The Class of 2000 Report:

Environmental Education, Practices and Activism on Campus

Prepared for the Nathan Cummings Foundation
by Benjamin H. Strauss
1996

Credits

Editors: Barbara Eubanks and David Greenberg
Cover illustration: Cynthia Johnson and Grace Howe
Cover design: Bethany Johns Design
Printing: Graphic Illusions
Layout editor: Jean M. Browne; Contributors: Annette Ensley and Andrea Kincannon

The Nathan Cummings Foundation

The Nathan Cummings Foundation is a national grantmaking organization rooted in the Jewish tradition and committed to democratic values, including fairness, diversity, and community. It seeks to build a society that values nature and protects ecological balance for future generations; promotes humane health care; and fosters arts to enrich communities. The Environment Program can be reached at:

Environment Program
Nathan Cummings Foundation
1926 Broadway, Suite 600
New York, NY 10023-6915
Tel.: 212.787.7300 Fax: 212.787.7377
E-mail: enviro@cummings.ncf.org

Table of Contents

Foreward

A sense of responsibility to future generations drives many of our efforts to protect the environment. The Nathan Cummings Foundation feels that the education and empowerment of the *next* generation is an essential element of any strategy to create a sustainable future.

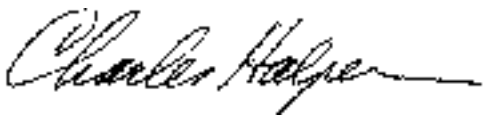
We have a vision for higher education in the 21st century:

- Every discipline—from economics to literature to engineering—will incorporate environmental perspectives as a core component.
- All university operations will be measured against standards of ecological responsibility.
- Students will be engaged in environmental service and public dialogue from campus to national levels.

Because of this vision, the Foundation commissioned a special report on higher education and the environment. *The Class of 2000 Report* presents information and resources on environmental education, practices, and activism on campus. It also suggests strategies and recommendations to stimulate increased effort in each of these spheres. We are confident that this report will be useful to the university community; to philanthropies and non-profit organizations; and to the media and others interested in the environment and higher education.

This report will form the base on which we build our new environmental grants program. We expect to work with other foundations in this important endeavor.

More importantly, we want students, faculty, and academic administrators to join together to assure that all future students will leave college fully conversant with environmental issues and with a commitment to sustainability in both thought and action. Universities must become centers of environmental education and concern. The next generation deserves nothing less.



Charles R. Halpern
President, The Nathan Cummings Foundation

ABOUT THIS REPORT

The Class of 2000 Report was prepared at the request of the Nathan Cummings Foundation to enhance the Foundation's development of an additional grantmaking focus for its Environment Program. Guidelines for this new focus, the Class of 2000 Project, will be available in January 1996, with proposals invited at that time.

The aims of this report are twofold: to provide basic information and ideas which will enhance the understanding of environmental education, practices and activism on campus; and to develop action strategies for philanthropies and others involved in these areas today. The report argues the need for action in each area, provides historical and contemporary background, outlines key questions for strategy development, and offers recommendations for action. Much of the historical information and many of the organizational descriptions cannot be found together, or even at all, anywhere else.

The views expressed in ***The Class of 2000 Report*** are not necessarily shared by the Foundation, its officers, or its Board members. A ***Summary of Findings*** is available separately on request.

Audience

Although written for the Nathan Cummings Foundation, this report is also intended to be useful to a wide variety of groups and individuals, including other foundations, college and university students, faculty, administrators, and non-profit organizations, as well as media interested in the environment, educational reform, and student activism.

Organization

This study is broken into three major parts: **Environment and Education**, **Environment and Campus**, and **Environment and Activism**. These topics are closely related, but each part can be read alone, if desired. Each part is divided into four major sections:

- The **need** statements outline reasons to take action in each of the report's three main areas.
- The **background** sections narrate the recent trends and current status of each part's subject area. These sections include historical narratives, case studies of individual campuses or reform initiatives, descriptions of relevant organizations, and discussions of funding sources.
- The sections on **strategic considerations** identify key issues and choices for clarifying objectives and formulating strategies. The sections are not meant to recommend a course of action, but rather to outline a thought process.
- The **recommendations** listed at the end of each major chapter of the report are based on the author's analysis and opinions. They are offered in the hope that they will contribute insight and direction. The order in which the main recommendations appear roughly reflects a suggested order of priorities.

The **Introduction** presents a case for why increased efforts to reform higher education and affect college student development are critical in the quest for a more sustainable future. It also offers a short sketch of the higher education context in general. The **Conclusion** briefly summarizes the interconnections and recommendations of the three major parts, and weighs which recommendations may be most valuable.

Methodology

Information was gathered primarily through dozens of telephone interviews, correspondence and manuscripts, and some library research. In addition, students, faculty, and, in several cases, facilities staff were personally interviewed during site visits to ten colleges and universities: Brown University, Dartmouth College, George Washington University, Middlebury College, Stanford University, Tufts University, the

University of California at Berkeley, the University of California at Los Angeles, the University of Colorado at Boulder, and the University of Vermont. The geographical clustering of these campuses and the concentration of schools in the Northeast were due to time constraints in travel and completing the report; however, an attempt has been made to include at least some cases or information from campuses around the nation; in such instances, students and faculty were contacted by telephone.

Acknowledgments

This report would not have been possible without the generosity and time of scores of people. I would like to thank all of those who offered their time to talk, write, share materials and ideas, or contribute in other ways to this report, including but not only: David Allen, Matthew Arnold, J. Bonasia, Jean Browne, Owen Byrd, Edwin Choy, Trista Claxon, Gina Collins, Jack DeBell, André Delattre, Michael Dorsey, Faye Duchin, David Eagan, Jim Elder, John Elder, Annette Ensley, Mark Fraioli, Michael Gelobter, Robert Gottlieb, Elizabeth Gres, Steven Hamburg, Denis Hayes, Therese Heliczer, Britta Ipri, Shane Jimerfield, James Karr, Thomas Kelly, Christopher McGrory Klyza, Kimberly Larsen, William McDonough, Donella Meadows, Cris Moore, Douglas O'Reilly, Carl Reidel, Steven Rockefeller, Donald Ross, Leslie Samuelrich, Abdi Soltani, Aqualina Soriano, Kurt Teichert, Brian Trelstad, Stephen Viederman, Ross Virginia, Harold Ward, Ken Ward, Wendy Wendlandt, Ian Worley, and Miya Yoshitani. Kristen Grimm Wolf and Jamie Lachman were especially helpful to me in providing materials and sharing data entry duties, respectively. The Yale Student Environmental Coalition generously allowed me to use its office in the early stages of this project. I owe one of my greatest debts to David Greenberg for his challenging and thoughtful suggestions and clear editing. Barbara Eubanks, Stanley Katz, and Jessica Lissy also made helpful comments on various drafts.

During the course of writing, I have knowingly (and unknowingly) borrowed ideas from countless people, and therefore beg their forgiveness if I have not always acknowledged them properly. In particular, my work stands on the shoulders of the writing, thought, and help of several key veterans who have long supported environmental education, stewardship, and activism on campus: Anthony Cortese, William Cronon, Helen Denham, Chris Fox, Julian Keniry, David W. Orr, April Smith, and Will Toor.

Finally, I would like to give special thanks above all to Charles Halpern, President of the Nathan Cummings Foundation, who first asked me to do this work and who has offered excellent ideas throughout the project; Conn Nugent, former director of the NCF Environment Program, who gave valuable advice early on; and Richard Mark, the Environment Program's current director, whose patience in receiving my drafts has been more than generous and whose comments have sharpened them considerably. I deeply appreciate the faith shown by these three and by the Nathan Cummings Foundation as a whole in seeking the perspective of a young person—a perspective often left out of dialogues about how to achieve a more sustainable future.

This report is dedicated to the College Class of 2000.

About the author

Benjamin H. Strauss graduated with honors in 1995 from Yale University, where he earned a Bachelor of Arts degree in Biology. While in college, he was an active member of the Yale Student Environmental Coalition. He was also co-founder and program director of the "Campus Earth Summit," an international conference held at Yale in February 1994 to advance environmental education, campus stewardship, and student activism.

Please comment

Both the author and the Nathan Cummings Foundation welcome — moreover, encourage — comments, criticisms and suggestions. Please write to the attention of the Environment Program, Class of 2000 Project.

Executive Summary

A fundamental improvement in the human relationship with the earth will demand a major reorganization of our societies, economies, and ways of thinking. This scale of transformation can only be accomplished through basic and sweeping changes in the educational experiences offered to young people. At the same time, young people must continually help to re-envision a just and sustainable future toward which we all can strive. This report, prepared at the request of the Nathan Cummings Foundation, focuses on three complementary strategies for engaging undergraduate students in the United States.

I. Expanding environmental education at colleges and universities

Students of *all* fields need to develop "environmental literacy," the intellectual tools and practical skills to become caring and competent stewards of the planet. Although building a core of environmental professionals is important, detailed teaching about the environment should not be reserved for future specialists. Reaching all students will require the redirection of traditional disciplines—from history to architecture to business and economics—toward a more ecological perspective. Few organizations have attempted this challenging task to date, leaving both much work to be done and a great opportunity for progress. The philanthropic community should place a very high priority on working with organizations and faculty to promote environmental literacy at colleges and universities across the country, especially through redirecting traditonal disciplines.

The most obvious vehicles for undergraduate environmental education are environmental studies and sciences programs. In a burst of rapid growth that may have been a response to the sentiment and student advocacy surrounding the first Earth Day, roughly one-third of all existing programs were formed between 1970 and 1974. Another third were formed from 1990-94, following Earth Day's twentieth anniversary. Today there is a greater emphasis on science. Still, most campuses lack an environmental program, and the recent expansion may soon be eclipsed by financial stress on colleges and universities from federal budget cuts. Foundations should support the growth, preservation and networking of environmental studies programs around the country. Funders should understand, however, that almost two-thirds of these program graduates go on to become environmental professionals. Programs also reach out to students who will enter

other segments of the working population, but the extent of this outreach is less clear.

Some colleges and universities offer special classes or programs in which students explore campus and community environmental problems and their solutions. These programs, like the growing Service Learning movement, combine service and learning. They also facilitate interdisciplinary cooperation by providing clear tasks around which faculty and students from different departments can organize. Foundations should encourage these initiatives and other experiential education opportunities, including internships.

II. Improving campus environmental practices

Learning is not limited to the classroom. Colleges are large institutions with significant ecological impacts, and they teach behavior by example. By observing and especially by participating in efforts to improve campus environmental practices, students can develop skills and habits for a lifetime of responsible involvement. They can also help to mitigate the impact of detrimental campus policies, an enterprise valuable in itself. Foundations should encourage students to take part in campus reform.

Recycling is by far the strongest area of campus environmental reform. 2,700 colleges and universities have recycling programs today, compared to 50 in 1980. Most were started by students, but now the majority are institutionalized. Many campuses have also launched initiatives to increase energy efficiency, and the most successful ones have each cut their energy bills by over $3 million per year. Students and staff have conducted campus environmental audits, reformed purchasing policies, reduced pesticide use, conserved water, increased public transportation opportunities, and advocated for environmental justice in school decisions. Funders not only should support students and staff in developing networks and information resources for these efforts, but they should also promote the aggressive communication of positive results.

While these successes (outside of recycling and energy efficiency) have been scattered, college and university administrations *have* increasingly begun to institutionalize mechanisms for campus-wide environmental reform. These include appointing a standing committee, hiring an environmental coordinator, and changing official policies. Foundations should encourage—and even urge—top administrators to continue on this path of *building in* environmental stewardship as a campus priority.

III. Strengthening student environmental activism

By participating in activism, students can develop skills and values, challenge and educate their peers, and exert an immediate impact on society at large.

Current trends to undo environmental laws and protections make communication of the strongly pro-environment student voice a top priority, elevated in urgency from other concerns in this report. Funders should support regional and national student campaigns with relevance to contemporary environmental policy debates. Foundations should facilitate effective communications and media work, encourage non-partisan student voter registration and education, and promote training programs for democratic participation.

Environmental activism among students received a giant boost in the crucial years surrounding Earth Day 1990. Several hundred campus environmental groups expanded into over two thousand; at the same time the number of national groups and networks more than quadrupled. Following large conferences in 1989 and 1990, students conducted national campaigns to reform campus practices, protect forests, and ensure cleaner air. A 1992 campaign registered students to vote. Meanwhile, campus groups worked individually on a much wider range of projects—from starting environmental education programs at local elementary schools to pressuring their universities to divest from certain companies. Coordinated national activity dipped after the 1992 presidential elections, but since 1994 has been undergoing a revival, as reflected by three more national conferences. Foundations should not only help students to strengthen the infrastructure of their environmental movement; they should also support individual campus efforts and centers as well.

While recent polls show a record level of cynicism concerning the political system among college students as a whole, youth voter turnout actually increased by 20 percent from 1988 to 1992. Furthermore, polls suggest that although students are volunteering in unprecedented numbers, a majority (over 84 percent) of undergraduates believe the government does not do enough to protect the environment. Under these conditions, increasing student democratic participation and amplifying youth voices are very important strategies for bringing more attention to environmental problems and building more national will to solve them.

For many students, the college years are a time of hope and idealism. By advancing environmental education, practices, and activism on campus, we can lay the groundwork for a more sustainable future. Such a comprehensive approach during this unique window of opportunity could revitalize the environmental movement today and perhaps restore to this planet a semblance of its former health.

Introduction

A recent "Warning" was issued by 1,600 scientists in 70 countries, including over 100 Nobel laureates:

> *Human activities inflict harsh and often irreversible damage on the environment and on critical resources. If not checked, many of our current practices put at serious risk the future that we wish for human society and the plant and animal kingdoms, and may so alter the living world that it will be unable to sustain life in the manner that we know.*[1]

In words penned by the Union of Concerned Scientists, the signatories cited "critical stress" on the atmosphere, oceans, and water resources. They pointed to the depletion of soils, forests, and living species. Finally, they warned of the burden of rapid population growth on the Earth's finite resources and waste absorption capacity.

The danger inspiring this consensus is profound. The Intergovernmental Panel on Climate Change, a panel of 2,500 scientists, has determined that this century's global warming is due at least in part to human emissions of greenhouse gases, and projects accelerated temperature increase through the next century. Scientists anticipate major disruptions in natural ecosystems and the displacement of millions of coastal dwellers as sea levels rise.[2] The world fish catch has stopped increasing after a fourfold expansion from 1950 to 1990, with indications that all major ocean fisheries are being harvested at or beyond capacity.[3]

The age of substituting fertilizer for land appears to have ended: most major food-producing countries are close to the limit of possible gains from adding fertilizer to existing grains. Many areas of the world are using all freshwater available from the hydrologic cycle, or pumping down aquifers faster than they are refilling. Over two-thirds of the world's species of birds are in decline, mainly because of tropical deforestation, the draining of wetlands for farming and development, and pollution.[4]

Most fundamentally, the rapid pace of human growth is fueling this change and destruction. Over the last 50 years, world population has more than doubled.[5] Equal or greater rates of expansion are expected to prevail for the next half century. In the words of the World Commission on Environment and Development, "Our human world of 5 billion must make room in a finite environment for another human world."[6]

The paradigm of sustainability has emerged in response to this sense of crisis. Sustainability has two sides, suggested by humanity's custodial relationship to the earth's resources. One side involves *preventing* a collapse or decline of life support systems, and requires policies and practices that protect and care for our atmosphere, land, and water. The other meaning of sustainability involves *providing for* human needs and institutions. Again in the WCED's words, "sustainable development" means to "meet the needs of the present without compromising the ability of future generations to meet their own needs."[7]

The phrase "sustainable development" has caused much debate in the environmental community. Some have argued that growth and sustainability are incompatible; others have pointed out that "development" can mean qualitative change and the redistribution of wealth, instead of absolute growth. The valuable effect of this debate has been to emphasize integrating thought about human organization and the shape of "nature" in planning for the future. Obviously, human practices greatly affect the physical environment. The way we organize our economies, governments, and thought contributes directly to whether, how much, and in what way we alter the earth and its resources. Essentially, social structures function as part of the world "environment," or nature, and cannot be separated from it. Sustainability requires that *society itself*, within and among nations, become a steward of the planet.

Fundamental and sweeping changes in education are necessary to transform society toward sustainability.

For this reason, concerns of justice and equity are intrinsically part of sustainability. An unjust society is not viable, in a profound sense, even if it lives within the planet's means. Conversely, a diminished standard of living due to environmental degradation wears away at collective patience, tolerance, and fairness. Imagining and cultivating a sustainable future is the most fundamental collective project for the well-being of humanity.

Because society is part of nature, and the health of nature depends on the health of society, *all* education which has to do with how humans live—culturally, socially, politically, ecologically—is environmental education. It needs to be recognized and treated as such. A transformation toward a more sustainable society can be accomplished only through fundamental and sweeping changes in the educational experiences offered to young people, from pre-school through professional school. At the same time, young people must continually help their elders to re-envision a just and sustainable future toward which we can all strive.

OPPORTUNITY

This report focuses on strategies for engaging undergraduate students in the United States. Education in America is important to target—not only because of the nation's disproportionate consumption and pollution, but also because of America's role as a

leading example of development to other nations. In 1989, the United States still emitted roughly 15 percent of the world's sulfur dioxide, one-quarter of all nitrogen oxides, and one-quarter of the carbon dioxide, in addition to manufacturing some 30 percent of all chlorofluorocarbons, the compounds which deplete the stratospheric ozone layer.[8] At the same time, through the proliferation of television and U.S. programming, the high-consumption life style of the wealthiest Americans has become the envy and aspiration of much of the world. This life style is an environmentally irresponsible one, both to lead and to imitate; its global achievement, if possible, would eventually precipitate ecological disaster.

The college experience is an important focus because it is a time of personal growth and exploration. It is a period when students, often living away from home for the first time, will develop new knowledge and form fresh habits of thought and action. Quantitatively, studies have shown that students become better citizens during this time. "With a few exceptions...the evidence is abundant and consistent in indicating that changes toward greater altruism, humanitarianism, and sense of civic responsibility and social conscience occur during the college years," report Ernest Pascarella and Patrick Terenzini in *How College Affects Students*, their comprehensive review of research on higher education.[9]

Identifying the causes of and possible remedies for the environmental crisis will require in every sector a skilled army of people whose careers are dedicated to protecting and restoring the environment. Yet it is even more critical for the development of a sustainable future that people whose job titles do not include the word "environmental" come to exercise a strong environmental awareness and competence in their lives and work. Environmental concerns cannot be compartmentalized. The environmental ethic must extend from the contractor who selects building materials, to the executive who chooses whether and what to build, to the legislator who drafts pertinent laws, to the public who elect the legislator.

It is critical that people whose job titles do not include the word "environmental" come to exercise a strong environmental awareness and competence in their work.

Students can be encouraged to increase their environmental involvement in many ways. Faculty can encourage them through classroom teaching. Campuses and communities can serve as living laboratories for an applied understanding of environmental problems and solutions. Involvement in service and activism can be a spark to ignite a lifetime of participatory citizenship.

This report describes current models and suggests strategies to:

1) **Expand college and university environmental education;**
2) **Improve campus environmental practices; and**
3) **Strengthen student environmental activism.**

These three approaches are distinct, employing different methods. However, this report also acknowledges that different campus programs will have effects in other areas; their objectives should not be considered in isolation. For example, student activism in the last 25 years was a powerful force in bringing environmental education to the classroom. Classroom education can better inform campus environmental stewardship, or inspire students to take action in a broader sphere. And stewardship initiatives are important training grounds for future activists. Above all, the three basic approaches are united by sharing a common goal—to help students become better stewards of the earth.

The fundamental importance of this goal drives the need to develop a funding strategy in these areas. The diversity and number of potential tactics and players also call for a well-considered plan, so that resources do not become diluted and thus ineffective. However, an unprecedented opportunity beckons for foundations to collaborate on these strategies.

By 2002, annual federal funding for non-military research and development may be lowered by $11.2 billion, with many cuts concentrated in environmental areas.

CONTEXT

Each strategy described can be applied across a broad range of higher education institutions, but must be adjusted accordingly in different situations. Higher education is divided into public and private institutions, large and small; two-year colleges, four-year colleges, and full universities; liberal arts, research, and vocational schools; minority institutions and mainstream schools; and, finally, secular and religious institutions, to list most major distinctions.

Foundations and other organizations interested in helping college students to become better stewards of the environment would do well to consider first which students and what kinds of institutions to focus on. Strategies and tactics should vary accordingly. A sample consideration is that student activism may need stronger faculty support at community colleges than at four-year institutions because of rapid student turnover. Initiatives in environmental education should take into account that public colleges and universities tend to have more students, and fewer faculty and resources per student, than private institutions. This report focuses on four-year undergraduate programs, but recognizes the importance of technical and community colleges, as well as graduate and professional education.

All types of institutions will be affected, albeit unequally, by national political developments. The 104th Congress has coupled attempts to roll back environmental laws and protections with a drive to cut many higher education programs. Research funds, student financial support programs, and federal agencies related to education have been threatened with substantial reduction or outright elimination.

For example, the American Association for the Advancement of Science projects that by 2002, annual federal funding for non-military research and development will

drop by $11.2 billion (adjusted for inflation), with many cuts concentrated in environmental areas.[10] This equals the sum of voluntary donations to all colleges and universities in 1992-1993, from alumni, foundations, corporations, and other categories combined (see **Appendix A**). At the same time, Congress has targeted the National Endowments for the Arts and for the Humanities for elimination from the federal budget, and is aiming to slash billions of dollars from federal programs to help students afford college.[11] These include the Federal Direct Student Loan Program, direct student-aid programs, and the Corporation for National and Community Service, which helps students pay back their college loans in exchange for service. The trauma of budget cuts will be far-reaching, affecting not only departmental offerings but also the demographic composition and day-to-day life of the student body.

The assault on both environmental protection and on American higher education may bring together student groups to defend their interests. Yet the pressures of the attack will certainly make more difficult the task of directing student and institutional activity toward a vision of sustainability. Federal funding cuts are likely to have a dramatic impact on environmental research programs and faculty, with effects that will trickle down to undergraduate education programs. Students who need to work more hours to pay tuition will be less able to participate in stewardship or activist efforts outside of class. Amid such losses, at least one set of opportunities should be created: budget cuts should spur campus administrations to pursue money-saving conservation measures.

Appendix A draws a statistical sketch of higher education today, covering the incidence of different types of institutions, voluntary giving to higher education, institutional responses to financial pressures, and administrators' views of the financial outlooks on their campuses. This report recognizes the difficult period that may be looming for higher education, and forms its recommendations in this light.

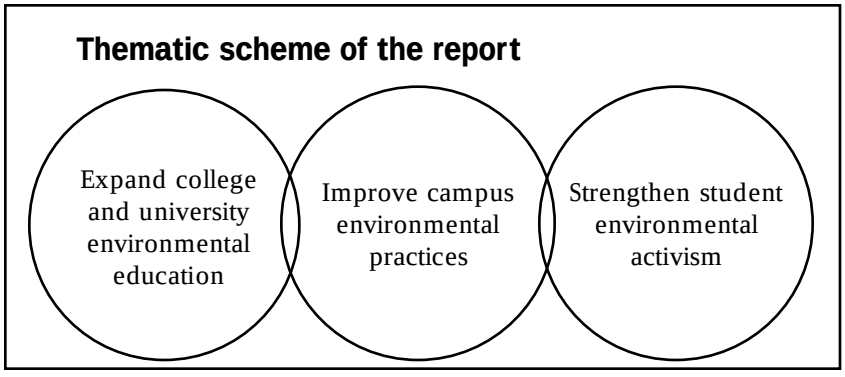


Figure 1. Three paths, one vision: developing students into caring and competent stewards of the earth.

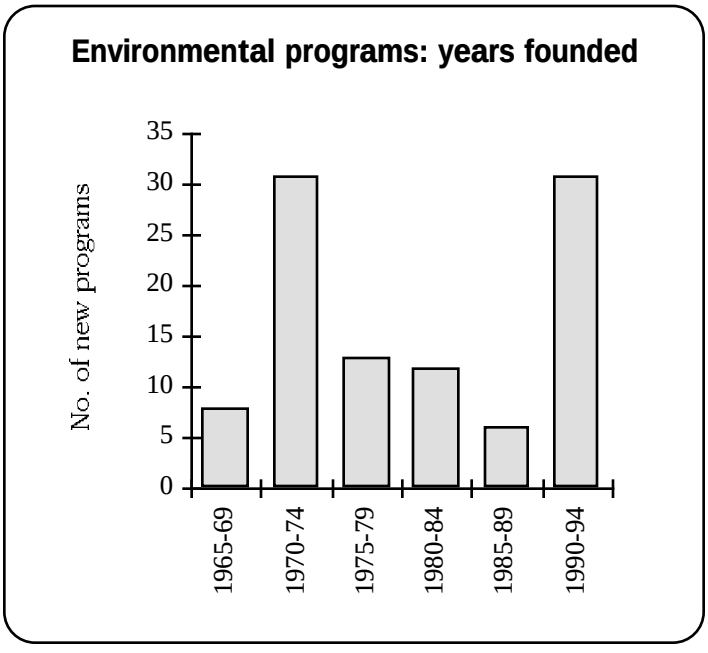


Figure 2. Based on the sample of 101 "environmental studies" and "environmental sciences" programs listed in the second edition of Peterson's *Education for the Earth* (1995). See **Appendix B** for listing. The number of students enrolled during 1993-94 for this sample was 54 percent of the total number ever graduated before that date.

Environment and Education

The 1990's have marked a second awakening for environmental education in institutions of higher learning. The first took place in the early 1970's, when environmental studies and sciences programs were formed in colleges and universities for the first time. The first Earth Day, in 1970, as well as the student activism it reflected and inspired, was a major impetus for this growth. Now, a second burst of academic programs has formed in the wake of Earth Day 1990 (see **Figure 2**).

It is critical that this decade's advances be continued and consolidated. More than in the 1970's, gains should be translated into major and lasting changes in teaching and scholarship across the spectrum of disciplines. Environmental issues cannot remain relegated to special programs with special concerns. The artists, business people, doctors, laborers, policy makers and school teachers of a sustainable society—all citizens, not just the environmental professionals—need to understand environmental concerns.

THE NEED FOR EXPANDING ENVIRONMENTAL EDUCATION

The potential for effecting change through colleges and universities has long been recognized. Writing in 1896, Woodrow Wilson described the effects and spirits of the American college experience:

> *America has never yet had a season of leisured quiet in which students could seek a life apart without sharp rigors of conscience, or college instructors easily forget that they were training citizens as well as drilling pupils... when all is said, it is not learning but the spirit of service that will give a college place in the public annals of the nation. It is indispensable... that the air of service be admitted to all its classrooms. I do not mean the air of party politics, but the air of the world's transactions... the sense of the duty of man toward man... of the significance of truth for guidance as well as for knowledge.*[12]

American higher education can offer meaningful guidance and service to society by building programs to produce competent environmental specialists. A sustainable future will require experts to develop restorative technologies and policies, from photovoltaic cells to a tax incentive structure that promotes a cleaner environment.

