological basis for prohibiting use. For the refuge, the primary concern is controlling visitor behavior because it is the most significant variable influencing the impact of the encounter on manatees. However, the off-refuge location of the encounters, its inability to regulate visitation, and the complexity of enforcing regulations inhibit the effectiveness of the refuge's ability to manage the area.

Crystal River National Wildlife Refuge's strategy to control visitor behavior is centered on educational enforcement and the willingness of operators and visitors to monitor their own behavior. To enforce regulations (and educate visitors) the refuge employs one full-time officer. The current management strategy has evolved as a result of the complex managerial setting in which the refuge operates. Thus, it is valuable to explore the context surrounding its effort to protect manatees in Crystal River.

Complicating the managerial setting is the urban location of the refuge (Figure 6, page 32). Historically, few manatees used the bay (see Hartman 1979) and the area was consequently developed as a multiple-use recreation area. Except for jet skiing, SCUBA, water skiing, recreational boating and fishing were all uses that occurred before manatees used the bay in large numbers. The Citrus County Manatee Protection Plan has since restricted boat speed to “slow” and “idle” during the manatee season. Regardless, private property encompasses the bay and the multiple-use mentality of the

residents complicates management efforts. David, a refuge employee, discussed influence of the refuge's location:

You have these other uses, commercial-based uses, that are here in the community, which is right here... You are actually physically located right in the city of Crystal River. The bay itself is right here on the water, and you have people who are making their living, basically, bringing people with them to go out and dive and experience what's out there in the water. But we have a fair amount of control over what happens at the Main Spring itself and within the sanctuary boundaries, but obviously we're limited outside of those areas.

In addition, the refuge itself is comprised of 18 parcels, but the refuge only owns two parcels of water bottom (Figure 8, page 40). The implication of this is that, except for the swim corridor, manatee encounters do not occur on refuge-owned property. Consequently, management techniques utilized under refuge authority, such as spatial and temporal use limits, are not available for Crystal River National Wildlife Refuge. Additionally, resource users encounter manatees via multiple access points including dive shops, marinas, and public boat ramps. This, as discussed by David, inhibits the refuge's ability to contact visitors:

We are not in a position to have direct contact with every one of those [participants] before they get in the water... And, we are not operating in all cases within the boundaries of the National Wildlife Refuge... A lot of people that don't like what's going on here do not understand that... the National Wildlife Refuge boundary typically stops at the shoreline of the island; or, in the case of the Main Spring there is a small portion of water bottom owned by the Service. For the most part you're talking about state-owned water bottoms, and we are pretty much limited to extreme incidence of human behavior that clearly could harm that animal before we could interact.

The species itself, with its naturally inquisitive nature, also complicates management of encounters. From an evolutionary standpoint the manatee has had no natural predators; thus, there was no natural selection against this inquisitive trait (R. Bonde pers. comm.). Some manatees have habituated to the presence of people and may actually seek encounters with humans by approaching and physically touching them. The result is that management options such as in-water passive observation may have limited effectiveness because gregarious manatees may engage participants.

Additionally, the difficulty of identifying a causal link between encounters and resulting negative impacts also inhibits the refuge's ability to manage based on biological evidence, its preferred approach to management. David says, "What we don't seem to have, in my opinion, is sound biologically based information showing that mere touching or mere contact—if it's not an aggressive sort of thing—would potentially cause that animal to swim away and possibly end up dying." Because negative impacts are difficult to detect, the tendency is for the refuge to ignore the potential for negative impacts and focus on the evidence of impacts that do result. One refuge employee, Jane, said "If touching manatees was found to cause negative impacts, sure, I would agree with stopping it...I just don't see it yet...Somebody would have to prove that to me."

However, the refuge's ability to make decisions strictly based on reliable biological information is mired in a political environment that adds to the complexity of the managerial setting by constricting the way in which the refuge approaches management. The refuge belongs to the National Wildlife Refuge System, which is a division of the U.S. Fish and Wildlife Service. The refuge has its own procedures, yet Congress influences it. Furthermore, the refuge must manage for wildlife in a setting where the local economy thrives on the manatee as a tourist attraction. David said that ideally, "we'd like to focus on just the biology, what's good for the manatees. What's the biology telling us? Well, it's not quite that simple. That should be the predominant issue though, what's good for species."

The refuge's inability to effectively manage the area is reflected in its inability to enforce manatee protection regulations. Far from simplifying the refuge's management ability, enforcement of manatee protection regulations adds to the complexity of the managerial setting. First, there are the ambiguous regulations the refuge has to enforce. Because manatee encounters occur mostly off refuge property, the Endangered Species Act (ESA) must be used as a basis for enforcement authority. Under the ESA, speed zones have been implemented and sanctuaries have been created; however, some of the regulations enforced by the Service are ambiguous.

Harassment, for example, is defined by the ESA as significantly disrupting normal behavioral patterns, but applying this regulation in the field can be problematic. According to Service law enforcement personnel: "The more black and white [regulations] can be, the easier they are to enforce. The grayer they are the more difficult they are to enforce. Harassment is a real gray one." In order to write up a harassment case the behavior observed would have to be "blatant" such as "riding" or "grabbing onto a manatee." For other behaviors such as following or pursuing it would be "tough to prove that it's actually harassing or harming the manatee...the way the definition's written." In order to enforce this regulation the Service must "be able to go to court and say...beyond reasonable doubt that that person *significantly* altered their breeding, sheltering, or feeding behavior and that can be difficult" (emphasis added).

Thus, the onus is on law enforcement to provide clear and convincing evidence on regulations such as harassment, yet the evidence is often very difficult to articulate. Furthermore, law enforcement is charged with articulating that a violator "knowingly" committed a violation; that is, they must show that a person "knew or should have known" that their behavior was illegal. This includes behavior regarding boat speed, sanctuary trespass and harassment. One refuge officer perceives this standard as potentially constraining:

The Department of Justice ruled that all the Endangered Species Act cases must be articulated as "knowingly." In other words, the defendant would have to knowingly violate one of these regulations, which makes it fairly tough for the officer. Well, when they witness that, when you are interviewing the subject that committed that violation, I mean, you have to articulate...that this person knowingly violated one of these regulations. So that's what's happening now. These cases involved with manatees are now "knowingly" violations and we're having to deal with that issue as far as articulation of the facts.

Officers tend to only write violations that they feel will "stick" in a court of law. Due to the "knowingly" clause and gray definitions of infractions such as "harassment" and "slow speed," law enforcement officers are reluctant to write citations to violators.

Instead, officers have taken an educational enforcement approach that promotes self-monitoring among operators and participants. A refuge manager discusses how this approach is operationalized in the field:

The approach that has been taken here has been to basically try to educate people about the protection that manatees have, to remind them of the penalties—you know, to give them the do's and don'ts and remind them of the penalties if they cross the line into a situation where there's harm and harass going on, and also the threat of possibly getting ticketed or something and the presence of the refuge and refuge staff and refuge law enforcement officers and all of that.

But even this approach has become problematic for the refuge. The reason for this is that participants who go on guided tours with local operators, rent boats, use private boats, and participate in tours with out-of-town operators (called bare-boat charters) receive varying levels of educational messages regarding proper behavior (see Chapter VI).

Despite factors complicating its ability to protect the manatee based strictly on “what’s best for the manatee,” the Service’s position is that the benefits of swimming with manatees outweigh the potential costs. Bob Turner, the former Manatee Coordinator for the Fish and Wildlife Service comments on the benefits in a documentary which specifically addresses manatee encounters in Crystal River: “The positive side is that anybody that ever swam with or has seen a manatee up close is a manatee advocate for life. And so we get a lot of support from people who have had the opportunity to be with them here at Crystal River and swim with them” (Stover 1998). This idea of creating “manatee advocates” was reiterated by refuge personnel saying that participants, “become manatee advocates and they’ll do anything to help protect the species” (Stover 1998).

USGS Sirenia Project Biologist, Cyrus Renhia

The Sirenia Project is the federal research agency, housed under the Biological Resources Division of the U.S. Geological Survey³, responsible for meeting research

³ The Sirenia Project began as the research arm of the U.S. Fish and Wildlife Service before it was moved to the U.S. Geological Survey.

needs identified in the manatee recovery plan. Cyrus Renhia, a 22-year veteran of the Project, has at least 15 years of experience monitoring the Crystal River manatee population. He describes the Project's role as an objective information collector. It conducts research in accordance with the recovery plan's objectives and does not engage in management decisions. Instead, it provides information to and advises the Service who then incorporates that knowledge into manatee recovery efforts. The Project has monitored the Crystal River population since the 1970s and has witnessed both the growth in manatee use and visitor use of the area. Cy's perspective on manatee encounters tends to focus on the benefits (i.e., manatee advocate creation) yet he maintains caution because of the potential for negative impacts.

One of his primary objectives in Crystal River is to identify and catalog manatees that use the area in order to estimate survivability rates. To do this, he catalogs scars on the individual manatees. The best time for him to do this is during cold spells because manatee use of the area is at its highest. Thus, he spends a lot of time out among manatee-encounter participants. To him a major mediating factor in manatee encounters is the sanctuaries. In fact, when I asked him to describe Crystal River and the interactions that occur, he began with a discussion on the utility of sanctuaries. A paper published under the auspices of another Project employee examined manatee response to increased boating activity (Buckingham et al. 1999). The study showed that in response to increased boat activity in the bay the manatees moved into the sanctuaries as opposed to leaving the bay altogether.

Sanctuaries provide necessary protection from disturbance and the resulting negative impacts. His focus when discussing interactions was not on human but on manatee behavior. He says that there are a myriad of variables that affect an individual manatee's response to interactions. However, manatees can be divided into two general classes or dispositions: a "Type A personality," are those manatees with "puppy dog mentalities" that actively engage in interactions while a "Type B personality" are those which avoid people. These "personality" variables must be incorporated when

discussing negative impacts because, “what might not necessarily impact a Type A manatee may be very detrimental to a Type B manatee.” Tolerance for interactions may vary according to the manatee’s disposition: “I think an animal will put up and tolerate with a lot and that will be related to whether it’s really tired and it wants to go back to sleep or whether it’s in a warm water area and doesn’t want to be displaced.”

At the same time that he describes manatees as naturally gregarious, he explains that the Crystal River population has a higher degree of “friendliness” than manatees elsewhere. Moreover, this “friendliness” may vary depending on the setting. For example, radio tagging a manatee in Crystal River is relatively easy, “You can hold your breath and just take the tag and put it on [the manatee] in the water...and the animal won’t move.” This same individual, however, may be “difficult to approach” outside of Crystal River. Thus, he says, “I wouldn’t take it for granted that all the friendly manatees in Crystal River are friendly anywhere else based on what we know from the animals that we’ve radio tagged and wild animals that I have seen in other places that don’t exhibit that same kind of friendly behavior.”

Despite the complex variables influencing encounters, Cy has an overall favorable attitude toward encounters. In his 15 years he has yet to perceive negative impacts from encounters, such as decreased reproduction, but cautions that he might be biased because he only sees the animals that allow him to see them: “It’s the flighty ones that might be adversely affected by this.” Overall, his perspective on manatee encounters is that visitors generally are behaved and the benefits of people interacting with manatee are currently high enough to warrant them:

I think it's a very positive thing. I think that people that go in and spend a few minutes swimming with an animal the size of an elephant get out of the water better for the experience. You know, it's a very positive kind of thing. I think it gives them a better appreciation for the environment and the planet as a whole. I think that, to some people, getting in a wetsuit is probably one of the most incredible things they've done in their lives because they're getting in an marine environment or an aquatic environment that's as alien as the surface of another planet. And so it opens opportunities for people to not only experience the manatee experience but to also appreciate the marine environment and the ecosystem that we're all kind of interconnected to.

These people, he says, then become manatee advocates and are more aware of the problems surrounding manatee recovery. The real benefits are to the manatees as these people become "voters and people that are interested and taxpayers that help to fund and develop the refuge system and protect manatees statewide."

Still, he is wary that unregulated use may erode the benefits and enhances the costs of manatee encounters. The current situation in Crystal River may be "as good as it gets" and management efforts, such as sanctuaries, need to be adaptable to manatee use. While he says that manatee encounters may be beginning to "deteriorate a little bit," he still believes that people can "have the best of both worlds at the same time":

I think that we can have ecotourism and we can have personal interactions and experiences with the wildlife and we can still have what we call really wildlife, you know, true wildlife. And it may be the only situation or the only case we can do that but we'd be foolish not to take advantage of it...

Florida Marine Research Institute (FMRI)

The Florida Marine Research Institute is a part of the state's Fish & Wildlife Conservation Commission (FWCC). It conducts research for the state in order to provide information for marine resource management. Similar to the USGS Sirenia Project, part of FMRI's mission is to study life histories, population biology, ecology, behavior, and migrations of manatees in order to assist recovery efforts (Florida Fish & Wildlife Conservation Commission 2001). Thus, it works on behalf of the manatee and has the potential to benefit from manatee encounters through increased constituencies, awareness, and through behavior change (e.g. changes in boating behavior) that may result. However, FMRI believes that the benefits of encounters do not exceed the benefits of other more passive viewing opportunities. Furthermore, when dealing with an endangered species this group wants to "err on the side of caution." That is, the potential costs—in the form of negative impacts to individuals and the species—are difficult to discern and therefore outweigh the potential benefits.

Recently, FMRI established an official position on manatee encounters. In January 2000, an article was published in the St. Petersburg Times with the headline, "Agencies back hands-off policy." In this article (Behrendt 2000), Scott Mech, an

administrator for the FMRI who grew up in Crystal River, indicated that he believes that the physical contact that occurs during manatee encounters is “not in the best interest” of the animals and advocates against it. In the article, Mech wanted to change the touch message to “if the manatee comes to you, avoid it,” because “the best thing for the manatee is not pursuing them, not touching them.” The cost—disturbance of manatees—is considered greater than the benefits derived from encounters. Mech states in the transcripts of a 1999 Watchable Wildlife Conference, which focused on marine mammal harassment, that:

In terms of appreciation, there are many animals that people don't have opportunities to touch, that people respect and care about...If they truly care about the animal (for the most part people don't intend to harass the animals), perhaps we should educate them that there are other ways to appreciate other than to touch... (Shapiro and Velez-Camacho 1999).

I interviewed Allison, a manatee biologist with FMRI who has championed an on-going interagency discussion and working group on marine mammal harassment⁴, and Alex, a co-worker and working group member. They labeled the passive observation Mech describes above as “appreciation.” “Nurturing,” on the other hand, is where people feel a need to help organisms. This proclivity toward nurturing, according to Alex, is “directly related” to harassment (e.g., feeding). It also creates the desire in people to seek out manatees and interact with them. As well-meaning as encounter participants may be, interactions with manatees may have significant costs.

