

Paper Submission: 2007 NAAEE Conference Proceedings  
Research Symposium

A National Study on the Role of University Affiliated Nature Centers on Implementation of the  
University's Visions and Missions

Abstract:

This paper presents the findings of a research project undertaken to determine the variety of ways in which university affiliated nature centers support their university's mission. This study was conducted to establish baseline information, national norms, and other critical information for nature center administrators to use in developing mission statements and strategic plans. Findings from this study detail nomenclature, staffing, programming, research, facility/setting descriptions, and various mission statements characterized by the participant nature centers.

Key Words:

University affiliated nature centers, baseline information, nature centers, environmental centers, and mission statements.

Authors:

George R. Vahoviak  
Affiliate Assistant Professor of RPTM,  
Program Director, Shaver's Creek Environmental Center  
Penn State University

Jennifer E. Heindel  
Graduate Assistant, Shaver's Creek Environmental Center  
Penn State University

James P. Hamilton  
Assistant Professor of Communications Arts and Sciences  
Penn State University, Mont Alto Campus

ABSTRACT

This paper presents the findings of a research project undertaken to determine the ways in which university affiliated nature centers support their university's mission. This study was conducted to establish baseline information, national norms, and other critical information for nature center administrators to use in developing mission statements and strategic plans. Findings from this study detail nomenclature, staffing, programming, research, facility/setting descriptions, and various mission statements characterized by the participant nature centers. For the purposes of this publication, only those findings related specifically to nature centers and their roles in meeting mission goals within their respective universities will be discussed.

## INTRODUCTION

~~BRENT EVANS AND CAROLYN CHIPMAN EVANS AND EVANS WRITES THE FOLLOWING ABOUT NATURE CENTERS IN THE PREFACE OF THEIR 2004 BOOK~~

~~—THE NATURE CENTER BOOK— :~~

~~—NATURE CENTERS CAN UNITE COMMUNITIES AND ENABLE THEIR NEIGHBORS TO SAVE THEIR TREASURED PLACES, MANAGE THE LAND WITH SUSTAINABILITY IN MIND, AND SHOW THE CHILDREN HOW TO VALUE AND NURTURE LIFE. VOLUNTEERS AND SUPPORTERS OF NATURE CENTERS KNOW A TRUE SENSE OF PURPOSE AND A TRUE SENSE OF COMMUNITY. NATURE CENTERS CONSERVE NATURAL RESOURCES, PROVIDE PLACES OF QUIET RECREATION, GIVE STUDENTS AND TEACHERS OUTDOOR CLASSROOMS, ENGENDER A REAL SENSE OF COMMUNITY, AND~~

~~PROMOTE RESPECT FOR LIFE. NATURE CENTERS ARE GROWING AND SPREADING BECAUSE, LIKE WILDFLOWERS, THEY WORK. (EVANS AND EVANS, 2004, P. XIV)~~

~~THESE AUTHORS SPEAK ABOUT THE 1,261 NATURE CENTERS FROM THE U.S. AND CANADA LISTED IN THE 1990 DIRECTORY OF NATURAL SCIENCE CENTERS, WHICH ENCOMPASSES NATURE CENTERS, MUSEUMS, ENVIRONMENTAL EDUCATION CENTERS, SOME STATE PARKS, BOTANICAL CENTERS, ZOOS, AND AQUARIUMS. (EVANS AND EVANS, 2004, P. 17) THIS COMPILATION OF NATURE CENTERS MAKES NO DELINEATION BETWEEN THOSE AFFILIATED WITH AN INSTITUTION OF HIGHER EDUCATION, AND THOSE ASSOCIATED WITH OTHER GOVERNMENT, CIVIC, OR PRIVATE GROUPS.~~

#### PURPOSE OF THE STUDY

The purpose of this study was to identify those nature centers who are affiliated with institutions of higher learning, ~~collect baseline information about these centers,~~ and to analyze how the missions of their respective affiliated institutions are supported by the mission of the nature center. Nature centers who are affiliated with institutions of higher learning may share in the responsibility for fulfilling the missions of its university affiliate: Teaching, Research, and Service. How then, should nature centers build a mission and strategic plan which supports both- the integrity of environmental education and the purpose of a nature center, and all the elements of a university mission?

Specifically, this study asked the following:

- Who are these university affiliated nature centers (UANC)?
- ~~Under the broad label of nature center, what specific nomenclature was used to identify the various nature centers?~~
- ~~What is the personnel structure of the center?~~
- ~~What are the types of programming offered?~~
- ~~What types of educational opportunities exist at these centers—public, undergraduate, and graduate?~~
- ~~To what extent does the center provide/support graduate education and research?~~

- ~~What marketing strategies are used by the center?~~
- ~~What are the unique features of the setting and facility of the center?~~
- What are the essential elements of the center's mission statement and in what ways do they support their affiliated university's mission?

