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To the Graduate Council:

I am submitting herewith a dissertation written by Carolyn Jeanne Price entitled "Bioeconomic and Biophilic Intersect in Nature Centers - A Case Study of One Nature Center." I have examined the final electronic copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Educational Psychology and Research.

Russel L. French, Major Professor

We have read this dissertation and recommend its acceptance:

Neil Greenberg, Stephanie Robinson, Gary Skolits

Accepted for the Council:

Carolyn R. Hodges

Vice Provost and Dean of the Graduate School

(Original signatures are on file with official student records.)

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Bioeconomic and Biophilic Intersect in Nature Centers

A Case Study of One Nature Center

A Dissertation Presented for

The Doctor of Philosophy

Degree

The University of Tennessee, Knoxville

Carolyn Jeanne Price
December 2010

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Dedication

This dissertation is dedicated to the passionate supporters of nature centers whose own dedication underwrites the mission to embrace and preserve nature. Nature center employees, volunteers, and boards of directors imbue wild landforms with a magic—sometimes subtle, often direct, and always awe-inspiring. Preserving green spaces in places is vital for our emotional, mental, and physical well-being.

I also dedicate this work to the memory of my mother, Joy Floyd Price, and my father, Otha Melvin Price.

Nature remained tangible and a recognized force in my mother's world while her awareness of others melted away. During her long battle with Alzheimer's, she retained an appreciation of flowers and trees; fresh air and sunshine; clouds, rain, and snow; birds and butterflies; and her feline companion, Kitty Kat. Ever the farmer, my father's last shared wisdom was that I should use *Epsom Salts* on my grapes. He did not know why or how the salts would help; he just knew it was the right thing to do.

My mother and my father were a redoubtable couple, worthy of respect and honor for their determination, strength, and a caring ethic. Thank you, Mom and Dad.

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There are many persons to whom I offer heartfelt thanks and appreciation for their instruction, guidance, support, and participation.

Committee members Dr. Russell French (Chairperson), Dr. Gary Skolits, Dr. Stephanie Robinson, and Dr. Neil Greenberg brought to this research professional acumen, personal expertise, and an understanding of the process that facilitated completion of the project. My long-held goal of earning a doctoral degree has been realized due to the guidance, support, and encouragement of this group of scholars, always offered generously and judiciously. I have been taught, mentored, advised, guided, and nurtured; I also have real world application of excellence and best practice in higher education, assessment, research, and evaluation as a model for my professional practice. Completing my dissertation under the tutelage, and in the company, of Dr. French, Dr. Skolits, Dr. Robinson, and Dr. Greenberg has fostered a belief in my own scholarly potential.

A sincere thank you is offered for the time, cooperation, and invaluable assistance of Ijams Nature Center Director Paul James, Development Officer Sally Judiscak, plus Ijams very fine staff and Board of Directors. In addition, I want to express my appreciation for Ijams' members and the visitors to the Center who participated by sharing their perspectives.

I also thank Nature Center Directors, Environmental Education Organization Directors, and, most appreciatively, Graham Burton of the Royal Society for the Protection of Birds in the United Kingdom for their precious time and gracious cooperation.

Each of the participants added invaluable detail and richness to my data collection and supported this research. Sharing their knowledge and perceptions has articulated the value of nature in the nature center experience.

I want to express appreciation to Dr. Joe Heimlich and his colleagues for their groundbreaking work in the field of visitor motivation with the development of the Motivational Identity Tool and for Dr. Heimlich's contribution to instrumentation in this study.

Abstract

The purposes of this research were 1) to understand what stakeholders in one nature center are “thinking” about the focus of their center and the niche it occupies; 2) to characterize the role of one nature center in its local community; 3) to examine the nature center in terms of established characteristics of a “best” nature center; 4) to compare stakeholder perceptions with perceptions of directors of exemplar nature centers and environmental education organizations; and 5) to characterize visitor and member stakeholder perceptions and motivations in terms of the extrinsic value of ecosystem services, *bioeconomics*, versus the intrinsic value of nature, *biophilia*.

This research was conducted utilizing case study methodology with mixed method data collection. Ijams Nature Center visitors and members were surveyed concerning the value of nature; structured interviews were administered to Ijams Nature Center employees, nationally recognized nature center and environmental organization directors.

Visitors’ perceptions of nature focused on the natural surroundings of the nature center, providing opportunities to watch wild animals, appreciate nature, and feel at peace. Nature center member perceptions of nature reflected the concepts of stewardship and advocacy fostered by the Center’s conservation mission, education programs, and preservation activities.

Participants shared common thematic concepts for the role of nature centers and the characteristics of a best nature center. A best nature center was characterized as a composite of factors, practices, and perspectives that merge to form a business plan reflective of best practice guidelines. Participants highlighted the unique quality of centers and the passion and vision that

guides development and the roles played by nature centers in their local communities, as identified in this study, i.e., education, advocacy, and immediacy.

Ijams Nature Center visitors and members valued nature differently in terms of bioeconomics and biophilia, but both groups rated the biophilic value of nature of greater importance, with differing constructs reflective of that value.

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Chapter I

Introduction

“Le coeur a ses raisons que la raison ne connaît point.” [—The heart has its reasons of which reason knows nothing.”] (Brunschvicg, 1909). This statement, attributed to Blaise Pascal —French mathematician, physicist, and moralist—over three centuries ago, speaks to the tension between bioeconomics, the extrinsic value of nature, and biophilia, the intrinsic value of nature, two fundamental dimensions of the way we relate to the environment, i.e., with our hearts and minds. This dichotomy characterizes conflicting paradigms prevalent in discussions about environmental issues and the value of nature.

In 1962, Joseph Shomon, Director of the Nature Center Division, National Audubon Society (NAS), penned, “Today people need the outdoor natural world as never before....places where men can think in quiet...we need the added will and wisdom that only nature can give us....” (p.56). During the post WWII movement to preserve our natural resources and increase citizen access and usability, nature centers were endorsed by the National Audubon Society (NAS) as interpretive centers with resources to educate and inspire the public about the environment, its importance, and how to conserve it in communities. The focus on interpretive centers in National Parks during the same period helped to foster the NAS move. Additionally, the focus spearheaded the grass-roots movement with the stated mission of protecting urban green spaces. Subsequently, the organization began to place a new emphasis on the development of centers in urban locations (Gross, 2002).

In today's world, nature centers bring to their local communities experiences that resonate with visitors in a variety of ways and to varying degrees. They may provide a place for relaxation and recreation, serve as a source of inspiration for artists and writers, reduce stress, or improve the human condition by simply providing a space in the city that is devoted exclusively to nature. Due to this variability in benefits and usages, defining "what is" a nature center in the 21st Century is a complicated task. To conduct this research properly, a working definition of the concept "nature center" is necessary. In 1963, Ashbaugh, (NAS), described a nature center as:

"a green island of undeveloped land set aside by a private community group or political body for the learning and enjoyment of its citizens. It is a place within a city or near it where children, family groups and persons of all ages can renew their rightful kinship with the land...and all of Nature" (p.74).

And, in 1968, Shomon, further described nature centers as:

"educational institutions with definite programs designed to teach people the importance of knowing the real relationship between man and his environment—for his own good (p.59); to make them aware that man is a part of nature and not independent of it (p.61); and sources of information and places for families to walk through woods, fields, and marshes"(p.63).

Nature centers today continue to reflect those articulated descriptions; however, issues of conservation and environmental concerns have resulted in a shift in focus. In 2002, Gross and Zimmerman described nature centers as "sanctuaries that guide people to a sense of place..." (p.5). For purposes of this research, a nature center is defined as a physical structure and organized set of activities or events based on the specialness of a natural land form with a sense of place, a tie to the land, a connection with the culture of the community, and a focused celebration of all that the *place* represents.

The shift in focus leads to the question of how nature centers will meet the challenges of the current economic difficulties and budget restrictions that each organization must address (Levy, 2009). The purpose of nature centers is embodied in preserving a representative parcel of nature in urban environments for learning, inspiration, and enjoyment; ultimately, however, nature center operations are based on a business model, increasingly mindful of the importance of meeting the needs of their constituents and aspiring to organizational effectiveness. In 1998, the Association of Nature Center Administrators (ANCA) published a Best Practices Checklist designed to guide nature center administrators in efforts to develop effective business operations. Nature centers operating under these best practice standards will incorporate good business and effective marketing strategies and will be impacted by industry standards—for natural landform management as a component of natural resource management, visitor satisfaction, organizational efficacy, and community involvement, to name a few (Byrd, 1998). At the time of this research, the subject of the case study, Ijams Nature Center (INC), was embarking on a journey of investigation and organizational analysis to determine the Center’s core identity in its local community. ANCA will soon offer a publication entitled “Branding & Marketing Your Nature Center,” one indicator of industry recognition of this issue. Examining the relationship of the nature center to the community, its neighbors, members, and visitors begins with understanding the role nature centers fulfill for their constituents.

Problem

The problem addressed by this study is the lack of a consistent and established understanding of what the focus of nature centers is and should be. Nature centers are

representative of a visitor resource developed for a very unique and specific purpose, and nature center visitor motivations are key factors in understanding the role nature centers play in local communities. In addition, visitor perceptions, attitudes, values, and beliefs, as “ingredients” in motivation, affect the use of centers as resources for recreation, education, meditation, and/or getting closer to one’s natural self. Investigating visitor motivations as they reflect the role of nature centers is a timely undertaking based on industry concerns, and it serves to fill a gap in current research.

Purpose Statement

The purposes of this research were 1) to understand what stakeholders in one nature center are “thinking” about the focus of their center and the niche it occupies; 2) to characterize the role of one nature center in its local community; 3) to examine the nature center in terms of established characteristics of a “best” nature center; 4) to compare stakeholder perceptions with perceptions of directors of exemplar nature centers and environmental education organizations; and 5) to characterize visitor and member stakeholder perceptions and motivations in terms of the extrinsic value of ecosystem services, *bioeconomics*, versus the intrinsic value of nature, *biophilia*.

Overview of Study Design and Theoretical Framework

Research Questions

The framework of the study consists of four research questions:

1. What are Ijams Nature Center (INC) stakeholders’ perceptions, attitudes, and beliefs about nature?

2. What are the nature center's stakeholders' perceptions of the role of this nature center in their local community and their perceptions of the characteristics of a best nature center, as they would define it?
3. How do the perceptions of INC stakeholders compare or contrast with nationally recognized peer nature center directors' perceptions of a) the role of their nature centers in their local communities, and b) the characteristics of a best nature center?
4. How do the perceptions of INC visitor and member study participants relate to the concepts of bioeconomic value and biophilic value of nature?

The research questions can be viewed as five distinct objectives of this study: 1) to learn how a select group of stakeholders in one nature center perceive nature; 2) to learn how a select group of stakeholders in one nature center characterize the role of their nature center in the local community and their perceptions of the characteristics of a best nature center, as they would define it; 3) to examine how a group of nature center and environmental education organization directors, recognized as national peers, characterize the role of their own nature centers and define a best nature center; 4) to compare/contrast the perceptions of INC study participants with the perceptions of nationally recognized peer nature center director and environmental education organization director study participants; and 5) to determine how study participants' perceptions of Ijams Nature Center are reflective of the bioeconomic and biophilic value of nature.

To answer the research questions, this study utilized a mixed methods approach in an exploratory single case study design. The use of the case study allowed the researcher to

examine the knowledge utilization process as applied to study participants. The researcher examined a “phenomenon that seems to be inseparable from its context” (Yin, 1981, p.99).

Use of Case Study Design

As previously mentioned, case study design was used in conducting this study. Yin (1994) cites case study research as providing the investigator the opportunity to examine a situation in-depth, incorporating context into the investigation. An embedded, single case design was appropriate for this research because the study was investigating one nature center, and several sub-units of analysis were identified as critical to the investigation.

An analytic approach generalizes the results of Ijams’ case study to the broader theories of ecosystem services and nature’s intrinsic value (Yin, 1994). Within this case study, qualitative, descriptive research was undertaken yielding detailed information about nature center visitors’, members’, and employees’ attitudes, perceptions, and opinions. The focus was on exploration and description, not on the discovery of a universal truth or cause-effect relationship. In keeping with Yin’s methodology, three components central to exploratory research and case study design – “what is to be explored, purpose of the exploration, and criteria by which the exploration will be judged successful” (p.29) – guided the study; further, Yin’s five characteristics of an exemplary case study, i.e., significance, completeness, perspective, evidence, and composition, were applied throughout as measures of effectiveness.

Data Collection and Analysis

Data collection involved surveys of INC visitors and members, structured interviews with INC employees and Board of Directors, plus interviews with directors of select nationally

recognized peers and environmental education organizations. A mixed-method combination of qualitative and quantitative approaches has been used. Visitor and member survey data have been analyzed quantitatively. Interviews conducted were analyzed using qualitative analysis.

IRB Review

This research was conducted in compliance with the policies established by the Institutional Review Board (IRB) of The University of Tennessee and the researcher subscribed to the principles and standards of professional ethics in all research, development, and related activities involving this study. The IRB review encompassed the research protocol, the informed consent document signed by participants, announcement used in recruiting participants, and other relevant documents (see Appendix A). In carrying out its review, the IRB ensured that: (a) any risks to participants that may be incurred were warranted in relation to the anticipated benefits; (b) informed consent documents clearly conveyed the risks and the true nature of research; (c) announcements were not misleading; and (d) the selection of participants was equitable and justified.

Importance of the Study

Human dimension research is being recognized as a critical component in the study of experiences of visitors to national parks, nature preserves, and zoos and museums, as well as nature centers (www.hd.gov). Understanding visitor experience is becoming increasingly important in understanding the reciprocal relationship between humans and the rest of nature. Examining visitor motivations through the lens of the contrasting theories of the bioeconomic value of nature and the biophilic value of nature offers opportunities for mitigating the human

impact on natural resources. Social science theory and research methods incorporating the human perspectives of managing natural resources will move managers of those resources along the path toward a visitor management program that maximizes visitor experience satisfaction and minimizes the negative impact on the environment (Bath, 2003).

Monetary valuation methods and techniques have been developed to characterize environmental goods and services in terms of a “price” or economic value. The complimentary - and contradictory - concepts of extrinsic bioeconomic value and the intrinsic biophilic value in nature relate directly to fostering a caring ethic, developing environmentally literate citizens, and making the right decisions about the environment

This project holds several benefits for the management of natural landforms for Jams Nature Center (INC). The Center will gain valuable insights offering guidance for future developments to meet the needs of the community and to fulfill obligations as a steward of the lands within their nature preserve. Understanding the synergistic nature of the ecosystem and the human dimension of our environment will contribute to the ongoing effort to build sustainability into programs offered by nature centers.

Assumptions

This study has been conducted based on the following assumptions:

- Responding visitors and members were willing to share their true perceptions of their experiences in INC.
- Visitor/member responses were honest and representative of individuals' personal values and levels of satisfaction.

- Participants in the study were representative of the 2008 population of visitors to this nature center.
- Participants were representative of those visiting this nature center on any/all days of the week.
- The researcher did not bring bias to the data collection and analysis processes.
- The survey questions were worded appropriately to generate responses relevant to the research questions.

Limitations

This study was conducted based on the following limitations:

- INC visitor/member attitudes, perceptions, and beliefs are limited only to the Ijams Nature Center.
- Findings and conclusions of the study are limited by the content of the survey instrument.
- Participants were limited to those who were present on the day(s) data collection took place in the location(s) chosen for data collection.
- Applicability of findings of the study is limited to respondents who participated in this research project.
- Visitor reluctance was a factor in data collection because visitors were on their own time, and time is precious.
- Volunteer bias was a factor in the sample because only volunteer participants were surveyed.

Definition of Terms

For the purposes of this study, the following definitions are being used. Terms will be further defined in the literature review to clarify application to the specifics of this research project, as appropriate.

Attitude: a state of mind or feeling with regard to some matter.

Belief: mental acceptance or conviction in the truth or actuality of something.

Best: surpassing all others in quality; most excellent.

Best Practice: behaviors recommended to promote organizational effectiveness (Byrd, 1998).

Bioeconomic: integration of the disciplines of economics and biology, examining economic events from a biological perspective.

Biophilia: the love of life or living systems.

Community: a) group of interacting people living and/or working in a common location in close proximity to a nature center; b) group of interacting people sharing a common set of ideas, beliefs, and/or principles.

Conservation: the act of preserving natural resources.

Economic Value: the amount of money a person is willing to give up in order to get a thing, or the amount of money required to give up that thing (Wilson, et al, 2004, p.75).

Ecosystem Services: theoretical approach to the valuation of natural resources in terms of utility (Witt, 1999).

Extrinsic Value of Nature: worth derived from something external to nature itself.

Habitat: the area or type of environment in which an organism or biological population normally lives or occurs.

Human Dimension in Nature: all experience, observable behavior, and people's values, attitudes, and the basics of human nature that underlie the way people feel, think, behave and relate to the natural world (Adams, 2005).

Intrinsic Value of Nature: the essential, inherent worth of nature.

Member: adults with registered membership in Ijams Nature Center.

Motivation: that which stimulates action; provides an incentive.

Nature: the physical world, usually the outdoors, including all living things.

Nature Center: a physical structure and organized set of activities or events based on the specialness of a natural land form with a sense of place, a tie to the land, a connection with the culture of the community, and a focused celebration of all that the *place* represents.

Perspective: point of view; subjective evaluation of relative significance.

Role: a function or position.

Typology: systematic classification.

Value: rating based on a relative estimate of worth or desirability.

Visitor: adults who go or come to INC for a personal purpose.

Visitor Experience: that which visitors' encounter and take away from INC.

List of Abbreviations

ANCA – Association of Nature Center Administrators

EEO – Environmental Education Organization

INC – Ijams Nature Center

IRB – Internal Review Board

MIT – Motivational Identity Tool

NAS – National Audubon Society

NC – Nature Center

RFF – Resources For the Future

SC – Sierra Club

TNC – The Nature Conservancy

UEC – Urban Ecology Center

UK – United Kingdom

Summary

In this chapter, the need for a study to identify the focus and role of nature centers in today's world was established. In addition, the chapter provisionally defined nature centers and the services they provide, discussed the history of nature centers as a resource for humans interacting with nature, and, lastly, described nature centers' place as a factor in managing natural resource landforms. This chapter also recognized the human dimension as a factor in managing natural resources landforms. The purpose and the importance of the study were stated and research questions delineated. Finally, limitations, assumptions, and terms relevant and intrinsic to this study were defined.

Organization of the Study

This study is organized into five chapters. Chapter I has served as an introduction to the study. It contains problem and purpose statements, research questions, overview of study design

and theoretical framework, and importance of the study. Also included in Chapter I were a glossary of definitions specific to the study, assumptions, and limitations. Chapter II reviews current literature organized into the following sub-categories: bioeconomics; biophilia; the human dimension in natural resource management; the nature center business model; and visitor research in national parks, zoos, and museums.

Chapter III addresses research methods and procedures, identifies survey and interview populations, discusses survey and interview instruments, and describes data analysis procedures. Chapter IV reports the findings of the study and is organized according to the research questions. The final chapter, Chapter V, presents conclusions, discussion of findings and conclusions, and provides recommendations for future research.

Chapter II

Literature Review

The purpose of this research was to understand what stakeholders in one nature center are “thinking” about the focus of their center and the niche it occupies; to characterize the role of one nature center in its local community; to examine the nature center in terms of established characteristics of a “best” nature center; to compare their perceptions with directors of exemplar nature centers and environmental education organizations; and to characterize visitor and member stakeholder perceptions and motivations in terms of the extrinsic value of ecosystem services, *bioeconomics*, versus the intrinsic value of nature, *biophilia*.

Four research questions guided this study, as follows:

1. What are Ijams Nature Center (INC) stakeholders’ perceptions, attitudes, and beliefs about nature?
2. What are the nature center’s stakeholders’ perceptions of the role of this nature center in their local community and their perceptions of the characteristics of a best nature center, as they would define it?
3. How do the perceptions of INC stakeholders compare or contrast with nationally recognized peer nature center directors’ perceptions of a) the role of their nature centers in their local communities, and b) the characteristics of a best nature center?
4. How do the perceptions of INC visitor and member study participants relate to the concepts of bioeconomic value and biophilic value of nature?

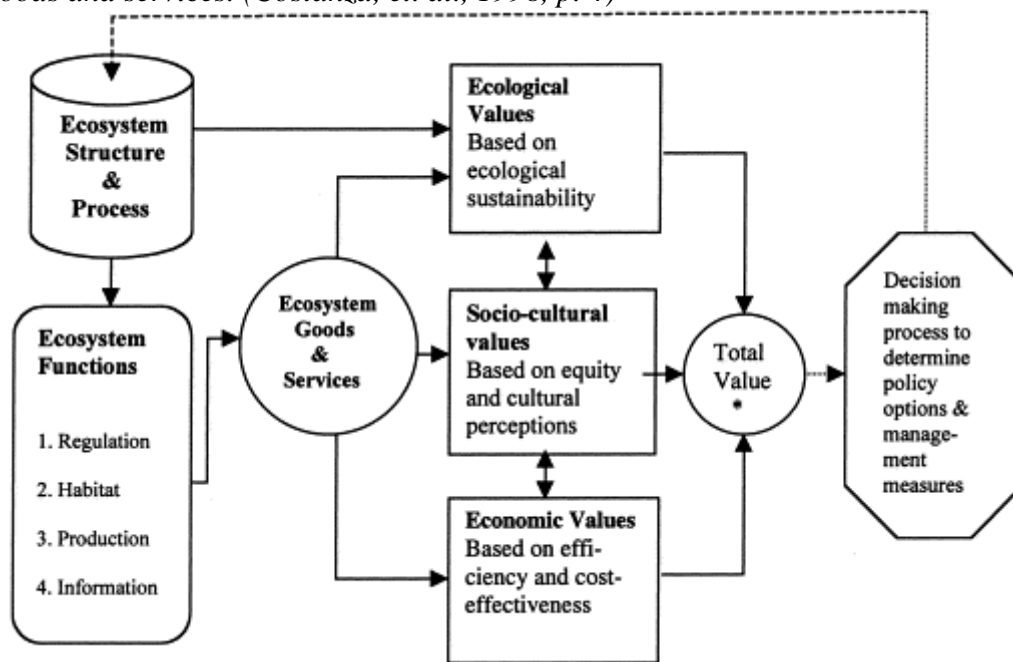
The objectives of this study were to gather descriptive data in order to learn how a select group of stakeholders in one nature center perceive nature, how they would characterize the role of their nature center in the local community, and their perceptions of the characteristics of a best nature center, as they would define it; to examine how a group of nature center and environmental education organization directors, recognized as national peers, characterize the role of their own nature centers and define a best nature center; to compare/contrast the perceptions of Ijams Nature Center (INC) staff, visitor, and member study participants with the perceptions of nationally recognized peer nature center director study participants; and, lastly, to determine how study participants' perceptions of INC are reflective of the bioeconomic and biophilic value of nature. These concepts serve to illuminate the dichotomy of the extrinsic value of nature, i.e., ecosystem services, and nature's intrinsic value with significant implications for the human dimension component.