FMRI's main concern surrounding manatee encounters is that it alters their natural behavior and creates the potential for long-term harm—negative effects that may not be traceable back to their source. The costs include negative impacts such as behavioral changes (e.g., habituation to boats), diminished health and fitness from repeated disturbance, and displacement from critical habitat; but, not all researchers with FMRI find encounters problematic. Allison explained that some biologists see

⁴ Groups involved include: Save the Manatee Club, National Marine Fisheries Service, Mote Marine Laboratory, The Sirenia Project, U.S. Fish and Wildlife Service, Crystal River National Wildlife Refuge, and Florida Fish and Wildlife Conservation Commission.

encounters as low priority but, to her, there is the potential of “killing them with kindness”:

You’ve got ecotourism which is just growing exponentially...And so, eventually...you may start driving them out of critical habitat. And that’s the other form of harassment...the potential to injure. And that eventually...in the long run (and this is a huge long term type of thing)...has potential to kill as well. I guess this issue doesn’t get a lot of attention because [there’s no] measurable immediate results...and also a lot of managers don’t see it as immediately a threat...We’ve got lots of managers in our agency who love to go swim with manatees...and they don’t see it as problematic at all. And I guess I’m thinking more in the long term that it could have the potential to harm.

Then there is the issue of scale. Swimming with dolphins started as a localized activity and then grew into a nationwide problem for the National Marine Fisheries Service (NMFS). As a result, NMFS has had to be reactive in addressing this problem. Allison sees the potential for the same thing to happen with manatee encounters. Encounters began occurring in Crystal River and then, in the late 1980s, Homosassa began to evolve as a manatee encounter site. Anecdotal reports of manatee encounters now occur throughout the state. She describes people in the Keys luring animals in by feeding them, and she has seen people swim with manatees in the warm-water effluent of a sewage treatment plant on the east coast. To her, this is the indication of a potential trend and a source of concern.

Additionally, an issue of equity underlies the scientific research community and their position on manatee encounters. Researchers who want to do something as simple as photo-identification must “jump through hoops” to get a permit to do so. They must show that their research is legitimate and that the species will benefit from it. In effect, some researchers feel they are penalized while the public has unchecked access to the manatees or dolphins; and, in the case of the public, interactions do not necessarily benefit either species.

Advocacy: Save the Manatee Club (SMC)

Save the Manatee Club is the primary manatee advocacy group in Florida. It, like federal and state agencies, has a “what’s best for the manatee” perspective. Its role

in the manatee management arena (including manatee encounters) is as a watchdog group. Whereas agencies' protection efforts tend to be limited by outside pressure, SMC is able to push for stronger manatee protection regulations. Carrie, an upper-level employee, describes the difference between SMC and the federal and state wildlife agencies:

And I think the difference between us and the agencies, you know across the board, is that they say, "Wow this is extraordinary, and it's enough because the pressure is tremendous from the other side. So let's stop here, we managed to get this extraordinary protection." But what we're saying is, that although it's extraordinary, it's still not enough of long-term. So they've lost their vision...I think the agency people are trying to take the easy way out.

Like FMRI, SMC believes the potential costs of the growing attraction of manatee encounters in Crystal River is greater than any benefit it provides manatees in the long run. Thus, SMC demands that the physical contact component of the manatee encounter be prohibited. It suggests instead that passive observation be the only type of interaction allowed in Crystal River.

Save the Manatee Club refutes the Fish and Wildlife Service's argument that encounters create manatee advocates. Encounter participants, SMC says, are already advocates before interacting with manatees. Thus, the manatees' constituency is not significantly enhanced by the experience. Stephanie White, an 11-year veteran with SMC, describes that people go to Crystal River for the selfish purpose of receiving gratification by interacting with a wild animal:

I don't think that anybody goes over there going, "Well, you know, I don't really like manatees but I think I'll go have this experience and maybe my view will change." I think that's very rare. I think that may have been true 20 years ago, 15 years ago but certainly not now. These people come there because they want the experience of swimming with manatees. They've heard about them. They advocate for them and they want to take their relationship with them to the next level.

Save the Manatee Club believes that the people that do encounter manatees exact costs on the very animal they want to protect. Stephanie suggests that people cannot behave appropriately regardless of the education effort. The Club routinely fields calls

from members inquiring about manatee encounters. Employees provide these callers with their position against interactions, but she estimates that only about 10% of its membership are “enlightened”; that is, when these people are told about SMC’s position they say, “Hmm. I never thought about it like that. You’re right.” The majority of its membership (80%) will engage in encounters regardless:

[They] are people who do care about the animal (or at least think they do) and go there because this is a really neat thing....And they’re the ones who, I think, once they get in the water they are totally not masters of their domain. You know, they lose their heads. They’re splashing around and they’re chasing manatees and they’re not really doing anything egregious but just harassing the hell out of them in their own habitat, which is why the animals swim off and hover in the sanctuaries.

Another manatee advocate who volunteers for SMC in Crystal River also described this type of visitor—good intentions but inappropriate behavior. She described an incident in which she escorted members of the Sierra Club conservation organization on a manatee encounter trip. After extensive lectures on proper behavior she said the group went “berserk,” pursuing manatees into the sanctuaries after initially displacing them.

Finally, Stephanie describes the last 10% of manatee-encounter participants as the “thrill seekers”:

[They] have a life list of exciting and adventurous things to do and this is one of them that they can check off the list. And I think that those people have a tendency to be the even more egregious harassers, the ones that do try to sit on them and stand on them and ride them and will actually just thoughtlessly separate mothers and calves and those kinds of things. So I really think there’s only maybe 10% of the people that really don’t give a flip about the animals.”

Save the Manatee Club readily identifies potential negative impacts that can result from manatee encounters. Overall, Stephanie says the problem with manatee encounters is that, “there is, first and foremost, the potential for harm to the species; and, when you’re talking about an endangered species, why take that chance?” There is more potential harm for the species than any gain. This view fits the groups’ values as well. Its “what’s best for the manatee” orientation is based on humans as the main variable in

the manatees' survival equation. Consequently, when SMC makes decisions regarding manatee welfare it removes humans from the equation and imagines how manatees survived without the human influence:

I think that what's best for them is, for the most part, to leave them to their own devices. And to leave their habitat as untouched as possible and to let them continue to interact with each other in their environment without human impacts. And I think that if you think about it that way always first and foremost then I think you can make some pretty good decisions.

Of course, no human activity in manatee habitat, no boats in the water, "that would be the very best thing for the animal," according to another SMC employee. However, the group does not try to get all boats off the water or to stop all development. There is the idea within the group that humans can coexist with manatees and even use them as a recreational resource. Even though SMC would ideally like people to not get in the water and swim with manatees—because this would be the "best" thing for manatees—it does recognize that discouraging this form of manatee observation would probably not be in its best interest.

A web site entitled "If You Love Me Please Don't Disturb Me" conveys SMC's official position on manatee encounters: "Save the Manatee Club is not opposed to being in the water when manatees are present. However, we are concerned about people interacting with manatees" (Save the Manatee Club 2001). It includes touching among other forms of interactions (e.g. riding and feeding) that "may be considered harassment under the Endangered Species Act (ESA)." Save the Manatee promotes passive observation and advises people that it "is the best way to protect manatees and all wildlife." The "look, but don't touch" ethic still provides great benefits to the observer: "By quietly observing manatees, you will get a rare opportunity to see the natural behavior of these unique animals."

Finally, SMC believes that passive observation of manatees would have an equivalent draw. Carrie discussed the popularity of Blue Springs State Park, located on the St. John's River in eastern Florida, where people gather in large numbers in the winter to view the manatees:

All the people can do is gather along the shoreline, and they go in droves. You can't get into that park in the wintertime. The line is around the block. The people go, because, you know manatees are not exciting to watch. [Laughs] I mean, they're coming up, they're going down. [Laughs] Big deal. But, people are going in droves and going back, and back, and back.

Summary of Stakeholder Perspectives

Stakeholder groups discussed in this chapter maintain different perspectives on manatee encounters. For some groups—Save the Manatee Club and the Florida Marine Research Institute—perspectives are based on the costs encounters may exact on manatees in the long term and the difficulty in detecting these impacts. Thus, they maintain an “err on the side of caution” orientation. The Fish and Wildlife Service differs with the previous groups even though it has a similar mandate to protect wildlife. Its perspective is that the manatee ultimately benefits from an increased constituency. Additionally, the Service makes decisions regarding encounters based on scientific evidence, not from a planning perspective. Currently, there is no evidence to indicate that the costs of encounters exceed the benefits. Similarly, the USGS Sirenia Project believes that it is possible to provide manatee encounters and protect manatees at the same time. Cy's perspective is the result of 15 years of fieldwork in Crystal River, during which time he has not seen any evidence to persuade him that the costs are too great.

The business community and participant perspectives differ from the advocacy group and agencies in that they seek personal benefits from manatee encounters. The business community, including the county's tourism agency and local businesses (including tour operators) benefit economically from the attraction of the manatee. Their motivation to protect the manatee varies significantly within this group but most recognize the need for protection efforts, if not for the manatees' sake then for the sake of preserving their ability to provide the experience.

Participants also seek personal benefits from manatee encounters. These benefits can come in the form of thrill seeking, experiencing nature, participating in a unique

experience, and/or having a spiritually moving experience. In the data presented here, the last two were specifically identified as benefits derived from encounters.

This chapter reveals that perspectives on manatee encounters tend to vary based on how stakeholders judge the benefits and costs to manatees and/or themselves.

Stakeholders raise issues in light of these perspectives. The main issue surrounding manatee encounters is the protection of the manatees themselves. Human interactions with wildlife, in general, can have negative consequences for target species. Harassment regulations prohibit human behaviors that are potentially harmful to an endangered species. In the next chapter, I explore this issue of manatee protection by identifying what occurs during an encounter and how stakeholders interpret the encounters in light of harassment regulations.

CHAPTER VI

MANATEE PROTECTION ISSUES

In this chapter, I first identify what types of interactions occur in Crystal River and then I examine how stakeholder perspectives influence their definitions of harassment and thus their interpretation of the policy on harassment. Additionally, I explore the way these interpretations influence the issues stakeholders perceive as salient to manatee encounters.

In Crystal River, the Fish and Wildlife Service has interpreted the harassment definition of the ESA in a way that permits participants to physically interact with manatees as long as the participants allow the manatee to dictate the encounter. This differs from other stakeholders, such as Save the Manatee Club, who believes that the encounter, regardless of how it occurs, is harassment simply because interactions with humans is not normal behavior for manatees. Operators and participants differ in that they tend to define harassment as direct harm to the animal rather than disturbance of the animal.

While definitions of harassment differ regarding encounters, each group is, or should be, interested in protecting the manatee. Managing agencies and advocacy groups work to fulfill their mission of delisting the manatee from the endangered species list. Some participants want to protect manatees so the resource can be enjoyed in the future. Some members of the business community seek to protect manatees in order to preserve the manatee tourism industry.

The desire to protect manatees in Crystal River is a common goal among stakeholders but differences occur over the level of protection. As discussed in the previous chapter the refuge's efforts to minimize harassment are complicated by its inability to regulate use and visitor behavior. Over the past decade, visitation to Crystal River has increased dramatically. This is evidenced by the increase in the number of operators as well as an increase in the number of boats per operator. Consequently, there is concern that participants are inadequately educated regarding the encounter

guidelines. Additionally, density at the encounter sites has increased to such a degree that enforcement efforts have become less effective.

While stakeholders all seek to protect manatees, their conceptions of harassment differ and, therefore, so do their perspectives on the appropriateness of encounters. Refuge efforts to minimize harassment are thus influenced by pressures to maintain and/or enhance the local tourism economy while ensuring manatee protection.

Understanding the Nature of Human-Manatee Interactions

Interactions or encounters with manatees in Crystal River involve boating, SCUBA, and snorkeling. Users may rent boats to observe manatees from the surface at the encounter areas. Others get into the water and experience them via snorkeling. The goal of SCUBA participants generally is not to interact with manatees (photographers, however, may use SCUBA to photograph manatees) but to receive certification or explore the cavern at the Main Spring. Therefore, SCUBA divers interacting with manatees is not as frequent.

An interaction or encounter occurs when the behavior of the participant and/or the manatee is affected by the other. The participant or the manatee may initiate interactions. Outcomes of the interaction can include physical contact, passive observation, or departure of the animal (i.e., the animal may leave; Figure 10). Physical contact results when a manatee approaches or allows an approaching participant to touch it during an interaction. Contact can be classified as harassing or non-harassing. Non-harassing contact includes “touching” and “petting,” and “playing” (see Chapter V).

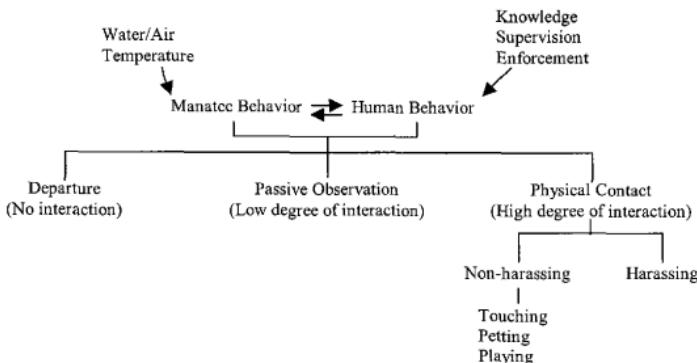


Figure 10 Initial outcomes of manatee encounters.

These levels of contact—touching, petting, and playing—indicate an increasing level of intimacy of an interaction. During one encounter trip, I was floating on the surface at the Main Spring when a manatee passed below me. I reached out and touched it but it kept moving. This was “touching.” When a manatee remains for a sustained period of time in response to touching, it can be described as “petting.” “Playing” occurs when the manatee “bonds” with the participant (*see Chapter V, p. 49*). Physical contact may not be the focus during this interaction but physical contact is required to achieve this level. Tim, a veteran manatee encounter participant, describes how he played with a manatee:

When it plays sometimes it goes beyond just scratching. Like that one the one year that I was with [the manatee] for so long, I was actually diving down into the water and doing barrel rolls and he was doing the same thing. I mean we just had a blast. And we literally played. It wasn't just, you know, pet. We literally played. We were doing water acrobatics and following each other around and just swimming. And it was a lot of times I wasn't really even petting him. We were just goofing off in the water.

Passive observation occurs when a manatee tolerates human approach and ultimately responds by continuing its natural behavior. This outcome usually occurs in one direction—when the participant approaches the manatee. Not disturbing the animal is implicit in the definition of passive observation yet people engaged in this can affect manatee behavior through loud noises, close approaches, and movement (e.g., swimming).

