

Abstract

TOWNSEND, BECKY J. Environmental Sustainability 'Inreach': How the Campus Community Informs Itself About Environmental Issues. (Under the direction of Dr. Gary Blank and Dr. Susan Moore.)

As many higher education institutions join in the sustainability challenge, several studies recently have emerged that examine the experiences of these institutions in greening their campuses. These studies have identified numerous factors that correlate with sustainability success. One common suggestion has been identified as a crucial measure for achieving success: raising environmental awareness within the campus community. Yet few data are available in the literature regarding what universities are doing to reach out to their campus communities about sustainability issues (for simplicity purposes, this will be referred to as **'inreach'**).

Despite the valuable benefits that inreach can accomplish, from publicizing existing campus sustainability efforts to increase compliance to raising general environmental awareness, little is known about the extent to which universities are using this strategy or about the program structures, methods, or success of inreach efforts. To address this gap, a survey was designed to (1) explore the strategies and providers that institutions of higher education are using to inform their campuses about environmental and sustainability topics; (2) determine factors associated with environmental sustainability inreach success; and (3) ascertain ways that inreach could be improved. The survey targeted all 188 higher education institutions in North and South Carolina and prompted 79 institutions to respond. Results show that the majority of institutions are still in the beginning stage of providing inreach,

that facilities offices are important sources for providing inreach; and that inreach success is significantly associated with structure for inreach programs, institutional commitment to campus sustainability, larger enrollments, and greater operations spending. Suggestions for improving inreach programs include dedicating funding and resources, establishing a central inreach source, and making a commitment to campus sustainability.

**ENVIRONMENTAL SUSTAINABILITY 'INREACH': HOW THE CAMPUS
COMMUNITY INFORMS ITSELF ABOUT ENVIRONMENTAL ISSUES**

by

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Personal Biography

Becky Jo Townsend grew up among the hillsides and farmland of Burke County, North Carolina. Her love of the outdoors began at an early age, with helping her grandparents in their garden, trips to the Green River Preserve, and outings with the Outward Bound School in the mountains of western North Carolina. These experiences motivated her to pursue a degree in Environmental Sciences at NC State University, where she graduated *Summa Cum Laude* in the spring of 2000. During her years in college, she served as president of the Student Organization for Sustainability and was an active supporter of campus sustainability at NC State University.

In the winter of 2001 Becky joined the Forestry and Environmental Outreach Program at NC State University, where she has worked as the program coordinator for over 4 years. While working at FEOP, she also took courses to pursue a Master's Degree in Natural Resources. For her thesis research, she wanted to study a topic that would make a difference and was guided by her passion for campus sustainability.

Becky lives with her cat JoeBou in Raleigh, North Carolina where they have made their home for the past 8 years. In addition to a good cup of coffee and a mystery novel, she enjoys backpacking, crafting, vegetarian cooking, gardening, playing piano, and dancing like no one is watching.

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Chapter 1: Introduction

Background

The relatively new topic of environmental sustainability in higher education has been getting increasing attention over the past fifteen years. Institutions of higher education (IHEs) have been identified as possessing both the ability and the responsibility to become leaders in society's shift toward a more sustainable future (Leal Filho et al. 1996, Cortese 1999, Orr 2002). Many IHEs worldwide have accepted the sustainability challenge by signing declarations of environmental commitments, adopting institutional environmental policies, and creating environmental management plans. A plethora of articles now are available that examine the experiences of higher education institutions in the process of greening their campuses and the challenges, barriers, and successes they have encountered. These articles have addressed issues such as 'green' building, energy and water usage, recycling and waste management, food services, and various other university functions and campus operations.

In response to these experiences and challenges, several studies have emerged that consider factors correlating with sustainability success and identify major barriers preventing the easy assimilation of sustainable practices into IHEs (Carpenter and Meehan 2002, Dahle and Neumayer 2001, Herremans and Allwright 2000, McIntosh et al. 2001, Sharp 2002, Shriberg 2002, Starik et al. 2002, Taylor 1999, Anonymous 1996). These articles identify organizational profile characteristics and more specific characteristics within institutions that relate to campus sustainability challenges and success. In one of

these studies Dahle and Neumayer (2001) examine greening status with respect to solid waste management and energy management, reported obstacles faced in the greening process, and interviewee suggestions for ways to overcome these challenges. The survey of six tertiary institutions identified four main obstructions hindering the campus greening process: financial resources, lack of awareness, non-environmental attitudes on campus, and lack of space at urban campuses. One common suggestion was identified as the most important measure for overcoming these barriers: raising environmental awareness within the campus community.

Several other articles have addressed the need for raising environmental awareness on campuses. Newport et al. (2003) discuss the necessity of creating campus-wide recognition and support of sustainability, stating that, “Proponents of sustainability concede that without broad buy-in sustainability is not a tenable solution to earthly issues” (p.359). Spellerberg et al. (2004) echo this point with the claim that, “Before sustainability can be an integral part of ‘how we do things’, there will have to be considerable effort to draw staff and student attention to the implications of unsustainable practices” (p.131). And Gudz (2004) takes the claim a step further, insisting that an institution’s commitment to sustainability is not sufficient for achieving sustainability unless it becomes a “shared endeavor” (p.166).

The vast majority of literature about increasing environmental awareness at IHEs focuses on incorporating environmental sustainability into an institution’s curriculum, yet graduates will readily confess that much of what they learned during their college years was outside of the classroom. In one article discussing student-led research, Pike et al. (2003)

emphasize that “the way in which learning occurs is as important as the content” (p.219). Raising environmental awareness in higher education institutions can be achieved in more ways than by just promoting environmental literacy through curriculum. A campus is its own community, and sustainability can be treated not only as a classroom subject but also as a part of everyday life. This community approach is identified by Breyman (1999) who states, “Campus greening projects are often a student’s first experience with social change, promoting greater consciousness and awareness” (in Pike et al. 2003, p.227).

Specific initiatives to raise awareness outside of the curriculum approach have been suggested by several studies as indicators of environmental sustainability progress and success within IHEs. In describing indicators that show environmental management has been mainstreamed into an IHE, Carpenter and Meehan (2002) list community involvement as a crucial indicator and also cite a case study where community awareness activities were used to overcome “corporate and individual resistance” as a barrier to campus greening (pp. 29-31). Herremans and Allwright (2002) identify several awareness activities including “conducting seminars, producing information pamphlets, and producing an environmental newsletter” as a quality of an Environmental Leader, the highest level of their four-tiered classification system of effective university environmental management systems. In their analysis of the survey results for the “State of the Campus Environment: A National Report Card on Environmental Performance and Sustainability in Higher Education,” McIntosh et al. (2001) point out the lack of training programs to orient new campus members to campus environmental issues and suggest that this could be “one of the biggest opportunities” identified by the survey. In a set of recommended environmental performance indicators,

another study lists several awareness initiatives including articles in internal publications, information published on the Internet, and environmental training programs (Anonymous 1996).

Clearly these non-curriculum education methods are an important component in the campus greening process. For simplicity purposes, this study will refer to these initiatives that are designed to reach out the to campus community about environmental issues as environmental *inreach* (Figure 1.1). Inreach has the potential to achieve awareness, support, and ownership of sustainability by the campus community that the prior studies claim are needed. To accomplish these goals, environmental inreach can promote general environmental awareness, provide a means to publicize existing campus sustainability efforts to increase compliance, and motivate involvement in environmental activities. By encouraging the community to adjust their habits in sustainable ways, it also has potential to be a means for shifting lifestyles and ethics.

Few articles are available in campus greening literature that directly examine environmental sustainability inreach initiatives. In one of these articles, Marcell et al. (2004) performed a study to reduce electricity usage in two dormitories, with one dorm receiving a basic energy education campaign while the other received a community-based social marketing campaign. Several inreach strategies were used including invitations to sign a commitment statement for reducing energy, distribution of promotional items, fact sheets and stickers, and newspaper articles. Findings from the study showed that while students in both dorms reduced energy usage, the dorm that received the more intensive social marketing campaign had a greater shift in awareness and behavior. In their

characterizations of the greening initiatives of four universities, Starik et al. (2002) cite numerous inreach strategies that are being used on campuses including environmental orientations, listserves for environmental announcements, and publicity for campus environmental efforts. As part of a study about recycling programs, Pike et al. (2003) investigated whether recycling education would increase student participation in campus recycling programs. Their results showed that the “presence of education and bins did significantly reduce the waste stream” (p.222), though results were not significant enough to support that education increased recycling. Despite the need for increasing environmental awareness and the benefits that inreach can offer, few other studies discuss what is being done to raise environmental awareness on campuses.

Purpose of This Study and Theoretical Framework

No systematic research has been done to comprehensively study environmental inreach, and therefore little is known about the extent to which institutions are using inreach strategies or the program structures, methods, or success of inreach efforts. To address this gap a survey was designed to learn about environmental sustainability inreach at institutions of higher education. Three main goals will be addressed.

Goal 1: The survey’s primary aim was to investigate the strategies and providers of current inreach initiatives, providing insight into how effective, comprehensive, and prevalent environmental inreach programs are at IHEs. It was expected that the progress of inreach efforts would closely follow the progress of general campus sustainability efforts.

Shriberg (2002) performed a study to address the organizational factors influencing campus sustainability among institutions that have signed the Tailloires Declaration, and he concluded that most campuses are still in the beginning stages of campus greening (p.292). Because the survey created for this study would address a wider range of institutions, not just those that have already made a commitment to campus sustainability, it was predicted that Shriberg's finding would be more pronounced, with a noticeable distinction between a few institutions that have taken steps toward environmental sustainability and are using inreach strategies and a majority of institutions that are still in the beginning stage of environmental sustainability and have performed few or no inreach efforts.

Hypothesis 1: Environmental sustainability inreach efforts will excel only at a small number of institutions.

Goal 2: Because some institutions were expected to be more active in reaching out to their campuses than others, the survey would also explore possible reasons behind the disparity. Specifically, what are the factors that enable some inreach systems to be more successful? Three main factors were examined: environmental inreach structure, institution commitment and support for environmental initiatives, and institutional demographics.

Institutional commitment and support for environmental sustainability initiatives was expected to be a good indicator for the status of inreach efforts, and the study examined whether more commitment and support from the institution would mean more successful and productive inreach strategies. Shriberg (2002) concluded that "a committed core of individuals at all levels within the institutional hierarchy is required to drive campus

sustainability efforts” (p.287) and that “leadership commitment is important in signaling the importance of environmental and interrelated social issues, providing a strategic vision and enhancing coordination” (p.286). Over one thousand institutions of higher education have signed various environmental declarations, and countless others have expressed their support for campus sustainability through other institutional policies and projects (Tilbury 2004). It was expected that the institutions that have made greater commitments would be more likely to have successful inreach programs.

Hypothesis 2a: Greater commitment and support from the institution will be associated with greater success of inreach systems.

The level of structure of inreach systems, for example centralization of campus inreach efforts and presence of paid coordinators, was also examined to determine what sort of structures are in place for environmental inreach and if greater structure of initiatives means more environmental inreach success. Numerous studies have identified structural barriers to the implementation and success of campus sustainability (Thomas 2004, Spellerberg 2004, Shriberg 2002). In their study about the mainstreaming of environmental management in IHEs, Carpenter and Meehan (2002) identify several structural factors that are crucial to incorporating sustainability into campus operations, including establishing who on campus is responsible for particular sustainability functions, allocating a dedicated budget for these functions, and creating accountability through reporting systems (p.30-32), These types of structures are also expected to be important for environmental inreach initiatives and would likely generate more successful inreach efforts.

Hypothesis 2b: Better-established structures for inreach systems will be associated with more successful inreach.

Institutional demographic variables were also examined in the study, including affiliation of the institution (state, independent, community college, etc.), highest degree offered, state (NC or SC), location type (rural, urban, etc.), residential campus, operations spending, endowment, and tuition. These factors were expected to be antecedent variables, influencing both the commitment of the institution to environmental sustainability and the instillation of sustainability structures (Figure 1.2). Shriberg found that campus sustainability progress was not associated with demographic conditions, except for a slightly higher success among small, private institutions (p.285). He insists that this finding be used with caution because of the purposive sample of only Tailloires Declaration signatories and its bias toward large, public institutions. For this study, it was predicted that larger institutions would have greater support for environmental inreach initiatives because of greater student demand and public visibility of the institution and because a larger institution may have more available funds and resources that could be used for environmental inreach initiatives.

Hypothesis 2c: Institutions with a larger enrollment will have more successful inreach programs.

Goal 3: Lastly, the study aimed to ascertain the challenges hindering inreach and to bring forth suggestions for improving inreach. Several studies have identified the main barrier to campus sustainability to be the low priority of environmental sustainability to the

institution, exhibited by various factors including a “lack of money, lack of time and institutional inertia” (Shriberg 2002, p.285, Carpenter and Meehan 2002, Sharp 2002). It was anticipated that respondents in this study would identify factors similar to these associated with a lack of priority to also be challenges to inreach and a means for improving inreach.

Hypothesis 3: Factors indicating a lack of institutional priority for environmental sustainability and inreach would be identified as challenges to inreach and a means for improving inreach.

Chapter 1 Figures

ENVIRONMENTAL INREACH: How an institution reaches out and communicates to its own campus community about environmental issues.

1. Environmental inreach includes **ONLY OFFICIAL INITIATIVES** that have been sanctioned by the administration of the institution (unless otherwise stated). For example, initiatives of student environmental organizations should not be included unless they were also sponsored by the institution.
2. Environmental inreach does **NOT** include for-credit courses in an institution's curriculum. For example, a semester course on environmental technology should not be included, however a one-time seminar on composting should be included.
3. Questions in this study were about environmental **INREACH** activities **ONLY**, not all environmental initiatives (unless otherwise stated). For example, energy conservation measures would not be included, but a flyer encouraging students to turn off their lights to save energy would be included.
4. Questions in this study were based on an institution's activities **OVER THE PAST 12 MONTHS** unless otherwise noted.

Figure 1.1: Definition of Environmental Inreach as provided by this study

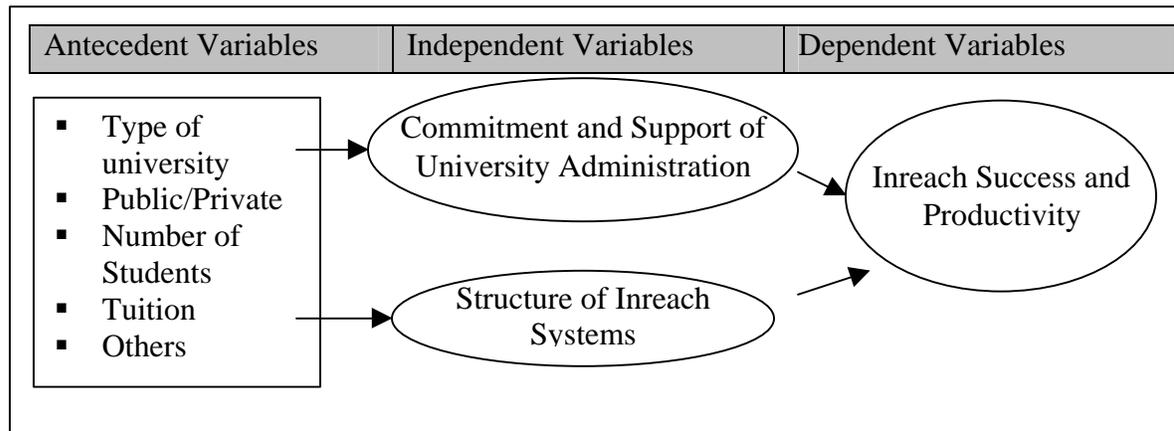


Figure 1.2: Inputs of inreach success

Chapter 2: Methods

Population and Sample

The target population for the study was higher education institutions in general. For the purpose of limiting the study group to a reasonable size while maintaining a sample that could be widely representative, the sample was restricted to the higher education institutions in North and South Carolina, a population size of 188 institutions. This purposive and nonrandom sample was chosen simply because I was most interested in the results for my own area. Aside from variations between institutions of the southeastern United States and IHEs in other regions (ex. tuition differences and general environmental attitudes), the sample is still expected to provide results that can be applied to institutions nation-wide, as North and South Carolina have much diversity among their institutions in size, tuition, and public or private affiliations.

Respondents

Choosing knowledgeable respondents for a questionnaire about the topic of campus sustainability posed some difficulty. As each institution is unique in both the status and structure of campus environmental sustainability systems, no common job position or title exists for all institutions, and thus no readily available list of contact persons exists. Considering that, I chose to send an invitation to the president or chancellor of each institution. The invitation asked the institution's president to ask the appropriate staff person to complete the questionnaire. The questionnaire then obtained information about

this person, providing an added benefit of the study: additional information about who on campuses are the knowledgeable persons regarding campus environmental sustainability issues.

Sampling Frame and Institutional Demographics

North and South Carolina institutions listed in the *2004 Higher Education Directory* (Rodenhouse 2003) formed the study sample. This directory was chosen because it provided the broadest list of IHEs of the guidebooks I reviewed; it included community colleges, two-year institutions, and technical schools. Contact information, including chief officer name, physical address, and email address, as well as institutional demographics (including enrollment, tuition, affiliation, residential institutions, and highest degree offered) were obtained from the *Directory*. Additional demographic information (endowment, operational spending, and location type) was compiled from the *2004 College Blue Book* (Quick 2003), and the lists of NC and SC community colleges was determined from UnivSource.com (UnivSource 2005a, UnivSource 2005b). Data from these directories were entered into a Microsoft Access database by a research technician. For contact information to be kept separate from survey responses and to ensure confidentiality, each institution was randomly assigned a four-digit identification number that was linked to their institution's contact information, and this code was collected with the survey responses.

Survey Data Collection Method

Because little is known about the topic of inreach, I wanted to (1) establish baseline data by examining a large number and wide diversity of institutions to get a good

representation of current inreach activity; and (2) address my hypotheses using statistical significance. To best accomplish these goals while minimizing time and resources for the study, I chose to use a questionnaire, which would be widely applicable, easy to analyze quickly, and would provide numerical data for correlations. The option of examining individual case studies was also considered, but this approach could reasonably scrutinize a much smaller sample given the time and resources available. I chose to implement an online survey (with both mail and email invitations and reminders) mainly because of the low cost of this method compared to face-to-face and telephone surveys and because the study population is presumed to have equal access to internet resources. The greater difficulty and resource-intensiveness of determining an appropriate list of respondents also contributed to the decision to use an online survey, as it would be easy for the institution president to forward the survey to the appropriate person via email.

Constructs and Indices

The first step in preparing the questionnaire was to operationalize each of the three key constructs. Three indices were created to assign point values for responses and cumulate answers into a numerical score for each construct. Descriptions of these scores as defined by the questionnaire along with explanations of the corresponding index and maximum score are as follows:

1) Environmental Inreach Success (Dependent Variable): Determining appropriate questions to assess inreach success was difficult because little previous research has been

done on the topic. A score of 49 points was possible for this index and was defined as a sum of the following:

- a. 6 Points: Presence of a website about environmental sustainability issues (2 Points), a listserv for environmental announcements (2), and a volunteer network for environmental activities (2). (Question 1)
- b. 18 Points: Variety of inreach methods the institution has used, for example, posters, campus environmental orientation for students, and articles or advertisements in a campus newspaper. Eighteen methods were listed, and one point was assigned for use of each method. (Q.2)
- c. 5 Points: Diversity of primary targets for inreach initiatives. One point each for targeting students, faculty, administration, staff, and campus visitors. (Q.3)
- d. 4 Points: Diversity of goals specifically focused on by inreach initiatives. One point each for focusing on general environmental awareness, advertising campus sustainability accomplishments or policies, involvement in sustainability activities or initiatives, and changing lifestyles or ethics. (Q.4)
- e. 5 Points: Diversity of areas specifically focused on by inreach initiatives. One point each for global, national, regional (ex. State), local (ex. City), and campus environmental issues. (Q.5)
- f. 11 Points: Diversity of campus topics specifically addressed by inreach initiatives, for example, recycling, water conservation, and transportation issues on campus. One point was given for each of eleven possible topics. (Q.6)

2) Environmental Inreach Structure (Independent Variable): Defining structure was also difficult due to the lack of prior research on inreach systems. Structure scores were defined using the following point system. A sum of 31.75 points was possible plus variable points for the number of inreach staff positions; the maximum variable points earned by an institution was 640, but this was considered an outlier since the next highest points earned was 130.

- a. 3 Points: Diversity of inreach providers, for example official environmental office and student environmental groups. Points were assigned on a ranked scale such that 0.75 points were given for presence of an official environmental office and/or official environmental committee or task force as an inreach provider; 0.5 points were given for presence of an office of energy management, office of waste management, or other facilities office as an inreach provider; and 0.25 points were given for presence of an unofficial environmental committee, a student environmental organization, student government, student green party, or other student group as an inreach provider. (Q.8)
- b. Variable Points: Paid positions involved with environmental inreach as part of their job responsibilities. Points were assigned for each position as follows: 1 point for a position devoting 4 or less hours per week, 2 points for 5-9 hours per week, 3 points for 10-19, 4 points for 20-29, 5 points for 30-39, and 6 points maximum for 40 or more hours per week. (Q.11)
- c. 16 Points: Presence of a central source for inreach. 5 points were given for either a central office or program with assigned office space or for an

environmental/sustainability coordinator position. 3 points were given for either a central office or program but not assigned office space or for an environmental/sustainability officer position. (Q.12)

- d. 8 Points: Presence of reporting systems. 3 points were assigned for required reporting, and 1 point was assigned for 5 additional reporting options, for example, reporting to the institution's president. (Q.20)
- e. 3 Points: Measures of success. 3 points were assigned if there had been any attempts to measure the success of an inreach activity or initiative. (Q.21)

3) Institution Commitment and Support (Independent Variable): Commitment and support of the institution for general environmental sustainability was measured out of a maximum score of 21 points and was assigned as follows:

- a. 2 Points: Presence of an official environmental policy. (Q.24)
- b. 1 Point: Presence of an environmental degree program. (Q.24)
- c. 1 Point: Presence of an environmental general education requirement for graduation. (Q.24)
- d. 2 Points: Presence of an official, central office or coordinator for environmental sustainability issues. (Q.24)
- e. 1 Point: Presence of an environmental student organization. (Q.24)
- f. 2 Points: Presence of institutional funding provided for the implementation of an environmental management plan. (Q.25)
- g. 2 Points: Signatory of the Talloires Declaration, a commitment that originated at a conference in Talloires, France that is signed by administrations to incorporate

environmental sustainability into the institution's operations and mission (Talloires 1990) (Q.26)

- h. 5 Points: Respondent's rating of supportiveness of senior administration for environmental sustainability initiatives on campus. Points were assigned as follows: Extremely supportive (5), Very Supportive (4), Somewhat Supportive (3), Neither Supportive nor Discouraging (2), Somewhat Discouraging (1), Very Discouraging (0). (Q.27)
- i. 5 Points: Respondent's rating of financial supportiveness of senior administration for environmental sustainability initiatives in general on campus. Points were assigned as in the previous scale. (Q.28)

Survey Development

To assist with development of the survey, I followed many of the guidelines for question wording and general survey techniques provided by *Designing Surveys: A Guide to Decisions and Procedures* (Czaja and Blair 1996). After a draft questionnaire was created, an informal pretest was conducted with six colleagues who were either currently working or had previously worked with environmental sustainability at one of four different NC universities. The six people included students, staff, and faculty. Four pretest respondents were sent an electronic copy of the survey in Microsoft Word format to print, complete, and return. Two respondents met individually with me to examine the survey question-by-question, determine comprehension of the question, and identify problems with wording or question order. Based on these results, I estimated completion of the survey to require

approximately fifteen minutes. Following the pretest, the invitation letter and questions were revised and submitted for approval by the NCSU Institutional Review Board for the Use of Human Subjects in Research.