A review of related literature reveals a growing discussion about the complimentary and contradictory concepts of the value of nature in terms of ecosystems and nature for its own sake, as factors in examining visitor motivation in nature venues. The literature review reveals limited research about this relationship; literature cited includes published research available at the time this study was conducted. The investigation undertaken will add to the existing research base. This literature review will address current research, in four subsets: 1) bioeconomics and biophilia; 2) human dimension in natural landform management; 3) visitor motivation in parks, zoos, and museums; and 4) the nature center business model.

Bioeconomics and Biophilia

Bioeconomics. The theory of *bioeconomics* is an emerging theoretical perspective of resource management addressed within the theory of *ecosystem services*. It integrates the disciplines of economics and biology by examining economic events from a biological perspective (Witt, 1999). The term “ecosystem services” refers to the management of natural resources in terms of utility and provides a conceptual framework and typology for describing, classifying, and valuing ecosystem functions, goods, and services in a clear and consistent manner. As depicted in Figure 1, ecosystem goods and services translate ecological structures and processes into ecosystem functions. These resulting ecosystem functions, more limited in number, provide the goods and services that are valued by humans, e.g. maintenance of energy fluxes, nutrient (re)cycling, food-web interactions (Costanza, et. al., 1998, p. 4).

Figure 1. Framework for integrated assessment and valuation of ecosystem functions, goods and services. (Costanza, et. al., 1998, p. 4)



Estimating the economic value of ecosystem goods and services not traded in the marketplace illuminates previously unrecognized social costs and benefits; the impact of which is important because of their worth to different members of society (Wilson, et. al., 2004). In bioeconomic terms, the human species, as an organism, has the genetic obligation to use natural resources to reproduce other capital goods (Ghiselin, 1999). According to Wilson, Troy, and Costanza (2004), economic value is measured by the balance of economic exchange or “amount of money a person is willing to give up in order to get a thing or the amount of money required to give up that thing” (p.75).

Ecosystem wellbeing and human wellbeing are complimentary concepts. “Valuation reflects the role and importance of natural structures and processes to the health of ecosystems and to the maintenance of ecosystem services” (Costanza, 2002, p. 4). The typology of values developed within the framework of this ecosystem theory includes, ecological, socio-cultural, and economic.

Bateman & Turner, in their review of the main problems connected to the non-market commodities valuation process, offer a basic formula for the aggregate value, or total economic value, of environmental resources which is actual use value plus option value plus existence value, as depicted in Figure 2.

Figure 2.

Formula for Total Economic Value of Environmental Resources

$$\text{Actual Use Value} + \text{Option Value} + \text{Existence Value} = \text{Total Economic Value}$$

Actual use value reflects resources currently being utilized. Option value refers to future use of resources and is reflective of conservation objectives planning for use at a later date. Existence value refers to an appreciation of and respect for the very existence of certain species or whole ecosystems. Economic development that addresses acceptable levels of environmental quality and conserves nature's assets commonly is termed sustainable development; however, the conventional economic perspective considers the sustainability issue as a concern based on "the phenomenon of market failure and its correction via 'proper' resource pricing" (p.5). Based on this approach, a strategy insuring the "efficient allocation of environmental resources through price corrections based on individual preference value" (p.5) will be sustainable. Environmental economic literature has, over the last 40+ years, proposed a range of monetary valuation models attempting to place a value or price on environmental goods and services provided by nature.

In research undertaken on behalf of Resources for the Future (RFF), Krutilla and Fisher (1975) addressed the economic value of ecosystem services, as framed within the paradigm of environmentalism versus land economics and based on the prevailing perspective of land economists. Basically, land economists held that natural resources have no value until they have been "improved" and produce a usable commodity. Krutilla and Fisher argue that "conventional presentation of land economics" fails to consider the opportunity costs of the land economists' approach to land use and resource management (p. 9). Further, their position is that irreplaceable resources will be lost if natural resources are valued only for use as commodity resources. Natural resources cannot be reproduced by man, hence, "increases in demand for the services of nature cannot be met by increases in supply" (p. 11). Natural resources have

economic and psychic value; economic value in terms of developmental potential versus the value of natural resources undeveloped, psychic (aesthetic) value. For example, natural biota for genetic information and botanical specimens for medicinal purposes are valued as economic natural resources; biological diversity has an economic value, as well as, an aesthetic value. Natural landscape wildlands and rivers and tracts of roadless wildlands are valued as aesthetic resources; wildlife populations and scenic area patterns geomorphology, weathering, and ecological succession are valued both as economic and aesthetic natural resources (Table 1).

Table 1.

RFF Value of Undeveloped Natural Resources (1975) (pp. 14, 15)

Natural Resource	Economic Value	Aesthetic Value
1 natural biota for genetic information	x	
2 botanical specimens for medicinal purposes	x	
3 biological diversity	x	x
4 natural landscape variety, i.e., wildlands and rivers		x
5 tracts of roadless wildlands		x
6 wildlife populations	x	x
7 scenic area patterns of geomorphology, weathering, and ecological succession	x	x

Note: RFF—Resources for the Future (www.RFF.org)

Ultimately, the cost of development includes “opportunity returns lost in transforming a tract of wildland into the developmental alternative” (p.11). Understanding the different aspects and attributes related to these places may help managers 1) plan and distribute resource use across a landscape; 2) gauge the various meanings of different resources and places; 3) recognize and address concerns of the local community; and 4) promote fair consideration and protection for special resources.

Costanza et. al. (1997) developed a valuation chart that translates ecosystem services in dollar values based on 1997 market system valuation of commodities (Table 2).

Table 2

Nature’s Services (Costanza et. al., 1997)

Value*	Ecosystem Services	
\$1.17	Pollination	Insects and other animals pollinate plants, including many of the crops people eat.
\$ 5.76	Erosion Control	Functioning ecosystems help reduce the loss of soil and limit the erosion of shores and coasts.
\$ 6.84	Climate Regulation	Ecological processes regulate the Earth’s climate, including global temperatures and precipitation.
\$ 13.86	Food Production	Nature provides a cornucopia of food for people, including fish, game, crops, nuts, and fruits.
\$16.92	Water Supply	People depend on watersheds, lakes, and aquifers to store and retain water.

*Trillion Annually

Ecological life-support services include the crops people eat, flowers, and other plant-life; helps reduce the loss of soil from erosion protecting shores and coasts; regulates our climate,

plus global temperatures, and precipitation; provides food for people, such as, fish, game, crops, nuts, and fruits; and maintains our lakes, watersheds, and aquifers to store and retain water.

According to Rebecca Goldman, senior scientist for The Nature Conservancy (TNC) ecosystem services team, TNC scientists are increasingly focused on the benefits humans have enjoyed resulting from processes of the natural world, such as, “clean water, flood control, soil replenishment, carbon sequestration” (Brooks, 2009, p. 15). Nature is still valued for its own sake; however, valuing services provided by an ecosystem moves the conservationist community toward measures of accountability for investments that claim to increase – or protect – those benefits. Strategically, recognizing the measurable benefits of conservation investments may be the basis for valuing nature for its own sake. Of specific relevancy for nature centers, is that particular natural resource features and geographic locations can have important symbolic, aesthetic, or utilitarian meanings for different groups.

Biophilia. In 1984, Biologist Edward O. Wilson coined the term *biophilia* to describe the deep connection with the rest of life that human beings subconsciously seek and need, acknowledging the earth as a living organism and the source of all life. There is a cultural context in this human-nature connection that permeates our society, filters through our individual lives, and is a factor in our increasing belief in the pivotal influence of nature in future civilizations. (Smith & Dilafroz, 1999). This connection to nature may lead to informative, instructional, and transformative constructs that feed conservation and stewardship of natural resources contributing to the environmental balance of the earth, as well as, assisting in the continuation of the ecological life cycle.

The intrinsic biophilic value of nature, in the context of this research, is addressed within the framework of the theory of *biophilia* using Stephen Kellert’s Typology of Values of Nature, (Table 3), to which he refers as a “heuristic device for describing the importance of nature in human evolution and development” (2004). People possess an inherent inclination to affiliate with natural process and diversity, and this affinity continues to be instrumental in human physical and mental development. This concept, commonly referred to as the *biophilia hypothesis*, is structured as nine values of nature. Satisfactory expression of biophilia has been linked to various aspects of physical, emotional, and intellectual growth and development. The nine values of nature are aligned (Kellert& Wilson, 1993), and include: aesthetic, dominionistic, humanistic, moralistic, naturalistic, negativistic, scientific, symbolic, and utilitarian. The hypothesis suggests that human deep dependence on nature is the very basis for the existence of a conservation ethic.

Table 3.

Kellert’s Typology of Values of Nature (1993)

Value	Importance in Human Evolution/Development
Aesthetic Physical	attraction and beauty of nature
Dominionistic	mastery and control of nature
Humanistic	affection and emotional attachment to nature
Moralistic	spiritual and ethical importance of nature
Naturalistic	immersion and direct involvement in nature
Negativistic	fear and aversion of nature

Table 3, continued

Kellert's Typology of Values of Nature (1993)

<u>Value</u>	<u>Importance in Human Evolution/Development</u>
Scientific	knowledge and understanding of nature
Symbolic	metaphorical and figurative significance of nature
Utilitarian	material and practical importance of nature

Human Dimension in Landform Management

Adams's (2005) brief history of urban ecology and conservation chronicles the formal interaction of humans with the natural world which grew to be nature conservation in urban areas. This history details the foundations of the human dimension in landform management as a factor of nature conservation in urban areas and focuses on the complimentary concepts of wildlife and human wellbeing in the natural world. Urban nature centers were constructed and provided educational programs that focused on nature. Per Adams' history, what is known about the impact of humans on the natural world in urban settings is that urbanization negatively impacts the habitats of many species and alters species' distribution.

The human dimension in natural landform management factors into all of the difficult decisions we must make about how to interact with the natural world on societal and individual levels and, as recently as forty years ago, was perceived as 90 percent of natural resource management (ILWA, 1966). Our future is dependent on making the right decisions and working together at local, national, and global levels to develop environmentally sustainable societies and

foster stewardship values. If we step away from pro-active involvement in conservation issues, the life cycles of ecosystems have the potential to break down.

Sustainability is impacted by human activities. These human interventions alter factors that determine the fundamental properties of ecological and social systems. A realistic goal of sustainability is, therefore, directly impacted by the human dimension of managing natural landforms. Natural resources systems and human social systems are inevitably linked and environmental sustainability must take into account the human dimension of the ecosystem. Thus, environmental management is the management of both people and natural resources to attain human goals while protecting the environment in order to sustain natural systems. (Fitzgerald, 2002). Human goals balanced with environmental values bring together theories that differ fundamentally. Kellert's (1998) biophilia typology is a reflection of our innate affinity for nature; Costanza, et.al., developed the ecosystem services' typology through the lens of the human dimension component of the environment(2002).

Visitor Motivation Research In Parks, Zoos, And Museums

Nature centers in the United States emerged from an earlier identification as zoos and museums of natural history and the early basis for organization is still reflected in nature center physical structures, missions, and exhibits. Consequently, for this study, research about visitor motivations in parks, zoos and museums was reviewed. In general, park, zoo, and museum visitor research has been focused on visitor satisfaction and there is a body of research investigating visitors in terms of planned recreational activities. However, the literature review revealed very limited research concerning visitor motivation.

Motivation of individual and group visitor behavior in parks zoos, and museums can be influenced by many factors, including social norms, worldview, cultural heritage, political affiliation, legal requirements, economic status, knowledge, past experience, and various psychological phenomena (Human Dimensions FAQs, n.d.). Improved understanding of those influences will help managers determine management and communication actions; practice target marketing for educational communication products; and promote use by diverse groups. Lack of understanding the impact of the human-centered factors in natural landform management can result in ineffectual management practices.

Parks, zoos, museums, and other educational leisure settings for free choice learning and nonformal education have begun to examine visitor motivations because learning in those settings is very closely linked to visitors' intrinsic motivation. Motivational factors impact visitors' experiences and have significance for interpretation, educational programs, exhibits and displays, and choices of self-guided versus tour venues. Falk (1999) in a review of research concerning learning in museums, focused on 4 different museum environments and the learning experienced by a limited number of select visitors. Falk concluded that measuring learning in a museum venue requires due consideration for "prior knowledge, experience, and interests", plus an understanding of what visitors "see, do, say, and think about" as the visit proceeds (p.2). In a later research study, Falk et. al. (2007) found that visitors to zoos and aquariums bring with them "specific identity-related motivations and these motivations direct how they conduct their visit and what meaning they derive from the experience" (p.3). Likewise, Frauman & Norman (2003) found that visitor motivation factored into the degree of learning experienced by those visitors in

nature venues. A visitor brings to the venue a greater or lesser degree of receptivity with implications for direct or indirect learning that may occur during the visit.

A multi-institutional research study was conducted to make the connection between motivations and attitudes. This project spanned a three-year period and examined motivations of visitors‘ in 12 AZA-accredited organizations, over 5,500 visitors participated, and institutions varied in size and geographic location. –For the first time, we have reliable data validating the positive impact zoos and aquariums have in changing visitors‘ feelings and attitudes about conservation” (Maddy, 2007).

Packer & Ballantyne (2002) examined the motivations of museum, aquarium, and art gallery visitors about their reasons for visiting expressed in terms of the desired outcome of the visit. The survey provided visitors with 40 choices as possible reasons for visiting. Results were thematized; items were grouped into five subsets (Table 4), learning and discovery, passive enjoyment, restoration, social interaction, and self-fulfillment.

Table 4

Classification of Motivational Factors Influencing Visitors (Packer & Ballantyne, 2002)

Motivational Subset	Desired Outcome of Visit
Learning and Discovery	<ul style="list-style-type: none"> ▪ discover new things ▪ expand knowledge ▪ be better informed ▪ experience something new or unusual
Passive Enjoyment	<ul style="list-style-type: none"> ▪ enjoy oneself ▪ be pleasantly occupied ▪ feel happy and satisfied
Restoration	<ul style="list-style-type: none"> ▪ relax mentally and physically ▪ have a change from routine ▪ recover from stress and tension

Table 4, continued

Classification of Motivational Factors Influencing Visitors (Packer & Ballantyne, 2002)

Motivational Subset	Desired Outcome of Visit
Social Interaction	<ul style="list-style-type: none"> ▪ spend time with friends or family ▪ interact with others ▪ build relationships
Self-fulfillment	<ul style="list-style-type: none"> ▪ desire to make things more meaningful ▪ challenge abilities ▪ feel a sense of achievement ▪ develop self-knowledge and self-worth

The Nature Center Business Model

Published research addressing nature centers focuses primarily on programming, environmental education, and natural habitat and populations. Research concerning nature centers as business entities is very limited and rests almost exclusively within the nature center industry itself. The Association of Nature Center Administrators (ANCA) defines a nature center as bringing “environments and people together under the guidance of trained professionals to experience and develop relationships with nature” (Byrd, 1998, p. xvii). Further, ANCA requires that a nature center have “a natural site or home base to conduct educational programs; an established education program; an existence as a separate legal entity with a precise mission statement managed by a governing body; and a paid professional staff” (p. xvii). The ANCA definition of nature center administrator supports the business-formula approach to describing a nature center director, —. . . an individual who provides the vision and leadership to carry out the administration and development of the center’s missions, goals, and objectives. Primary responsibilities include management of a facility, its education programs, personnel, finances,

marketing, and physical resources” (p. xvii). ANCA established a checklist of recommended practices that will enhance the effectiveness of a nature center as an organization underscoring the nature center business model. In 1966, the Izaak Walton League of America also recognized effective leadership and suitable land as critical aspects of community support of a nature center indicating those two components will therefore play key roles in the success of the center.

According to an interview with Graham Burton, Nature Center Director for the Royal Society for the Protection of Birds, in the United Kingdom (UK) the concept of nature centers grew as a way of preserving – or conserving – natural features and bringing people to the feature. Burton indicates that effective development of a nature center facility begins with the nature conservation value. Bringing people to the actual place may be best accomplished with only a car park and foot path instead of a full-fledged facility. However, if the conservation value of the location is not enough and visitors might not visit just because of the *place*, then business questions are considered:

- 1) Will it stand up as a business?
- 2) What do we want to do?
- 3) What is the most important way to do it so people can enjoy the land feature and will the facility attract enough people to earn the necessary money to make the business viable?
- 4) Can we afford it?

The crucial factor, according to Burton, is the financial viability of any proposed facility. In 5 to 10 years time, will the business be self-sustaining? Can the organization afford to run it? Is enough money being generated currently to make good business sense? The real issue is creating enough business to support the facility, so UK nature centers often incorporate a restaurant into the design of the facility to generate additional income. Suggestions for

addressing the best practice and good business concepts include: use a business model to evaluate the potential for the site; think of the nature center as conservation business for the land; and develop/manage the visitor business as separate and supportive of the business model with a serious conservation mission. Finally, conservation organizations are striving to serve members and society as a whole, so comments from the local community are invited. The bigger picture and long term is the overall approach (G. Burton, personal communication, September 29, 2008).

Summary

Chapter II has included a review of the current literature and research that addresses the concepts of bioeconomics and biophilia; the human dimension in natural landform management; visitor motivation in museums and zoos; and the nature center business model. Important findings from the limited literature base available include the following:

- Biophilia, the intrinsic value of nature, and bioeconomics, the extrinsic value of nature, have relevance to issues of landform management and play sometimes complimentary, and sometimes contradictory, roles.
- The human dimension in natural landform management is a growing area of concern as nature centers factor into their decision making process how to interact with the natural world on societal and individual levels.
- Visitor motivations impact visitors' experiences, have significance for nature centers' exhibits and displays, directly affect a center's mission, goals, and objectives, and are, therefore, also factors for consideration in decision making.

- Nature centers should 1) use a business model to evaluate the potential for the site; 2) think of the nature center as conservation business for the land; and 3) situate the visitor business as separate and supportive of the business model with a serious conservation mission.

Chapter III

Methods and Procedures

This chapter frames the study's design, with rationale for the design; describes its context and participants; explains data collection procedures, instruments, and instrument selection; and provides details regarding quantitative and qualitative data analysis.

Research Questions and Associated Objectives

Four research questions and five objectives served as the framework for this study:

1. What are Ijams Nature Center (INC) stakeholders' perceptions, attitudes, and beliefs about nature?
2. What are the perceptions of this nature center stakeholders of the role of this nature center in their local community and their perceptions of the characteristics of a best nature center, as they would define it?
3. How do the perceptions of INC stakeholders compare or contrast with nationally recognized peer directors' perceptions about a) the role of their nature center in their local communities, and b) the characteristics of a best nature center?
4. How do the perceptions of INC visitor and member participants in this study relate to the concepts of the bioeconomic value of nature and biophilic value of nature?

The five associated objectives of this study were: 1) to learn how a select group of stakeholders in one nature center perceive nature; 2) to learn how a select group of stakeholders in one nature center characterize the role of their nature center in the local community and their perceptions of the characteristics of a best nature center, as they would define it; 3) to examine

how a group of nature center and environmental education organization directors, recognized as national peers, characterize the role of their own nature centers and define a best nature center; 4) to compare/contrast the perceptions of INC staff, visitor, and member study participants with the perceptions of nationally recognized peer nature center director study participants; and 5) to determine how study participants' perceptions of Ijams Nature Center are reflective of the bioeconomic and biophilic value of nature.

Context

Ijams Nature Center, a nature preserve located along the Tennessee River off Island Home Avenue, Knoxville, TN, is the realized dream of Knoxville residents Harry and Alice Yoe Ijams. The Center has nurtured members of the local community in the wild —as” beginning with the family’s 50-year project begun in 1910, developing a wildlife sanctuary on their original 16 acres.

Ijams is a local, home-grown jewel in the Knoxville community and surrounding areas that now encompasses 160 acres. The educational component of their program offering has developed over the years as they have recognized a growing community interest in environmental education. Informal science, informal learning, out-of-school learning, and nature-as-the-classroom are utilized in all program objectives of the Center’s on site activities and outreach programs.

Ijams offers interactive environmental education programs for students grades K-12. Outreach programs are designed to be interactive and vary with hands-on activities, games, and media presentation; offer children fun, educational, and exciting activities; and will

accommodate up to 30 children. In addition, outreach programs include a live animal presentation designed to enhance the learning of the program participants. On-site programs include nature day camps, nature pre-school, birthday parties, junior naturalists, and boy scouts; summer programs are designed for grades 1 & 2, 3 & 4, 5 & 6. Knox County and Tennessee state curriculum guidelines are followed in the development of all of on-site and outreach programs.

School programs have been available from Ijams since the late 80's and, as previously mentioned, live animals are used in some presentations for educational observation and demonstration of behaviors and physical characteristics, not for petting. Endangered species programs are designed for 5th grade students because students at this level are capable of grasping the concept. Programs are keyed to state standards; two programs are available per grade level through the 8th grade.

History. Harry (H.P.) and Alice Yoe Ijams built their home in 1910 and over the next 50 years developed the 20-acre property into a wildlife sanctuary that they graciously shared with the community. Harry was an artist and avid birdwatcher who often drew the scenes and animals found on the Ijams property. Alice was a talented horticulturist and kept a greenhouse for propagating small native plants and shrubs that were sold or planted on the grounds.