~~THE DATA COLLECTED IN THIS STUDY ENABLED US TO PROVIDE NEW INFORMATION ON THE FOLLOWING:~~

- 1) ~~WITH RESPECT TO MISSIONS, PROGRAMMING, ADMINISTRATION, AND STAFFING—WHAT TRENDS, GEOGRAPHICAL TENDENCIES, COMMONALITIES, OR ISSUES EXIST AMONG THIS GROUP OF NATURE CENTERS?~~
- 2) ~~WHAT ARE THE VARIOUS UNIVERSITY MISSIONS, AND IN WHAT WAYS DO THEIR AFFILIATED NATURE CENTERS SUPPORT THE THOSE MISSIONS OF THOSE HIGHER EDUCATION INSTITUTIONS?~~
- 3) ~~WHAT FINDINGS AND/OR REOCCURRING THEMES UNCOVERED DURING THIS STUDY WARRANT FUTURE RESEARCH?~~

#### BACKGROUND OF THE STUDY

~~AS THE STAFF FROM PENN STATE'S SHAVER'S CREEK ENVIRONMENTAL CENTER (SHAVER'S CREEK) BEGAN THE PROCESS OF DEVELOPING A NEW STRATEGIC PLAN FOR THE PERIOD 2005—2008, A FUNDAMENTAL QUESTION AROSE: HOW DO WE. WE WERE ATTEMPTING TO DEVELOP A PLAN FOR SHAVER'S CREEK—THE COMMUNITY NATURE CENTER, AND SHAVER'S CREEK-PENN STATE'S NATURE CENTER. WE REALIZE THERE ARE MANY TEMPLATES TO USE IN DEVELOPING A STRATEGIC PLAN AND MISSION STATEMENT FOR NATURE CENTERS IN GENERAL (EVANS ET AL. AND EVANS, 2004., BYRD, 1998). BUT, UNLIKE THE MAJORITY OF KNOWN NATURE CENTERS IN THE U.S., SHAVER'S CREEK ALSO SHARES RESPONSIBILITY IN FOR FULFILLING THE MISSIONS OF ITS UNIVERSITY AFFILIATE—PENN STATE. THE PENN STATE MISSION RESTS FIRMLY ON A TRIAD OF TENETS: TEACHING, RESEARCH, AND SERVICE. ADMITTEDLY, SHAVER'S CREEK CONTRIBUTED A GREAT DEAL TO THE UNIVERSITY MISSION IN THE AREA OF SERVICE, HOWEVER CONTRIBUTIONS TO TEACHING AND RESEARCH APPEARED TO BE LACKING. HOW THEN, SHOULD SHAVER'S CREEK BUILD A MISSION AND STRATEGIC PLAN WHICH SUPPORTS BOTH THE INTEGRITY OF ENVIRONMENTAL EDUCATION AND NATURE CENTER PURPOSE, AND THE ALL TENETS ELEMENTS OF THEIR UNIVERSITY MISSION?~~

~~IN AN ATTEMPT TO ANSWER THESE QUESTIONS, BUILD A PROACTIVE MISSION STATEMENT, AND REWRITE THEIR STRATEGIC PLAN, A SEARCH WAS BEGUN FOR RESEARCH AND DATA PERTAINING TO THE ROLES UNIVERSITY AFFILIATED NATURE CENTERS PLAY IN SUPPORTING THE MISSION AND VISION OF THEIR PARENT UNIVERSITYIES.~~

## REVIEW OF PERTINENT LITERATURE

### Definitions

~~Before a search for literature and research data could begin, it was first necessary to give~~  
~~An initial purpose of the literature review was to find definitions for~~ ~~the terms~~ university-affiliated and nature centers . To this end university affiliated is being defined by the authors as the broad spectrum of affiliations a center may have with any institution of post-secondary education-. A representative result of the search for nature center definition was found in

The American Association of Museum\_s, ~~reprinted in the~~ 1990 Directory of, Natural Science Centers, ~~defines a nature center as follows:~~

For the purposes of accreditation, a nature center is defined as an organized and permanent nonprofit institution which is essentially educational, scientific, and cultural in purpose with professional staff, open to the public on some regular schedule. The nature center manages and interprets its lands, native plants and animals and facilities to promote an understanding of nature and natural processes. It conducts frequent environmental education programs and activities for the public (NSYF; 1990).

~~Evans and Evans (2004, p. 42-43) offer the following definitions of nature centers and their respective sources as follows:~~

~~—A nature center is land-based, serves a local community, and fosters sustainable relationships between people and the earth& The best centers expand our vision and offer insights into our deep connections with the earth and each other.—~~  
~~—————Michael Gross and Ron Zimmerman, *Interpretive Centers*, 2002~~

~~—A nature center provides leadership in bettering man—s awareness and reverence for life, and helps create a sense of individual responsibility for the care and wise use of natural resources.—~~  
~~—Armand Bayou Park and Nature Center, *Field Survey and Guidelines for Development*, 1974~~

~~—A nature center brings environments and people together under the guidance of trained professionals to experience and develop relationships with nature. A nature center consists of:~~

- ~~1. A natural site or home base to conduct educational programs;~~
- ~~2. A separate legal entity with a precise mission statement managed by a governing body;~~
- ~~3. A paid professional staff;~~
- ~~4. An established educational program.~~

~~—Association for Nature Center Administrators (ANCA)~~

Based on these definitions, the potential population of this study was composed of natural history museums, nature centers, environmental education centers, field stations, 4-H centers, arboreta, botanical gardens, zoos and long-term ecological research stations housed in and/or administered by an institution of higher education.