The final questionnaire had 33 single or multi-part questions organized into six different categories: Environmental Inreach Activities, Goals and Topics, Providers, Success and Challenges, General Environmental Status, and Survey Respondent (Appendix B). Once the questions were finalized, an online form was created using Dreamweaver MX 2004, and the NCSU inFORM system was employed to collect the responses.

Invitations

Invitations were mailed and emailed to the president or chancellor of each institution asking him or her to give the survey to the appropriate person for completion (Appendix A). The invitation provided the topic and purpose of the study (i.e. assess environmental sustainability inreach initiatives at universities) and requested participation in the study. It also described who the sample included so recipients would understand why they had been selected and what would be done with the results (i.e. made public and available to the respondents). The invitation then provided a promise of confidentiality, a name and phone number to contact with any questions, and the funding source of the study.

Survey Completion Online

Respondents were given three weeks from the initial email and mail invitations to complete the questionnaire. A mail and email reminder was sent after 10 days. The invitation directed respondents to the survey website to complete the questionnaire. The

survey website consisted of three pages and a homepage (Appendix B and C). The homepage welcomed respondents, told the estimated time for questionnaire completion, and outlined contents of the following three web pages. Because the initial person receiving the invitation might not be the same person to respond, Page 1 provided a description of the study similar to that given in the invitation letter in case the respondent had not been forwarded the invitation details. Page 2 gave a detailed definition of environmental inreach as it would be understood in the survey and also described how the online form would function. Page 3 was the questionnaire as an online form. Prior to completing the questions, respondents were asked for their assigned Institution Code provided in the invitation letter. Respondents could review the instructions at any time while completing the survey by clicking a link that would open the instructions in a new window. My contact information was provided on each web page in case the respondent had any questions about the study or encountered submittal difficulties. After completing the questionnaire, the respondent clicked a “submit” button, and a new window opened thanking him or her for participation and listed all of the submitted responses. If the respondent mistakenly left any required questions unanswered, a new window would open stating the question numbers that still needed to be answered.

Six respondents contacted me to report difficulties completing the survey. Two respondents informed me that it had taken them significantly longer than the estimated fifteen minutes. Two respondents requested a later deadline in order for the proper person to be able to respond or in order to collect information from a variety of different people. One respondent had difficulty submitting the online form at all and instead faxed a printout of the

completed form, which I then entered. The web form was designed such that upon submission, the respondent would be notified of any unanswered questions and his or her survey would remain open in another window preserving all answers. For one institution this feature of the online form did not work, instead erasing all responses, so instead this respondent provided the responses over the phone while I entered them into the form.

Analysis Methods

The NCSU inFORM system collected responses in a tab-delimited text file that was converted to Excel for analysis. Responding and non-responding institutions were compared using two-sample t-tests to compare means of the numeric variables (enrollment, tuition, endowment, and operations spending) and chi square tests to compare proportions among the categorical variables (affiliation, institutions with campus residential programs, state, highest degrees offered, and location type). To determine if institution demographics correlate with the three key variables, the demographic factors and key variable scores were examined using linear regression (for numeric variables), two-sample t-tests (for two-category variables), and one-way analysis of variance tests (for multi-category variables). Linear regressions were used to examine correlations between the key variables, and a multi-regression analysis was used to more closely look at the correlated numeric demographic variables. An alpha of 0.05 was used to determine significance for all statistical analyses.

Chapter 3: Results

Responding versus Non-responding Institutions

Of 188 institutions invited to participate in the study, 79 institutions (42%) completed the questionnaire. Considering the difficulty of determining a sampling frame and the indirect method of locating respondents by way of the chancellor or president, this response rate is better than was expected.

Comparing the demographics compiled from guidebooks, we can observe several differences between the non-responding institutions and the responding institutions (Table 3.1). A statistically significant difference was found for two of the demographic variables. The mean enrollment of responding institutions was nearly twice the mean enrollment of institutions that did not respond ($p < 0.01$). By dividing all the institutions contacted into three equal categories based on enrollment (small, medium, and large institutions), we see the larger institutions in the sample were more likely to respond, while smaller institutions were less likely to respond (Figure 3.1). A significant difference was also found for operations spending, with a mean of \$2.8 million for responding institutions versus \$0.9 million for non-responding institutions ($p < 0.05$). Statistically significant differences between responding and non-responding institutions were not found for tuition ($p < 0.15$), endowment ($p < 0.1$), affiliation ($p < 0.1$), state ($p < 1$), highest degree offered ($p < 1$), residential institutions ($p < 0.1$), or location type ($p < 1$).

Activities

To assess the types of inreach strategies institutions are using, the questionnaire listed 21 activities or initiatives and asked respondents whether their institution had used these methods for environmental inreach (Q.1-Q.2, Appendix B). The average number of methods used by an institution was five, and the median was four (Figure 3.2). No institution had used all of the methods listed by the questionnaire, and eleven institutions had used none of the methods listed. Figure 3.3 lists the specific strategies provided in the questionnaire and the number of institutions that had used each strategy. The four most commonly used methods were campus-wide emails, events or fairs (for example, Earth Day events), signs, and stickers (for example, “Turn out the light.”). Only four respondents (5%) said their institution had a dedicated environmental newsletter, and this was the least common strategy. One institution selected the “Other” option and described the distribution of promotional materials (mugs) as a tactic for environmental inreach purposes.

Goals and Topics

Respondents were asked about primary targets (audiences that were focused on) for inreach activities (Q.3). Not surprisingly, the most common primary target audience was students (70%). Staff, faculty, and administration audiences followed closely after students with 62%, 60%, and 48% respectively targeting these audiences (Figure 3.4). Campus visitors were targeted much less often by inreach activities (18%).

The questionnaire described four different goals of environmental inreach and asked respondents if their inreach initiatives had specifically focused on each of the goals (Q.4).

Promoting general environmental awareness (46%) and motivating involvement in environmental activities (44%) were the most commonly reported goals for inreach initiatives (Figure 3.5). Changing lifestyles or ethics (38%) was a less common goal, and promoting campus sustainability accomplishments or policies (35%) was the least common goal of inreach initiatives.

Respondents were asked about the topics of their inreach initiatives, both by scope of the topic (i.e. global, regional, etc.) and by specific campus issues like recycling and energy conservation (Q.5-Q.7). Topic areas more immediate to the institution were addressed by more institutions than broader topic areas; thus campus topics were the most commonly addressed, while global topics were less likely to be addressed (Figure 3.6). Recycling was overwhelmingly the most commonly addressed campus topic for inreach initiatives, with 86% of responding institutions having inreach initiatives to address recycling on their campuses (Figure 3.7). Energy conservation, purchasing (recycled paper, for example), waste reduction, and water conservation were also popular campus topics; each of these topics was selected by at least 45% of the responding institutions. Local and/or organic food was the least common campus topic, only selected by 10% of institutions. Two additional topics were described in the “Other” category: waste management (for example, chemical spill prevention) and air quality. On average, institutions had addressed 4.4 of the listed campus topics. Respondents were also asked to rank the top three campus topics that their institution has addressed the most with environmental inreach initiatives (Q.7). By assigning points to each ranking (three points for the top answer, two for the second-most, and one for the third-most addressed topic), we find a similar trend as reported by which

topics had been addressed (Figure 3.8). Recycling was overwhelmingly the most addressed topic, followed by energy conservation and waste reduction.

Providers

Respondents were asked a series of questions about the providers of inreach initiatives on their campuses. The first question listed several possible sources and asked respondents which of these sources provided inreach at their institution (Q.8). The next question asked respondents to rank the top three sources for inreach (Q.9). The most common sources were student environmental organizations, student government, and unofficial environmental committees, found at 33%, 32%, and 28% of responding institutions respectively (Figure 3.9). The least common inreach source was student green party (1%). The top ranked sources providing the most inreach were facilities or physical plants, student environmental organizations, and official environmental committees or task forces with 16%, 13%, and 12% of the total ranking points respectively (Figure 3.10). The lowest ranked source was student green party with less than 1% of total ranking points.

Another investigated aspect about providers is the number of paid positions dealing with environmental inreach as part of their job description (Q.11). The survey respondents reported a total of 212 positions, or a mean of 2.7 per institution (Figure 3.11). A follow-up survey question took a closer look at these positions by asking how many hours each position worked per week on inreach initiatives. Twenty-two institutions (28%) had no positions, while four institutions (5%) reported one or more full-time positions. By looking at these responses in terms of total inreach hours instead of total number of positions (Figure

3.12), we found an average of 10.2 hours per week per institution devoted to environmental inreach (or 18.0 hours if we include one large outlier); the median was 2.0 hours, and the mode was 0 hours. Excluding institutions with no positions gives an average of 14.3 hours per week.

Respondents were also asked about the *central source* for environmental inreach on their campuses, and four possible offices or positions were listed: Environmental/sustainability officer position, Environmental/sustainability coordinator position, Central office or program but not assigned office space, Central office or program with assigned office space (Q.12). Forty institutions (51%) did have one of these central inreach sources. A central office with office space (15 institutions, 19%) and a sustainability coordinator (13 institutions, 16%) were the most common of the sources listed (Figure 3.13). For the forty institutions having a central source, several follow-up questions were asked to gain more information about the structure of that source. On average, these office directors and sustainability coordinators/officers devote 12.0 hours to inreach each week, with a median of 6.0 hours and a mode category of 0-5 hours (Q.14). The majority of these positions were considered facilities staff (Figure 3.14, Q.15) and were funded by general institution funds (Figure 3.15, Q.16). Some of the positions were funded by facilities or departmental funds or by external grants, but none of the positions had funding from a campus sustainability fund or from additional student fees.

Reported funding for environmental inreach initiatives over the past twelve months, including staffing, office upkeep, project costs, and other expenses, totaled over \$1.6 million for all 79 responding institutions (Figure 3.16, Q.17). Excluding one large outlier, the mean

was \$20,927 per institution including the ten institutions reporting no funding for inreach, or \$23,770 excluding these ten institutions. The median funding per institution was \$2,000, and the mode category was \$0 - \$250. As with the funding for central source director positions, the majority of funding for inreach came from general institution funds (41%); however, funding for inreach initiatives was more diversified than the funding for specific director positions, with 59% of inreach initiative funding coming from department and facilities funds, additional student fees, and external grants (Figure 3.17, Q.18). As shown by Figure 3.18, inreach funding was split among allocations for office overhead and supplies (24%), salaries or wages (41%), and specific projects (30%) (Q.19).

Success and Challenges

Respondents were asked if their institutions had a system of reporting for inreach initiatives, and six reporting systems were listed as choices; respondents could choose more than one system (Q.20). Results showed that 32% of responding institutions reported inreach initiatives annually, 24% were required to report inreach initiatives, and 43% had no method of reporting (Figure 3.19). 20% of the institutions reported that they had attempted to measure the success of an environmental inreach initiative on their campus (Q.21), however, descriptions provided by survey respondents were inadequate to make any generalizations about these success measures.

Survey Question 22 asked respondents to describe the three main ways they believe environmental inreach could be improved on their campuses. A wide variety of ideas was provided for this question, and responses were divided into ten categories (Figure 3.20).

Each suggestion was coded by which category it best matched. In several instances, a response overlapped categories, and for these cases the response was split into both categories (i.e. a half point was given to each category).

1. Strategies (16% of all responses): Descriptions of specific strategies that could be implemented were the most common suggestions for improving inreach. Among the strategies listed, printed media (ex. flyers, newspaper articles, etc.) was the most common, followed by events (ex. seminars and orientations), electronic media (ex. listserves and websites), and environmental awards.
2. Central source (11%): The creation of a central position, office, or committee for the coordination of inreach initiatives was the second-most common suggestion. Nineteen respondents (24%) specifically stated the necessity for a dedicated coordinator position.
3. Funding and Support (10%): Respondents described the need for more funding, staff, resources, and support to create or improve inreach efforts.
4. Involvement (9%): Increasing involvement of the campus community, including students, faculty, staff, and administration was also a common suggestion. Involvement was described as participation in current inreach efforts, in general environmental programs, and in the creation of new inreach initiatives.
5. General Awareness (9%): The broad suggestion of generally increasing awareness was also popular among the responses. This response seems like a

variation of the debate, “which comes first, the chicken or the egg?” Respondents expressed that for inreach to occur, first someone or some group within the institution must be aware of the benefits and importance of environmental sustainability and then implement inreach themselves or demand that administration initiate it.

6. Promotion of Current Efforts (5%): Many respondents suggested promoting the sustainability efforts that the institution has already implemented, but perhaps has not effectively advertised. For example, several responses addressed better publicizing of campus recycling efforts, or one respondent suggested advertising a new LEED certified building.
7. Plan and Organize (5%): Several suggestions for improving inreach revolved around creating a plan for organizing inreach initiatives.
8. Institutional Commitment (4%): Some respondents emphasized that the institution must make environmental sustainability a priority and then commit to inreach efforts in order for inreach to begin and/or be successful.
9. More Inreach (2%): Five responses simply stated that more inreach efforts need to happen to promote environmental awareness.
10. Miscellaneous (7%): A wide range of suggestions fell outside the delineated categories. These suggestions included specific ways to make advertising successful (for example, how to appeal to campus audiences), targeting a specific audience, cooperating with community environmental groups or other agencies on inreach initiatives, obtaining information about inreach

programs at other institutions, and better collaboration within the institution. An additional 47 responses (20%) were considered irrelevant; these included “n/a” and “ditto” responses, vague or incomprehensible answers, and responses that addressed sustainability issues but not necessarily inreach.

After motivating respondents to consider ways for improving inreach, Question 23 asked about the single greatest challenge to inreach success. The following categories were determined from the responses (see Figure 3.21).

1. The greatest challenge reported was simply a lack of funding to support inreach programs. (18%)
2. The low prioritization of environmental sustainability and inreach was the second-most reported challenge, and this was often described as a lack of vision at the administration level or that institutions have an “overwhelming number of things that need to be tackled” or “other battles are being fought”. (17%)
3. The third-most common response was a lack of participation, and these responses included the involvement of students, volunteers, staff, faculty, and administration to help implement and participate in inreach programs. (10%)
4. A general lack of awareness about environmental sustainability was also a common challenge, both among students and administration. This response was very similar to that described previously for Question 22. (10%)

5. The need for a dedicated staff position or office solely responsible for environmental sustainability issues was explicitly mentioned in several responses. (7%)
6. Similar to the “low prioritization” category, another popular challenge was specifically reported as a lack of time. Respondents stated that staff and faculty were already too busy. (7%)
7. Respondents also blamed apathy for too few efforts toward inreach and environmental sustainability initiatives. (6%)
8. A lack of know-how or the resources necessary to implement environmental inreach was reported by three institutions. (4%)
9. Seventeen responses were not categorized. Nine of these responses (12%) were very broad, for example needing to have more inreach initiatives, more education, or more communication. Two responses (3%) did not directly answer the question, and six responses (8%) were “n/a”.

General Environmental Status

To assess each institution’s efforts toward general campus environmental sustainability, respondents were asked several questions that did not pertain specifically to inreach. According to these responses 17% of the institutions have an official environmental policy; 14% have an environmental management plan; 27% have an environmental degree program; 24% have an official, central office or coordinator for

sustainability issues; 32% have an environmental student organization, and 4% have signed the Tailloires Declaration (Figure 3.22).

Respondents were also asked their opinion about the supportiveness of senior administration for general environmental sustainability initiatives (Q.27, Figure 3.23). While 25% of respondents rated their administration's support as "Neither Supportive Nor Discouraging", the vast majority responded that their administration was "Somewhat" (20%), "Very" (33%), or "Extremely Supportive" (20%). Only one institution (1%) responded that their administration was "Somewhat Discouraging". Respondents were also asked to rate the support of their administration *financially* for environmental initiatives, and these ratings were not as positive and those for general support (Q.28). Only 47% rated their institution at some level of supportive financially, as opposed to the 73% reported for generally supportive. Five respondents (7%) rated their administration's financial support as "Somewhat Discouraging" or even "Very Discouraging"; 34% rated their administration as financially "Neither Supportive Nor Discouraging".

Survey Respondents

Respondents answered several questions about themselves, including what type of position they held at the institution (Q.31, Appendix B). Of the 79 respondents, 37 (47%) were "Staff administrator/director or above", 17 (22%) were "Academic administration (dean, director, or above)", 8 (10%) were "Faculty", 9 (11%) were "Facilities staff", and 8 (10%) were "Other staff" (Figure 3.24).

Respondents were also asked for their job title and to describe their involvement with environmental sustainability issues on campus (Q.29, Q.30). Looking at these two questions together, eight categories of involvement were determined, with some respondents divided among two different categories (Figure 3.25). 24% of respondents described their environmental responsibilities through their position in facilities or operations. These respondents were directors of the physical plant and facilities or facilities staff. 21% stated that they had no involvement or were not directly involved with sustainability issues. 20% described an indirect involvement in environmental issues through their role in the institution's administration. This category included descriptions of the responsibilities of institution presidents and directors of research, administrative services, planning, financial/business services, and academic affairs. 13% were involved with sustainability issues through a special program or initiative implementation, for example environmental health and safety, recycling programs, building guidelines, or purchasing. 8% were involved as teaching faculty, and 8% reported that they were a sustainability coordinator or officer. 4% reported that they were involved through a sustainability committee or council, and 2% reported that they were involved as advisors to a student environmental organization.

At the end of the questionnaire, respondents were asked if their institution had a noteworthy inreach program or initiative on their campus and if so, to describe it (Q.33). Responses to this question were inadequate to interpret and would require a more focused follow-up on a case-by-case basis which was outside the scope of this study. A few of the responses that were easy to understand included creative inreach strategies like green games

where students or dormitories compete by reducing energy or water usage, piling discarded paper next to elevators for waste awareness, and disseminating instruction booklets to describe a new green dorm and how to live in it.

Key Variables

Following the indices described in Chapter 2, points were assigned to questionnaire responses and then combined to provide a score for each of the three main study variables. Out of forty-nine points possible for Environmental Inreach Success, the maximum score given to a responding institution was 40, and three institutions (4%) received zero scores. The average score was 17, and the median score was 15. Figure 3.26 shows the distribution of Success scores. For Environmental Inreach Structure, there were 31.75 points possible plus variable points for the number of inreach staff positions. The maximum Structure score earned by any institution was 101; however this was a significantly larger score than was earned by other institutions and was therefore treated as an outlier in all tests of significance and correlations. Excluding the outlier, the mean and median Structure scores earned were 9.7 and 4.5 respectively; five institutions earned a zero Structure score (Figure 3.27). Out of 21 points possible for Institution Commitment and Support for general environmental sustainability, the maximum score earned by a responding institution was 19. The average and median Commitment scores earned were each 8, and all institutions earned at least a score of one (Figure 3.28).

Relationships with Key Variables

To determine if relationships exist between institution demographics and the three key variables, the demographic factors and key variable scores were examined, and p-values for the statistical tests are reported in Table 3.2. Enrollment was associated with all three key variables. Larger institutions exhibited a higher Inreach Success ($p < 0.01$, $R^2 = 0.11$, Figure 3.29), a higher Inreach Structure ($p < 0.001$, $R^2 = 0.20$, Figure 3.30), and a higher Institution Commitment to environmental sustainability ($p < 0.001$, $R^2 = 0.14$, Figure 3.31) than did smaller institutions. Operations spending was also associated with all three variables. Institutions with a higher operations spending exhibited higher Inreach Success ($p < 0.001$, $R^2 = 0.25$, Figure 3.32), a higher Inreach Structure ($p < 0.01$, $R^2 = 0.39$, Figure 3.33), and a higher Commitment ($p < 0.01$, $R^2 = 0.43$, Figure 3.34). Additionally, institutions with higher endowments were associated with higher Success ($p < 0.01$, $R^2 = 0.11$, Figure 3.35) and higher Commitments ($p < 0.001$, $R^2 = 0.19$, Figure 3.36). Highest degree offered was also associated with Inreach Success ($p < 0.01$), with First Professional Degree and Doctoral institutions having the highest average Success scores (Figure 3.37). Only one professional degree institution was in the study sample, and it earned 34 points, which was higher than the averages of all the other categories. The mean Inreach Structure scores of institutions with residential campuses (13 points) was also significantly greater than the mean of institutions that do not have a residential campus (7 points) ($p < 0.05$).

To eliminate relationships among the demographic factors and determine the most important factor associated with Inreach Success, a preliminary multi-regression analysis was performed with the three correlated numeric variables. This test yielded the following

relationships with Inreach Success: operations spending had an $R^2=0.24$; enrollment had an $R^2=0.14$; and endowment had an $R^2=0.13$.

Correlations were also examined between each of the three key variables, and all six possible relationships were found to be statistically significant, with p-values less than 0.001 (Table 3.3, Figures 3.38-3.40). Relationships between success and inreach funding, paid inreach hours, and presence of a central inreach source were specifically examined, and all three factors were found to have statistically significant positive relationships with success (all p-values less than 0.001) (Figures 3.41-3.43).

Chapter 3 Tables

Table 3.1: Demographic variables for responding institutions (N=79), non-responding institutions (N=110), and the total sample (N=188). The number of institutions examined for each demographic (N) varies as some demographics were not reported by every guidebook.