The Ijams family grew wildflowers and ferns, developed ponds for aquatic life, and created beautiful, natural habitats that now function as Ijams Nature Center's "outdoor classrooms." For years, people living in the area came to the Ijams' home to walk the trails and talk about nature.

Methodology

This study was a descriptive research effort using both quantitative and qualitative instruments. To answer the research questions, a mixed methods, exploratory, single case study design was utilized. Yin cites case study research as providing the opportunity to “investigate a contemporary phenomenon within its real-life context” under conditions in which “boundaries between phenomenon and context are not clearly evident” (1994, p.13).

The case design was selected for this study as the optimal research approach due to three specific factors: namely, 1) one nature center is being studied; 2) the subject of the study is within a bounded system; and 3) a more in-depth understanding of a phenomenon is being sought.

To address objectives numbers 1 and 5, the researcher adapted a survey instrument designed to capture motivations of visitors in zoos and aquariums; adaptations were designed to accommodate the study’s research questions and population to be surveyed. To address objectives 2, 3, and 4, the researcher used interview protocols specifically designed for this study.

Survey Population and Sample

The survey population consisted of two groups – adult visitors to INC and adult members of INC. The invitation to participate was presented differently to members of each group, and participation rates differed significantly, as will be discussed in Chapter IV.

Adult Visitor Participants

As they were encountered on the grounds and in the museum by the researcher, adult visitors to Ijams Nature Center (INC) in Knoxville, Tennessee, were invited to participate in a

survey. Visitors to INC shared the characteristics of being anonymous and geographically dispersed and were only accessible when on the grounds of the nature center. Therefore, a convenience sampling procedure of free and independent visitors was utilized. The sample consisted of visitors (N=319) who were present on site during the days of data collection and accepted the invitation to participate in the survey. Data collection took place between the hours of 9am and 5pm, Visitor Center hours of operation, on alternating weeks of Monday, Wednesday, Friday, Sunday and, Tuesday, Thursday, and Saturday. Data collection began June 21, 2008, and continued through July 26, 2008; a total of 21 days was spent in data collection.

Data collection occurred primarily at the Visitor Center main site as a convenience location to interact with visitors. The data collection tool was a researcher-distributed paper and pencil survey made available in two ways: handed directly to visitors and placed on a table in close proximity to the Exhibit hall inside the Visitor Center. Visitors were invited to participate by completing the survey on site in an interview mode or by completing the survey on site, in written form, and depositing it in the Visitor Survey Drop Box.

Adult INC Member Participants

Ijams' membership population totals 1000; the target number of completed questionnaires was 250, as a representative sample of the population. INC adult members were invited to participate in a member survey with an announcement in Ijams newsletter, "Earth Words." Members were invited to participate in an on line survey accessed via a link on the INC website and were offered the option to choose an alternative paper and pencil survey. The on line survey failed to produce the targeted goal of 250; therefore, a sample of 150 members was

contacted via telephone to gain cooperation. Ultimately, 156 members participated in the survey. Of those, 57 percent (N= 91) participated on line, and 43 percent (N=65) completed the paper and pencil survey.

Interview Population and Samples

The interview population consisted of 4 sample groups (Table 5): 1) Ijams Nature Center (INC) Board of Directors; 2) INC employees; 3) nationally recognized directors of nature center (NC) organizations; and 4) nationally recognized directors of environmental education organizations (EEO). Interview protocols were developed based on the research questions and supporting objectives. Question sets reflect study objectives in support of the research questions.

Table 5

Study Participants

Data Collection Methodology	Sample Category	N
1 Survey	Visitors	319
2 Survey	Members	156
3 Interview	INC Board of Directors	9
4 Interview	INC Employees	9
5 Interview	Nature Center Directors	8
6 Interview	EEO Directors	3

Note: INC—Ijams Nature Center; NC—Nature Center; EEO—Environmental Education Organization

Structured interviews were conducted with INC Board of Directors (N=9) via telephone. Structured interviews were conducted with INC personnel (N=9) in-person at the INC location and via telephone during their regular work hours.

Structured interviews were conducted via telephone with the NC and EEO directors (N=8) throughout the data collection period, July 2008 through October 2008. These exemplar NC and EEO directors were identified by INC Director, Paul James, in consultation with Great Smoky Mountain Institute at Tremont Director, Ken Voorhis. Directors of the following nature centers were interviewed:

- 1) Aullwood Audubon Center and Farm, OH;
- 2) Chippewa Nature Center, MI;
- 3) Cincinnati Nature Center, OH;
- 4) Kalamazoo Nature Center, MI;
- 5) Lake Erie Nature & Science Center, OH;
- 6) New Nashville Nature Center, TN;
- 7) Pinejog Nature Center, FL; and
- 8) Schlitz Audubon Nature Center, MI.

Lastly, structured telephone interviews were conducted with directors of select environmental education organizations (N=3) throughout the data collection period, July 2008 through October 2008. Environmental education organizations included the Great Smoky Mountain Institute at Tremont, TN; the National Audubon Society (NAS), MO; and the Urban Ecology Center, WI.

Survey Instrument

The survey used in this study is a derivative of the psychometric measure visitor survey *Motivational Identity Tool* (MIT) (see Appendix B). The MIT was developed to capture

motivations of zoo and aquarium visitors (Heimlich, 2002). Design of the MIT began with a confirmatory study and literature review in Phase I of a multi-phase study. Over 125 items representing five motivational factors were initially produced and tested at four zoos and four aquariums using traditional instrument development methods and statistical techniques. The identity-related visit motivation instrument was the psychometric instrument constructed in Phase I (Heimlich, 2002). The instrument listed 20 statements representing four examples from each of the five key identity-related motivations common to zoo/aquarium visitors. Visitors selected the five statements that best explained why they chose to visit the zoo or aquarium on that particular day and then, for each of the five statements selected, ranked them in importance on a seven-point Likert-type scale. The final version of the MIT, validated in museums and zoos, included a total of 20 items with 7 choices (Heimlich, 2008).

This researcher conducted a pilot study to establish reliability of the survey questionnaire. The pilot study was conducted with a convenience sample of volunteer participants (N=20). Parallel-form reliability was established by administering alternate forms of the questionnaire in multiple testing sessions. The original MIT instrument was administered to one-half (N=10) of the participants; adjustments were made in the number of choices per item based on participant comments, i.e., choices were reduced from a total of 7 to 5 per item. The adjusted version was then administered to the remaining pilot participants (N=10). Respondent feedback resulted in changes in the wording of the statements; specifically, the name of Ijams Nature Center was placed in statements based on the pilot participants' suggestions. The adjusted instrument was administered to all volunteers (N=20) for the final test and minor changes made to improve

clarity of the statements. Results from the pilot study were incorporated into the final design of the instrument (see Appendix C).

The same set of survey questions was asked of both visitors and members with minor changes to reflect the visitor/member status of the participants; members were asked two additional INC-specific membership questions (see Appendix D). MR Survey tool, a software package resourced via the Office of Instructional Technology, University of Tennessee, was used to develop the on line survey. Both the member survey and visitor survey consist of multiple-choice, Likert scale questions. A one-page, paper and pencil questionnaire was developed to accommodate participants who requested an alternative to the on line electronic survey. The paper and pencil version mirrors the on line survey and is also a set of multiple-choice, Likert scale questions.

Interview Instrument

Interview protocols were specifically designed for this study based on concepts addressed by the research questions and supporting study objectives (see Appendix E). Wording of the interview question sets for INC Director and INC Board of Directors differed slightly in that the Director and Board of Directors were asked about the role Ijams plays in the local community and their perspective on the characteristics of a best nature center. INC staff participants were asked about the role Ijams plays in the local community. Nature Center Directors and Directors of Environmental Organization were asked about the role their nature center plays in their local communities and the characteristics of a best nature center (Table 6).

Table 6

Interview Protocols

Participant Sample	Interview Questions
INC Board of Directors	<ul style="list-style-type: none"> • From your perspective, what role does Ijams play in Knoxville and the surrounding communities? • What do you think a best nature center looks like?
INC Director	<ul style="list-style-type: none"> • From your perspective, what role does Ijams play in Knoxville and the surrounding communities? • What do you think a best nature center looks like?
INC Staff	<ul style="list-style-type: none"> • From your perspective, what role does Ijams play in Knoxville and the surrounding communities?
NC Directors	<ul style="list-style-type: none"> • What role do you play in your local community? • What do you think is characteristic of a best nature center?
EEO Directors	<ul style="list-style-type: none"> • What, if anything, do you think is a characteristic of nature centers that sets one apart from others, such as characterizing a nature center as a best? • What role do nature centers play in their local communities? • What do you think is the one outstanding characteristic of a best nature center? In other words, what does success look like for a nature center in your opinion?

Notes: INC—Ijams Nature Center; NC—Nature Center; EEO—Environmental Education Organization

Data Analysis

Data analyses were conducted for each research question based on the objectives of the question and data sources serving that objective (Table 7).

Exploratory data analysis was conducted and descriptive statistics used to address Research Questions # 1 and #4 to capture patterns in the data reflective of participants' perceptions and attitudes about the bioeconomic and biophilic value of nature. Survey questions were analyzed utilizing quantitative analysis techniques to determine the frequency of occurrence, the statistical mean, and standard deviation using the program PASW Statistics 18.0 Program, an analysis software program.

Qualitative analysis procedures were used to answer Research Questions #2 and #3. Data from the interviews with Ijams Nature Center (INC) Director, INC Board of Directors, INC staff, nature center nationally recognized peer directors, and environmental education organization directors were cleaned, verified, and organized. Analyses were conducted in accordance with appropriate qualitative techniques using coding methodology for categorizing the data (Merriam, 2009, p.178) (see Appendix F). Contents of interviews were analyzed for themes and recurring patterns of meaning. Thematic categories were then developed in terms of the role of nature centers and characteristics of a best nature center. Using an open coding technique, data were considered in minute detail while developing some initial categories. Later, more selective coding was used to systematically identify codes with respect to core concepts.

Table 7.

Research Questions, Objectives, and Data Sources

Research Questions	Objective(s)	Data Source	Item No.
What are INC stakeholders' perceptions, attitudes, and beliefs about nature?	<ul style="list-style-type: none"> ▪ to learn how a select group of stakeholders in one nature center perceive nature. 	Visitor Survey	2,4,5,10,13,15,16,17,20
		Member Survey	2,4,5,10,13,15,16,17,20
What are this nature center stakeholders' perceptions of the role of this nature center in their local community and their perceptions of the characteristics of a best nature center, as they would define it?	<ul style="list-style-type: none"> ▪ to learn how a select group of stakeholders in one nature center characterize the role of their nature center in the local community and their perceptions of the characteristics of a best nature center, as they would define it. 	INC BoD Interviews	1,2
		INC Director Interviews	1,2
		INC Staff Interviews	1
How do the perceptions of INC's stakeholders compare or contrast with nationally recognized peer directors' perceptions about a) the role of their nature center in their local communities and b) the characteristics of a best nature center?	<ul style="list-style-type: none"> ▪ to examine how a group of nature center and environmental education organization directors, recognized as national peers, characterize the role of their own nature centers and define a best nature center; ▪ to compare or contrast the perceptions of INC study participants with the perceptions of nature center director and environmental organization director study participants. 	NC Director Interviews	1,2
		EEO Director Interviews	1,2,3
		INC BoD Interviews	1,2
		INC Director Interviews	1,2
		INC Staff Interviews	1
		NC Director Interviews	1,2
		EEO Director Interviews	1,2,3

Table 7 (Continued).

Research Question, Objectives, and Data Sources

Research Question	Objective(s)	Data Source	Item No.
How do the perceptions of INC visitor and member participants in this study relate to the concepts of the bioeconomic value and biophilic value of nature?	▪ to determine how study participants' perceptions relate to nature centers as reflective of the bioeconomic and biophilic value of nature	Visitor Survey	1-18
		Member Survey	1-20

Note: INC—Ijams Nature Center; NC—Nature Center; EEO—Environmental Education Organization

The Coding Process

The coding process was begun by re-reading transcripts line-by-line. Following the line-by-line read-through, comments, terms, and observations were open coded (i.e., noted) in the margins next to words or phrases that were potentially interesting, relevant, or important to the study. The next step involved grouping the concepts (i.e., comments, terms, and observations) from each set of transcripts into a loose structure based on commonalities. A separate code list of concepts from each set of transcripts was created; code lists were then merged into a master list of concepts. The master list reflected the recurring patterns in the data and, ultimately, the themes, or categories. The themes were constructed to reflect recurring patterns of meaning that were evident in each set of responses. Themes identified concerning the role of nature centers included a) education, b) advocacy, and c) immediacy. Analysis of the data concerning the characteristics of a best nature center led to researcher identification of emergent themes, namely, a) leadership, b) staff, and c) strategic planning.

Summary

Chapter III has addressed methods and procedures used in conducting this study. This section provided information about data sources and methodology; survey and interview populations and instruments used. Finally, a brief overview of data analysis techniques was provided. In summary,

- Primary data collection procedures included administering surveys and conducting interviews.
- Survey population consisted of 319 INC visitors and 156 members.
- Interview population consisted of 9 INC Board of Directors, 9 INC Employees, 8 Nature Center Directors, and 3 Environmental Education Organization Directors.
- Primary quantitative data analysis procedures included frequency of occurrence, statistical means, and standard deviation.
- Case study analysis was conducted based on qualitative basic and inductive comparison analysis procedures.

Chapter IV

Findings

Chapter four presents the findings of the study. Research questions are reiterated, along with the associated five study objectives. A summary of data sources and analysis strategies is also presented as an introduction to the findings presented throughout the chapter.

The purpose of this research was to understand what stakeholders in one nature center are “thinking” about the focus of their center and the niche it occupies; to characterize the role of one nature center in its local community; to examine the nature center in terms of established characteristics of a “best” nature center; to compare their perceptions with directors of exemplar nature centers and environmental education organizations; and to characterize visitor and member stakeholder perceptions and motivations in terms of the extrinsic value of ecosystem services, *bioeconomics*, versus the intrinsic value of nature, *biophilia*. This chapter will introduce the results of the investigation grouped by research question.

Research Questions

Four research questions serve as the framework for this study, including:

1. What are Ijams Nature Center (INC) stakeholders’ perceptions, attitudes, and beliefs about nature?
2. What are this nature center’s stakeholders’ perceptions of the role of this nature center in their local community and their perceptions of the characteristics of a best nature center, as they would define it?

3. How do the perceptions of INC stakeholders compare or contrast with nationally recognized peer directors' perceptions of a) the role of their nature centers in their local communities, and b) the characteristics of a best nature center?
4. How do the perceptions of INC visitor and member participants in this study relate to the concepts of the bioeconomic value and biophilic value of nature?

In support of the research questions, there are five associated objectives of this study, as follows:

- 1) to learn how a select group of stakeholders in one nature center perceive nature;
- 2) to learn how a select group of stakeholders in one nature center characterize the role of their nature center in the local community and their perceptions of the characteristics of a "best" nature center, as they would define it;
- 3) to examine how a group of nature center (NC) and environmental education organization (EEO) directors, recognized as national peers, characterize the role of their own nature centers and define a "best" nature center;
- 4) to compare/contrast the perceptions of INC Director and Board of Directors study participants with the perceptions of nationally recognized peer nature center director study participants; and
- 5) to determine how study participants' perceptions of Ijams Nature Center are reflective of the bioeconomic and biophilic value of nature.

Research questions and objectives are supported by data sources utilizing quantitative and qualitative methods aligned with each question/objective, as indicated in Table 8. A total of 475 surveys were administered and 29 interviews conducted; surveys were analyzed utilizing

quantitative methodology, and interviews analyzed utilizing qualitative methodology. Surveys were administered on site, on line, and via the US postal service; interviews were conducted person-to-person on site and via telephone.

Table 8.

Research Question, Objectives, and Data Sources

Research Questions	Objectives	Data Sources	Item No.
What are INC stakeholders' perceptions, attitudes, and beliefs about nature?	to learn how a select group of stakeholders in one nature center perceive nature.	Visitor Survey	2,4,5,10,13, 15,16,17,20
		Member Survey	2,4,5,10,13, 15,16,17,20
What are this nature center stakeholders' perceptions of the role of this nature center in their local community and their perceptions of the characteristics of a best nature center, as they would define it?	to learn how a select group of stakeholders in one nature center characterize the role of their nature center in the local community; their perceptions of the characteristics of a best nature center, as they would define it.	INC BoD Interviews	1,2
		INC Director Interviews	1,2
		INC Staff Interviews	1
How do the perceptions of INC's stakeholders compare or contrast with nationally recognized peer directors' perceptions about a) the role of their nature center in their local communities and b) the characteristics of a best nature center.	<ul style="list-style-type: none"> ▪ to examine how a group of nature center and environmental education organization directors, recognized as national peers, characterize the role of their own nature centers and define a best nature center; ▪ to compare or contrast the perceptions of INC study participants with the perceptions of nature center director study participants. 	NC Director Interviews	1,2
		EEO Director Interviews	1,2,3
		INC BoD Interviews	1,2
		INC Director Interviews	1,2
		INC Staff Interviews	1
		NC Director Interviews	1,2
		EEO Director Interviews	1,2,3

Table 8. (Continued)

Research Question, Objectives, and Data Sources

Research Questions	Objectives	Data Sources	Item Number(s)
How do the perceptions of INC visitor and member participants in this study relate to the concepts of the bioeconomic value and biophilic value of nature?	to determine how study participants' perceptions relate to nature centers as reflective of the bioeconomic and biophilic value of nature	Visitor Survey	1-18
		Member Survey	1-20

Note. INC—Ijams Nature Center; BoD—Board of Directors; NC—Nature Center; EEO—Environmental Education Organization

Data Analysis

The paramount consideration in analyzing the data was to answer the research questions and associated objectives previously introduced. To that end, data were cleaned, verified, and strategically organized for analysis. Analyses were conducted in accordance with the appropriate qualitative and quantitative techniques, as explained in Chapter III.

For quantitative data, an analysis was conducted utilizing PASW Statistics 18, a statistical analysis software program. Descriptive statistics were used to determine frequency of occurrence, mean values, and standard deviations for statements relating to visitor and member motivation.

For qualitative data, the contents of interviews were analyzed for themes and recurring patterns of meaning using “coding” methodology, as described by Merriam (2009, p.178) (see Appendix F). For each research question, analyses of Ijams Nature Center participant data,

nature center participant data, and environmental education organization participant data were conducted separately and independently, in accordance with the earlier referenced coding methodology. Unexpectedly, however, for Research Question 2 and Research Question 3, the analysis process resulted in sets of common final themes for each group of participants, with differing descriptors. The process for developing the categories from which the final themes were derived is described within the discussion of findings below. Qualifying explanations for each of the themes—for each group of participants—are included in the findings.

Research Question 1. What are Ijams Nature Center (INC) stakeholders' perceptions, attitudes, and beliefs about nature?

Objective 1.1: to learn how a select group of stakeholders in one nature center perceive nature.

Analysis of INC Stakeholders' Perceptions, Attitudes, and Beliefs about Nature

INC visitors were invited to rate selected statements according to their level of importance in their decision to visit Ijams Nature Center on the day of their participation in the survey. Members were invited to rate selected statements according to their level of importance in their decision to become a member of Ijams Nature Center. The response indicator range of values for the surveys was 1, 2, 3, 4, and 5, representing responses of not important (1), somewhat important (2), fairly important (3), quite important (4), and very important (5), respectively.

For visitors, the three survey constructs with the highest means, as well as highest percentages, indicating very important, included: –At peace in these surroundings” (M=4.55, %=67.4), –Appreciate nature” (M=4.54, %=67.1), and –Watch wild animals,” (M=4.53,

%=70.2). In contrast to visitors, the two survey constructs reported by members with the highest means, as well as highest percentages, indicating very important, were: –Support conservation,” (M=4.47, %=63.6) and –Support the mission to study, celebrate, and preserve land,” (M=4.37, %=59.9). The third survey construct with the highest means was –Agreement with environmental and conservation concerns,” (M=4.34). This survey construct was rated very important by 31.3% of members and quite important by 39.8% of members (Table 9).

Overall, survey statements rated by visitors received mean ratings greater than 4.0. Four of the nine statements rated by members received mean ratings ranging between 3.88 and 3.99, while the remaining statements received mean ratings ranging from 4.00 to the previously noted 4.47. These ratings indicate that survey participant responses averaged between quite important and very important.

Table 9
Visitor/Member Perceptions of Nature

Survey Constructs	Visitor Data Responses								Member Data Responses							
	N	NI (%)	SI (%)	FI (%)	QI (%)	VI (%)	M	SD	N	NI (%)	SI (%)	FI (%)	QI (%)	VI (%)	M	SD
Support conservation	319	2.2	2.5	11.9	29.5	53.6	4.29	.961	156	0.8	1.9	8.1	25.0	63.6	4.47	.864
Actively support conservation and the protection of wildlife	319	2.8	7.8	15.4	25.1	48.3	4.06	1.142	156	1.6	5.5	12.2	24.1	55.9	4.25	1.016
Support mission to study, celebrate, and preserve land	319	2.2	1.9	11.0	22.6	62.1	4.39	.949	156	0.8	1.7	11.3	24.9	59.9	4.37	.962
Study nature	319	2.2	5.0	14.7	27.3	49.8	4.15	1.085	156	5.1	7.7	14.7	28.1	42.2	3.88	1.292
Watch wild animals	319	1.6	1.3	8.5	18.2	70.2	4.53	.864	156	4.5	5.8	13.3	26.2	48.0	4.00	1.265
Appreciate nature	319	1.3	0.9	5.3	24.8	67.1	4.54	.831	156	6.0	5.2	13.0	32.1	41.5	3.91	1.275
Natural spaces fill me with wonder	319	1.6	3.4	10.7	30.4	53.0	4.27	.998	156	2.3	4.1	17.1	34.7	37.4	3.92	1.198
At peace in these surroundings	319	1.3	0.6	6.9	23.8	67.4	4.55	.758	156	4.0	4.9	12.2	30.9	45.1	3.99	1.248
Agreement with environmental and conservation concerns									156	1.3	9.1	16.9	39.8	31.3	4.34	1.038

Note: N—Number of Participants; NI—Not Important; SI—Somewhat Important; FI—Fairly Important; QI—Quite Important; VI—Very Important; M—Mean; SD—Standard Deviation

Research Question 2. What are this nature center's stakeholders' perceptions of the role of this nature center in their local community and their perceptions of the characteristics of a best nature center, as they would define it?