Departure in the context of the interaction refers to a manatee leaving the area of an encounter (with no implication of resulting harm to the animal). It may occur at any time during an interaction and is often caused by human behavior. A manatee's departure may be caused by human approach (e.g. splashing) or physical contact. Furthermore, participants may cause manatees to depart even before getting in the water. Throwing in a boat anchor or approaching manatees with boats may cause manatees to leave an area. In these cases it is a one-way interaction—human behavior affects manatee behavior. In many cases, participants are unaware of the manatee's presence and the consequences of their behavior. The consequences of departure are that manatees may move to an area of similar (leaving) or inferior habitat (displacement).

There are additional factors that influence both human and manatee behavior during an interaction, and, therefore, influence the outcome. For example, manatee behavior is influenced by water temperature. It is commonly understood by operators that the colder the temperature, the more successful the outcome⁵. Some operators say that the colder weather makes the manatees more sociable.

Factors that influence visitor behavior are knowledge of encounter guidelines, the level of on-site supervision, and the presence of formal law enforcement (Figure 10). Stakeholders accept the notion that those that are better educated regarding regulations, which include boat speeds, sanctuaries, and harassment, are less likely to behave inappropriately. Furthermore, inappropriate behavior is attributed mostly to users in rental boats, personal watercraft, and on bare-boat charters, suggesting that supervision plays a key role in mediating behavior. Finally, the formal law enforcement effort of the

Fish and Wildlife Service is considered to influence the occurrence of inappropriate behavior.

Understanding Harassment

Regulatory definitions leave much ambiguity to what actual behaviors constitute harassment. To put the issues surrounding harassment into context it is necessary to discuss in some detail the definitions of harassment held by stakeholders in the manatee encounter arena. While the enforcement effort in Crystal River is based on the Service's definition, other stakeholder definitions set the tone for the overall acceptability of encounters. This section begins with a comparison of the regulatory definitions of harassment used at the federal and state level. Then, it examines how stakeholders identify harassment and how they operationalize their definitions in the field.

Formal Definitions

Harassment is described in the literature as human behavior that causes stress in an animal that increases the physiological costs of survival or decreases the probability of successful reproduction (see Neil, Hoffman, and Gill 1975). Events that cause stress are a natural occurrence in nature, but harassment due to harassment is a concern because of its potential to have an undue negative effect on an individual animal, a population, or an entire species.

Because of the potential for harassment to negatively affect wildlife populations, especially endangered species, wildlife protection laws prohibit it. Three acts contain harassment regulations applicable to manatees: the Endangered Species Act of 1973, the Marine Mammal Protection Act of 1972, and the Florida Marine Sanctuary Act of 1978 (Table 2). The Endangered Species Act regulation on harassment and the Florida Marine Sanctuary Act share the same definition with the exception that the latter is specific to manatees and includes feeding as a specific harassing behavior. The 1994 amendments to the Marine Mammal Protection Act of 1972 contains a two-part definition of harassment. "Level A" harassment is defined as having the "potential to

⁵ Operators define *success* as getting all participants to touch, pet, and/or play with manatee during an outing.

injure a marine mammal...in the wild." "Level B" harassment is defined as having the "potential to disturb a marine mammal...in the wild."

Table 2 Comparing definitions of harassment.

Endangered Species Act 1973, U.S. Code of Federal Regulations	Florida Marine Sanctuary Act 1978, Florida Administration Code	Marine Mammal Protection Act 1972 (amended in 1994)
50 CFR 17.3	68C-22.002(24)	16 USC 1362 §3(r)(1)
An intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering.	Any intentional or negligent act or omission which creates the likelihood of causing an injury to a manatee by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include breeding, feeding, or sheltering. The intentional provision of any type of food to manatees not in captivity shall be considered harassment under this definition, unless authorized by a valid federal or state permit.	Any act of pursuit, torment, or annoyance which: (A) has the potential to injure a marine mammal or marine mammal stock in the wild [Level A]; or (B) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering [Level B].

The main disparity in definitions occurs between the Endangered Species Act and the Marine Mammal Protection Act. The 1994 amendments to the MMPA recognize two levels of impact, the potential to "injure" and the potential to "disturb," while the ESA focuses on the potential for injury. Intuitively, it seems that the MMPA definition is more clearly delineated and therefore should be enforced during manatee

encounters. In reality, the Service has derived its interpretation from the ESA. David Wilcox explained that the reason for this is because there has been more "legal application" of the terms harm and harass; whereas, the MMPA is "largely untested."

Stakeholder Definitions

The harassment regulations provide guidance on what harassment is but stakeholders still must interpret how the definitions should be applied in the field. Thus, definitions vary among stakeholders. Definitions of harassment are closely aligned with stakeholder perspectives on manatee encounters discussed in the previous chapter. Those that believe encounters have benefits tend to have a more liberal definition of harassment than those that believe encounters are "not in the manatee's best interest." These definitions then influence a group's overall willingness to accept the encounters that occur in Crystal River.

I begin with the Save the Manatee Club because this group provides a useful typology of harassment. The Club, while understanding that some behaviors are more, what one employee terms, "egregious" than others, views the encounter itself as harassment because interaction with people is not the manatees' natural behavior. However, in viewing interactions in Crystal River, Stephanie, a 10-year SMC employee, generally judges harassment along two dimensions. First, harassment can be major or minor depending on the degree of potential negative impact. Second, harassment can be defined as intentional or unintentional depending on whether the behavior is directed toward a manatee. Because the Club's "what's good for the manatee" perspective centers around removing human influence from the survival equation, its overall definition of harassment is very strict. It believes, as Stephanie explains, that any human interaction is harassment:

[If] there's a person right here and it has to make an evasive maneuver to get around that person, I consider that harassment. I think that anything that alters not just natural behavior, which is the standard, but just gets in their way, is harassment for me.

I described an incident to Stephanie from my own experience where I was kayaking in Kings Bay and unknowingly coasted over a resting manatee, causing it to

depart. Was this harassment? Yes, she responded, because I “bothered” a manatee. However, she described my incident as “on the minor scale” and “permissible” because it was unintentional and almost “unavoidable.” She also added that this type of harassment is probably “tolerable” for the manatees because I was in a non-motorized boat and, “if it happened very often they’d pick another place to sleep.” In contrast, she described disfiguring a manatee as “egregious” harassment because the action is intentional and has a potentially high degree of negative impact⁶.

Egregious behaviors are what David Wilcox from the Fish and Wildlife Service terms “undisputable” harassment. That is, these are behaviors that all stakeholders generally agree are harassment because they have the greatest potential to cause harm to the manatee (Figure 11). He lists examples such as “pursuit,” “poking,” and “wounding,” all of which can be classified as behavior directed toward a manatee during an encounter. Unintentional harassment, however, occurs when a behavior is not directed toward a manatee but still has a high potential to cause harm. For example, this occurs when a manatee is displaced into inferior habitat. Excited participants who splash, flail their arms or legs, or yell can unintentionally cause displacement. Intentional disturbance may occur when a participant follows a manatee causing it to retreat to a sanctuary. The participant directed his or her behavior (i.e. following) toward the manatee but the potential degree of impact is relatively minor.

This typology is based on my interview with Stephanie and therefore applies specifically to SMC. Other stakeholders may agree with the general typology but not with the classification of acts as harassment. For example, there is disagreement between stakeholders on whether physical contact, or “touching,” is a form of harassment. Some stakeholders, such as operators, would not classify touching as a form of disturbance whereas, SMC would consider touching to be harassment.

The only area of agreement between stakeholders within this typology is undisputable harassment. For example, manatee-encounter participants tend to focus on

⁶ Specifically, Stephanie referred to a story of a manatee having initials carved in its back. She is skeptical of the story saying, “I can’t imagine a manatee sticking around for that.”

direct harm behaviors cause to an animal rather than the effects of disturbance. Because operators serve as the experience provider, new participants will take their cues regarding harassment from them. In his speech, Operator 2 explains that touching a resting manatee that is surfacing to breathe is analogous to someone, "crashing a pair of cymbals next to you as you sleep." As a result, his participants tend to refrain from touching surfacing manatees because they learned that it is inappropriate behavior. For other participants, this may be the only opportunity they get to touch a manatee. For example, I accompanied participants with Operator 10 on a warm day when manatees were dispersed throughout the bay (and opportunities to view and interact with them were scarce). After no success at the Main Spring, the operator finally found a cove with two resting manatees. The manatees surfaced to breathe approximately every five minutes. When the captain spotted a manatee, he would yell directions to his participants so that they could touch the animal. No petting or playing occurred; the manatee submerged immediately after breathing.

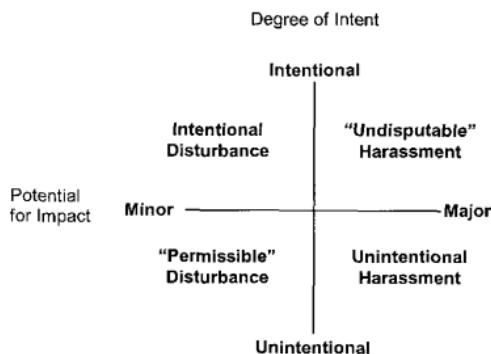


Figure 11 Dimensions used by SMC to judge harassment. *Note.* Because there is no real consensus on harassment at the minor level I have chosen to use the term "disturbance" for the purposes of distinguishing major and minor impacts.

Operators and agencies will describe some participants as “losing their heads” or going “berserk” once they enter the water, implying that participants with good intentions lose their awareness regarding harassing behavior. While their behaviors may not always be as extreme as described above, people may lose an understanding of what constitutes disturbance once they are in the setting. In an effort to have an optimal encounter their definition of harassment may change from a focus on disturbance, which is conveyed through educational messages, to a focus on direct harm.

To illustrate the idea that participant’s ideas of disturbance may change once they are in the setting, I describe behaviors witnessed during my first observation at the Three Sisters encounter site in early January. In these incidents, which occurred over a 2-hour period, manatees were not directly harmed but they appeared to have been disturbed because their normal behavior was changed. First, I watched as a father yelled at his son who was actively pursuing a manatee. His son responded by slowing the pace of his pursuit but not aborting it. I later observed a Manatee Watch volunteer stop three participants in pursuit of another manatee. Soon after that, a woman and her daughter approached a manatee resting on the bottom in shallow water. They reached down and touched the manatee causing it to depart. Another person violated the sanctuary boundary in an attempt to interact with a manatee. Later, a couple with two small children arrived in a canoe. From the canoe they pursued a swimming manatee in order to allow their children to get a close view. Finally, I observed woman snorkeler actively pursue a manatee until Operator 3 was able to get her attention and admonish her.

Harassing behavior may decrease with experience as participants learn that manatees are most responsive to calm, still people. Tim and Alicia, 14-year veterans of the experience, know how to successfully encounter manatees. They can interact with the same manatee petting and playing for hours. They described harassment in very specific terms. For example, Alicia said actively “kicking your fins” is a form of harassment because it implies that a participant is pursuing a manatee. They defined pursuit as “following that animal when that animal is clearly turning to go in another direction.” It is possible that harassment definitions evolve based on experience. That

is, definitions begin with what operators teach as harassment but may become more specific as participants become more comfortable with the experience.

The business community, of which operators are an integral component, then has an important role in conveying what constitutes harassment during a manatee encounter. Within this group, perspectives vary widely. The tendency is to be lenient on the definition because the term has historically been used as justification to restrict activity (e.g., the creation of Three Sisters Sanctuary). Again, however, business owners identified behaviors that fit under the “undisputable” harassment category of SMC’s typology of harassment including chasing, riding, feeding, and separating a cow/calf pair. Of this group, the operators’ conception of harassment is important because they are usually the primary contact for visitors. Thus, visitor behavior stems from what the operators inform them about harassment.

Operators varied in their conception of harassing behaviors but, like participants, generally view harassment as harming the animal rather than disturbing it. I asked Operator 1, highly regarded by the Fish and Wildlife Service, about displacement. She replied that manatees cannot be displaced because the refuge has “roped off all the warm water.” She also discussed disturbance saying that there is no “real consequence” from causing a manatee to move 25 yards to another feeding spot. She asked, how could there be? There are more manatees than ever. Other operators see no harm to manatees because they have never been “pet to death.” One operator commented, “people aren’t hurting the manatees. You don’t see snorkel tubes sticking out of their heads or anything, right?”

Encounter operators showed awareness of harassment regulations by providing participants with behavioral guidelines: Do not dive down on manatees; No more than 6 people can interact with any one manatee (to avoid surrounding); Do not kick your fins (to avoid pursuing the animal). Operators also make distinctions that other groups may not. They may define “chasing” as a form of pursuit but not “following.” For example, on a trip with Operator 4, eleven participants (including myself) got into the water and began “following” a mother and calf as they moved up the Homosassa River feeding. A

woman stood up declaring that we were not allowed to chase the manatee. At this, a teenage girl responded that we were not “chasing,” we were “following” them. The captain then placated everyone saying that this “following” behavior was okay because the manatee “do this everyday” and are used to people. After this, the entire group followed these manatees a few hundred feet up the river, touching them as they surfaced to breathe; and, when it was shallow enough, some touched them as they foraged on the bottom.

Regulatory agencies, charged with manatee recovery would intuitively seem to have a strict definition of harassment. However, the line separating appropriate behavior during encounters and harassing behavior varied among agencies. As long as the manatee is allowed to dictate the interaction, the Fish and Wildlife Service permits people to encounter manatees. Its position is, if people are floating quietly on the surface and if a manatee approaches, the participant can reach out one hand (two-hand touching may be considered riding) and make physical contact with the manatee. The refuge operationalizes harassment through a set of guidelines provided to participants through its literature and in the “Manatee Manners” video that define specific harassing behaviors (Appendix D). Although these guidelines are not directly enforceable they provide parameters within which people are expected to act.

This interpretation of harassment is not restricted to the refuge or manatees; it is applied at a Service-wide scale. That is, a person who follows these guidelines can interact with any manatee in Florida or any other federally listed animal, from a key deer to a grizzly bear, as long as they adhere to the same or similar guidelines⁷. However, most people do not pursue interactions with other listed animals because of safety concerns.

The Service’s definition of harassment is primarily influenced by what is provable in a court of law. As a result, the Service is much less likely to write cases except for the most egregious violations. For law enforcement to cite someone for harassment the officer in the field determines whether the citation will “stick” in a court

⁷ This is true unless rules are specifically created against interactions with a certain species.

of law. That is, the officer will have to articulate beyond reasonable doubt that the participant's behavior "significantly altered" its natural behavior and must show "harm" to the animal. Additionally, officers also must show that the person knew or should have known the particular behavior was harassment.