<i>Demographic</i>	<i>Responding Institutions</i>	<i>Non-Responding Institutions</i>	<i>Total Sample</i>
Enrollment mean (p<0.01)	4,878 (N=79)	2,441 (N=108)	3,465 (N=187)
Tuition mean (p<0.15)	\$5,958 (N=79)	\$7,495 (N=106)	\$6,839 (N=185)
Endowment (p<0.1)	\$108 Million (N=54)	\$23 Million (N=64)	\$62 Million (N=118)
Operations spending (p<0.05)	\$2.8 Million (N=55)	\$0.9 Million (N=69)	\$1.7 Million (N=124)
Residential campuses (p<0.1)	44% (N=79)	57% (N=98)	51% (N=177)
Location type (p<1)	(N = 79)	(N = 108)	(N = 187)
Rural	24%	19%	21%
Suburban	32%	40%	36%
Small Town	14%	19%	17%
Urban	30%	22%	26%
State (p<1)	(N = 79)	(N = 110)	(N = 189)
North Carolina	65%	69%	67%
South Carolina	35%	31%	33%
Affiliation (p<0.1)	(N = 79)	(N = 109)	(N = 188)
State	20%	12%	15%
Independent	13%	11%	12%
Community College	49%	38%	43%
Religious	18%	32%	26%
Other	0%	7%	4%
Highest degree offered (p<1)	(N = 79)	(N = 109)	(N = 188)
Associates	52%	43%	47%
Baccalaureate	15%	23%	20%
Master's	14%	19%	17%
Doctorate	15%	11%	13%
Other	4%	4%	4%

Table 3.2: Statistical Significance for Demographic Associations with Key Variables

<i>Demographic Factor</i>	<i>Environmental Inreach Success</i>	<i>Environmental Inreach Structure</i>	<i>Institution Commitment and Support</i>
Enrollment	p < 0.01	p < 0.001	p < 0.001
Tuition	p < 1.0	p < 1.0	p < 1.0
Endowment	p < 0.01	p < 1.0	p < 0.001
Operations Spending	p < 0.001	p < 0.01	p < 0.01
Affiliation	p < 0.5	p < 0.5	p < 0.5
Highest Degree Offered	p < 0.01	p < 0.5	p < 0.5
Location	p < 0.5	p < 0.5	p < 1.0
North Carolina v. South Carolina	p < 1.0	p < 1.0	p < 1.0
Residential v. Non-Residential	p < 0.1	p < 0.05	p < 1.0

Table 3.3: Statistical Significance for Correlations between the Key Variables

<i>Correlation</i>	<i>p-value</i>
Environmental Inreach Success and Environmental Inreach Structure	p < 0.001
Environmental Inreach Structure and Institution Commitment and Support	p < 0.001
Environmental Inreach Success and Institution Commitment and Support	p < 0.001

Chapter 3 Figures

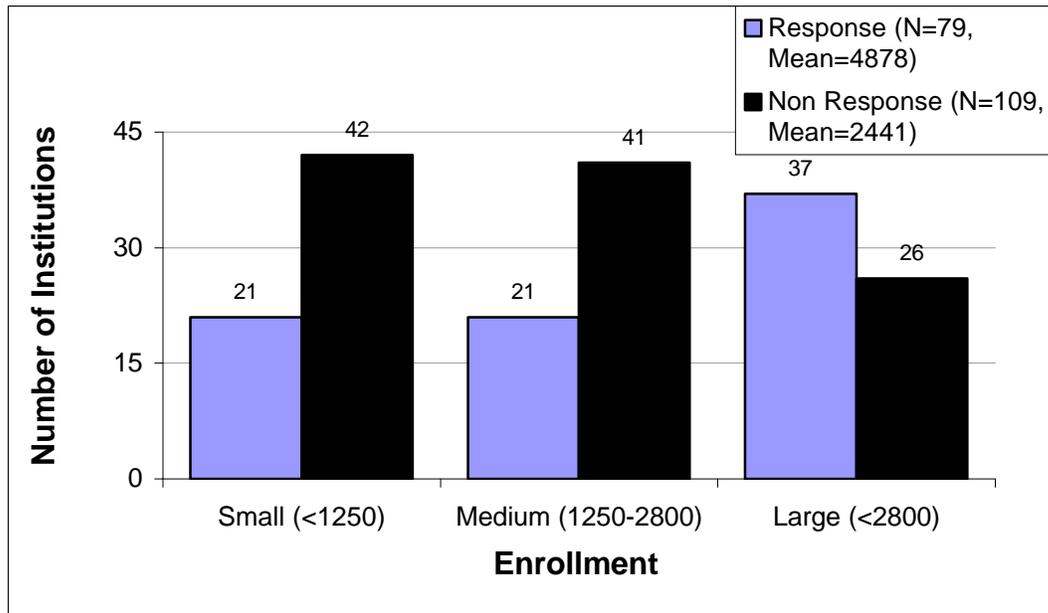


Figure 3.1: Enrollments of responding and non-responding institutions

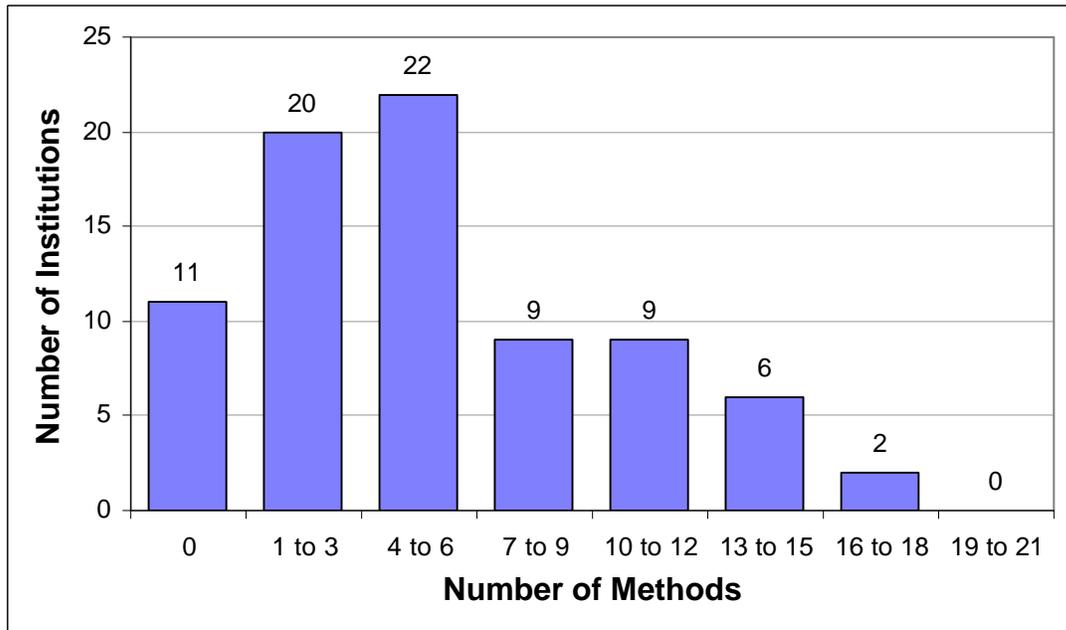


Figure 3.2: Number of inreach methods used per responding institution

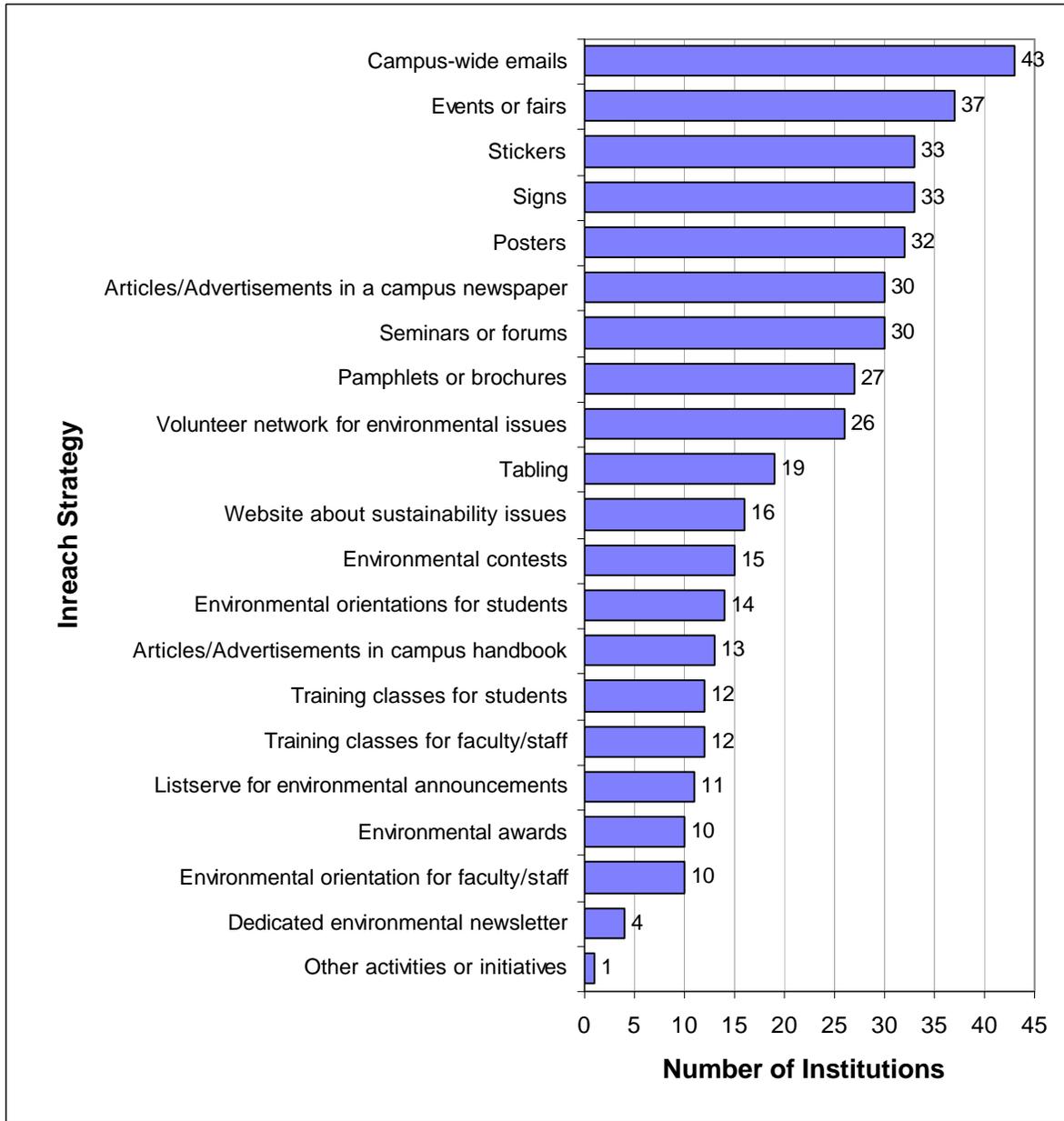


Figure 3.3: Number of institutions using each inreach strategy

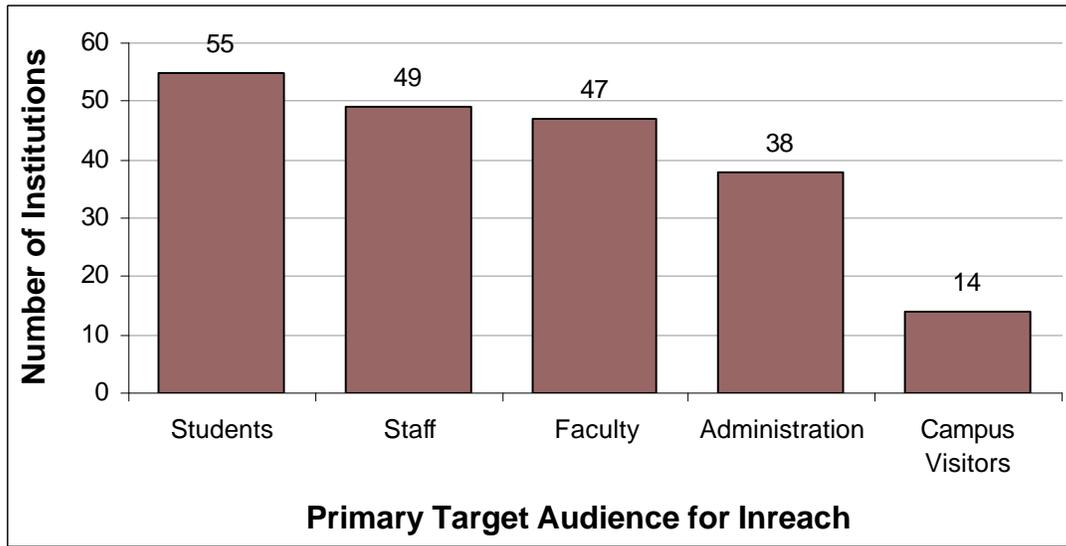


Figure 3.4: Institutions focusing on each audience as a primary target for inreach initiatives

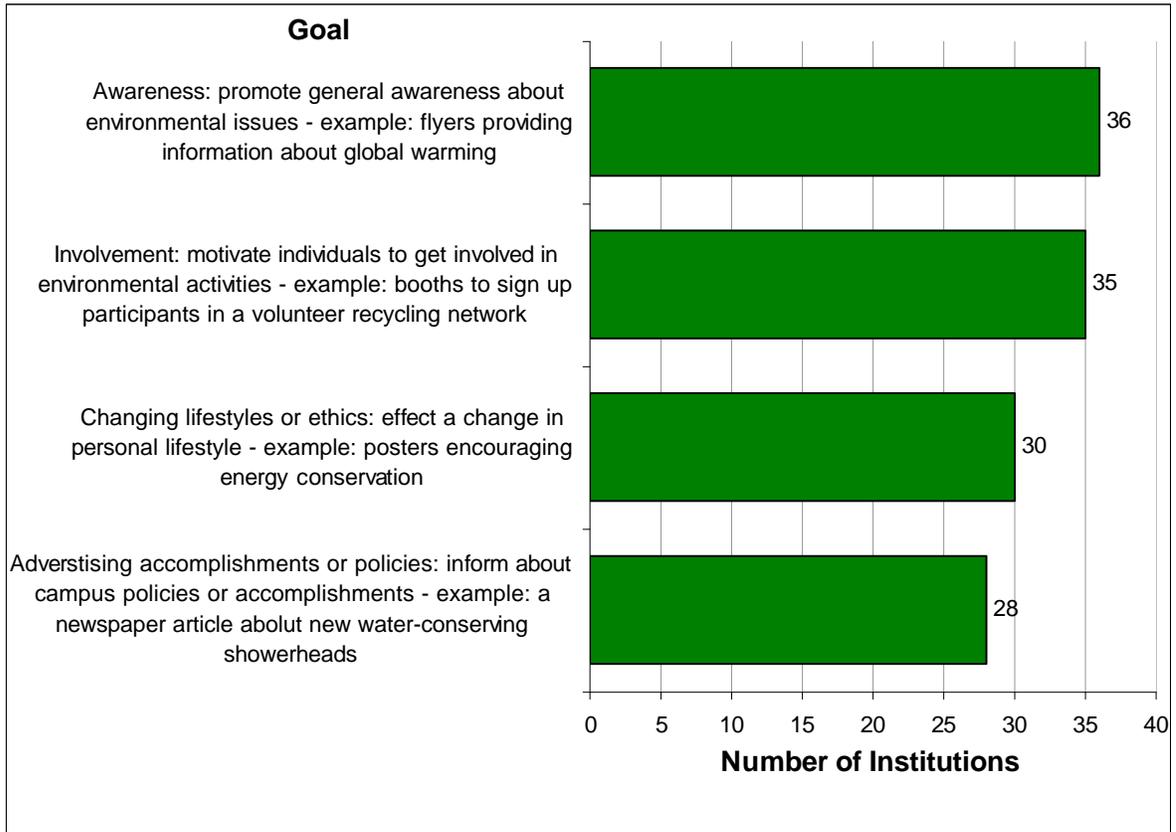


Figure 3.5: Institutions focusing on each goal for inreach initiatives

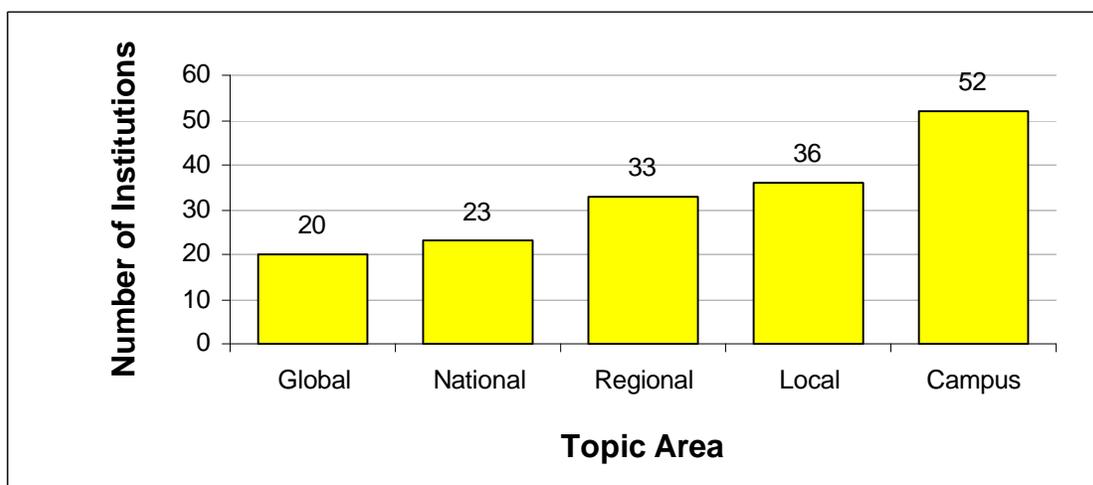


Figure 3.6: Institutions focusing on each inreach topic area

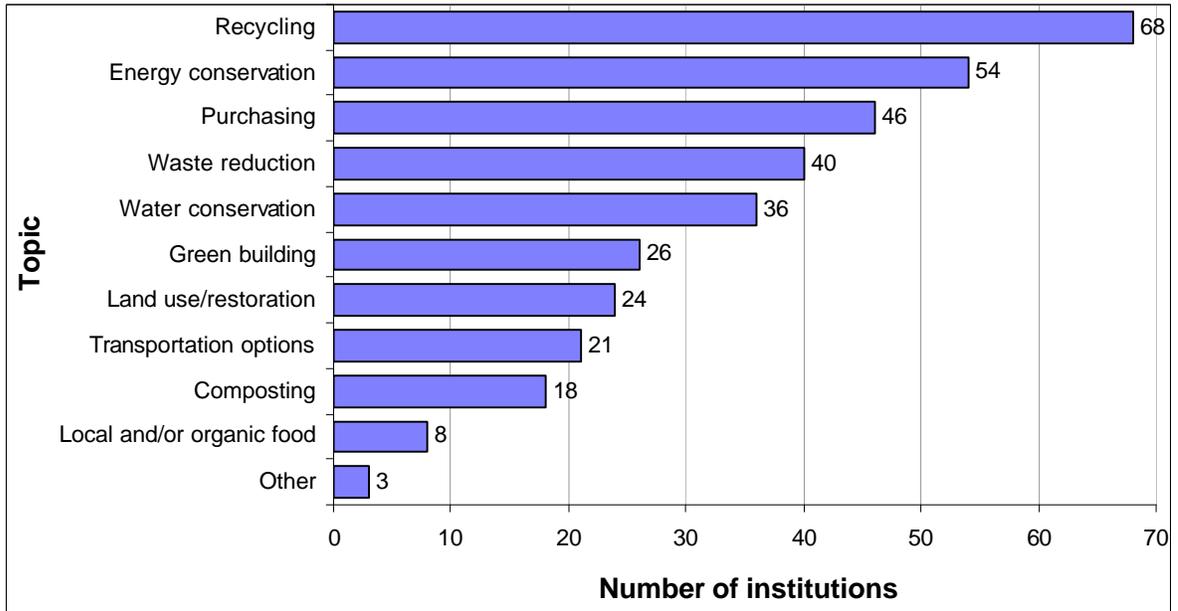


Figure 3.7: Institutions focusing on each campus environmental topic

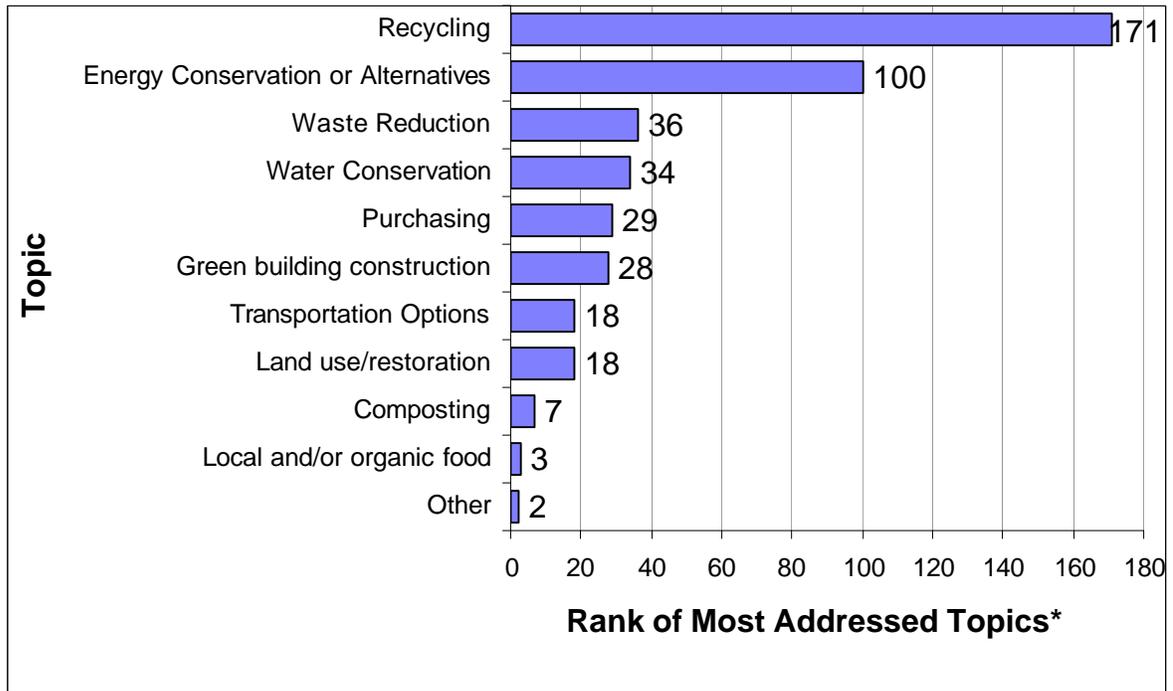


Figure 3.8: Ranking of topics most addressed by environmental inreach initiatives.

*Ranking points were calculated by assigning points to each rank (three points for the top answer, two for the second-most, and one for the third-most addressed topic).