Objective 2.1: to learn how a select group of stakeholders in one nature center characterize the role(s) of their nature center in the local community and their perceptions of the characteristics of a best nature center, as they would define it.

Analysis of INC Stakeholders' Perceptions of the Role of their Nature Center

This set of responses to question two presents analysis of Ijams Nature Center (INC) stakeholder perceptions from the perspective of the role of their nature center in the local community. Analysis of the data obtained through the comments of INC stakeholders led to the identification of themes regarding the role of nature centers. Separate lists of comments, terms, and observations from the set of INC stakeholders' data were created; lists were then merged into a master list of concepts. The master list reflected the recurring patterns in the data and, ultimately, the themes. The themes, or categories, were constructed to reflect recurring patterns that were evident in each set of responses. Stakeholder statements were grouped by theme, and three themes resulted—education, advocacy, and immediacy, as depicted in Figure 3.

The education theme represents grouping of comments that stress the role of the nature center as an educational resource for adults and children in the community as well as the region. The advocacy theme represents the grouping of comments focused on the promotion of conservation, preservation, and the related issues of progress and development. The immediacy theme represents the grouping of comments concerning the accessibility to natural places and presence of green space in urban communities.

Figure 3

INC Stakeholder Perceptions of the Role of their Nature Center

Education Category—Representative Comments

- *Cornerstone of environmental and natural history education in the southeast*
- *Anchor and leader in community environmental education*
- *Functions with the mindset that environmental education is important for adults and critical for children*

Advocacy Category—Representative Comments

- *Promoting:*
 - *Conservation*
 - *Environmentalism*
 - *Education Programming*
 - *Appreciation of Nature*
- *Protection and preservation of park property*
- *Focus of the “green edge”*
- *Embodies the nature perspective*
- *Stopgap for progress and development*
- *Disciplinary reminder for a healthy city*

Immediacy Category—Representative Comments

- *Only nature preserve in Knoxville and Knox County*
- *Local safe haven for children and adults*
- *Ijams family legacy - a local history*
- *Place with dedicated trails*
- *Staff knowledgeable about the local environment*
- *Linkages to the community greenway and city park system*
- *Accessibility*

Note: INC—Ijams Nature Center

Education Category. The following narrative includes comments reflective of the education theme. Due to the preponderance of responses, the perceived main, or primary, role of INC is education.

INC, as reported by one stakeholder, is the “cornerstone of environmental and natural history education in the southeast.” Also, several variations on educational topics, methodologies, and audiences for the activities of educating were offered by participants. For

instance, stakeholders indicated that INC conducts education programs at ~~schools,~~ ~~on site,~~ during ~~fieldtrips,~~ and in ~~outreach programs~~ presented in the Knoxville community.

As one stakeholder reported, INC is an ~~anchor~~ and leader in community environmental education” with a regional impact; other stakeholders reported that the nature center ~~functions~~ with the mindset” that environmental education is ~~important~~ for adults” and ~~critical~~ for children.” They also indicated that the programs are ~~effective~~ for families and teachers, as well as, ~~self-help.~~ Stakeholders stated that education topics include ~~recycling,~~ the ~~natural~~ environment,” “endangered species and plants for children,” and ~~good practice~~ for adults” and explained that the local ~~community~~ in Knoxville and surrounding counties,” plus ~~visitors~~ from outside the area” all benefit from the educational programs.

Advocacy Category. The second role reported by INC stakeholders was advocacy. The following narrative includes comments reflective of the advocacy theme – promoting the concepts of ~~conservation,~~ ~~environmentalism,~~ “educational programming,” and an ~~appreciation~~ of nature.”

Stakeholders stated that INC is the ~~focal~~ point for much of what the established Knox community views as the green edge” of the community and acts as ~~a~~ microcosm of what preservation of the land” should be. For example, ~~restoration~~ of Mead’s Quarry is a model of how to restore a landform” that has been misused. Stakeholders also reported that INC ~~embodies~~ the nature perspective” and serves as a ~~stopgap~~ for progress and development” of the city – ~~functioning~~ as a disciplinary reminder of what needs to be protected to have a healthy city” and ~~promoting~~ protection and preservation of park property.”

Immediacy Category. According to stakeholders, the third role fulfilled by INC is that of immediacy. The following narrative includes comments reflective of the immediacy theme – focusing on close proximity of the nature preserve to the larger community of Knoxville, accessibility, and the nature center as an easily accessed resource for information about the local natural environment.

Several mentioned that INC is the ~~only~~ nature preserve in the city of Knoxville and all of Knox County.” Further, stakeholders indicated that the preserve provides a ~~safe~~ haven for children and adults to enjoy a unique combination – the legacy of the Ijams family realized in a place with dedicated trails, a staff knowledgeable about the local environment, linkages to the greenway and city park system,” and ~~open~~ accessibility.” ~~INC~~ is an extension of our own backyards,” one stakeholder stated.

Analysis of INC Stakeholders’ Perceptions of the Characteristics of a Best Nature Center

This second set of responses to question two presents analysis of Ijams Nature Center (INC) stakeholders’ perceptions of the characteristics of a ~~best~~ nature center, as they would define it. Analysis of the data obtained through the comments of INC stakeholders led to researcher identification of emergent themes regarding the characteristics of a best nature center. Separate lists of comments, terms, and notes from the set of INC stakeholders’ data were created; lists were then merged into a master list of concepts. As suggested by Merriam (2009), a set of initial categories was identified to reflect ~~conceptual elements~~” (p. 181) that captured individual portions, or segments, of the statements. This initial list of categories was refined, and the final set of categories renamed to more accurately reflect the data.

The themes, or categories, were constructed to reflect recurring patterns evident in each set of responses. As shown in Figure 4, stakeholder statements were grouped by theme with the resulting three themes of leadership, staff, and strategic planning. The leadership theme represents grouping of comments that focus on the vision and purpose of the nature center, plus purposeful and effective leadership within the organization. The staff theme represents grouping of comments that stress the integral importance of staff to carrying out the vision of the center and the everyday functioning of the nature center. The strategic planning theme represents the grouping of comments focused on effectively communicating to center stakeholders the purpose, vision, and goals in all aspects of nature center development, design, and operation.

Leadership Category. The following narrative includes comments reflective of the leadership theme. Characteristics of a best nature center, as noted by stakeholders, include a “diversity of landforms”, “animals”, plus a combination of “indoor world class exhibits” “supportive of the mission” of programs and “outdoor resources that enhance the protected acreage” for “passive visitation” and group activities. Ultimately, stakeholders indicated that a best nature center is “accessible, well-managed, and well-staffed.” Further, the center will have a developed “community outreach initiative” and “strong educational goals”; some “component of passivity” plus a “diverse range of activity”; and will incorporate “education, research, recreation, and spiritual growth” in programming.

Staff Category. The following narrative includes comments reflective of the staff theme. Stakeholders stated that the “knowledge and skill” levels of staff should result in a nature center with a “unique flavor” and a “strong community presence”, occupying a “niche that reflects the strength of the land.” Stakeholders stated that staff of the center should be an integral part of

“building programs that educate people about the environment” with “conscious attention to human behavior”, as well as, “actions taken.”

Stakeholders indicated that “exhibits should be included in the center”; kid exhibits, especially, should be “fun and interesting.” In addition, stakeholders recommend that the center should be “small enough that even a toddler can be involved and enjoy outdoor programming”, but large enough for an “older child to be in the woods to experience nature.” Several stated that educational programs should be “multi-age focused” and making a “measurable difference” for each age group.

Strategic Planning Category. The following narrative includes comments reflective of the strategic planning theme. According to stakeholder responses, a best nature center should be user-friendly with the “guiding principles underlying the purpose immediately clear on a first visit” saying, “This is why we exist.” Further, per stakeholders, a best nature center “should have a focus on where to excel – knowing where you are and where you are going.”

Figure 4

INC Stakeholders’ Perceptions of the Characteristics of a Best Nature Center

Leadership Category—Representative Comments

- *Diversity of landforms*
- *Animals*
- *Indoor world class exhibits supportive of the mission*
- *Outdoor resources—enhance protected acreage*
- *Occupying niche—reflects strength of land*
- *Community outreach initiative*
- *Education, research, recreation, and spiritual growth*

Staff Category—Representative Comments

- *Integral to building programs that educate about the environment with conscious attention to human behavior and actions taken*
- *Knowledge, skill levels result in nature center with unique flavor and strong community presence*

- Accessible, well-managed, and well-staffed
- Diverse programming – multi-age focused
- Making a measurable difference

Strategic Planning Category—Representative Comments

- Guiding principles immediately clear — “This is why we exist.”
 - Focus—Where to excel
 - 2nd Focus—Where you are
 - 3rd Focus—Where you are going
-

Note: INC—Ijams Nature Center

Research Question 3. How do the perceptions of Ijams Nature Center (INC) stakeholders compare or contrast with nationally recognized peer directors’ perceptions of a) the role of their nature centers in their local communities, and b) the characteristics of a “best” nature center?

Objective 3.1: to examine how a group of nature center and environmental education organization directors, recognized as national peers, characterize the role of their own nature centers and define a “best” nature center.

Analysis of Nature Center Directors’ Perceptions of the Role of Nature Centers

This set of responses to research question three presents analysis of nature center directors’ perceptions of the role of their nature center in their local community. Analysis of the data obtained through the comments of NC directors led to researcher identification of emergent themes regarding the role of their nature center. Separate lists of comments, terms, and notes from the set of NC directors’ data were created. These separate lists were then merged into a master list of concepts and a set of initial categories identified to reflect “conceptual elements” (Merriam, 2009, p. 181). These elements captured individual portions, or segments, of the statements. The initial, or master, list of categories was refined and the final set of categories, or themes, renamed to more accurately reflect the data, i.e., recurring patterns that were evident in each set of responses. Analysis was undertaken independently with diligence and in

accordance with procedures suggested by Merriam (2009), as noted. However, and unexpectedly, themes emerged in common with INC analysis.

As shown in Figure 5, directors' statements were grouped by theme, and three themes resulted: education, advocacy, and immediacy. The education theme represents grouping of comments that stress the role of the nature center as a resource for experience and information, and a place to explore, discover, and learn, especially for children. The advocacy theme represents grouping of comments that focus on the role of nature centers as a connection (or reconnection) with nature, and a source for information about preservation and environmental issues. The immediacy theme represents grouping of comments that focus on the role of nature centers as the place for urban and suburban residents to enjoy nature and feel safe.

Education Category. The following narrative includes comments reflective of the education theme. According to directors, a nature center is a place for people to explore, discover, and learn", especially a place to come as a child and repeat that visit." To enhance the role centers play in a community, the center functions as a leader in environmental education and nature education." Directors reported that centers are a resource for experience and information." The main role is teaching the kids about nature."

Advocacy Category. The following narrative includes comments reflective of the advocacy theme. Directors reported that one role is remaining true to the mission of reducing human impact" on the land by preserving the land." Also, the role can be to lead people to understand their connection to nature" and, sometimes, to reconnect with nature." In addition, centers may participate in planning the community – planning for green spaces." One director commented that, as a member of all the Chambers of Commerce" in a region, centers can be a

“constant presence” in communities with “high visibility” and a focus that “allows nature not to be taken for granted.”

As noted by one director, nature centers function on “several different levels”; people look to a nature center as a resource for “information about environmental issues”. “Networking and partnership” are necessary because of the focus on the need to “get kids out of doors” and the need for “environmental education.”

Figure 5

NC Directors’ Perceptions of the Role of Nature Centers

Education Category—Representative Comments

- *Explore, discover, learn*
- *Come as a child and repeat that visit*
- *Leader in environmental education and nature education*
- *Resource for experience and information*
- *Teaching kids about nature*

Advocacy Category—Representative Comments

- *Reduce human impact on the land by preserving the land*
- *Leads people to understand their connection to nature*
- *Reconnect with nature*
- *Involved in community planning—planning for green spaces*
- *Allows for nature not to be taken for granted*
- *Resource for information about environmental issues*
- *Networking and partnership necessary to get kids out of doors and environmental education*
- *Caring for the property about which the center is organized*

Immediacy Category—Representative Comments

- *Place for urban and suburban dwellers to literally get out into nature*
 - *Enjoy nature and feel safe*
 - *Presence and knowledge of staff*
 - *Reassures visitors and answers questions about natural space*
 - *Connection to city or state park offers complimentary activities*
 - *Enhance overall benefit of the park*
 - *Place providing nature venue to get physically fit*
-

Note: NC—Nature Center

Immediacy Category. The following narrative includes comments reflective of the immediacy theme. Directors stated that availability of staff allows visitors to “enjoy nature and feel safe”; reassures visitors by their “presence” and their “knowledge”; and answers questions about the “natural space.” Further, centers connected to a city or state park offer “complimentary activities” and “enhance the overall benefit of the park.”

Centers offer a “place for urban and suburban dwellers to literally get out into nature” and enjoy the experience. Finally, “place” is another function by providing a nature venue for people to “physically visit.” Another main role is “earing for the property” about which we have been organized.

Analysis of NC Directors’ Perceptions of a Best Nature Center

This second set of responses to question three presents analysis of nature center director perceptions of the characteristics of a best nature center, as they would define it. Analysis of the data obtained through the comments of directors led to researcher identification of emergent themes regarding the characteristics of a best nature center. Utilizing Merriam (2009) suggested practice, the director data sets were reviewed and separate lists of comments, terms, and notes created. Subsequently, a master list of concepts was developed. Based on the master list of concepts, categories were identified that echoed individual portions, or segments, of the statements. The list of categories was refined and the final set of categories renamed to more accurately reflect the data. Independent analysis was conducted with rigorous attention to the procedures outlined by Merriam (2009) and analyses determined that Nature center directors and INC stakeholders shared themes in common concerning the characteristics of a best nature center.

As shown in Figure 6 (see p. 66), three themes were identified that reflect recurring patterns evident in each set of responses. i.e., leadership, staff, and strategic planning. The leadership theme represents grouping of comments that address the importance of leadership and its multi-leveled structure within a nature center, i.e., vision and mission components, organizational requirements, and community impact. The staff theme represents grouping of comments that focus on staff as the voice of the center, i.e., a key ingredient in communicating with the center's constituents and developing programs, establishing the center as a community resource for knowledge, and making the visitor-experience meaningful. The strategic planning theme represents grouping of comments that focus on a comprehensive approach to daily operations and long-range goals, as well as, the impact of nature center activities in the local community.

Leadership Category. The following narrative includes comments reflective of the leadership theme. Directors stated that these centers have “high quality programs” and “excellence at all levels” of operation. Directors indicated that everyone at the center should have “passion” for what we do. They also indicated that the best nature centers will offer “diverse programming” with “something for everyone” and they will know “the audience they serve.” Programs will “demonstrate progressive learning.” As one director stated, nature centers should “engender a sense of wonder” in their visitors by “stimulating with programming and the design of the facilities.” Another director stated that nature centers “enhance their level of functioning” by connecting with organizations, such as the National Audubon Society and Association for Nature Centers Administrators. Leadership is important because “we are all in

this together engaging people from the bottom up – not from the top down.” According to several directors, nature centers are creating a “real world,” more “humane, caring, and kind.”

Fun and “entertainment with the environmental message” are also important; you want to “get down to the level of visitors” so they feel a “connection and take some action in their personal lives.” Finally, the message should be presented in a positive, upbeat way so you are “not beating people up” with the message.

Directors perceived that the “element of community” is present, as well as, people “connecting to the land and to each other” as a “tangible ingredient” in their visit to a nature center and visitors, as members or nonmembers, sharing their “emotional connection with the land.” “Visitors share an emotional connection to the land and the experience just by virtue of walking the trails, participating in a planned program or one of the self-guided activities, i.e., feeling a sense of community and the sensory aspects of being on site,” one director stated.

“Magic is an essential ingredient” in a best nature center, according to one director, “Walt Disney said that everyone who came to Disney would be the first person to visit.” This director stated that “everyone” who visits a nature center “experiences *whatever they expect for the first visit.*” Also, this director noted that “visitor perception” is the key; the goal is to keep “all participants involved” and getting “what they want from their individual visit.”

Staff Category. The following narrative includes comments reflective of the staff theme. Nature centers will necessarily “prioritize the amount of time” spent with each audience and “modify the program” to address needs of their audiences “on-site and off site.” Directors felt that a knowledgeable, visitor-friendly staff is absolutely a “key ingredient.” Directors also indicated that the “right amount of interpretation” is “essential.”

A director stated that it is important to integrate ~~environmental sustainability~~ into programs so the concept is a ~~value-added component~~ for visitors. This director also indicated that programs should be designed to meet the needs of ~~different age ranges~~; the ~~life-long learner~~ is better understood and more recognized now than in past years. Further, information is more ~~accessible~~ and opportunities are provided for people to become ~~knowledgeable~~ about environmental issues.”

According to one director, nature centers are ~~opportunity brokers~~. For instance, the director noted that first time visiting a nature center for kids is ~~serendipitous~~; also, kids learn best by ~~doing~~ and by having fun.” Given the right combination of ~~experiences, activities, and information~~, kids will ~~integrate experiences~~ into their own worlds, according to the participant.

Directors stated that programming is also key and should be ~~appropriate~~ for the land base/landform” around which the center is built. The ~~facility~~ should be designed to highlight” the landform of the location. Directors suggested that successful nature centers are ~~user-friendly and consumer-oriented~~; visitors are greeted by ~~smiles and a responsive~~ staff.

Strategic Planning Category. The following narrative includes comments reflective of the strategic planning theme. The organizations offer ~~opportunities for learning and sharing~~, i.e., ~~everyone is a learner and everyone is a teacher~~.” People in general ~~earn and teach by example~~” and learn from others’ mistakes. A best nature center will ~~embrace the assistance~~ provided by such resources. One director stated, ~~Our profession works together supporting each other in an effort to increase and inspire interest in nature~~.” Several directors noted that

nature centers are based on a business model; “financial sustainability” is “critical to a center’s success.” Weakness in the “financial aspect” of the business “can be fatal.”

Directors stated that best nature centers are “relevant” and “in touch with community.” In addition, the center “accepts change”, is somewhat “entrepreneurial”, engages in “strategic planning”, and knows what to do “next”; the center benefits from “effective leadership setting the culture” in the organization; and programs are unique. A best center pays attention to “economics”, “environment”, and the “social side of sustainability.” Directors stated that the environment is impacted by “sustainability of businesses.” Therefore, a nature center with its focus on “sustainable businesses” will benefit because the business will share “skills and lessons learned.” In such an organization, “mentoring” can take place. A sustainable business can “triple the bottom line.”

They also noted that a broad “network and partnership among local community groups” focused on the “landform and environmental issues” enhances the effectiveness of the nature center and “broadens” the impact. Further, the center “models the best concept”; “your constituency sees you walk the walk” providing the best examples for what they can do “in their own lives.” In addition, directors felt that these centers focus on recognizing “changing trends and meeting the needs of the community.”

Analysis of EEO Directors’ Perceptions of the Role of Nature Centers

This set of responses to question three presents analysis of environmental education organization (EEO) directors’ perceptions of the role of nature centers in their local communities. In general, environmental education organizations offer environmental education in residential settings and off-site in outreach, as well as, other learning venues focusing on the

natural world. Analysis of the data obtained through the comments of EEO directors led to researcher identification of emergent themes regarding the characteristics of a best nature center. The process of analysis resulted in an interim set of lists recording comments, terms, and notes from the EEO directors' data; the interim set of lists was then merged into a master list of concepts. From the lists of concepts, a set of initial categories was identified to reflect "conceptual elements" (Merriam, 2009, p. 181) that captured individual portions, or segments, of the statements; the initial set of categories was refined and the final set (of categories) renamed to more accurately reflect the data.

Figure 6

NC Director Perceptions of the Characteristics of a Best Nature Center

Leadership Category—Representative Comments

- *Diverse programming – something for everyone*
- *Programs demonstrate progressive learning*
- *Engender sense of wonder – stimulating with programming and design of facility*
- *Enhance level of functioning by partnering with other organizations –*
- *Leadership – key ingredient – engage people from the bottom up Creating a real world – humane, caring, kind*
- *Positive, upbeat environmental message Element of community – connecting to the land and to each other*
- *Visitors, members and nonmembers, share emotional connection with the land*
- *Effective leadership setting the culture Magic – essential ingredient – everyone experiences whatever they expect for first visit – visitor perception is key*

Staff Category—Representative Comments

- *Knowledgeable, visitor-friendly staff – key ingredient*
- *Programs environmental sustainability ingredient and value-added*
- *Meet needs of different age groups*
- *Opportunity brokers – kids will integrate experiences in their own world*
- *Information accessible – about environmental issues*
- *Center should be user-friendly and consumer-oriented*
- *Visitors greeted by smiles and responsive staff—Facility designed to highlight landform*

Strategic Planning Category—Representative Comments

- *Entrepreneurial – accepts change, engages in strategic planning, knows what to do next*
- *Pays attention to economics, environment, and social side of sustainability*

- *Network and partnership among local community groups focused on landform and environmental issue, plus, environment impacted by sustainability of businesses*
Center models best concept – your constituency sees you walk the walk – best examples

Note: NC—Nature Center

The themes, or categories, were constructed to reflect recurring patterns that were evident in each set of responses. As shown in Figure 7, directors' statements were grouped by theme, and three themes resulted: education, advocacy, and immediacy. The education theme represents grouping of comments that stress the role of the nature center as a resource for education with a focus on nature and environmental issues with the goal of transforming behavior. The advocacy theme represents grouping of comments that focus on the role of nature centers as community building by fostering connections among constituencies concerned with conservation issues and green living. The immediacy theme represents grouping of comments that focus on the role of nature centers as a locally available resource that is knowledgeable and accessible and whose knowledge-base is grounded in environmental issues, i.e., a gathering place akin to the local library or community center with a nature connection.