### Other Pertinent Literature

~~—Much of the current literature on university affiliated nature centers deals with the challenges they face in compensating for institutional budgetary cutbacks, how these entities are working to convey the value of their museums to both institutional administration as well as the public at large, and the need to build internal and external constituencies (Tirrell, 2000; Huttere, 2003; Kelly, 2001; Willumson, 2000; Duff, 2005, Burman, 2005, Hamburg, et al., 2006).~~

~~Additionally, Tirrell (2001) and Jonaitis (nd) have published articles about their experiences in using a more business like approach to raise the funds necessary to replace crumbling infrastructure—thus creating new state-of-the-art facilities. While there is a plethora of this type of literature no research or data was were found providing baseline data information on university affiliated nature centers.~~

## METHODOLOGY

### Creation of Survey Instrument

~~—The questionnaire developed for this study used addressed the essential aforementioned~~

~~study questions of the study, listed earlier, in a very straight forward manner. The majority of questions simply required written responses, or checking the appropriate response(s). The questionnaire was then pilot tested on several faculty members within the PSU Recreation, Park, and Tourism Management (RPTM) Department and revised as recommended.~~

## Study Population

The population for this study was defined as all entities affiliated with an American institution of higher education which is essentially educational, scientific, and cultural in purpose with professional staff, open to the public on some regular schedule. The nature center manages and interprets its lands, native plants and animals and facilities to promote an understanding of nature and natural processes. It conducts frequent environmental education programs and activities for the public (NSYF, 1990). Since a comprehensive list of these entities did not exist, such a list had to be compiled before going further with this study.

To accomplish this task, two World Wide Web search engines were employed to gather the organization-s' ~~names and addresses~~ contact information. ~~Keywords used in combination with university/college in these search engines were: university/college natural history museum, university/college natural science center, university/college environmental science center, university/college environmental education centers, 4 H centers, college/university outdoor education centers, university/college outdoor adventure center, university/college nature center, university/college environmental centers, university/college sustainable center and university/college environmental learning centers.~~ Contact information was also gathered from existing lists from the following organizations: Organization of Biological Field Stations, Long Term Ecological Research Network, American Association of Museums (natural history/anthropology listings), and the National Association of Marine Laboratories. This ~~producing~~ ing a list of 210 entities; which ~~were deemed to meet~~ met the selection criteria.

~~All 210 nature center s directors were sent an initial contact letter one week before the survey went out outlining describing the purpose of the study and asking them to fill out the~~

~~survey, which would be coming in the mail the following week. One week after the survey was mailed a follow-up letter was sent to confirm the receipt of the survey. Finally, two reminder additional letters were sent asking them to complete and return the survey one and two months after the initial mailing of the survey. Since the survey was so in-depth the researchers felt this time frame would give the directors sufficient time to complete it.~~

## Data Analysis

The quantitative data analysis was conducted using SPSS version 14 to run descriptive analyses, such as means, modes, percentages, ranges, and frequencies. In instances where the collected data appeared to be bimodal, the two sets of values were analyzed separately.

Qualitative data ~~was~~ were analyzed through NVIVO software by using the open coding method to establish ~~reoccurring~~ ~~recurring~~ ~~themes~~ recurring themes. No prior discussions took place among the researchers ~~to that might~~ determine, in advance, possible themes, ~~which might~~ resulting from the research data. The qualitative data ~~was~~ were used to support and correlate with the quantitative data findings.

## Results

~~I Trends, geographical tendencies, commonalities, and issues among the participant nature centers~~

### Types of Centers Represented

~~—A total of 210 surveys were mailed to nature centers around the United States and of those, 60 were completed and returned to the researchers resulting in a return rate of 30 percent. Of these 60 returns, 30 higher education institutions were represented. Thirteen out of these 210 nature centers declined to participate in the study because they felt they did not fit the researcher's definition of a university-affiliated nature center, thus reducing the total population for this study to 197. Participants were asked to self-identify all descriptors as to the type of center they are; these responses are presented in Table 1 Participant Break Down.~~

Table 1: Break Down of Self Identified Type of Center

Type of Center	N (60)	% of total respondents
Biological Field Station	26	43%
Environmental Education Center	25	42%
Natural History/ Science Museum	14	23%
Other	13	22%
Experimental Forest	6	10%
Arboretum/Botanical Garden	6	10%
Long Term Ecological Research Station	3	5%
Aquarium/ Marine Science Center	2	3%
4-H Center	2	3%

Those nature centers who identified themselves as other represented conference centers, raptor centers, herbariums, teambuilding challenge course, marine research and education center, camp, national historic landmark, multi disciplinary field station, cultural history museum, conservation museum, and a leadership center.