Of significantly more importance, higher education can provide *all* graduates with the intellectual tools and practical skills to become caring and competent stewards of the planet—in other words, with "environmental literacy," or "ecological literacy." David Orr, Director of Environmental Studies at Oberlin College and author of *Ecological Literacy*, divides the literacy concept into three basic elements: "the *knowledge* necessary to comprehend inter-relatedness," "an *attitude* of care or stewardship," and "the practical *competence* required to act on the basis of knowledge and feeling."[13] An environmentally literate person recognizes that human actions have complex ecological and normative consequences. He or she has the motivation and education to investigate and pursue courses of action that contribute to a more sustainable future.

These are attributes which the great majority of graduates have lacked until now, and the results have not been neutral. Environmental literacy is not just about developing citizens who will create environmental solutions; it is also about preventing the ignorance and negligence which lead to ecological damage. Too many "well-educated" graduates with important positions in society share these shortfalls. Without any conscious intention of ruining humanity's home, many otherwise admirable people have by their actions unwittingly helped create a legacy of environmental destruction.

Promoting environmental literacy is critically important for the sake of all society. But it is also important simply for higher education. If colleges and universities do not offer a thorough treatment of ecological questions, they will considerably decrease their relevance. Environmental study is an essential component of a liberal or vocational education for the 21st century.

Environmental literacy is not just about developing citizens who will create environmental solutions; it is also about preventing the ignorance and negligence which lead to ecological damage.

Why focus on higher learning

Environmental thinking and values should be vigorously promoted at all levels of education; but there are several reasons why increased efforts should be focused especially at the post-secondary level.

First, colleges and universities are high-leverage areas to target for change. Few other places offer such a concentration of future leaders and professionals. Because institutions of higher learning number much fewer than elementary or secondary schools, they allow greater access to students through a smaller number of venues.

Secondly, environmental education at the post-secondary level does not seem to attract the same outside attention and resources as it does from K to 12. In fact, the

phrase "environmental education" (or "EE") is mainly used to refer to primary and secondary schooling. Organizations with "environmental education" in their name or mission statement rarely dedicate resources to college or university efforts. Establishment of new federal, state and non-profit organizations focusing on secondary school EE has accelerated steadily from decade to decade since 1960.[14] By contrast, most environmental studies and sciences programs for undergraduates were created in two short bursts following Earth Days 1970 and 1990, with a major valley in between. Related organizations have been created primarily since the late 1980's.

Environmental education does not seem to attract the same outside attention and resources at the college level as it does from K to 12.

There are at least twenty K-to-12 EE organizations operating on a national level, as well as 59 state groups, and hundreds of local ones.[15] A recent report commissioned by the Pew Charitable Trusts studied 35 of these organizations, including most of the national groups. Their combined annual budget was found to be almost $31.5 million. Over $13 million comes from federal agencies, and only $2 million comes from foundations. State agencies, program fees, corporate grants, and other sources provide additional revenue.[16]

These totals, though small considering the need for environmental education, dwarf the funds available to organizations concentrating on college, graduate or professional environmental teaching. Only a few such organizations exist, and most are described in these pages (see **pp. 18-22**). The combined annual budget of the groups described in ***The Class of 2000 Report*** is under $3 million.[17]

Most discrepancies between efforts to promote environmental education in K to 12 *versus* corresponsding attempts at colleges and universities probably stem from basic institutional differences. The latter, being so vast and complex, seem more difficult to influence than high schools and elementary schools. University faculty may be more resistant than school teachers to "external" agenda, materials, or training. Furthermore, a higher proportion of college faculty have highly specialized expertise and develop their own courses, instead of relying on standard curricula. Therefore, it can be difficult to produce materials applicable to a wide range of diverse classes.

Despite these difficulties, there are ample avenues for challenging higher education to reconsider its directions. This section describes the history and current dimensions of environmental education on college campuses, and outlines ways foundations and others might affect its future.

BACKGROUND

College students can learn about environmental issues in many ways. This section will discuss environmental studies and sciences programs (grouped by some under the same heading, "environmental studies").[18] It will look at the integration of environmental issues into the mainstream curriculum and examine experiential education opportunities

related to the environment. Each of these areas will be explored through case studies. Descriptions of environmental organizations working for reform in higher education, as well as their funding sources, will follow.

Environmental studies, environmental sciences

Most environmental programs are called "environmental studies" or "environmental sciences." The best estimate available is that 150 colleges and universities offer degrees in environmental studies, and that a greater number have environmental sciences programs. Perhaps a total of 400 studies and sciences programs exist in the nation, scattered among 3700 institutions of higher education.[19]

A brief survey of listings in the second edition (1995) of Peterson's *Education for the Earth: The College Guide for Careers in the Environment* suggests that the two labels differentiate programs in a meaningful way. Most sciences programs offer Bachelor of Sciences (B.S.) degrees, and strongly emphasize the natural sciences, while most studies programs offer Bachelor of Arts (B.A.) degrees. Typically, environmental studies programs still weight natural sciences most, but include more social sciences than environmental sciences programs do. Studies programs sometimes require humanities coursework, as well. Despite these program differences, there is considerable overlap in degree offerings between environmental studies and environmental sciences (see **Table 1**).

An estimated 400 college-level environmental programs currently exist in America.

History and trends of environmental programs

Trends at the institutions researched for this study suggest a widespread movement of environmental programs toward greater focus on the sciences. Both Harvard and Stanford have established science-heavy programs in the last several years, allowing for a moderate number of economics or policy classes. In these cases, very few humanities courses are structured to fulfill degree requirements. For instance, at Berkeley, a 20–year–old program oriented toward the humanities and social sciences (Conservation and Resource Studies) has been absorbed into a science-dominated department (Environmental Science, Policy and Management). On the other hand, at the University of Vermont, the highly interdisciplinary Environmental Studies Program recently avoided a similar absorption after vigorous student and faculty protest.

As the number of environmental programs continues to increase, new environmental studies programs have outnumbered new environmental sciences programs. However, the margin of difference is very small compared to that during the previous major growth period in the early 1970's (see **Figure 3**). If the late 1990's repeat the pattern of the late 1970's, few additional environmental studies programs will be formed, while the creation of sciences programs will continue to accelerate for several years before subsiding as well.

Distribution of degrees in environmental programs

Program	Degree offered		
	B.A.	B.S.	Both
Env. sciences	16%	68%	16%
Env. studies	52%	17%	31%
Total	34%	43%	23%

Table 1. Data were taken from the second edition of Peterson's *Education for the Earth* (1995). Sample size: 48 environmental studies programs, 50 environmental sciences programs.

One possible explanation for the trend toward science is that many individuals find science alone to be a more objective, effective, or uncontroversial basis for solving environmental problems than the study of policy, culture, and values. Non-science faculty who teach environmental subjects commonly agreed with this explanation. Additionally, the trend could be a response to concerns about graduate employability or to feedback from alumni who are environmental professionals and wish they had more science in their backgrounds.

One recent development likely to harm environmental sciences programs more than environmental studies, however, is the dramatic decrease of federal funds for environmental research now threatened. This would hurt graduate programs most of all, but the impact would certainly reach the undergraduate level as well.

Content of environmental studies

The best study available on the content of environmental studies (not sciences) is a recent report from the Environmental Careers Organization. 1,374 alumni from environmental studies programs at 31 colleges and universities were surveyed to assess the mean relative emphasis of programs by discipline. The six most emphasized disciplines were sciences, led by biology. The seven next emphasized were social sciences, led by planning (see **Figure 4**). Public schools highlighted geography more than private schools. Private schools placed greater emphasis on public policy, ethics and philosophy, and political science. B.S. programs focused on chemistry, math and statistics more than B.A. programs. B.A. programs stressed public policy, political science, economics, and law. Emphases did not vary significantly with year of alumni graduation, and biology received the most weight in every category tested.[20]

Some colleges offer major environmental degrees; other universities offer minor degrees, "modified majors," or special certificates in environmental studies. The latter program formats are, for the most part, not captured in Peterson's guide. They typically reflect the philosophy that an undergraduate education must be grounded in a specific discipline, and that students

Years founded: environmental studies *vs.* sciences

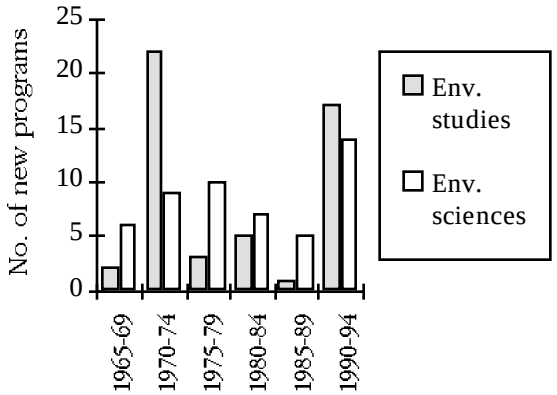


Figure 3. Based on same data as Figure 2.

can supplement this work with interdisciplinary studies. These alternative programs may reach a greater number of students with more diverse interests and career goals than major progams do.

Administrative structure of environmental programs

On one end of the spectrum, some universities have environmental studies or sciences departments with their own tenured faculty, budget, and course listings—just like any other academic department. On the other end are environmental programs with no specified faculty, and possibly no office or secretary either; in the worst cases, the program is simply a menu of courses capped by a senior project.

Most cases seem to fall in between these extremes, and are programs, but not departments. Often at these colleges a small number of course offerings—an introductory class or sequence, or a junior seminar—are created, while students still earn most credits from outside departments. Faculty who teach the environmental courses may be employed through the environmental program or through an outside department; sometimes they hold joint appointments. These distinctions determine how money flows. Whether a faculty member is paid or volunteers to teach environmental studies can greatly affect his or her home department's attitude toward interdisciplinary teaching. In general, the administrative structure of environmental programs is very important in determining their institutional strength and the shape of their offerings. Because institutions of higher education are so diverse, it is virtually impossible to draw a blueprint for the best program structure.

Environmental studies alumni

The Environmental Careers Organization study found that the great majority of students earning degrees in environmental studies intend to become environmental professionals, and that 64 percent actually do so. The most common regret these specialized graduates have regarding their

Disciplinary emphasis of environmental studies

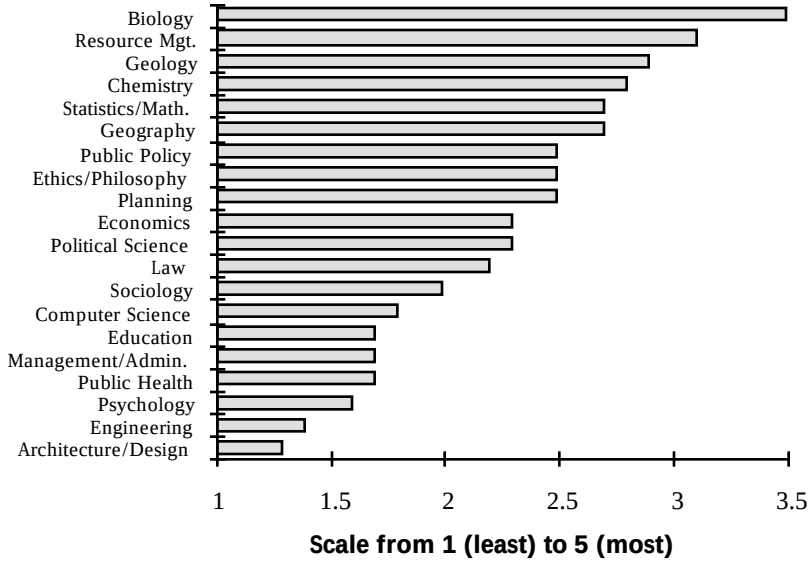


Figure 4. This figure is reproduced from *Environmental Studies: 2000* by Douglas O'Reilly *et al.* (Boston: Environmental Careers Organization, 1995), and is based on averages from the survey responses of 1,374 alumni who attended 31 environmental studies programs.

education is that they did not take more science, laboratory, and field work courses.[21]

Environmental sciences programs require more science courses than most studies programs. Presumably, environmental sciences graduates, carrying a more technical and specialized background, find related employment in environmental fields more readily than environmental studies alumni. No study, however, was located on this subject.

64 percent of students earning degrees in environmental studies become environmental professionals.

Campus case studies

- **Middlebury College**

  Middlebury is a small liberal arts college in Vermont and home of the nation's oldest environmental studies program, started in 1965. Environmental studies is now the school's fastest-growing and fourth largest major, with 60 students from an entire class of 500 awarded degrees in 1995. In 1990, only four students graduated from the then moribund program; it was revitalized by star faculty and growing student interest. The program in environmental studies received its own secretary, office space, and building for the first time in 1995.

  The program requires a broad interdisciplinary base, which includes science, literature, and policy courses, and then offers a range of possible concentrations. Such a choice of concentrations is very common among environmental studies programs, including others described in this research. All faculty are employed through traditional departments, and very few courses are listed as "environmental studies."

  Given the administrative structure, it would be easy to conclude that the Middlebury program provides a "menu major" based on existing courses, with little cohesiveness or impact on the college as a whole. However, Middlebury's small size facilitates interdisciplinary dialogue among faculty who teach courses counting toward the environmental major. The political scientist who currently directs the program, Christopher McGrory Klyza, says he spends more time speaking to biology and English faculty than to those within his own department. He also believes that the sheer number of environmental studies majors now taking certain classes has forced teachers to change course content in order to meet student interests and demands.[22]

- **Stanford University**

  Stanford created its Earth Systems major in 1992, an example of a rigorous environmental sciences program. It is part of Stanford's School of Earth Sciences and had more undergraduates (106) enrolled as majors in spring 1995 than all of the School's departments combined. Earth Systems is not a department, but a program, and has no faculty of its own. It operates on a budget of $250,000 to $300,000 per year, all of which can be considered soft funds. It receives no university general funds.

  An Earth Systems major requires courses in biology, chemistry, geological and environmental sciences, mathematics, statistics, physics, economics, and computer programming. Students can then opt to pursue one of five tracks: Geosphere, Biosphere, Anthrosphere (economics), Land Systems Management, or Environmental Technology. An internship is required. A small handful of courses have been created or modified for the Earth Systems program, but it mainly draws on a menu of already existing classes. The program, on the one hand, seems to have created a popular and worthy option for students; on the other hand, so far it has not challenged many faculty to change what they teach about.[23]

- **University of Colorado at Boulder**

  With some 480 majors enrolled in 1994-95, Environmental Studies at CU-Boulder is the fastest-growing degree program on a campus widely known for its environmental inclinations. Environmental Studies is not a department. One faculty member is the part-time director, and one staff person is the adviser to all majors. Roughly 100 different courses can be used to help fulfill the major, but no courses have been developed specifically for it. The total program budget is $10,000, after personnel. Besides a committee which meets on average one time per term, there is no formal communications mechanism among faculty who teach courses accepted or required for the degree.

  The program in Environmental Studies at Boulder shows what can happen when high student demand meets a low funding level—a common problem at large state schools. (Academic *departments* at state schools are funded in proportion to enrollment, but *programs* are not.) The case also exposes a common syndrome: many environmental programs are pasted together from previously existing and uncoordinated departmental courses and offer few or no integrative classes.[24]

- **University of Vermont**

  The University of Vermont Environmental Program is notable for an administrative structure conducive to interdisciplinary education. Founded in 1972, it now has 300 majors, 200 minors, and the fastest-growing applicant pool in a university with roughly 8,000 undergraduates.

  Because the program is not a department, its core faculty hold primary appointments elsewhere. In the past, the Environmental Program paid a portion of their salaries. It no longer plays this part; but for the first time, the program now has some formalized input in deciding tenure for the faculty who teach for it.

  Core coursework includes several interdisciplinary classes within the program. It otherwise emphasizes the social sciences and humanities, with such classes as environmental ethics, law, economics and policy.

  The UVM Environmental Program has long had the goal to spread environmental scholarship into existing departments. The results have been mixed. When the program was created, first-year students wishing to enroll were required to take one introductory environmental studies course, as well as one environmental course developed in a traditional department. However, very few departments cooperated to develop appropriate courses. The program has also aimed to penetrate various departments by developing its core faculty and by paying non-environmental faculty to develop and teach program courses. Over the years, environmentally oriented courses in psychology, economics, political science and sociology have been created in this way.[25]

Environmental perspectives in multiple disciplines

Students who do not pursue environmental degrees can still be exposed to issues of sustainability in the classroom. They might choose to take a specialized environmental course; or they might happen upon any class into which the teacher has chosen to integrate environmental perspectives.

Role of environmental programs

Environmental programs can bring new perspectives to the education of non-majors in several ways. For instance, non-majors can take courses offered by the environmental

program. Popular and effective lecturers are critical to reaching large numbers of students. At Dartmouth College, for example, almost 25 percent of all undergraduates take one of the introductory environmental studies courses offered each year.[26]

Environmental programs can also catalyze the introduction of environmental teaching and scholarship into departments across the disciplinary spectrum. This can take place formally, as at UVM, or simply through the presence and persuasion of program-associated faculty. Reaching non-environmental majors through non-environmental classes is extremely important. This approach (1) affirms that environmental concerns are not marginal; (2) reaches more students; and (3) does not depend on a small number of faculty.

The catalytic work of environmental studies and sciences programs and their faculty is difficult, however. Most faculty interviewed for this report felt that their programs had had little or no impact on outside faculty. At one school, for example, a biologist in the environmental program has persuaded several economics professors to team-teach special courses with her over the years. The economics department has declined to pay for this work, and the cooperative faculty members have never been tenured.

> The traditional teaching of economics is "as if a biology textbook proposed to study an animal only in terms of its circulatory system, without ever mentioning its digestive tract."

Meaningful and sustained interdisciplinary dialogue is difficult to achieve, even with the help of an environmental program. Nevertheless, it is still possible. Even one committed faculty member can be a leader in the short term. William Cronon, University of Wisconsin–Madison history professor, has, for example, created informal breakfast seminars at two universities where faculty from a wide array of disciplines explore issues together.

Status of selected disciplines

The degree to which environmental perspectives may be integrated into the teaching and scholarship of a given discipline does not lend itself to easy assessment, especially quantification. While some encouraging developments are underway, multiple sources show that the overall situation is dramatically inadequate.

- An informal survey by the Management Institute for Environment and Business in 1993 indicated that roughly 50 of the nation's 700 **business schools** offered—or were developing—environmental management courses at that time.[27] Today, the total is 100.[28]

- **Economics** is probably the discipline most criticized by environmentalists, and the one most resistant to change. Herman Daly, a former World Bank economist and a founder of the International Society for Ecological Economics, writes of the traditional study of economics that "it is exactly as if a biology textbook proposed to study an animal only in terms of its circulatory system, without ever mentioning its digestive tract....What concept in economics ties the economy to its environment?"[29]

- A survey cited by the Consortium of Environmental Education in Medicine found that over the course of four years the average **medical school** gives each student *only six hours* (not credit hours) of instruction in environmental and occupational medicine.[30]

- A critical mass of respected scholars in **history** and **literature** are defining environmental sub-fields of these disciplines. Ultimately, through their scholarship and persuasion, these thinkers may catalyze "mainstream" humanists to explore the complex human attitudes toward nature, and thereby help to develop a much needed new ethical and intellectual framework in the quest toward sustainability.

- Less than 10 percent of **teachers' colleges** require a practicum in environmental education at the elementary and secondary school levels.[31]

- No accredited program in **public affairs and administration** requires environmental management, planning or policy content as part of its curriculum standards.[32]

- The small discipline of **chemical engineering** may be one of the most advanced in terms of integrating environmental perspectives. Although only 32 of 155 departments surveyed in 1992 taught "pollution prevention" principles (mostly through special elective courses), roughly half of the nation's 2000 chemical engineering faculty ordered copies of David Allen's *Pollution Prevention: Homework and Design Problems for Engineering Curricula*, distributed that year through the American Institute of Chemical Engineers. A comprehensive course textbook is now being completed.[33]

- Island Press is publishing a book in 1996 about reshaping the undergraduate curriculum, with chapters specifically directed toward "greening" **anthropology**, **biology**, **economics**, **geography**, **history**, **literature**, **media and journalism**, **philosophy**, **political science**, **and religion** (see **Appendix I** for bibliographic information).

Campus case studies

Integration of environmental perspectives into one discipline across multiple colleges and universities is an important strategy for spreading environmental literacy. Working through multiple disciplines on one campus is another, as is forming a special graduation requirement.

- **Tufts University**

  Tufts University is home to an unusual program, probably the most outstanding example of a campus effort to move environmental issues outside of environmental studies programs and into the general curriculum. Founded by Anthony Cortese in 1990, the **Tufts Environmental Literacy Institute** (TELI) offers one- or two-week training sessions each year to faculty of any discipline on how to integrate environmental perspectives

into their teaching. TELI now attracts faculty from diverse colleges and universities across the country and around the world, with over 40 institutions so far represented.

TELI began, however, with a focus on Tufts itself. Through TELI, environmental perspectives have been added to Tufts courses in American studies, biology, chemistry, child study, diplomacy, drama, economics, engineering (chemical, civil, electrical, and mechanical), English, French, geology, history, international relations, nutrition, political science, psychology, Russian, sociology, and Spanish. TELI began as a program of the Tufts Center for Environmental Management, but has recently moved under the aegis of the Association of University Presidents for a Sustainable Future (see "Organizations for higher environmental education," on p. 19). Tufts University supplies no hard funds to any of these entities.[34]

- **University of Georgia**

The University of Georgia has a program unique to any of the other schools encountered in this study, perhaps to any other major university in the country. *All* 22,000 undergraduates must fulfill an environmental literacy requirement (which was instituted in 1994) in order to graduate. The requirement is to pass one course from a specified list. Courses on the list come from multiple schools and departments; but to get on the list, a course must be approved by a special committee. Most of the courses were newly designed for this purpose. University faculty voted for the literacy requirement after several years of planning and discussion, with the active support of President Charles B. Knapp.[35]

All 22,000 undergraduates at the University of Georgia must fulfill an environmental literacy requirement.

Experiential education: internships and special courses

Internships and special problem-solving courses cannot reach as many students with the messages of environmental education as regular lectures and seminars. However, experiential education opportunities such as these are likely to affect students in a more meaningful way.

Faculty repeatedly name internships as the most powerful way to reach students. As indicated in a recent survey, students and alumni also have strong positive feelings about these experiences. The Environmental Careers Organization has quantitatively shown that prior internships are a key to finding environmental employment after graduation. Internships can range from summer research, to service work, to organizing a campaign to build a bike path on campus. Environmental studies program alumni cite small laboratory courses and hands-on field work as their most valuable experiences as undergraduates.[36]

Some environmental programs offer courses which research solutions for campus and community problems.

Besides offering internships, some environmental programs present unusual courses directed toward research on local environmental problems and solutions. Such courses connect the campus and community to the rest of the planet—the "real world"—from

which students so often consider colleges to be exempt. They also provide a way for students to evaluate their own campus institutions, or understand their communities better.

These courses follow essentially the same model as "service learning," a popular and rapidly growing component of the educational reform movement. Service learning lets students render community service, including environmental service, for credit. It also provides opportunities for structured reflection surrounding the service performed. Campus Compact, founded in 1985 by the presidents of Brown, Georgetown, and Stanford Universities, is a major service learning organization in higher education. The number of college and university members doubled between 1990 and 1994, reaching almost 500. Campus Compact claims that over half a million students volunteered more than 20 million hours of community service at Compact institutions in 1994.[37]

By expanding their focus, classes and programs oriented toward environmental problem-solving can also concentrate on issues reaching beyond the local community. For example, studying the potential environmental impact of economic development in China (a focus of Harvard's environmental program) offers less opportunity for experiential contact with class subject matter than a locally focused course would. However, this global perspective can form the basis of a whole program which combines fields as diverse as economics, Asian studies, and atmospheric science.

Classes at Brown combine study of the urban environment with service toward low-income neighborhoods.

Having a specific problem to tackle—whether it be Chinese development or neighborhood lead poisoning—encourages the effort required to overcome the intellectual and administrative barriers that separate disciplines. It promotes and interdisciplinary teaching and systemic understanding, key elements of environmental literacy. Experiential and problem-based approaches to environmental education have the potential to combine a high level of student engagement with focused interdisciplinary work, academic standards of high quality, and an active approach toward sustainability. Little more could be asked of a program of study.

Campus case studies

- **Brown University**

  At Brown, students in the Environmental Practicum Course have helped a low-income neighborhood by analyzing indoor and outdoor lead contamination levels and energy standards in housing. City and state building authorities appear to have accepted class proposals to raise the energy standards for any new low-income housing to be built in the neighborhood. This should result in long-term lower utility bills for occupants as well as decreased environmental impacts. On a wider scale, Brown's Center for Environmental Studies has taken up the study of the urban environment, often combined with community service, as a major focus.[38]

- **University of Virginia**

  Led by the School of Architecture, a faculty and student group at the University of Virginia has developed a series of interdisciplinary courses and fellowships which tackle the health and protection of a nearby river watershed. The series combines the perspectives of architecture, landscape architecture, commerce, ecology, engineering, history, hydrology, law, medicine, planning, and other disciplines.[39]

- **University of Wisconsin–Madison**

  The Institute for Environmental Studies at the University of Wisconsin–Madison has developed a library of dozens of student research papers on campus environmental concerns which document everything from underground storage tanks to food use to air quality. Many of these papers were generated by the Campus Ecology Research Program, a division of the campus physical plant that connects students and faculty to facilities staff who have questions. One study on transportation demand management led to the adoption of an emergency-ride-home program and a flexible parking-permit system to reduce campus traffic; the student who conducted the research has now been hired full-time.[40]

Organizations for higher environmental education

Several professional associations and non-profit organizations work to integrate environmental topics into undergraduate and professional school study. Those identified in the course of this study are described below; most were formed within the last five years.

A) Non-profits integrating environmental issues across multiple disciplines

- **Association of University Presidents for a Sustainable Future-Secretariat (UPSF)**

  The UPSF, formerly called the Secretariat of University Presidents for a Sustainable Future, is the member organization of signatories to the *1990 Talloires Declaration* (see **Appendix E**). As of February 1995, presidents, chancellors, and rectors from 203 universities in 42 countries had signed the declaration, giving their endorsement to the principle that colleges and universities should work for a more sustainable world. 41 of the signatory institutions are in the United States.

  UPSF programs include the Tufts Environmental Literacy Institute, the Institutional Ecology program, and the Global Partners program. Institutional Ecology promotes campus environmental stewardship by offering traveling seminars. The Global Partners program seeks to develop issue-specific partnerships (for example, concerning the connections between global warming and human health) among signatory institutions. The UPSF is currently situated at the Tufts Center for Environmental Management, but is a financially independent organization operating on an annual budget of $225,000, mostly from foundation grants.[41]

  UPSF: Member group for signatories of the *Talloires Declaration*.

- **Center for Respect of Life and the Environment (CRLE)**

  Founded in 1986, CRLE is a division of the Humane Society of America, focusing most of its efforts toward environmental reform of higher education, especially theological education. CRLE's broader work includes organizing interdisciplinary conferences and

arranging for staff to speak and consult at campuses across the country. Under a project called Theological Education to Meet the Environmental Challenge, CRLE works to promote change by collecting syllabi and other relevant materials and holding intra-disciplinary conferences. Recently, CRLE (funded by the Pew Charitable Trusts' Global Stewardship Initiative) has undertaken to "green" theological education on a campus-by-campus basis with a small group of "Lead Institutions."