Education Category. The following narrative includes comments reflective of the education theme. These centers offered “entertainment and education pieces for kids and adults” with a “focus on nature and environmental issues.” In the future, one director noted, “climate change and oil problems may require” that nature centers play a bigger role in “how to live on the earth.” The director continued, “The center may be the prime location for workshops on solar energy, environmental sustainability, and other environmental issues with workshops adopting a *reflective* flavor as natural resources are depleted.” The director suggested that “centers may also function” as the logical resource for “how-to guidelines” for living more *eco-*

friendly.” Another benefit, according one director, is that —community revitalization” can develop.

The —hope” is that visitors will —carry the center’s vision home” with them and see that vision as applicable —to their own back yards.” The big question is —how to transfer those enlightenments to their worlds and not leave the nature center as just a little island.”

Figure 7

EEO Director Perceptions of the Role of Nature Centers

Education Category—Representative Comments

- *Entertainment and education pieces for kids and adults – focus on nature and environmental issues*
- *Future – prime location for workshops – solar energy, environmental sustainability – reflective as natural resources are depleted*
- *How-to guidelines for living eco-friendly*
- *Community revitalization*

Advocacy Category—Representative Comments

- *Sense of community and connection to the land*
- *Climate change and oil problems – future concerns in how to live on the earth*
- *Survival-oriented environmental first-aid centers -- informed location*
- *Knowledge base for green living in cities*
- *Source of environmental input and guidance for proposed development and other land uses for city*

Immediacy Category—Representative Comments

- *A grass-roots impact*
 - *Totally integrated into the community*
 - *Center staff and volunteers – link to community*
 - *Gains street credibility – direct impact on immediate vicinity*
 - *Nature-connected community center – highlighting environmental aspects of community life*
 - *Build a bridge for community – connection to the land and place*
Analogous to good library – functions as community hub – place for people to connect – for people with a nature focus
-

Note: EEO—Environmental Education Organization

Advocacy Category. The following narrative includes comments reflective of the advocacy theme. According to EEO directors, nature centers historically were a gathering place

for the ~~e~~community to learn” about nature that provided both a ~~s~~sense of community and a connection to the land.” The role of nature centers may have to be ~~s~~survival-oriented environmental first-aid centers” functioning as the informed location for resources on these same issues. Per one director, ~~n~~nature centers become the knowledge base for green living” in a city. ~~S~~Staff and residents come together to address environmental issues”, such as, working with city officials to decide what will be the ~~r~~right zoning for a proposed development.”In addition, ~~i~~city officials, and even the governor”, can call ~~a~~asking for environmental input and guidance” when there is a concern for a proposed development or other ~~l~~and use issues.”

Immediacy Category. One EEO director indicated that a ~~e~~city-situated nature center” should have a ~~h~~uge role” in the community and be ~~t~~otally integrated into the community.” Nature centers can produce some ~~v~~ery positive results”, i.e., ~~a~~ grassroots impact.” In addition, the director indicated that ~~c~~enter staff and volunteers” are a ~~l~~ink to the community”; the center ~~g~~ains street credibility” through its membership because ~~t~~he members are themselves residents” of the surrounding community. The same director stated that center involvement can have a ~~d~~irect impact on the immediate vicinity,” for instance, center activities reduced ~~e~~crime rates” and ~~m~~otivated the homeless” to become active in the ~~e~~city park system (as a quasi-grassroots movement).” The nature center functions as a ~~n~~nature-connected community center” providing the greater neighborhood with resources for community events while ~~h~~ighlighting environmental aspects” of their community life.

According to directors, the ~~c~~ommunity is the ~~g~~uiding force” in the roles played by a nature center. In addition, consistent ~~c~~ontact with kids”, ~~m~~entoring”, ~~e~~ross-generational interactions” among local residents, and the ~~e~~thnicity blend among volunteers” can ~~b~~uild a

bridge for the community” making the connection to —the land and the place.” One EEO director stated, —A good nature center is analogous to a good library – everyone goes to the center eventually and repeatedly.” Further, —The center functions as a community hub, a place for people to connect and relate. The center is important to individuals with a nature focus. —

Analysis of EEO Directors’ Perceptions of the Characteristics of a Best Nature Center

This set of responses to question three presents analysis of environmental education organization (EEO) directors’ perceptions of the characteristics of a best nature center, as they would define it. Analysis of the data obtained through the comments of EEO directors led to researcher identification of emergent themes regarding the characteristics of a best nature center. Separate lists of comments, terms, and notes from the set of EEO directors’ data were created and then merged into a master list of concepts. A set of initial categories was identified to reflect —conceptual elements” as described by Merriam (2009, p. 181) capturing individual portions, or segments, of participant statements. As indicated previously in this report, after refining the initial list of categories, the final set of categories was renamed to more accurately reflect the data.

The themes, or categories, were constructed to reflect interpretations of recurring patterns that were evident in each set of responses. As shown in Figure 8, directors’ statements were grouped by theme. As noted previously, Ijams Nature Center and this group of directors of environmental education organizations share themes in common. Descriptions, i.e., explanations, of those themes are different for each group of participants. The resulting three themes were leadership, staff, and strategic planning.

The leadership theme represents grouping of comments that stress leadership expertise and effectiveness, insuring the nature center’s mission, vision, and passion are reflected consistently. The staff theme represents grouping of comments that focus on knowledge and expertise of staff as critical factors in effective business practices. The strategic planning theme represents grouping of comments that stress the importance of evaluating every proposal through a series of lenses to thoroughly understand the potential impact on existing aspects of the nature center and the underlying benefit of nature centers in the community.

Figure 8

EEO Director Perceptions of the Characteristics of a Best Nature Center

Leadership Category—Representative Comments

- *Triad of experiences--school program interaction and modeling for community*
- *Magical experience of the landform*
- *Decisions guiding lines of stewardship—Green sustainability at forefront*
- *Environmental considerations—evident even in design of center’s buildings*
- *Balanced combination of passion, programming, and business*
- *Nature center—passion of the heart ignited by people – all work inspired*
- *Honor precepts of “best practice”—Doing something no one else is doing*
- *Mission, vision, and passion – preserving a piece of land*
- *Landform contributes to center’s uniqueness*
- *Leadership expertise/effectiveness—business models, experience, education*
- *Modeling for the community—eco-friendly practices*

Staff Category—Representative Comments

- *Nature center model – four areas of knowledge for educators and naturalists*
 - *Knowledge of environment—Strong communication skills—Interpret for visitors—Observation—Inspiration*
- *Staff training near top of list – focus on positive group dynamics*
- *Culture of organization important--Good business practice – someone should be available and very visible--Focus – immediate vicinity of physical location*
- *Exhibits should be interactive and not gimmicky or museum science*
- *Comprehensive approach to environmental education programs*

Strategic Planning Category—Representative Comments

- *Every move should be approached with a series of “lenses” to analyze the impact*
 - *–first, economy;*
 - *second, environmental – magic moment to visitor experience?*

- *Every school should have an outdoor lab.*
- *Every neighborhood should have a nature center.*

Note: EEO—Environmental Education Organization

Leadership Category. The following narrative includes comments reflective of the leadership theme. According to directors, qualifying as a top nature center “varies from center to center”; there is a “triad of experiences – legs to the stool that makes us work”:

1. “school programs” so there is “consistency with the kids”;
2. “interaction” with the community; and
3. “modeling” for the community, such as, a “sustainable green facility.”

Several directors indicated that a best nature center is “in touch with societal needs” and “living what they preach.” Further, land management decisions should lead to the “magical experience of the landform” around which the nature center has evolved; those decisions are the “guiding lines of stewardship.” Directors stated that “green sustainability” should be at the forefront; “environmental considerations” should be evident even in the “design of the center’s buildings.” In addition, there should be a “balanced combination of passion, programming, and business.” As one director stated, “A nature center is a passion of the heart ignited in people — we all work inspired.”

EEO directors indicated that a nature center characterized as a best nature center will “honor the precepts of best practice”. Plus, the center will be doing something “no one else is doing”; they will be exceptional because they are “pushing the envelope.” For example, a director said that the center may “serve urban folks and the urban community” or combine “elementary school, higher education, and the nature center”, a place for people to “explore, discover, and learn.”

According to directors, centers that thrive have a ~~history~~ of a handful of people” committed to ~~preserving~~ the piece of land” and who remain involved with the center. Usually, a ~~grass-roots~~ beginning grows out of a passion” for a piece of land and a ~~person~~ with a vision”; the passion carries through to develop a ~~culture~~ unique to that vision.” Directors indicated that the person ~~carries~~ the vision and the passion” and the ~~mission~~, vision, and passion” come first. As one director cited, an ~~example~~ of the passion, vision, and commitment” is Aullwood Nature Center, quote, ~~Mrs. Aull’s~~ vision is being carried out by the current director and others who have a passion for Aullwood.” Also, the natural landform around which the nature center is formed ~~contributes~~ to each center’s uniqueness.”

EEO directors stated that the ~~level~~ of funding” available for the center is key; ~~falling~~ short of greatness” can be due to lack of dollars. In addition, ~~expertise~~” in how to lead and work with volunteers and/or staff, i.e., the level of leadership, is also very ~~key~~ to functioning” as a best nature center; ~~volunteer~~ commitment is the result” of good leadership. If management embodies a high level of expertise, then it can ~~cascade~~ and result in excellent” staff and volunteers. As noted by one director, effective leadership is a ~~blend~~ of business models, plus experience and education..

Staff Category. The following narrative includes comments reflective of the staff theme. One EEO director stated that in the ~~nature~~ center model”, there are ~~four~~ areas of accomplishment” necessary for center naturalists and educators, namely, ~~knowledge~~ of the environment, communication, observation, and inspiration.” This director explained that ~~knowledge~~ of the environment” includes skills related to ~~expertise~~ in plants, the land, the elements, and/or animals.” Additionally, center naturalists and educators should have ~~strong~~

communication skills” with the ability to ~~—interpret~~” for visitors; observation is the ability to ~~—pay attention and share the passion.~~” Finally, ~~—inspiration for self and others~~” is of ~~—paramount importance~~” – remaining ~~—inspired by nature.~~”

Staff training is ~~—near the top of the list~~” for performance as a best nature center with a ~~—focus on positive group dynamics.~~” The ~~—culture of the organization~~” is also important; visitors should always be greeted by a ~~—friendly person on site and on the phone~~ – no answering machine or menu.” Directors indicated that there should always be someone ~~—available and very visible~~” to answer questions – ~~—basically, good business practice.~~”

Directors noted that the mission of a nature center is usually focused on the environment in the ~~—immediate vicinity of the center’s physical location~~” which increases opportunities for staff to concentrate on local environmental issues. Exhibits should be ~~—interactive~~”; ~~—if they are gimmicky and just museum science~~”, then they ~~—miss the point.~~” Further, areas around the center buildings should be ~~—surrounded by native plants.~~” If the center has animals, are they native? If they are ~~—not native~~, then the center is not really thinking about what their mission should be.”

Directors indicated that center programs are most often geared for school teachers and school children from ~~—preschool through the fourth grade, ages 2 to 9 or 10,~~” and most centers do not track the kids. However, a best nature center will track the kids from ~~—year to year~~” building the program as ~~—kids advance through the school system~~” indicating that staff knowledge and function go beyond the education role. Further, programs will be ~~—grade-specific~~” when school-based, ~~—more centered to the client~~”, and ~~—demonstrate consistency~~” year after year.

Educational programs dependent on “teacher contact” are also dependent on the teachers’ “levels of environmental knowledge” and their history of “awareness of environmental education programs at nature centers and other nature venues.” According to EEO directors, working with the “school system” is more effective since involvement with the children is not “dependent on the teacher”; hence, nature programs can be “scheduled into the curriculum school-wide.”

Strategic Planning Category. The following narrative includes comments reflective of the strategic planning theme. One director noted that “transportation assistance can raise the level of effectiveness” of programs because the logistics and finances of transportation will impact school participation. “Thinking through the problem” of getting the kids to the center is an indication of a center “thinking comprehensively.” Directors noted that a nature center often “needs business” and must practice “becoming entrepreneurial” and assertive in terms of “having something to sell” to the community. “Community involvement” is very important as is “modeling for the community.” For example, one director commented that their center offers employees “Eo-Bucks—every staff member who does not use fossil fuels to get to work has \$1 added to their paycheck each day they use some alternate method” to get to work. The concept is being “adopted by other businesses” in the community.

One director noted that the building at their nature center is the result of “6 lenses for design—the first is economy and, the second, environmental impact”, for example, the potential impact was “projected for 7 generations with building materials” to evaluate if planned use would be “good or bad for the environment.” The third lens cited by the director was “programmatic.” The director considered, for instance, “Can this decision positively or negatively impact a program?” Additionally, how might the building design “add a magic

moment to visitor experience?” Another example cited was a ~~slide~~ installed in an unused closet for practicality and to add that magic moment.” Final thought: ~~every~~ school should have an outdoor lab and every neighborhood should have a nature center.”

Objective 3.2: to compare/contrast the perceptions of Ijams Nature Center (INC) study stakeholders with the perceptions of nature center and environmental education organization director study participants about the role of their own nature centers and characteristics of a ~~best~~ nature center.

The response to objective two of question three presents analysis of the comparison/contrast of INC stakeholder study participants with the perceptions of nature center and environmental education organization study participants from the perspective of the role and characteristics of a best nature center.

Comparison of Perceptions of the Role of Nature Centers

As reported earlier, themes for the role of nature centers identified within the comments collected during interviews were education, advocacy, and immediacy. Although participants' responses shared a common thread in themes identified, the groups differed in the descriptors used to detail roles played by nature centers in their local communities. Context of the individual nature centers, the history and setting of the nature center landform, and experiences of the interviewees were reflected in their comments.

Education Category. INC stakeholders' perceptions about the education role were expressed in terms of the community as a unit, ~~an~~ anchor and leader in community environmental education.” Nature center directors addressed the universality of the education role and the center as a community participant or business partner, describing the nature center as ~~the~~ nature

connection” for the community. Environmental education organization directors’ perceptions depicted nature centers as an integral member of the community, focusing on community involvement beyond the education concept and nature connection, as a “nature-connected community center.”

Advocacy Category. Descriptors for the role of advocacy among the groups were more similar, reflecting responsibility for nature issues affecting their local home sites, the community, and the city. For example, among INC stakeholders’ perceptions was the report that Ijams functions “as a disciplinary reminder of what needs to be protected to have a healthy city.” Nature center director perceptions included the perception that centers often participate in “planning for green spaces” in the community. Environmental education organization directors’ perceptions included the idea that nature center visitors will “carry the center’s vision home” with them, advocating for environmental issues.

Immediacy Category. Perceptions categorized as reflective of immediacy differ in terms of frequency of use and familiarity. For instance, nature center directors articulated the immediacy role of nature centers as the “place for urban and suburban dwellers to literally get out into nature”; Ijams stakeholders’ perceptions included the characterization of their nature center as “an extension of our own backyards.” A typical environmental education organization participant suggestion is that “a nature center is analogous to a good library – everyone goes to the center eventually and regularly.”

Comparisons of perceptions concerning the role of nature centers, as reported by nature center directors, environmental education organization directors, and Ijams Nature Center stakeholders, are depicted in Table 10.

Table 10

Comparisons of Participants' Perceptions of the Role of Nature Centers

INC	NC	EEO
Education Category—Representative Comments		
<ul style="list-style-type: none"> ▪Anchor and leader in community environmental education ▪Cornerstone of environmental and natural history education in the southeast ▪Environmental education important-adults &critical for children 	<ul style="list-style-type: none"> ▪Leader in environmental education and nature education ▪Resource for experience and information ▪Teaching kids about nature 	<ul style="list-style-type: none"> ▪Future – prime location for workshops – solar energy, environmental sustainability – reflective as natural resources are depleted ▪How-to guidelines for living eco-friendly
Advocacy Category—Representative Comments		
<ul style="list-style-type: none"> ▪Conservation, environmentalism, education programming, appreciation of nature ▪Preservation of park property ▪Embodies the nature perspective ▪Stopgap for progress and Development ▪Disciplinary reminder for a healthy city ▪Focus of the “green edge” 	<ul style="list-style-type: none"> ▪Resource for information about environmental issues ▪Reduce human impact on the land ▪Caring for property ▪Connection to nature ▪Green spaces ▪Nature not taken for granted 	<ul style="list-style-type: none"> ▪Climate change – future concerns in how to live on the earth ▪Environmental first-aid centers—informed location ▪Knowledge base for green living in cities ▪Development for city ▪Community and connection to the land
Immediacy Category—Representative Comments		
<ul style="list-style-type: none"> ▪Only nature preserve in Knoxville and Knox County ▪Local safe haven for children and adults ▪Ijams family legacy – a local history ▪Place with dedicated trails ▪Staff knowledgeable about the local environment ▪Community greenway and city park system ▪Accessibility 	<ul style="list-style-type: none"> ▪Place for urban and suburban dwellers to get out into nature ▪Enjoy nature and feel safe ▪Presence and knowledge of staff ▪Connection to city or state park ▪Nature venue—physically fit 	<ul style="list-style-type: none"> ▪Totally integrated into the community ▪Nature-connected community center ▪Build a bridge – connection to the land and place ▪Analogous to good library – functions as community hub – place for people to connect –with a nature focus

Note: INC—Ijams Nature Center; NC—Nature Center; EEO—Environmental Education Organization

Comparisons of Participants' Perceptions of a Best Nature Center

As reported earlier, themes of the characteristics of a best nature center identified within the comments collected during interviews were leadership, staff, and strategic planning (Table 11). As noted earlier in comparison of the role of nature centers, participants' responses shared a common thread in themes identified, and the groups differed to a greater degree in the descriptors used to detail the characteristics of a best nature center. However, context of the individual nature centers and the experiences of the interviewees were also reflected in their comments to a greater degree than in the comparison of roles.

Leadership Category. Ijams stakeholders' perceptions reflective of the leadership category focused on working toward the center's vision by incorporating into the design of the center a "diversity of landforms" and "outdoor resources enhancing the protected acreage." Nature center director perceptions more directly addressed "leadership" as a "key ingredient – engaging people from the bottom up, not the top down." Environmental education organization participant perceptions focused on the broader issues of "green sustainability" and "societal needs."

Staff Category. INC stakeholders' perceptions reflective of the staff thematic category focused on program building, knowledge levels, and knowledge of staff with the objective of staff actions to make a difference. Nature center directors described staff as a component of operations along with programming and facility design. The knowledge level of staff was characterized as a key ingredient in creating a best nature center. Staffing, programming, and design of the facility were represented as important in developing an effective organization. Environmental education organization directors also highlighted knowledge and skill levels of

staff as critical to functioning as a best nature center. The presence and availability of staff were noted as important for good business practice.

Ijams Nature Center stakeholders, nature center directors, and environmental education organization directors differed only peripherally in descriptors categorized as reflective of the staff theme. The main difference is the focus of INC stakeholders and EEO directors on knowledge and business versus the focus of NC directors on programming and visitor services.

Strategic Planning Category. Respondents’ perceptions reflective of the strategic planning thematic category differ somewhat in perspective. Ijams stakeholders highlighted the centers’ guiding principles as expressed consistently in all aspects of operations and activities, saying –This is why we exist.” Nature center directors’ perceptions focused on the integrative aspect of planning, –enhancing effectiveness and broadening impact” and –paying attention to economics, environment, and social side of sustainability.” Environmental education organization directors’ perceptions recognized the details and activities germane to strategic planning, –every move should be approached with a series of lenses to analyze the impact.”

Table 11

Comparison of Characteristics of a Best Nature Center

INC	NC	EEO
Leadership Category—Representative Comments		
<ul style="list-style-type: none"> ▪Community outreach initiative ▪Education, research, recreation, and spiritual growth ▪Diversity of landforms ▪Indoor world class exhibits supportive of the mission ▪Outdoor resources ▪Occupying niche 	<ul style="list-style-type: none"> ▪Leadership ▪Progressive learning ▪Partnering ▪Creating a real world – humane, caring, kind ▪Emotional connection with the land ▪Sense of wonder ▪Magic – visitor perception is key 	<ul style="list-style-type: none"> ▪Leadership expertise & effectiveness—niche ▪Modeling– sustainable green facility ▪Stewardship ▪Environmental design ▪Passion, programming, and business ▪Magical experience of the landform

Table 11, continued

Comparison of Characteristics of a Best Nature Center

INC	NC	EEO
Staff Category—Representative Comments		
<ul style="list-style-type: none"> ▪ <i>Human behavior/actions</i> ▪ <i>Knowledge, skill levels</i> ▪ <i>unique flavor/strong community presence</i> ▪ <i>Accessible, well-managed, well-staffed</i> ▪ <i>Diverse programming</i> ▪ <i>Measurable difference</i> 	<ul style="list-style-type: none"> ▪ <i>Information accessible</i> ▪ <i>Environmental issues</i> ▪ <i>User-friendly and consumer-oriented</i> ▪ <i>Facility designed to highlight landform</i> ▪ <i>Staff share passion</i> ▪ <i>Programs</i> 	<ul style="list-style-type: none"> ▪ <i>Nature center model</i> ▪ <i>Staff training near top of list</i> ▪ <i>Culture—org important</i> ▪ <i>Good business practice –</i> ▪ <i>Focus – immediate vicinity</i> ▪ <i>Exhibits – interactive</i> ▪ <i>Comprehensive environmental education programs</i>
Strategic Planning Category—Representative Comments		
<ul style="list-style-type: none"> ▪ <i>Guiding principles immediately clear — “This is why we exist.”</i> ▪ <i>Focus—where to excel, where you are, where you are going</i> 	<ul style="list-style-type: none"> ▪ <i>Knows what to do next</i> ▪ <i>Economics, environment, and social side of sustainability</i> ▪ <i>Businesses – mentoring</i> ▪ <i>Network and partnership</i> ▪ <i>Models best concepts</i> 	<ul style="list-style-type: none"> ▪ <i>Every school should have an outdoor lab</i> ▪ <i>Every neighborhood should have a nature center”</i> ▪ <i>Series of “lenses” to analyze the impact</i>

Note: INC—Ijams Nature Center; NC—Nature Center; EEO—Environmental Education Organization

Research Question 4. How do the perceptions of Ijams Nature Center (INC) visitor and member participants in this study relate to the concepts of the bioeconomic value and biophilic value of nature?