When asked to identify the departments with which their nature center was affiliated, 27 various ~~different~~ departments from math to academic offices were listed. The four department affiliations most commonly listed were: biological sciences (36%), humanities (25%), administrative offices (18%), , and various environmental departments (10%).—

Facility Description

—Data was were also collected on other self identified descriptive features of the nature centers including setting, natural features, proximity, acreage, buildings, and trails. Of the 30 descriptive feature variables, the most frequently listed of these are presented in Table 2. A majority (65%) of the centers reported that they responsible for the care and management of the natural features found at their locations.—

Table 2: Self Identified Facility Descriptions

Feature:	% Listing This Feature:
Setting	
Forested	48%
Other*	30%
Natural Features Present	
Lake/Stream	73%
Forest	72%

Historic Features	38%
Other <sup>o</sup>	30%
Preserve	28%
Animal Facility	22%
Proximity to Campus	
On Campus	37%
1-10 miles	12%
Greater than 10 miles Mean: 59.63 miles	50%
Acreage of Site	
Less than 10 acres-10 acres	25%
Greater than 10 acres Mean: 1,277 acres	75%
Trails-	
Indicated they had trails	68%
Self Guided Trails-	53%
Non Self Guided Trails	65%
Approximate Miles of trails	
1-5 miles	49%
Greater than 10 miles	24%

\*Participants listed rural setting, island, mixed forest/savanna/prairie, 40 acres of fields, forested area in the middle of an urban setting, 18 acres in the middle of campus, remote savanna/oak woodland.

<sup>o</sup> Participants listed butterfly exhibit, GreenWays Trail, oak savanna, organic garden, prairie, structures built by Miccosukee Indians, the center area is situated within the Shoshone Natural Forest, wetlands.

Here

Data on structures located on site included the number of buildings present, incorporation of green design, classrooms, visitor center square footaged descriptions, and labs. Ninety percent (90%) of the participants indicated the presence of at least one building on site, with a range of building numbers up to 200. Table 3 presents pertinent data about participants—buildings.

Table 3: Descriptions of Buildings on Site

Structure feature	% indicating this feature	Mean Values	Range
Green design buildings:	<u>20</u> 18%	0.3 buildings	1-3 buildings
Classrooms	<u>91</u> 81%	3 classrooms	range 1-15
Lab Classrooms*	<u>65</u> 58%	1.95 labs	range 1-20 labs
Visitor's Center	42%	10,391 square feet	Range 900-200,000 sq feet

~~\*wet/dry labs, nutrient labs, paleontological lab, exhibit preparation labs, classroom, field lab in an A-frame, analytical, toxicology, culture labs, water study labs, DNA lab, unspecified research labs.~~

~~One nature center noted that while they currently had no green design buildings, all future construction would be of green design. Another center reported they were in the process of certifying their building through LEED.~~

Other Features

~~Participants were also given the opportunity to list and describe any other features found at their centers. The responses to this section were quite varied and included such statements features as having areas for outdoor activities (ie. boating, skiing, volleyball, soccer, camping, outing club cabins), having a portion of their grounds listed with the National Park Service National Natural Landmark Program, having the Wisconsin Conservation Hall of Fame and Museum at their location, to a listing of and having other natural features, such as a pond, bog, or oak savanna. Other responses stated the nature center had maple sugaring facilities, historic features like a cemetery, and a historic barn with farm implements, and Additional respondents stated they had maple sugaring facilities or historic features such as a cemetery or historic barn with farm implements, while another one center listed revealed they were only accessible by boat or ice road. A final One center noted they maintained very close ties with the local school and help to support/sponsor the local science fair.~~

Personnel

~~There were a number of personnel questions asked to determine average staffing averages numbers in each particular area as well as the most frequently stated education levels for each position type. Table 4 presents a visual summary of staffing means.~~

Table 4: Personnel Description and Mean Education Level

<del>Personnel Type</del>	<del>% of Nature Centers with personnel of this type</del>	<del>Mean Number of Personnel: Minimum/Maximum</del>	<del>Minimum Education Level/Maximum Education Level</del>
<del>Administration</del>	<del>93%</del>	<del>2.6 2.6</del>	<del>54% either BS/MS 54% PhD</del>

Faculty	56%	<del>3.9</del> <del>3.9</del>	53% PhD <del>68% PhD</del>
Non-Faculty-Instructional	48%	<del>5.7</del> <del>6.2</del>	<del>68% either BS/MS</del> <del>37% MS</del>
Support Staff	88%	<del>7.7</del> <del>7.8</del>	<del>58% stated no specific education or other skills</del> <del>75% BA/BS/Associates, no specified education level or other</del>
Marketing-Full Time	13%	<del>1.4</del> <del>1.4</del>	<del>75% BA/BS/Associates</del> <del>75% BA/BS/Associates</del>
Marketing-Part Time	18%	<del>1</del> <del>1</del>	<del>36% BA/BS/Associates</del> <del>36% BA/BS/Associates</del>
Interns	46%	<del>11.96</del> <del>13.18</del>	<del>53% student status</del> <del>57% student status</del>

Table 4: Personnel Description and Mean Education Level (cont.)

Personnel Type	% of Nature-Centers with personnel of this type	Mean Number of Personnel:- Minimum/ Maximum	Minimum Education Level/ Maximum Education Level
Volunteers	38%	<del>96.7</del> <del>102.78</del>	<del>63% stated no education level</del> <del>63% stated no education level</del>
Others*	42%	<del>9.6</del> <del>10.2</del>	<del>72% stated either job related experience or no specific education</del> <del>76% stated either job related skills or no specific education.</del>

\*graphic designer, event coordinator, development director/officers, programs assistant, exhibit designer, architect/project manager, building maintenance, station assistant, semi-skilled laborer, collections manager, museum store manager, food service, housekeeping.