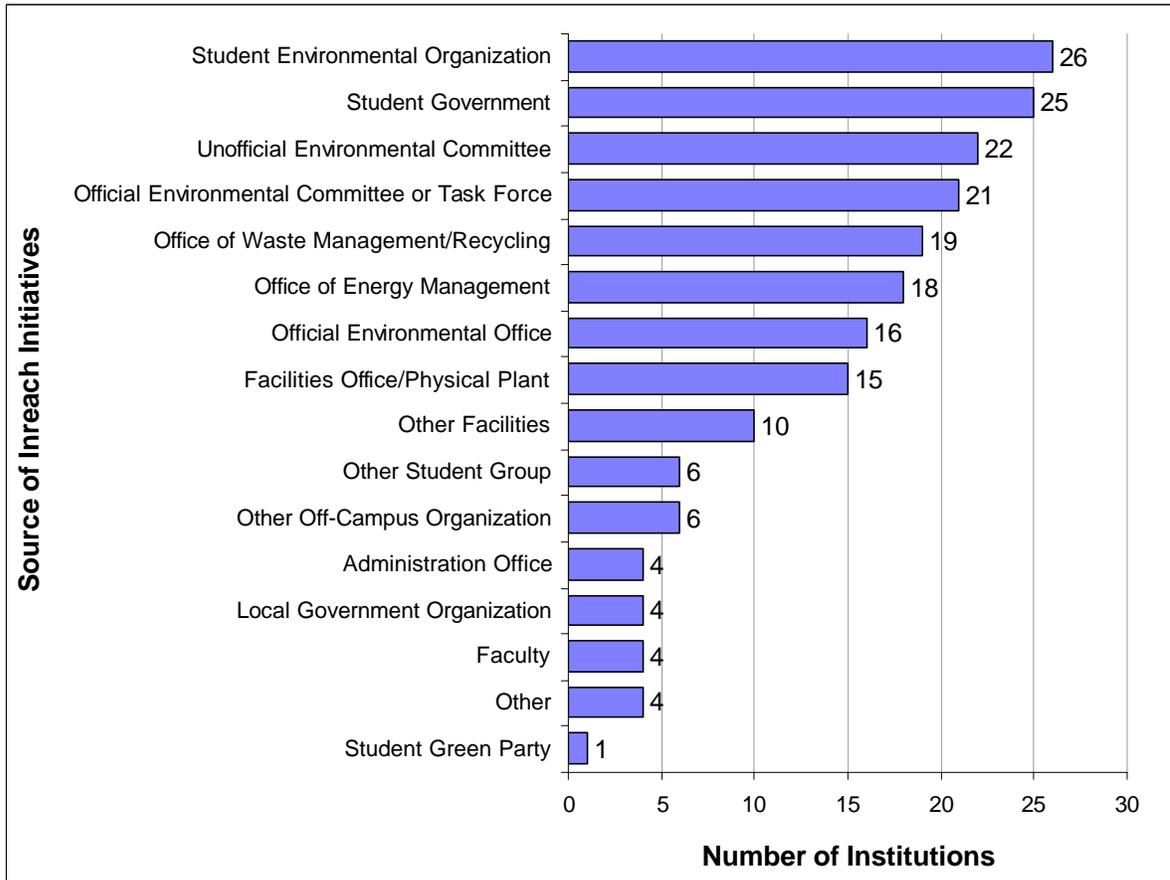


Figure 3.9: Number of institutions with each source of inreach initiatives

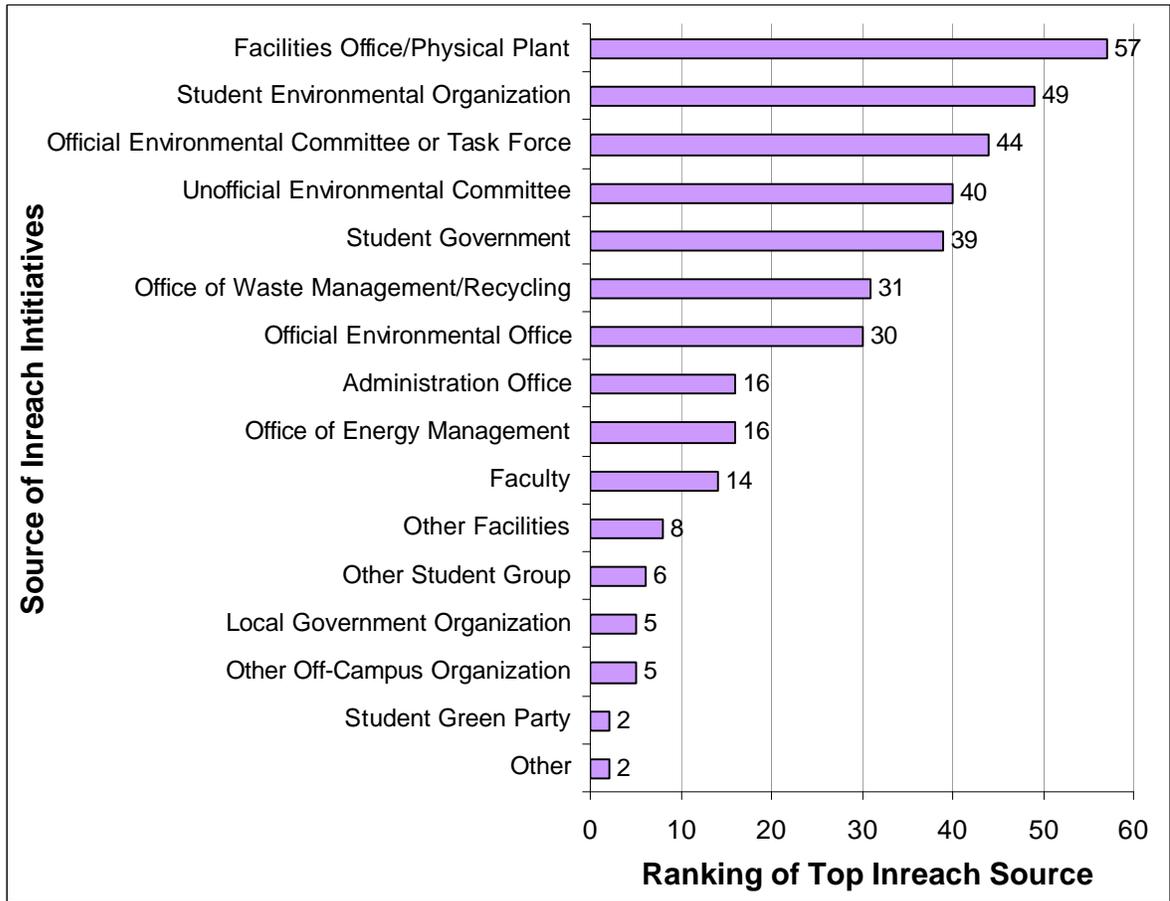


Figure 3.10: Ranking of top inreach sources. *Rankings points were calculated by assigning points to each rank (three points for the top answer, two for the second-most, and one for the third-most addressed topic).

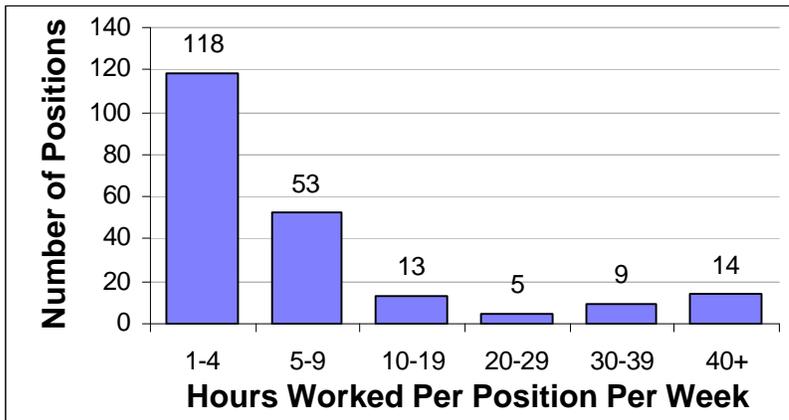


Figure 3.11: Total paid positions by hours worked per week

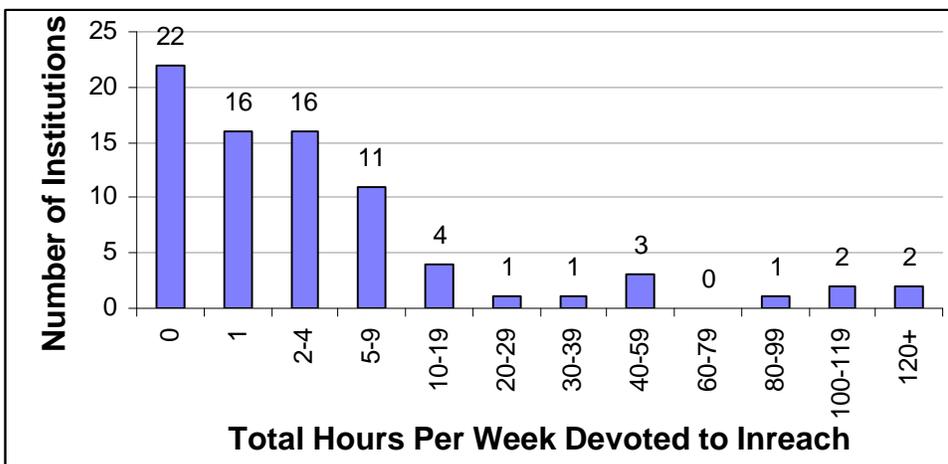


Figure 3.12: Inreach hours per week per institution

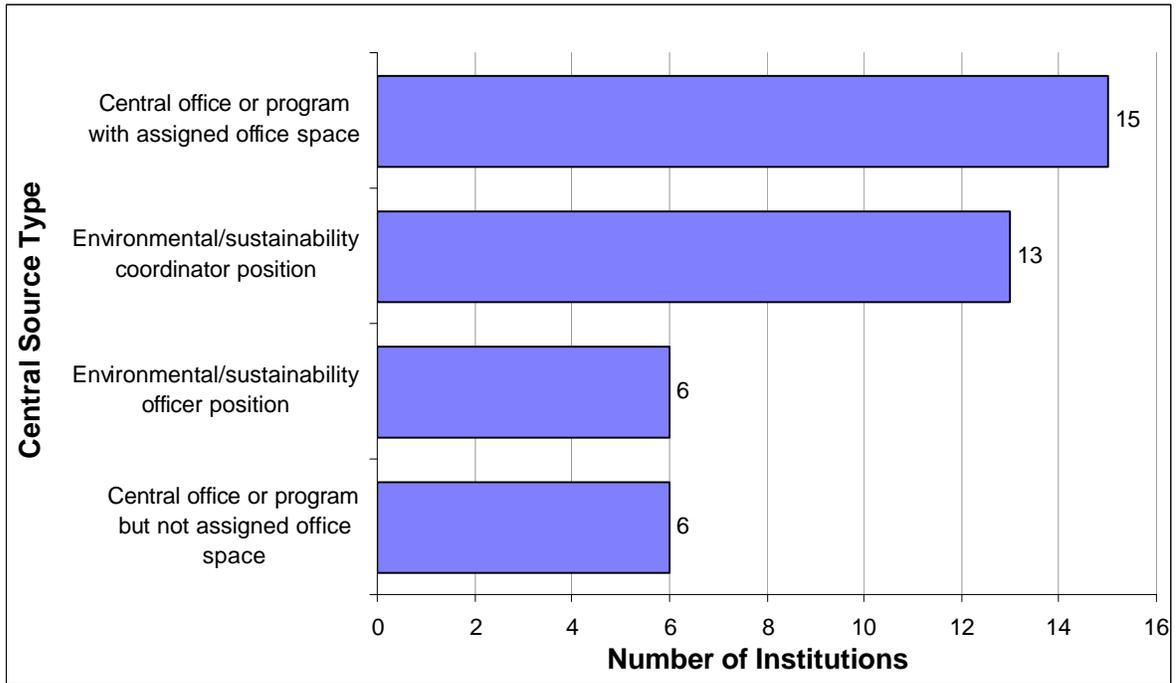


Figure 3.13: Institutions with each of these central sources for inreach initiatives

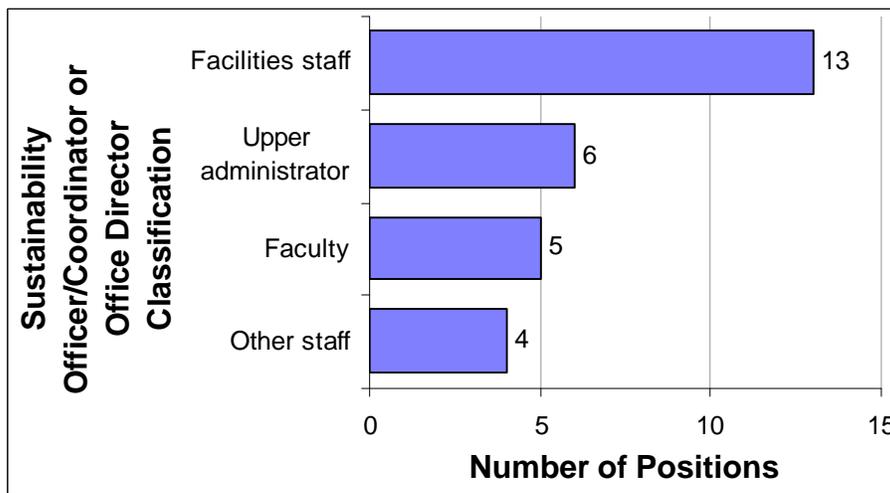


Figure 3.14: Types of positions directing inreach initiatives

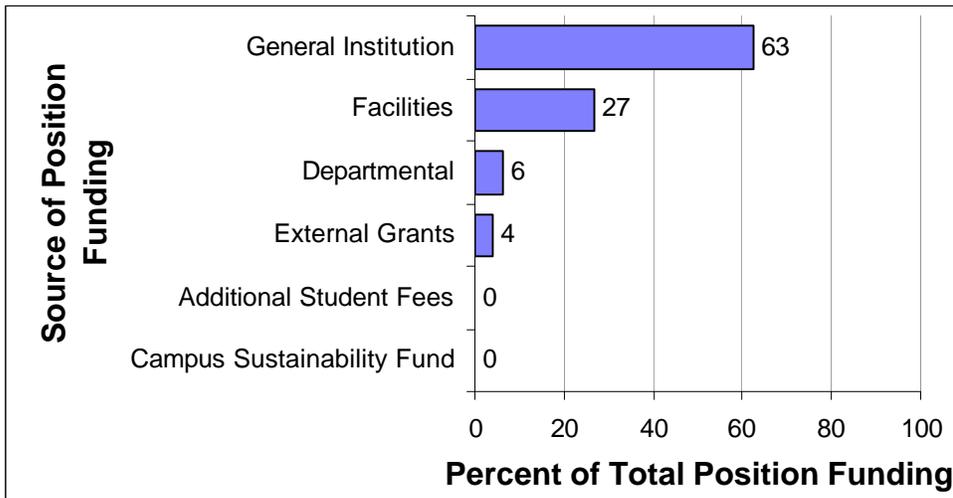


Figure 3.15: Source of funding for positions directing inreach initiatives

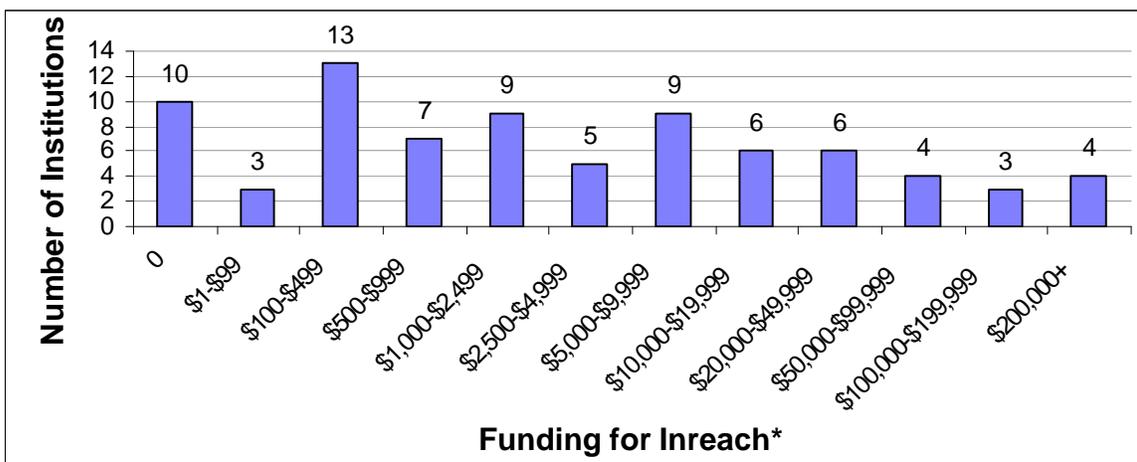


Figure 3.16: Funding for inreach initiatives over the past 12 months per institution.
 Note: categories are not evenly distributed.

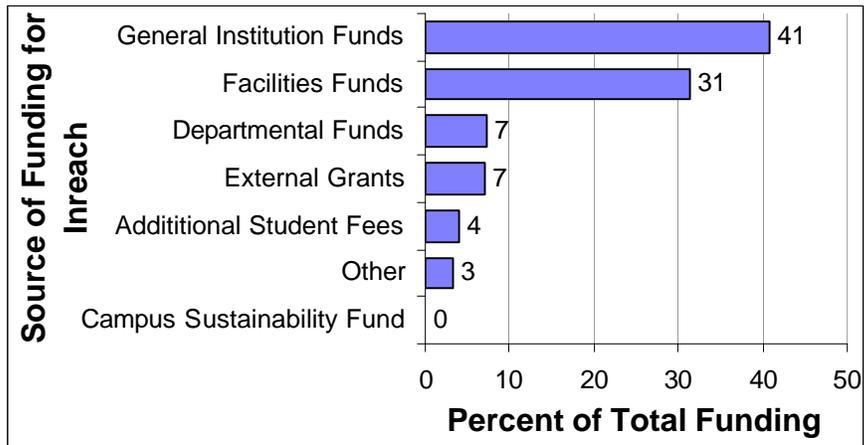


Figure 3.17: Funding sources for inreach initiatives

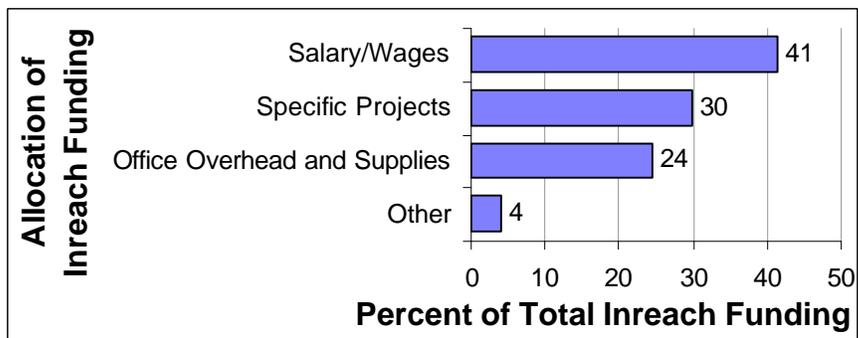


Figure 3.18: Allocation of inreach funding

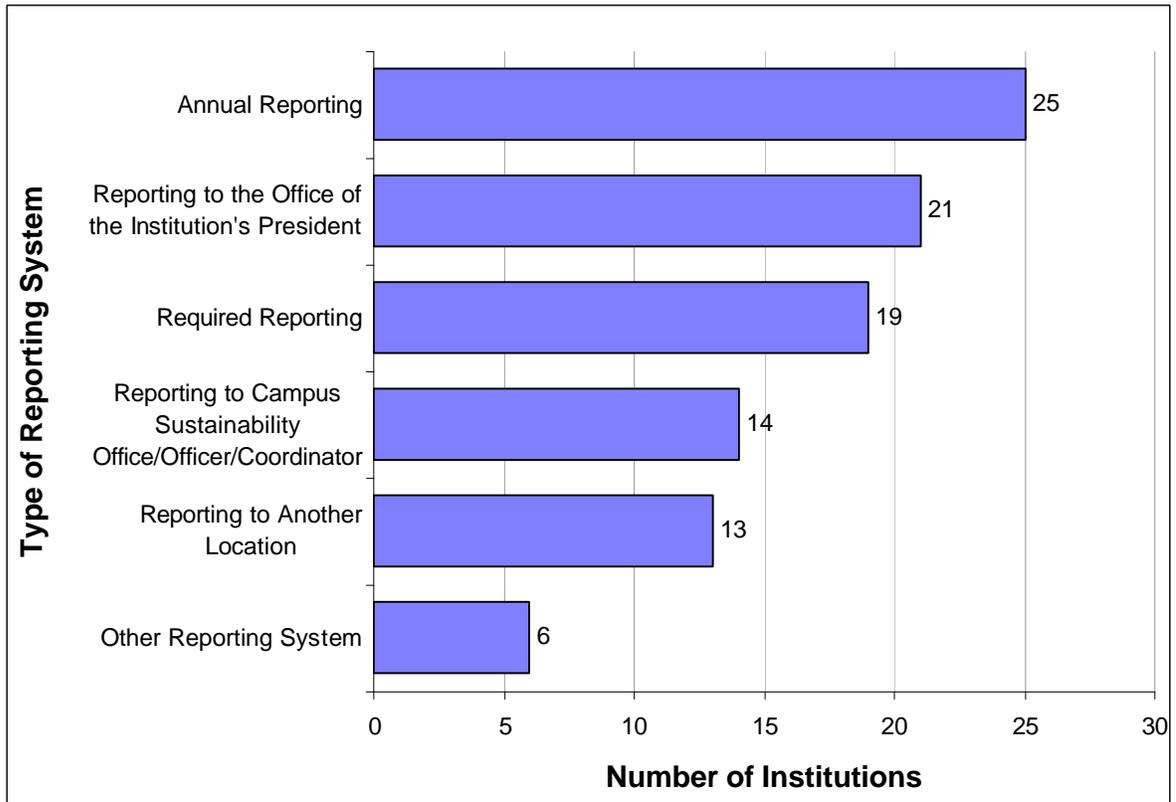


Figure 3.19: Inreach reporting systems. Institutions could choose multiple reporting systems.

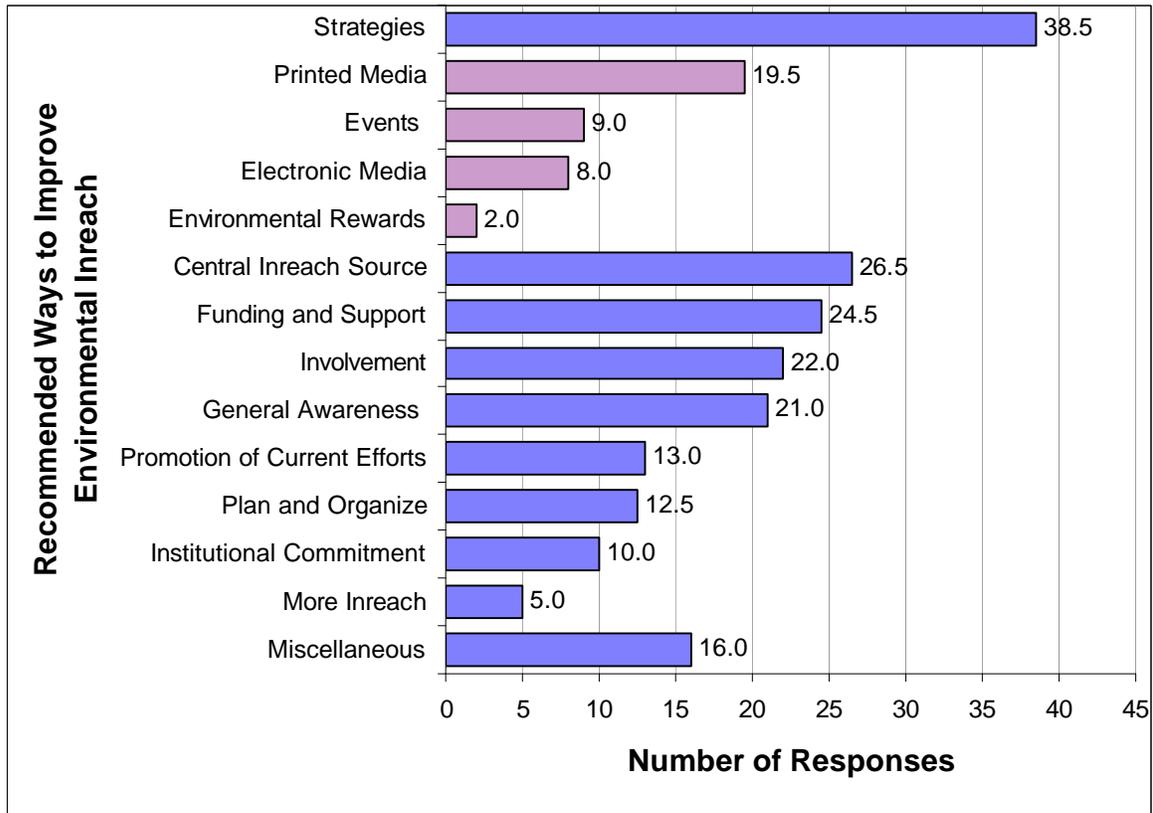


Figure 3.20: Recommended ways to improve environmental inreach.