CRLE has the equivalent of five full-time staff, and operates on a budget of roughly $350,000 per year. Approximately 60 percent comes from the Humane Society; 30 percent from foundation grants and gifts; and 10 percent from sales and subscriptions to CRLE's journal, *Earth Ethics*.[42]

- **National Pollution Prevention Center (NPPC)**

The NPPC was established in 1991 at the University of Michigan with a grant from the EPA. Its primary activity is developing and selling compendia of introductory information, bibliographies, syllabi, case studies, and other materials on pollution prevention. As of March 1995, pollution prevention abstracts for chemical engineering had been distributed: 200 for accounting, 200 for business law, and 50 each for environmental studies, industrial ecology, industrial engineering, and operations research. A total of 600 individuals and institutions had been reached. NPPC also publishes a national directory of pollution prevention programs in higher education, places several interns each year, holds conferences, and conducts research on pollution prevention education.[43]

- **Pollution Prevention, Education and Research Center (PPERC)**

Many smaller-scale pollution prevention centers than the NPPC exist across the country. One of note is the Pollution Prevention, Education and Research Center at UCLA. Like NPPC, PPERC has developed modules to help faculty integrate pollution-prevention concepts into their teaching. For instance, PPERC published David Allen's book of modules in chemical engineering. The manual's rapid success, reaching over 1000 faculty, reflected the high demand for environmental course materials and the power of professional associations and their membership lists as distribution vehicles.[44]

- **Second Nature**

Led by Anthony Cortese, the founder of the Tufts Environmental Literacy Institute, Second Nature was incorporated in May 1993. Second Nature seeks to spread the TELI model throughout the nation and beyond. It is engaged in a multi-year process to develop "Partnership Leaders," who will ultimately run faculty training workshops on their own campuses. In the meantime, Second Nature has held a number of TELI-like workshops on its own around the country. Second Nature is currently working with the HBCU/MI Environmental Technology and Waste Management Consortium (seventeen colleges and universities); the Brazilian Consortium for Environmental Education and Research (four universities); and the Montana Consortium (three tribal colleges, one four-year college), with plans for expansion.

Second Nature's other major projects are the Consortium for Environmental Education in Medicine (a sister organization; see p. 21) and an Environmental Reference Center, to be made available on the World Wide Web. The ERC will include bibliographies and sample course syllabi for teaching about the environment in the context of diverse academic disciplines. Over 170 syllabi have already been collected.

Second Nature has ten full-time staff members and an annual budget of approximately $800,000, most of which comes from foundation grants.[45]

B) Professional associations integrating environmental issues into specific disciplines

- **American Society for Environmental History (ASEH)**

Established in 1977, ASEH now has roughly 1000 members. History faculty probably make up the majority, although other disciplines are represented; many members are graduate students. ASEH holds a biennial conference and publishes a quarterly journal, *Environmental History* (formerly *Environmental History Review*), with 950 subscribers. Every few years, an issue is devoted to undergraduate course syllabi, with the aim of facilitating the teaching of environmental perspectives in college history. ASEH is run by volunteers on an annual budget of roughly $50,000 from membership fees.[46]

- **Association for the Study of Literature and the Environment (ASLE)**

ASLE was formed in 1993 and already has 600 members, split evenly between faculty and graduate students. Its first national conference was held in June 1995. The Association produces two newsletters each year and a membership directory. It also administers an e-mail discussion list. One member has developed a diverse archive of 50 syllabi for classes in environmental literature and writing. The collection is a product of very modest outreach efforts. The archivist receives about six requests for syllabi per semester. ASLE is run by volunteers and operates on an annual budget of several thousand dollars, collected through membership fees.[47]

- **International Society for Ecological Economics (ISEE)**

Of the associations listed here, ISEE is the most actively engaged in promoting curricular reform. It has published a textbook, developed a model curriculum, and plans to offer training and consulting services, including establishing a collection of ecological economics syllabi; it hopes to do more, once a distribution mechanism is in place. The society formally incorporated in 1989 and now has about 1,400 paying members. Roughly half live in the United States, and many are faculty or research staff in economics, biological sciences, or policy.

ISEE holds biennial international meetings, issues the monthly *Journal of Ecological Economics*, and publishes scholarly materials through a special arrangement with Island Press. Three paid staff run the society's journal, publications and general affairs on an annual budget of $200,000 from foundation grants, membership fees and subscriptions.[48]

C) Non-profit organizations integrating environmental issues into professional schools

- **Consortium for Environmental Education in Medicine (CEEM)**

CEEM was launched in May 1994 by a partnership joining Second Nature, the Massachusetts Medical Society, and Physicians for Social Responsibility. The Consortium includes faculty from five Massachusetts and Rhode Island medical schools. Responding to a survey showing that the average medical student receives only six total hours (not credit hours) of training in occupational and environmental medicine, the Consortium plans to implement faculty development, curriculum dissemination, and student outreach programs on a growing number of campuses.[49]

> The average medical student receives only six hours of training in environmental and occupational medicine.

- **Management Institute for Environment and Business (MEB)**

MEB is a non-profit organization working to advance environmental education in business schools. It concentrates its efforts on a core group of 25 schools, at which it has identified faculty champions and won the dean's commitment to the agenda. MEB now sells seven

400-page teaching modules with syllabi, lecture outlines, and reading materials. It generates multiple environmental "cases" (which faculty can assign as homework), an extensive case bibliography, and other educational resources.

MEB was founded in 1990. Early in its development, the institute offered only curricula. Later, it developed partnerships based on dean-level commitments with five top business schools. Four have opened centers for environmental management and research; three have appointed advisory councils on the environment.

Subsequent to these activities, MEB mailed a report to all 700 business schools in the United States. 150 replied that they were interested in similar services. MEB chose 25 schools to become the Business, Environment, Leadership and Learning group.

Over the course of its four years, MEB grew from a two-person, $30,000 operation to an organization with eleven staff members and an annual budget just under $1 million. With support from multiple foundations and corporations, an EPA contract, and materials sales, it easily has the most diversified funding base of any of the other organizations reviewed here. Foundation funding makes up approximately 35 percent of its annual budget.[50]

D) Non-profit organizations creating environmental internship opportunities for credit

- **Public Interest Research Groups (PIRG's)**

More thorough discussion of the PIRG's will be reserved for the section of this report focusing on activism. However, the PIRG's also create hundreds of internship opportunities for credit on campuses across the country each year. At the Rutgers campuses, NJPIRG coordinates 40-50 internships per year. Students have received credit for convincing town and university officials to build a bike route between campuses; for participating in river clean-ups and community water education; and for a range of other activities. Like other campus PIRG's, the Rutgers PIRG activities are supported through student fees.[51]

Financial support for higher environmental education

Support for both college and university environmental programs, as well as environmental non-profits focusing on higher education, comes from several sources. Foundations cannot easily influence or interact with most university funding sources (such as tuition, state funds, or investments). However, alumni can be potential allies for change. Attracting alumni interest and funding should be an intrinsic goal of any grant made directly to a campus-specific program (including programs for "greening" campus practices or helping student environmental groups). For example, as a condition of giving, a foundation might challenge alumni to match its grant, or stipulate that a portion of its grant be set aside to inform alumni about the supported project. Campus programs and non-profit organizations alike can receive funding from the federal government, foundations and corporations.

Foundation support

Most foundations interested in environmental projects fund issue-driven organizations actively working for solutions today. In contrast, educational efforts—with their long-term view—have received fewer resources. When grants *are* made to educational projects, professional and graduate schools seem to be favored more than undergraduate schools and colleges,

probably because the career paths of advanced students (and therefore the application of their expertise) are clearer. Similarly, when undergraduate education is supported, foundations seem to focus on subjects (such as environmental sciences, engineering, or business) which develop concrete skills and have the most obvious bearing on sustainability.

The Keck Foundation, for instance, has made major grants for building and renovating environmental sciences facilities at Dartmouth and CU-Boulder, respectively. The V. Kann Rasmussen Foundation has given $2 million to the Harvard Program on the Environment, which emphasizes sciences. The largest and longest program of giving identified in this research came from the Hewlett Foundation, which funded nine environmental programs at major universities (mainly on the graduate level) to train future environmental policy leaders. The program was terminated in 1992 after ten years because Hewlett's board could not see any obvious payoff; it was difficult to track the impact of the grants on students.[52]

A survey of grants made this decade to non-profit organizations outside of academia—but designed to promote environmental education within it—revealed an emphasis on integrating environmental perspectives into business and economics. Some grants were made for general integration support; others for studies of environmental studies; and a small number for architecture and medical school reform.

> Foundations have paid less attention to long-term sustainability and education than to pressing current issues.

Federal government support

Through the Environmental Protection Agency, the federal government once provided over $3 million in annual support to the Tufts Center for Environmental Management (CEM), mainly for pollution prevention research, and now supports George Washington University's Green University Program, a reform effort for curriculum and institutional practices. EPA recently withdrew its funding for CEM earlier than planned and with short warning. Tufts University never funded the Center, which is now in imminent danger of dissolution. At the same time, Tufts collected $980,000 for "Internal Cost Recovery" in fiscal year 1994 alone, out of grants to CEM. This rate of collection was pre-negotiated with EPA, but the entire incident shows the importance of confirming an educational institution's commitment to continue a new program before funding its creation. Colleges and universities can profit from new programs, even if these programs collapse as soon as soft funding is stopped. (It is also true that the programs at Tufts have been beneficial, regardless of their future fate.)[53]

EPA has also funded programs with wider scope, including the Management Institute for Environment and Business (for research), the National Pollution Prevention Center for Higher Education, and other academic initiatives in pollution prevention.[54]

Through the Department of Energy and via a grant to Second Nature from the National Fish and Wildlife Foundation, the government is supporting the Historically Black Colleges and Universities/Minority Institutions Environmental Technology Consortium. The primary goal of the DOE grant, which totaled $25 million for five years, was to develop and diversify the nation's workforce for Superfund clean-ups and other environmental restoration projects through: pre-college programs; technical training in colleges and graduate schools; research support; and support for environmental literacy development. The grant has come to the end of its term, and future support is uncertain, given the austerity of current federal budget cut-backs.[55]

STRATEGIC CONSIDERATIONS

Any strategy for promoting post-secondary environmental education should ultimately be guided by conscious judgments about which students are most important to reach, and with what educational content.

An important pragmatic concern for philanthropies is that direct financial support of individual campus programs could quickly swallow great amounts of money. Foundations with limited available resources may prefer to focus on encouraging key individuals, networks, resources, and initiatives which leverage the substantial funds already available in academia.

Objectives in expanding environmental education

A principal choice of objective is whether to concentrate on developing environmental literacy or professional expertise. *Environmental literacy*, as previously defined, is (1) the knowledge to comprehend ecological inter-relatedness; (2) an attitude of stewardship; and (3) practical competence to act on this knowledge and caring. *Environmental expertise* implies all of these things as well, but especially knowledge and competence to a degree that stems from a major educational *focus* on environmental concerns (as in, for example, an environmental program for a small population). Cultivating environmental literacy in a wide audience suggests adjusting the content of courses taught in a wide spectrum of disciplines outside such programs, including courses not called "environmental."

Reformers must choose whether to concentrate on developing environmental literacy or professional expertise.

Questions addressing this choice and related issues are explored below:

- **Which are the most important students to address?** One way to arrive at a conclusion is on the basis of expected careers. Perhaps students with environmental protection itself as a career goal will make the most difference in the drive toward a sustainable future. However, for people who are not inclined toward environmental careers, environmental education can be *even more* beneficial—

namely, by transforming future behavior from potentially destructive to constructive patterns.

Should reformers focus on providing basic awareness to students ignorant of environmental concerns, or on strengthening the knowledge of the committed? A related consideration is whether to concentrate on reaching a large number of students or on reaching a smaller number with a higher quality, more in-depth presentation.

- **Which are the most important disciplines and fields to develop?** The first criterion to consider is content. Which disciplines cause the most environmental damage by the principles they teach or fail to teach? Which fields have the potential to produce the most important skills and insights in leading to a sustainable future?

  The second criterion is ripeness. Some fields may be more ready to incorporate environmental perspectives than others. The final criterion is popularity. Students pursue some subjects more than others. Integrating environmental perspectives into the teaching and scholarship of popular degree fields will simply reach more students than changes made elsewhere.

- **Which are the most important colleges and universities on which to focus?** Any university singled out for reform assistance should be one that others are likely to imitate. This does not necessarily mean "elite" schools; Harvard and Stanford were late followers, for instance, in establishing environmental programs. Diversity of institutions, in both their gross structures and their locations, should be a consideration in selecting potential models.

  Institutional receptivity to reform is another significant consideration. The size, administrative structure, and institutional self-image affect an organization's flexibility and attitude toward change. Willingness to commit resources to environmental education is a good indicator of enthusiasm.

Means for and obstacles to expanding environmental education

Faculty are the ultimate *targets* for efforts to change teaching. What, then, are the best means to reach them? Foundations should consider supporting non-profit organizations and campus programs that provide faculty with resource materials, facilitate peer engagement, or promote intercollegiate outreach. Students, administrators, and university policies also affect faculty choices. Programs designed to influence any of the former may also therefore reach the latter.

Below are two short lists (drawn in part from two useful reports) of obstacles to environmental reform that must be faced. Some of these obstacles can and should be removed; others—fortunately a minority, like "broadness of goal"—are intrinsic, or appropriate, difficulties.[56]

A) Obstacles to integrating environmental issues into courses and disciplines

- Broadness of goal
- Lack of uniform curricula
- No clear campus person or organization to promote integration
- Unfriendly departments
- Lack of respect for interdisciplinary studies/the disciplinary mindframe
- Tenuring practices
- Unwilling faculty
- High teaching loads; faculty complaints that courses have no room for additions
- Backlash against "political correctness"
- Lack of environmental literacy among faculty
- Genuine difficulty of interdisciplinary scholarship and teaching

B) Obstacles to environmental studies and sciences programs

- Lack of benefits associated with departments (proportionate budget, including budget for hiring faculty or their time; overhead percentage from faculty who have earned grants; tenuring power; rights to sit on university committees)
- Varied and complex administrative structures
- High historic variance in student demand; perception that environmental programs are a fad
- Measurements of success incongruent with usual university standards
- Reliance on goodwill and volunteerism from other departments
- Opposition from traditional disciplines because of fear of competition for students and scarce resources
- Lack of respect from other faculty
- Weak communications within and among programs
- Fragmentation of environmental programs on one campus
- Genuine difficulty of interdisciplinary scholarship and teaching

RECOMMENDATIONS

Environmental literacy should be funders' and reformers' top educational priority. Relatively good progress has already been made in forming environmental programs. Now, as the route to more widespread teaching and learning about the environment, it is more important that strategic disciplines be opened to an ecological perspective.

In addition to the acute need for graduating more environmentally literate citizens, there are at least two tactical reasons for funders to focus on literacy. One, university dollars almost never do. Although environmental studies programs rarely receive adequate funds, they are nevertheless the destinations of choice for in-house and alumni money to support environmental education. Two, while environmental studies are extremely popular with students right now, such programs have over the years undergone a high variance in enrollment. Courses in special programs or with "environment" in the title cannot be left as the only havens of environmental teaching on campus.

Foundations that choose to provide direct grants to environmental programs—a critical and valuable function—should make sure the programs work closely with multiple departments. Rare and truly exceptional programs at strategic schools might be supported to develop initiatives which at the outset would otherwise be impractical, but which in the long run could ultimately win sustained institutional support. Demonstrated financial commitment to environmental education by a college or university should be a stiff prerequisite for the awarding of a grant. Foundations with limited resources for this area should focus on covering program expenses—not salaries, facilities, or especially overhead—all of which can be high.

THE FOLLOWING ARE THE KEY RECOMMENDATIONS FOR THIS SECTION:

I. Incorporate environmental perspectives into traditional disciplines.

Promoting environmental literacy is the most important educational reform strategy, and incorporating fresh perspectives into the teaching and scholarship of key disciplines is the most direct way to accomplish this goal. Nevertheless, this approach has received little support from funders. One reason may be that few organizations exist which focus on transforming academic fields to embrace environmental concerns. (Foundations should consider helping to create such groups as needed.) Additionally, moving the center of discourse in a major discipline is very hard work.

For these reasons, grantmakers and grantees should concentrate efforts on one or a small number of disciplines. They should choose fields which seem relatively receptive to change, and which can draw upon a critical mass of highly respected scholars who are interested in environmental issues. These fields include architecture, business, engineering, history and literature.

Another factor in the choice of a given discipline for environmental funding should be its popularity with students. **Figure 5** shows the ten most common subject areas for undergraduate degrees earned by the nation's graduating class of 1992. Based on these findings, business and related degrees should be emphasized when considering a viable academic field for "greening."

The third—and probably most significant—consideration in choosing a discipline to prioritize is its importance for promoting a more sustainable future. This judgment, however, is also the most subjective factor. Decidedly practical disciplines such as business are clearly critical, but so are fields like the arts and humanities, which can deepen our capacity to frame the relationship between humanity and the rest of nature. Agriculture and natural resource programs produce managers of wide tracts of land. Physicians have the potential to become society's eyes and ears for the adverse impacts of pollution on human health. Lawyers frame the nation's laws, and economists lay the theoretical underpinnings for policy decisions on all levels.

For sustainability to become a real possibility, truly each of these areas must be taken up in turn. Whichever focus is chosen by a particular grantmaker, organization or individual, many different tactics for reform can be applied.

A. Stimulate various tactics of reform and facilitate the work of interested faculty. Many professors are interested in environmental issues, yet do not incorporate them significantly, or at all, in their teaching. These are the first people who should be targeted for assistance.

The argument to teach more environmental issues may strike some faculty as ideological advocacy that does not belong in academia, or just another of many special-interest demands on their scarce class time. One approach to counteract such skepticism could be be to emphasize how the interdisciplinary aspects of environmental perspectives can enrich students' perceptions of the relevance of the traditional disciplines in today's world.

1. Provide helpful resources. These include collections of sample syllabi, model curricula developed by experts, annotated bibliographies, case studies, problem sets, and modules designed

---

Ten most common Bachelors degrees earned in 1992

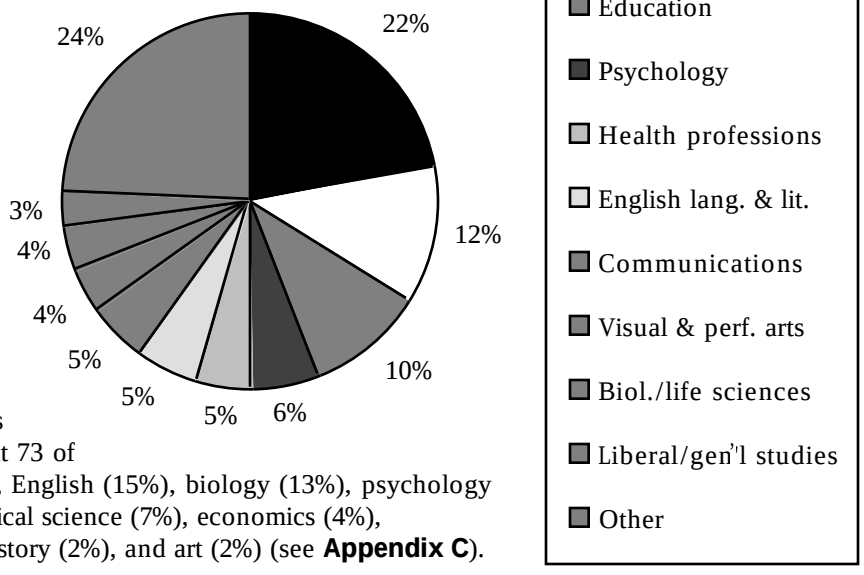


Figure 5. Based on data from the U.S. Department of Education, printed in *The Almanac of Higher Education* (Chicago: University of Chicago Press, 1995). The Yale Daily News *Insider's Guide to the Colleges* (New York: St. Martin's Press, 1995) gives related information: the most popular major at each of the 300 schools it reviews. For the class of 1994, the top degrees were: business (the favorite at 73 of the schools covered, or 22%), English (15%), biology (13%), psychology (11%), engineering (9%), political science (7%), economics (4%), elementary education (3%), history (2%), and art (2%) (see **Appendix C**).

to fit into existing courses. Curricular reformers widely report that faculty appreciate such materials when they are *easy-to-use*, or save work, but do not often use resources that require substantial effort on the professor's part.

2. **Conduct vigorous outreach.** Environmental education in secondary schools is characterized by a vast abundance of curricula, but lack of coordination and outreach, according to a recent report prepared for the Pew Charitable Trusts.[57] Higher education could end up in the same place. Collecting and preparing materials will always be easier than disseminating them, but dissemination should be the more emphasized step. This goal requires organizations with long-term commitments and staff, not just faculty consultants.

> Many professors are interested in environmental issues, yet do not incorporate them into their teaching.

Existing non-environmental academic associations are important channels for distributing information. The wide circulation of *Pollution Prevention: Homework and Design Problems for Engineering Curricula*, for example, was achieved through the American Institute of Chemical Engineers.

3. **Utilize the Internet.** Colleges and universities are well connected to the Internet, which is an inexpensive and logical tool for publishing and disseminating educational resources, such as course syllabi. The Internet can also be used as an outreach mechanism. In a survey conducted by Second Nature, faculty from the Historically Black Colleges and Universities/Minority Institutions Consortium reported that the Internet would be their preferred means of sharing and receiving curricular information. The Internet is also a way for faculty to network. The American Society for Environmental History and the Association for the Study of Literature and the Environment already have active on-line discussion groups.

4. **Provide training.** Not only may faculty development be the most resource-intensive approach to curricular change, but it is also likely to have the greatest impact per professor involved. The Tufts Environmental Literacy Institute and Second Nature are organized around this principle. Longer, discipline-specific programs modeled after the National Endowment for the Humanities summer institutes, led by respected scholars in their fields, would be extremely valuable.

5. **Promote interdisciplinary faculty dialogue.** This may be the most important recommendation for stimulating the work of

interested faculty, on the level of the individual campus. William Cronon's breakfast seminars are a good example of this practice.

6. **Create incentives.** National awards for interdisciplinary environmental teaching and scholarship could be developed, but ultimately the goal would be to create incentives on the campus level. One innovative example is the internal sabbatical program of the Institute for Environmental Studies (IES) at the University of Washington, through which UW faculty in diverse departments compete to spend sabbaticals teaching and doing research at the IES.[58] Of course, the ultimate incentive is tenure.

7. **Remove obstacles.** Deep obstacles to interdisciplinary scholarship pervade academia. Many may be lifted only through long-term intellectual changes. For instance, most tenuring committees favor publishing in respected disciplinary journals which, more often than not, show no interest in interdisciplinary work. Changing these conditions involves changing the world views of many people. Obstacles to interdisciplinary scholarship, however, are not necessarily obstacles to modest incorporation of environmental issues into teaching. Another sign of hope is that the number of graduate students now interested in environmental topics far exceeds the availability of faculty with expertise to advise them. Many of these environmentally aware graduate students may soon accept faculty appointments themselves.

B. Develop mainstream textbooks with significant environmental content. Many college courses do not use textbooks, but introductory courses often do. Popular classes, such as introductory economics and American history, are good targets. Although textbooks rarely achieve best-seller status, some actually do become widely used, with hundreds of thousands of copies sold. An economics professor at Harvard has recently received an advance of over $1 million to write the next great economics textbook.[59] An abundance of environmental texts exist in various disciplines, but concerned faculty agree that there are few mainstream textbooks that seriously integrate environmental perspectives.

II. Strengthen environmental studies.

Environmental programs are the institutional shelter and organizing base of faculty with environmental interests. Although directed toward students already interested in environmental issues and careers, these programs can also be forces for reshaping traditional disciplines, campus by campus.

Foundations should support the development of environmental studies programs—as opposed to environmental sciences—because the former have greater potential to influence a broader spectrum of fields. Additionally, environmental sciences are more likely to receive research grants and other funding (judging from the grants to environmental programs identified in this research) and thus are less in need of additional support. Without a doubt, environmental sciences are very important, and rigorous science is a critical component of any environmental studies program; but a less stringent approach with a wider appeal may ultimately cause the greater impact.

Environmental programs are usually young, lack the institutional strength of traditional departments, and may now be threatened by repercussions from looming federal budget cuts to environmental research. Yet far too few campuses possess any programs at all in this field.

Environmental programs can help reshape traditional disciplines, campus by campus.

A. Stimulate networking among environmental programs. There are 400 environmental studies and sciences programs across the country; yet there is no formal environmental studies network. At least 31 percent of all programs have been created in the 1990's (based on the total sample of 101 from Peterson's *Education for the Earth*), and they surely have much to learn from each other as well as from older programs. As interdisciplinary bodies in discipline-oriented settings, environmental programs are diverse, complex, and fragile.

One informal network does exist: the New England Environmental Studies group. Program directors meet once a year at a rotating host school, but lack a coordinator, office, budget, or concerted outreach effort. A formal network with these assets could facilitate communication, advocate for the creation of new programs, and attempt to improve older ones.

B. Reach out to a more diverse audience. Traditionally environmental studies and sciences have attracted relatively homogenous groups of students and faculty, *i.e.*, middle class, educated, upwardly mobile. More emphasis on how ethnic minorities and people of low income bear the brunt of some forms of environmental degradation should help to change this trend. These issues are also a vehicle through which environmental scholarship and teaching may reach political science, sociology, and ethnic studies departments. Because of the low levels of diversity in student populations at most institutions of higher education, a particularly effective strategy is to focus on building strong environmental studies programs on campuses with large minority populations.

C. Enhance model environmental studies programs. Environmental studies programs everywhere lack adequate funds. Enhancing the success and profile of the best ones—or preserving them, if endangered—can play an important national role in strengthening environmental studies. There may be a particular need for development of models outside the more selective colleges and universities, schools which probably offer environmental studies in greater proportion than other groups.

Potential grantmakers should use funds to leverage funds, exercising caution and making grants only when the host university also shows real financial commitment. Foundations should also focus on programs which have the greatest potential to impact students outside their major areas of study, especially programs designed to encourage faculty from many departments to develop new courses and communicate with each other.

III. Multiply high-quality opportunities for experiential education.

No lecture course is as likely to deepen a student's commitment and skills as much as a practical, problem-solving learning experience. Foundations should explore ways to leverage funds for internships, and to develop national exposure for the best student research focusing on local environmental solutions. For instance, funders could reward and publicly recognize strong projects and the programs which produce them. Award funds could be earmarked for implementing student recommendations.

Practical learning experiences will deepen a student's commitment and skills more often than lectures.

Funders could also play an extremely valuable role by encouraging the coordination of these efforts with the rapidly expanding Service Learning movement. This could help widen the scope of service learning, and raise the number of students participating in environmental service and research.

IV. Urge top administrators and powerful non-academic institutions to move ecological sustainability higher on the educational agenda.

A. Track and publicize state and federal funding levels for environmental research. Scholarship and teaching usually follow the availability of research funds. The 104th Congress is attempting to slash funds offered by multiple federal agencies for environmental research. Foundations should support efforts to educate the public about this trend and to open a national dialogue about it.

B. Rate colleges and universities on their environmental teaching. The GNP alone is not an appropriate measure of national economic health, nor is the *U.S. News and World Report* college ranking a definitive evaluation of colleges. A more valuable rating would consider whether a college as a whole (not just the environmental program) contributes to sustainability. Which institutions are the ten best? the "dirty dozen"? Such a ranking could pressure college admissions directors and presidents with a new form of accountability. Evaluations would need to be based on simple and understandable criteria, such as faculty time and resources allocated to environmental education. Any ranking would be controversial, and would have to be designed and promoted carefully.