Seven centers reported they had no marketing staff because they used the resources of either the affiliated university's marketing staff or the marketing staff of the department with which they are affiliated. Student workers comprised 135% of the personnel listed in the support staff and 3147% of those positions listed in the "other" category, such as These included student workers, station assistants, work-study students, and Post Doctorates.

It is interesting to note here that those centers who have faculty as staff tended to be located either on campus or within 1-5 miles of the affiliated campus (55%) and the rest were located five or more miles from campus (44%). This is in contrast to those centers without faculty as staff which tended to be located more than ten miles from campus (62%) and the remainder which were located on campus to five miles away (34%). Both groups had facilities

with similar acreage.

### Programmatic Offerings

Three of the survey questions requested information on educational programming opportunities for both public and academic audiences. Respondents were asked to list the type of programs offered in five different programmatic areas (public programs, school programs, residential, offsite, and other) and check which of the university missions areas were supported by these programs. These missions areas were generalized as the following three emphases categorized as: Teaching, Research, and Service. Respondents indicated, by category of program type, what combination of missions areas each program type supported. Out of the five programmatic areas listed above, the majority of respondents listed programming in three areas: public programs, school programs, and offsite programs.

Table 5: Program Type, Support for Mission, and Program Topics

Program Type	% offering programs in this program type	Mission areas most frequently supported by the listed programs	Most frequently listed program topics
Public Programs	82%	Teaching/Service, Service	Unspecified public programs, unspecified lectures, guided tours
School Programs	83%	Teaching, Teaching/Service, Service	Guided k-12 visits/unspecified school programs, Natural History/Environmental Education
Off-site Program	57%	Service, Teaching/service	Public outreach, unspecified classes, school programs

Spread across all of the five programmatic areas were the teacher professional development (offered by 33% of respondents) and camps (offered by 17% of respondents). These Teacher professional development opportunities included such topics as Teachers in the Woods, GREEN Teacher Institute, and week long teacher education programs. Camps included summer camps, residential camps, day camps, and vacation camps.

~~Respondents were also asked if there were any other organizations which conducted programs at their centers, of which forty percent (40%) indicated there were other groups presenting such programming. The most common groups listed were local organizations (ie. Kiwanis Club, Nature Plant Society, library) and various university units (ie. continuing education, Cooperative extension).~~

~~The second programming question asked participants to check, from a list of 26 content area courses, which courses the nature center either taught or with which they assisted, with the teaching. Seven of the most frequently checked courses and the percentage, of 41 respondents who completed the section, listing the courses were as follows:~~

~~5638%: Flora/Fauna Taxonomy and Identification (offered 1-2 times per year)~~

~~4933%: Environmental Education Methods (offered once a year)~~

~~4632%: General Ecology (offered once a year)~~

~~4430%: Environmental Science/Field Laboratory (1-2 times a year)~~

~~4128%: other courses (i.e. architecture archeology, avian related, biology related, environmental education, timber related, technology related, interpretation, paleontological, science education, independent study, seminars, leadership) (offered 1-3 times a year)~~

~~32%: Natural History Interpretation~~

~~27%: Local Ecology/Natural History (offered once a year)~~

~~Three survey respondents noted they hoped to develop course offerings in the next two years~~

~~which would cover some of these 26 content areas. Another four respondents noted that some of~~

~~the listed content courses were taught by other departments/faculty at the nature center, however~~

~~they did not check which courses they were.~~

~~Within this section, respondents were also asked if their state had environmental education certification and if so, which courses offered by the center count towards this certification. Thirteen percent (13%) of the centers indicated their states had an environmental education certification, seventy four percent (74%) indicated their states did not have environmental education certification, and thirteen percent (13%) were unsure if their respective states did or did not have environmental education certification. Very few respondents listed any courses that count towards their state's environmental education certification program.~~

~~The third question in the programmatic section asked respondents to list collegiate~~

courses their center's staff/faculty teach or assist with teaching, broken down into four different areas the categories were: undergraduate, graduate, non-credit, other, and they were asked to check all of the appropriate descriptors (ie. The medium through which the course was taught and course topic). Table 6 provides a summary of the collegiate course offerings.

Table 6: Collegiate Course Types, Descriptors, and Topics

Collegiate Course Type:	% of centers offering courses at this level:	Most frequently checked teaching descriptor:	Most frequently listed topic:
Undergraduate	58%	Taught or assisted with on site	Natural history topics such as ecology, vertebrate zoology, botany, biodiversity
Graduate	37%	Taught/assisted onsite, taught <u>in residence</u> off site.	Natural history topics such as ecology, vertebrate zoology, botany, biodiversity
Non-Credit	20%	Taught on-site	Public programs, ecology classes
Other	15%	Taught off site	Teacher professional development, courses offered by other university departments at the nature center

Those centers which had faculty as staff were more apt to teach more analytically based courses such as field laboratory methods, quantitative biology, and research methods and measurements courses than their non-faculty counterparts, for example field laboratory methods, quantitative biology, and research methods and measurements courses than their counterparts. Also centers with faculty as staff listed offered five times as many natural history courses than those centers without faculty as staff (29 courses and 6 courses respectively).