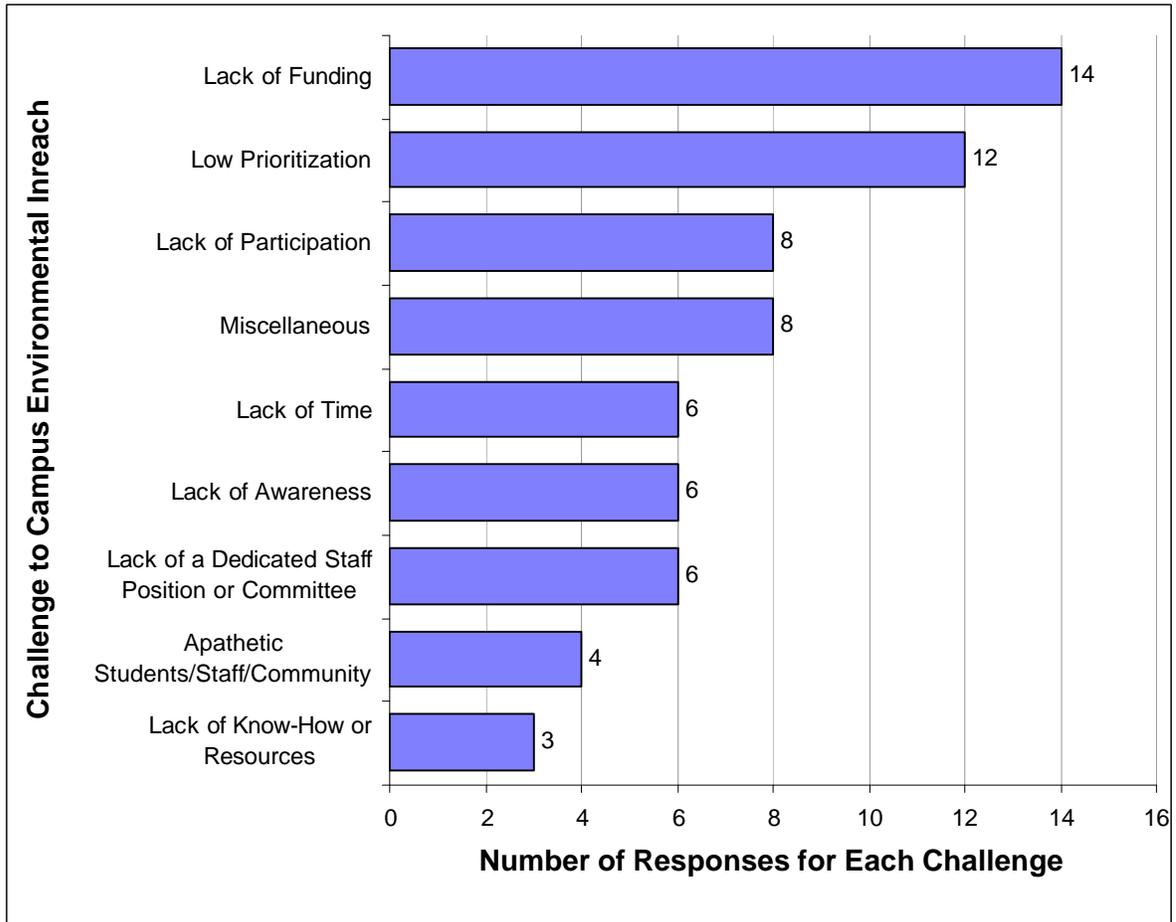


Figure 3.21: Reported challenges to campus environmental inreach

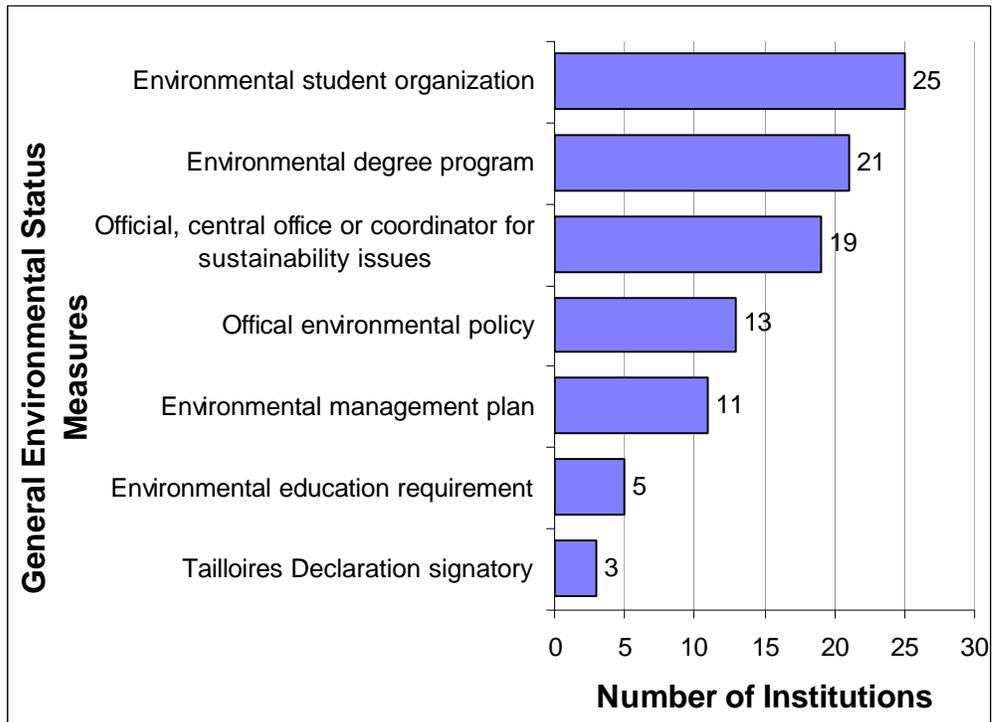


Figure 3.22: Institutions with each of these measures of general environmental status

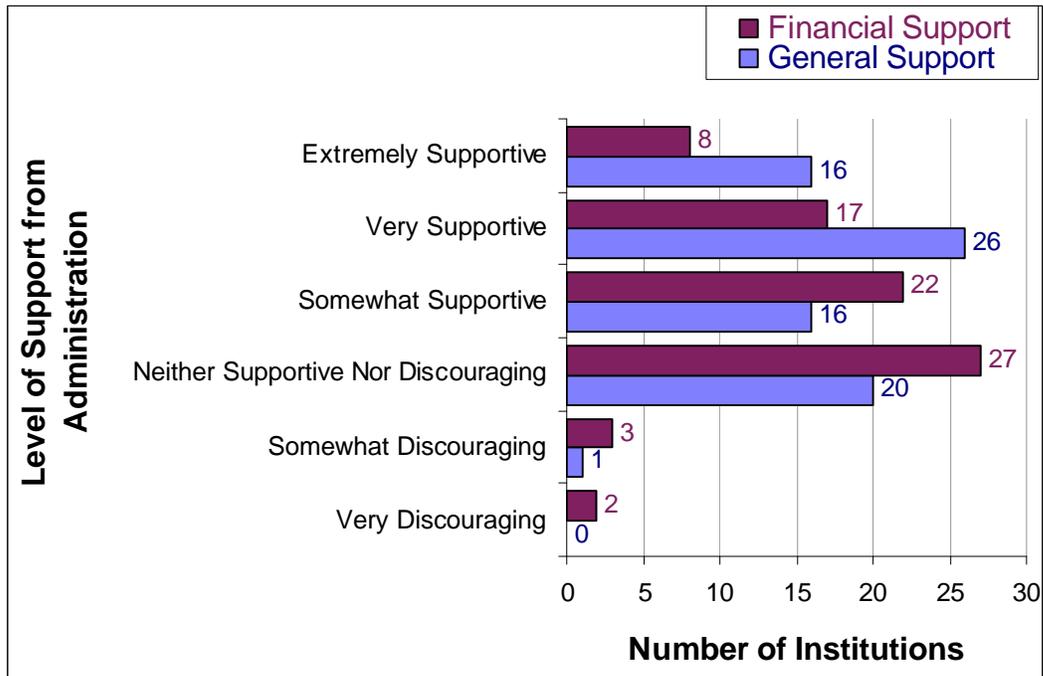


Figure 3.23: Reported supportiveness of senior administration for environmental sustainability initiatives in general and financially

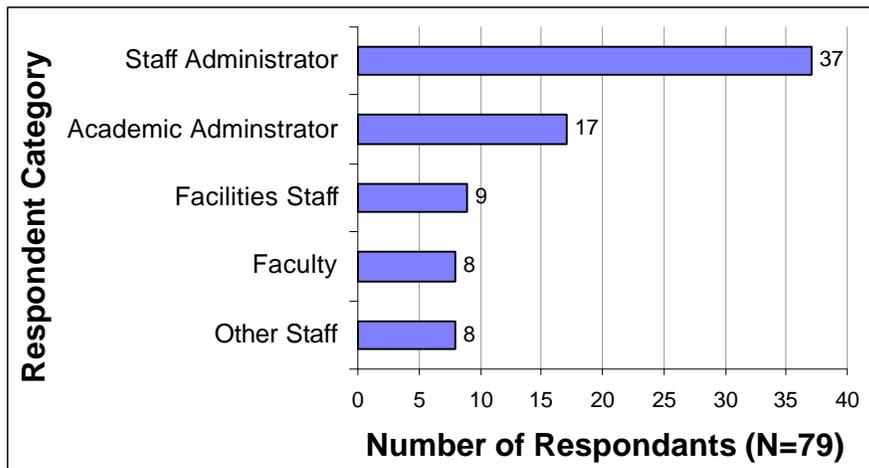


Figure 3.24: Categories of respondents

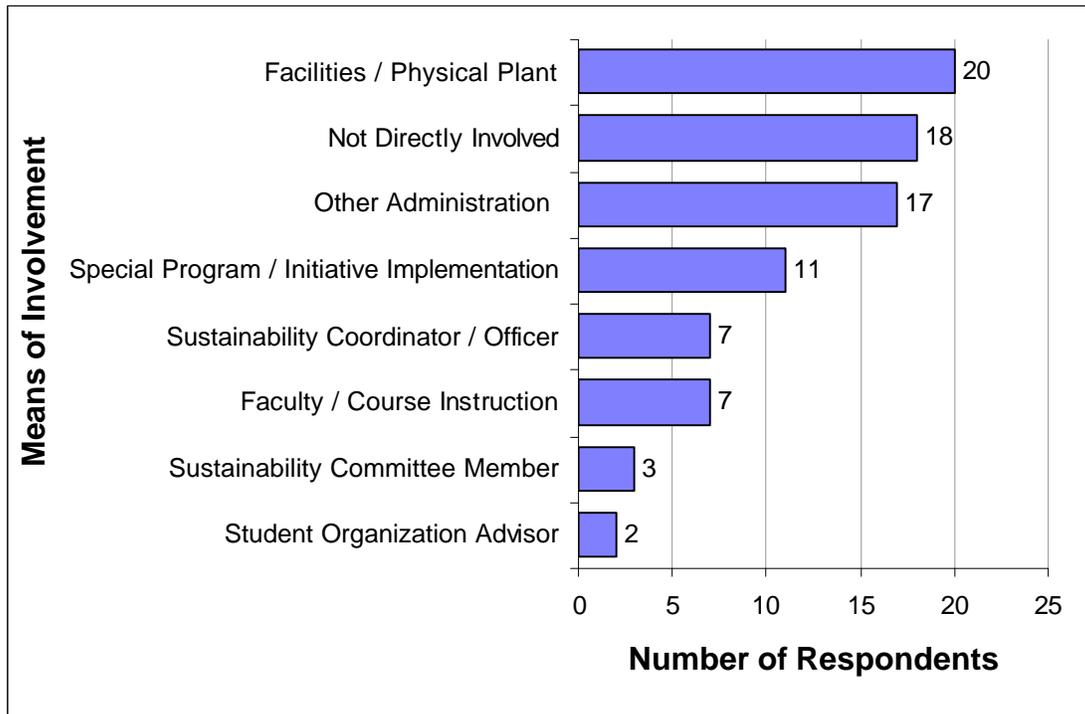


Figure 3.25: How respondents are involved in environmental sustainability issues on campus

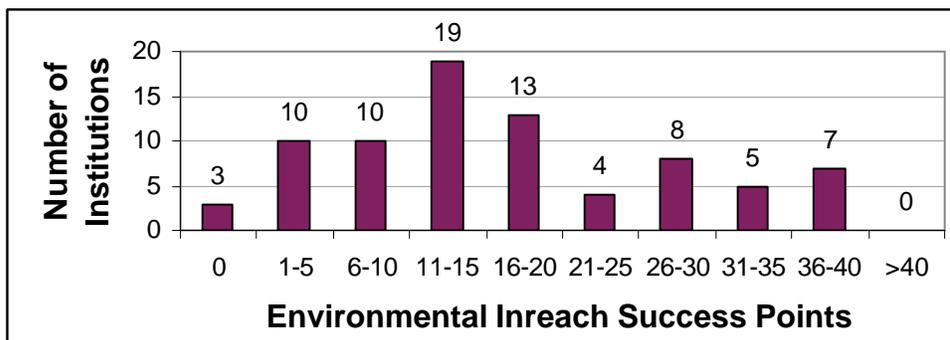


Figure 3.26: Scores for Environmental Inreach Success (out of 49 points possible)

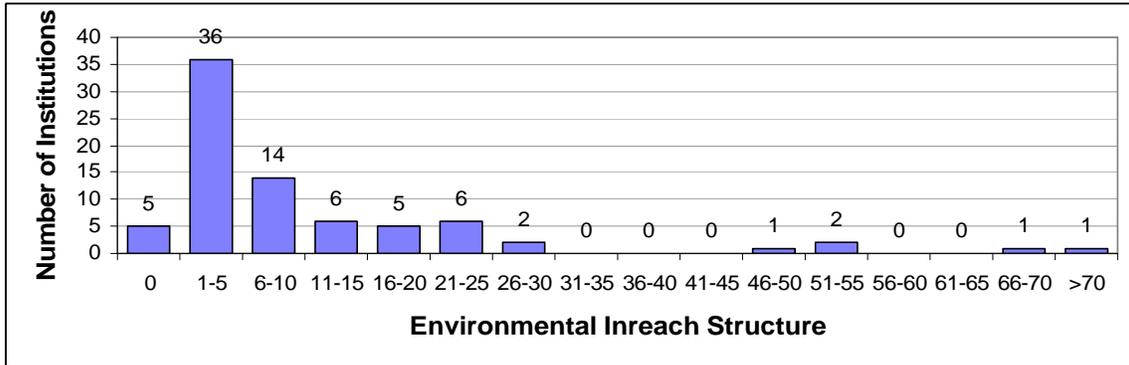


Figure 3.27: Points for Environmental Inreach Structure

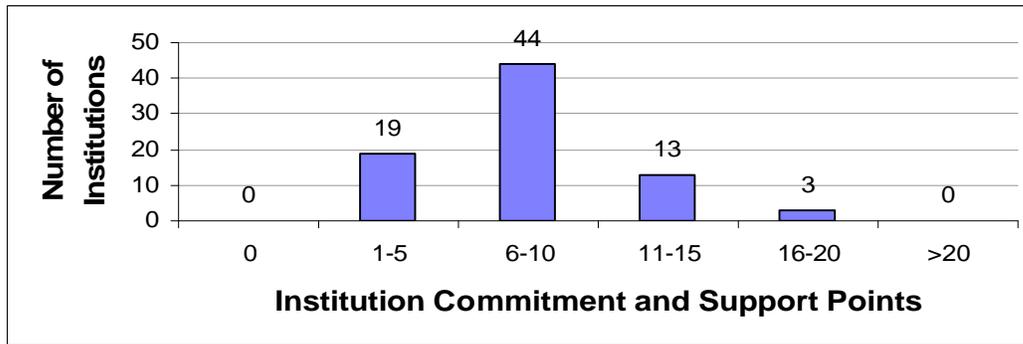


Figure 3.28: Points for Institution Commitment and Support. (out of 21 points possible)

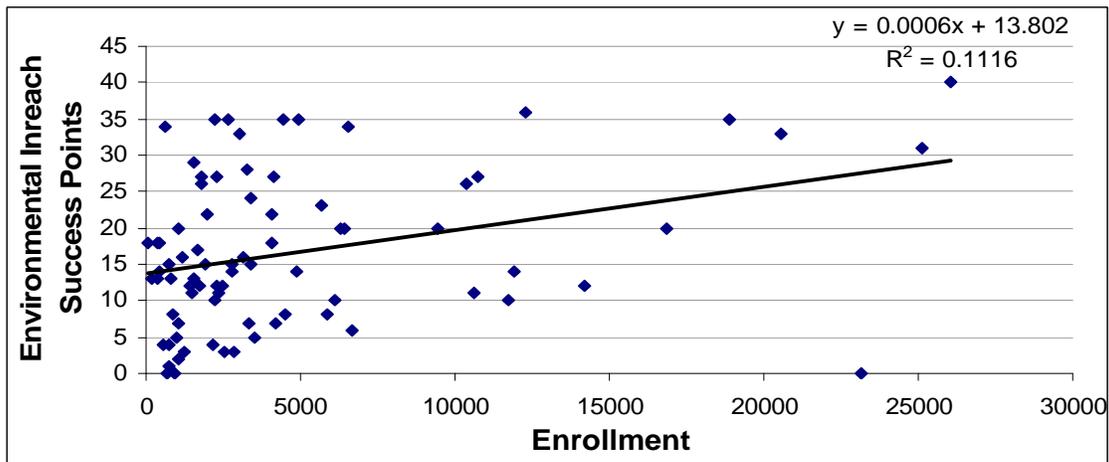


Figure 3.29: Correlation between Environmental Inreach Success and enrollment

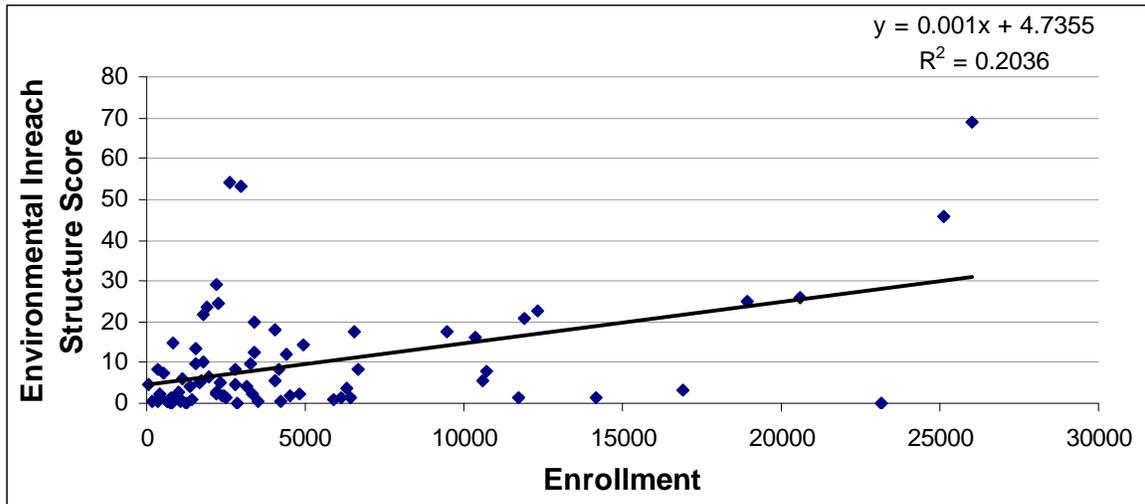


Figure 3.30: Correlation between Environmental Inreach Structure and enrollment

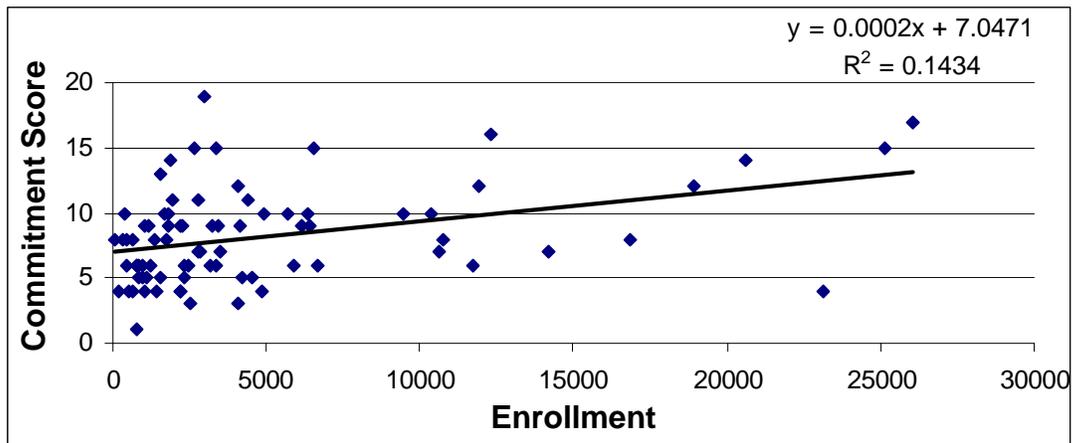


Figure 3.31: Correlation between Institution Commitment and Support and enrollment