Refuge law enforcement officers operationalize harassment in two ways, by stopping people and educating them and by writing citations. Darren, an officer that worked at the refuge for 5 years never actually cited a person for harassment; and, Tim, a current officer, has not written a case in "a few" years. Because the enforcement of harassment is difficult, Tim stops people behaving inappropriately, instructing them that they cannot engage in such behavior. He says if he sees the same person harass a manatee after he stops them, he then can successfully cite them.

Because the Service is the primary management agency involved in determining the suitability of manatee encounters, Figure 10 can be amended to include its definition of harassing and non-harassing behaviors (Figure 12). This currently reflects the way in which encounters are enforced, although what is enforced is an issue in itself and is discussed below.

The role of the research arm of the federal government is to investigate impacts to manatees and make recommendations to the managing agency. Thus, because of the agency's advisory role, its definition of harassment can potentially have significant influence on the nature of interactions with manatees. Cy Renhia, the USGS Sirenia Project's biologist who focuses on Crystal River, has an overall positive perspective on manatee encounters. Cy has a broad-scale definition of harassment saying that the artificial warm-water refuges created by power plants have significantly harassed manatees, resulting in a major change in their behavior. The consequence of this large-scale harassment, he believes, is that the last manatee will starve to death rather than be hit by a boat.

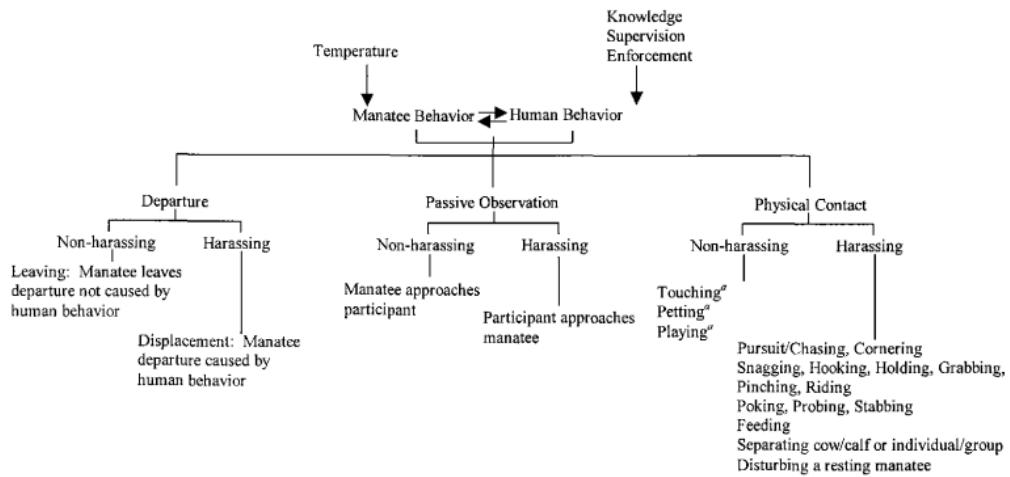


Figure 12 Outcome of manatee encounters using the USFWS definition of harassment. ^a, non-harassing physical contact is one-hand, open-hand touching.

In Crystal River, his concern is not as strong or ominous. It is of primary importance to him that the manatees have places to get away from human touch or to avoid humans altogether. Regarding harassment, he says that, "it's only a few that probably do what we could constitute or what anybody would constitute as real true harassment, where they're actually disrupting or changing the behavior of the animal." Harassment, he says, has not really changed since he began in the setting 15 years ago other than the "total number of people."

His concern regarding harassment would be significant if he saw that impacts were occurring to manatees. For example, he would be concerned if he repeatedly saw a female who was not reproducing: "Is she aborting fetuses because of herbicides or is she not getting pregnant because too many people are patting her on the back?" Thus, as a biologist he is looking for evidence that manatee encounters cause negative impacts.

The official state position on manatee encounters is that encounters, as they currently occur, are "not in the best interest" of the manatee (Behrendt 2000). Allison and Alex, employees with FMRI, have a strict definition of harassment. They view harassment as it is defined in the literature (see Neil, Hoffman, and Gill 1975), as any human behavior that increases the physiological costs of survival. Thus, they focus on the negative impacts that may occur because of encounters. For example, repeated disturbance by encounter participants can result in cumulative impacts that may be undetectable by scientists. Alex also explained that people have no basis for judging whether an interaction disturbs a manatee unless the manatee is disturbed to such an extent as to depart. Thus, harassment can be insidious and undetectable, with significant potential for harm. Even seemingly innocuous behavior such as touching a manatee can be considered harassment.

Minimizing Harassment

The Fish and Wildlife Service uses the tools available to it in order to minimize manatee harassment by encounter participants. Speed zones, sanctuaries, and enforcement of harassment regulations are the primary ways the refuge controls user behavior. Additionally, the special-use permit, issued to operators that utilize the Main

Spring swim corridor, requires them to educate their users regarding the regulations and encounter guidelines. Manatee Watch Volunteers also keep an eye on on-site behavior and educate participants at the encounter areas about the rules and the manatees. Despite these efforts, its ability to control user behavior, and thus minimize harassment, is primarily affected by the dramatic increase in visitation over the past decade. This increase in use (along with the indifferent attitudes of some operators) then dilutes the effectiveness of the refuge to educate users and enforce behavior. Consequently, the refuge cannot manage the setting in the way it would like.

The first concern is that increasing numbers of participants are creating a greater density of people in manatee encounter areas. With this increase in density comes increased pressure on the resource as well as changes in the social setting (e.g., crowding). Additionally, education efforts vary both between operators and according to the way in which participants access the resource (i.e., guided tour, rental boat, personal boat). Supervision and enforcement of participants is also problematic because the level of supervision varies by operator, and the refuge's effort to enforce behavior is confounded by staffing issues, their level of activity, and the standards used in citing violators.

Density

Based on my observations, concern about controlling participant behavior appears to increase as the number of people participating in manatee encounters increases. The refuge currently estimates that 100,000 visitors use the refuge each year (Eileen Nuñez, pers. comm. 2000). Encounters are concentrated in the two primary areas in which manatees congregate, the Main Spring and Three Sisters Spring, and two secondary areas, Warden Key and Magnolia Spring (Figure 7, page 37). The result is a high density of boats and people in these areas, especially on weekends.

Today there are at least 13 operators who provide tours. In 1990, Shackley (1992) reported just five operators. Furthermore, in the past two years, the number of operators in Crystal River has increased directly due to increased demand for manatee encounters. Additionally, the number of boats per operator has increased. Operator 2, a

single-boat operator, said that he increased his capacity by changing from a skiff to a pontoon boat. The impetus was his perceived increase in demand by groups of 10 to 13 people, a size he previously was unable to accommodate. Other operators have added boats to their operation each year to accommodate demand. Jesse, a resident who lives adjacent to the Three Sisters encounter area, raised concern about this during a discussion about the increased popularity of manatee encounters:

With all the advertising...it seems like this year there's three or four more dive groups, dive captains, places in town where you can rent a boat or go out with a group. And I think that'll continue to go on for as long as it's popular. So pretty soon, we'll be stepping on them [Laughs]. You walk from boat to boat."

Walking from boat to boat was a way to convey a perception that high density equals crowding in the setting. When I commented on the high number of boats at the Main Spring encounter area one day an operator replied, "This is nothing. I've seen 40 boats out here." To this, a refuge law enforcement officer added, "There are days when you can walk from boat to boat to boat."

An increased number of boats also causes concern regarding user conflicts. This is the case at Three Sisters Spring. This popular site occurs along a relatively narrow canal and Jesse's husband has seen over 20 boats lined along the sides of the canal. Jesse reports that her neighbors become upset because the navigable channel becomes clogged with anchored boats and snorkelers through which they have difficulty maneuvering.

Another issue raised associated with operators was the number of people on guided tours. Operator 7 runs one of the largest boats averaging 34 participants per outing, but the operator's boat can hold up to 49 people. Some guided tours carry 10 to 15 participants. The smallest operator in the area handles a maximum of 6 participants. Concern with the larger boats is in the ability of the boat captain to supervise the behavior of a large group. Operator 3 is a one-boat operation that carries no more than 10 passengers. In an interview with Steve, the owner, and his wife Marta we discussed this issue. Steve pointed out other operators who can carry 40 people on their boats. The trend, he said, is toward guided tours. Marta, however, does not believe this is

necessarily a good trend saying that “it’s still 40 heads going” to encounter manatees. To her, that group size is too large to manage.

With increased numbers of boats comes an increased number of people using these areas and, therefore, an increased perception of crowding. This can be illustrated by the way in which operators were talking to each other on a busy Presidents’ Day weekend. On a Saturday, I was shadowing a refuge law enforcement officer and listening to an exchange over the marine radio. One operator was at Three Sisters and the other at the Main Spring. They described the crowds at each site in terms of “millions of people.” One operator said that there were 3 million people down at the Main Spring. At this, another operator, who was at the Main Spring, playfully interjected, “I have to correct you. We only have 1.5 million people.”

The operators understand the impact that high density can have on the visitor experience because it creates a perception of crowding. A former operator discussed this concern telling me that during the formation of the Three Sisters Spring sanctuary he suggested that the operators collectively develop a way to spread out the use because he was concerned that the experience was, “losing some of its quality.” He continued saying that: “When you’re talking about an ecotourism experience you’re talking about relatively limited numbers of people. And if you drop 100 people at Three Sisters Springs all at one time that’s pretty significant.”

The quality experience is also diminished because large numbers of people in relatively shallow areas have a negative impact on visibility. Operator 2 told me in an interview that if there are 2 or 3 boats at the Three Sisters encounter area he will not stay and “add to the problem.” The problem, he said, is that, “the water gets stirred up and you can’t see.”

Because operators understood the impact crowding can have on the visitor experience some began providing tours earlier in the morning to avoid these crowds. Operator 7 described this shift saying, “I was the very first person in this area to do 7:00 A.M. trips...[Operator 2] and I and [Operator 1] had a big fight about that’s too early and

people won't come and you'll never have any customers. And now, what time do they go out? 6:15 A.M."

While this shift may have originally been to avoid crowding that reasoning has changed. In an interview with Operator 2, I asked if it was important to be the first one out in the morning (7:00 A.M.). He said that he comes early because it's cooler and manatee "moods" can "change with air temperature." Additionally, he says the timing is good because participants are usually cold by 8:30 A.M. or 9:00 A.M., when the rental boat users are just arriving. As for coming early in order to provide a certain experience, such as solitude, he smiled and said, "I tell them there isn't going to be any of that."

In addition to visitor experience impacts, manatee behavior may be affected as well because participant behaviors that may not be disturbing to the manatee at lower levels may be potentially harassing at higher levels. When density is high, the ratio of participants to manatees increases. Consequently, there are more people attempting to interact with a single manatee. Don Matthews, a former refuge employee, describes this as "trying to get five pounds of manatees and ten pounds of people into five-pound sack. It doesn't fit." The consequence is that it may result in avoidance behavior. For example, when a manatee surfaces to breathe, it often casually floats up to the surface. Sometimes, however, groups do not allow manatee to "come up for air." This means that the manatee must swim away from the group in order to surface without being touched. One operator describes his observation of other operators at a manatee encounter site:

I've seen the captain of one of the tour boats swimming away cursing saying the damn animal can't even come up for air. He was pissed off with his own group...He's getting paid from the company to do this...He's just doing his job and he even sees that there's too many people in the water.

Around Three Sisters Sanctuary people often stand and float around the sanctuary watching the manatees inside. When density increases, however, people stand shoulder to shoulder around the perimeter of the sanctuary. A nearby resident describes the scene as, "a little zoo." He explained:

All these people line up around the sanctuary perimeter and look at the manatees and wishing the manatees would come out and...out of the sanctuary and I'll see a manatee come ...and all of a sudden—Zoom. People would just start with the manatees. The thing is the manatee gets tired of the people. It goes right back to the sanctuary (P75:32, 611:617).

Table 3 summarizes the perceived effects of increased density on the social and biophysical setting as discussed in this section. However, not every one agrees about density and crowding. Operator 4, characterized as generally unconcerned for manatees and held in low regard by some other operators, says they avoid the crowds only because of the social conditions—crowds do not necessarily affect the manatee. Some manatees, she said, are not skittish. A person could “fire a gun” and not bother them. This operator asserts that neither density nor behavior affect the manatee, while others suggest that density itself is a significant issue.

Other operators suggest that density is not the issue but that visitor behavior is the key factor affecting manatees. This theme repeatedly surfaced throughout the field study. Operator 7 did not define crowded as a numbers issue. Instead he described in terms of visitor behavior: “If we had 30 people in the water and they’re all doing exactly what they’re supposed to do it wouldn’t be a crowded situation. If you have 4 people jostling and trying to get in there and trying to touch the manatee and trying—it becomes crowded. The appearance is that it’s crowded. So for me it’s not a numbers thing.”

Operators generally hold the view that behavior has a more significant impact on manatees than density. One operator explains this when asked if the number of people has an effect on the manatees:

If everybody’s doing what they’re supposed to do, no. If you’ve got a bunch of people doing something they’re not supposed to do, yeah. I mean, I’ve been swimming with manatees before where you’ve had to push them out of the way because they won’t leave you alone. Then I’ve had other experiences where they don’t want nothing to do with you. So it just all depends on how you behave. You could have large group of people doing the right thing at the right time and have no effect on them.

Thus, according to operators, the number of people in the water may not be as significant a factor as controlling their behavior. The tools used in Crystal River to control behavior are education on the rules and guidelines for interactions, supervision of participants,

and formal law enforcement. Increased use is a concern regarding efforts to control behavior because it dilutes the effectiveness of education and enforcement efforts. Consequently, education and enforcement are issues in themselves.

Table 3 Perceived impacts of density by some stakeholders.

Stakeholder	Impact
Operator	Loss of ability to provide certain experiences (e.g., solitude) Decreased opportunity to provide successful manatee encounters
Participant	Decreased quality of social setting Loss of solitude Increased perception of crowding Decreased visibility Decreased opportunity to encounter manatees
Resident	Loss of privacy Decreased ability to navigate waterways
Manatee	Increased likeliness to be disturbed or harassed May be confined to sanctuary May increase avoidance behavior

Education

Literature on minimizing recreational impacts on wildlife emphasizes education as a key management strategy (see Orams 1996). Issues surrounding education primarily focus on the inability of tour operators to effectively minimize harassment. Stakeholders, including participants, the refuge, SMC, as well as some operators, recognize that some operators fail in their ability to educate users.