### Research and Support for Graduate Students

— Data were was collected on the number of research projects the nature centers have undertaken over the last five years, and the agencies, if any, with which they partnered, with in the project(s). Sixty seven percent (67%) of the respondents indicated their staff members were involved in conducting research, in There was a bi-modal distribution of the number of projects

listed. The lower value group mode had a mean value of three (3) research projects. The high value group mode, centers that are more research intensive, had a mean of seventy (70) projects. These research projects covered a wide range of topics areas including: habitat management, nutrient concentrations and sequestration, biotic interactions, free-choice learning, minority participation in informal science education, and weed management education to name a few. The majority of research projects focused primarily on vertebrate research topics such as: box turtle dispersal, sturgeon restoration, bird distribution and abundance. For the most part, research partners listed by participants included government agencies (ie. PA Department of Conservation Natural Resources, Forest Engineering Research Institute of Canada, USFWS, and NSF). Other research partners included university science departments, social science departments, local school districts, and local conservation organizations.—

——— Thirtyeight percent (3028%) of the participants indicated their centers also supported the research of other departments and/or faculty at their facility. This research generally focused on issues relating to biodiversity, such as amphibian inventories and environmental impacts on bird populations, and included partnering with government agencies and university science departments.—

——— Study participants were asked to list the number of masters—and doctorate graduate students supported by the center, as well as the sources of financial support for those graduate students. Seventeen nature centers (28%) responded they did employ graduate students. Nineteen nature centers (32%) responded they did not have graduate students. Six nature centers wrote they had graduate students, however, but did not specify the graduate level or the level of employment. Table 7 shows the response rate for each specific area.—

Table 7: Percentage of Centers with Graduate Students Broken Down By: Degree, Assistantship Level, and Funding (N=17)

	Quarter Time	Half Time	Full Time	Self-Funded
Masters-	12%	29%	65%	<u>1822%</u> of masters students
Doctorate	<u>182%</u>	6%	35%	<u>308%</u> of

				doctorate students
--	--	--	--	--------------------

The sources of funding cited by respondents included: direct funding from the affiliated university (520%), grants and gifts (3029%), governmental agencies (265%), the center's own budget (220%), and scholarships (98%). Sixty percent (60%) of the respondents did not list any specific sources of funding for their graduate students.

Again, there are some notable differences between those centers which employ faculty as staff and those which do not. Centers with faculty as staff listed four times as many research projects and half as many supported research projects as their counterparts. Also centers with faculty as staff were three times as likely to support fulltime masters students and twice as likely to support fulltime doctorate level students.

## RESULTS

H. Various university missions, and ways affiliated nature centers support the mission of those higher education institutions

### Administrative

The last section of the survey contained six administrative questions on pertaining to the nature center's mission, its their affiliated institution's mission statement, percentage of effort put forth towards the mission's areas of teaching/research/service, key elements of the nature center's strategic plan, frequently used marketing tools, and budgetary data.

### Mission Statement Analysis

Forty nature centers (66%) sent a copy of their center-s' mission statements and 41 (83%) of the affiliated university universities' mission statements were sent or gathered from the university universities' website. Two nature centers reported they were in the process of developing a new mission statement. The most common themes present in the mission statements are presented in Table 18.

Table 18: Common Themes in The University and Nature Center Mission Statements

University's Mission Statements (n=41)	Nature Center's Mission Statements (n=40)
Research, service, creation of new knowledge (24)	Promoting an awareness/understanding of the region's natural history and educating audiences as to how best utilize those natural resources in a sustainable manner (34)
Outreach (20)	Research for the creation of new knowledge, in both the social and natural science disciplines and creating research opportunities for university students and faculty members (14)
Creating diversity (15)	Preserving the center's biological diversity/cultural history/natural features/collections for future generations (10)
Developing students' critical thinking skills or ethics (15)	Supporting their affiliated University's mission (7)

Table 9: Areas of overlap between the University and Nature Center Mission Statements

University's Mission Statement Themes	Nature Center's Mission Statement Themes
Research, service, creation of new knowledge	Research, education, supporting the community
Outreach	Education
Collaboration	Creating Partnerships, Creating links to other university departments
Becoming an academic leader	Being a preeminent learning center

Fifty one (51) organizations completed the question pertaining to the percentage of each center's effort at addressing the three main mission areas of (Research, Teaching, and Service). The percentages shown below, indicate the number-mean percentage of respondents listing some effort in that mission area. The ranges indicate the span of effort percentage-given to each area. When this data was analyzed, the following was found: The summary of this data is presented in Table 2.

Table 2: Percent of Total Effort Allocated to Three Mission Areas

Mission area: \_\_\_\_\_ % Effort Allocated:

Research: 27% Range: 0-99%  
 Teaching: 36% Range: 0-95%  
 Service: 35% Range: 0-100%

Strategic Plan Analysis

Analysis of the 28 strategic plans and their key elements produced 17 key component areas. The most highly represented components were:

- ~~developing~~Developing educational and hands-on opportunities for both the public and academic audiences to interact and explore the natural world (54.3%),
- ~~I~~Improving the center's facilities to better serve and support the university, increasing the center's funding (57%), and
- ~~conducting~~Conducting research related to the region's natural history (14%).