C. Hold a conference on environmental literacy among university presidents, foundation officers, prominent alumni and other stakeholders. Raise the issue and show that strong environmental plans and programs can be valuable for fundraising, as well as for the future of the planet.

D. Challenge accreditation bodies to include requirements for environmental education. This strategy is particularly applicable for professional and vocational schools—from agriculture, to business, to medicine, to natural resource management fields. Such a challenge to the status quo is likely to involve large battles. The Education Committee of the President's Council for Sustainable Development will recommend that professional school accreditation bodies require exposure to environmental issues.[60]

V. Leverage the enormous student demand for environmental education opportunities.

Enrollments in environmental programs are continuing to expand well after Earth Day 1990, often rising faster than enrollments in most or all other majors.

A. Support student advocates for environmental education. From the University of Oregon to Yale University, campus environmental groups advocate for college environmental education. National groups, such as Campus Ecology and Campus Green Vote, have done so as well. Campus organizing activities may not ever reach the passionate heights inspired by identity politics (*e.g.* hunger strikes for ethnic studies), but can potentially utilize a much broader base of interested students. The proliferation of new environmental programs developed shortly after Earth Days 1970 and 1990 suggests that student activism played an important role.

B. Conduct studies which show the demand and need for environmental education in college. For instance, conduct periodic surveys of high school students to find out how important colleges' environmental practices or course offerings are (or would be) in making their choices of where to attend. The results would be one way of illustrating student

demand for environmental education, and might become a tool for advocacy to include environmental information in popular guides to American Colleges and Universities, such as *Fiske's, Barron's,* and the *Yale Daily News*. Currently these guides offer virtually no environmental information, even for schools with the most-touted environmental studies programs. Years ago, the guides did not include descriptions of student body diversity and racial politics; now they do. Environmental concerns should be addressed as well.

To assess the need for environmental education, a special environmental literacy test might be administered to a sample of college juniors and seniors across the country. Controlling for college selectivity, researchers could analyze multiple variables (such as expected major degree or college region) and develop an overall picture of the state of environmental literacy on the undergraduate level in this country today.

Environment and Campus

Learning does not begin and end at the classroom door. Colleges and universities are large institutions with complex power structures and significant ecological, social and economic impacts. They are very much part of the "real world," even though many students deny this in their everyday speech. As such, colleges set examples of institutional behavior and have the potential to show that organizations can make environmental protection a priority in their operations.

More than this, schools can serve as laboratories where students learn to put ideas about sustainability into action. Thanks to the efforts of students, faculty, and administrators, over three-quarters of the nation's colleges now have recycling programs. Many have implemented programs from energy conservation to the purchase of local and organic produce; some have begun to incorporate environmental considerations into institutional operations. The pace of change is increasing. However, few schools seem to have applied environmental concerns to activities with the highest impact levels, such as campus development planning or the construction of new buildings.

THE NEED FOR CAMPUS ENVIRONMENTAL REFORM

The obvious need for improving campus practices is that doing so mitigates their considerable physical impact on the environment. A related value is that progressive colleges and universities can serve as models for other campuses, or for other institutions in society. Most importantly, initiatives that make institutions of higher education into better stewards of the planet can leave an imprint on students, each of whom is a potential future advocate for environmental responsibility.

These different values are complementary to a degree, but may also involve some trading off. The most efficient ways to decrease campus environmental impacts, for example, might often bypass significant student involvement. On the other hand, high-profile, high-involvement programs designed to educate the entire student body may direct energy away from efforts to promote deeper systemic reform.

Mitigating physical impacts

Colleges and universities can have major environmental impacts in their communities. A 1989 audit revealed that, even in a city the size of Los Angeles, UCLA is the third largest consumer of electricity and the eighth largest water user.[61] Yale University purchases

approximately 80 million sheets of white paper per year, or 84 pounds per student (of this, paper with recycled content accounts for 1.8 percent).[62] Campuses with student housing generate an average of 820 pounds of waste per student per year.[63] Clearly, given these rates of consumption, improved practices on campuses can lead to many concrete environmental benefits.

Prophylactic practices can also be financially beneficial in a time of budget pressure. Dartmouth College, Harvard, and Stanford have each saved hundreds of thousands of dollars through programs which encourage recycling, changes in student behavior, and energy conservation. To date, the University of Buffalo and the City University of New York have both reduced their energy bills by over $3.5 million per year through conservation programs.[64] Reductions in pesticides and water use, as well as in hazardous materials generation, have also produced significant savings in campuses across the country.

UCLA is the third largest consumer of electricity in Los Angeles. Yale buys 84 pounds of paper per student per year.

Setting examples for other institutions

In addition to saving resources and money and preventing pollution directly, campuses can serve as models for other institutions. The Brown University recycling program, started by students in 1984, helped guide the design for Rhode Island's mandatory recycling program, the first statewide program in the nation.[65] Colleges and universities can also teach each other. Perhaps one of the most inspirational stories in "campus ecology" has been the development of microscale chemistry to reduce laboratory hazards and waste. Several Bowdoin professors developed techniques in the late 1970's and used them in their classses. In 1985 they started publishing articles about the method and eventually wrote a textbook. As a result, more than 400 colleges and universities have now switched to microscale organic chemistry lab programs.[66]

In the non-academic community, numerous companies, non-profit organizations, and branches of government have taken even more visible steps than campuses toward mitigating their own environmental impact. It would be difficult to argue that academia has been a leader in moving society toward environmental stewardship by example. However, given their intellectual and research resources, colleges and universities do have exceptional opportunities to examine their operations and experiment with alternatives.

Teaching students by example and experience

The third advantage of developing sustainable practices on campus is the hardest to define, but potentially the most valuable. This is the impact on students' education and

their future behavior. In the long run, positively influencing the lifetime behavior of a population of students is obviously more beneficial than saving a small amount of electricity or landfill space today.

Campus environmental reform can provide a passive learning opportunity for *everyone* in the campus community. When students observe changes being made in harmful campus practices, they become more aware of institutional impacts and responsibility. Learning becomes more active when students have to change their own behavior as, for example, when they start to recycle.

But the most active learning surely takes place when students help to engineer change in campus practices, through independent activist efforts or through classwork. Although such learning experiences may tend to be concentrated among students already committed to environmental principles, in fact, they are likely to be valuable in deepening commitment and facilitating the ongoing translation of personal convictions into actions.

Influencing the future behavior of students may be the most valuable result of campus environmental reform.

BACKGROUND

Students, faculty and administrators are at work across the country on a wide range of campus ecology projects. This section will briefly survey the popularity of major types of projects and discuss efforts to institutionalize sustainable practices. It will then describe some successful campus efforts and extramural organizations working for campus environmental reform.

Recycling on campus

Without contest, the most popular area in campus environmental reform is recycling. On any given campus, it tends to be the first thing an environmental group or the administration targets. The University of Colorado at Boulder developed one of the first campus recycling programs, started by students in 1976. However, recycling has really caught on more recently. Jack DeBell, director of the CU-Boulder recycling program since its inception, estimates that in 1980 only fifty campuses practiced recycling, but that now over 2700 do. The biggest jump in recycling seems to have occurred in the two years following Earth Day 1990.[67]

The most popular step.

Most programs were initiated and first run by students. A 1991 survey sponsored by UCLA and Washington State University of 344 campus programs found that roughly half were student-run. At that point, schools had already been institutionalizing these practices, but today students are still in charge of hundreds of programs.[68]

The popularity of recycling among reformers may be attributable to its special nature as an activity with both personal and institutional dimensions. Students who

participate in recycling feel involved in a practice that is morally satisfying, uncontroversial, and concrete. Recycling is a classic entry-level activity for students interested in environmental action. It drives behavior change in a much wider audience. And beginning a program brings the satisfaction of effecting campus-wide reform.

Reforms beyond recycling

Interest in campus practices beyond recycling was sparked by an environmental audit of UCLA, conducted by masters students in 1989. Its results were publicized on the front page of the *Los Angeles Times*.[69] Based on the UCLA model, the environmental audit became the centerpiece of Earth Day 1990, Inc.'s campus campaign, in which students conducted over one hundred audits across the United States and as far away as Japan.[70]

Also in 1989, the National Wildlife Federation founded its Campus Outreach Division (formerly called Cool It! and now Campus Ecology). Campus Ecology's mission is to improve campus environmental practices by assisting students engaged in reform efforts. This year, for the first time Campus Ecology tracked the distribution of the issue packets it offers. The results are displayed in **Figure 6** and are likely to offer a fair reflection of where student interests on campus environmental issues currently stand. Recycling and waste reduction are still the most popular topics, by more than a factor of two.

Since 1990, several books have been published addressing ways to make campuses more sustainable, and offering case studies of improved practices.[71] Reforming campus practices was also one of the major themes of the "Campus Earth Summit," an international conference for students, faculty, and administrators held at Yale in 1994.

Institutionalizing reforms

Institutionalization of sustainable practices tends to have greater and longer-lasting effects than any particular reform taken alone. Institutionalization can take many forms, and certain measures have become increasingly popular in recent years. Colleges and

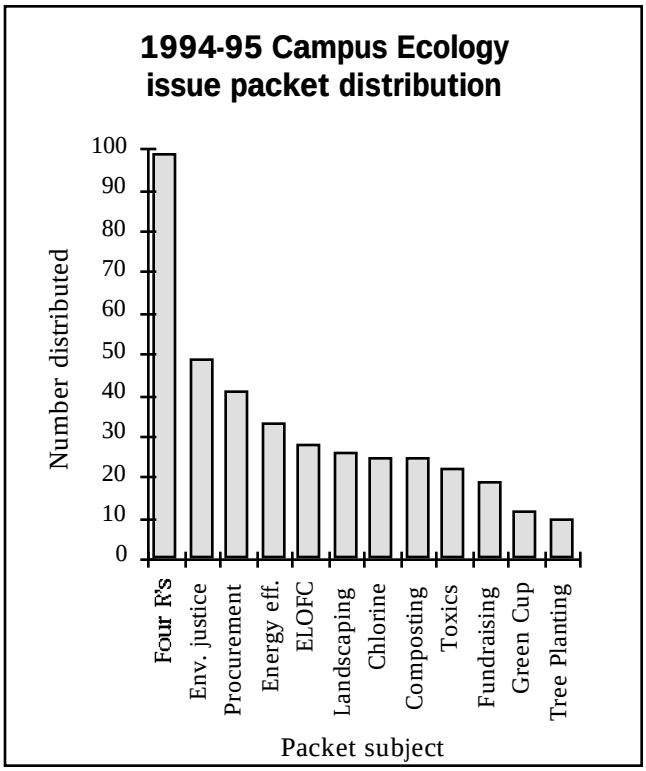


Figure 6. All 1994-95 issue packets are listed. Distribution suggests the interests of students and Campus Ecology staff. ELOFC = Eating lower on the food chain; Four R's = Reducing, reusing, repairing, and recycling. Data from Chris Soto of Campus Ecology.

universities have established environmental committees, hired personnel to coordinate mitigation efforts, and created special programs to promote systemic reform. Often, student groups have advocated for these changes.

The University of Kansas created an office of the Environmental Ombudsman in 1990. So far, it has developed a campus policy on ozone-depleting chemicals, initiated lighting and shower-head retrofits, launched campus recycling programs, and increased procurement of recycled materials.[72] Since 1990, Brown, for instance, has employed an environmental coordinator to oversee the "Brown Is Green" program. The program and its coordinator have intervened in the design of new buildings, supervised major electrical and lighting retrofits, and worked with environmental studies classes to conduct research for further change.[73]

Colleges and universities have established environmental committees, hired coordinators, and created special programs to promote systemic reform.

Dozens—if not hundreds—of schools have hired recycling coordinators over the last ten years. They have narrower responsibilities than environmental officers, but often become involved in many aspects of campus sustainability beyond recycling. Middlebury College hires a recycling coordinator, but it also has an Environmental Council (with student, faculty and staff members) which reports to the college Treasurer on campus environmental practices. Ball State University in Indiana has a university-level "Green Committee," whose research and recommendations have won the endorsement of school trustees and have resulted in improved campus recycling, a tree planting campaign, retrofits to increase energy efficiency, and academic course revisions.[74]

The University of Colorado at Boulder does not have a special committee, but students have recently created an annual review process which seems very promising. Inspired by the 1994 "Campus Earth Summit," Boulder students have created their own annual summit for on-campus participants. Students research campus environmental topics and share their reports with key administrators and staff. These groups then convene for a weekend to discuss the results and options for action. Composting, food service reform, minimization of hazardous waste, energy systems, water conservation, and curricular reform have all been addressed so far.[75]

Campus environmental reform case studies

These case studies are arranged by topic to give a sense of the wide range of campus ecology projects attempted at colleges and universities. Longer listings can be found in April Smith's *Campus Ecology* and SEAC's *Student Environmental Action Guide*. Detailed studies are available in Julian Keniry's *Ecodemia* and *The Campus and Environmental Responsibility*, edited by David Eagan and David Orr.

The topic categories covered here are: student behavior, environmental audits, campus infrastructure, inputs and outputs, environmental justice, and investments.

A) Student behavior

- **"Green Cup" competitions**

In 1990-91, students at Harvard created an "Ecolympics" competition among residential houses to see which could use resources most efficiently. That year, Harvard's residential heating energy consumption dropped by thirteen percent and electricity use decreased by two percent, for a savings of roughly $500,000. Equally impressive, due to creative and aggressive publicity, 98 percent of students polled at the end of the end of spring term knew about the program. Any financial officer would agree that the $5,000 grant made by physical operations administration to the Ecolympics organizers proved to be a good investment.

Since Harvard's program began, largely through the work of the organization Campus Ecology, the prototype has spread to many other campuses. These include George Washington University, Northeastern, Tufts, University of North Carolina-Wilmington, University of Wisconsin-Madison, Western Washington University, and Yale. The name "Ecolympics" turned out to violate a U.S. Olympic Committee trademark, so "Green Cup" has mainly been used.[76]

98 percent of students polled at the end of term knew about the "Ecolympics," or "Green Cup" program.

- **Environmental cooperatives**

Another campus program type is the environmental co-op. In co-op homes, students who are interested in cultivating environmentally responsible life styles gather together. The houses can become practical laboratories in sustainable living practices, and have even been developed through classwork, as at Brown University. The difficulty with co-ops as agents for change is that they tend to attract people who already have strong environmental interests. However, co-ops can empower these individuals by teaching them how to translate their interests into actions.

There are environmental co-ops at many schools, including Brown, Dickinson, Middlebury, Stanford, University of Colorado-Boulder, and the University of Vermont. A possible organizing vehicle to catalyze more environmental co-ops is the National Association of Student Cooperatives.[77]

B) Environmental audits

The first step in optimal mitigation of campus environmental impacts is to identify the most pressing and solvable problems. This can be accomplished by conducting an environmental audit. Hundreds of campus audits, widely ranging in quality and impact, have been conducted since UCLA's groundbreaking example. Many have focused on specific issues, like energy or waste, because of the vastness of a complete assessment. Audits have been conducted independently by student groups, through classwork, or under the supervision of environmental committees.

Recent outstanding examples include "Pathways to a Green Campus," a 1995 report prepared by a committee of students, faculty and administrators at Middlebury College. An audit was also just completed by a student-led coalition of thirty students, faculty and administrators at Princeton. Top-level administrators have embraced the report so far, and voluntarily distributed summaries to the Board of Trustees.[78]

C) Infrastructure

• Building design

Few colleges or universities have incorporated sustainability as a major element in the design of any of their buildings. The main exceptions are small experimental schools such as the World College West in Petaluma, California, which employs passive solar heating, natural lighting, and highly efficient water and electrical fixtures.

The Center for Regenerative Studies at the California State Polytechnic University, Pomona—with housing, classroom, and research facilities for 90 students, faculty, and staff—is now under construction using non-toxic renewable building materials. It will employ passive and active solar energy, as well as natural sewage treatment. Organic wastes will be recycled in fertilizing the Center's intensive aquaculture and agricultural plots.[79]

Some institutions closer to the mainstream have also engaged in worthy projects. At the University of Virginia, a $150,000 gift from the outgoing Class of 1995 will support the development of a Solar Resource Center, including an installation of photovoltaic cells on top of an existing building. The cells will then be used to supply all of the electricity for a proposed new building wing which will employ super-efficient technology and design.[80]

• Transportation

Many campuses are plagued by severe parking problems, and several have taken active steps to alleviate them. After a student-led campaign, students at the University of Colorado at Boulder voted to assess themselves an annual fee so that all students would receive bus passes. A similar initiative passed at the University of Illinois at Urbana-Champaign and, combined with slight modifications in bus routes, led to an increase in daily student rides from 300 to 11,000. At Rutgers, student PIRG members successfully lobbied the university administration and the township in 1994-95 to build a bike route between the two major Rutgers campuses.[81]

Daily bus ridership among students increased from 300 to 11,000 at the University of Illinois.

D) Inputs and outputs

• Purchasing

In 1992-93, U.S. expenditures for higher education topped $186 billion.[82] Colleges and universities can wield their economic power in favor of a healthy environment through their purchasing policies. Rutgers now includes environmental language in all construction, paving and waste disposal contracts, and purchases a range of products with recycled content—from paper to parking lot bumpers. More broadly, *all* vendors with which the central purchasing office corresponds are invited to indicate whether their products or processes are environmentally sound, and how so, with the understanding that this criterion will be a major factor in the purchasing decision.[83]

• Energy and water

Energy conservation programs probably offer higher potential annual dollar savings than any other campus ecology initiatives. The environmental benefits are also not negligible. SUNY Buffalo and the City University of New York system are two of the best examples, each having reduced its annual energy bill by over $3.5 million. At CUNY alone, this amounts to prevention of over 52.1 million pounds of carbon dioxide emissions, not to mention other pollutants, per year.[84]

Other campuses have made strong strides in water conservation. Many have taken such measures as installing low-flow shower heads. A faculty member at Mesa Community College in Arizona has gone so far as to organize a xeriscaping program; students at UNLV are now initiating a similar effort. Xeriscaping is landscaping using native plants adapted to local, desert rainfall levels, instead of lawn grass and other species which require watering.[85]

SUNY-Buffalo and CUNY have each cut more than $3.5 million per year from their energy bills.

- **Food**

Starting in 1986, students at Hendrix College in Arkansas conducted research on the sources of the food they were served in their cafeteria and the availability of local produce, especially organic produce. By 1992, the college purchased 30 percent of its food locally, compared to a 6 percent baseline, resulting in fresher food, reduced environmental impacts, and support of the local economy. The ongoing and challenging work was guided by the Meadowcreek Project, a nearby environmental educational center, and made possible by two foundation grants totaling $214,000.

Other colleges, such as Carleton and St. Olaf's in Minnesota, have replicated the Hendrix program. Although the program's first director left Hendrix several years ago, he reports that he still receives calls for help from faculty and staff across the country who want to try the same thing.[86]

- **Pesticides**

Colleges and universities manage large grounds, and tend to do so intensively. An entire warehouse at Dartmouth College used to be devoted to storage of pesticides, herbicides, and treated seeds. Since the introduction of an integrated pest-management program, the annual purchase of under $400 worth of these materials fits in two cabinets.[87]

Mesa Community College in Arizona has saved water by converting grass lawns to native plants.

- **Recycling and waste**

The popularity of recycling programs and their pioneering role in developing campus environmental sensibilities have already been discussed. Successful recycling programs worth mentioning here are those at CU-Boulder and Dartmouth. The Boulder program is notable for maintaining a high level of student involvement and employment despite long-time institutionalization; for creatively presenting its environmental benefits each year; and for national networking efforts. The Dartmouth program has been very successful financially, requiring no additional staff and saving up to $100,000 a year from reduced dumping fees and sales of recyclable materials.[88]

Many recycling programs also attempt to reduce waste and promote reuse. For instance, several programs have set up exchange sites where campus community members can drop off or pick up anything from furniture to office supplies, for free or for a nominal fee. Many programs try to reduce hazardous waste streams, and compost food and yard wastes.[89]

E) Environmental justice

Environmental justice—particularly the idea of fighting the disproportionate burden of environmental degradation on minorities—is a popular topic among student

environmentalists. Most opportunities to work for it present themselves beyond the campus. When students do get the chance to organize around campus policies related to environmental justice, they have made strong stands. Students have organized to block university incinerator construction in low-income and minority neighborhoods in Chicago (the University of Chicago, 1989) and in St. Louis (Washington University, 1994).

At the University of Arizona, with the help of the Student Environmental Action Coalition (SEAC), students have mounted a successful multi-year campaign to block the construction of a new telescope on Mt. Graham, sacred ground for the San Carlos Apache as well as the habitat of an endangered species of red squirrel. Also catalyzed by SEAC, students at Michigan State University, Ohio State University, the University of Pittsburgh, and the University of Toronto stopped their schools from becoming financial partners in the Mt. Graham project.[90]

The Brown University Environmental Studies Program has incorporated research and service for environmental justice as a major component of its curriculum. Its assistance to nearby low-income neighborhoods has already been outlined in "Environment and Education."

Students have stopped their universities from building incinerators in low-income and minority neighborhoods.

F) Investments

Investment policy is probably one of the most difficult things to change at a university. The amount of money involved and the necessity of interacting with trustees make for a complicated process to encounter and reform. However, students often express interest in stopping their universities from investing in companies that harm the environment. The topic is probably popular because of the success of the student movement for divestment from South Africa in the late 1980's.

The broadness of the criterion that a company do no harm to the environment is prohibitively vague and sweeping. On the other hand, students have succeeded in winning university divestment from specific projects. At Tufts, students convinced the trustees in 1994 to sell $2 million in Hydro-Quebec bonds, a company which planned to flood thousands of square miles in Canada inhabited by Cree Indians, behind new hydro-electric dams.[91]

Organizations for campus environmental reform

Campus Ecology is the nation's principal organization concentrating on students and campus environmental practices. Students for an Energy Efficient Environment (SEEE) focuses on campus energy efficiency. A number of other national student environmental groups work for campus reform, including Campus Green Vote, SEAC, and the PIRG's, but it is a secondary part of their agendas. These groups will be discussed in the section on "Environment and Activism." The Association of University Presidents for a Sustainable Future, described in "Environment and Education," has also recently added campus practices to its agenda, and Second Nature has plans to do so, as well.

Besides Campus Ecology and SEEE, several networks among college and university staff are covered here. Some focus on the environment; for others, it is a marginal issue. A number of national environmental programs are involved with college and university

practices, but do not concentrate on higher education. The most notable one that does focus on campuses is Green Lights of the EPA, which has a special College and University Program.

- **Campus Ecology**

  Campus Ecology is the Campus Outreach Division of the National Wildlife Federation, and was formed in 1989, when it was originally called "Cool It!" Since then, its mission has remained relatively constant: "to establish environmentally sound practices on college campuses by promoting leadership and action within the campus community."[92]

  Through a national office with three staff, and four field staff, Campus Ecology provides workshops, telephone consultation, issue packets, an annual review of case studies, and other materials to campuses which request them. In 1993-94, field staff visited over 140 campuses in more than 35 states, and held over 150 workshops for members of 225 campus environmental groups.

  Overall, Campus Ecology has helped with roughly 1,200 student environmental projects since its inception. It is funded by the National Wildlife Federation.[93]

- **College and University Recycling Council (CURC)**

  An alliance of campus recycling coordinators, CURC became an official technical organization under the National Recycling Coalition (NRC) in September of 1995. The main interests of CURC steering committee members include sharing operational details, developing national standards for campus recycling programs, and coordinating joint purchases to make environmentally sound products more cost-competitive.

  Another interest involves forging links with other collegiate associations which deal with campus management issues, including the Association of Physical Plant Administrators, the National Association of Educational Buyers, and the National Association of College and University Food Services. The recyc-l Internet mailing list (see below) has been an important tool for early communications among CURC members.[94]

- **Green Lights: College and University Program**

  Green Lights is a subdivision of the Environmental Protection Agency. It is a voluntary program through which participants sign non-binding memoranda of understanding; these statements promise they will survey their U.S. facilities and complete all profitable lighting upgrades within five years. In return, EPA provides technical support and opportunities for public recognition.

  Over 200 colleges and universities had agreed to be partners with Green Lights as of June 1995. One partner, the City University of New York, has reduced its energy bill by $3.8 million per year. Columbia University is saving $2.1 million per year, and the University of Cincinnati is saving $943,000. Over 100 million pounds of carbon dioxide emissions are being prevented annually by these three universities alone.[95]

- **Grnsch-l and recyc-l Internet mailing lists**

  Grnsch-l and recyc-l are listserv lists. Anyone with an electronic mail account who is "subscribed" to either list receives all messages sent to the list address, and can post his own messages as well. In this way, an ongoing conference is formed, in which hundreds across the country can participate. Grnsch-l covers general topics of campus sustainability, whereas recyc-l focuses on waste reduction and recycling. Both lists are active during the school year, with typically one to ten messages per day. Grnsch-l has roughly 240 subscribers, and recyc-l has 120.

Communications over these networks have resulted in many concrete benefits, including facilitation of an environmental audit at Colby College; the "Greening of the Maize and Blue" initiative at the University of Michigan; a reused goods exchange center at the University of Wisconsin-Madison; a statewide network of campus recycling officers in Illinois; and technical improvements in recycling programs at campuses across the country.

The lists are run from a Brown University mainframe computer at almost no cost and little maintenance time by the coordinator of "Brown Is Green."[96]

- **Students for an Energy Efficient Environment (SEEE)**

SEEE is a national student-run group with a staff of six and a very specific mission: it helps the EPA to enlist colleges and universities as Green Lights Partners and conserve energy. Each year, SEEE selects student interns across the country to receive training in basic energy efficient technologies and in lighting audits, and then pays them a $1000 stipend to convince their college or university to improve its practices and join Green Lights. For 1995-96, there are 50 interns. SEEE was founded in 1993.[97]

- **Organizations involved with college and university practices but not focusing on higher education**

The Environmental Defense Fund is helping Duke University (along with several prominent companies) to purchase more recycled paper. Green Seal, a non-profit organization in Washington, DC, has produced a *Campus Green Buying Guide*. INFORM, a New York-based non-profit, recently published a study called *Making Less Garbage on Campus: A Hands-On Guide*. Numerous other organizations are likely to participate in campus issues in similar ways—in marginal approaches that may hold potential.[98]

- **College and university associations not focusing on campus environmental issues but with relevance to them**

Several trade associations have the potential to become conduits for widespread campus environmental improvements. Some have environmental committees or have held conferences on environmental concerns. These associations include: the National Association of Educational Buyers, the National Association of College and University Business Officers, the National Association of College and University Food Services, and the National Association of College Stores. All these organizations are listed and described to varying degrees in *Ecodemia*.

Financial support for campus environmental reform

The finances of the few non-governmental national efforts to improve campus ecology are modest and, for the most part, do not include foundation support. Campus student groups involved in improving campus practices are funded from local sources, such as student government, student fees, and fundraising events. Official campus programs have received money from a variety of sources—from their host institution, to foundations, to the EPA.[99] When national student environmental organizations have been involved in campus reform, financial support for such reform has come from the general support of those groups (to be described in "Environment and Activism").

STRATEGIC CONSIDERATIONS

The key consideration in supporting campus environmental reform is how much to target the reduction of environmental impacts *versus* how much to concentrate on the education of students. The two ends are not mutually exclusive—they will often reinforce each other; but each balance of emphasis will suggest a different strategy.

Many campus reforms are cost-saving and, largely because of this, growing in popularity among college and university administrators. A main role of funders interested in this area may therefore be to help spread information and begin change that will sustain itself.