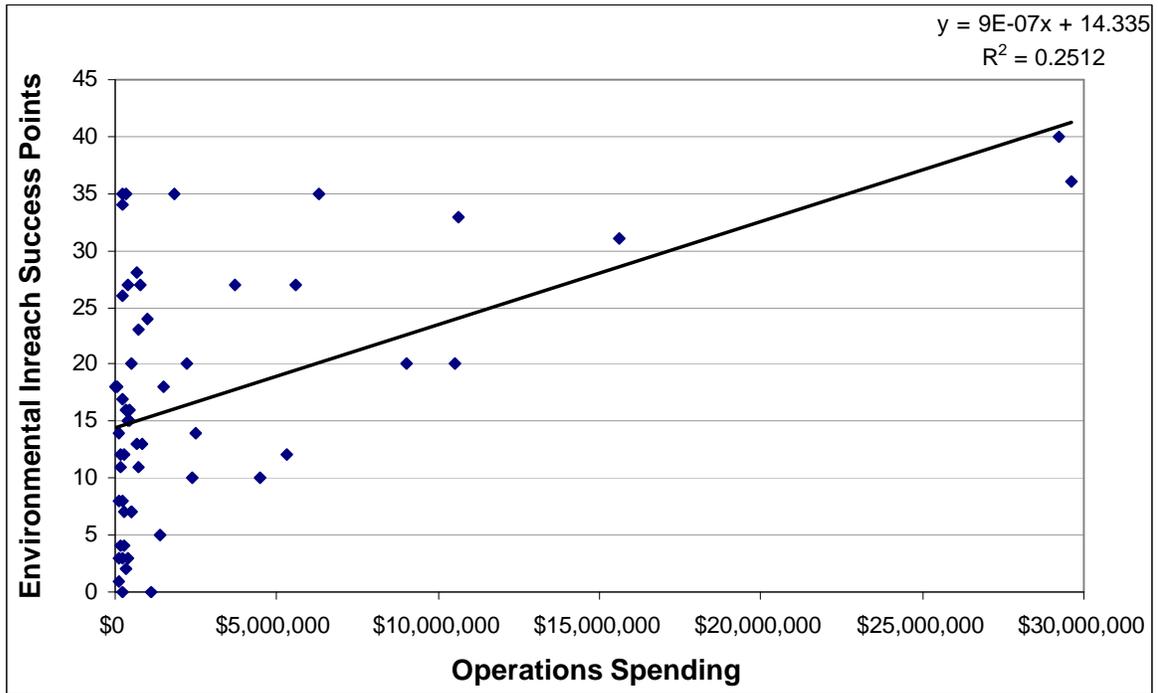


Figure 3.32: Correlation between Environmental Inreach Success and operations spending

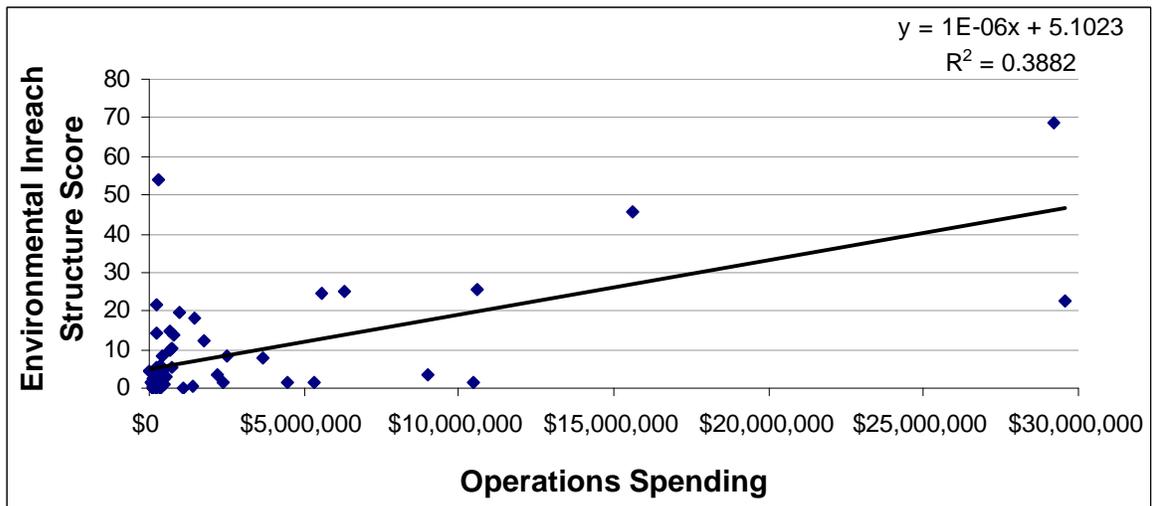


Figure 3.33: Correlation between Environmental Inreach Structure and operations spending

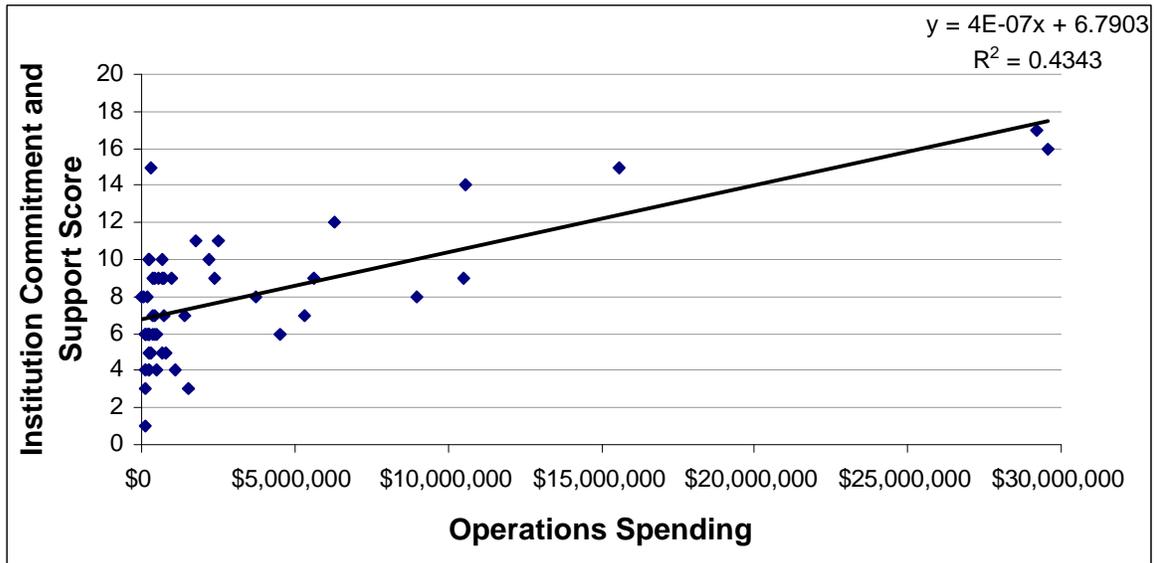


Figure 3.34: Correlation between Institution Commitment and Support and operations spending

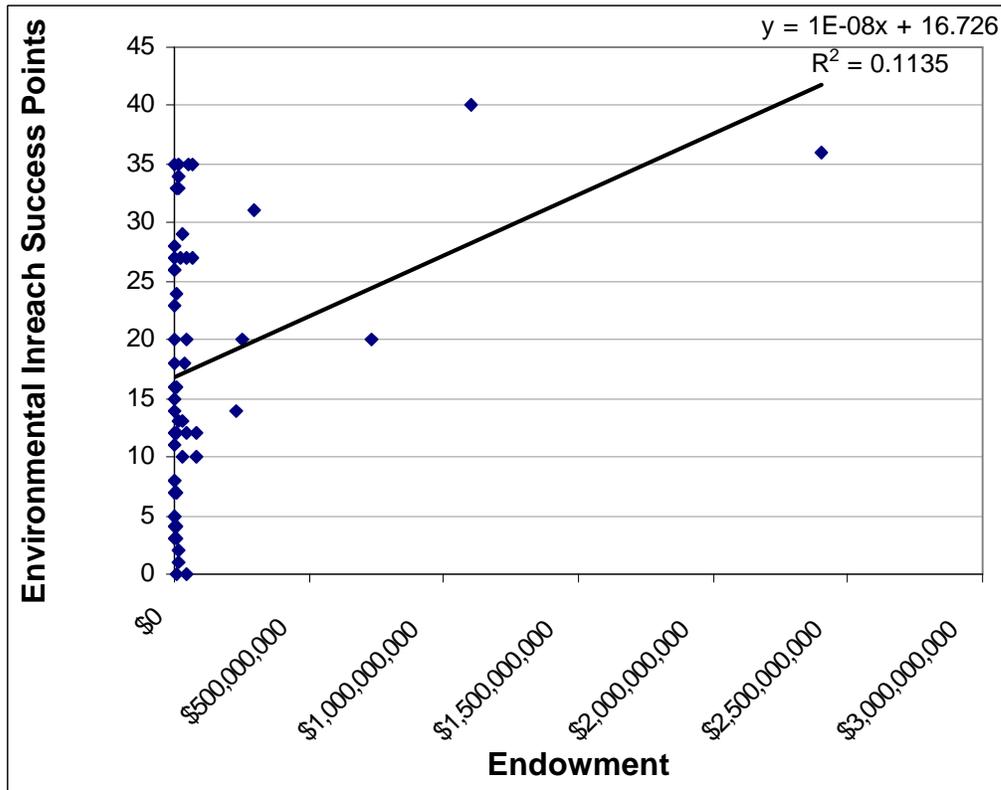


Figure 3.35: Correlation between Environmental Inreach Success and endowment

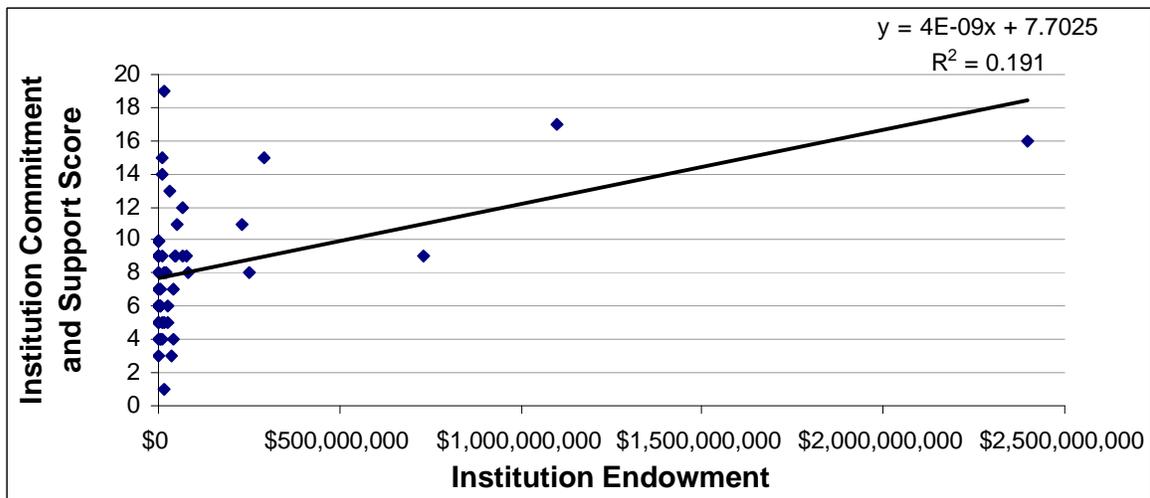


Figure 3.36: Correlation between Institution Commitment and Support and endowment

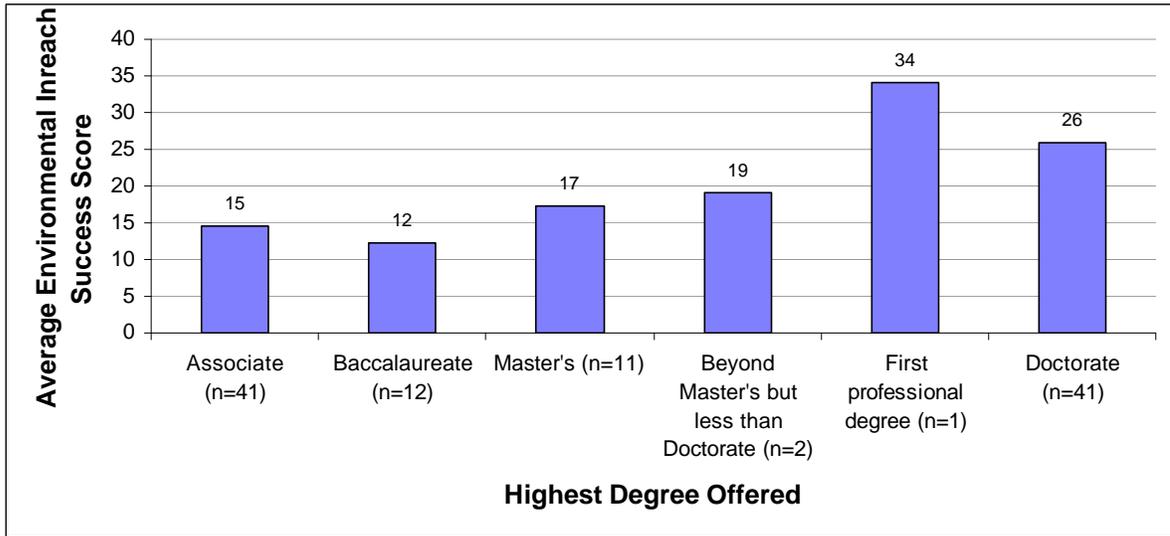


Figure 3.37: Average Environmental Inreach Success scores for responding institutions by highest degree offered

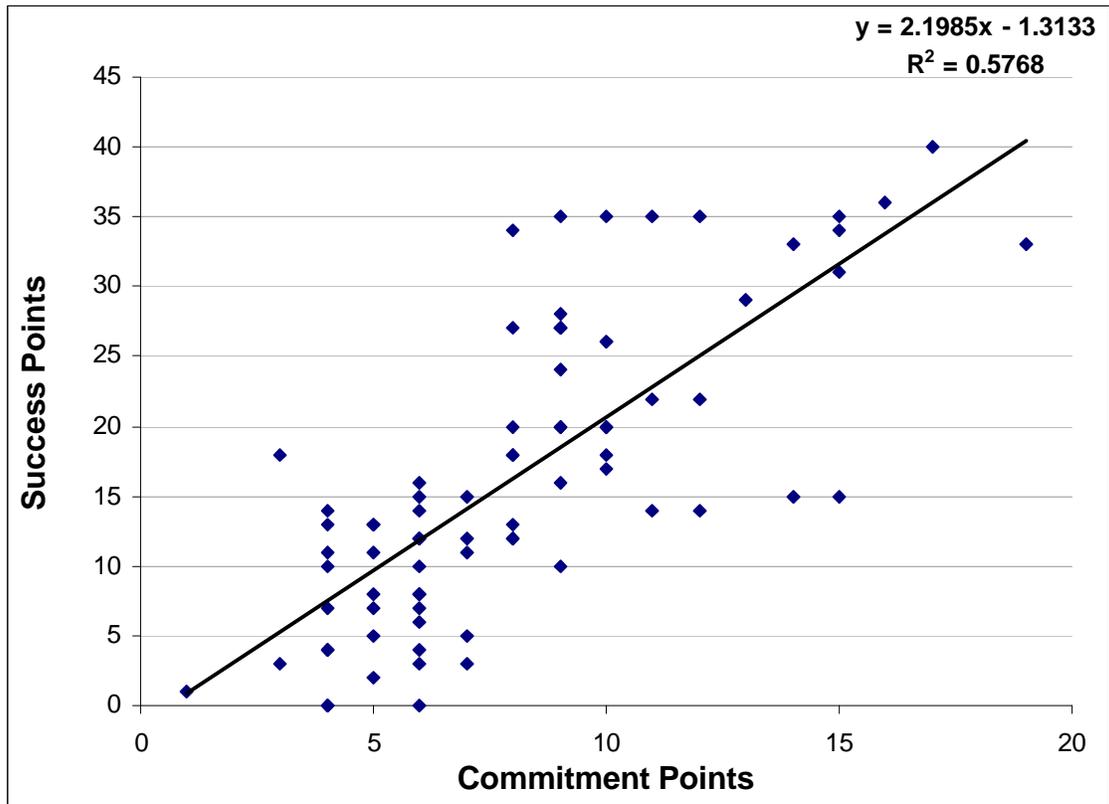


Figure 3.38: Correlation between Environmental Inreach Success scores and Institution Commitment and Support scores

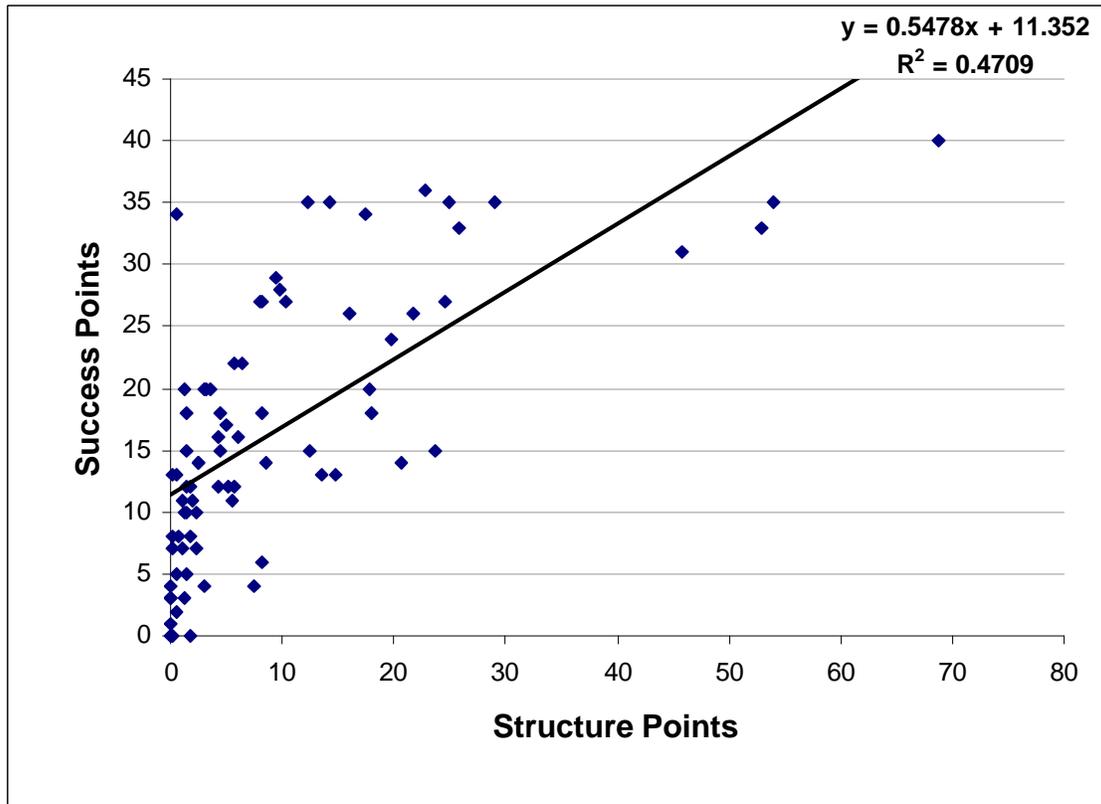
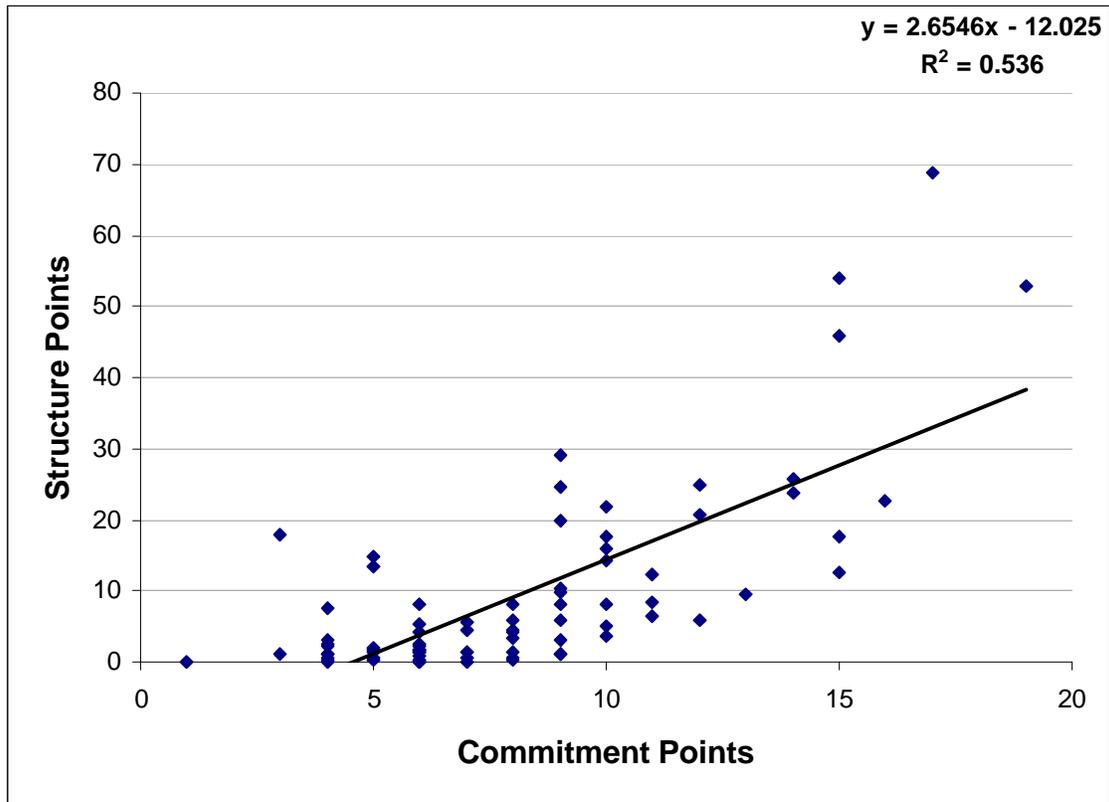


Figure 3.39: Correlation between Environmental Inreach Success scores and Environmental Inreach Structure scores



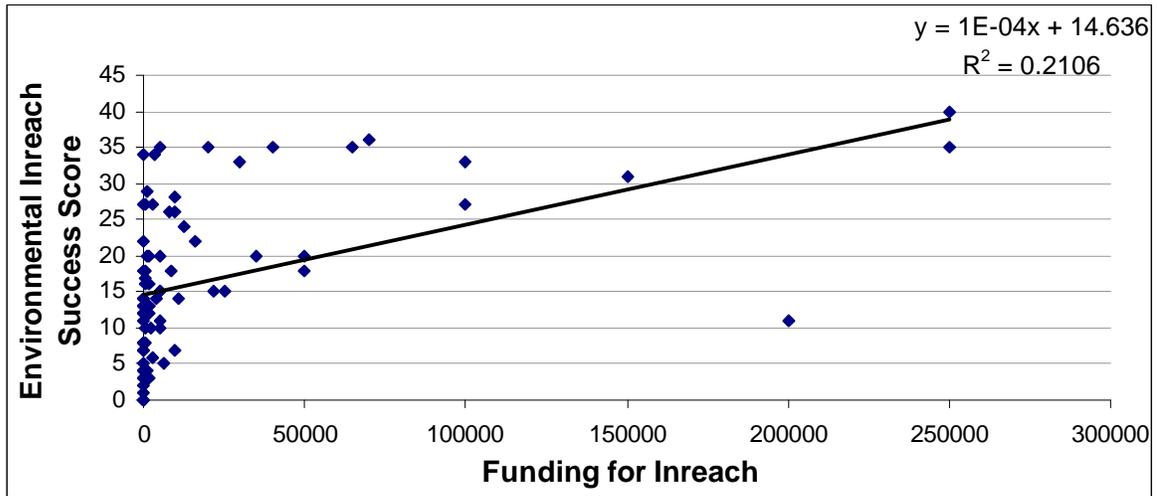


Figure 3.41: Correlation between Environmental Inreach Success and funding for inreach