An examination of operators reveals that their efforts to educate users vary from none to a comprehensive effort (Table 4). Most guided tour operators show the required “Manatee Manners” video and provide an additional talk on how to successfully interact with manatees. Those that do not show the video usually provide a more extensive talk on interaction rules. Some operators also emphasize the rules by providing reminders to

their participants en route to the encounter site. Operator 7 is the most extensive educator, providing a seminar that includes information on manatee natural history and conservation.

Table 4 Information provided to participants by operators.

Operator 1 ^b	Operator 2 ^a	Operator 3 ^a	Operator 4 ^b
“Manatee Manners” Video Additional talk (in dive shop)	Talk (en route)	“Manatee Manners” Video Additional talk (en route)	“Manatee Manners” Video Reminders (en route)
Operator 8 ^c	Operator 6 ^b	Operator 7 ^a	Operator 11 ^b
No effort	“Manatee Manners” Video (on loop) Additional talk Reminders (en route)	Sit-down seminar Natural history Threats Recovery Efforts Rules Reminders (en route)	“Manatee Manners” Video Additional talk (en route)

^a Only provides guided tours

^b Provides guided tours and rental boats

^c Provides only rental boats

Indifferent operators (*see Chapter V, page 57*) provide their participants with minimal education. Operator 8 makes relatively little effort to even show the required video. Operator 6 puts its video on a loop directing their participants to be sure to watch it before they leave. Other operators sacrifice effectiveness for efficiency. For example, Operator 2 does not show the video. Instead, he talks to participants en route. When I accompanied one of his tours, a woman was trying (with much difficulty) to squeeze into her wetsuit. The operator repeatedly interrupted his talk to help her. In addition, he was repeatedly interrupted by the marine radio. This method of delivery,

according to Operator 7, who provides an hour-long sit-down seminar, dilutes the effectiveness of educational messages:

I don't care what the operators tell me, when you're onboard the boat and the wind's blowing just like it's blowing right now [about 10 mph] and you're driving out to the site and you've got 12 or 13 minutes and people are putting on their wetsuits and talking amongst themselves, they can't be educated. You can't focus on all these things at one time and hear everything you need to hear...There's no way. You've got to get people. You've got to isolate them. You've got to put them in a classroom environment and say, "Okay, you need to listen to this because if you don't listen to it you can't do this."

Additionally, efforts to educate participants vary between guided tours and rental boat users; those who do the latter receive less information and guidance. Tim Rich, a refuge officer explains the difference:

When somebody goes in and rents a boat from a local dive shop, they get a "Manatee Manners" video, they get the literature that's handed out and then they're basically cut free. They don't have, you know, a certified boat captain or someone that's very familiar with the resource, you know, as an educational guide through their experience with the manatees.

Operators also tend to focus their talks on encounter success rather than on manatee protection or conservation. In his additional talk, Operator 11 tells his participants the, "right way to approach a manatee, how to scratch them, how to get them underneath and let them roll—little tricks." For example:

The mossy ones, leave alone because they don't like to be messed with. The ones that are clean like a dolphin are the ones that have been scratched. They are more friendly. Leave the barnacled ones alone because the barnacled ones are going to cut your hands apart, you know. They just come in from the ocean. They got the barnacles. Leave them alone. Find the ones that are smooth. The ones that come to you are going to play with you. The ones that swim away from you let them swim because maybe they'll stop and they'll turn and they'll come back to check you out.

This is a concern for Stephanie, with SMC, who says that operators need to convey conservation messages. Save the Manatee Club believes that education can voluntarily influence the behavior of individuals although, Stephanie posits that such an

effort would take at least a decade. She adds: "If the problems that we see escalate then maybe we can't wait that long."

Finally, there is concern regarding participants who access the manatees through use of private boats because there are relatively few ways to educate them. As Tim describes, this group is most likely to "make mistakes." He explains:

They have the information provided by the AM 1610 radio station (from the signs that they can view as they come into Crystal River to get some type of information). And then at the boat ramps they have more signage that tells them the do's and don'ts and provides a little bit of education on the speed zones and the definitions that we look for. And then they get out into the bay and they see an enormous amount of signage for the different speed zones and sometimes it's pretty confusing. They don't have appropriate guidance, in my opinion, because there's so many different regulations out there that they don't know.

While recognizing the role education can play in behavior change, SMC believes that there is a point in which education becomes ineffective. This, says Carrie, occurs when numbers become too great. In this case she is speaking in terms of the increase in boating in the state, but the same principle applies to Crystal River:

Education is the kind of foundation that you always...have to have...But I think, personally, that regulation and enforcement are the keys...And I think that, as an institution, I would say that's what we believe now...It's just a no-win situation. Unless we regulate people...unless we manage people and regulate their behavior...we don't stand a chance.

Supervision and Enforcement

Simply educating participants on the rules of manatee encounters will not minimize harassment. Operator 7 explains that regardless of how well his participants are educated, some are going to behave inappropriately. In Crystal River, the refuge enforces regulations including speed zones, sanctuaries, and harassment. As part of the enforcement equation, the refuge relies on guided tour operators to supervise encounter participants. Operators do this to varying degrees (see Chapter V, page 55). For example, Operator 7 always has at least one staff member in the water to supervise behavior. They participate under the guise of finding manatee, but really, he says, they are out there to ensure that his participants behave: "From our perspective if you

have...people in the water and a captain on board the boat and we're monitoring it, yeah our people are going to do some screwy things but we're right there to stop it."

Lack of participant supervision is a major concern among Fish and Wildlife Service law enforcement officers, SMC, and some operators and participants.

Participants that rent boats and use personal watercraft are unsupervised and the perception is that these two groups are more likely to violate regulations. Operator 7 suggests that unsupervised participants behave worse than the worst behaved participants on his boat. The reason is because these participants are both uneducated and unsupervised. He suggests that behavior needs to be guided throughout the encounter.

An additional concern is a particular type of rental, the bare-boat charter. The bare-boat charter is much like the rental boat user except that it is a commercial operation using a dive shop's rental boat from which to run their operation. These dive shop operators are from other parts of the state or country and provide manatee encounter trips for participants who travel with them. According to Operator 7, concern with bare-boat charters is that the out-of-town commercial operator is under pressure to provide encounters for the participants that have traveled to Crystal River: "If they don't find [manatees], the repercussion is that later on when they want someone to go on another trip or they want somebody to come again on the manatee trip that it's just not going to happen." These bare-boat charter operators, in contrast to local operators, have no responsibility to educate or supervise the behavior of their visitors.

In addition to operator supervision, one full-time refuge officer and two collateral duty officers formally enforce behavior. All stakeholders, including the Service, identified the lack of a law enforcement presence as one factor affecting its ability to control behavior. Stakeholders perceive the law enforcement presence as low for several reasons. First, there is one full-time officer to enforce these regulations. While visitation has increased significantly over the past decade, enforcement efforts have remained steady. David Wilcox, a refuge employee, believes that increased staff would increase the refuge's ability to control behavior and, thus, minimize harassment:

I'd like to have a better handle on being able to do something about the bad players that come into the area and get in the water and do the things that we don't want them to do. If I had the...personnel to do that, it would make the job a lot easier because we could make it very clear about what people could and could not do. I think we could have more of an impact. We're always kind of making our pitch for more law enforcement capability here. We just have to continue to do that and hope that it works out eventually.

The issue regarding the lack of adequate staffing is not limited to the refuge. Operators and Save the Manatee Club both express concerns. Operator 7 is concerned enough about the lack of enforcement that he has actually inquired about hiring an off-duty officer to accompany his encounter trips.

Second, manatees now congregate in different areas (e.g., they began frequenting Three Sisters Spring around 1994) increasing the territory to be enforced within the bay. Thus, the officer on patrol is responsible for a larger area. Finally, operators criticize the amount of time Fish and Wildlife Service law enforcement actually spends patrolling. Operator 2 expressed his frustration when he discussed the law enforcement presence during Martin Luther King weekend, which was more crowded than expected: "I think [law enforcement] came out and worked a few hours and that was it—no enforcement."

While I was in the setting there was one weekend in which no officer was on patrol. During this weekend, Don Jameson, a resident that lives adjacent to Three Sisters Springs, called the refuge to report sanctuary violators who were trying to coerce a manatee to leave the sanctuary. He called and reported it but the refuge volunteer working was helpless and unable to resolve the problem.

Finally, as discussed in the previous chapter, ambiguity surrounds the enforcement of harassment. The standards required for citing a participant for harassment or speeding are complicated by "gray" definitions, the "knowingly" standard, and the ability to articulate the case in a court of law. For example, operators repeatedly explained to me how the officers' "hands are tied" on citing people for violations.

Specifically, the idea that the issuance of citations are based on a “knowingly” standard, where an officer has to articulate that a violator knew or should have known that his or her behavior was wrong, worries some operators. Steve, of Operator 3, explained to me the knowingly standard and how it influences visitor behavior: “If you come up in a sanctuary and [the officer] comes up to you and says, ‘Mike, do you know you’re in the sanctuary?’ ‘No I didn’t realize this, I’m sorry.’ He cannot write you a ticket.” The concern for Steve is that people aware of this standard will use it to their advantage. He describes an incident in which his wife heard a man tell his children to go play in the sanctuary. He instructed them to say they did not know they were in the sanctuary if they were stopped. Thus, he says, “they’re giving them that advantage out here of saying, ‘No, I didn’t know this.’”

In addition, feeding, considered to be undisputable harassment, has been rendered unenforceable by the federal prosecutors and illustrates how definitions of harassment are shaped, not by biological evidence nor concern for the species, but by what a prosecutor will take to court. Tim, a law enforcement officer, explains that the Service’s stance on feeding has changed since he began working at Crystal River National Wildlife Refuge:

The feeding issue, when I first got here, was an element that the Service backed as, you know, changing the animal’s behavior. There’s been some documentation from a branch within the Service that states that they don’t believe that that alters the behavior of the animal and I was directed not write that type of case. So, what I’ve done is just taken down information under the old standards and talked to them about why they shouldn’t do that and educate them—a verbal or written warning, if you will, so they clearly understand that they can’t do that.

This problem was also discussed at a 1999 Watchable Wildlife Conference in Ft. Meyers, Florida during an interagency roundtable session (Shapiro and Velez-Camacho 1999). The federal government, while it has the ability to enforce state regulations⁸, cannot enforce feeding as one federal officer from the Service’s Division of Law Enforcement said, “for whatever reason.” He continued that:

⁸ The Florida Manatee Sanctuary Act of 1978 specifically identifies feeding as a form of harassment.

Right now, if a person feeds a manatee from a federal perspective there is not much that we can do unless I have a scientist or a biologist who is willing to go on the witness stand, take an oath and say, "This is significant and disrupts the behavior of manatees because...."

Law enforcement ineffectiveness in Crystal River is the result of limited staff, a large territory, the actual time law enforcement spends conducting enforcement activities, and the standards involved with citing violators (Figure 13). It results in a low perception of consequences by unsupervised visitors, and, consequently, visitors may be less likely to behave appropriately. The perceived lack of enforcement is illustrated by Tyler Simpson, a former dive shop operator, believes that the refuge is failing in its enforcement duty:

These Fish and Wildlife personnel need to realize that, "Hey, I've got to work on weekends and I've got to work on holidays because that's when the people are here." There's a good chance that if the personnel was rotated properly and put out on the water when the most people were there that it would eliminate some of these complaints that you hear...If the enforcement presence were there, chances are that wouldn't be happening.

Conclusion

Agency and advocacy groups work to recover the manatee while operators along with the Crystal River business community seek to benefit economically by providing a unique experience for tourists. Despite these seemingly conflicting goals, each seeks to protect manatees (although agreement on the degree of protection varies). In Crystal River the main protection concern is harassment. Inappropriate behavior by encounter participants can result in negative impacts to manatees that can ultimately influence the fitness of the population. Thus, tools used to minimize harassment in Crystal River include the use of sanctuaries, education of participants, and control of behavior through supervision and enforcement of regulations. Of these, groups perceive education and control of participant behavior to be inadequate.

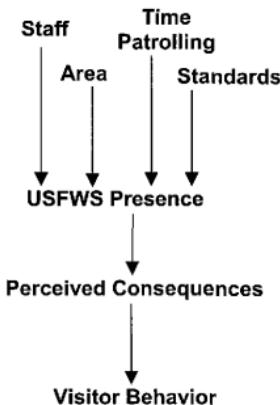


Figure 13 Enforcement factors affecting visitor behavior.

One major concern was that increased visitation, and thus increased density at encounter sites, has confounded education efforts and rendered refuge enforcement efforts ineffective. Lack of education efforts by indifferent operators also has a negative influence on participant behavior. As perceived by stakeholders, behavior is also a function of the degree of supervision. Thus, participants who encounter manatees via guided tours are the best behaved. Formal enforcement efforts are ineffective due to the lack of staff, the large territory, standards required to cite violators and a perceived absence during high-use periods.

While manatee protection is a priority for the refuge, its inability to manage visitation and visitor behavior results in concern for the protection of the Crystal River population. In the next chapter, I explore ways in which manatee encounters can be managed in a way that meets protection needs while sustaining the economic benefits of manatees as a tourism attraction.

CHAPTER VII

DISCUSSION AND CONCLUSIONS

If I were the new refuge manager, I would sit down with my staff first and I would try to determine if there are any real significant, foreseeable problems in the not-to-distant future... The next thing I would do is I would try to have a meeting with dive shop operators and say, "Look guys, this is what it looks like is coming down the line. You all are making a good living. You want to continue making a good living. We want everybody to be happy...We need to come up with a plan." Then hopefully, out of that brainstorming or series of brainstorming sessions, you can develop some kind of plan...

— Former Manatee Tour Operator

In the previous two chapters I illustrated the different perspectives stakeholders have on manatee encounters. In Chapter V, I explored stakeholder perspectives on manatees encounters based on their values, goals, and the ways in which they resultantly behave. In Chapter VI, I showed how these values influence the way in which policy on harassment is interpreted and applied specifically to manatee encounters. In this chapter, I discuss the current relationship between tourism and manatee protection based on the results in Chapters V and VI, project the future relationship, and suggest the Fish and Wildlife Service take a proactive approach to managing manatee encounters.

In general, the relationship between the manatee tourism and manatee protection camps can take one of three forms: conflict, coexistence, or symbiosis (Budowski 1976). Symbiosis is the optimal relationship in which the tourism industry and management work in concert with each other to meet each other's needs. The historical relationship between the two camps, however, has been one of conflict. In the last five years, this relationship has evolved into coexistence, where both parties exist without conflict, but there is little contact or understanding between the two.