Objectives in campus environmental reform

In addition to the major objectives of reducing environmental impacts and educating students, a third possible goal of campus environmental reform is significant: stimulating student activism. Campus ecology projects tend to be comfortable entry-level environmental activities for a wide range of students, and can also sustain activist involvement because of the projects' relevance and immediacy. In times that call for students to participate in actions beyond campus, a community of committed activists will be ready.

Campus stewardship projects offer potential for reaching out to student groups not traditionally interested in environmental action.

These three possible objectives call forth a series of questions:

- **Which project types are most effective for reducing environmental impacts?** Concentration on impact mitigation suggests a course of action which ultimately emphasizes work with college and university employees and their networks, on projects which may often be invisible to students. However, reformers are free under this objective to target those campus practices which are the most environmentally destructive, and to consolidate these gains in institutional changes—in policy, administrative, and programmatic reform. Student agitation tends to catalyze reform and its institutionalization; however, greater and more lasting gains are likely to be realized through the work of dedicated staff within the university.

- **Which project types are most effective for educational goals?** Students can learn practical environmental values by observing sustainable institutional practices; by attempting to improve personal environmental behavior; or by actively working for campus environmental reform through class research and independent activism.

The opportunity for students to learn by observing institutional practices depends on the visibility of projects chosen, and the quality of educational outreach and publicity. Such outreach is often missing altogether from campus reform programs. Given good communications, however, one can reach a wide student audience.

Efforts to effect changes in behavior (as in recycling or Green Cup competitions) have an advantage, in that outreach to a broad student population is built into their agendas. Their message tends to focus on personal change, not on institutional reform.

Active research and reform efforts are likely to exert the most influence on participating individuals. However, they tend to reach a relatively small audience which, in turn, may already bring a high level of interest in environmental issues.

- **Which project types are most effective for encouraging activism?** The popularity of a project as an entry-level activity tends to grow with its tangibility and the absence of controversy. Therefore, recycling is often the first environmental action project which students try out. Recycling and other campus-oriented projects have spread widely without much organized advocacy. However, additional encouragement of campus ecology projects should help to maintain a base of interested students; such intervention offers potential for reaching out to groups not traditionally interested in environmental action.

- **Should any particular colleges or universities be the focus of reform efforts?** If a foundation or non-profit organization chooses to support a reform effort at an individual campus, the main criteria for selection (outside of project interest) are the project's probability of success and the suitability of the school as a model for other campuses. Interested supporters should consider geographically and institutionally diverse colleges and universities, so that different types of schools can look to the pilot institutions as viable role models.

Means for and obstacles to campus environmental reform

Campus environmental practices can be improved through student efforts, faculty or staff participation, or a combination of the two. Improvement may also stem from the leadership of an administrator. Students have often been effective advocates for the hiring of staff and for other administrative initiatives. Students, staff, faculty, and administrators alike can benefit from outside networks, informational assistance, and encouragement.

Student development, in the form of learning from campus environmental reform, may be enhanced through peer education or activism, or faculty guidance in special research. It can also come from the efforts of staff and administrators involved in campus environmental reform to communicate their visions and successes.

Environmental innovation may be easier to achieve in campus practices than in teaching and the activities suggested in *Environment and Education.* In teaching, there is frequently worry about tenure, coupled with inevitable struggles over goals or ideology. In campus practices on the other hand, the concern is primarily just with practical feasibility. Deans and presidents are likely to support initiatives to accomplish energy efficiency sooner than they are apt to lobby for reshaping introductory economics courses.

Environmental innovation may be easier to achieve in campus practices than in teaching.

A) Obstacles to campus environmental reform

- Non-acceptance of nvironmental sustainability as a guiding principle for operations
- Lack of designated staff, administrative mandate, or process
- Time constraints on staff
- Short pay-back periods required for conservation projects
- State reabsorption of savings from state university campus conservation programs, which destroys financial incentives to conserve
- Failure to use total cost accounting

B) Obstacles to student involvement and education

- High level of technical competency needed for campus operations
- Slow pace of campus development planning processes
- Rapid student turnover
- Lack or staff concern about communicating efforts

RECOMMENDATIONS

The basic goal of any outside-funded program to improve campus environmental practices should be to influence student development in a positive way. Although campuses are sizable institutions using many resources and producing many wastes, funder dollars would probably be better spent elsewhere if their goal is simply to achieve immediate maximum mitigation of negative environmental impacts.

As a result, this section's top recommendations are to support initiatives that emphasize direct student involvement. However, many recommendations here *do* focus on how to reduce campus impacts. That objective is not incompatible with the goal of encouraging student education and activism. The most influential programs will likely be those which, while striving to reduce the campus ecological footprint, also effectively engage a broad population of students. In the end, most programs which succeed in affecting students will need to achieve tangible results as well. The main concern of this report is that the reverse should not necessarily be the case—namely, that programs which succeed in dramatically reducing detrimental campus impacts do not actually involve students, or even worse, do not ever reach their ears.

THE FOLLOWING ARE THE KEY RECOMMENDATIONS FOR THIS SECTION:

I. Expand student and faculty research and coursework directed toward improving campus and community environmental stewardship.

Campus expertise ought to be utilized to mitigate campus impacts and to improve the local environment. Few institutions have the same potential for self-examination as colleges and universities; and students, as well as the institutions, can benefit from this study. This recommendation echoes the suggestion put forth in *Environment and Education* to increase experiential education opportunities in an effort to deepen the competence, commitment, and confidence of interested students.

Students and faculty working on campus issues should develop good relationships with the physical plant staff, whose cooperation is essential for any hands-on mitigation or education project. In some cases, plant officers have even served as adjunct faculty, teaching about the practical issues involved in campus environmental reform.

II. Multiply student efforts to reform campus practices.

Student environmental groups have achieved a long list of successes in reducing the ecological footprint of their colleges and universities. They have probably spawned the creation of most campus recycling programs in the nation; and they have successfully advocated on many campuses for the adoption of new environmental programs and staff positions.

Besides achieving such concrete results, campus stewardship initiatives can help participating students develop both the practical competence that is part of environmental literacy and the commitment to action required to carry out the goals of environmental literacy. Campus ecology work is often a student's first experience with environmental activism and, due to the immediate and visible results possible, has reasonable chances to become a satisfying one.

Because of these appealing qualities, and because stewardship initiatives do not tend to create uncomfortable controversies, funders should encourage student environmental groups doing this work to engage other student groups not traditionally concerned with environmental issues. Many well-developed national college and student networks exist which could become channels for the spread of environmental action and concern. Athletics programs, student governments, fraternities and sororities, for example, are often in search of–or even dedicated to–service opportunities. These groups represent new areas for action, from campus to national levels.

III. Urge top administrators to institutionalize campus environmental stewardship and launch model initiatives.

Practical competence is part of environmental literacy.

A. Advocate for institutional reforms with effects that will multiply. Foundations can support students and other advocacy groups to encourage such measures from campus administrations that will:

1. **Create ongoing mechanisms to incorporate environmental considerations into physical plant decision-making.** A staff member, standing committee, or program charged to reduce environmental impacts (especially one with an ongoing voice in campus planning) will produce more benefits than any one-time initiative. Environmental employees are particularly valuable because they become the first full-time, year-round campus advocates for sustainability. Also, unlike students, they do not have to leave after four years. Ultimately, the goal is to minimize the need for special staff or structures by incorporating environmental concerns into campus-wide planning, policy and job descriptions. Few, if any, campuses are near this point, however.

2. **Leverage and publicize financial savings produced through conservation measures.** Many campus conservation measures can result in high savings. Many have done so already. These savings should be carefully tracked and channeled into environmental projects that have net cost. While outside sources should not fund projects which save schools money, they can nevertheless play a worthwhile role by publicizing and catalyzing such programs—for example, by underwriting a national "green" financial guide for campuses, complete with case study project costs, annual savings, financing techniques and payback periods. If campus environmental reformers can learn to use the language of investors, higher education's budget crunch might be turned to the advantage of some reform projects.

B. Undertake exceptional projects. College and university administrators should sponsor model initiatives, such as making a campus building into a showcase of environmental technology. Projects exceptional enough to turn heads at a large number of colleges and universities should receive occasional foundation support.

C. Rate colleges and universities on their environmental performances. Rating campuses on a physical basis would be a complex but perhaps easier task than comparing how much their teaching does (or does not)

contribute to a more sustainable future. The College and University Recycling Council is already engaged in efforts to develop standard criteria by which to evaluate campus recycling programs. Other organizations could do the same in different areas. Comparing campuses could generate competition and publicity and ensure that environmental performance was regularly reviewed. Developing standard measures would help campuses to track their own progress over time.

IV. Develop resources and networks to stimulate and facilitate the work of interested administrators, staff and students.

Several national student groups have organized to varying degrees around campus environmental issues. Enlightened administrators can also play a crucial role by encouraging peers to make common commitments or gestures, such as signing the *Talloires Declaration* (see **Appendix E**). The people with the greatest current potential to benefit from new resources and networks are recycling coordinators and other paid staff who have an environmental focus. They have the stability, time, and expertise to communicate at a high level, or to follow up on major new project ideas.

A. Utilize the Internet. The grnsch-l and recyc-l e-mail distribution lists are effective tools already serving hundreds of interested individuals, mainly staff and students. Additionally, members participating in these lists have posted messages urging the creation of permanent World Wide Web sites for the placement of detailed information on diverse campus conservation topics. Some such sites are beginning to spring up, although quality is extremely varied. "The Brown Is Green" page is now browsed thousands of times each month. On the Web, potential for sharing information is vast, although lack of organization, consistency, broad coverage and quality control may hamper its usefulness. A centralized attempt to improve Internet programming would be very feasible.

B. Develop human networks, environmental peer reviews and standards. With the growing interest in environmental impacts of colleges and universities—for instance, the growing number of schools forming environmental committees or hiring staff—more than a network of campus recyclers is needed. Communications over the Internet can play an important role, but the formation of complementary human networks that can develop authority as sources of information and standards, and which can review programs or help campuses requesting assistance, would be useful for lowering campus impacts nationwide. Not only groups with explicit environmental interests but also pre-existing professional associations should be cultivated as important channels for networking and dissemination of information.

V. Communicate positive results loudly and consistently.

Target audiences include the campus community, alumni, and the public-at-large. Communications is a frequently neglected dimension of campus environmental reform, yet one of the most important venues for enhancing student education and influencing other campuses or institutions.

Initiatives for campus ecology are fairly appealing to the media. Compared to other areas of study in this report, features on ecology are more easily grasped than stories about curriculum, and are less controversial than stories about student activism. Projects most likely to engage media attention will in some part be a function of student or regional interests, as well as the creativity and promotional ability of the project designers. Some initiatives, such as the incorporation of environmentally sound features into new buildings, will be innately visible. In this light, funders would be wise to favor initiatives which have a significant communications component.

Environment and Activism

In recent American history, students have been leaders in the struggles to pass civil rights legislation, to increase women's opportunities, to end the Vietnam War, and to oppose Apartheid through divestment.[100] Across the globe, young people have organized with varying degrees of success in South Africa, Eastern Europe, and Tiananmen Square. Students everywhere are active in social movements for peace, justice, democracy—and for the environment.

Students are well situated to take effective action in significant numbers. As Ralph Nader, founder of the student Public Interest Research Groups, has often observed, students possess a unique set of activist resources. They have well-defined communities, their own newspapers, radio, computer networks, and regular meeting areas. Many have ample leisure time, strong ideals, and lots of energy.

The number of campus and national student environmental groups in the United States has boomed over the last ten years, and accomplishments have been substantial. Groups have created hundreds of campus recycling programs, successfully fought the development of major, harmful projects, and registered hundreds of thousands of students to vote.[101]

Students have catalyzed extensive national gains by helping to organize Earth Day 1970 and 1990. Following 1970, many of the nation's most important environmental laws were passed. On campus, the field of environmental studies was born from the concern raised and reflected by that landmark day. In contrast, the energy surrounding Earth Day 1990 translated into fewer dramatic legislative accomplishments, although the Clean Air Act was reauthorized that same year. Whatever its shortcomings, however, Earth Day 1990 did stimulate activities like recycling, and it did succeed in putting environmental issues on the agenda of many citizens, politicians, businesses and organizations. Once again, many new college environmental programs were formed, and students activated a renewed interest in campus practices directly affecting the environment.

Yet, despite these past gains, there is still cause for great concern, as well as enormous potential for future success.

Around the country, students are now volunteering at record levels. Tapping into this spirit of commitment is important for student environmental groups. In spite of this courageous spirit, however, recent polls reveal unprecedented levels of cynicism among students about government. This cynicism on the part of American students is a major

challenge to their democratic participation in efforts to protect and strengthen environmental policy.

The student activists discussed in this report are primarily undergraduates. Graduate and professional students are often too busy to get involved in sizable numbers. When these older students do get involved, however, they are often better trained, and hence more effective, than undergraduates. From the main organizer of the first Earth Day to the students who first audited UCLA's environmental practices, graduate and professional students have been important allies for undergraduate activism.

Students possess a unique set of activist resources.

THE NEED FOR STUDENT ENVIRONMENTAL ACTIVISM

Strengthening student environmental activism has many values. Activism lets students develop skills and values for a lifetime of meaningful involvement. It helps students educate and influence their peers about environmental issues. Activism can exert an immediate impact on colleges and universities, local communities, and the nation. Finally, cultivating student activist involvement can help the environmental movement by training future advocates and harnessing their high energy, as well as by providing a wide base of support and fresh perspectives on old problems.

Although only a small percentage of students are likely to become activists, this dedicated cadre can reach large numbers of their peers. The most popular activities for campus environmental groups tend to be organizing Earth Day events, inviting speakers, hosting discussions and film series, and running other educational events. The concrete achievements of student campaigns, when well-publicized, can play important roles in peer education and shaping the public mood in general.

From the campus to the international level, students have already shown that they can be an effective force for environmental reform. They have created campus resource-conservation programs. In Quebec they have helped stop the construction of a major hydropower project which would have flooded thousands of square miles of native Cree land. These are in no way small achievements.

Currently, there is a particularly acute need for students to achieve a strong voice in national environmental policy debates. While at this time Congress continues to mount an unprecedented attack on the nation's environmental laws, an overwhelming majority (84%) of the class that entered college in 1994 believe that "the Federal government is not doing enough to control environmental pollution."[102] These circumstances alone are sufficient reason to dedicate substantial resources for student environmental mobilization.

The involvement of students in environmental issues is also important because they can play an important role in broadening support for reform. They care greatly about diversifying the constituency and appeal of environmentalism. In fact, several national student groups have recently focused on environmental justice issues, such as toxic waste disposal and lead poisoning, and have made them into major action priorities.

Student environmental activism should be sustained and strengthened toward the year 2000, the thirtieth anniversary of Earth Day, when the new millennium draws attention to society's hopes and concerns. Young people, as symbols of the future, may find themselves at the center of attention. At this time, much notice may also be drawn to environmental issues. A student environmental movement with a strong infrastructure and a sophisticated communications network should be able to translate this heightened public awareness into concrete advances for the next century.

BACKGROUND

To develop effective strategies for building the student environmental movement, it is important to look closely and critically at the movement's history and learn from its successes and shortcomings. This report examines newly formed national organizations, recent campus activities, and current trends in student perspectives. In doing so, it also explores the different roles of amateur activists, trained organizers, campus-based groups, and national student organizations.

Watersheds: Earth Day 1970 and 1990

If a college environmental group does anything, it organizes Earth Day activities on its campus. This trend testifies to the impact of Earth Day 1990, and to the importance with which students view Earth Day as a force in the environmental movement. A few years before 1990, only several hundred student environmental groups existed across America. Today, over two thousand are in existence.[103] Students were instrumental in making both Earth Day 1970 and Earth Day 1990 the powerful events they turned out to be. Reciprocally, student life was profoundly affected by these moments. An analysis of Earth Day history is a good starting point for a history of the student environmental movement.

> Before 1990, there were several hundred student environmental groups on campus. Now there are over two thousand.

Earth Day 1970

The first Earth Day, in 1970, took place in the context of high national levels of student activism and recent visible environmental crises. In 1970, the Cuyahoga River in Ohio became so polluted that it burst into flames. Just a few months before, in 1969, a massive oil spill took place off the coast of Santa Barbara. The time was certainly ripe for major action. U.S. Senator Gaylord Nelson realized the moment had arrived and asked Denis Hayes, a Harvard law school student, to organize a national Earth Day.[104]

Under the banner of Environmental Action, Hayes led a group comprised heavily of students—recent and current—who were involved in environmental efforts. Earth Day was born, and its enormous success forever changed the face of environmental activism.. An estimated 20 million citizens participated in Earth Day events nationwide.Congress was adjourned for the day while its members spoke on various campuses. College students undertook a wide range of dramatic projects—from marching 500 miles between San Francisco and Los Angeles—to presenting New Mexico state senators with an "Enemy of the Earth" award in the form of a giant plastic globe.[105]

In subsequent years, Congress passed many of the nation's most important environmental laws, including the Clean Air Act (1970), the Clean Water Act (1972), and the Endangered Species Act (1973). Environmental Action itself was a critical advocacy group for the passage of the Clean Air Act, having developed a coalition with the nation's biggest steel- and auto-workers' unions.[106]

New environmentally aware non-profit organizations were also formed in the wake of Earth Day. These include the first Public Interest Research Groups (PIRG's), state-based student membership groups focusing much of their energies on environmental issues. No other major student networks identified in this research were formed during this period; rather smaller environmental groups sprang up spontaneously on many campuses.[107] In a concentrated burst between 1970 and 1975, faculty and administrators created dozens of environmental studies programs across the nation. Before 1965 there had been none.

Earth Day 1990

Like Earth Day 1970, Earth Day 1990 was a watershed event in the student environmental movement. The 1989 *Exxon Valdez* oil spill, some twenty years after Santa Barbara, stirred public concern. So did the broiling 1988 greenhouse summer, as well as medical waste washing up on beaches, and other highly visible crises. Student activism in general was experiencing a revival. The previous fifteen years had been relatively quiet for most student causes, not just for environmental issues (an exception was divestment from South Africa). However, all at once in 1989-90, twenty thousand students marched against homelessness; two thousand rallied in Washington, DC for increased student aid; and four hundred schools participated in a nationwide speak-out on abortion rights.[108] This relatively high level of multi-faceted activism created another parallel to the late 1960's.

A combination of national ripeness and good organizing led to major gains in the student environmental movement.

Earth Day 1990 itself was preceded by a highly sophisticated, 18-month, media-saturation campaign directed by expert organizers. An estimated 200 million participants turned out for events worldwide! Although, at least in America, Earth Day 1990 did not give the same impression of being a student-led uprising as the 1970 event did, youth and students were probably the most involved sectors of the population. College students sent 200,000 postcards to Congress and were leaders in campus and community events

across the country. More importantly, out of Earth Day the student environmental movement made major gains in infrastructure. A fortuitous combination of national ripeness and good organizing led to these advancements.[109]

The organizing was spearheaded by Earth Day 1990's Campus Program. Owen Byrd, a recent law school graduate, developed and oversaw a paid staff of three, as well as a volunteer network of regional, area, and campus coordinators. Many of these organizers went on to play key roles in the student environmental movement.[110] In the fall of 1989, Earth Day 1990 distributed Campus Environmental Audit forms to students around the country, with the intention of developing campus environmental groups and their memberships. Other devices were employed, such as collecting signatures for a Green Pledge. At the same time, the regional coordinators were busy searching for reliable contacts everywhere.

A $5,000 grant seeded the conference that launched the largest student environmental organization in the nation.

By mid-winter, Earth Day's Campus Program had developed a contact list of representatives from 2,000 different student environmental groups.[111]

A Threshold

The Earth Day 1990 Campus Program was not the only major organization in student environmentalism in 1989-90. This was the year that the Student Environmental Action Coalition (SEAC) became a national entity and achieved most of its national successes. SEAC began in 1986 as a group of students at the University of North Carolina-Chapel Hill. In the spring of 1988, members placed an advertisement in *Greenpeace Magazine*, asking if other students wanted to form a country-wide network. In the fall of 1989, the UNC group organized SEAC's first national conference, "Threshold," on their campus.[112]

Conference organizers said they expected several hundred participants to show up. Instead, some 1,700 students attended from 43 states! According to many present, the atmosphere was electric; the energy helped spark an intensive year of organizing. In fundraising for the conference, SEAC received its first foundation grant–$5,000 from the Mary Reynolds Babcock Foundation in the summer of 1989–and opened a small office in the UNC student center.[113]

On November 15, 1989, SEAC organized its first national action, a nationwide call for "minimum impact campuses," in which students at over 100 schools presented statements to administrators. Next, in February, it coordinated 35 simultaneous student marches on state capitals, in support of the Tongass Timber Reform Act and the Native Forest Protection Act. Then, in early April, in a joint effort with the Earth Day Campus Program, Campus Ecology (then Cool It!), and the PIRG's, SEAC helped coordinate a National Student Action for Clean Air in Washington, DC. Several hundred students participated, representing 45 states. Meanwhile, multiple SEAC letter-writing campaigns focused on legislation dealing with such issues as global warming, forest preservation, and clean air.[114]

The following October, still in 1990, SEAC organized another conference–this time at the University of Illinois at Urbana-Champaign. For outreach, SEAC used its own contact lists and the contact list from 2,000 campus groups derived from Earth Day's Campus Program. SEAC estimates that over 7,600 students from 1,100 colleges and universities attended "Catalyst," still the largest student environmental conference on record.[115]

After "Catalyst," SEAC dramatically reduced its focus on national organizing. From 1991 through 1995 it conducted two national campaigns—a 1990-91 Corporate Accountability Campaign for Energy Independence, and a 1993 anti-NAFTA drive. In 1991 SEAC held a national conference, "Common Ground," in Boulder, Colorado, which was attended by roughly 2,200—but then stopped with big conferences until 1995. Overall, SEAC's leadership views the organization as a "grassroots coalition" and has become very sensitive about imposing any central, "top-down" agenda.[116]

Recent revival of activism

After "Common Ground," there was no national student environmental conference for two years. Students as a whole attempted fewer environmental actions on a national scale. There were exceptions, including the registration of 107,000 students to vote in the 1992 elections by the group Campus Green Vote.[117]

By 1994, the pace began to pick up again. In February, with some help from Campus Green Vote, the Yale Student Environmental Coalition organized the "Campus Earth Summit," the first national student environmental conference since "Common Ground." The conference was intentionally kept at a working size, with roughly 450 students, faculty and administrators from campuses in every state and 21 countries attending. The summit produced a *Blueprint for a Green Campus*, which addresses environmental education, practices, and activism on campus; it also stimulated new campus initiatives from Princeton to Boulder.

Responding to the 104th Congress, a coalition collected over one million signatures on an "Environmental Bill of Rights."

The following February(1995), a coalition spearheaded by the PIRG's (but with major contributions by Campus Green Vote, the Sierra Student Coalition, and local SEAC campus group affiliates) organized an "Emergency Campus Environmental Conference" in Philadelphia. Some 1,800 students attended. This conference was part of an ongoing "Free the Planet" campaign to take corporate "greenwashing" out of Earth Day (1995) and to gather signatures, on an "Environmental Bill of Rights Petition." By September, the coalition collected over one million signatures with copies for delivery to Newt Gingrich and the rest of Congress. The campaign also included an April "Earth Day Campus Summit" in Washington, DC, organized by Campus Green Vote. This campaign brought students from almost every state to urge Congress to stop attacking environmental laws.[118]

In October 1995, SEAC held its first national conference in four years, back home in Chapel Hill. Over 1,000 students attended its speeches and workshops.[119] At the confluence of an Earth Day anniversary, and in light of the new environmental threat posed by Congress, the momentum of organized student environmentalism appears to have picked up.

National student environmental organizations

SEAC and Campus Ecology were founded in 1989. Riding the wave of Earth Day 1990, three more organizations were formed in 1991. Green Corps, a field school in environmental organizing for recent college graduates, started its activities. The Sierra Student Coalition was created as the student-run wing of the Sierra Club. Campus Green Vote, dedicated to registering students to vote and educating them about environmental issues, also came into being. All of these groups are described below, along with SEAC and the PIRG's.

- **Campus Ecology** (formerly **Cool It!**). See "Environment and Campus."

- **Campus Green Vote (CGV)**

  Campus Green Vote was first proposed in the summer of 1991 to register students for the elections and educate them about environmental issues. The group took shape and registered 107,000 students the next year. In 1994, it led the YouthVote coalition (including the National Abortion Rights Action League, the United States Student Association, and Rock the Vote) that registered over 250,000 students. CGV co-hosted a week-long student Summer Training Academy in 1994 with the League of Conservation Voters Education Fund.

  It played an active role in the Free the Planet campaign by organizing a DC "Earth Day Campus Summit" in April 1995. At that summit, over 120 students from 42 states received media training and made presentations to members of Congress about home-state environmental issues. CGV reports that over 100 print, television and radio stories were generated locally and in the national media. CGV also has a World Wide Web home page and distributes action alerts on environmental legislation to students through an electronic mail distribution list.

  Besides working on student voter registration and education to improve government environmental policies, Campus Green Vote has worked on improving campus environmental policies. To this end, it assisted in organizing the 1994 "Campus Earth Summit" and in producing the *Blueprint for a Green Campus*. It also helped create the *Campus Green Pages*, a national directory, and promotes media coverage of campus environmental improvements.

  Campus Green Vote, a project of the Center for Environmental Citizenship, currently employs three recent graduates and several interns, and operates on an annual budget of roughly $200,000. Its major sources of funding have been foundations and the National Wildlife Federation.[120]

- **Green Corps**

  Founded in 1991 with the help of the Fund for Public Interest Research, Green Corps subtitles itself the "field school for environmental organizing." Each year, it places twelve to eighteen recent college graduates on campuses around the country. At those campuses,

Green Corps members run a series of campaigns for national environmental organizations which contract for the service. In a month-long summer session, and then six times throughout the academic year, Green Corps runs intensive trainings for these field organizers. So far, a majority have continued in environmental organizing after "graduation." Field organizers also form campus Green Corps chapters; student members trained there often go on to play leading roles on campus.

A field school for environmental organizing.

Green Corps has worked on a Boycott Mitsubishi campaign with the Rainforest Action Network; a lead-poisoning campaign with the Environmental Defense Fund; a REAL Energy campaign with the PIRG's; and the 1995 Free the Planet campaign. It registered 26,000 students to vote in 1994, working with Campus Green Vote, and collected over 100,000 postcards in an ancient forests campaign with the Sierra Club. Through these and many other efforts, Green Corps taps students into national projects and generates increased media coverage.

Green Corps's annual budget is roughly $300,000, with funding primarily from the organizations to whom Green Corps provides services. It has also collected money from canvassing, grassroots fundraising, the PIRG's, and several foundations. Four national staff members train and coordinate the field organizers. An additional staff of 55 are a part of Neighborhood Green Corps, a service project (not described here) with separate funds granted by Americorps.[121]

- **Public Interest Research Groups (PIRG's)**

The state-based student Public Interest Research Groups have chapters on some 90 campuses in fifteen states. The Fund for Public Interest Research provides technical assistance to the state chapters, and USPIRG coordinates national campaigns.

The PIRG's do not tackle environmental issues exclusively, but these issues are a major focus of effort. Most campaigns are statewide or national advocacy projects, although PIRG's have sponsored more service and campus-directed projects lately. PIRG's claim credit for many of the nation's bottle bills, as well as the nation's strongest Toxic Use Reduction laws in Massachusetts and Oregon. They led the effort to ban offshore drilling in Florida, and claim to register about 250,000 students to vote every election year.