~~Along with data collected about missions and strategic plans, respondents were also asked to rate a list of twelve marketing tools in accordance to by the frequency of their use: frequently, sometimes, or seldom.—~~

Table 10: Use Frequency of Twelve Marketing Tools

Marketing Tool	Not-marked/used	Frequently-used	Sometimes-used	Seldom used
Advertising	35%	17%	25%	23%
Public Service-Announcements	35%	10%	28%	27%
Press Releases	17%	37%	35%	12%
Media Coverage-(attendance)-of-Events	22%	17%	42%	20%
Fliers/Posters	13%	45%	38%	3%
Underwriting	48%	5%	12%	35%
Web Site	8%	73%	18%	0%
Paper Newsletter	33%	25%	18%	23%
Electronic-Communications-(from your-university/college)	27%	40%	25%	8%
Direct Mail Pieces	23%	33%	28%	15%
Word of Mouth	12%	60%	28%	0%
Other*	87.8%	8%	3%	2%

~~\*billboards, brochures, exhibits at conferences, radio, TV, intern solicitation through other university departments and career center.~~

~~The last of the administrative questions focused on budgetary information on revenue sources and expenditures. These This data were was too incomplete to accurately analyze due to nature center administrators not having access to complete the financial data on certain income and expenditures categories. Some participants noted their cost structures did not allow them to be able to break out certain information such as amount spent on personnel fringe benefits. Other participants responded that the University budget covered certain expenditures categories, such as facility upkeep, so they were unable to complete the question.~~

### ~~Concluding Question~~

~~At the very end of the survey participants were given the opportunity to relay any other information they desired to share. Of the twenty two (22) nature centers that provided a response to this question the most common themes dealt with:~~

~~55% of their responses dealt with budgetary issues and how they are trying to balance responsibilities to the university with commitments to conduct fee-based programs for the public. One center listed four creative means they have developed to offset funding cutbacks:~~

- ~~• developing a series of interpretative training manuals which are oriented to students and professionals,~~
- ~~• developing an interpretive consulting business to help other organizations and agencies develop interpretive media and trainings, along with their overall interpretive planning,~~
- ~~• operating a nature focused gift shop in their nature center, and~~
- ~~• custom designing/constructing/selling cedar signs for both organizations and individuals.~~

~~One nature center reported they began charging admission as a way to become less reliant on state funding. (I really don't know how to accurately summarize the data we got in this section)~~

~~listings of support facilities such as~~

- ~~• composting facilities for the University and the community~~
- ~~• technological capabilities (ie. wireless internet, video conferencing, real-time data cameras)~~
- ~~• nursery for temporary plantings~~
- ~~• cottages and a shelter which serves as an outdoor classroom~~

~~and lastly information relating to the function of the nature center~~

- ~~• operated as part of the research and service/outreach missions of the University~~
- ~~• facility is operated to serve the general public, OSU students/faculty, partnering institutions, federal/state governmental agencies~~
- ~~• to serve the teaching, research, and educational needs of the natural resource community while serving as the University's research/teaching forest.~~

~~THIS WHOLE SECTION NEEDS TO BE REDONE. IT NEEDS TO BE RETITLED TO MAKE SENSE AND EVERYTHING FROM THE WORD "LISTINGS" TO HERE NEEDS TO BE INTEGRATED INTO THE PAPER BETTER. THIS IS JUST HANGING OUT HERE ALL BY ITSELF AND, THEREFORE, IS LARGELY NOT UNDERSTANDABLE.~~

~~Findings and/or reoccurringrecurring themes which warrant future research~~

### Discussion

Analysis of the collected mission statements revealed a distinct difference ~~in the function between~~ the mission statements of universities and nature centers. The vast majority of university mission statements, like that of Penn State, purported a triad of basic missions ~~tenets~~: teaching, research, and service. Additionally, such ideals as creating diversity, becoming an academic leader, or creating well rounded students were included in the mission statements. Similarly ~~ly~~ to ~~results published by~~ Morphew and Hartley (2006) ~~(???)~~, this study concluded that university mission statements typically reflect the values and ideals of the university's patrons and board members, and tend to be more rhetorical than directive in nature.

Conversely, nature center mission statements are more directive in function. They appear to be written to help guide the activities of the center by offering clear cut objectives such as creating research opportunities for university students and faculty members. Many of the mission statements' objectives closely aligned with the key elements contained within the nature center-s' strategic plans. For example, 85% of the nature centers' mission statements stated they were attempting to promote an awareness and understanding of the region's natural history, which was also seen in 54% of the strategic plan-s' key elements.

Along with aligning with the centers' strategic plans there were also a number of areas of overlap between the nature center and affiliated university mission statements, thus ~~allowing the conclusion to be made showing~~ that nature centers ~~support their affiliated institution by often~~

acting as a teaching and service arm of the university. ~~This conclusion is further reinforced by reviewing the data collected in Table 5 which detailed the mission areas of teaching/service, service, or teaching to be the mission areas most frequently supported by the various programmatic offerings.~~ Also, teaching and service ~~comprised were listed by~~ 71% of the 51 organizations who answered the question pertaining to the percentage of effort put forth in each of the three mission areas.