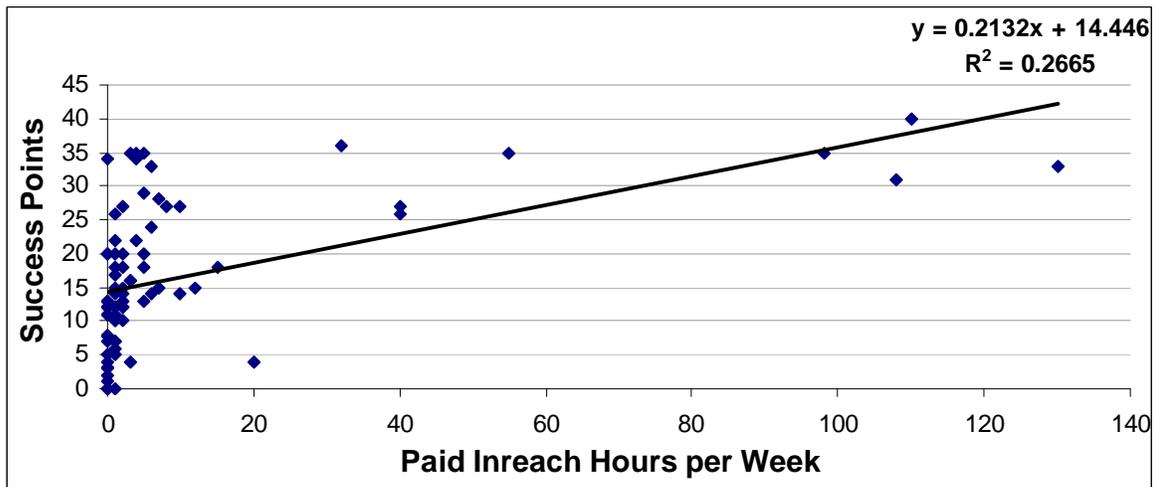


Figure 3.42: Correlation between Environmental Inreach Success and paid inreach work hours

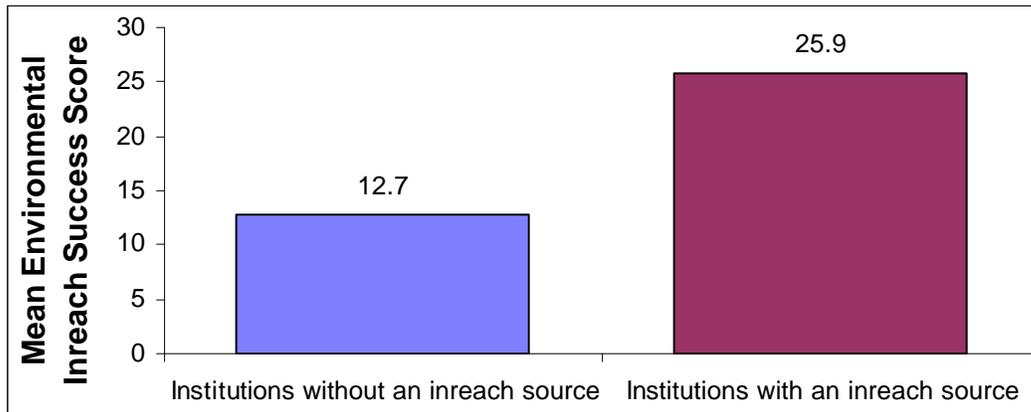


Figure 3.43: Comparison of Environmental Inreach Success scores for institutions with a central inreach source and institutions without a central inreach source

Chapter 4: Discussion

The purpose of this study was to learn about environmental sustainability inreach at institutions of higher education. The first goal was to gain insights about the strategies and providers of current inreach initiatives. Another goal was to determine the factors associated with successful inreach programs. Lastly, the study aimed to ascertain the challenges hindering inreach and to generate suggestions for improving inreach. This discussion will address each of the three stated goals and the corresponding hypotheses in light of the study results and will then examine contributions of the results to general environmental sustainability in higher education.

Goal 1: Inreach Strategies and Providers

Survey results show that institutions are using a variety of strategies to reach out to their campuses about environmental issues, with an average of five different strategies per institution. However, three of the four most commonly used strategies (emails, stickers, and signs) were likely the easiest to implement, requiring little coordination or resources. The less commonly used strategies included campus environmental orientations, training classes, environmental awards and contests, environmental listserves, and dedicated environmental newsletters. All of these strategies would require a significant amount of coordination and resources.

Students, faculty, staff, and administration were all common target audiences for inreach initiatives. Because the most common types of strategies used would be available to many audiences (ex. “Turn out the light” stickers would be viewed by students, faculty, and

staff), we can assume that institutions are not focusing their inreach initiatives for specific audiences. Using more intensive strategies would be better suited to targeting specific audiences, for example an orientation session for new faculty or staff that addresses environmental sustainability efforts on campus like recycling programs, energy and water conservation strategies, and environmental policies.

The most commonly reported goal of inreach was to promote general environmental awareness (46% of responding institutions), followed closely by motivating involvement in environmental activities (44%). The least common goals were changing lifestyles or ethics (38%) and providing information about campus environmental accomplishments or policies (35%). This finding is somewhat discouraging because institutions obviously must have accomplishments before they can provide information about them and because habits during college years may have an influence on adult lifestyles.

Topic areas that were more immediate to the institution were addressed through inreach initiatives by more institutions than broader topic areas. While addressing local issues is important for getting people's attention, environmental issues are truly global, and perhaps inreach should adopt the motto "Think globally; act locally." Recycling was overwhelmingly reported to be the most commonly addressed campus topic. It was addressed by inreach initiatives at 86% of responding institutions, while the next closest topic was energy conservation at 68% of institutions. Recycling was also ranked much higher than other topics at 171 ranking points, and the next highest ranked topic was energy conservation at 100 points. Because sustainability is a very broad topic and applies to many aspects of daily life, it is important to adjust the perception that being environmentally

friendly simply means recycling. Inreach could provide a valuable means for expanding this traditional environmental perception to be more inclusive of other environmental dimensions. Even if the institution currently has not made progress in some of these areas, for example a campus composting facility, raising awareness about composting can encourage individuals to change their own habits and even take the initiative to find resources for starting a composting program on campus or elsewhere.

The reported time that paid positions work on inreach initiatives was an average of 10.2 hours per week per institution. Institutions with a central inreach source reported the directors of these programs work an average of 12.0 hours per week on inreach, constituting 30% of a director's job responsibilities. Average funding for inreach was over \$20,000 per year for positions, office maintenance, and specific projects. Devoting this much money and work hours to inreach suggests a substantial dedication among institutions for inreach. However, if medians and modes are considered alongside the averages for these factors, as shown in Table 4.1, this seeming devotion becomes less dramatic. Medians were significantly lower and mode categories were the lowest possible for each of these factors, suggesting that though a few institutions are very dedicated to inreach, raising the averages, most institutions are much less devoted. This distinction is further supported by the findings that only 24% of institutions are required to report inreach efforts and only 20% have attempted to measure the success of an inreach initiative. Paid positions, required reporting, and success measures are key components for inreach program structure, yet the results show that the majority of institutions have not put these components in place. Combined with the results showing that the most common strategies are the easiest to coordinate and

address the most basic topics, these findings support *Hypothesis 1* by demonstrating that current environmental sustainability inreach programs excel only at a small number of institutions.

Facilities offices were found to play an important role as providers of inreach initiatives. While the most common sources for inreach on campuses were student environmental organizations, facilities offices and physical plants were by far the top ranked providers of environmental inreach (Figure 4.1). This difference indicates that, though many institutions have student environmental organizations doing some inreach, facilities offices provide much more inreach. Substantially more directors of central inreach sources were reported to be facilities staff (46%) than upper administration (21%), faculty (18%), or other staff (14%). Additionally, facilities offices were reported to provide 31% of the total funding for inreach efforts, the second highest source following general institution funds (41%). Because facilities offices direct waste management, energy usage, new buildings, and other key areas for environmental sustainability, it is logical that they would also be involved in environmental inreach.

Facilities offices as the main providers of environmental inreach likely limits inreach in several ways, for example the types of topics addressed by inreach efforts. More focus would probably be placed on projects with cost benefits (ex. recycling or energy usage) rather than inreach that simply targets environmental awareness. Also, facilities offices typically work ‘behind the scenes’ on campus and have limited means of interaction with the rest of the campus community, which would affect their ability, opportunity, and resources for designing inreach initiatives. Perhaps most importantly, unlike other types of

communities higher education institutions have a great opportunity to use the knowledge base and resources they possess because of the concentration of experts on their campuses. IHEs can capitalize on the skills and experiences of educators, the expertise of professors who deal with environmental issues, and the innovative research that is conducted on their campuses. Facilities offices may not have the necessary partnerships with these other groups to most effectively diffuse this knowledge base into its environmental sustainability inreach initiatives.

Factors Associated with Inreach Success

Statistical analysis identified four demographic factors associated with success of inreach efforts: enrollment, highest degree offered, operations spending, and endowment. As predicted by *Hypothesis 2c*, larger institutions in the study did exhibit a higher Success level ($p < 0.01$, $R^2 = 0.11$). This correlation could have several possible causes: higher accountability because of greater visibility to the public, greater demand from a larger campus community, or larger staff with more resources. A positive correlation was also found between endowment and Success ($p < 0.01$, $R^2 = 0.11$); this correlation may be due to greater resources available to for inreach initiatives, and a significant correlation between endowment and funding for inreach initiatives was found ($R^2 = 0.14$, $p < 0.01$). The difference between average Success scores among institutions with different highest degrees offered was significant and interesting ($p < 0.01$), with a general trend from the lower level degrees (associates) having lower average Success scores to the higher level degrees (doctoral) having higher scores. Because the trend between highest degree offered and Inreach

Success looks similar to the trend between highest degree offered and enrollment (Figure 4.2), it is suspected that highest degree is only indirectly associated with Inreach Success. *Hypothesis 2c* did not foresee that another demographic factor would be more strongly correlated with success than enrollment. Operations spending was the demographic factor most strongly correlated with Success ($p < 0.001$, $R^2 = 0.25$), and multi-regression analysis showed that it is the most important demographic factor related to Inreach Success. Because operations spending is essentially funding for facilities offices, this positive relationship further supports the survey findings that facilities offices are an important component of inreach success. More research needs to be conducted to investigate more fully each of these relationships with inreach success.

As suspected by *Hypotheses 2a* and *2b*, Environmental Inreach Structure and Institution Commitment and Support scores determined by survey responses were both positively correlated with Environmental Inreach Success. Each of these relationships was stronger than any of the demographic factor relationships with Success (Structure: $R^2 = 0.47$, Commitment: $R^2 = 0.57$) and had p-values less than 0.001. Though these correlations give reason to advise institutions to commit to sustainability and to put proper inreach structures in place, they also beg the question of which comes first. First, are institutions with the propensity for committing to sustainability already implementing inreach before making a commitment? Do the positive effects of inreach lead to a commitment? Do institutions that are already more environmentally focused determine both commitment and inreach? Or does a commitment compel institutions to initiate inreach efforts? Also, because a significant correlation was found between commitment and inreach structure, we must ask

how this relationship behaves. Do sustainability commitments provoke institutions to put inreach structures in place? Do inreach structures occur regardless of a commitment, with structures created by other factors that also correlate with commitment? Does upper administration play a direct role in institutionalizing the sustainability commitment by creating inreach structures? And does the stronger relationship of Commitment with Success than Structure with Success mean that making a commitment should be a higher priority than putting proper structures in place? More research must be done to address the cause and effect of these relationships specifically.

Three specific components of inreach structure were also found to have statistically significant, positive relationships with success: funding, paid inreach hours, and presence of a central source. These results suggest that institutions with a desire to increase environmental awareness on their campuses could benefit by seeking funding for inreach initiatives, dedicating paid staff time for inreach, and creating a central source to coordinate inreach activities.

Inreach Improvement: Challenges and Suggestions

Combining the two qualitative survey questions regarding challenges and suggestions generated many ideas for inreach advancement. These can be summarized into five main categories for improvement.

1. **Funding and Resources.** Lack of funding and resources is a major challenge for environmental inreach on campus, so dedicating and/or increasing funding and resources for these programs could improve inreach.

The survey results confirmed that funding has a statistically significant positive association with successful inreach programs, and providing resources is a necessary step for creating inreach program structure.

2. **Central Inreach Source.** Centralizing inreach efforts is also critical for providing structure and improving inreach. This can be accomplished in many different ways, including hiring a full-time inreach or sustainability coordinator, creating an inreach office, or simply appointing a committee responsible for planning and organizing inreach initiatives. Results from survey questions identified a positive association between the presence of a central inreach source on campus and inreach success.
3. **Commitment.** Results showed that many institutions have not yet made a substantial commitment to environmental sustainability. Making such a commitment by giving environmental sustainability a priority position on campus would be a positive step for improving inreach. This recommendation is also supported by the survey results, which show a significant correlation between the institution's commitment and support for environmental sustainability and inreach success.
4. **Strategies.** Expanding inreach strategies that are employed on campus is another way to improve inreach. Using a variety of methods to reach out to the campus community would allow institutions to target different audiences in creative ways, incorporating environmental issues into campus life.

5. **Awareness and Involvement.** Lastly, many suggestions were made for generating involvement in inreach and campus sustainability efforts by increasing environmental awareness and combating apathy. Achieving these goals functions in a positive feedback loop with inreach; more inreach creates awareness and involvement, while greater awareness and involvement causes a demand for inreach and initiates more inreach efforts. Rather than wait for the cycle to start on its own, because of this feedback loop, it is suggested that institutions first concentrate their efforts on the preceding recommendations to increase inreach efforts (like centralizing inreach efforts), and then let the positive effects of the loop occur to aid inreach.

The first three of these improvement measures, dedicating funding and resources, establishing a central inreach source, and making a commitment, are direct indicators that an institution has made environmental sustainability a priority on its campus. These recommendations support *Hypothesis 3*, showing that a lack of priority of campus sustainability is a major challenge for inreach efforts.

Environmental Sustainability in General at Responding Institutions

The response rate for this study (42%) was higher than had been expected given the difficulty of determining a direct sampling frame. Certainly part of an explanation for the high rate could be that because of the difficulty of choosing a sampling frame, extra effort was exerted to establish survey methodology that would elicit a positive response rate, for example carefully wording the invitation letter to encourage institution presidents to

participate in the study, making the questionnaire readily accessible online, and sending invitations and reminders via regular mail and email. Regardless of the effectiveness of the survey methodology, the high response rate also indicates that (1) institution presidents are familiar with the topic of environmental sustainability and think it is important enough to pass along a questionnaire about the topic to an appropriate respondent and (2) respondents think sustainability is important enough to use their time to complete the questionnaire. As environmental sustainability has become a “hot topic” recently, the high response rate is an optimistic indicator that institutions are beginning to take environmental sustainability issues seriously.

The high response rate did not extend to all institutions equally however, as larger institutions had a higher response rate than smaller institutions (4878 for responding versus 2441 for non-responding institutions). The study results show a correlation between enrollment and the three main study variables, with institutions having lower enrollments also having lower inreach success, inreach structure, and commitment to sustainability; therefore, if we assume that small non-responding institutions would be similar to the small institutions that did respond, the results imply that lower response rates among smaller institutions may be caused by lower environmental sustainability efforts (also suggesting a lower interest or awareness) than at the larger institutions. Explanations of the lower response rate could also include the possibilities that small institutions may be less likely to respond to surveys in general, they may not have an appropriate person to respond, or they may be less visible to the public and therefore less pressured to be sustainable or to participate in a study with peer institutions. Mean operations spending was also lower for

the non-responding institutions (\$0.9 Million versus \$2.8 Million for responding institutions), and this relationship could be linked to enrollment because smaller institutions likely require less spending on operations.

The General Environmental Sustainability section of the questionnaire also provided insights about the status of sustainability at institutions of higher education. Results for the six factors assessing general campus environmental sustainability status were rather poor, with only one factor, the presence of a student environmental organization, reaching more than 30% of the responding institutions. Only 17% had an environmental policy, and only 27% had an environmental degree program. Though many respondents felt that their senior administration was supportive (73%) of environmental initiatives, only 47% reported that administration was also *financially* supportive. These results indicate that environmental sustainability has not yet been made a priority for the majority of our campuses.

The study also provided information about who on campuses are most knowledgeable regarding environmental sustainability issues. 47% of survey respondents were staff administrators or directors and, based on job titles, the large majority of these were directors within facilities offices. An additional 11% of respondents were facilities staff. Other results from the study also point out the importance of facilities offices to environmental sustainability inreach. Though the location of environmental sustainability leaders clearly varies from campus to campus, the results from this study suggest that the majority of these leaders are associated with facilities offices.

Summary

A preliminary assessment of environmental inreach status can be made based on this study's results. Though most institutions are doing some environmental sustainability inreach, for the most part institutions of higher education are still in the beginning stage of environmental inreach. Initiatives at the majority of institutions are not yet comprehensive or ambitious, addressing only a limited selection of topics using the simplest strategies. While some institutions are dedicated to inreach and have put appropriate structures in place to support inreach, most institutions have not yet taken such actions. Larger institutions with greater operations spending, institutions that have made a commitment to campus sustainability, and institutions that have put proper inreach structures in place were found to be more likely to have successful inreach programs. Another new insight provided by the study was the importance of facilities offices as inreach providers. Suggestions to improve inreach programs include dedicating funding and resources, establishing a central inreach source, and making a commitment to campus sustainability. Though this study provides preliminary baseline data about the topic of environmental sustainability inreach, it generated many questions. Further research about current inreach programs and inreach success would have much value for the science of sustainability in higher education and at a larger scale, for the state of our environment in general.

Chapter 4 Tables

Table 4.1: Comparison of averages and means for inreach providers

<i>Factor</i>	<i>Mean</i>	<i>Median</i>	<i>Mode Category</i>
Inreach Hours per Week	10.2	2.0	0-5
Director Inreach Hours per Week	12.0	6.0	0-5
Inreach Funding	\$20,927	\$2,000	\$0-250

Chapter 4 Figures

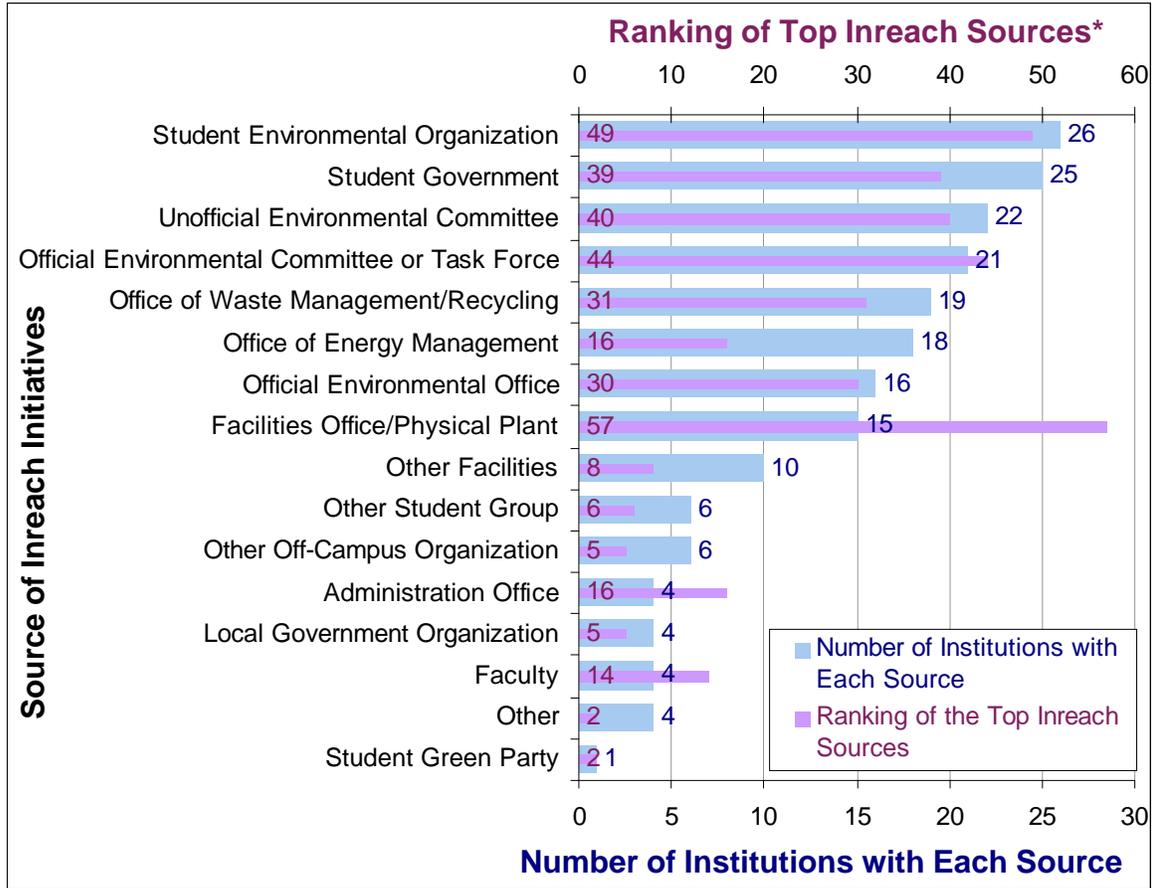


Figure 4.1: Number of institutions with each source of inreach initiatives and the rankings of top inreach sources. *Rankings points were calculated by assigning points to each rank (three points for the top answer, two for the second-most, and one for the third-most addressed topic).

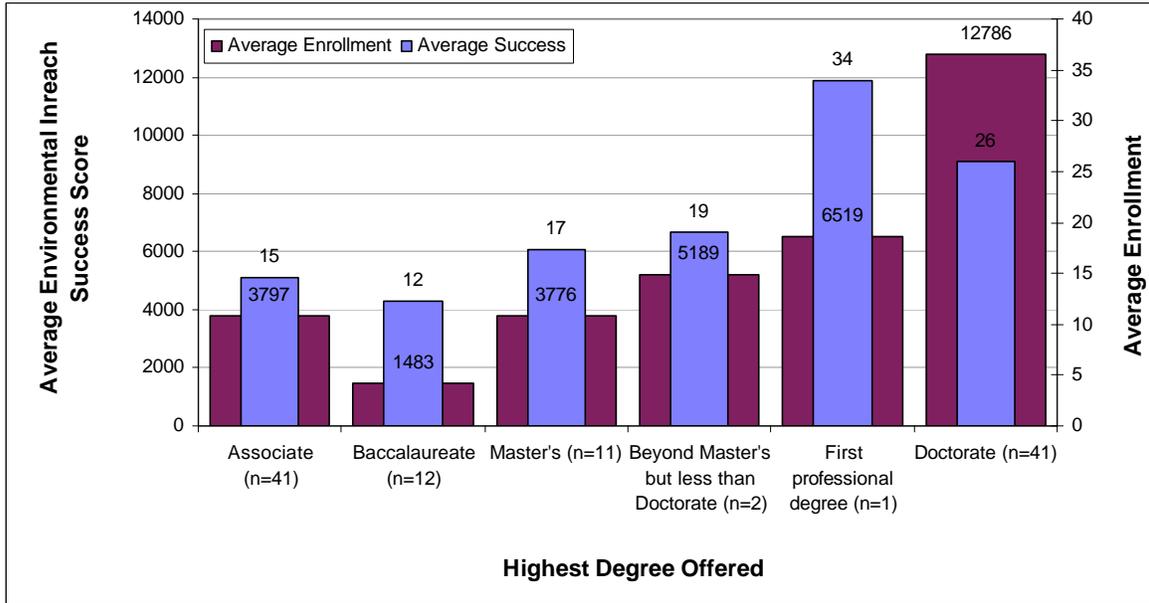


Figure 4.2: Comparison of Inreach Success and enrollment trends for institutions by highest degree offered

Chapter 5: Study Limitations and Future Research

As described in the previous chapter, study results raise questions about the relationships associated with inreach success, and more research should be done to investigate reasons behind each of the relationships. Learning more about the factors of success would provide both a valuable set of guidelines for institutions wishing to promote any of the four inreach goals outlined in the survey and also more insight into the determining factors of campus environmental sustainability in general. Qualitative studies that delve more deeply into the inner workings of institutions, address cause and effect relationships between environmental awareness and campus sustainability, and examine the progress schedule for campus sustainability processes through specific case studies would likely shed much light on this topic.