Thousands of students volunteer and hundreds intern on PIRG campaigns each year. Unlike the other organizations described in this chapter, some student PIRG's have a relatively long history, dating back to 1971. Many PIRG's also have significantly higher budgets. Finally, PIRG's have at least one permanent paid professional organizer at each campus where they have a presence, and more at the state offices. Students run PIRG governing boards, but non-student staff tend to be the driving forces within the organizations.

These staff leaders are the subject of some debate within the student environmental community. Donald Ross, a PIRG founder, argues that professional PIRG staff members help students—the way coaches help sports teams—to become more serious and effective. Others believe that professional staff rob student groups of their amateur spirit, energy, and sense of empowerment. A degree of trade-off may, in fact, be required between these opposing viewpoints.

Student PIRG's receive funding primarily through student fees and proceeds from canvassing. Campus organizations at many state schools can qualify to receive student fees each semester if enough students vote to approve such a measure. This funding mechanism comes under regular attack from conservative state legislators.

The PIRG's are limited by the fact that they do little organizing on campuses without chapters. To begin a new chapter today, however, is a difficult and contested enterprise. The last campus PIRG created was at the University of Madison-Wisconsin in 1989.[122]

To obtain a fuller sense of the PIRG system, it is worth choosing one state PIRG to explore in more depth—for example, CALPIRG. CALPIRG has chapters on six large University of California campuses: San Diego, Los Angeles, Santa Barbara, Santa Cruz, Berkeley, and Davis. CALPIRG's director estimates that each campus runs three to five simultaneous projects through the efforts of one- to three- hundred student volunteers. Thirty to fifty of these volunteers are core leaders or interns. This represents a very high level of involvement for campuses of any size.

In the spring of 1995, CALPIRG participated in the Free the Planet campaign, and in other national campaigns to protect the Endangered Species Act. They worked to promote the purchase of recycled products by businesses, campuses, and communities. They pressured California phone companies and newspapers not to use wood from ancient Canadian temperate rainforests.

In the last three years, CALPIRG helped to preserve California's electric vehicle mandate; gathered over 10,000 signatures to qualify the Mass Transit Initiative for the November 1994 ballot; worked with Californians Against Waste to stop the CD longbox; and won a lawsuit against Shell Oil for dumping selenium into San Francisco Bay.[123]

Each CALPIRG campus runs three to five projects per semester, involving up to three hundred student volunteers.

- **Sierra Student Coalition (SSC)**

The Sierra Student Coalition is the student branch of the Sierra Club. Although it is run by college students, the Coalition was founded by a high school student and claims half of its membership from high schools. SSC maintains a network of activists ready for alerts, and holds a training for high school organizers each summer. It has developed a lead-poisoning curriculum. To disseminate information, SSC runs discussion lists and a Web site on the Internet, and publishes a bi-monthly newsletter. It was a member of the Free the Planet coalition. In 1993, SSC helped to generate thousands of letters in support of the California Desert Protection Act.

In spring 1995, SSC launched a national Next Generation for Wilderness campaign with the goal of developing projects in twenty-one separate eco-regions. The plan was developed at the first national SSC conference, when a small group of members met in Washington, DC for three days of training, advocacy, and a rally. It also plans a campaign called *Stopping the War on the Environment* to fight the *Contract with America* agenda.

SSC is run out of a national office in Providence, Rhode Island, near Brown University, by several dozen volunteers, mainly from Brown. There are a few affiliated campus groups across the country. The group counts all 30,000 youth members of the Sierra Club as its own. Active membership is a much smaller core, but has potential to grow. Several hundred students were in contact with the national office in 1994-95.

Each year SSC receives most of its funding (roughly $70,000), from the Sierra Club, which retains—but has never used—veto power over the youth group's agenda. Other funding sources include corporations and individuals.[124]

- **Student Environmental Action Coalition (SEAC)**

In the group's own words, SEAC is "a grassroots coalition of student and youth environmental and social justice activists."[125] The impressive early accomplishments of

SEAC have already been described. Since the "Catalyst" conference in 1991, SEAC has focused more on being a network and resource for its membership than on organizing it.

As a resource, SEAC publishes a magazine, offers a range of organizing guides, runs multiple electronic mail discussion groups, and conducts regular trainings around the country. As a network, SEAC offers the services of five full-time staff members at the national office and roughly 50 regional, state, and area volunteer coordinators at as many volunteer campus offices. This is a better measure of the organization's size than the more than 2000 college and high school groups which SEAC claims are part of its coalition; nervertheless, SEAC's on-the-ground outreach potential is impressive. SEAC is also affiliated with an international youth organization, called Action for Solidarity, Equality, Environment and Development (ASEED), which SEAC started in 1991

The SEAC network sponsors up to several dozen local and regional conferences each year, ranging from 30 to 200 participants. It has also helped New York students fight a hydropower project that would have flooded Cree lands in Quebec, and assisted University of Arizona students to struggle against the construction of a telescope in the habitat of an endangered species. SEAC did not initiate either effort, although an inspirational guest speaker at SEAC's "Catalyst" conference ignited the New York effort to "save James Bay."

SEAC takes a strong stance on recruiting the participation of diverse ethnic groups in the environmental movement. It has formed a "People of Color Caucus," and requires that half of its National Council be comprised of people of color. As part of its Environmental Justice Initiative, SEAC claims to have reached over 200 people of color in weekend organizer trainings. EJI also includes the Sustainable California Youth Project, started in 1994, which places college students of color in summer internships for environmental justice organizing.

SEAC challenges its members to expand their ideas about the environment.

SEAC attempts to govern itself through "grassroots democracy," but has probably limited its effectiveness as a result. Many members have difficulty reconciling any initiatives that appear to be "top-down." One area coordinator recently reflected this spirit in writing, "Why do we need a political agenda? Aren't we grassroots? Don't we have many directions?"[126] Since "Catalyst," SEAC has rarely used its network to set a national agenda or implement a national campaign.

SEAC's agenda is a source of tension and confusion for many in the student environmental movement. It includes some important items often left out by other environmental groups, particularly concerns of environmental justice. In focusing on social justice issues beyond the scope of environmental justice, however, it may make its efforts too diffuse. A December 1994 draft outline of SEAC's upcoming *Environmental Justice Organizing Guide* listed nine issue areas: lead poisoning and housing; hazardous waste facilities; pesticides and farm workers; workers' rights; native sovereignty; urban issues; education; immigration; and trade, capitalism, and the world economy. At SEAC's 1995 national conference, the single national campaign proposed at the closing rally was to fight for affirmative action. It is valuable for SEAC to challenge its membership, but it may be moving too far afield to maintain the strongest enthusiasm of students interested in issues more commonly understood as "environmental."

SEAC operates on an annual budget of roughly $250,000, almost three-quarters of which comes from foundations. The remainder is supplied by membership fees, publications sales, and other sources.[127]

- **Students for an Energy Efficient Environment.** See "Environment and Campus."

- **Other organizations**

  A number of smaller student environmental organizations target or address environmental issues. The Endangered Species Campaign of the National Wildlife Federation works with students to support the Endangered Species Act. The United States Student Association, Youth Action, Midwest Academy, National Student News Service, and other organizations have included environmental issues, training, and news coverage in their agendas. A long listing of the nation's student social action groups can be found in Helen Denham's 1993 report for the New World Foundation, *Building Power for Change: Young People Organizing in the United States*.

Environmental groups on campus

The bulk of student environmental energy has been exercised on individual campuses and their communities, not in national efforts or organizations. It is difficult to catalogue their activities systematically. However, a few generalizations are possible.

Environmentally-concerned college students perform a wide range of activities. At some campuses, one group may run multiple programs; elsewhere, multiple student groups may pursue separate agendas. One popular activity involves organizing Earth Day and peer education events, such as showing films or inviting speakers. Many groups promote recycling, and many teach environmental education in secondary schools. Other campus initiatives span as wide a range of issues and activities as the environmental movement itself, including itself endangered species, environmental justice, campus energy and resource conservation, forest and rainforest protection, voter registration, and letter-writing to elected representatives.

Most student organizing takes place at the campus or community level.

Most campus groups operate with few resources. It is a struggle for many to get office space. Annual budgets run from several hundred to several thousand dollars. From a donor's perspective, students use funds extremely efficiently, accomplishing an enormous amount with very little money. Students often pay expenses out-of-pocket.

Membership varies and can fluctuate dramatically. Often a group has a handful of core volunteers, and a larger group of members who help out or attend meetings regularly. Frequently, a pool of five or ten times as many students remains uninvolved—a group of people who once attended a meeting or signed a list of interest. Sometimes this group of interested-but-uninvolved students grows in proportion to pressures on student time and attention. Sometimes this deterioration is a result of ineffective organization. Groups that have large offices or paid staff tend to minimize this problem.

Many of the student environmental movement's best moments have been catalyzed by successes on individual campuses. Campus groups have been pivotal in forming national efforts, supplying both their agenda and their leadership. Some examples of these cases follow.

Campus case studies

"Environment and Campus" case studies offer several examples of student successes in reforming campus practices. The cases here show the diversity of environmental groups and activities, the importance of substantial centers, and the role which campus groups can play in wider campaigns. This list is not representative; only leading activist centers have been chosen. New successes are always on the horizon, however, and strong groups can fade as rapidly as students graduate. This instability is a basic condition of student organizations. Activity levels within a campus can be sustained by permanent offices and staff, and by national organizations.

Fighting the construction of dams and telescopes on fragile, native lands.

- **Cornell University**

  The Cornell Greens helped lead the 100 campus groups which opposed New York Governor Mario Cuomo's decision to purchase electricity from Hydro-Quebec. The Canadian company planned to build multiple hydroelectric dams in the James Bay region of Quebec, which would flood and poison with mercury thousands of square miles of native Cree homeland. The campus opposition, as well as opposition from the Sierra Club, the National Audobon Society, Greenpeace, and other environmental groups, ultimately helped pressure Cuomo to reconsider his decision and cancel the contract.

  The Cornell Greens played an important coordinating role in the *Save James Bay* campaign. They were the New York coordinating group for SEAC at the time. Members traveled throughout the state to train and help other students organize events. An organizer at Cornell estimates that groups at roughly 70 colleges took significant actions as part of the campaign, and that students generated more than 10,000 letters and phone calls to Cuomo. Students held rallies in New York City and in Albany, canvassed door-to-door and convinced county commissions and major unions to pass resolutions against the project.

  The Greens played the key role in stimulating union involvement. Beginning with a local union of Cornell workers, they gained the support of larger state unions, until New York Solidarity itself passed a resolution against buying power from Hydro-Quebec. Conservation, they argued, would both be less expensive and create more in-state jobs.[128]

- **University of Arizona**

  Students have been fighting the University of Arizona for more than five years to prevent it from building a new telescope on Mt. Graham, in the habitat of an endangered species of red squirrel and on sacred land of the San Carlos Apache. A major breakthrough took place in 1991, when UA students published an article in SEAC's national magazine about the Mt. Graham project. Through the SEAC network, the UA activists encouraged students at Ohio State University, Michigan State University, the University of Pittsburgh and the University of Toronto to stop their universities from becoming partners in the project. No American university has joined with UA to this date.

  The other major turn in the case took place when SEAC joined the Mt. Graham Coalition as a co-plaintiff in 1994 against the United States Forest Service for granting UA permission to build. The groups quickly won a permanent injunction; in 1995, a federal court upheld the injunction against UA's appeal. SEAC contributed research and volunteer time as co-plaintiff. The ongoing UA student-activist effort has operated on a minimal budget, with students sometimes covering costs out-of-pocket.[129]

- **University of California-Los Angeles**

UCLA's Environmental Coalition performs many activities typical of student groups across the country. It has committees on Earth Week activities, recycling, purchasing, and environmental education. It publishes a newsletter. The Environmental Coalition also hosts panels and speakers, and participates in services such as dune restoration. Approximately 250 students have signed its interest lists, but about 25 members comprise its core.

In 1994-95, students in the Coalition's environmental education committee undertook a very unusual project. They produced a documentary film about environmental racism in Los Angeles, and about community efforts to organize against it. They plan to show the movie on a tour of LA high schools during 1995-96.

The Environmental Coalition operates on an annual budget of about $6,000. This money is supplied by the Graduate Student Association; unlike most student environmental groups, the Coalition gets roughly equal participation from the graduate and undergraduate populations.

The Environmental Coalition is not UCLA's only student environmental organization, as is the case at many other campuses. Other UCLA groups include the Rainforest Action Group, the Coastal Action Team, Students for Social Responsibility (in campus investing and practices), and a chapter of CALPIRG.[130]

Activism on campus can be stimulated and sustained by a permanent office and staff.

- **University of Colorado-Boulder**

CU-Boulder has perhaps the most effective independent student environmental center in the nation. The University of Colorado Student Union (UCSU) Environmental Center is a branch of UCSU student government "whose purpose is to promote environmental awareness on campus." It is directed by a voting student board which meets weekly. The Center employs a director, administrative assistant, and many students as part-time staff. It sponsors speakers, films, conferences, and other educational events, and has an environmental library.

The Center runs multiple projects simultaneously. Its Alternative Transportation Committee convinced students to assess themselves an annual fee to make their ID cards good as local bus passes. ATC is also advocating a long-term plan for a pedestrian campus. The Campus Reform group has sponsored two annual CU "Campus Earth Summits" since the original conference at Yale. In them, students research campus topics, from food services to energy efficiency to environmental curricula. They present reports to facilities staff and administrators, and then hold a two-day meeting to discuss the issues and potential actions.

Other projects abound. Boulder Cooperative Housing is organizing a student environmental living co-op. The Toxics Group has investigated emissions from Boulder County corporations. Earth Education members teach environmental education in area elementary schools, and the Ecological Economics project runs an e-mail discussion group on the subject. Affiliates housed in the Center include groups for economic, social, and environmental justice, animal rights, wilderness study, Colorado wolf restoration, rainforest protection, voter education, and renewable energy. SEAC and Green Corps chapters operate out of the Center. CU Recycling is also housed there.

The Environmental Center and CU Recycling operate on an annual budget of close to $200,000, most of which is provided by student fees.[131]

- **Yale University**

  The biggest accomplishment of the Yale Student Environmental Coalition (YSEC) was to host the "Campus Earth Summit" in February of 1994. The conference brought 450 students, faculty and administrators from campuses in every state and 21 countries together to discuss environmental education, campus environmental stewardship, and student activism. The results were a widely-distributed *Blueprint for a Green Campus*, and many campus ecology initiatives, from Boulder to Australia.

  YSEC has also been a significant presence on the Yale campus. It runs an environmental center, organizes multiple events and campaigns each year, and develops and supports other campus environmental groups. YSEC has organized annual Earth Day events since 1990; conducted an environmental audit of Yale; launched a Green Cup competition, hosted multiple conferences each year; written guides to both environmental courses offered and to "green" campus living; and developed an environmentally-friendly section of the campus store.

  Affiliated groups have taught environmental education at a local middle school, published a campus student environmental magazine, lobbied against Hydro-Quebec, conducted guerrilla theater, and run outdoor outings. Outside of major conferences, YSEC's annual budget tends to fall between $10,000 and $20,000.[132]

A statistical portrait of American students

A discussion of student environmental activism should not leave out an examination of students themselves. Several interesting and contradictory patterns among college-aged students have emerged in the last half-decade. According to polls, students have expressed intense cynicism about politics and government. At the same time, voter turnout increased dramatically from 1988 to 1992. Young people have been labeled as "Generation X," yet polls say they are volunteering more than any generation before them. This section looks at student views in the areas of politics, society, collective action, responsibility, and the environment.

Cynicism about government and social institutions is at a record high...

Political participation and views

The Cooperative Institutional Research Program (CIRP), housed at the UCLA Higher Education Research Institute, has conducted national polls of incoming college freshmen every year since 1966. For the class entering in 1994, CIRP found that a record-low 31.9 percent believed that "keeping up with political affairs" is important in life, compared to 37.6 percent in 1993 (a non-election year), 42.4 percent in 1990, and 57.8 percent in 1966. The percentage of students who said that they discussed politics regularly (16.0 percent) also hit an all-time low in 1994.[133]

At the same time, the percentage of 18-to-29 year-olds registered to vote increased from 58 percent to 68 percent between 1992 and 1994, according to MTV polls. Actual turnout for 18-to-24 year-olds increased by 20 percent between the 1988 and 1992 presidential elections, the highest rate of increase for any age group.[134]

In trends for ideological identification, the percentage of college freshmen calling themselves conservative or far right has been generally increasing since its trough near 15 percent, in the mid-1970's to 22.4 percent in 1994. 22.9 percent in 1993 is the all-time high on record. The percentage of freshmen calling themselves liberal or far left has also been increasing from its lowest dip, in the early 1980's, which was the terminus of a precipitous decline from 38.1 percent in 1971. In 1994, 25 percent of first-year students classified themselves as liberal.

From 1993 to 1994, 2.2 percent fewer students identified themselves as liberal, while 0.4 percent fewer called themselves conservative.[135] In 1994 voters aged 18-29 claimed major party affiliation (Democratic and Republican) in equal measure (34 percent), after having favored President Clinton heavily in 1992.[136]

Volunteering and service

A 1993 survey of 9,100 American undergraduates, conducted by President Arthur Levine of Columbia's Teachers College, also uncovered a high level of cynicism about politics and social institutions. 56 percent of students surveyed did not believe that "traditional American politics" can cause "meaningful social change,"[137] and 80 percent were critical of the nation's social institutions—more than during the 1960's! 22 percent thought the nation's problems were being well met by the political system, and only 21 percent felt that Congress cared for people's best interests.

In contrast, two-thirds of students surveyed claimed to have participated in volunteer activities during the preceding year. (41 percent thought that community service should be *mandated* in college.) Many of those surveyed said that they had heroes—mainly family, friends, and religious figures. Relatively few students admitted to having heroes in a similar 1979 survey. Three-quarters of survey respondents said that it was very important to be well-off financially, but five-out-of-eight wanted to make meaningful social contributions through their careers.[138]

> ...but the generation labeled "X" is volunteering more than any one before it.

An enormous service movement has been developing on campuses in recent years, with offices opening to give students volunteer opportunities. In 1993, President Clinton created the Corporation for National Service, which supports student service efforts across the country.

Students today appear more cynical about government—and their own collective power to change it—than the 1960's generation. At the same time, however, students seem to believe that individuals can make a difference. Individualism seems to have become a guiding principle for how to do good, not just how to do well.

Students and the environment

College students have long been considered one of the nation's most environmentally concerned groups. According to the CIRP survey, first-year students reached a peak of

concern about the environment in 1972, when 45 percent said that personal involvement in environmental protection was a "very important" life priority. This figure declined to 16 percent in 1986, when it began a sharp increase to 34 percent in the fall of 1990. It has since declined to 24 percent in 1994, when those surveyed were the first group of students not yet in high school for Earth Day 1990. The number of students who said that government does not do enough to protect the environment peaked in 1992, at 90 percent. The figure now stands at 84 percent, the 1988 level. Although personal commitment appears to have declined of late, students almost always feel strong actions are necessary to preserve environmental quality.[139]

Many environmentally-inclined students place a high value on personal behavior. Their behavioral choices often begin with recycling, and sometimes later manifest in stronger expressions of personal commitment, such as vegetarianism. For some, such choices are the highest expression of the work to achieve sustainability. These students take comfort in the fact that each is living responsibly. Many plan to work for environmental protection in their careers, if not on campus. These "life-style environmentalists" tend to be very cynical and discouraged about the political system. Whether they realize it or not, they are closely connected to contemporary trends of individualism.

Environmental attitudes of first-year college students

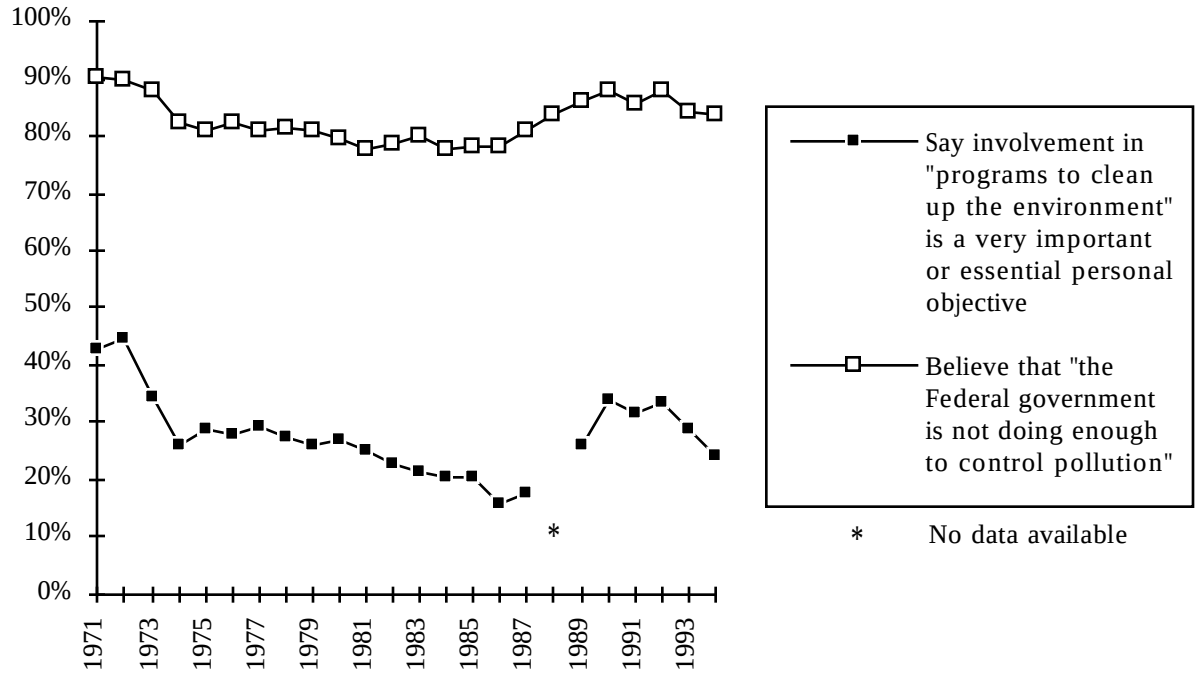


Figure 7. Data from Dey *et al., The American Freshman: Twenty-Five Year Trends* (Los Angeles: Higher Education Research Institute, UCLA, 1991), for 1971-1990; and annual research bulletins from the Higher Education Research Institute for 1991-94. Based on annual surveys of approximately 250,000 freshman at a sample of roughly 600 two- and four-year colleges and universities.

Other students, a numerically significant group, enjoy taking part in service-type programs, such as recycling runs, teaching environmental education, or spreading "environmental awareness." The rewards for such activities are tangible and immediately apparent; it gives these students satisfaction to achieve such concrete results. In outlook, this group is generally close to the life-style environmentalists, and tends to share their cynicism about civic institutions.

Another type of engagement involves students who undertake campus or local advocacy projects, such as setting up a recycling program, or changing an administrative policy. Other students become involved in environmental issues through broader political causes, from endangered species to clean water issues. Many are particularly concerned about justice and equity for underprivileged groups in society or for animals.

Students who care about the environment usually place a high importance on personal behavior.

Perhaps larger than all of these groups combined is that body of students who do not participate in campus service or advocacy initiatives, but nevertheless hope for careers in environmental protection. Student organizers have been surprised more than once by the number of new faces they see at campus conferences on environmental careers and other issues.

Finally, many environmentally concerned students have come to their commitments through recreational experiences in the outdoors. This often includes participation in the outing programs used for campus orientation.

Individual students, of course, share traits from the different categories described, and often change the orientation of their commitment to the environment during the course of their college years.

Financial support for student environmental activism

Most funds for campus environmental groups are requested from student government. Groups with higher budgets usually have special money sources. Students at CU-Boulder have assessed themselves a regular fee, totaling over $135,000 each year, to support the campus environmental center. Some campus groups have received grants from physical plant budgets for conservation and recycling activities.

Almost no groups have long enough histories to look toward their own alumni for support; yet some have received funds from college alumni sympathetic to environmental issues, or from alumni parents of group members. A handful of student groups have received grants from foundations. Such grants have helped University of North Carolina students make SEAC into a national entity, and have enabled Yale students to organize the "Campus Earth Summit."

Among the national student environmental groups, Campus Ecology and the Sierra Student Coalition receive most or all of their funding from large established

environmental organizations outside campuses. The PIRG's receive funding from student fees, canvassing, and some grants. Green Corps receives funds for its services, as well as from grassroots fundraising and some grants. SEAC and Campus Green Vote receive most of their income from foundations.

Special considerations for grantmaking to student organizations.

In her report, *Building Power for Change*, submitted to the New World Foundation in 1993, Helen Denham offers an excellent list of special considerations for making grants to student organizations:

- Involve young organizers in the funding process: contact them proactively, meet with them, work with them.
- Consider funding projects of organizations that may not know to solicit support.
- Determine ways to simplify the grantwriting and reporting process.
- Be prepared to provide multiple-year support.
- Consider supporting consultants who can assist student groups in developing fundraising strategies.
- Recognize that new student organizers and key contacts will emerge every year.[140]

STRATEGIC CONSIDERATIONS

A key issue for student environmental organizations and any grantmakers supporting them is how to balance achieving concrete results today, with training and developing good organizers and committed citizens for tomorrow. These ends are not mutually exclusive, but do suggest different programmatic emphases.

Secondary questions include which concrete organizing goals are most desirable and attainable for students, whom to train, and how best to train them.

How can we balance the pursuit of concrete objectives today with organizer training and development for the future?

Objectives in student environmental activism

Activism lets students develop important skills and values, educate peers about environmental issues, and effect more tangible changes in society around them. These objectives can reinforce each other. For example, concrete results are likely to increase student enthusiasm and involvement, and stimulate peer education through media coverage. Good training should lead to attainment of improved results. However, concentrating intensively on one objective may reduce a program's effectiveness in other areas. For instance, allocating extensive periods to training and development may not leave enough time to implement other important initiatives.

These possible objectives call forth a series of questions:

- **What goals can students best achieve, and what are the most effective ways of organizing to do so?** Students can be involved in the details of campus and local change. They can create new programs or sit down to negotiate with the campus administration. On regional and national levels, however, students cannot easily become "players" in such direct ways. Their principal tool for change becomes advocacy through creative communications. Different kinds of training, assistance, networks, and financial resources are necessary for these different strategies.

- **What are the most effective ways to promote student development through organizing?** Foundations must consider whether it is more important to help student organizations develop a committed core of leaders, or to train as many students as possible more casually. Trade-off in this question is reduced because activism naturally involves outreach to a large group of students. The development of an advanced core group enables them to train others. Grantmakers and student groups must also weigh how much to involve professional organizers and adult mentors as teachers of organizing. Finally, learning how to organize requires practice as well as instruction, so the question of how to balance support for projects and for formal training arises again.

- **What are the most effective ways of increasing peer education?** Reaching out to peers is one of the most natural elements of student environmental organizing. Almost every campus group organizes educational lectures, Earth Day events, special discussions and the like. Funders who decide to support work in this area might weigh the importance of holding special events *versus* increasing communications through campus media, such as newspapers, magazines, and radio broadcasts. The latter strategy might be easier to coordinate across multiple campuses, and may fit better with a plan to help students sharpen media outreach skills in general.