As visitation increases unregulated in Crystal River there is concern that manatee encounters will reach (or have reached) a saturation point (Budowski 1976), where manatees will be significantly impacted by use. Two stakeholder groups in particular, Save the Manatee Club and the Florida Marine Research Institute, currently perceive an imbalance in the use-protection relationship. Currently, however, there is no research

that implicates encounters in Kings Bay as harmful to manatees. This, combined with the difficulty in detecting impacts and the inability of the Fish and Wildlife Service to control use, means that the perceived conflict is actually a value difference between stakeholders over the acceptability of manatee encounters. This type of conflict has been characterized as a “wicked problem” by Allen and Gould (1986) where there are no right answers or technical solutions.

I posit that, because of the refuge’s inability to control use, the tourism-protection relationship is on a path to conflict. In order to make management decisions, I propose that the Crystal River National Wildlife Refuge adopt a proactive management strategy that incorporates the values and perspectives of stakeholders. The U.S. Forest Service and the National Park Service have successfully applied management frameworks and planning processes such as Limits of Acceptable Change (LAC) and Visitor Experience Resource Protection (VERP) respectively. These process specifically address the wicked problem associated with dual objectives to provide use while protecting the resource. Each uses a consensus-building process to determine desired conditions and management strategies. As the National Wildlife Refuge System is increasingly accessed for the purpose of viewing rare species, the Fish and Wildlife Service should consider implementing a similar management framework to effectively balance use and protection of wildlife resources.

The Tourism-Resource Protection Relationship

The relationship between those promoting tourism and those charged with resource protection varies. At one extreme the tourism industry can also be the primary resource protector, while at the other it may have no involvement or concern for the resource. Budowski (1976) identified three relationships that can exist between tourism promoters and those responsible for and concerned with conservation of nature. First, conflict occurs when tourism is perceived to have a detrimental effect on nature. Second, tourism and conservationists coexist when there is relatively little contact or understanding between the two. This relationship usually is not static because as tourism increases the relationship evolves either into one that is mutually satisfying or

into conflict. Finally, Budowski defines symbiosis as the optimal relationship between tourism and conservationists. Symbiosis involves a close working relationship between conservationists and the tourism industry to sustain the resource while providing use:

While natural assets are conserved as far as possible in their original condition or evolve towards an even more satisfactory condition, an increasing number of people derive wider benefits from Nature and natural resources—whether in a physical, aesthetic, cultural, scientific, or educational sense (27).

It is important to note here that symbiosis is an ideal state. That is, while the tourism industry and conservationists should work towards a symbiotic relationship (and thus away from conflict), this end result may not be achieved, especially in Crystal River.

The relationship between the manatee tourism industry and the principal manatee protection agency, the Fish and Wildlife Service, has evolved from one of conflict into coexistence. Initially, the business community vehemently opposed the Service's efforts to create sanctuaries and limit boat speeds. The creation of Three Sisters Sanctuary in 1996-97 was the business community's first concerted attempt to cooperate with management efforts. Currently, however, the Service, while concentrating its efforts on manatee protection, remains relatively uninvolved in the tourism industry, serving primarily an enforcement function in the setting. Moreover, the tourism industry is more concerned overall with providing an experience than protecting the manatee.

As unchecked tourism growth (i.e., participation in manatee encounters) continues this relationship will revert to conflict. In fact, it currently appears to be in the early stages of the conflict process (Pruitt and Rubin 1986). An increase in use without a concomitant increase in protection efforts has already prompted some groups to perceive the relationship as increasingly problematic—efforts to protect the manatee from harassment may be failing in Crystal River. Thus, some stakeholders perceive a conflict between manatee encounters and manatee protection; that is, SMC and FMRI perceive that manatee protection goals and standards cannot be achieved simultaneously with the goals of the manatee tourism industry (Pruitt and Rubin 1986).

Budowski (1976) notes that when conservationists perceive conflict they “often fight back with all kinds of interdictions or other restrictions” (27). In fact, this is

traditionally how the Service has dealt with manatee tourism. Using the Endangered Species Act, the refuge implemented sanctuaries and speed zones in Kings Bay in an attempt to bring balance to the tourism-protection relationship. Currently, in Crystal River, groups such as SMC may pressure the Service to further increase restrictions on encounters in order to resolve the perceived conflict.

Sources of Conflict

The conflict is based on the changes that have occurred to Crystal River and the impacts the manatee may incur (or perhaps have incurred) as a result of increased visitation; however, the concern for manatees is the result of base value differences between stakeholder groups. Increased visitation changes the nature of the resource, the site, and the user (Butler 1980; Duffus and Deardon 1990; Plog 1994) and these types of changes may have or may be occurring in Crystal River. These changes are perceived by some stakeholder groups and some parties within stakeholder groups to conflict with personal or organizational values.

Use Changes Resource Conditions

The rising conflict in Crystal River is a function of increased use without simultaneous increases in protection efforts. As an attraction such as manatee tourism increases the tourism literature suggests that there may be changes in both the nature of the destination site and the nature of the users (Duffus and Deardon 1990). Butler (1980), asserted that tourism areas go through an evolution characterized by rapid growth, once a site is discovered, followed by a stagnation stage that often leads to a decline in the area as an attraction.

As discussed in Chapter II (page 16), Duffus and Deardon (1990) posit that the type of visitor in wildlife tourism settings changes from “wildlife specialists” to “wildlife generalists.” At some point during a site’s evolution, a “saturation point” or carrying capacity may be reached where degradation of the target resource (in this case, the manatee) becomes significant (Budowski 1976; Martin and Uysal 1990). This carrying capacity may be exceeded due to the sheer increase in use of the resource augmented by an inability to effectively respond to and manage for the resultant

changes. Thus, the inability of the Fish and Wildlife Service to control use also affects its ability to educate participants and enforce their behavior, reducing the managerial carrying capacity (Manning 1999).

Values Conflict: Interpreting Harassment

Ultimately, however, the current conflict is the result of a valuational difference between stakeholders. Valuational factors include attitudinal differences in how people and organizations perceive wildlife and conservation efforts. Concerning manatee encounters, there are a variety of perspectives on interacting with manatees. For example, the business community harbors an anthropocentric view (Grumbine 1996) of natural resource management, that manatees can be used for human benefit; whereas, SMC maintains a biocentric view that manatees are one part of a larger ecosystem and thus need to be protected. In addition, the way in which different groups interpret harassment regulations is illustrative of this difference. In the previous chapter, I problematized the idea of harassment. Harassment, itself, is a simple concept: it is human behavior that can inhibit a species' chance of survival. However, formalizing this concept as policy—applied to all endangered wildlife species in the case of the ESA—has resulted in a regulation that is difficult to apply because of its inherent ambiguity.

Harassment is an “annoying” act or omission that “significantly” disrupts “normal” behavior and “creates the likelihood of injury.” It is the role of those responsible for manatee protection to interpret these terms and apply them in the field. The Fish and Wildlife Service has made a interpretation of this definition as it applies to manatee encounters. The agency’s interpretation is influenced primarily by its ability to satisfy the burden of proof in a court of law but also by scientific evidence (or lack thereof) on the impacts of encounters. Other groups are more influenced by the potential and often subtle impacts that may result from intimate interactions with humans (e.g., habituation to boats). These impacts are often difficult to discern and can be insidious in nature. The question then is, which interpretation is right?

For this problem there is no single right answer and no technical solution. It is what Allen and Gould (1986) describe as a “wicked problem.” Wicked problems are characterized by a high degree of complexity with no correct solution. With wicked problems, the actual problem definitions are “in the mind of the beholder” and the search for resolution is a function of how each defines the problem. That is, each stakeholder imposes their own values into concepts, such as “annoying” acts or “disruption of normal behavior,” and then acts according to those values.

Management, then, is not simply a rational process where decision making is based on science; rather, managers must balance the needs of the species, the ecosystem, and the interested public (Weeks and Packard 1997). According to Kellert (1994), in addition to biophysical information, valuational, socioeconomic, and organizational dimensions influence management decisions. In Crystal River, the refuge is most influenced by socioeconomic dimensions, which include the sociological, economic, and political factors that affect management. The refuge is pressured by the business community and participants who want unrestricted access to manatees at one extreme and SMC and FMRI, who believe the interactions should not continue at the other (Figure 14). Kellert (1994) found in a previous study that endangered species programs are “often opposed by groups with a primary dependence on the extraction of natural resources” (376). This same principle can be applied to manatee tourism, where the local economy significantly depends on manatee tourism. Thus, there is conflict between the perceived economic needs of the business community and the manatee protection community. Finally, organizational factors in endangered species programs also influence decision making. They include the narrow training of wildlife managers in the biological sciences, the tendency to view endangerment from a short-term perspective, and conflicting goals and objectives between institutions (Kellert 1994).

In addition to the inputs that influence the decision making process, Weeks and Packard (1997) identified the four factors that affect a community’s acceptance of scientific management: access to resources, relationship with resource managers, cognitive models of how the resource functions, and the perceived appropriate

relationship of humans and nature. First, the business community in Crystal River has historically reacted to management decisions by mobilizing political resources. While some have access to government officials, there is no formal organization for sophisticated lobbying. Consequently, efforts to reverse management decisions have been unsuccessful.

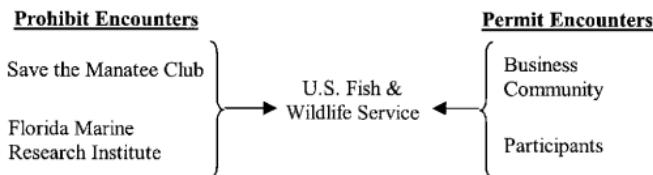


Figure 14 The Fish and Wildlife Service is influenced by competing interests. *Note.* The USGS Sirenia Project is not included because currently it is not formally an active party in the conflict.

Second, in Crystal River the relationship between managers and encounter providers is generally one of suspicion and distrust. This is the result of a history of contention between the two, where the Fish and Wildlife Service decreased access to resources (through sanctuary creation and expansion) in an irregular, punctuated fashion. Because of the past relationship, new efforts to manage the setting or the encounter are likely to be met with immediate suspicion. Third, operators in Crystal River considered local knowledge about the nature and consequences of encounters to have more value than concerns of managers. Moreover, because there are no solid indicators to the contrary, the business community believes that such concern for encounters is unwarranted. Finally, operators and participants tend to view manatee encounters from a utilitarian perspective as opposed to the ecological view espoused by managers and scientists.

Managing Manatee Encounters

An examination of these factors in the context of manatee encounters suggests that the conflict is likely to escalate if not carefully addressed because the local community views each government action as a potential threat to the local economy. Furthermore, as Weeks and Packard (1997) observed, new messages from management, however valid, may not be heard if the messenger is not trusted.

The Fish and Wildlife Service will eventually find itself in a precarious position. Two stakeholder groups, Save the Manatee Club and the Florida Marine Research Institute, have identified manatee encounters to be in conflict with manatee protection goals. As institutions charged with manatee recovery, SMC and FMRI inevitably will seek further restrictions on manatee encounters to rectify what they perceive as an imbalance in the protection-use relationship. Both are effective at mobilizing resources to bring about change. For example, SMC accessed the Marine Mammal Commission, which brought pressure on the Service to create Three Sisters Sanctuary in 1996-97. The Florida Marine Research Institute can access resources at the state level by lobbying for stricter harassment legislation. If this should occur, the Fish and Wildlife Service might find itself under significant pressure to prohibit encounters.

In addition, the refuge is hampered by a complex management setting; encounters occur off refuge property. Healy (1994) discusses tourism landscapes as a common pool resource (see Hardin 1968) that, because they belong to everyone and therefore no one, they are subject to overuse. Because of this, the refuge cannot control use spatially or temporally, nor can it limit access. Furthermore, because users do not gain access through a single entry point, the refuge finds difficulty ensuring that effective educational messages reach participants. Finally, as use increases the refuge has a limited capacity for enforcement and education due to its limited resources.

Table 5 Factors complicating the management manatee encounters in Crystal River.

Factor	Description	Management Implication
Science	In general, it can be difficult to detect impacts from human interactions (Knight and Cole 1995a).	Managers often must make decisions before scientifically valid data on wildlife responses can be determined.
Access	Kings Bay is a common pool resource (Hardin 1968) with multiple points of entry.	The refuge is unable to temporally or spatially control use.
Manatee Characteristics	Individual responses to encounters vary.	Effective regulations must understand the context surrounding interactions.
Education	Because participants access manatees through private operators, the refuge has little direct contact with users.	The refuge relies on operators to educate users even though some operators stress interaction success over manatee protection.
Supervision/Enforcement	The refuge is constrained by limited resources and ambiguous regulations.	The refuge relies on operators and participants to self-monitor participant behavior even though some operators do not give priority to manatee protection.
Socioeconomic	Crystal River business community has a perceived economic dependence on manatee encounters. The current level of interaction is integral to the attraction.	Efforts to implement changes to manatee encounters may result in a defensive conflict spiral (Pruitt and Rubin 1986).
Stakeholder Relationship	There is a level of distrust between Fish and Wildlife Service and the business community.	Same as above.
Competing Values	Stakeholder groups differ on the acceptability of encounters	Stakeholders pressure the Service based on their values.
Political	SMC and FMRI effective at mobilizing resources. The Service is influenced by Congress	No action in Crystal River subjects Fish and Wildlife Service to political pressure to restrict manatee encounters.

The ability of the refuge to effectively manage manatee encounters will become increasingly difficult in the face of increasing use as well as growing concern among some stakeholder groups. If things continue on their current course, the refuge will increasingly rely on operators to self-monitor and educate participants despite the fact that not all operators recognize manatee protection as a priority. Moreover, based on the historical relationship between the refuge and the tourism industry there is a salient concern that any effort on the part of the refuge to implement significant changes will set in motion a defensive conflict spiral, which is a vicious circle of action and reaction where a party reacts in order to protect itself from the actions of the other party that it perceives as threatening (Pruitt and Rubin 1986). In order to move away from conflict, it is important that the Fish and Wildlife Service involve stakeholders in future decision making.

Moving toward Symbiosis

For all of the reasons discussed above (summarized in Table 5) the Fish and Wildlife Service must carefully respond to concerns regarding manatee encounters by balancing the values of stakeholders while ensuring manatee protection. Budowski (1976) introduced the idea of a symbiotic relationship between tourism and conservation. Symbiosis is defined as a mutualistic relationship from which both partners benefit (Hale and Margham 1991). For the tourism industry in Crystal River, there is an economic benefit, and for the manatee protection arena the benefit is a safe area for wintering manatees as well as an increased manatee constituency. This symbiotic relationship, however, requires the tourism industry to support manatee protection “which will ‘develop’ educational, scientific, and recreational, [sic] resources with the objective that they in turn will attract more and different kinds of tourists” (Budowski 1976, 29).