Objective 4.1: to determine how study participants’ perceptions relate to nature centers as reflective of the bioeconomic and biophilic value of nature.

Analysis of Visitor and Member Bioeconomic and Biophilic Value of Nature

This set of responses to research question four presents analysis of how the perceptions of INC visitor participants in this study relate to the concepts of the bioeconomic value and

biophilic value of nature. The statements on the surveys were organized into biophilic and bioeconomic categories based on the development process for the survey instrument. (See Chapter 3.)

Visitor and Member Bioeconomic Value of Nature

Table 12 depicts frequency of occurrence, the means, and standard deviations for visitor and member perceptions concerning the bioeconomic value of nature. Visitors rated survey constructs according to their level of importance in their decision to visit Ijams Nature Center on the day of their participation in the survey. Members rated the constructs according to their level of importance in their decision to become a member of Ijams Nature Center. The response indicator range was 1, 2, 3, 4, and 5, representing responses of not important (1), somewhat important (2), fairly important (3), quite important (4), and very important (5), respectively.

As reported in Table 12, for visitors the three constructs with the highest means, as well as highest percentages, indicating very important, included: ~~–~~Important institution in this community,” (M=4.59); ~~–~~Quality time for family/friends,” (M=4.31); and ~~–~~Enjoyable for family/friends,” (M=4.24). Members mirrored the visitor rating of ~~–~~Important institution in this community,” (M=4.55) with the highest means and highest percentage, although the actual rating was not as high. The two constructs with the next highest means, included: ~~–~~One of best places to visit around here,” (M=4.23) and ~~–~~More here than mall or movie,” (M=3.68). Notably, visitor and member survey construct, ~~–~~Wife/partner/husband made me,” received the lowest mean rating from both visitors and members, 1.56 and 1.16, respectively, as well as, the highest percentage rating for not important, 78.4% and 87.6%, respectively.

Overall, eighty percent of the bioeconomic survey constructs were rated by visitors between quite important and very important (3.36 to 4.0); the remaining twenty percent were rated between not important and somewhat important (1.56 and 2.52, respectively). Seventy-three percent of survey constructs received ratings from members quite important to very important (3.16 to 4.55, respectively). Ratings of the remaining constructs ranged between not important and somewhat important (1.16 to 2.99, respectively). Means and response rate percentages for all survey bioeconomics constructs reflective of the bioeconomic value of nature are recorded in Table 12 (see p. 87).

Visitor and Member Biophilic Value of Nature

This set of responses to research question four presents analysis of how the perceptions of INC visitor and member participants in this study relate to the concept of the biophilic value of nature. Visitors rated selected statements according to their level of importance in their decision to visit Ijams Nature Center on the day of their participation in the survey; members rated statements according to their level of importance in their decision to become a member of INC. The response indicator range was 1, 2, 3, 4, and 5, representing responses of not important (1), somewhat important (2), fairly important (3), quite important (4), and very important (5), respectively.

As depicted in Table 13 (see p. 89), for visitors, the three survey constructs with the highest means included: –At peace in these surroundings,” (M=4.55); –Watching wild animals,” (M=4.53); and –Appreciate nature,” (M=4.54). For members, the three statements with the highest means included: –Support conservation,” (M=4.47); –Support the mission to study,

celebrate, and preserve land,” (M=4.37); –Agreement with environmental and conservation concerns,” (M=4.34).

All survey constructs reflective of the biophilic value of nature received mean ratings from visitors greater than 4.0. Almost 50%, four of the nine, rated by members received mean ratings ranging from 3.88 to 3.99, while the remaining constructs received mean ratings ranging from 4.00 to the previously noted 4.47. These ratings indicate that survey participants rated all biophilic items quite important or very important. Means and response rate percentages for survey constructs reflective of the biophilic value of nature are recorded in Table 13 (see p. 89).

Summary of Key Findings

Key findings from this study are noted, as follows.

For visitors, the three statements with the highest means, as well as highest percentages, indicating very important, included: –I feel at peace in these surroundings” (M=4.55), –Coming here helps me appreciate nature” (M=4.54), and –I like to watch wildlife,” (M=4.53). In contrast to visitors, the three statements with the highest means, as well as highest percentages, indicating very important, reported by members, were: –I support conservation,” (M=4.47); –I support the mission to study, celebrate, and preserve land,” (M=4.37); and –I agree with my own environmental and conservation concerns,” (M=4.34).

Common themes were identified concerning the role of nature centers, i.e., education, advocacy, and immediacy. Although participants’ responses shared a common thread in themes identified, visitors and members differed in the descriptors used to detail roles played by individual nature centers in their local communities. Context of the individual nature centers, the

history and setting of the nature center landform, and experiences of the interviewees were reflected in their comments.

Similarly, common themes were identified concerning the characteristics of a best nature center; those themes were leadership, staff, and strategic planning. Ijams stakeholders, nature center directors, and environmental education organization directors differed in the descriptors used to detail the characteristics of a best nature center. Context of the individual nature centers and the experiences of the interviewees were reflected in participants' responses.

For visitors, the three survey constructs with the highest means, as well as highest percentages, indicating very important, reflective of the bioeconomic value of nature included: ~~–~~Important institution in this community,” (M=4.59); ~~–~~Quality time for family/friends,” (M=4.31); and ~~–~~Enjoyable for family/friends,” (M=4.24). Members mirrored the visitor rating of ~~–~~Important institution in this community,” (M=4.55) with the highest means and highest percentage, although the actual rating was not as high. The two constructs with the next highest means, included: ~~–~~One of best places to visit around here,” (M=4.23) and ~~–~~More here than mall or movie,” (M=3.68). Notably, visitor and member survey construct, ~~–~~We/partner/husband made me,” received the lowest mean rating from both visitors and members, 1.56 and 1.16, respectively, as well as, the highest percentage rating for not important, 78.4% and 87.6%, respectively.

For visitors, the three survey constructs with the highest means reflective of the biophilic value of nature included: ~~–~~At peace in these surroundings,” (M=4.55); ~~–~~Watching wild animals,” (M=4.53); and ~~–~~Appreciate nature,” (M=4.54). For members, the three statements with the highest means included: ~~–~~Support conservation,” (M=4.47); ~~–~~Support the mission to study,

celebrate, and preserve land,” (M=4.37); –Agreement with environmental and conservation concerns,” (M=4.34).

All survey constructs reflective of the biophilic value of nature received mean ratings from visitors greater than 4.0. Almost 50%, four of the nine, of the survey constructs rated by members ranged from 3.88 to 3.99, while the remaining constructs received mean ratings ranging from 4.00 to the previously noted 4.47.

The complete table of participants’ interview responses is presented in Appendix G, Table 14. The complete table of visitor and member survey results with frequency of occurrence, the statistical mean, and standard deviation for each survey construct, as reported by visitors and members, is presented in Appendix H, Table 15.

Table 12

Visitor and Member Survey Results Reflective of the Bioeconomic Value of Nature

Survey Constructs	Visitor Data Responses								Member Data Responses							
	<u>N</u>	<u>NI</u> (%)	<u>SI</u> (%)	<u>FI</u> (%)	<u>QI</u> (%)	<u>VI</u> (%)	<u>M</u>	<u>SD</u>	<u>N</u>	<u>NI</u> (%)	<u>SI</u> (%)	<u>FI</u> (%)	<u>QI</u> (%)	<u>VI</u> (%)	<u>M</u>	<u>SD</u>
Revisit	319	37.0	7.8	13.8	17.9	23.2	2.82	1.633	156	23.2	7.0	19.4	19.9	28.4	3.16	1.559
One of best places to visit around here	319	3.1	3.1	14.1	30.4	48.0	4.13	1.102	156	1.6	3.0	11.5	31.4	27.9	4.23	1.013
Visit nature centers on trips	319	13.5	11.9	20.1	30.7	23.2	3.36	1.350	156	19.0	24.5	25.5	16.1	11.2	2.64	1.309
My choice to Spend my day	319	4.1	2.8	12.2	28.8	51.4	4.19	1.088	156	.8	1.7	11.3	24.9	59.9	2.99	1.344
More here than mall or movie	319	4.7	4.1	11.3	25.7	53.6	4.18	1.144	156	7.3	8.7	17.1	33.2	33.4	3.68	1.338
Wife/partner/ husband made me	319	78.4	4.4	6.6	4.4	6.3	1.56	1.183	156	87.6	3.6	3.2	1.9	.8	1.16	.671
Enjoyable for family/friends	319	5.6	1.9	7.5	28.5	55.5	4.24	1.146	156	9.3	8.7	12.6	33.3	31.6	3.56	1.436
Good experiences for family/friends	319	11.9	3.4	11.6	26.6	46.1	3.91	1.354	156	7.2	10.0	15.6	30.6	33.6	3.64	1.364

Table 12, continued

Visitor and Member Survey Results Reflective of the Bioeconomic Value of Nature

Survey Constructs	Visitor Data Responses								Member Data Responses							
	<u>N</u>	<u>NI</u> (%)	<u>SI</u> (%)	<u>FI</u> (%)	<u>QI</u> (%)	<u>VI</u> (%)	<u>M</u>	<u>SD</u>	<u>N</u>	<u>NI</u> (%)	<u>SI</u> (%)	<u>FI</u> (%)	<u>QI</u> (%)	<u>VI</u> (%)	<u>M</u>	<u>SD</u>
Quality time for family/friends	319	4.7	2.5	9.1	24.8	58.8	4.31	1.056	156	9.9	11.3	13.8	32.1	28.5	3.45	1.451
Important institution in this community	319	2.5	.6	5.3	13.8	76.8	4.59	.937	156	1.6	1.9	3.2	15.6	75.5	4.55	.982
Membership benefits									156	9.4	19.3	21.2	20.1	27.8	3.31	1.416

Notes: N—Number of Participants; NI—Not Important; SI—Somewhat Important; FI—Fairly Important; QI—Quite Important; VI—Very Important; M—Mean; SD—Standard Deviation

Table 13

Visitor and Member Survey Results Reflective of the Biophilic Value of Nature

Survey Constructs	Visitor Data Responses								Member Data Responses							
	<u>N</u>	<u>NI</u> (%)	<u>SI</u> (%)	<u>FI</u> (%)	<u>QI</u> (%)	<u>VI</u> (%)	<u>M</u>	<u>SD</u>	<u>N</u>	<u>NI</u> (%)	<u>SI</u> (%)	<u>FI</u> (%)	<u>QI</u> (%)	<u>VI</u> (%)	<u>M</u>	<u>SD</u>
Support conservation	319	2.2	2.5	11.9	29.5	53.6	4.29	.961	156	0.8	1.9	8.1	25.0	63.6	4.47	.864
Actively support conservation and protection of wildlife	319	2.8	7.8	15.4	25.1	48.3	4.06	1.142	156	1.6	5.5	12.2	24.1	55.9	4.25	1.016
Support the mission to study, celebrate, and preserve land	319	2.2	1.9	11.0	22.6	62.1	4.39	.949	156	0.8	1.7	11.3	24.9	59.9	4.37	.962
Study nature	319	2.2	5.0	14.7	27.3	49.8	4.15	1.085	156	5.1	7.7	14.7	28.1	42.2	3.88	1.292
Watching wild animals	319	1.6	1.3	8.5	18.2	70.2	4.53	.864	156	4.5	5.8	13.3	26.2	48.0	4.00	1.265
Appreciate nature	319	1.3	0.9	5.3	24.8	67.1	4.54	.831	156	6.0	5.2	13.0	32.1	41.5	3.91	1.275
Natural spaces fill me with wonder	319	1.6	3.4	10.7	30.4	53.0	4.27	.998	156	2.3	4.1	17.1	34.7	37.4	3.92	1.198
At peace in these surroundings	319	1.3	0.6	6.9	23.8	67.4	4.55	.758	156	4.0	4.9	12.2	30.9	45.1	3.99	1.248
Agreement with environmental and conservation concerns									156	1.3	9.1	16.9	39.8	31.3	4.34	1.038

Notes: N—Number of Participants; NI—Not Important; SI—Somewhat Important; FI—Fairly Important; QI—Quite Important; VI—Very Important; M—Mean; SD—Standard Deviation

Chapter V

Conclusions, Discussion, Implications, and Recommendations

The purpose of this research was to understand what stakeholders in one nature center are “thinking” about the focus of their center and the niche it occupies; to characterize the role of one nature center in its local community; to examine the nature center in terms of established characteristics of a “best” nature center; to compare their perceptions with directors of exemplar nature centers and environmental education organizations; and to characterize visitor and member stakeholder perceptions and motivations in terms of the extrinsic value of ecosystem services, *bioeconomics*, versus the intrinsic value of nature, *biophilia*. The findings of the study were presented in Chapter IV. Conclusions drawn from the results presented in Chapter IV have been grouped by research question and are discussed below.

Conclusions

Question 1: What are INC stakeholders’ perceptions, attitudes, and beliefs about nature?

Conclusion 1: Based on the findings of this study, it is possible to conclude that visitors’ and members’ perceptions, attitudes, and beliefs about nature differed. Visitors perceive that the surroundings themselves provide them with opportunities to watch wild animals, appreciate nature, and feel at peace. Visitors do value the conservation and education mission of the nature center; however, the emotional connection and nature experiences are of more importance. In contrast, INC member perceptions of nature are reflective of the concepts of stewardship and advocacy fostered by the Center’s conservation mission, education programs, and preservation activities.

Question 2: What are the nature center's stakeholders' perceptions of the role of this nature center in their local community, and their perceptions of the characteristics of a "best" nature center, as they would define it?

Conclusion 1: Ijams' stakeholders characterized the role of their nature center in the local community as a resource for environmental education for adults and children in the community, advocacy on behalf of conservation and preservation issues, and access to natural habitats and green spaces within the city.

Conclusion 2: Ijams' stakeholders characterized a best nature center as demonstrating the characteristics of effective leadership with vision and purpose of the center guiding operations, competent and knowledgeable staff engaged in carrying out the vision of the center, and evidences of strategic planning in day-to-day operations, with the center's purpose, vision, and goals evident to constituents.

Conclusion 3: Ijams' stakeholders' perceive that the role of Ijams Nature Center in their local community does incorporate characteristics that describe a best nature center, specifically the characteristics of leadership, staff, and advocacy.

Question 3: How do the perceptions of INC stakeholders compare or contrast with nationally recognized peer directors' perceptions of a) the role of their nature centers in their local communities, and b) the characteristics of a best nature center?

Conclusion 1: Both nature center directors and environmental education organization directors characterized the role of nature centers in their local communities as providers of environmental education, advocacy concerning issues of conservation and preservation of natural resources, plus accessibility to a nature experience.

Conclusion 2: Ijams Nature Center (INC) stakeholders, nature center directors, and environmental education organization directors voiced common themes in the articulation of their perceptions of the role of nature centers in their local communities i.e., education, advocacy, and immediacy. However, differences in context were evidenced by the breadth and depth of their perceptions. INC stakeholders' comments focused on the most important part of each role fulfilled by their nature center, i.e., the essence or crucial element. Nature center directors' descriptions enlarged the perspective and included aspects of experience relevant to the concept of each theme.

Conclusion 3: Both nature center directors and environmental education organization director participants perceived a best nature center as demonstrating effective leadership in overall operations, evidences of competent and knowledgeable staff in daily operations and programming activities, and strategic planning the guiding force in establishing long term goals and conducting day-to-day operations.

Conclusion 4: Perceptions of the three groups examined in this study—INC stakeholders, nature center directors, and environmental education organization directors—differed in their “degree” of articulation characterizing a best nature center. And, as previously addressed, differences in context were evidenced by the breadth of phrasings, describing the broader scope of some nature centers in the way they interact with communities, for example. Also notable were differences in the depth of descriptor phrasings which highlighted aspects of nature center functioning that might normally be overlooked.

Conclusion 5: According to findings in this study, a best nature center is a composite

of factors, practices, and perspectives that merge to form a business plan reflective of best practice guidelines. Participants' comments highlighted the unique quality of centers and the passion and vision that guides development.

Question 4: How do the perceptions of INC visitor and member study participants relate to the concepts of bioeconomic value and biophilic value of nature?

Conclusion 1: Ijams Nature Center visitors and members value nature differently in terms of the concepts of bioeconomics and biophilia. Both visitors and members rate the biophilic value of nature of greater importance than the bioeconomic value; however, each group selected differing survey constructs as reflective of the biophilic value of nature.

Participants' perceptions of the bioeconomic value of nature reflect a greater range in survey constructs ratings of very important than biophilic ratings of survey constructs.

Conclusion 2: Both visitors' and members' perceptions, reflective of the bioeconomic value of nature, focus on the Center as an ever present feature, dedicated to public service, and important to the community. Additionally, visitors and members recognized the importance of the experiences of family and friends.

Discussion

Discussions of selected conclusions are organized by question and conclusion.

Visitor and Member Perceptions of Nature

Question 1/Conclusion 1. The differences in assignment of value by members may imply that becoming a member of this nature center is a function of the degree of an individual's concerns for long term environmental conservation issues. The stewardship/advocacy valuation by members is in alignment with the underlying objectives of nature centers as delineated by

Ashbaugh (1963), i.e., contributing to conservation and promoting environmental stewardship. Exploration of the nature center visitor and member motivations adds to the discussion of the human dimension in preserving natural landforms that is an area of growing importance and becoming an even more critical consideration in nature centers' mission of preserving the land.

Role of Nature Centers

Question 3/Conclusion 3. Each group's responses (INC participants, nature center directors, and environmental education organization directors) were indicative of their nature center's "evolution"; each nature center came into existence as the result of one individual's passion or a group of supporters who wanted to preserve a particular location, i.e., a landform. The role of that nature center was impacted by the community in which it located and needs of the community. Environmental education organization directors' perceptions characterized the role of a nature center as one of functionality. Overall, the comments of each group were equally imbued with inspirational spirit and passion for the nature center roles of education and advocacy, plus the immediacy of nature venues about which the nature center has been organized.

Characteristics of a Best Nature Center

Question 2/Conclusion 1. Ijams' stakeholders described a best nature center as having a diversity of landforms, indoor world class exhibits, and outdoor resources that enhance the protected acreage supportive of the center's vision and purpose. A best center will have competent and knowledgeable staff carrying out the vision of the center with a community outreach initiative, plus education, research, and recreation.

Question 3/Conclusion 3. Ijams' stakeholders' comments suggest that their nature center can be characterized, in many respects, as a best nature center. Their comments echo those offered by the other two groups of participants, i.e., nationally recognized nature center directors and environmental education directors.

Question 3/ Conclusion 5. The justification for this conclusion is bound within the unique "ontogeny" of the development of nature centers. Nature centers are conceptually different because each center is formed around a unique, or unusual, landform; the history, shape, location, or other characteristic of the landform captures the imagination of a person or group of people who then work to preserve the landform by developing a nature center.

Emergent themes in the analysis of characteristics of a best nature center found in this study (leadership, staff, and strategic planning) are reflective of the Associated Nature Center Administrator (ANCA) Best Practices Checklist (Byrd, 1998). The ANCA checklist of recommended practices, a collaborative effort of nature center professionals and other experts, presents practices from the field organized into five categories, or sections; each section includes suggestions for application. The five categories are leadership, strategic planning, boards, staff, and fund raising.

Visitor and Member Bioeconomic and Biophilic Value of Nature

Question 4, Conclusion 1. Results of data collected in this study are in support of the theoretical concept of bioeconomics. To review, ecosystem wellbeing and human wellbeing are complimentary concepts. "Valuation reflects the role and importance of natural structures and processes to the health of ecosystems and to the maintenance of ecosystem services" (Costanza, 2002, p. 4). The typology of values developed within the framework of this ecosystem theory

includes, ecological, socio-cultural, and economic values. Nature is still valued for its own sake; however, valuing services provided by an ecosystem moves the conservationist community toward measures of accountability for investments that claim to increase – or protect – those benefits. Strategically, recognizing the measurable benefits of conservation investments may be the basis for valuing nature for its own sake.

The perceptions are significant for nature centers because nature centers are organized around a geographic landform and developed as a result of a passion or deep appreciation for the landform. Particular natural resource features and geographic locations may have important symbolic or utilitarian meanings for different groups, translating into bioeconomic value.

Results of data collected in this study lend research support to the theoretical context of the biophilia hypothesis. The biophilia hypothesis suggests that human deep dependence on nature is the very basis for the existence of a conservation ethic and that people possess an inherent inclination to affiliate with natural process and diversity.

Satisfactory expression of biophilia has been linked to various aspects of physical, emotional, and intellectual growth and development. Visitors' and members' perceptions reflective of the biophilic value of nature speak specifically to components of the natural world.

Implications

Role of Nature Centers

The implications of the results of this study concerning the role of nature centers are suggestive of several areas for investigation that relate to environmental education (EE) programs and environmentally-focused activities presented by schools and other venues, including boys and girls clubs and after-school programs, as well as, eco-tourism. The roles

identified could serve the objectives of EE programs, and other environmentally-focused activities, since these venues share audiences and objectives in common with nature centers.

Participants' responses may also have relevance to environmentally-based experiential education programs, i.e., citizen science programs and activities/naturalist certification programs, such as the Southern Appalachian Naturalist Certification Program (SANCP), Great Smoky Mountains Institute at Tremont, (<http://www.gsmit.org/sanpcp>). These programs have objectives and goals in common with nature centers. In addition, many states are developing EE certification programs, similar to the North Carolina (NC) Environmental Educator Certification Program, sponsored by the NC Office of Environmental Education, (<http://www.eenorthcarolina.org/certification.html>). Experiential education programs and EE certification programs assert goals of education and advocacy and work to be accessible and available to their constituents, mirroring the roles identified by the participants in this research. The implication is that such programs would benefit by building on this connection, training constituents to be knowledgeable about their own communities' natural habitats. For example, local citizen scientists, or certified environmental educators, could function as the quasi-official go-to person for the local neighborhood or greater community interests concerning environmental issues, echoing the education, advocacy, and immediacy roles.