On regional and national levels, the principal tool students can use for change is advocacy through effective communications.

- **Should any campuses or groups in particular receive support?** If student groups on individual campuses are supported, foundations should consider the importance of the project, the geographic distribution and diversity of the group in question, and the opportunity to expand the project beyond the individual campus.

Means for and obstacles to student environmental activism

The means for student environmental organizing are diverse, and sometimes the subject of basic disagreements among organizers and organizations. Efforts may be top-down or grass-roots, student-led or professionally supported. However, many of these tactics can be combined in a single effort. In order to draw strength from both amateur student energy and professional-level organizational talent, a variety of tactics is often appropriate for one venture.

The 1993 report to the New World Foundation offers a very thorough list of obstacles to youth organizing. Many apply to student environmental organizing:

A) Organizational obstacles

- Lack of infrastructure
- Rapid turnover
- Lack of training and mentors
- Lack of money, especially for administrative and overhead cost, coupled with the difficulties of grantwriting and fundraising
- Tension between results and training; youth organizations must devote a high proportion of their energies to training new leadership
- Lack of political/power analysis
- Lack of long-range planning
- Turf battles, and conflict over agendas, strategies, and tactics
- Lack of communication strategies
- Lack of access; students are often dismissed because of their youth.

Given current aggressive attacks on environmental protections, funders and student groups should concentrate on achieving immediate gains.

B) Societal obstacles

- Impermanent constituency
- Divisions by class, race, culture
- Backlash against progressive politics
- Media blackout and bias. (In a recent survey, 40 percent of young people claimed they had participated in a protest during 1992; 16 percent participated in 1968. Contemporary media coverage does not reflect this pattern at all, but rather emphasizes negative images of violence and drug use among youth.)[141]

RECOMMENDATIONS

Because of the current aggressive attacks on environmental protections, funders and student organizations should concentrate on achieving concrete victories. In particular, they should emphasize state-to-national campaigns and communications, and focus on immediate national environmental policy concerns. All three major goals areas of student environmental organizing are nevertheless important: 1) to develop participating students into effective citizens and future organizers; 2) to educate other students about environmental issues; and 3) to achieve concrete external objectives.

Because of their widespread support for strong environmental protections, and due in part to the open minds which they often bring with their approaches, students can be an important source of revitalization for the environmental movement.

In times of less stress, a higher proportion of resources should be allocated to training students as organizers. This training process should still take place within the context–and be driven by the excitement–of an actual campaign or purpose. At all times, foundations should support the development of campus-to-national-level infrastructures. These structures are critical in building and sustaining student effectiveness. They will also maximize the unprecedented opportunity posed by Earth Day 2000.

THE FOLLOWING ARE THE KEY RECOMMENDATIONS FOR THIS SECTION:

I. Develop regional and national campaigns with relevance to current environmental policy debates.

Veteran student organizers note that it is difficult to organize large numbers of students at the national level on a sustained basis, but that it can be possible to mobilize students *en masse* for specific and timely ventures. The history of SEAC, for example, demonstrates the potential effectiveness of national campaigns, as well as the difficulty of sustaining student-led efforts on a national scale. The current assault on environmental progress has presented a major stimulus for action. Funders should encourage and support the national student organizations and any smaller groups ready to conduct state, regional, and national campaigns. Campaigns are valuable, both to educate students and the public about current developments, and to show elected officials how students feel about environmental concerns. The campaigns may be action-based, but their essence is communications.

II. Escalate publicity efforts in campus and national media to increase the coverage of environmental issues and student environmental action.

Use of effective communications is the fastest way to involve more students and the general public in the current national environmental policy debates. Campus conservatives understand the power of communications; it has been their principal

weapon for years. Foundations should provide advice and technical assistance to student groups, or even create a new organization to do so. The organization could work with national and local groups to prepare and distribute press releases about their activities, do critical audio and video work, and point the press toward local student contacts. Funders should encourage and subsequently underwrite student proposals with strong communications plans.

These strategies concern increasing campus-to-national media coverage of student actions. Other possible initiatives involve communications alone. Foundations could play an important role by stimulating and supporting initiatives such as:

- Investigative research and writing on environmental issues for mainstream or environmental campus media.
- A syndicated column for distribution to campus papers. Well-known environmental thinkers could alternate with student contributors.
- A national student environmental magazine.
- Development of lists of national and local spokespeople, and a computer database for journalists to work up a local angle on student environmental stories.

III. Register students to vote and educate them about major national environmental issues.

Given the widespread student conviction that the government does not do enough to protect the environment—the polled opinion of 84 percent of college freshmen in the fall 1994, it is important for students to educate each other about candidate positions and the implications of policy initiatives for sustainability. Campus Green Vote focuses on voter registration and education; these are also major activities for the student PIRG's. Funders should encourage such efforts, and especially help to emphasize the message that environmental protection is a non-partisan issue. Registration is particularly important, as polls show students are expressing record levels of cynicism about the political process and the effectiveness of civic institutions.

IV. Strengthen the infrastructure of the student environmental movement.

By their nature, social movements wax and wane. Although, in general, student enthusiasm for environmental protection is still high, polls show that it has undergone some recent decline. Strengthening infrastructure will help maintain levels of activity even in the face of future slippage, and can provide a base for taking maximum advantage of opportunities when they arise.

A. Strengthen networks and build new constituencies.

1. **Sustain regular regional and national conferences.** Student environmental conferences generate an energy and a visibility that

are critical for the movement. The members of every entering class need to be shown that they are not working alone. Conferences generate lists of new contacts, catalyze specific projects, earn media coverage, and play an important role in the development of new leadership. Probably more than anything else, conferences built SEAC and have held its regions together. Follow-up is traditionally the biggest weakness of these student gatherings; groups should address this problem on a case-by-case basis from the earliest stages of planning.

Conferences generate lists of new contacts, catalyze specific projects, earn media coverage, and play an important role in the development of new leadership.

2. **Tap fresh student interest through existing networks not focusing on environmental issues.** These networks might include student governments, religious groups, fraternities, or sororities. As discussed in an "Environment and Campus" recommendation, the best entry-level projects for such groups are often direct service or campus ecology projects.

3. **Develop a network of activists among faculty and administrators.** One of the principal challenges of organizing students is that 25 percent of the undergraduate student body will graduate every year. Faculty and administrators stay in place. At most colleges or universities, student activists describe a small group of inspiring teachers.[142] A list of environmentally friendly and activist faculty/administrators around the country would be an extremely valuable asset for student organizing. Such a network might engage in its own projects (including the promotion of environmental teaching and dialogue), and serve as an important conduit to increase student knowledge and involvement.

4. **Develop networks of environmentally concerned alumni.** Alumni can be important sources of funds and assistance for campus groups. They also carry special clout with college administrations. Environmentally concerned alumni from several universities have recently begun to organize themselves. The Dartmouth Environmental Network is probably the most successful case. It holds an annual conference at Dartmouth, hires a student intern, and has worked on the greening of campus practices.[143] Individual alumni have also helped student groups that reached out to them. This contact occurred at the University of Chicago, and at Yale. University administrations often try to block student attempts to

contact alumni, but alumni can be reached and organized through faculty, one another, or through non-profit environmental organizations.

5. **Build high school activist networks through college students.** The Sierra Student Coalition has a fifty-percent high school membership, and SEAC's junior membership is growing. Networks for high school (and even younger) students might also be cultivated through environmental education programs taught by college students. (See recommendations below.)

B. Develop training and technical assistance for national and campus groups.

1. **Increase the number and effectiveness of training programs at all levels.** While most national student groups offer training workshops to members, it is not clear that the leadership receives much training itself. The most successful student environmental campaigns, Earth Day 1970 and 1990, were run by highly trained law-school students. Therefore, developing the talents of the student leadership through training or mentorship programs should receive top priority.

   As for member training programs, there are two basic models. In one, students travel to attend a brief workshop, or are visited by field trainers. This usually occurs during a weekend of the school year, or for a longer period during the summer. In the other form of training, a qualified staff member stays on campus with students and trains them over the course of a whole year. The latter is probably more effective, but also more expensive.

   In general, training is an intensive need in student organizing because of rapid student turnover. It is also a goal in itself, benefiting students as they move on to a variety of other communities and institutions.

Media and fundraising support, research, strategic advice, and training are all services in need by student activists at all levels.

2. **Create an organization or mechanism for strategic and technical assistance to national groups.** As most environmental groups, even on the national level, are run by students or recent students, they have a youthful energy which can attract high levels of participation and offer a sense of empowerment. However, their inexperience is also an important liability. Most student groups could use their

membership far more effectively and reach the media far more often than they actually do. An organization offering media and fundraising support, research, strategic advice, training, and related services would be a very valuable tool for the movement. This multi-faceted intervention would not only preserve student, grassroots quality of the environmental movement, but would also give it critical professional support.

C. Develop effective tools for organizing: the Internet and computer technology. The average age of Internet users is 23 and dropping.[144] A significant number of colleges and universities already offer accounts to students ; many institutions even extend network connections into the dorm rooms. Where there is e-mail access, student use rapidly becomes nearly universal. Some of the national student environmental groups use the Internet to put their members in touch with each other and to issue occasional bulletins. However, the surface has only been scratched for the potential uses of cyber-space.

Foundations should help student groups to develop lists, extend outreach, and recruit through campus electronic networks. Philanthropies should support student efforts to coordinate and synchronize national action campaigns through the Internet. Grantmakers should also support the development of issue-specific e-mail distribution lists, and student group World Wide Web sites to share useful information.

Training students to use these tools is not a concern. Organizers who do not already understand them can turn to their friends or roommates.

V. Strengthen individual campus group efforts and centers.

In a climate of cynicism, the greatest inspiration may be the example of others making an impact. Many projects and campaigns of the student environmental movement have been born out of the successful model or leadership of one campus—from UCLA and its environmental audit, to the Cornell Greens and the effort to “Save James Bay.”

> Small grants will purchase volunteer time and self-respect from campus groups that have rarely, if ever, received outside funds before.

Major student environmental centers, especially those with paid staff and adequate office equipment, are a key ingredient to strong campus groups with sustained activity. They can become regional bases for organizing, as well. The student environmental center at the University of Colorado at Boulder, for example,

with full-time staff and work-study student staff, sustains a level of campus activity probably unmatched in the nation.

Unfortunately, student groups and centers are not nearly as well endowed. Foundations should support multiple groups in strategic areas and at diverse types of institutions around the country. Very small grants will purchase an enormous amount of volunteer time and self-respect from groups that have rarely, if ever, received outside funds before. Some of these inexpensive risks should spark surprising gains, making the package worthwhile.

Special measures would be necessary to publicize the availability of such funds, and to offer technical assistance for their administration. Finally, funders should be willing as part of their grants to help student groups purchase basic office equipment as needed; the volunteer time offered in exchange is more than worth the bargain.

VI. Organize students who teach environmental education at secondary schools.

Almost every campus with an environmental group, it seems, has a group of students who teach about the environment at local schools. One University of Kentucky student raised $84,000 for Lexington schools to buy environmental education materials.[145] Yet there appears to be no communication or network among such groups. Such a network would catalyze new environmental education groups and spur growth in existing ones. It would save time, avoid duplication of curriculum-development efforts, and lend legitimacy to network members. In addition, a network of environmental education groups could support high school organizing, and create communication and mobilization channels into high schools for major national events.

Conclusion

A just and sustainable future *requires* that every kind of student learn to become environmentally responsible and competent. The pathways through which this can take place are as diverse as the institutions of higher education and the students who populate them. This report has identified three major avenues, united by their common goal. Expanding environmental education, improving campus practices, and strengthening student activism complement each other to reach a broad student audience.

Although each type of campus program is fairly distinct in its approach, each will have effects in the other areas. Their objectives should not be considered in isolation. For example, student environmental activism can lead to improved campus practices, which in turn maybe edifying to a wide audience in ways that no classroom could ever achieve. Classroom education, in turn, can better inform campus environmental stewardship, or inspire students to take action in a broader sphere.

In short, there are causal linkages running in every possible direction among the three main topics of this report. The most environmentally enlightened colleges and universities reflect an understanding of these connections in their programs and policies. For example, strong environmental studies programs at Brown and Middlebury are complemented by formal mechanisms to improve institutional behavior and ensure student participation. Moreover, when George Washington University recently announced a "Green University Initiative," it not only committed to improving operations and teaching, but dedicated research and medical services to "a principled environmental ethic and a commitment to sustainability," in the words of university president Stephen Joel Trachtenberg.[146]

STRATEGIC CONSIDERATIONS

Foundations should consider the goals, prior achievements, and means for advancement available in each of the three areas described in this report as the basis for choosing a funding strategy. Organizations and individuals should apply the same process to formulate plans for action. These groups should all bear in mind that environmental education can build the intellectual underpinning necessary for a sustainable future. Both the training of future specialists and the wide development of environmental literacy are important priorities; however, some trade-off between these goals may be required, given limited time and resources. Environmental studies programs are relatively well-developed; the integration of environmental perspectives across the curriculum is not as advanced.

Involvement in service, advocacy, or other forms of environmental action outside the classroom may often be the most effective way for students to become *engaged* in the pursuit of sustainability and to learn practical skills. In these projects, as in formal educational reform, foundations and organizers must weigh the importance of broad participation, intensive training, and achieving measurable results. It is true that these ends can compete with one another; but they can also be mutually reinforcing. Achievement of results boosts recruitment as well as the confidence, commitment, and energy of veteran campus environmentalists and should not be neglected for the sake of student training and development. However, training is important both for newcomers to organizing and for established leaders. Effective communications must be understood as one of the most valuable tangible objectives toward which students and their supporters should strive—whether this be informing the campus community about local environmental improvements, or using regional and national media as a vehicle to reach a broader constituency with messages about student beliefs.

RECOMMENDATIONS

All three campus-based strategies for environmental reform described here are important arenas for action and philanthropic support. They are complementary approaches which strive for the common goal of student development into caring and competent stewards for the future. Individual funders and organizations, however, might choose to emphasize just one or two areas to achieve more focus and effectiveness in their own programs. At this time, an overall prioritization does seem appropriate for those in a position to choose.

Prioritize student environmental activism.

The need for increased student activism is particularly urgent today. Politicians are exerting such extreme pressure against the environmental gains of the last 25 years that efforts to counter this development must take top priority. Students can become a major force in helping to shape the national debate on environmental protection, and foundations should heavily support student environmental activism with this goal while the attack lasts. Communications and voter registration should be emphasized. This strategy will also have the effect of strengthening the environmental movement by training future activists, and will help develop all students into committed citizens of the planet.

A well-prepared student environmental movement will be able to capitalize on the interest and support likely to climax in 2000.

Furthermore, foundations should help students build stronger infrastructures for activist training, coordinated action, and technical assistance in preparation for the year 2000. That year, the 30th anniversary of Earth Day and the dawning of a new millennium, is likely to be a moment on which a well-prepared movement can capitalize strongly.

Emphasize the integration of environmental perspectives in subjects across the curriculum.

In order to cultivate environmental literacy in the majority of students who are neither activists nor environmental studies majors, foundations should support advocates for incorporation of environmental perspectives into the teaching of targeted disciplines. This avenue, though less dramatic than activist efforts, is crucial for achieving sustainability. All students must have the sensitivity and practical knowledge to make good environmental decisions in their careers, as well as in their civic and personal lives.

Faculty, students, and administrators, non-profit organizations and academic associations can all help transform education by creating special resources, networks, and demands for change, as well as initiatives that leverage the substantial funds already in academia. Funders should support such efforts. They might also work to support existing environmental studies programs. These programs have the potential to reach a broader spectrum of students than just those who choose environmental studies as a major, and may need support in the wake of federal and institutional budget developments. So that students have the opportunity to learn directly about environmental practice, foundations should help environmental programs multiply high-quality opportunities for experiential education.

Create opportunities for students to learn from campus stewardship.

While the path of intellectual change is often slow, initiating improved campus stewardship practices can often occur swiftly. College and university administrators should find it easier to take a stand on improving their physical plant practices, for example, than to challenge the curricula taught by their faculty. Although effecting these changes is an end in itself, foundations should support campus reforms so that students can learn from them. Many campus improvements with the most beneficial environmental impacts will come from staff and administrators, whose work is usually invisible to students. From a student perspective, communication of stewardship efforts or direct involvement in them is sometimes more important than the actual mitigation of campus impacts. Of course, students are often driving forces behind stewardship initiatives in the first place, and should definitely be encouraged in this role.

• • •

For students, the college years are a season of hope and idealism. Timely support for advancing environmental education, practices, and activism on campus should lay the groundwork for a more sustainable future. It will also refresh the environmental movement today so that the Class of 2000 and their children's children can truly inherit a better life on this planet tomorrow.

Summary of Recommendations

EXPAND ENVIRONMENTAL EDUCATION AT COLLEGES AND UNIVERSITIES

WITH A FOCUS ON INCREASING ENVIRONMENTAL LITERACY

I. Incorporate environmental perspectives into traditional disciplines.

A. Stimulate and facilitate the work of interested faculty by collecting, creating and disseminating resources (such as sample course syllabi, case studies, problem sets, and modules), and by supporting intensive faculty development programs.

B. Develop mainstream textbooks with significant environmental content.

II. Strengthen environmental studies.

A. Stimulate networking among environmental programs.

B. Reach out to a more diverse audience.

C. Enhance model environmental studies programs that are either financially threatened or situated in regions or at types of institutions lacking strong models.

III. Multiply high-quality opportunities for experiential education.

Catalyze internships and classes that research campus and local environmental solutions, thus combining service with learning.

IV. Urge top administrators and powerful non-academic institutions to move ecological sustainability higher on the educational agenda.

A. Track and publicize state and federal funding levels for environmental research.

B. Rate colleges and universities on their environmental teaching.

C. Hold conferences on environmental literacy among university presidents, foundation officers, prominent alumni and other stakeholders.

D. Challenge accreditation bodies to include requirements for environmental education.

V. Leverage the enormous student demand for environmental education opportunities.

A. Support student advocates for environmental education.

B. Conduct studies which show the demand and need for environmental education in college.

IMPROVE CAMPUS ENVIRONMENTAL PRACTICES

WITH A FOCUS ON INFLUENCING STUDENT DEVELOPMENT IN A POSITIVE WAY

I. Expand student and faculty research and coursework directed toward improving campus and community environmental stewardship.

Support student participation on special committees, as well as class projects directed toward improving environmental stewardship. (See also Recommendation III on previous page.)

II. Multiply student efforts to reform campus practices.

Encourage student environmental organizations to work for a wide range of campus reforms, and to use these issues to engage other student groups–such as student government, athletics teams, fraternities and sororities–not traditionally concerned with the environment.

III. Urge top administrators to institutionalize campus environmental stewardship and launch model initiatives.

A. Advocate for institutional reforms with effects that will multiply. These innovations include: creating a staff position, standing committee, or special program charged with reducing campus environmental impacts; and channeling savings from conservation projects back into more environmental efforts.

B. Undertake exceptional projects that can serve as innovative and dramatic models to other campuses.

C. Rate colleges and universities on their environmental performances.

IV. Develop resources and networks to stimulate and facilitate the work of interested administrators, staff and students.

A. Utilize the Internet to create specialized communications networks and information resources.

B. Develop human networks, environmental peer reviews and standards, and reach out to already existing networks of physical plant administrators at colleges and universities .

V. Communicate positive results loudly and consistently.

Reverse the usual lack of publicity about campus environmental reforms to realize their maximum educational and motivational value, both within and beyond the campus community.

STRENGTHEN STUDENT ENVIRONMENTAL ACTIVISM

WITH A FOCUS ON AMPLIFYING THE STUDENT VOICE WITHIN REGIONAL AND NATIONAL ENVIRONMENTAL POLICY DIALOGUES

I. Develop regional and national campaigns with relevance to current environmental policy debates.

Support students in informing other students and the public about current public policy developments, and help them to show elected officials how students feel about environmental concerns.

II. Escalate publicity efforts in campus and national media to increase the coverage of environmental issues and student environmental action.

Provide advice and technical assistance to exisiting student groups, or even create new organizations to prepare and distribute press releases, produce critical audio/video documentation, and point the press toward local student contacts.

III. Register students to vote and educate them about major national environmental issues.

Emphasize that environmental protection is a non-partisan issue.

IV. Strengthen the infrastructure of the student environmental movement.

A. Strengthen networks and build new constituencies.
B. Develop training and technical assistance for national and campus groups.
C. Develop effective tools for organizing: the Internet and computer technology.

V. Strengthen individual campus group efforts and centers.

Make small grants to numerous groups in strategic areas around the country, and at diverse types of institutions, especially when the groups are performing activities that can serve as models for other campuses or as catalysts for regional or national actions.

VI. Organize students who teach environmental education to K–12.

Build a network to catalyze the creation of new college groups that perform this activity; to increase the success of existing groups; and to add to the infrastructure for joint communications and organizing among colleges and high schools.

Notes

INTRODUCTION

1 Union of Concerned Scientists, "World Scientists' Warning to Humanity" (Cambridge, MA: Union of Concerned Scientists, 1992).
2 William K. Stevens, "Scientists Say Earth's Warming Could Set Off Wide Disruptions," *The New York Times*, September 18, 1995, p. A1.
3 Lester Brown, "Nature's Limits," in *State of the World: 1995* (New York: W. W. Norton & Company, 1995), pp. 4-5.
4 *Ibid.*, pp. 4-7.
5 World Resources Institute, *The Crucial Decade: The 1990s and The Global Environmental Challenge* (Washington, DC: World Resources Institute, 1989), p. 1.
6 World Commission on Environment and Development, *Our Common Future* (New York: Oxford University Press, 1987), p. 4.
7 *Ibid.*
8 World Resources Institute, *The Crucial Decade*, p. 2.
9 Ernest T. Pascarella and Patrick T. Terenzini, *How College Affects Students* (San Francisco: Jossey-Bass, 1991), p. 277.
10 Malcolm W. Browne, "Budget Cuts Seen By Science Group As Very Harmful For U.S. Research," *The New York Times*, August 29, 1995, p. C1.
11 Stephen Burd, "House Votes to End Funds for Arts in 2 Years, Humanities in 3," *The Chronicle of Higher Education*, July 28, 1995, p. A31. Jim Zook and Colleen Cordes, "Education Cuts Reduced in GOP-White House Compromise," *The Chronicle of Higher Education*, July 14, 1995, p. A24.

ENVIRONMENT AND EDUCATION

12 Richard Hofstader and Wilson Smith, eds., *American Higher Education: A Documentary History, Volume II* (Chicago: University of Chicago Press, 1961), p. 694.
13 David Orr, *Ecological Literacy* (Albany: State University of New York Press, 1992), p. 92. Emphasis added.
14 Gerald Lieberman, *Pieces of a Puzzle: An Overview of the Status of Environmental Education in the United States* (a report prepared for the Pew Charitable Trusts, Philadelphia, 1995), p.11, Chart 2: "EE Program Initiation Period."
15 *Ibid.*, pp. 18-19, for number of national and local EE organizations. Compilation by the North American Association for Environmental Education (Washington, DC) for state level total (available on the Internet, within the Envirolink gopher network).
16 Lieberman, *Pieces of a Puzzle*. Figures based on sums from the sample of EE organizations listed in Appendix F of the Lieberman report.
17 The Public Interest Research Groups, the National Pollution Prevention Center for Higher Education, and the Pollution Prevention, Education and Research Center are not included in this calculation because they focus as much or more on advocacy (the PIRG's) or research (the others) than on environmental education.
18 Natural resource management programs are not included here under the headings of environmental studies or sciences. Some natural resource programs have a strong emphasis on conservation, but

others may not. In this report, these fields are considered as part of the universe of fields which require a strong integration of environmental perspectives in the name of helping to create a sustainable future.

19 Douglas O'Reilly (co-author of the Environmental Careers Organization report *Environmental Studies: 2000*) estimates there are 150 to 160 environmental studies programs, based on a database which he compiled during the course of his research. He reports that he found more environmental sciences programs than environmental studies, but did not track the former. Anthony Cortese (Director of Second Nature and a former dean at Tufts University) estimates that roughly 400 colleges and universities have environmental studies *or* sciences programs total.

20 O'Reilly *et al.*, *Environmental Studies: 2000* (Boston: Environmental Careers Organization, 1995), pp. 27-28.

21 *Ibid.*, pp. 28-29.

22 Interview with Christopher McGrory Klyza (Director, Middlebury College Program in Environmental Studies), April 1995, for program history and information. Program in Environmental Studies (Middlebury College, Middlebury, VT) course description sheet, 1994-95, for program description. Anita Manning, "Eco-studies are blooming at colleges," *USA Today*, April 19, 1995, for size and growth rate of Middlebury Environmental Studies (confirmed by Klyza).

23 Earth Systems Program (School of Earth Sciences, Stanford University, Stanford, CA), "Earth Systems Program: An Interdisciplinary Undergraduate Major with Coterminal Master's Option" (Stanford, CA: Stanford Publication Services, winter 1993-4), for program description. Interview with Deana Fabbro-Johnston (Administrator, Stanford Earth Systems Program), April 1995, for program administration and enrollment.

24 Environmental Studies Program (University of Colorado at Boulder), "Environmental Studies Program" information sheet, 1994-95, for program offerings description. Interview with James White (Director, CU-Boulder Environmental Studies Program), March 1995, for program size, growth, and administration.

25 The Environmental Program (University of Vermont, Burlington), "Environmental Studies" information sheet, 1994-95, for program offerings description. Academic Affairs Committee, Subcommittee on The Environmental Program Reorganization, The Faculty Senate, University of Vermont, "Outline of Discussions with Carl Reidel, former Director, The Environmental Program," November 20, 1994, for program size and growth. Interviews with Ian Worley (Director, University of Vermont Environmental Program), March and June 1995; and Carl Reidel (founder and former Director, University of Vermont Environmental Program), May 1995, for program history and administration.

26 Interview with Ross Virginia (Director, Dartmouth Environmental Studies Program), March 1995.

27 Thomas N. Gladwin, "The Global Environmental Crisis and Management Education," *Total Quality Environmental Management*, Autumn 1993, p. 110. Interview with Matthew Arnold of the Management Institute for Environment and Business, July 1995.

28 "Workshop on the Principles of Sustainability in Higher Education," a report to the President's Council on Sustainable Development, p. 4.

29 Herman Daly, "On Nicholas Georgescu-Roegen's Contributions to Economics: An Obituary Essay," forthcoming in the *Journal of Ecological Economics*.

30 Consortium for Environmental Education in Medicine (Cambridge, MA), "Consortium for Environmental Education in Medicine" information sheet, 1995.

31 "Workshop on the Principles of Sustainability in Higher Education," p. 4.

32 *Ibid.*

33 Eds. Pamela Bloch and Joanne Goodwin, *Directory of Pollution Prevention in Higher Education*, second edition (University of Michigan, Ann Arbor, MI: National Pollution Prevention Center for Higher Education, 1994), p. v., for chemical engineering survey results. Interview with David Allen (then Co-director, Pollution Prevention, Education and Research Center, University of California-Los Angeles), March 1995, for information on special chemical engineering course materials and textbook.

34 Tufts Environmental Literacy Institute, "TELI Course Revision Summaries" (Tufts University, Medford, MA; also available from Second Nature), for course revision descriptions. The Center for Environmental Management (Tufts University), "A Balanced Approach to Global Environmental Change: 1994 Annual Report," for Tufts budgeting information. Interviews with Thomas Kelly (Director, Association of University Presidents for a Sustainable Future-Secretariat), spring 1995, for recent TELI history and

administrative details.