Specifically, a qualitative study is suggested to investigate the importance of facilities offices to inreach. A case study or interview approach would be able to examine facilities offices and learn more about their motives for inreach, the methodologies they have found to be most successful, and the support they receive from the institution's administration. The study could also determine if and how facilities offices coordinate and network with other organizations on campus to provide environmental inreach. A set of suggestions specific for helping facilities offices become more effective inreach providers would be a useful outcome of such a study.

More research into the number of paid hours devoted to inreach would also be useful. Many paid positions and paid hours devoted to inreach were reported, and a study to further investigate these hours could help determine what these positions focus on while

doing inreach work or if respondents overestimated the amount of time spent on inreach. It would also be interesting to learn if inreach is specifically included as part of the job descriptions of these positions. More information about specific job responsibilities and the language used to describe these in job descriptions would be beneficial for institutions that would like to formalize and coordinate inreach efforts.

One limitation of this study is that little can be assumed about the environmental sustainability and inreach programs at the institutions that did not respond to the questionnaire, particularly institutions with lower enrollments as these institutions had a relatively low response rate. Triangulation of methodology would be a productive way to address this limitation, as using case studies or interviews could specifically target inreach at smaller institutions. Another possible way to address the non-response group without the necessary resources for a qualitative study would be to assume that non-responding institutions would answer survey questions most similarly to institutions that responded later during the study period. Time and resources were not available for this study to examine the data in this way, but a future study could make predictions about the non-responding institutions by examining trends based on date of response.

Another study limitation is that the majority of respondents were from facilities or administration (80%) and, though these personnel may be the most knowledgeable individuals to respond about inreach, they still may not be aware of all inreach initiatives on campus, especially at larger institutions. Therefore, results from this study may not fully represent all aspects of inreach, particularly those initiated by student organizations, individual faculty, and off-campus organizations which may be unknown to facilities and

administration personnel. Supplementary studies could expand knowledge about inreach by targeting additional respondent types.

Additional qualitative methodology would also be useful to expand the survey results by providing examples and to follow up on several topics that were difficult to address in the questionnaire. For example, descriptions of the measures of success provided by survey respondents were mostly inadequate to make any generalizations about inreach. Also, respondents were asked if their institution had a noteworthy inreach program or initiative on their campus and if so, to describe it. Responses to this question were inadequate to interpret and would require more focus on a case-by-case basis.

While the survey included questions about types of inreach strategies and structures of inreach programs, it did not include a sufficient way to measure the frequency or quantity of inreach activities. Learning more about how often inreach strategies are used, if they are done on a regular basis, and the extent and scale at which they are applied would be useful for future measures of inreach success, especially for inreach to be considered as an indicator of campus environmental sustainability. Examining the guidelines for social marketing strategies, like those applied by Marcell et al. (2004), may be able to provide techniques for measuring inreach and ideas for a framework for inreach strategy development.

The most commonly addressed topics of inreach, including recycling, energy and water conservation, raise the question of whether expending resources for inreach about these topics is the best use of an institution's resources. Are these topics focused on simply because they are common topics, because they are easiest to address, because they save

money for the institution, or because they best serve an institution's goals? Further study is needed to examine how an institution can best use its inreach resources in meeting its environmental sustainability goals and teaching missions.

Lastly, this study did not address whether inreach success is correlated with the progress of institutions toward general campus sustainability. Learning about this relationship would address whether inreach could accurately be treated as an indicator of sustainability. An ongoing study that simultaneously tracks improvements to inreach programs and campus sustainability status would also be beneficial for analyzing the impacts that inreach strategies can achieve.

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Appendices

- A. Invitation Letter
- B. Questionnaire
- C. Study Website Introduction Pages

Appendix A: Invitation Letter

[Chancellor or President's Name]
[Title]
[Institution Name]
[Address]

Dear [Name],

I am requesting your assistance with a study to assess how higher education institutions are addressing environmental sustainability. Specifically, how are institutions reaching out to their campuses about environmental issues? (For simplicity purposes, this will be referred to as environmental 'inreach'.) This invitation letter has been sent to presidents of each of the two- and four-year higher education institutions in North and South Carolina. This study will summarize environmental inreach activities at NC and SC institutions of higher education. **I ask that you, your campus sustainability officer/coordinator, or a knowledgeable staff person complete the online survey by November 15th, 2004. Only one person from your institution should complete the survey.**

As environmental sustainability has recently become a hot topic on campuses and because this study will be discussing educational strategies with which learning institutions are by nature involved, the results of this study will be valuable to institutions of higher education. The survey asks specific questions relating to methods institutions use to reach out to their campus community about environmental issues, for example posters on campus recycling or environmental seminars. **Regardless of the extent of your institution's inreach efforts, your responses are valuable and will be useful to the study.** To summarize the results, I will develop a report that profiles the various ways that campuses perform inreach. This report will be made available to the public and for your review. **The estimated time to complete the survey is 15 minutes.**

Your completion of this survey is greatly appreciated, and your responses to the questions will remain confidential. The information in the study records will be stored securely in a password-protected electronic database, and survey data will be destroyed upon completion of study analysis. No individual references will be made in oral or written reports that could reveal your responses.

To complete the survey:

1. Go to the study website: www4.ncsu.edu/~bjtownse/study/
2. Use the following randomly assigned code to identify your institution:

Your Institution Code: [Randomly assigned code number]

Any questions about this survey or the study should be directed to Becky Townsend at North Carolina State University, Campus Box 8003, Raleigh, NC 27695, phone: 919-515-9563, email: becky_townsend@ncsu.edu. This study is sponsored and funded by the NC State University Department of Forestry.

Thank you in advance for your time and participation.

Sincerely,

Becky Townsend

Appendix B: Questionnaire

Environmental Sustainability at Higher Education Institutions - Inreach Survey

Complete the survey. You may [review the instructions](#) at any time.

Enter the Institution Code provided to you in your invitation letter/email:

I. ACTIVITIES

1. Does your institution have the following?

- | | YES | NO |
|--|-----------------------|-----------------------|
| a. Website about environmental/sustainability issues | <input type="radio"/> | <input type="radio"/> |
| b. Listserve for environmental announcements | <input type="radio"/> | <input type="radio"/> |
| c. Volunteer network for environmental activities | <input type="radio"/> | <input type="radio"/> |

2. Has your institution done the following activities or initiatives for the purpose of environmental INREACH?

- | | YES | NO | I DON'T KNOW |
|--|-----------------------|-----------------------|-----------------------|
| a. Posters | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| b. Pamphlets or brochures | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| c. Stickers (ex. "Turn off the Light") | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| d. Dedicated environmental newsletter | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| e. Campus-wide emails | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| f. Articles/Advertisements in a campus newspaper | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| g. Articles or advertisements in campus handbook | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| h. Signs | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| i. Environmental awards (for environmental behavior on campus) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| j. Environmental contests | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| k. Events or fairs (ex. Earth Day events) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| l. Tabling (an informational table or booth) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| m. Seminars or Forums (not courses for credit) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| n. Campus environmental orientation for students | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| o. Campus environmental orientation for faculty/staff | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| p. Training classes for students | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| q. Training classes for faculty/staff | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| r. Other activities or initiatives (describe below): | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

--

II. GOALS AND TOPICS

3. Have any of the above INREACH initiatives or activities focused on the following audiences as a primary target? A primary target indicates the audience that was focused on for the activity. For example, putting "Turn off the light" stickers in classroom buildings targets primarily students. Even though faculty would also see the stickers, they would not be considered a primary target.

	YES	NO	I DON'T KNOW
a. students	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. faculty	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. administration	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. staff	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. surrounding community	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4. Have any of your campus' environmental INREACH initiatives specifically focused on the following goals?

	YES	NO	I DON'T KNOW
a. Awareness: promote general awareness about environmental issues - example: flyers providing information about global warming	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Advertising accomplishments or policies: inform about campus policies or accomplishments - example: a newspaper article about new water-conserving showerheads	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Involvement: motivate individuals to get involved in environmental activities - example: booths to sign up participants in a volunteer recycling network	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. Changing lifestyles or ethics: effect a change in personal lifestyle - example: posters encouraging energy conservation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

5. Have any of your campus' environmental INREACH initiatives specifically focused on the following areas?

	YES	NO	I DON'T KNOW
a. global environmental issues	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. national environmental issues	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. regional environmental issues (ex. state)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. local environmental issues (ex. city)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. environmental issues on campus	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

6. Have any of your campus' environmental INREACH initiatives specifically addressed the following campus topics?

	YES	NO	I DON'T KNOW
a. Recycling on campus	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Water conservation on campus	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Energy conservation or alternatives on campus	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. Transportation options on campus	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. Waste reduction on campus	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f. Local and/or organic food on campus	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g. Green building on campus	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
h. Land use/restoration on campus	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
i. Composting on campus	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
j. Purchasing (ex. recycled paper) on campus	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
k. Other campus topic: describe below	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

7. Which THREE topics have been addressed the most through environmental INREACH initiatives. [Rank ONLY the top THREE topics using the numbers 1, 2, and 3 (1 being the most addressed topic). Use each number ONLY ONCE.]

	RANK
a. Recycling on campus	<input type="text"/>
b. Water conservation on campus	<input type="text"/>
c. Energy conservation or alternatives on campus	<input type="text"/>
d. Transportation options on campus	<input type="text"/>
e. Waste reduction on campus	<input type="text"/>
f. Local and/or organic food on campus	<input type="text"/>
g. Green building on campus	<input type="text"/>
h. Land use/restoration on campus	<input type="text"/>
i. Composting on campus	<input type="text"/>
j. Purchasing (ex. recycled paper) on campus	<input type="text"/>
k. Other campus topic: describe below	<input type="text"/>

III. PROVIDERS

8. Where do INREACH activities originate on your campus? [Include BOTH official AND unofficial (i.e. not sanctioned by the institution) activities.]

	YES	NO	I DON'T KNOW
a. Official environmental office	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Official environmental committee or task force	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Unofficial environmental committee	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

- d. Student environmental organization
- e. Student government
- f. Student Green Party
- g. Other student group: describe below

- h. Office of energy management
- i. Office of waste management
- j. Other facilities office: describe below

- k. Off-campus organization: describe below

- l. Other: describe below

9. Which are the three main providers of environmental INREACH to your campus? [Rank the providers using the numbers 1, 2, and 3 (1 being the provider that does the most inreach). Use each number ONLY ONCE.]

RANK

- a. Official environmental office
- b. Official environmental committee or task force
- c. Unofficial environmental committee
- d. Student environmental organization
- e. Student government
- f. Student Green Party
- g. Other student group: describe below

- h. Office of energy management
- i. Office of waste management
- j. Other facilities office: describe below

- k. Off-campus organization: describe below

I. Other: describe below

10. How many paid positions at your institution are involved with environmental INREACH as part of their job responsibilities. [Approximate if necessary.]?

NUMBER OF POSITIONS:

11. How many of these positions devote the following number of hours to environmental INREACH each week?

HOURS	NUMBER OF POSITIONS
a. 0-4	<input type="text"/>
b. 5-9	<input type="text"/>
c. 10-19	<input type="text"/>
d. 20-29	<input type="text"/>
e. 30-39	<input type="text"/>
f. 40-40+	<input type="text"/>

12. Does your institution have any of the following that is THE CENTRAL source for environmental INREACH to the campus? (i.e. in their job description or office mission).

	YES	NO
a. Central office or program with assigned office space	<input type="radio"/>	<input type="radio"/>
b. Central office or program, but not assigned office space	<input type="radio"/>	<input type="radio"/>
c. Environmental/sustainability coordinator position	<input type="radio"/>	<input type="radio"/>
d. Environmental/sustainability officer position	<input type="radio"/>	<input type="radio"/>

[If "No" to ALL of the options in Question 12, SKIP to Question 17.]

[Questions 13-16 refer to the office and/or position described in Question 12. Choose ONLY ONE person or office with the broadest authority and/or most time spent.]

13. What is the name of this office or the title of this position?

14. Approximately how many hours does this position (or the director of this office) devote to environmental INREACH each week?

HOURS PER WEEK:

15. Which category best describes this position (or director)?

CHOOSE ONE:

- a. Faculty
- b. Upper administrator
- c. Facilities staff
- d. Other staff (describe what department below)

- e. Other (describe below)

16. Where does the funding come from to pay the salary for this position? [Give your answer based on the percent that comes from each source.]

- a. This position is unpaid.

PERCENT OF SALARY

- b. General institution
- c. Departmental
- d. Facilities
- e. Additional student fees
- f. External grants
- g. Campus sustainability fund
- h. Other: describe below

TOTAL 100 %

17. What do you estimate to be the total amount of money, INCLUDING staffing, office upkeep, project (like printing costs for posters, etc.), and other expenses, devoted to environmental INREACH over the past twelve months? Please estimate to the best of your knowledge.

\$

18. Approximately what percent of the total funding provided in Question 17 came from the following sources?

PERCENT OF FUNDING

- a. General institution funds
- b. Departmental funds
- c. Facilities funds
- d. Additional student fees

e. External grants	<input type="text"/>
f. Campus sustainability fund	<input type="text"/>
g. Other: describe below	<input type="text"/>
<input type="text"/>	
TOTAL	100 %

19. Of the total funding provided in Question 17, approximately what percent is allocated for the following? Please estimate to the best of your knowledge.

	PERCENT OF FUNDING
a. Salary/wages	<input type="text"/>
b. Office overhead and supplies	<input type="text"/>
c. Specific projects	<input type="text"/>
d. Other: describe below	<input type="text"/>
<input type="text"/>	
TOTAL	100 %

IV. SUCCESS AND CHALLENGES

20. Which of the following are systems of reporting for environmental INREACH activities on your campus?

	YES	NO	I DON'T KNOW
a. Required reporting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Annual reporting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Reporting to campus sustainability office/officer/coordinator	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. Reporting to the office of the institution's president	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. Reporting to another location (describe below):	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="text"/>			
f. Other reporting system: describe below	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="text"/>			

21. Have there been any attempts to measure the success of any of your environmental INREACH activities/initiatives?

YES	NO	I DON'T KNOW
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

If YES, please describe below (the activity, method of measurement, results, any conclusions about success, etc):

22. Please describe three **THREE MAIN** ways you think environmental INREACH could be improved on your campus?
[This question is NOT asking about environmental sustainability initiatives in general, but specifically about how INREACH can be improved.]

1.

2.

3.

23. Please describe what you consider to be the **SINGLE MAIN** challenge to environmental INREACH on your campus?
[This question is NOT asking about environmental sustainability initiatives in general, but specifically about how INREACH can be improved.]

V. GENERAL ENVIRONMENTAL STATUS

24. Does your institution have the following?

- | | YES | NO | I DON'T KNOW |
|---|-----------------------|-----------------------|-----------------------|
| a. An official environmental policy | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| b. An environmental degree program | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| c. An environmental general education requirement for graduation | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| d. An official, central office or coordinator for environmental sustainability issues | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| e. An environmental student organization | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

25. Is there institution funding provided for the implementation of your environmental management plan? If YES, then approximately how much money in total?

- | YES | NO | NO PLAN |
|-----------------------|-----------------------|-----------------------|
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
- If YES, then approximately how much money in total? \$

26. Has your institution signed the Tailloires Declaration (a commitment that originated at a conference in Tailloires, France that is signed by administrators to incorporate environmental sustainability into the institution's operations and mission)? If yes, in what year?

- | YES | NO | I DON'T KNOW |
|-----------------------|-----------------------|-----------------------|
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
- WHAT YEAR?

27. How would you rate the supportiveness of senior administration for environmental sustainability initiatives in general on your campus?

- | | |
|--|-----------------------|
| a. Extremely Supportive | <input type="radio"/> |
| b. Very Supportive | <input type="radio"/> |
| c. Somewhat Supportive | <input type="radio"/> |
| d. Neither Supportive nor Discouraging | <input type="radio"/> |
| e. Somewhat Discouraging | <input type="radio"/> |
| f. Very Discouraging | <input type="radio"/> |

28. How would you rate the FINANCIAL supportiveness of senior administration for environmental sustainability initiatives in general on your campus?

- | | |
|--|-----------------------|
| a. Extremely Supportive | <input type="radio"/> |
| b. Very Supportive | <input type="radio"/> |
| c. Somewhat Supportive | <input type="radio"/> |
| d. Neither Supportive nor Discouraging | <input type="radio"/> |
| e. Somewhat Discouraging | <input type="radio"/> |
| f. Very Discouraging | <input type="radio"/> |

VI. SURVEY RESPONDENT

29. What is the name and contact information for the person completing this survey? [Reminder: Your responses will remain confidential. Your contact information will be used only for contact if the investigators need to follow-up with you about any of your responses and for distribution of the study results. No individual references will be made in oral or written reports that could reveal your responses.]

a. FIRST NAME:

b. MI:

c. LAST NAME:

d. SUFFIX:

e. JOB TITLE:

f. ADDRESS 1:

g. ADDRESS 2:

h. CITY:

i. STATE:

j. ZIP:

k. PHONE #: l. EXTENSION:

m. E-MAIL:

30. Describe how you are involved with environmental sustainability issues on your campus.

31. Which category best describes you?

- a. Faculty
- b. Academic administrator (dean, director, or above)
- c. Staff administrator/director or above
- d. Facilities staff
- e. Other staff (describe what department below)

- f. Other (describe below)

32. Would you be interested in receiving a copy of the results summary for this study?

- YES NO

33. Do you have a particular INREACH program or initiative on your campus that you believe is noteworthy?

a. If so, please describe below:

b. Would you be receptive to providing more information about this program to the investigators of this study?

YES

NO

Thank you for your time!

Submit

Reset

Please click only ONCE! A new screen will open to let you know if your survey was submitted or if you need to answer any skipped questions.

[Survey Homepage](#) | [Contact](#)

Appendix C: Study Website Introduction Pages

Environmental Sustainability at Higher Education Institutions - Inreach Survey

Welcome to the Survey on Environmental Sustainability Inreach at Higher Education Institutions.

The estimated time to complete the survey is 15 minutes. This website will guide you through the following three pages. Please read through the first two pages carefully, so you can properly answer the survey questions.

- Page 1 will briefly provide some information about about the study.
- Page 2 will outline the instructions.
- Page 3 is the survey itself. You will be able to review the instructions at any time while on this page.

Thank you in advance for your time and participation.

[Continue to Page 1: About the Study](#)

[Survey Homepage](#) | [Contact](#)

Environmental Sustainability at Higher Education Institutions - Inreach Survey

About the Study

The purpose of this study is to assess how higher education institutions are addressing environmental sustainability. Specifically, how are institutions reaching out to their campuses about environmental issues? (For simplicity purposes, this will be referred to as environmental 'inreach'.) Presidents of each of the two- and four-year higher education institutions in North and South Carolina have been invited to complete the following survey. This study will summarize environmental inreach activities at NC and SC institutions of higher education. Presidents, campus sustainability officers/coordinators, or knowledgeable staff persons are requested to complete the survey **by November 15th, 2004. Only one person from your institution should complete the survey.**

Why is this Study Important?

As environmental sustainability has recently become a hot topic on campuses and because this study will be discussing educational strategies with which learning institutions are by nature involved, the results of this study will be valuable to institutions of higher education. The survey asks specific questions relating to methods institutions use to reach out to their campus community about environmental issues, for example posters on campus recycling or environmental seminars. **Regardless of the extent of your institution's inreach efforts, your responses are valuable and will be useful to the study.** To summarize the results, I will develop a report that profiles the various ways that campuses perform inreach. This report will be made available to the public and for your review. **The estimated time to complete the survey is 15 minutes.**

Confidentiality

Your completion of this survey is greatly appreciated, and your responses to the questions will remain confidential. The information in the study records will be stored securely in a password-protected electronic database, and survey data will be destroyed upon completion of study analysis. No individual references will be made in oral or written reports that could reveal your responses.

Questions?

Any questions about this survey or the study should be directed to Becky Townsend at North Carolina State University, Campus Box 8003, Raleigh, NC 27695, phone: 919-515-9563, email: becky_townsend@ncsu.edu.

This study is sponsored and funded by the NC State University Department of Forestry.

Thank you for your participation in this study.

[Continue to Page 2: Instructions](#)

[Survey Homepage](#) | [Contact](#)

Environmental Sustainability at Higher Education Institutions - Inreach Survey

Instructions - you may review these instructions at any time while completing the survey.

I. Answer questions based on the following definition:

ENVIRONMENTAL INREACH: How an institution reaches out and communicates to its own campus community about environmental issues. Use the following guidelines when answering the questions:

1. Environmental inreach includes **ONLY OFFICIAL INITIATIVES** that have been sanctioned by the administration of the institution (unless otherwise stated). For example, initiatives of student environmental organizations should not be included unless they were also sponsored by the institution.
2. Environmental inreach does **NOT** include for-credit courses in your institution's curriculum. For example, a semester course on environmental technology should not be included, however a one-time seminar on composting should be included.
3. Questions are about environmental **INREACH** activities **ONLY**, not all environmental initiatives (unless otherwise stated). For example, energy conservation measures should not be included, but a flyer encouraging students to turn off their lights to save energy should be included.
4. Questions are based on your institutions' activities **OVER THE PAST 12 MONTHS** unless otherwise noted.

II. Please note that when you finish the survey and click the "Submit" button, a new window will open. This window will indicate whether you skipped any questions that still need to be answered or if the survey was submitted successfully:

1. If you still need to answer skipped questions, the new window will tell you which questions you still need to complete. You can use your mouse to maneuver to the survey window. The survey will have retained all your answers so that you can simply complete the skipped questions and click "Submit" again.
2. If your survey was submitted successfully, the new window will inform you of the successful submission, and you may then close the survey window.

Thank you again for your time and participation.

[Continue to Page 3: Complete the Survey](#)

[Survey Homepage](#) | [Contact](#)