Characteristics of a Best Nature Center

The implications of findings and attendant conclusions concerning a best nature center are suggestive of several areas for ongoing concern of nature centers, especially the issues of funding, sustainability, and program success. Funding for nature centers comes primarily from supporters, i.e., members, fees for programs, and fundraising activities. Donations to nonprofit

organizations fluctuate with the economy, and, therefore, impact nature center finances. Both sustainability and program success are impacted by the issues of funding, and long-term survival is dependent on building sustainability. Program success is a key ingredient in the growth of a center and a nature center whose programs are unsuccessful eventually ceases to function. Sustainability and program success are dependent on funding. Nature center directors should use a business model to evaluate, and re-evaluate, operations and success of their centers. Further, nature centers should function as conservation business for the land with the visitor business situated as separate, and supportive, of the business model with a serious conservation mission.

Practical application of results of this study suggest that implementation of operational tactics would move the nature center to more effectively reflect the business model approach to sustainability for a nature center. Based on participants' comments, best nature centers will incorporate programs designed for adults as well as children, follow a customer service perspective in operating the center with proper signage and staff always available to visitors, design the facility to communicate the nature center vision and mission to be visible to all visitors, plus adopt a program-for-fee approach to establishing a revenue stream.

As noted earlier in this report, Graham Burton, Nature Center Director for the Royal Society for the Protection of Birds in the United Kingdom, described nature centers as a way of preserving – or conserving – natural features and bringing people to the feature. (G. Burton, personal communication, September 29, 2008). Burton's measures for developing a nature center are applicable when evaluating the viability of an existing center because, to repeat the earlier statement, nature centers function based on a business model. Burton suggests that

financial viability is a crucial factor for nature centers, therefore, sustainability should be a prime consideration, e.g., will the business be self-sustaining in 5 to 10 years?

Drawing on Burton's comments and building on the findings in this study, the implication is that the combined efficacy of best practice and good business concepts could be employed by using a business model to evaluate the potential for the nature center and thinking of the nature center as *conservation business for the land*, in other words, land conservation in collaboration with business. Best practice precepts underwrite the overall approach of focusing on the big picture and long term. The nature center business model is a growing theme in the industry and findings of this study support that focus. Ultimately, establishing a revenue stream supportive of the nature center business model is the key to sustainability.

Visitor and Member Valuations of Nature

The visitor and member biophilic and bioeconomic valuations of nature as reported in this study have implications for other nature organizations with an environmental agenda. Such organizations would benefit by taking into consideration how their members and potential members value nature—in terms of the intrinsic value of nature (biophilia) and/or the extrinsic value of nature (bioeconomics). Results of their investigation could then inform future development, fund raising, promotion, designing marketing campaigns, advocacy outreach, promotions, and membership recruitment strategies.

For example, biophilia and bioeconomic concepts may offer understandings of member motivations for joining and supporting the causes of nature centers and related organizations, e.g., the Sierra Club (SC). As an example, during an informal conversation with a SC member, who is on the membership committee for the local SC Harry Broome Chapter, the opinion was

offered that the motivation for membership (in the local SC Harry Broome Chapter) is reflective of the bioeconomic value of nature while participation in local SC outings is reflective of a biophilic value of nature (personal communication, June 16, 2010). However, the national perspective, according to Johanna O'Kelley, Director of Licensing and Cause-Related Marketing, suggests that SC members' commitment to the conservation of nature is indicative of the biophilic value of nature and, further, that a biophilic valuation of nature is the prime motivator for persons who join the SC. (O'Kelley, J., personal communication June 18, 2010).

Supportive of the national perspective is the SC poster which, according to O'Kelley, is a direct extraction of SC member participants' responses reported during research conducted by a cause marketing firm about "attitudes of environmental groups", as evidenced by this excerpt:

"Nature, vastly complex and infinitely subtle, is our perfect metaphor. Related to everything, signifying everything, it is the spring where we go to renew our spirit. And it, in turn, asks something of us. It compels us to take responsibility and then to take action."

Bioeconomic value may be reflected by the SC tagline,

"explore, enjoy and protect the planet", similarly, the SC mission statement, "To explore, enjoy and protect the wild places of the earth; To practice and promote the responsible use of the earth's ecosystems and resources; To educate and enlist humanity to protect and restore the quality of the natural and human environment; And to use all lawful means to carry out these objectives."

Recommendations for Future Research

This investigation was undertaken to add to the existing research concerning 1) bioeconomics and biophilia; 2) human dimension in natural landform management; 3) visitor motivation in parks, zoos, and museums; and 4) the nature center business model. Three recommendations are offered with regard to future research:

Recommendation 1: A multisite/multicase case study of nature center stakeholders examining their perceptions, beliefs, and attitudes about the bioeconomic and biophilic value of nature as it pertains to nature center functionality, i.e., programs offered, exhibits, activities, community involvement, etc, should be conducted. Appropriate research questions might be:

Research Question 1: What are nature center stakeholders' perceptions, attitudes, and beliefs about nature?

Research Question 2: How do the perceptions of nature center stakeholders relate to the concepts of bioeconomic value and biophilic value of nature?

Research Question 3: Are these values understood by directors? If so, what is the impact of those perceptions on nature center functionality, i.e., programs offered, exhibits, activities, and community involvement and engagement.

Recommendation 2: A multisite/multicase qualitative case study concerning the role of nature centers and characteristics of a best nature center in nature centers of differing sizes and in different locations within the United States and internationally is needed. Appropriate research questions might be:

Research Question 1: What are nature center stakeholders' perceptions of the role of nature centers in their local community?

Research Question 2: What are nature center stakeholders' perceptions of the characteristics of a "best" nature center, as they would define it?

Research Question 3: How do stakeholders' perceptions of their nature centers align with their perceptions of a best nature center?

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Appendices

Appendix A
Informed Consent Statements

INFORMED CONSENT STATEMENT
Interviews

A. INTRODUCTION You are being invited to voluntarily participate in an interview. The purpose of this interview is to assist Ijams Nature Center in determining the role of Ijams Nature Center in the local community and describe constituents' concept of "Ijams' Nature Center is.....".

B. INFORMATION ABOUT PARTICIPANTS' INVOLVEMENT IN THE STUDY Your involvement in the study will include participating in a 10-15 minute interview under the following circumstances:

1. Ijams Nature Center has approved the interview, and also invites your voluntary participation.
2. The interview will be scheduled/conducted in person or via phone.
3. The Researcher, Carol Price, from the University of Tennessee Knoxville (UTK) will conduct the interview.

C. RISKS There is minimal risk to your participation in this evaluation.

D. BENEFITS Benefits to your participation include the collection of information that could be used to contribute to the objectives of the study.

E. CONFIDENTIALITY Confidentiality of interview results (participant responses) will be maintained. Participant responses noted will not be attributed to specific individuals. Data will be stored securely and only available to the Researcher. Selected interview comments made may be included in the project report, but not attributed to individuals.

F. CONTACT INFORMATION If you have questions at any time about the study or the procedures, (or you experience adverse effects as a result of participating in this study,) you may contact the researcher, Carol Price, at the UT Institute for Assessment and Evaluation; Bailey Education Complex A513; Knoxville; TN 37996-3400, or call (865)428-9373. If you have questions about your rights as a participant, contact [Research Compliance Services](#) of the Office of Research at (865) 974-3466.

G. PARTICIPATION Your participation in this study is voluntary; you may decline to participate without penalty. If you decide to participate, you may withdraw from the study at anytime without penalty and without loss of benefits to which you are otherwise entitled.

***Program participants will remain anonymous and, consequently, consent signatures will not be collected.**

*CONSENT	
I have read the above information and I agree to participate in this study.	
Participant's signature _____	Date _____
Investigator's signature _____	Date _____

**INFORMED CONSENT STATEMENT
FOR Ijams Nature Center Visitor Survey**

A. INTRODUCTION You are being invited to voluntarily participate in an interview. The purpose of this interview is to assist Ijams Nature Center in determining the role of Ijams Nature Center to the local community and describe constituents' concept of "Ijams' Nature Center is.....".

B. INFORMATION ABOUT PARTICIPANTS' INVOLVEMENT IN THE STUDY Your involvement in the study would include participating in a 10-15 minute interview under the following circumstances:

1. Ijams Nature Center has approved the interview, and will also invite your voluntary participation.
2. The interview will be scheduled/conducted in person or via phone.
3. The Researcher, Carol Price, from the University of Tennessee (UT) will conduct the interview.

C. RISKS There is minimal risk to your participation in this evaluation.

D. BENEFITS Benefits to your participation include the collection of information that could be used to contribute to the objectives of the study.

E. CONFIDENTIALITY Confidentiality of interview results (participant comments) will be maintained. Participant comments noted will not be attributed to specific individuals. Data will be stored securely and only available to the Researcher. Selected interview comments made may be included in the project report, but not attributed to individuals.

F. CONTACT INFORMATION If you have questions at any time about the study or the procedures, (or you experience adverse effects as a result of participating in this study,) you may contact the researcher, Carol Price, at the UT Institute for Assessment and Evaluation; Claxton Complex A513; Knoxville; TN 37996-3400, or call (865)428-9373. If you have questions about your rights as a participant, contact [Research Compliance Services](#) of the Office of Research at (865) 974-3466.

G. PARTICIPATION Your participation in this study is voluntary; you may decline to participate without penalty. If you decide to participate, you may withdraw from the study at anytime without penalty and without loss of benefits to which you are otherwise entitled.

***Program participants will remain anonymous and, consequently, consent signatures will not be collected.**

***CONSENT**

I have read the above information and I agree to participate in this study.

Participant's signature _____ Date _____

Investigator's signature _____ Date _____

–Why Are You a Member of Ijams Nature Center?” Survey

Member Survey Informed Consent Form/On line MR Survey

You are invited to participate in a survey of members of Ijams Nature Center.

The purpose of this study is to assist Ijams in determining the role of the Nature Center in the local community.

Your participation in this survey includes completion of an on line survey which should take about 10 minutes to complete.

Your decision whether or not to participate is voluntary. You may withdraw your responses, omit specific questions, or cancel your entire survey submission anytime before you “officially” submit your answers using the submit button at the end of the survey.

All data or answers collected may be used in publication but will remain confidential regarding your identity. The survey tool provides internal coding to control for duplicate entries. Any information collected through this research that may personally identify you will not be released or disclosed without your separate consent, except as specifically required by law.

There are no risks in participating in this research beyond those inherent in self-examination and contribution of personal time to complete the survey.

You may not receive any direct benefits from participating in the study. The results of the survey may help increase knowledge and contribute to the findings of this study.

If you have questions at any time about the study or the procedures or you experience adverse effects as a result of participating in this study, you may contact the researcher, Carol Price, at (865)428-9373. If you have questions about your rights as a participant, please contact the Office of Research Compliance Officer at (865)974-3466.

To confirm that you have read and understand the details of this Informed Consent Form and agree to participate in the study, please click the “I consent to participate” button below.

Please print a copy of this statement for your records.

Please select the statement which best reflects your participation choice.

- 1. "I consent to participate in this survey and do so voluntarily."
- 2. "I decline to participate in this survey." You will now exit this survey.

Why are you here today?

Check the 5 that best reflect why you are here today.

For those 5 statements only, indicate the importance of the reason.

- If a statement represents a **very important reason you are here today**, you would circle **7**.
- If a statement represents a **less important reason you are here today**, you would circle **1**.

Check 5	Less Important				More Important			
	Reason	1	2	3	4	5	6	7
<input type="checkbox"/> ...I like the types of things I can learn here		1	2	3	4	5	6	7
<input type="checkbox"/> ...I came a long time ago and want to revisit it		1	2	3	4	5	6	7
<input type="checkbox"/> ...I actively support conservation and the protection of wildlife		1	2	3	4	5	6	7
<input type="checkbox"/> ...It is one of the best places to visit around here		1	2	3	4	5	6	7
<input type="checkbox"/> ...I support conservation		1	2	3	4	5	6	7
<input type="checkbox"/> ...the many different species fill me with wonder		1	2	3	4	5	6	7
<input type="checkbox"/> ...my wife/partner/husband made me come		1	2	3	4	5	6	7
<input type="checkbox"/> ...I discover things about myself when I come here		1	2	3	4	5	6	7
<input type="checkbox"/> ...I frequently visit zoos/aquariums when I go on trips		1	2	3	4	5	6	7
<input type="checkbox"/> ...I get more here than going to the mall or a movie		1	2	3	4	5	6	7
<input type="checkbox"/> ...It was my choice for how to spend the day		1	2	3	4	5	6	7

- | | | | | | | | | |
|--------------------------|---|---|---|---|---|---|---|---|
| <input type="checkbox"/> | ...I support the mission to study, celebrate and protect animals | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| <input type="checkbox"/> | ...my family/friends have good experiences here | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| <input type="checkbox"/> | ...this is a good way for my family/friends to share quality time | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| <input type="checkbox"/> | ...I feel at peace in these surroundings | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| <input type="checkbox"/> | ...my family/friends enjoy themselves here | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| <input type="checkbox"/> | ...coming here helps me appreciate nature | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| <input type="checkbox"/> | ...I like to watch the animals | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| <input type="checkbox"/> | ...I like to study wildlife | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| <input type="checkbox"/> | ...this is an important institution in this community | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

AGE ___ **Been here before?** No ___ Once or twice ___ Number of times ___ C

Appendix C

Visitor Survey

"WHY ARE YOU HERE TODAY?"

Please rate the following reason statements according to their level of importance in your decision to visit Ijams Nature Center today.

If a statement represents a very important reason you are here today, please check (✓) column **5**.
 If a statement represents a not at all important reason you are here today, please check (✓) column **1**.

Please place a check (✓) in the appropriate column.		Not At All Important	Slightly Important	Fairly Important	Quite Important	Very Important
		1	2	3	4	5
1	I came a long time ago and wanted to revisit.					
2	I actively support conservation and the protection of wildlife.					
3	Ijams is one of the best places to visit around here.					
4	I support conservation.					
5	The many different natural spaces fill me with wonder.					
6	My wife/partner/husband made me come.					
8	I frequently visit nature centers when I go on trips.					
7	I get more here than going to the mall or a movie.					
9	This visit is my choice for how to spend my day.					
10	I support the mission to study, celebrate, and preserve land.					
11	My family/friends have good experiences here.					
12	This is a good way for my family/friends to share quality time.					
13	I feel at peace in these surroundings.					
14	My family/friends enjoy themselves here.					
15	Coming here helps me appreciate nature.					
16	I like to watch the wildlife.					
17	I like to study nature.					
18	This is an important institution in this community.					

Thank you for participating in this survey.

Appendix D
Member Survey

WHY ARE YOU A MEMBER OF IJAMS NATURE CENTER?

Please rate the following reason statements according to their level of importance in your decision to be a member of Ijams Nature Center.

If a statement represents a very important reason you are a member, please check (✓) column **5**.
 If a statement represents a not at all important reason you are a member, please check (✓) column **1**.

Please place a check (✓) in the appropriate column.		Not At All Important	Slightly Important	Fairly Important	Quite Important	Very Important
		1	2	3	4	5
1	I visited a long time ago and want to support it.					
2	I actively support conservation and the protection of wildlife.					
3	Ijams is one of the best places to visit around here.					
4	I support conservation.					
5	The many different natural spaces fill me with wonder.					
6	My wife/partner/husband "made" me become a member.					
7	I frequently visit nature centers when I go on trips.					
8	I get more visiting Ijams than going to the mall or a movie.					
9	It is my choice for how to spend my day.					
10	I support the mission to study, celebrate and preserve land.					
11	My family/friends have good experiences at Ijams.					
12	This is a good way for my family/friends to share quality time.					
13	I feel at peace in the surroundings at Ijams.					
14	My family/friends enjoy themselves at Ijams.					
15	Visiting Ijams helps me appreciate nature.					
16	I like to watch the wildlife.					
17	I like to study nature.					
18	Ijams is an important institution in this community.					
19	I enjoy the membership benefits.					
20	Ijams environmental and conservation concerns agree with my own.					

Thank you for participating in this survey.

Appendix E

Interview Protocols

INC Board of Directors	<ol style="list-style-type: none">1.From your perspective, what role does Ijams play in Knoxville and the surrounding communities?2.What do you think a best nature center looks like?
INC Director	<ol style="list-style-type: none">1.From your perspective, what role does Ijams play in Knoxville and the surrounding communities?2.What do you think a best nature center looks like?
INC Staff	<ol style="list-style-type: none">1.From your perspective, what role does Ijams play in Knoxville and the surrounding communities?
NC Directors	<ol style="list-style-type: none">1.What role do you play in your local community?2.What do you think is characteristic of a best nature center?
EEO Directors	<ol style="list-style-type: none">1.What role do nature centers play in their local communities?2.What, if anything, do you think is a characteristic of nature centers that sets one apart from others, such as characterizing a nature center as a best?3.What do you think is the one outstanding characteristic of a best nature center? In other words, what does success look like for a nature center in your opinion?

Appendix F

Qualitative Analysis Procedure—Open Coding Process

1. The coding process was begun by re-reading each transcript line-by-line.
2. A second read-through was conducted and individual comments highlighted to focus attention on the specific combinations of words.
3. Following the second read-through, comments, terms, and observations were written in the margins next to words or phrases that were potentially interesting, relevant, or important to the study.
4. In a third read-through of the transcript and comments, patterns and regularities began to emerge that became concepts or categories.
5. The next step involved grouping the concepts from each set of transcripts into a loose structure based on commonalities.
6. A separate code list of concepts from each set of transcripts was created.
7. The separate lists were merged into a master list.
8. The master list reflected the recurring patterns in the data and, ultimately, the themes, or categories.
9. The themes were constructed to reflect recurring patterns of meaning that were evident in each set of responses.

Example of Qualitative Analysis

Nature Center Directors' Interview Responses—Role of Nature Centers

Question:

What role do you play in your local community?

Sample Participant Responses with Assigned Temporary Codes:

<u>Second Read Through with Comments/Terms</u>	<u>Coding Process</u>
1. Place for people to explore,	<i>Explore Discover Learn</i>
2. discover, and learn	
3. Place to come as a child	<i>High visibility – community presence</i>
4. & repeat visit	
5. Special events to increase	<i>people -- children</i>
6. visibility to come out	<i>events -- visit outdoors</i>
7. and enjoy	
8. Surrounded by 2500 acres	<i>good time</i>
9. of open space so Leaders	
10. in the community	<i>large parcel of land</i>
11. Participate on planning	<i>urban location/community</i>
12. community – for green	
13. spaces	<i>green spaces for locals</i>
14. Constant presence in the	
15. community with high	<i>history</i>
16. visibility – spend time	
17. in our center vs. time in	<i>known in the community</i>
18. the community is a fine line	
19. Leader	<i>outreach</i>
20. in environmental education	<i>programs at center</i>
21. & nature education	
22. True to our mission of	<i>environmental education</i>
23. reducing human impact	<i>knowledge about nature</i>
24. on the land by	<i>human dimension</i>
25. preserving the land	
26. —Resource for experience	<i>preservation/conservation</i>
27. and information that lead	<i>information/hands on</i>
28. people to understand their	<i>experience</i>
29. connection to nature”	
30. past 20 years focused on	<i>connect to nature</i>
31. being in touch with the	<i>community connection</i>
32. community allows nature	
33. not to be taken for granted	<i>natural areas recognized as important/special</i>

Appendix G.

Table 14.