I contend that a symbiotic relationship in Crystal River is impeded by the narrow training of wildlife professionals and the unacceptability of management efforts by the tourism industry. Most wildlife managers have had narrow professional training, focusing almost exclusively in the biological sciences, and thus are not well-equipped to

deal with the valuational, socioeconomic, and organizational factors involved in decision making (Kellert 1994). In this case, managers have little understanding of tourism principles and goals, which can lead to an adversarial relationship. Crystal River serves as an illustrative example of this adversarial relationship. The Fish and Wildlife Service has historically perceived the tourism industry as its primary nemesis partly because of their perception of conflict between use and protection, but also because the tourism industry was unwelcoming to management efforts, reacting strongly to any protection efforts that it perceived as threatening. In reality, however, these two groups have a shared interest in manatee protection—the Fish and Wildlife Service because of its mission and the tourism industry because of its desire to sustain itself⁹. The West Indian manatee is Crystal River's proverbial “goose with the golden egg”. It is in the community's best interest to support manatee protection efforts. However, it is imperative that wildlife managers recognize and incorporate the values of the community in its management plan. By doing so, managers will begin to engender a more symbiotic relationship that enhances both manatee protection and tourism and may ultimately benefit all parties involved.

To improve the tourism-protection relationship and circumvent historical conflict that has arisen due to top-down decision making, the Fish and Wildlife Service must shift from its unilateral decision making style to an approach that incorporates input from key stakeholders. Over the past two decades various planning and management frameworks have been developed and applied to natural resource management settings as a way to balance use and protection.

Management and Planning Frameworks

Currently, the Save the Manatee Club and the Florida Marine Research Institute perceive manatee encounters to be in conflict with their goal of manatee protection because of the potential for resultant negative impacts. In contrast, the business community, the Fish and Wildlife Service, and the USGS Sirenia Project perceive

⁹ I focus specifically on the Fish and Wildlife Service; however, the same principle should be applied to all stakeholders interested in manatee protection: SMC, FMRI, and the USGS Sirenia Project.

encounters to have greater potential benefits than costs. This disparity in perspectives creates a perceived conflict (Pruitt and Rubin 1986), which has the potential to manifest itself as an effort to change policy. I contend that for the tourism industry to continue providing manatee encounters (in some form), it must fully invest itself in manatee protection. Because the manatee is an endangered species, its protection supersedes the use of manatees as a recreational resource. However, the manatee protection community must work in concert with the tourism industry to provide as attractive an experience as possible in order to help sustain the local economy.

Management and planning frameworks provide a means for collaboration and have been developed to specifically address the complexity of managing a recreational use while protecting the resource. Thus, they are a useful tool to aid decision making for the "wicked" problem of manatee encounters. For example, the U.S. Forest Service developed the Limits of Acceptable Change (LAC) planning process, and it has been applied to recreational use in wilderness settings (Stankey et al. 1985). It is a managerial framework that recognizes that appropriate biophysical and social conditions for a given setting are mostly an issue of social value rather than a technical one (Stankey 1990). This process was also successfully implemented by Australia's Great Barrier Reef Marine Park Authority to develop stakeholder consensus in a port dredging project. Stakeholders determined limits of acceptable change related to the health of resident corals and agreed upon managerial actions to be taken if the specified changes occurred (Oliver 1995).

A similar framework, Visitor Impact Management (VIM) was developed for the National Parks and Conservation Association (Graefe, Kuss, and Vaske 1990). The Visitor Experience and Resource Protection (VERP) planning process is broader in scale than LAC or VIM and has been implemented by the National Park Service to manage recreational use within the parks (U.S. Department of the Interior 1997). Each has different applications, strengths, and weaknesses (Table 6), but they share common elements (Nilsen and Tayler 1997).

These processes are all based on the premise that change is an inevitable consequence of recreational use (Stankey, McCool, and Stokes 1984). They are useful for a setting like Crystal River because these frameworks recognize the inherent conflict of resource use and protection and realize that both goals (i.e., unrestricted access and absolute protection of resource and social conditions) must be compromised to some extent (Cole and Stankey 1997). That is, because manatees are a rare and endangered species and because they are a popular attraction, neither absolute protection nor unrestricted access is a desired condition. Instead of concentrating on use levels that manatees can tolerate without significant impact (i.e., carrying capacity), frameworks like LAC focus on desired management conditions. Desired conditions are based on values of multiple stakeholders and thus the frameworks incorporate interdisciplinary consensus-building planning teams that focus on managing human-induced change. Once these management objectives are established, the interdisciplinary team defines standards—minimum acceptable conditions. Key indicators of change are chosen and then both natural and social science data are collected in order to monitor changes in the biophysical and social setting. If conditions change beyond acceptable limits then agreed upon management actions are taken to return the setting to its desired state (U.S. Department of the Interior 1997).

Compared to the other frameworks such as VERP, LAC is issue driven (Nilsen and Tayler 1997). Issues and concerns are defined at the outset and then management objectives are created based on those salient concerns. It is useful for addressing specific factors in planning and management. Compared to VIM, the LAC process is more proactive, focusing on future conditions rather than reacting to current problems (Nilsen and Tayler 1997). In addition, Oliver's (1995) critique of the process notes that the procedures "are highly relevant to the decisions facing wildlife managers, who may be asked to decide what level of exploitation of wildlife is considered to be ecologically acceptable" (136), and recommends that environmental managers in general adopt and apply the concept more widely. For these reasons, the LAC process, or some adaptation

of it, is both an appropriate and useful tool to be applied to manatee encounters in Crystal River.

Table 6 Comparison of LAC, VERP, and VIM planning processes.

	Limits of Acceptable Change (LAC)	Visitor Experience Resource Protection (VERP)	Visitor Impact Management (VIM)
Process	Identifies desired conditions and actions necessary to obtain conditions.	Prescription for desired future conditions by defining appropriate levels and distribution of use.	Addresses problem conditions, causal factors, and potential management strategies.
Application	Proactive planning for current concerns. Wilderness areas, wild and scenic rivers, historic sites, and tourism development	Broad-based planning focusing on strategic decisions pertaining to carrying capacity. Usually applied at the park planning level.	Problem-solving framework to address current problems. Similar to LAC, it can be applied to a wide variety of settings.

Source: Adapted from Nilsen and Taylor (1997).

Applying the LAC Framework to Manatee Tourism

In McCool's (1994) article applying the Limits of Acceptable Change process to tourism development, he argues that "sustainable nature-dependent tourism" requires two components. First, there must be a planning process developed that addresses problems and "forces explicitness in decision-making." Second, McCool argues that the socio-political nature of management requires "a public involvement process that is oriented toward consensus building." In this section I focus on the utility of LAC in managing manatee tourism.

A framework such as LAC is desirable for manatee tourism planning because there is perceived conflict between use and protection. Applied to Crystal River, the use question shifts from one of how many participants can be accommodated in manatee encounter areas before there are negative impacts to the manatee and before the social

conditions are compromised, to the desired resource and social conditions. The LAC is a nine-step procedure (Figure 15) with four major components: (1) the desired (i.e., acceptable and achievable) conditions are specified; (2) the relationship between current and desired conditions is compared; (3) management actions necessary to achieve desired conditions are specified; and (4) a monitoring program is implemented to evaluate management actions (Stankey et al. 1985).

A framework such as LAC can be applied for decisions the refuge is currently making that impact manatee encounters. For example, the refuge currently makes decisions regarding the terms of the special-use permits issued to tour operators. Once desired future conditions are established, part of the permit requirements may be to assist in monitoring conditions relative to those standards. The LAC process can also be used to reach agreement on specific behaviors that may be considered undisputable harassment, or limits beyond which further use of a particular encounter areas is deemed unacceptable.

At the outset, goals for the process need to be clearly established (Cole and Stankey 1997). In the case of manatee encounters, the goal may be to maximize manatee protection while providing a satisfying tourism experience. The Limits of Acceptable Change process identifies issues and concerns as its initial step. This research has identified manatee protection from harassment as the primary concern in Crystal River. An interdisciplinary team then could be composed of the state and federal managers, state and federal scientists, relevant advocacy groups, tourists, and the Crystal River community including, local government, the manatee tourism industry, and residents. This panel would then use a consensus-building process to define desired social and biophysical conditions for manatee encounters, determine key indicators (see Table 7 for examples of potential indicators), establish standards against which conditions will be judged, and determine management alternatives when substandard conditions occur.

It is important to note that consensus building does not necessarily mean that all parties must unanimously agree; nor, is it management by popular vote. Instead, a

consensus-building process is one in which there is voluntary participation by parties involved in a conflict; there is direct interaction among representatives of these parties; and there is mutual agreement by the parties on the process to be used and any ensuing settlement (see McCool, Guthrie, and Smith 2000 for a discussion on the consensus-building process).

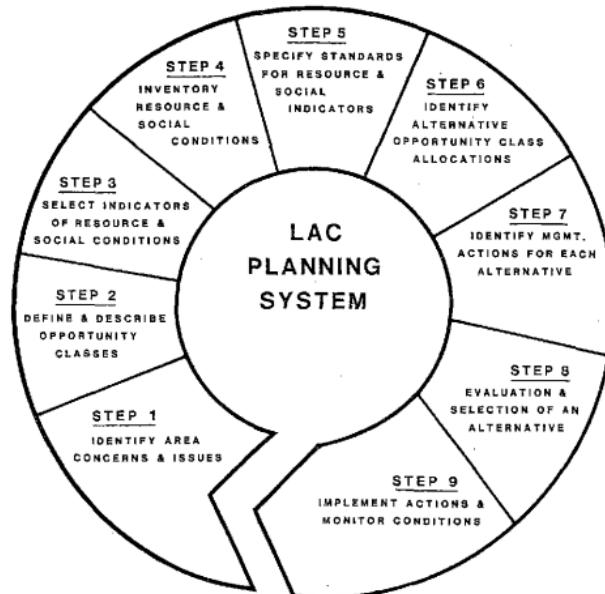


Figure 15 Nine steps of the Limits of Acceptable Change (LAC) planning process. *Source.* Stankey et al. (1985).

Table 7 Potential indicators of social and resource impacts.

Condition	Variable	Indicator
Resource	Displacement	Distribution within bay (e.g., Buckingham et al. 1999) Number of manatees using bay in winter and/or during cold spells (Buckingham et al. 1999) Direct observation of encounters - manatee response to encounters (e.g., Wooding 1997)
	Health	Bioenergetics studies (see O'Shea 1995) Pathological studies
	Survival	Manatee injuries/mortality (Buckingham et al. 1999) Reproductive rates/success (Buckingham et al. 1999) Survivability rates
	Habitat	Forage availability (Buckingham et al. 1999) Water quality
	"Normal" Behavior	Comparative analysis of manatee behavior in non-use areas
Social	Perceptions of Resource Conditions	Water clarity Manatee behavior
	Tour operators	Helpfulness of staff Information provided
	Weather	Temperature of water Temperature of air
	Satisfaction	Overall experience rating Tour operator rating Number of manatee seen Amount of other wildlife seen Amount of noise associated with human activities in the area
	Other people	Number of people on the boat Number of people in an encounter area Number of boats in an encounter area Other participants' behavior.

In addition, Oliver (1995) argues that wildlife managers need not abandon the belief that a scientific understanding should form the basis for management decisions; rather, “a scientific understanding of the environment being managed should always form the basis for management decisions” (132). The problem, however, is that scientific information is often insufficient or altogether lacking, yet management decisions must still be made. Thus, this type of process addresses the acceptability of current and future conditions given the socio-economic dimensions influencing decision making. Furthermore, it also is important to note that resource managers do not give up power to the group; instead they empower the group: “The responsibility for the final decision should lie with the panel as a whole and (ultimately) the management authority vested with the legal power to make the final decision” (Oliver 1995, 136).

While the LAC process can be quite useful for decision making, there are some notable caveats. Because negative impacts can be insidious in nature, the determination of indicators and standards can be difficult. The key in manatee encounters is protecting manatees from harassment; however, the relationship between harassment and its impact to manatees is not known. The question then becomes, without sufficient information how are indicators chosen? Oliver (1995) addressed this in the application of the LAC to a dredging project carried out near a coral reef in Australia using what he called “best guesses.” His group chose two indicators of sub-lethal stress because they were readily recorded in the field and were well-documented as indicators in the formal literature. For the same reasons, the choice of standards can also be problematic. For this, Oliver’s group used “best guesses” to set standards and used “decision curves” which recommended a gradient of alternative management strategies based on the level of impact detected.

It is the LAC-type of process that is important. Public input on wicked problems such as protecting manatee from harassment is increasingly important in making sound natural resource management decisions. It addresses the paradox of the tourism-protection relationship by compromising each goal and deciding what type and degree of change in a setting is acceptable. It is also a collaborative process with the potential to

engender a symbiotic relationship between the manatee tourism industry and the manatee protection arena.

Conclusions

In 1992, Shackley envisaged manatee encounters in Crystal River as the “final nail in the manatee’s coffin” because of their potential to increase the manatees’ levels of environmental stress and decrease their reproduction rates. Since Shackley’s visit to Crystal River, speed zones were implemented, sanctuaries were created (and others were expanded), and manatee use of Crystal River has increased significantly. Currently, despite concerns for manatee encounters, Crystal River is widely considered by the manatee management community as a safe haven for manatees.

Overview of Findings

The fundamental purpose of this research was to obtain an understanding of stakeholder perspectives on balancing the use of manatees as a resource with the protection of this endangered species. Table 5 (page 112) summarizes the difficulty in effectively balancing the use-protection relationship in Crystal River. In general, it is difficult to establish a cause-effect relationship between human interactions with wildlife and the negative impacts that may occur. Research on the effects of manatee encounters with humans in Crystal River is relatively unknown. Despite the lack of scientific information, stakeholder groups maintain positions for and against encounters based on their fundamental views on wildlife protection and an evaluation of the costs and benefits of these interactions.

Participants described encounters as sometimes spiritual but always “unique” because they are an opportunity to interact with a wild, rare, and charismatic marine mammal. Further, they felt that manatees ultimately benefit from increased awareness and attitude and/or behavior change. Participants with a negative perspective generally believed that the encounters have negative outcomes for manatees. The business community, which includes the manatee encounter tour operators and supporting businesses, relies on the draw of the manatee to provide economic benefits for the entire county. In addition, this group believed that physical contact with manatees is integral

to the attraction and that participants also experience attitude changes. State and federal agencies make decisions regarding manatee encounters in light of their manatee protection mission. At the federal level, the Crystal River National Wildlife Refuge serves as the U.S. Fish and Wildlife Service's presence in Crystal River. It also believed that participants become "manatee advocates" in response to their experiences and that there is currently no evidence that negative impacts result from encounters. As the federal research agency that collects information that aids in the recovery of the manatee, the USGS Sirenia Project has also seen no evidence of negative impacts. In contrast, at the state level, FMRI believes that despite the lack of scientific data manatee encounters are inappropriate. Finally, the Save the Manatee Club, the main advocacy group in the manatee protection arena, took a stricter stance on manatee protection. Its position was that manatee encounters provide relatively few real benefits to manatees in comparison to the potential costs.