While the nature centers who participated in this study had a wide range of mission statements and mission emphases, there are a number of commonalities which can be found. For instance, the primary programmatic audiences are the general public, school groups, undergraduate students and to a lesser extent K-12 teachers. At this time, the data collected on the types of programs offered to public and school ~~audiences are audiences are~~ ~~is~~ too inconclusive to determine just what the reoccurring themes may be. However, most nature centers offer both audiences guided tours of their facilities. Secondly, devising ways to overcome state or university budgetary reductions remains a significant concern.

## CONCLUSION

~~Even though a number of different analyses were conducted on the collected data, the only one which produced any significant results dealt with the presence or absence of faculty as staff. This had an impact on the type and number of credit courses offered, graduate students supported, and research projects conducted or supported. However, such things as proximity to campus, facility size, and geographic locality showed little significant variation among the research participants. Other groupings such as department affiliation and research intensiveness produced inconclusive results due to too much overlap or small sample size.~~

Overall, this study indicates that the primary role of university affiliated nature centers in supporting their affiliated university is to act as a service and teaching arm of the university. Implications of this for nature center administrators point to the need for centers to identify the

variety of audiences, the diverse array of needs these audiences present, potential sources of revenue, and developments in technology, as they develop their own mission statements. The role of the university in today's rapidly changing world needs to be scrutinized carefully, as the mission of nature centers are developed and/or revised.

#### AREAS FOR FUTURE RESEARCH

~~—THERE ARE A NUMBER OF QUESTIONS WHICH AROSE DURING THIS RESEARCH AND WARRANT POSSIBLE FURTHER RESEARCH:~~

- ~~1) WHAT ARE THE VARIOUS FEE STRUCTURES FOR SCHOOL, PUBLIC, AND TEACHER PROGRAMMATIC OFFERINGS?~~
- ~~2) IS THERE CAMPUS TRANSPORTATION TO THOSE CENTERS WHICH ARE LOCATED MORE THAN 10 MILES FROM THEIR AFFILIATED CAMPUS, AND DOES THIS ENHANCE THE ROLE OF THE CENTER IN TERMS OF UNIVERSITY SERVICE?~~
- ~~3) WHAT ARE THE COMMON PROGRAMMATIC THEMES WITH REGARDS TO PUBLIC AND SCHOOL PROGRAMMING?~~
- ~~4) ARE THERE ANY ENVIRONMENTAL CONCERNS THAT ARE BECOMING MORE COMMONLY REFLECTED IN UNIVERSITY MISSION STATEMENTS WITH WHICH NATURE CENTERS COULD BECOME INVOLVED?~~

#### REFERENCES CITED

~~Byrd, N. (1998). The Nature Center Handbook. Association of Nature Center Administrators. Aullwood Audubon Nature Center and Farm. Dayton, OH.~~

~~Burman, L. (2005). University Museums as a Strategic Tool. On Communicating University Values. Retrieved February 19, 2007, from <http://publicus.culture.hu-berlin.de/umac/2005>~~

~~Duff, L. (2005). Student-Teacher-Scientist Collaborations. Retrieved February 26, 2007, from [www.lternet.edu/news](http://www.lternet.edu/news).~~

~~Evans, Brent; and Evans, Carolyn Chipman. (2004). The Nature Center Book. National Association for Interpretation. Fort Collins, CO.~~

~~Hamburg, (2006).~~

Hutterer, K. (2003). *University Museums and Collections of Natural History*. Retrieved February 19, 2007, from <http://publicus.culture.hu-berlin.de/umac/2003/hutterer.html>.

Jonaitis, A. (nd). *Joining the 21<sup>st</sup> century while remaining honest to our mission as a university museums*. Retrieved February 19, 2007, from <http://publicus.culture.hu-berlin.de/umac/2006>

Kelly, M. (Eds.) (2001) *Managing University Museums* [Electronic Version]. Retrieved January 12, 2007, from <http://saturn.bids.ac.uk>.

Morphew, C., and Hartley, M. (2006.) *Mission Statements: A Thematic Analysis of Rhetoric Across Institutional Type* [Electronic Version]. *Journal of Higher Education*, 77(3) Retrieved February 17, 2007, from <http://web.ebdchost.com>.

NSYF, (1990). *Directory, Natural Science Centers*, Roswell, GA.

Tirrell, P. (2000). *Dealing with change: university museums of natural history in the United States* [Electronic Version]. *Museum International*, 52(3) Retrieved February 19, 2007, from <http://www.blackwell-synergy.com/toc/muse/52/3>.

Tirrell, P. (2001). *The University Museum as a Social Enterprise*. Retrieved February 9, 2007, from <http://publicus.culture.hu-berlin.de/umac/2001/tirrell.html>

Willumson, G. (2000). *The shifting audience of the university museum* [Electronic Version]. *Museum International*, 52(2) Retrieved January 15, 2007, from <http://www.blackwell-synergy.com/toc/muse/52/2>.