Participants' Interview Responses

Ijams Nature Center Board of Directors' Responses—Role

- Leader in community environmental education
 - “Not enough” Ijams does not play enough of a role
 - Place – to go
 - Education in schools & at the site
 - Should increase and reach out to the community and increase awareness of the facility
 - Only nature game in town
 - Critical for school children
 - To help bring awareness of the environment to the community we live in and act as a microcosm of what preservation of land should like
 - Ex: Quarry – model of how to restore property injured or harmed
 - Education of kids in outreach
 - On-site programs focused on adults understand good practice and adult world in the environment we live in
 - Primary
 - Advocacy – Ijams is major big hitter promoting the idea in Knoxville
 - Also, Ijams plays a major role in promoting conservation, environmentalism, educational programming, and appreciation of nature as indicated in Q.1.
 - Focal point for much of what established Knox community views as the “green edge” of the community.
 - If issues around the environment, endangered species, helping kids learn about their environment, Ijams is the “go-to” place
 - Immediacy – only nature center - only place that people can come to nature – no place until you get to Seven Islands to experience nature – important because Ijams is the only nature preserve in Knoxville or Knox County
 - Knoxville education in schools re: recycling, natural environment, animals, and plants
 - Programs for children and adults in surrounding counties with an education bias
 - Impact is bigger than just Knox county – surrounding area and visitors from outside the area also benefit from programs offered at Ijams
-

Ijams Nature Center Board of Directors' Responses—Best

- access – easy for the entire community to utilize
- Fun and educational at same time for visitors
- Exhibits more fun for kids while educational – interactive and engaging so kids really have fun
- Increased welcoming and interactive aspect of the outdoor natural areas
- If someone happens to just drop in, then the layout of Ijams may be confusing – should be more interactive and welcoming
- Should be more interactive even in the outdoor setting
- Ijams characteristics – good example of the “best” – have visited many other Centers and Ijams does a really good job
- Goal – helping to educate people about the environment and what things that contribute to that
- Facility – to see goals in action and center would be teaching and helping people understand what to do to protect our environment
- Resource and facility and staff to help people increase their sense of world around them
- Focus – on where to excel and knowing where you are and where you are going

- Like Ijams – good and effective
- Small enough that even a small child can be involved and enjoy outdoors
- Large enough for older child in the woods to experience nature
- Educational programs
- Multi-age focused
- Making a difference for each age group
- Highly visible – when Knoxvilleans have out of town company, Ijams is on the list of must see places
- In addition to passive features, also lot of activity – education, research, recreation, spiritual growth
- Some component of passivity but wide variety of activity
- Principles underlying purpose immediately clear on a first visit saying, “This is why we exist!”
- Dynamic place – capable of adapting to current community needs or issues in community or environmental realm – not set in stone
- Staff recognized for knowledge and skills and Board that people are dying to be on because Board is one where a lot of hard work is expected but things get done and effect change
- Large enough size
- Center that is user-friendly
- Accessible, well-managed, well-staffed, and has a community outreach and strong educational goals
- Knowledgeable staff
- Diverse offering of activities, as well as, from geological standpoint
- Diversity of landforms and animals
- Accessible to the community and all ages and to handicap
- Good signage
- Well-known in community and strong presence and visibility
- Diverse offering of programs

Ijams Nature Center Director’s Responses—Role

- Conservation resource
- Educational programs – off-site and on-site
- Space is free and open and available
- Extension of our backyards
- Ijams family legacy
- Access to the outdoors

Ijams Nature Center Director’s Responses—Best

- Indoor world class exhibits reflecting mission of programs
- Outside enhancing outdoor acreage passive visitation and groups
- Unique flavor and niche takes strengths of natural land and incorporates into outdoor and indoor

Ijams Nature Center Staff Responses—Role

- Nature Center – walk on trails to look at nature
- See things from a nature perspective
- Learn from nature
- Building to house environmental education programs and nature crafts
- Information on the environment
- Part of the city park system
- Place

- Schools can use for field trips
- Scheduled blocks of time with learning as a component
- Educational resource to all ages in the community
- For downtown Knoxville – important & needed
 - Plus important and needed for tourists/Shortcut to nature/Available closer
 - Get in a natural setting where access solitude and exposure to experience nature
- Surrounding community – South Knox to West
 - More useful as an education tool
 - Condenses natural experience and environmental education
 - Due to increase in suburban areas and children not welcome – no unstructured time outdoors or freedom to play
- Safe haven for outdoor experience and play for children and adults
- Educational setting – biggest purpose
- Stopgap for progress and development of the city
- Buck stops here at the river
- Disciplinary reminder of what needs to be protected to have a healthy city
- Educational resource – families – teachers – anyone
- Recreational resource – walk trails – connect with nature – outside
- Resource for whatever –
 - Information/Lessen impact
- Role in the big scheme of things
- Regional nature center – s/b more far-reaching as far as surrounding communities
- Spider now w/tendrils & becoming more established as a resource
- Source of factual unbiased information so they can make informed decisions to increase environmental awareness
- We continue to expand our impact
- We expand audiences with high quality programming
- We need to increase our financial resource and land and support/preserve the park and offer high quality exhibits
- Cornerstone of environmental and natural history education in the southeast
 - Variety of programs/Range of ages
- Anchor in the community
 - Support and supplement school system with educational programs
 - Safe educational place for families
 - Quality public programming for children and families
 - Opportunity for self-education – just coming up here and spending time
- Children decreasing outside time -- Ijams provides outside place for field trips
- Natural areas – future based on increasing natural areas
- Future of natural areas survival depend on educating children
- Educational – instructional and exposure
- Outreach county and state standards – instructional & exposure – contingent on each other
- Personal – exposed to nature & importance of walking –“softly on the earth”
- Afraid of snakes due to what had been taught & helping to decrease fear
- Animals and plants becoming extinct (more...listen to recorded interview)
- Need to increase exposure so kids can take care of the earth
- Education and exposure to nature – teach an appreciation and it will build stewardship – grow to love it & expect it to be a common concern
- Observed older kids talking about garbage after educating them about damage of garbage to water system
- Place to come and enjoy outdoors and appreciate nature
- Place with environmental education component teaches all ages nature and protect/preserve the environment
- Place to enjoy visiting
- Valuable educational role not filled anywhere else in the Knoxville area
- Responsible environmental action
- NO ONE ELSE is doing that

- Resource for educational programs for kids, high school groups, scout groups with parents and adults, garden club, senior center
- Resource for many counties
- More people becoming aware and more involved
- Programs are volunteer based
- Increased participation in our programs
- People becoming more aware that we are here

Nature Center Directors' Responses—Role

- Place for people to explore, discover, and learn
- Place to come as a child & repeat visit
- Special events to increase visibility to come out and enjoy at least 2-3 times per year
- Surrounded by 2500 acres of open space so visitors cannot or do not drive by or walk their dogs – not in the neighborhood
- Leaders in the community
- Participate on planning community – for green spaces
- Member Chambers of Commerce – 5 in the region
- Constant presence in the community with high visibility
- How much time to spend in our center vs. time in the community is a fine line
- Leader in environmental education& nature education
- Place for people to explore, discover, and learn
- Place to come as a child & repeat visit
- Special events to increase visibility to come out and enjoy at least 2-3 times per year
- Surrounded by 2500 acres of open space so visitors cannot or do not drive by or walk their dogs – not in the neighborhood
- Leaders in the community
- Participate on planning community – for green spaces
- Member Chambers of Commerce – 5 in the region
- Constant presence in the community with high visibility
- How much time to spend in our center vs. time in the community is a fine line
- Leader in environmental education& nature education
- True to our mission of reducing human impact on the land by preserving the land
- —Resource for experience and information that lead people to understand their connection to nature”
- History of 50 years – past 20 years focused on being in touch with the community – with a focus that allows nature not to be taken for granted
- We are a regional center serving 190,000 per year – data indicates visitors from all local communities, all counties in Ohio, all states, 9 foreign countries
- Destination exemplifies a very good well operated nonprofit offering experiences in science & a nature center
- Our dollars spent per visitor lowest compared to other major attractions in the area @ \$6/visitor compared to most expensive \$26/visitor Museum & Natural History
- Located in the worst school district in the country – our grant-funded Portable Planetarium served 7,000 kids and (based on pre/post assessments) improved their knowledge levels about the solar system
- Reconnect with nature – offers a place for urban and suburban dwellers to literally get out into nature and enjoy the experience.
- Enjoy nature and feel safe because staff available to reassure and answer questions about the natural space
- Place to connect to nature
- Centers connected to a park so complimentary activity
- As a nature center –
- Information – people look to us as a resource for environmental issues
- Networking and partnership – why so important to get kids out of doors and do environmental education
- Place – to visit

- Our location is Bayside village, a suburb of Milwaukee & do have influence in the community. We have a good reputation but not at the level of the symphony, for instance. There are 7 nature centers in the area so we are not the only player in town. Our main role is teaching the kids – nature preschool – and caring for the property

Nature Center Directors' Responses—Best

- Diverse programming
- Know your audience
- Prioritize the amount of time spent with each audience
- modify to meet their needs on-site & off-site
- Progressive learning
- Sense of wonder – stimulating with programming and design of the facilities
- Something for everybody – variety always knowing your audience
- Connection with National Audubon Society -- holding national meeting at Aullwood
- ANCA headquarters – location for sharing
- Values statement – everyone is a learner & everyone is a teacher – learn and teach by example – can learn from others mistakes
- ANCA Consultant experiences enriched our understanding of what makes a nature center successful – our profession works together supporting each other in effort to increase and inspire interest in nature
- Nature centers are businesses – financial sustainability is critical to a center's success – weakness in financial aspect of the business can be fatal
- Nature centers are creating a real world more humane, caring, & kind – leadership is key – we are all in this together engaging people from the bottom up not from the top down
- Right amount of interpretation
- Fun and entertainment with the environmental message – get down to the level of visitors so they feel a connection and take some action in their personal lives
- Present the message in a positive, upbeat way so you are not beating people up with the message
- Some messengers are too negative about their impact on the planet
- The element of community – people connecting to the land and to each other as a tangible ingredient in their visit to a nature center
- Visitors, as member or nonmember, sharing their emotional connection with the land
- to paraphrase: visitors share an emotional connection to the land and the experience just by virtue of walking the trails, participating in a planned program or one of the self-guided activities, i.e., feeling a sense of community and the sensory aspects of being on-site
- Relevant
- In touch with community
- Accepts change
- Somewhat entrepreneurial
- Strategic planning
- Know what to do –next"
- Staff
- Setting the culture in the organization
- Leadership
- Programs are unique
- Southwest Michigan Sustainable Business Forum – business join to form and advisory board to help businesses share skills, lessons learned, mentor
- –Sustainable" business can triple the bottom line
- Environment is impacted by sustainability of businesses
- Social side of sustainability
- Pay attention to all 3 – economics, environment, and social
- MAGIC – Walt Disney said that everyone who came to Disney would be the –ifst person to visit". Everyone

- who visits experiences whatever they expect for the first time
- Visitor Perception is the key – keep all participants involved and getting what they want from their individual visit
- Environmental sustainability – important to integrate into programs so it is a “value-added” component for visitors.
- Life-long Learner – understood and recognized now more than in past years – information is more accessible & opportunities are provided for people to become knowledgeable about environmental issues
- Kids learn best by doing
- Kids learn best by having fun
- 1st time for kids is serendipitous
- Nature centers are opportunity brokers
- Kids will integrate experiences into their own worlds
- Knowledgeable, visitor-friendly staff absolutely the key ingredient.
- Programming also key – appropriate for the land base/landform
- Facility designed to highlight the landform of the location
- Passion – that everyone at the center for what we do
- Broad network and partnership – among local community groups
- Center “models” the best concept – constituency sees you walk the walk and providing the best examples for what they can do in their own lives
- Nature centers that are successful – friendly and greeted by smiles and responsive – user-friendly – consumer-oriented
- High quality programs
- Excellence at all levels of operation
- Recognizing changing trends and meeting the needs of the community

Environmental Education Directors’ Responses –Role

- Connection with the place
- Gathering place to learn about nature
- Community center providing a sense of community & a connection to the land
- Providing entertainment and education “pieces” for kids and adults
- Place for kids to learn
- Place for families to learn about the local area
- A place and a focus point on nature & environmental issues
- Promoting good environmental can find information and resources to do things about the environment and for the environment
- Climate change and oil problems may require that nature centers play a bigger role in how to live on the Earth with workshops on solar energy and resources about environmental sustainability and other environmental issues stocked in their bookstores.
- Nature centers should be “survival-oriented” & more of “first-aid” centers
- Centers should be “reflective” as natural resources are depleted so nature centers may need to be a resource for how to live – with a different kind of nature center to deal with the “hostile” parts of nature
- Still a community contact with the land and place and may become some of the few green spaces left
- Hope is that visitors will carry the Center’s vision home with them and see as applicable to their own back yards
- Big question is how to transfer those enlightenments home & not leave the nature center as just a little island – so nature spaces more fluid
- Good nature center is analogous to a good library – everyone goes to the center eventually and repeatedly – functions as a community hub – people connect to relate – important to individuals with a nature focus
- Nature center should have a huge role in the community and be totally integrated into the community
- Specific to UEC – open 7da with homework support, connected to the university for mentoring and tutors for the kids – 300 active volunteers offering a safe neighborhood experience for local kids – staff instructed to facilitate their jobs by parceling out to volunteers – key ingredient is ethnicity blend, generational interaction –

started leadership training program in the high school 8 years ago to increase the ethnicity blend and now seeing the results of that program

- For UEC – mayor calls and governor calls asking for environmental input and guidance when concern for a proposed development or other land concerns – neighborhood can use the center for meetings without cost – also will provide transportation if a community group loses their planned transport for an activity – only charge for use of facility if a planned wedding, etc. – we lease the property for \$1
- Knowledge base for green living that translates into decrease in crime in the city – motivated the homeless community as grassroots movement to activate the park
- Community revitalization thru environmental issues--Membership in the city so represent street credibility
- Staff and volunteers are a link to the community
- Grassroots – working with city officials to decide what will be the right zoning for a proposed development (for example) & we are pro-active
- Community important with the kids – importance of cross-generational interactions –
- Incredible value of consistent contact with kids & mentor in the community
-

Environmental Education Directors' Responses –Best

- Doing something no one else is doing – exceptional because pushing the envelope
 - Ex: UEC – serving urban folks & community involvement; Pinejog – combining elementary school, higher ed, and nature center
 - Teton Science School – pioneered one of the first graduate schools – In touch with societal needs and thinking out of the box
- Better centers have a history of a handful of people who were committed to preserving the piece of land & who remain involved with the center – most a grass-roots beginning that grew out of a passion for a piece of land – usually a Person with a vision and the passion to carry through to develop a culture unique to the vision – the Person carries the vision and the passion.
 - Ex: Aullwood – Mrs. Aull's vision is being carried out by Charity (current director) and others who have a passion for Aullwood
- Board of Directors deeply involved in the community understand and believe in the vision of the people committed to the nature center –“Outstanding” BoD provides longevity and continuity, passes the vision on, leaves center Director (personnel) alone to run the center
- Natural resource around which the nature center is formed is one major characteristic and contributes to each center's uniqueness – Staff training is near top of the list
- Funding – level of funding is key – falling short of greatness can be due to lack of dollars or expertise in volunteers and/or staff
- Leadership levels – volunteer commitment result of good leadership – mgmt level high expertise, then cascades down & can effect really excellent staff & volunteers
- Leadership is blend of business models – experience and education
- If tax-supported, locals do not hold the center to the same level of accountability
- Frequently, center will just wither w/o good leadership, but do not –go out of business”, instead w/b on life support
- Leadership not entirely trainable – result of good hiring & good training
- If they have animals, are they native? If they are not native, then center not really thinking about what their mission should be. Most missions are focused on the immediate environment
- Who are you selling to and how are you selling it? Geared to school teachers and kids ages 2 to 4th grade. Not tracking the kids usually & would be best to track kids from year to year building the program as kids advance thru the school system – programs should be grade-specific when school-based – more centered to the client – consistency year after year
- Usually an issue – school systems responsible for their own transportation and finances often a factor in school participation in center-based educational programs – many centers do not think thru the problem putting the burden of field trip and transportation on the school system
- Making it a big hassle for the schools and nature center to make the educational program work

- Educational programs dependent on teacher contact are also dependent on the teacher's level of environmental knowledge and history of awareness of environmental education programs at nature centers, etc. Working with the school system is more effective since involvement with the children is not dependent on the teacher. Nature programs are scheduled into the curriculum school-wide
- Programs should not be free – free programs raise a red flag – constituents should have some buy-in and commit to the program – s/b a vested interest
- Staff salary levels – if staff are primarily part-time hourly employees, the center is not really putting a lot of energy into staff – some staff are older & some younger, so age of staff is not a litmus of quality –range is good
- Educational levels not necessarily indicator of effectiveness – if dynamic group, then education not a factor
- Green sustainability – s/b at the forefront – environmental considerations s/b evident in the design of the center's building(s) – any consideration of “living what they preach” is big concern
- If gimmick & just museum science, then miss the point – s/b interactive
- Should always be greeted by a friendly person on site & on the phone – no answering machine or menu – should always be someone available and visible to answer questions
- Areas around center buildings s/b surrounded by native plants
- The “magical experience” is the guiding lines of stewardship
- Balanced combination of passion, programming, and business
- Initially started by handful of passionate people with a piece of land & a building to preserve and protect the land. Then developed capacity with interest and support, so became successful nonprofits, so influence is greater now.
- Mission/vision & Passion First
- Needs business practice becoming entrepreneurial & assertive in terms of having something to “sell” to the community
- Mission grows from vision & passed on built by the supporters of the vision
- Passion of the heart and ignited in people — all work with inspiration
- Nature Center Model
- 4 areas necessary for nature center naturalists/educators:
 - Skills related to expertise – knowledge of plants, the land, elements & animals, i.e., the environment
 - Communication skills/ interpretation-Observation – ability to pay attention and share the passion -
 - Inspiration – for self and others – remaining inspired by nature
 - Success is when you are part of your community's life – if you are the best kept secret, you are doing something very wrong
- Prominent in community but not prominent to community decisions – s/b involved in decision making in the community
- Some centers duck the role of participating in decision-making because may not want to make donors mad if nonprofit & if tax-supported then do not have the same problem
- Qualifying as top nature center varies from center to center – triad of experiences – legs to the stool that makes us work
- School programs so there is consistency with the kids
- Interaction with the community
- Sustainable green facility - modeling for the community
- Community involvement – again modeling for the community
- For example, we offer our employees “Eco-Bucks” – each staff member who does not use fossil fuels to get to work has \$1 added to their paycheck ea day they use some alternate method to get to work. Eco-Bucks being adopted by other businesses.
- Building is the result of 6 lenses for design
 - Economy
 - Environmental impact – UEC projected the potential impact for 7 generations with building materials to evaluate if planned use would be good or bad for the environment
 - Programmatic – can this decision positively or negatively impact a program & how might the building design add a magic moment to visitor experience, for example, UEC put a slide in a closet
- Final thought – every school should have an outdoor lab and every neighborhood should have a nature center

Appendix H
Table 15

Visitor and Member Survey Results

Survey Constructs	Visitor Data Responses								Member Data Responses							
	<u>N</u>	<u>NI</u> (%)	<u>SI</u> (%)	<u>FI</u> (%)	<u>QI</u> (%)	<u>VI</u> (%)	<u>M</u>	<u>SD</u>	<u>N</u>	<u>NI</u> (%)	<u>SI</u> (%)	<u>FI</u> (%)	<u>QI</u> (%)	<u>VI</u> (%)	<u>M</u>	<u>SD</u>
Revisit	319	37.0	7.8	13.8	17.9	23.2	2.82	1.633	156	23.2	7.0	19.4	19.9	28.4	3.16	1.559
Actively support conservation and protection of wildlife	319	2.8	7.8	15.4	25.1	48.3	4.06	1.142	156	1.6	5.5	12.2	24.1	55.9	4.25	1.016
One of best places to visit around here	319	3.1	3.1	14.1	30.4	48.0	4.13	1.102	156	1.6	3.0	11.5	31.4	27.9	4.23	1.013
Support conservation	319	2.2	2.5	11.9	29.5	53.6	4.29	.961	156	0.8	1.9	8.1	25.0	63.6	4.47	.864
Natural spaces fill me with wonder	319	1.6	3.4	10.7	30.4	53.0	4.27	.998	156	2.3	4.1	17.1	34.7	37.4	3.92	1.198
Wife/partner/husband made me	319	78.4	4.4	6.6	4.4	6.3	1.56	1.183	156	87.6	3.6	3.2	1.9	.8	1.16	.671
Visit nature centers on trips	319	13.5	11.9	20.1	30.7	23.2	3.36	1.350	156	19.0	24.5	25.5	16.1	11.2	2.64	1.309
More here than mall or movie	319	4.7	4.1	11.3	25.7	53.6	4.18	1.144	156	7.3	8.7	17.1	33.2	33.4	3.68	1.338
My choice to spend my day	319	4.1	2.8	12.2	28.8	51.4	4.19	1.088	156	.8	1.7	11.3	24.9	59.9	2.99	1.344

Table 15, continued

Visitor and Member Survey Results

Survey Constructs	Visitor Data Responses								Member Data Responses							
	<u>N</u>	<u>NI</u> (%)	<u>SI</u> (%)	<u>FI</u> (%)	<u>QI</u> (%)	<u>VI</u> (%)	<u>M</u>	<u>SD</u>	<u>N</u>	<u>NI</u> (%)	<u>SI</u> (%)	<u>FI</u> (%)	<u>QI</u> (%)	<u>VI</u> (%)	<u>M</u>	<u>SD</u>
Support the mission to study, celebrate, and preserve land	319	2.2	1.9	11.0	22.6	62.1	4.39	.949	156	0.8	1.7	11.3	24.9	59.9	4.37	.962
Good experiences for family/friends	319	11.9	3.4	11.6	26.6	46.1	3.91	1.354	156	7.2	10.0	15.6	30.6	33.6	3.64	1.364
Quality time for family/friends	319	4.7	2.5	9.1	24.8	58.8	4.31	1.056	156	9.9	11.3	13.8	32.1	28.5	3.45	1.451
At peace in these surroundings	319	1.3	0.6	6.9	23.8	67.4	4.55	.758	156	4.0	4.9	12.2	30.9	45.1	3.99	1.248
Enjoyable for family/friends	319	5.6	1.9	7.5	28.5	55.5	4.24	1.146	156	9.3	8.7	12.6	33.3	31.6	3.56	1.436
Appreciate nature	319	1.3	0.9	5.3	24.8	67.1	4.54	.831	156	6.0	5.2	13.0	32.1	41.5	3.91	1.275
Watching wild Animals	319	1.6	1.3	8.5	18.2	70.2	4.53	.864	156	4.5	5.8	13.3	26.2	48.0	4.00	1.265
Study nature	319	2.2	5.0	14.7	27.3	49.8	4.15	1.085	156	5.1	7.7	14.7	28.1	42.2	3.88	1.292
Important institution in this community	319	2.5	.6	5.3	13.8	76.8	4.59	.937	156	1.6	1.9	3.2	15.6	75.5	4.55	.982

Table 15, continued

Visitor and Member Survey Results

Survey Constructs	Visitor Data Responses								Member Data Responses							
	<u>N</u>	<u>NI</u> (%)	<u>SI</u> (%)	<u>FI</u> (%)	<u>QI</u> (%)	<u>VI</u> (%)	<u>M</u>	<u>SD</u>	<u>N</u>	<u>NI</u> (%)	<u>SI</u> (%)	<u>FI</u> (%)	<u>QI</u> (%)	<u>VI</u> (%)	<u>M</u>	<u>SD</u>
Membership Benefits									156	9.4	19.3	21.2	20.1	27.8	3.31	1.416
Agreement with environmental and conservation issues									156	1.3	9.1	16.9	39.8	31.3	4.34	1.038

Notes: N—Number of Participants; NI—Not Important; SI—Somewhat Important; FI—Fairly Important; QI—Quite Important; VI—Very Important; M—Mean; SD—Standard Deviation

Vita

Carol Price, born Carolyn Jeanne Price in the shadow of the Great Smoky Mountains, Sevierville, Tennessee, grew up in central Illinois. She returned to the mountains of East Tennessee to continue her education and spent the next several years pursuing a Masters in Adult Education and a Ph.D. in Education at the University of Tennessee Knoxville. Her doctoral program in Assessment, Research, and Evaluation focused on environmental evaluations and environmental education. During her time at the University of Tennessee Knoxville, she worked with the Institute for Assessment and Evaluation on educational and environmental programs and volunteered with local environmental organizations conducting assessments and evaluations. Carol will continue working with environmental and educational organizations offering a perspective that recognizes the importance of nature in our everyday lives.