These perspectives on encounters corresponded with how each group defined and interpreted formal policy on harassment. For example, Save the Manatee Club, believed that the encounter, regardless of how it occurs, was harassment simply because interactions with humans is not normal behavior for manatees. In contrast, the Fish and Wildlife Service has interpreted the harassment definition of the ESA in a way that permits participants to physically interact with manatees as long as the participants allow the manatee to dictate the encounter. Its interpretation also was influenced by its ability to satisfy the burden of proof in a court of law and by scientific evidence (or lack thereof) on the negative impacts of encounters. Operators and participants differed in that they tended to define harassment as direct harm to the animal and not necessarily disturbance of the animal.

The differences in perspectives on manatee encounters and harassment were not based on science but on values. In cases like this, where scientific information is lacking, there is no technical or "right" answer. The Save the Manatee Club and the Florida Marine Research Institute formally oppose manatee encounters because they perceive an imbalance in the use-protection relationship. Simultaneously, the Crystal

River business community, in general, perceives manatee encounters as unproblematic for manatees. Because of these divergent views, I posit that stakeholder perspectives on encounters are in the early stages of conflict. If decision making occurs without incorporating stakeholder input, the conflict will escalate and each party may ultimately suffer (e.g., support for manatee recovery, economic benefits). The concern over conflict is reflected in one's operators ominous prediction:

Today...if I had crystal ball, I'd say within 5 years there will be no more swimming with manatees...because somebody is going to come in and say, "You guys are stupid. What you're doing out there is stupid." And, it doesn't take an educated person to go out there and see 150 people in the water standing up, screaming and yelling and chasing manatees to know that it's stupid. And, we're going to ruin it for ourselves and then what are they going to say, you know? You don't want sanctuaries. You don't want education programs. You don't want certifications. You don't want boat captains. Okay, well you know what you're getting instead? Nothing. You get not to be in business any more. How's that for a surprise, you know? It's really, it's too bad but I think it's going to come to it. That's my opinion.

Implications and Further Research

Manatees are a valuable economic resource in Crystal River, maybe more so than in any other part of their range. Hence, it is important to seek a balance between use and protection in Crystal River. This research provided in-depth insight into a specific type of nonconsumptive use: the wildlife encounter. My research contributes to the literature on wildlife tourism, recreation management, and wildlife management, showing that management of nonconsumptive uses of wildlife is highly contextual. Consequently, regulations such as harassment, which are intended to apply to all species, are inherently ambiguous. Additionally, decision making has far-reaching ecological, economic and political consequences and disagreement between stakeholders often results from divergent values of the groups involved rather than scientific evidence. My research provides a vital first step in understanding the tourism-protection relationship in Crystal River. This research also contributes to Objective 28 of the manatee recovery plan by providing initial research into Task 283: reviewing regulations

regarding "close approaches" to manatees (U.S. Fish and Wildlife Service 1995). It should be used as a foundation to conduct further research that addresses the relationship of tourism and its (positive and negative) socio-economic and biological impacts.

Although the generalizability of qualitative research is inherently limited, this research may be useful to managers in other wildlife encounter settings. The major implication for managers of human-wildlife interactions is that management is highly contextual. That is, management decisions are a complex combination of biophysical, socioeconomic, and political factors. This is especially significant when information on the effects of encounters on the target species is insufficient or altogether lacking. In setting like Crystal River, where there is a high level of distrust between the tourism industry and the wildlife protection agency, it is important to incorporate stakeholder input through a collaborative decision-making process.

Abernathy (1995a), Abernathy (1995b), Buckingham (1990), and Wooding (1997) each looked at the short-term behavioral responses of manatees to human activity in Crystal River. In addition to their studies, bioenergetics studies on manatee responses to interactions may provide insight into the harassment issue (O'Shea 1995). More importantly, however, a longitudinal study investigating manatee encounters and the subsequent fitness of individuals who interact with participants is needed to examine how interactions affect manatees over time.

Because there is a tourism component to manatee encounters, it is imperative that socioeconomic research be conducted concurrently with biological studies. Baseline information on use—types of uses, frequency, distribution, levels of use—is imperative for effective management decisions. During my field study, I was surprised to find that the level of use is relatively unknown. The refuge uses a static formula that assumes a certain level of use on weekends and weekdays. The refuge additionally collects use data from tour operators but I was advised that the data is unreliable because not all operators make an effort to be accurate. Thus, a sampling procedure should be implemented to obtain a more accurate idea of use.

Because there is a significant demand for this experience, it is important to gain a broader understanding of the attitudes, motivations, and values of those coming to participate in manatee encounters. An investigation of the benefits of manatee tourism should be conducted. Interesting questions to research would be how the experience influences the attitudes and behavior of participants toward wildlife conservation efforts. A study examining participants' knowledge and perceptions of harassment may provide valuable information for educational efforts in Crystal River. Additionally, because the business community has a perceived economic dependence on manatee encounters in Crystal River, a study examining the economic benefits of manatee tourism is warranted.

On a broader scale, people are increasingly seeking encounters with wildlife—often endangered and/or rare species. In addition to assessing the biological needs of endangered species, it is imperative for effective decision making that managers understand the socioeconomic and political factors involved. Research needs in areas where encounters occur include baseline information on use levels and visitors. This will allow for more effective decision making. In addition, in order to avoid conflict based solely on perceptions (e.g., perceived economic dependence), research should seek to understand the benefits that encounters ultimately provide to the target species as well as the economic benefits to local communities.

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APPENDIX A

CONDITIONS OF THE CRYSTAL RIVER NATIONAL WILDLIFE REFUGE SPECIAL USE PERMIT

1. Permittee will provide customers with general educational materials concerning the refuge and the endangered West Indian manatee. Materials will be either those furnished by the Fish and Wildlife Service (FWS), or others produced by outside sources. If outside materials are used, information regarding the refuge and manatees must be approved in advance by the Refuge Manager.

In addition to the above:

- A. During the peak manatee use period (9/1 - 4/30), permittee will ensure that all customers view a videotape (FWS furnished or approved) focusing on manatee protection measures and regulations prior to entering the refuge.
 - B. During the off-season (5/1 - 8/31), permittee will provide customers (boat rentals) with specific info concerning manatee-related water craft speed zones.
 2. Permittee will comply with all applicable Federal, State and Local regulations. Commercial SCUBA diving and instruction will be conducted in a safe manner and according to industry standards.
 3. Permittee will provide FWS the refuge customer use data, as requested.
 4. Permittee will ensure customer compliance with all regulations concerning the refuge and manatees.
 5. Failure to comply with permit conditions may result in cancellation and possible loss of future privileges.
 6. Permittee and employees involved with providing customers with information regarding the refuge and manatees will attend an annual educational workshop to be provided by the refuge.
 7. Permittee will ensure that all boats (rental and tours) are equipped with adequate anchors to hold boats outside of sanctuary areas during all weather and tidal conditions.
 8. The U.S. Fish and Wildlife Service is not responsible for any mishaps or injury that may occur as a result from diving in King's Spring Cavern. It is the responsibility of the Special Use Permit holder to warn scuba divers of the inherent risk of cavern diving. All divers must be properly trained with proper equipment.
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APPENDIX B

SOLICITING INPUT FROM E-MAIL LISTSERVER MEMBERS

On two occasions, I sent letters out to an e-mail listserver hosted at <http://www.homesafe.com/manatee/index.html>. This listserver is mostly used by the public to discuss manatees. To increase data on manatee-encounter participants I solicited input through two e-mails:

E-mail 1

Greetings all,

I am investigating doing some research on human-manatee interactions in Crystal River, Florida. I want to know what kinds of people are participating in this activity as it has direct management implications for the area. If you don't know, Crystal River is the only area where it is not illegal to pet manatees. There is some debate about the impacts of this "intimate" interaction with them.

What I would like to know is your opinions on interacting with manatees or any other wildlife. Some believe that wildlife should remain 'wild' while others think that interactions with wildlife are important mechanisms for engendering conservation support. What do you think?

Have you ever snorkeled with manatees in Crystal River or pet them? What kind of impact did that have on you? Was it a good experience? Did you think that the manatees were harassed? What suggestions do you have for refuge managers?

All these answers will help me in developing an effective survey instrument (i.e., questionnaire). Thanks for your help.

Best regards,
Mike

E-mail 2

Have you ever been to Crystal River to swim with the manatees?

Tell me about it!

My name is Mike Sorice and I'm a graduate student from Texas A&M University, Department of Recreation, Park & Tourism Sciences studying human-manatee interactions in Crystal River. I'm interested in how they are managed; but, in order to understand how they are managed I need to know about the experiences people have there.

So, please tell me about your experiences. I will use most of your responses as a chapter in my thesis called "Understanding the Visitor Experience." Feel free to write me on any aspects of your experience but here are some questions you may use to guide you:

- How many times have you done it?
- Did you touch a manatee?
- If you did, why did you touch it?
- What was good about it?
- What did you like the least about it?
- Did you go on a guided tour, rent a boat, or go out on a friend's boat?
- How many people were on your boat? How did you feel about the number of people on your boat?
- If you went on a guided tour, who did you go with?
- If you rented a boat, who did you rent from?
- How did you learn about the rules for encountering a manatee?
- How many manatees did you see?
- How did you feel about the number of manatees you saw?
- How did you feel about the number of people in the water?
- How did you feel about the number of boats in the water?
- On a scale of 1 to 10 (1 being a poor trip and 10 being a perfect trip) how would you rate your trip?
- How did swimming with the manatees affect your attitude about manatee or wildlife conservation?

For the sake of being brief I won't go into detail about my research but if you have any questions about it I would be more than happy to discuss it with you.

I look forward to hearing from you!

Best regards,

Mike Sorice

APPENDIX C

COMPLAINT LETTER TO CRYSTAL RIVER NATIONAL WILDLIFE REFUGE

The refuge received this letter during my tenure as an intern. It is used here with their permission.

Jenny K.
Address
Binghamton, NY 13905

February 16, 2000

Manager
Crystal River National Wildlife Refuge
1502 Southeast Kings Bay Driver
Crystal River, FL 34429

Dear Manager,

I am writing to inform you of a number of violations I witnessed at the Crystal River Wildlife Refuge this past December, regarding treatment of manatees and other marine life. My understanding of the Endangered Species Act makes me wonder why the U.S. Fish and Wildlife agency does not take a stronger stance in preventing the transgressions described below.

In a recent trip to Florida, where my finance's parents reside, we rented a canoe and paddled into the waters of the Crystal River Refuge area. To our dismay, we encountered both locals and tourists feeding manatees at a site frequented by snorkelers and divers. There must have been approximately twenty motor boats [sic] anchored next to the buoys that are supposed to keep people out of the manatee sanctuary. The buoys did not dissuade people from harassing the supposedly protected species, nor did they prevent swimmers from entering the restricted zones.

I was alarmed at the sight of so many motorboats in a wildlife refuge area where manatees aggregate in the winter. To make matters worse, several tourist outlets were renting motorized boats to people with little to no experience in operating them. For example, a pontoon boat, owned by Plantation Inn, was operated by a group of tourists that had no clue as how to steer away from our canoe's path. Keep in mind that we were just about to anchor our canoe in an area away from the flow of boat traffic when the pontoon approached us. In fact, they threw their hands up in the air and decided to let their pontoon crash into our canoe. Luckily, we managed to quickly paddle away from the predicament. I assure you that if the pontoon had capsized our canoe, we would have taken legal action against the renters as well as the owners.

the predicament. I assure you that if the pontoon had capsized our canoe, we would have taken legal action against the renters as well as the owners.

Inexperienced boaters are not the only threats to manatees in the Crystal River refuge. We likewise witnessed numerous violations of local boaters exceeding idle speed in posted zones and entering shallow areas where manatees are found feeding. There seemed to be a lot of confusion over rules and laws regarding boat use and manatee treatment at the refuge site. Or perhaps people just didn't care.

I hope to think that the violations we observed at the refuge site were a result of ignorance as opposed to maliciousness of locals and tourists. To briefly mention, we also noticed two motor boats chasing a group of dolphins that were feeding in the area. Clearly, manatees are not the only wildlife that are harassed by people.

To assist in efforts to curtail the mistreatment of manatees and other protected wildlife in the national refuge, the following management strategies are suggested:

- **Limit the number of motor boats in the refuge area throughout the critical winter season** by issuing a permit system or other restrictive programs.
- **Encourage non-motorized boating** (canoes, rowboats, and kayaks) through public service announcements, outreach programs with schools, and placing advertisements in Florida tourism brochures.
- **Prominently display legal penalties on signs posted throughout the refuge, at the tourist outlets, and in other high visibility locations.** People are less likely to break the law when the costs are known, such as monetary costs and jail time.
- **Collaborate with other agencies and tourist outlets to decrease manatee harassment.** For example, require boat rental facilities to have the customer sign an agreement that indicates awareness of the rules and penalties regarding boat use and manatee harassment.
- **Increase USF&W warden patrol in the refuge areas during the critical winter season.** Of course, this is where civic participation comes in. Voters need to contact proper governmental channels (representatives, senators, and other key figures) to ensure increased funding for USF&W's management efforts.

I hope you will incorporate my suggestions in future endeavors to protect the endangered manatee. Perhaps our great, great grandchildren will be able to canoe alongside a healthy population of manatees in the Crystal River refuge area.

Sincerely,

Jenny K.

cc: Lawton Chiles, Governor of Florida
Fran P. Mainella, Director of Recreation & Parks
Virginia B. Wetherell, FDEP Secretary
Bruce Babbitt, Secretary [sic] of Interior
Carl Pope, President of the Sierra Club
Manager, Plantation Inn
Director, USFW

APPENDIX D

HUMAN BEHAVIORS LISTED AS HARASSMENT BY THE CRYSTAL RIVER
NATIONAL WILDLIFE REFUGE

Avoid harassing manatees. Harassment is defined as any activity which alters the animal's natural behavioral characteristics; including:

Approaching a manatee before the animal first approaches and touches you.

Actively pursuing/chasing (swimming after) or cornering a manatee while swimming or diving.

Poking, probing, stabbing a manatee at any time with any object. This includes but is not limited to a person's hand and/or feet.

Any activity which would separate a cow from her calf or an individual from a group.

Any attempt to snag, hook, hold, grab, pinch, or ride a manatee.

Any attempt to feed a manatee

Touching or disturbing a resting manatee.

VITA

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EDUCATION:

- 1998 to 2001 **Texas A&M University**, College Station, TX
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