35 "The Report of the President, 1994: Environmental Studies at the University of Georgia" (Athens, GA). Interview with James Porter (Ecology Program, University of Georgia), May 1995.

36 O'Reilly *et al.*, *Environmental Studies:2000*, p. 28.

37 Melissa Smith, ed., *Service Matters* (Providence, RI: Campus Compact, 1994), pp. 9-10.

38 Center for Environmental Studies (Brown University, Providence, RI), "A complete description of programs and activities," September 1994, p. 21.

39 Interviews with William McDonough (Dean, University of Virginia School of Architecture), March and October 1995.

40 Institute for Environmental Studies (University of Wisconsin-Madison), "Index to Campus Environmental Research Reports," September 1994. Interview with Daniel Einstein (Director, Campus Ecology Research Program), October 1995.

41 Interview with Thomas Kelly, March 1995.

42 Interview with Richard Clugston (Director, Center for Respect of Life and the Environment), October 1995.

43 National Pollution Prevention Center for Higher Education World Wide Web site, for general program information (http://www.snre.umich.edu/nppc/). Letter from Jonathan W. Bulkley (Director, National Pollution Prevention Center for Higher Education, Ann Arbor, MI), March 17, 1995, for materials distribution information. Interview with Bulkley, March 1995, for history.

44 Interview with David Allen, March 1995.

45 Interviews with Anthony Cortese and Second Nature staff, March 1995.

46 Interview with Susan Flader (President, American Society for Environmental History; Department of History, University of Missouri), April 1995.

47 Interview with Cheryll Glotfelty (Co-chair, Association for the Study of Literature and the Environment; Department of English, University of Nevada-Reno) and e-mail from Michael Munley (archivist, ASLE), April 1995.

48 Interviews with Faye Duchin (Curriculum Committee Chair, International Society for Ecological Economics; Institute for Economic Analysis, New York University), and Dean Button (Executive Secretary, ISEE), May 1995.

49 Consortium for Environmental Education in Medicine, "Consortium for Environmental Education in Medicine" information sheet.

50 Interview with Matthew Arnold (President, Management Institute for Environment and Business), May 1995.

51 Interview with Ken Ward (Staff director, NJ Public Interest Research Group), March 1995.

52 Environmental Studies Program (Dartmouth College, Hanover, NH), "Environmental Studies Program Newsletter," winter 1995. Interview with Robert Sievers (Board of Regents, University of Colorado), March 1995. Kitty Beer Mattes, "How to Study the Environment?" *Harvard Magazine*, March/April 1994, p. 31. Interview with Steven Tobin (Hewlett Foundation), May 1995.

53 "Letter of Understanding and Agreement between the United States Environmental Protection Agency and the George Washington University," signed December 12, 1994 by Carol M. Browner (Administrator, US EPA) and Stephen Joel Trachtenberg (President, GWU), on EPA's support of GWU's Green University Program. Center for Environmental Management (Tufts University), "A Balanced Approach to Global Environmental Change: 1994 Annual Report," for financial information about CEM. Interview with Thomas Kelly (for news that EPA has terminated funding to CEM), spring 1995.

54 Interviews with Matthew Arnold (on the Management Institute for Environment and Business) and Jonathan Bulkely (on the National Pollution Prevention Center for Higher Education), both spring 1995.

55 The Historically Black Colleges and Universities/Minority Institutions Environmental Technology and Waste Management Consortium (headquarters, Clark Atlanta University, Georgia), *Annual Report 1990-1991*.

56 O'Reilly *et al.*, *Environmental Studies: 2000*, pp. 22-23. Melvin H. Bernstein, *A Review of Environmental Education at Colleges and Universities in New England* (Boston: New England Board of Higher Education, 1995), p. 6.

57 Lieberman, "Pieces of the Puzzle," pp. 25-28.

58 Interview with James Karr (Director, Institute of Environmental Studies, University of Washington), May 1995.

59 Sylvia Nasar, "A Hard Act to Follow? Here Goes. Wanted for Econ 101: The Next Samuelson (Money Is No Object)," *The New York Times*, March 14, 1995, p. D1.

60 Interview with Thomas Gladwin (Stern School of Business, New York University), May 1995.

ENVIRONMENT AND CAMPUS

61 April Smith and Robert Gottlieb, "Campus Environmental Audits: The UCLA Experience" in *The Campus and Environmental Responsibility*, David Eagan and David Orr, eds. (San Francisco: Jossey-Bass Publishers, 1992), p.13.

62 Students include graduate and professional students. Paper purchased by Yale does not include the vast volume of course packets and supplies students purchase at commercial copy shops. Liza Grandia, "Patterns and Processes in the White-Paper 'System' of Yale University," fall 1994. Class paper for "Patterns and Processes in Terrestrial Ecosystems," Yale School of Forestry and Environmental Studies.

63 Jack DeBell, "Coming of age: Recycling on campus," *Resource Recycling*, vol. 13, no. 9, 1994, p. 45.

64 Walter Simpson, "Recharging Campus Energy Conservation: The View from SUNY-Buffalo," November 8, 1993. Simpson is the University Energy Officer at SUNY Buffalo. United States Environmental Protection Agency (Document EPA 430-F-95-030), "Green Lights: College and University Program" (Washington, DC: EPA, 1995).

65 Brown Is Green Program, "Brown University Recycling Program Summary," November 31, 1994.

66 April Smith and the Student Environmental Action Coalition, *Campus Ecology* (Los Angeles: Living Planet Press, 1993), p. 13.

67 2,700 is almost 78 percent of the nation's approximately 3,500 colleges and universities. DeBell, "Coming of age: Recycling on campus," p. 44. DeBell noted in a telephone interview, August 1995, that the biggest increases in campus recycling programs seemed to take place in 1991-92.

68 *Ibid.*, p. 45.

69 Anne Roark, "UCLA Identifies a Major Source of Pollution—Itself," *Los Angeles Times*, June 15, 1989, p. A1.

70 Earth Day 1990 News and Information Service, "Campus Program Results."

71 See **Appendix I** for fuller information. Books are: *Student Environmental Action Guide* (1991), by the Student Environmental Action Coalition; *The Campus and Environmental Responsibility* (1992), eds. David Eagan and David Orr; *Campus Ecology* (1993), by SEAC and April Smith; and *Ecodemia* (1995), by Julian Keniry.

72 Interview with Steven Hamburg (the first Environmental Ombudsman, University of Kansas; now a faculty member at Brown University), March 1995.

73 Brown Is Green Program, "Brown University Resource Conservation Program Summary," 1994. James Corless and Harold Ward, "Can Brown Be Green? Lessons from One University's Quest for Environmental Responsibility," in *The Campus and Environmental Responsibility*, pp. 45-54.

74 Interview with Robert Koester (Department of Architecture, Ball State University, Muncie, IN), August 1995. The 'Green' Committee on Environmental Studies, "Final Report" (Ball State University, Muncie, Indiana, December 1991).

75 Interviews with Will Toor (Director, University of Colorado at Boulder Environmental Center), summer 1995.

76 Ed. Chris Soto, *Campuses Working for a Sustainable Future* (Washington, DC: National Wildlife Federation, 1994), p. 103, for information on energy and financial savings, and trademark violation. Julian Keniry and Brian Trelstad, "Student Environmental Organizations," in *The Campus and Environmental Responsibility*, p.109, for history and publicity. Interview with Brian Trelstad (founder, Ecolympics), May 1995, for information on history and program replication.

77 Information from assorted personal interviews and environmental program brochures.

78 Interview with Chris Kim (Princeton '95; Co-President, Princeton Environmental Reform Committee), May 1995. See Environmental Council (Middlebury College, Middlebury, VT), "Pathways to a Green Campus: Environmental Council Reports and Recommendations," May 12, 1995, and Princeton Environmental Reform Committee (Princeton, NJ), "Princeton University Environmental Audit 1995."

79 Smith and the Student Environmental Action Coalition, *Campus Ecology*, p. 69, on World College West. The Center for Regenerative Studies (California State Polytechnic University, Pomona, CA), "The Center for Regenerative Studies" information pamphlet. (Date not printed.)

80 "1995 Class Gift To Fund Solar Resource Center," *Colonnade: Brief Notes from the University of Virginia School of Architecture*, vol. XI, no. 1, February 1995. Interview with William McDonough.

81 Interview with Will Toor, March 1995, on Boulder bus initiative. Smith and the Student Environmental Action Coalition, *Campus Ecology*, p.65, on University of Illinois at Urbana-Champaign. Interview with Britta Ipri (Rutgers student; Chair, National Student Forum, Student PIRG's), April 1995, on Rutgers bike campaign.

82 Julian Keniry, *Ecodemia* (Washington, DC: National Wildlife Federation, 1995), p. 5, citing U.S. Department of Education, *Digest of Educational Statistics*.

83 *Ibid.*, pp. 6-11. *Blueprint for a Green Campus: The Campus Earth Summit Initiatives for Higher Education* (Washington, DC: Heinz Family Foundation, 1995), pp. 24-25. Interview with Kevin Lyons (Procurement and Contracting Division, Rutgers University, New Brunswick, NJ), August 1995.

84 Simpson, "Recharging Campus Energy Conservation: The View from SUNY Buffalo." United States Environmental Protection Agency, "Green Lights: College and University Program."

85 Interview with Tara Pike (UNLV '95), March 1995.

86 Gary L. Valen, "Hendrix College Local Food Project," in *The Campus and Environmental Responsibility*, p. 86. Also interview with Gary Valen (Meadowcreek Project, AR), September 1995.

87 Interview with William Hochstin (Facilities Management, Dartmouth College, Dartmouth, NH), March 1995.

88 See CU Recycling (University of Colorado-Boulder), "CU Recycling - at a glance," 1994-95, which lists the trees, pollution, and gasoline saved by the program, as well as jobs created and academic programs facilitated. Interview with Jack DeBell (Director, CU Recycling), March 1994. Printout from William Hochstin, March 1995.

89 See Smith and Student Environmental Action Coalition, *Campus Ecology*, and Soto, ed., *Campuses Working for a Sustainable Future* (1994 and earlier editions) for examples.

90 Interviews with Liz Gres (then SEAC National Organizer, now Executive Director), March 1995, and Shane Jimerfield (then SEAC National Council Coordinator; also former student at University of Arizona), June 1995.

91 Interview with Shane Jimerfield, June 1995.

92 Campus Ecology brochure (Washington, DC: National Wildlife Federation, 1995).

93 Telephone interviews, Chris Soto and Julian Keniry (both on staff, Campus Ecology, National Wildlife Federation, Washington, DC), May and June 1995. Keniry, *Ecodemia*, p.1, for number of projects facilitated.

94 Interviews with Jack DeBell, March and August 1995. Monitoring of messages on recyc-l Internet mailing list, October 1994 through May 1995. Interview with Jamie Cahillane (University of Chicago), October 1995.

95 United States Environmental Protection Agency, "Green Lights: College and University Program." Interview with Doña Canales (Director, USEPA Green Lights College and University Program), June 1995.

96 Interview with Kurt Teichert (Director, Brown Is Green Program; moderator, grnsch-l and recyc-l lists). Monitoring of messages on recyc-l and grnsch-l Internet mailing lists, October 1994 through May 1995, and responses to direct e-mail inquiries.

97 Interview with Anne Price (Vice President of SEEE; Georgetown Class of 1996), July 1995.

98 See Green Seal, "Campus Green Buying Guide," produced by Green Seal (Washington, DC) in collaboration with the University of Maryland Center for Global Change, February 1994.

99 For example, the George Washington University Green University Program has received funds and assistance from the EPA, and the Hendrix College Local Food Project received foundation assistance.

ENVIRONMENT AND ACTIVISM

100 The student divestment movement in the otherwise quiet 1980's resulted in partial or total divestment of more than $4 billion in funds at over 150 schools. More than 60 percent of the colleges with protests divested at least in part, whereas fewer than 3 percent of colleges lacking student pressure divested at all. Paul Rogat Loeb, *Generation at the Crossroads* (New Brunswick, NJ: Rutgers University Press, 1994), pp. 172-173.

101 The Student Environmental Action Coalition claims that its member groups have started over 200 campus and high school recycling programs (*Threshold: the movement magazine of the Student Environmental Action Coalition*, March 1995, p. 2). A 1991 survey of 344 campus recycling programs by UCLA and Washington State University researchers determined that roughly half were student-run. By now, most programs are probably run by staff, but there are approximately 2700 in the nation. (Debell, "Coming of age: Recycling on campus.")

Campus Green Vote and the Public Interest Research Groups have been the major environmental players in student voter registration; their efforts are described under the headings "Background: National student environmental organizations."

102 Higher Education Research Institute, "The American Freshman National Norms—Fall 1994: College Students Shun Politics," report summary.

103 I identified no good estimates for the number of student environmental groups existing before 1990. However, Jack DeBell (founder and director of one of the nation's first campus recycling programs, at the University of Colorado-Boulder, in 1976) estimates that fifty campus recycling programs existed in 1980 (compared to roughly 2700 now), which is a good proxy, since recycling has often been the first priority and project of student environmental groups. By informal survey, it seems that most groups were formed (or reactivated) in the late 1980's or early 1990's. Students active at that time, including Owen Byrd (Earth Day 1990 Campus Program National Coordinator) agree with this claim.

What is much more certain is the broad extent of campus environmental groups which exist now. It may be more than the number of campuses in the United States (roughly 3500), since many campuses have multiple groups ranging from recycling to rainforest action. The Student Environmental Action Coalition alone claims to have over 2000 affiliate groups. While this claim is probably inflated, it is possible that members of over 2000 groups have been in some sort of contact with SEAC at least once since its formation.

104 Earth Day Resources, "Earth Day 1995: Free the Planet, The Organizing Manual" (San Francisco), p. 15.

105 Facts and figures for Earth Day 1970 are taken from Earth Day Resources, "Earth Day 1995: Free the Planet, The Organizing Manual," pp. 15-16. Campus Green Vote, "An Overview of the Student Environmental Movement," (Washington, DC: Campus Green Vote, 1995), cites the stoppage of Congress for Earth Day 1970.

106 Interestingly, Environmental Action had an agenda quite similar to the Student Environmental Action Coalition today. Both groups have been especially interested in reaching out to the underprivileged and disenfranchised, frequently in urban settings. Environmental Action chose to focus on stopping highways running through poor neighborhoods, while SEAC attacks problems such as the biased siting of toxic dumps and incinerators. Information on Environmental Action from an interview with Denis Hayes (National Coordinator/Executive Director of Earth Days 1970 and 1990; a founder of Environmental Action), June 1995.

107 Late research identified a possible major network in the Northeast centered around the Dartmouth Outing Club. Denis Hayes, however, could not recall any national student environmental networks which grew out of Earth Day 1970. The number of campus environmental groups, however, grew significantly after Earth Day 1970, he said. Interview, June 1995.

108 Loeb, *Generation at the Crossroads*, p. 264.

109 Interview with Denis Hayes for campaign description and turnout estimate, June 1995. Interview with Owen Byrd, June 1995, for information on overall student and youth involvement in Earth Day 1990. Loeb, *Generation at the Crossroads*, p. 264, for postcards figure.

110 These include Helen Denham, still active with SEAC and its international sister organization, ASEED; Chris Fox, director of Campus Green Vote; and Will Toor, director of the University of Colorado

Student Environmental Center.

111 Interview with Owen Byrd.

112 *Threshold*, March 1995, p.2, and most SEAC literature, document the Greenpeace story. Loeb, *Generation at the Crossroads*, p. 251, gives the 1986 start date for SEAC at the University of North Carolina-Chapel Hill.

113 Interviews with Owen Byrd and Chris Fox.

114 SEAC, Programs from the Catalyst and Common Ground conferences; interviews with Owen Byrd, Chris Fox, and Liz Gres.

115 Interview with Owen Byrd. SEAC, Brochure, 1995 (available from the SEAC national office in Chapel Hill, NC).

116 Interview with Liz Gres for list of recent SEAC national campaigns. Keith Schneider, "Student Group Seeks Broader Agenda for Environmental Movement," *The New York Times*, October 7, 1991, p. A12, for information on Common Ground.

117 Campus Green Vote, Brochure (Washington, DC: 1995).

118 Interviews with Wendy Wendlandt (Political Director, Fund for Public Interest Research), April 1995, and Chris Fox, May 1995.

119 Susan Broili, "1,000 hear call to take action for environment," *The Chapel Hill Herald*, October 15, 1995, p. A1.

120 Interviews with Chris Fox, spring 1995. Campus Green Vote brochure, 1995.

121 Interviews with Gina Collins (founder and former Director, Green Corps) and Leslie Samuelrich (Director, Green Corps), spring 1995. Green Corps, *1994-95 Annual Report* (Boston: Green Corps, 1995).

122 Interviews with Andrew MacDonald (National Campus Staff Director, PIRG's), Donald Ross (Rockefeller Foundation), Ken Ward (Executive Director, NJPIRG), and Wendy Wendlandt, spring 1995. New York Public Interest Research Group, "Ralph Nader presents: Students As If They Matter: A Look at the Public Interest Research Groups" (Washington, DC: Center for the Study of Responsive Law, 1982). "PIRGs' 20th Anniversary," *CALPIRG Citizen Agenda*, vol. 8, no. 3, spring 1992, pp. 4-5.

123 Interview with André Delattre (Executive Director, CALPIRG), April 1995. CALPIRG, "Major Accomplishments" flier (Santa Barbara, CA: 1995).

124 Interviews with Mark Fraioli (1994-95 Director, Sierra Student Coalition), spring 1995. Sierra Student Coalition, Brochure (Providence, RI: 1995). "California Desert Victory Crowns 20-Year Campaign," *The Student Activist: The newsletter of the Sierra Student Coalition*, vol. 2, no. 2, January 1995, p. 3.

125 Flier for SEAC's October 1995 National Conference.

126 "What is SEAC, what was SEAC, what could SEAC be?" *Threshold*, February 1995, p. 23.

127 Information on SEAC from interviews with Liz Gres, Amit Srinavasta (National Organizer, SEAC), and Miya Yoshitani (then Executive Director, SEAC), spring and summer 1995. "What is SEAC?" *Threshold*, March 1995, p. 2. Miya Yoshitani, "SEAC turns six," *Threshold*, April 1995, pp. 10-13. Student Environmental Action Coalition, *1993-94 Annual Report* (Chapel Hill, NC).

128 Interview with Cris Moore (Cornell '92), June 1995.

129 Interview with Shane Jimerfield, June 1995.

130 Interview with Aqualinna Soriano (UCLA Environmental Coalition member), April 1995.

131 Interviews with Will Toor, Julie Bridgham (Chair, UCSU Environmental Board), Ed von Bleichert (former Chair, UCSU Environmental Board), March 1995. UCSU Environmental Center, Brochure (spring 1995). (UCSU = University of Colorado Student Union.)

132 Information based on the author's personal experience as a member of YSEC from 1991-95.

133 Higher Education Research Institute, "The American Freshman National Norms—Fall 1994: College Students Shun Politics," report summary.

134 William Booth, "Polls: Young Tuned-Out Voters Feel Party Stuff Is Getting in the Way," *The Washington Post*, November 6, 1994, for registration information. Campus Green Vote, "An Overview of the Student Environmental Movement," for information on youth voter turnout increase from 1988 to 1992.

135 Freshman trends from the 1989 to 1994 summaries of the CIRP survey results, published by the Higher Education Research Institute, "The American Freshman National Norms."

136 Booth, "Polls: Young Tuned-Out Voters Feel Party Stuff Is Getting in the Way."

137 Phrasing taken directly from Levine survey questionnaire.

138 All results from the Levine survey from Alice Dembner, "Poll finds college students ready to make a

difference," *The Boston Globe*, September 4, 1994, National/Foreign p. 1.

139 Trends in freshman attitudes towards the environment from the 1989 to 1994 summaries of the CIRP survey results, published by the Higher Education Research Institute, "The American Freshman National Norms."

140 Helen Denham, "Building Power for Change: Young People Organizing in the United States," prepared for the New World Foundation, 1993, pp. 108-09.

141 *Ibid.* pp. 89-107.

142 Loeb, *Generation at the Crossroads*, p. 163.

143 Interviews with Thomas Burack (President, Dartmouth Environmental Network) and Betsy Mendelssohn (graduate student, University of Chicago), spring 1995.

144 David Bennahum, "Getting Cyber Smart," *The New York Times*, May 22, 1995, Op Ed.

145 E-mail communication from Trista Claxon, the student in question, 1995.

CONCLUSION

146 Stephen Joel Trachtenberg quoted in the Green University Program (George Washington University) "Green University Strategic Plan," 1995.

References

"1995 Class Gift To Fund Solar Resource Center," *Colonnade: Brief Notes from the University of Virginia School of Architecture,* vol. XI, no. 1, February 1995.

Academic Affairs Committee, Subcommittee on The Environmental Program Reorganization, The Faculty Senate, University of Vermont. "Outline of Discussions with Carl Reidel, former Director, The Environmental Program." November 20, 1994.

The Almanac of Higher Education. See "The Editors of *The Chronicle of Higher Education*."

Bennahum, David. "Getting Cyber Smart." *The New York Times*, May 22, 1995, Op Ed page.

Bernstein, Melvin H. *A Review of Environmental Education at Colleges and Universities in New England.* Boston: New England Board of Higher Education, 1995.

Bloch, Pamela and Joanne Goodwin, eds. *Directory of Pollution Prevention in Higher Education*. University of Michigan, Ann Arbor, MI: National Pollution Prevention Center for Higher Education, 1994.

Blueprint for a Green Campus: The Campus Earth Summit Initiatives for Higher Education. A project of the Heinz Family Foundation. Washington, DC, 1995.

Booth, William. "Polls: Young Tuned-Out Voters Feel Party Stuff Is Getting in the Way." *The Washington Post*, November 6, 1994.

Broili, Susan. "1,000 hear call to take action for environment," *The Chapel Hill Herald*, October 15, 1995.

Brown, Lester. "Nature's Limits," in *State of the World: 1995*. New York: W. W. Norton & Company, 1995.

Brown Is Green Program (Brown University, Providence, RI). "Brown University Resource Conservation Program Summary." 1994.
— "Brown University Recycling Program Summary." 1994.

Browne, Malcolm W. "Budget Cuts Seen By Science Group As Very Harmful For U.S. Research," *The New York Times*, August 29, 1995, p. C1.

Bulkley, Jonathan W. Letter to Ben Strauss, March 17, 1995.

Burd, Stephen. "House Votes to End Funds for Arts in 2 Years, Humanities in 3," *The Chronicle of Higher Education*, July 28, 1995, p. A31.

"California Desert Victory Crowns 20-Year Campaign," *The Student Activist: The Newsletter of the Sierra Student Coalition*, vol. 2, no. 2, January 1995, p. 3.

California Public Interest Research Group. "Major Accomplishments" flier. Santa Barbara: CALPIRG, 1995.

Campus Ecology. Brochure. Washington, DC: National Wildlife Federation, 1995.

Campus Green Vote. Brochure. Washington, DC, 1995.

— "An Overview of the Student Environmental Movement." Washington, DC: Campus Green Vote, spring 1995.

Center for Environmental Management (Tufts University, Medford, MA). "A Balanced Approach to Global Environmental Change: 1994 Annual Report." 1995.

Center for Environmental Studies (Brown University, Providence, RI). "A complete description of programs and activities." 1994.

The Center for Regenerative Studies (California State Polytechnic University, Pomona). "The Center for Regenerative Studies" information pamphlet. Date not printed.

Consortium for Environmental Education in Medicine (Cambridge, MA). "Consortium for Environmental Education in Medicine" information sheet. 1995.

Corless, James and Harold Ward. "Can Brown Be Green? Lessons from One University's Quest for Environmental Responsibility," in *The Campus and Environmental Responsibility*, David Eagan and David Orr, eds. San Francisco: Jossey-Bass Publishers, 1992, pp. 45-54.

CU Recycling (University of Colorado at Boulder). "CU-Recycling—at a glance." 1994-95.

Daly, Herman. "On Nicholas Georgescu-Roegen's Contributions to Economics: An Obituary Essay," forthcoming in the *Journal of Ecological Economics.*

DeBell, Jack. "Coming of age: Recycling on campus," in *Resource Recycling*, vol. 13, no. 9, 1994.

Dembner, Alice. "Poll finds college students ready to make a difference." *The Boston Globe*, September 4, 1994. National/foreign p. 1.

Denham, Helen. "Building Power for Change: Young People Organizing in the United States." Prepared for the New World Foundation, 1993.

Eagan, David J. and David W. Orr, eds. *The Campus and Environmental Responsibility.* Jossey-Bass Publishers: San Francisco, 1992.

Earth Day 1990 News and Information Service. "Campus Program Results." From files of Owen Byrd of the Greenbelt Alliance, San Francisco, CA.

Earth Day Resources. "Earth Day 1995: Free the Planet, The Organizing Manual." San Francisco: Earth Day Resources.

Earth Systems Program (School of Earth Sciences, Stanford University, Stanford, CA). "Earth Systems Program: An Interdisciplinary Undergraduate Major with Coterminal Master's Option." Stanford, CA: Stanford Publication Services, winter 1993-94.

Editors of *The Chronicle of Higher Education. The Almanac of Higher Education: 1995.* Chicago: University of Chicago Press, 1995.

Education for the Earth: The College Guide for Careers in the Environment, Second Edition. Princeton, NJ: Peterson's, 1995.

Environmental Council (Middlebury College, Middlebury, VT). "Pathways to a Green Campus: Environmental Council Reports and Recommendations." May 12, 1995.

The Environmental Program (University of Vermont, Burlington). "Environmental Studies" information sheet. 1994-95.

Environmental Studies Program (Dartmouth College, Hanover, NH). "Environmental Studies Program Newsletter," winter 1995.

Environmental Studies Program (University of Colorado at Boulder), "Environmental Studies Program" information sheet. 1994-95.

Gladwin, Thomas N. "The Global Environmental Crisis and Management Education," *Total Quality Environmental Management*, Autumn 1993, pp. 109-114.

Grandia, Liza. "Patterns and Processes in the White-Paper 'System' of Yale University." Fall 1994. Class paper for "Patterns and Processes in Terrestrial Ecosystems," Yale School of Forestry and Environmental Studies.

The 'Green' Committee on Environmental Studies (Ball State University, Muncie, IN). "Final Report." 1991.

Green Corps. *1994-95 Annual Report.* Boston: Green Corps, 1995.

Green Seal (in collaboration with the University of Maryland Center for Global Change). *Campus Green Buying Guide.* Washington, DC: Green Seal, 1994.

Green University Program (George Washington University, Washington, DC). "Green University Strategic Plan." 1995.

Higher Education Research Institute. "The American Freshman National Norms for Fall 19**." Los Angeles: Higher Education Research Institute, Graduate School of Education, University of California-Los Angeles, 19**. 19** represents 1989 through 1994.

Historically Black Colleges and Universities/Minority Institutions Environmental Technology and Waste Management Consortium. *Annual Report 1990-1991.* Headquarters of the Consortium are located at Clark Atlanta University in Atlanta, GA.

Hofstader, Richard and Wilson Smith, eds. *American Higher Education: A Documentary History, Volume II.* Chicago: University of Chicago Press, 1961.

Institute for Environmental Studies (University of Wisconsin-Madison). "Index to Campus Environmental Research Reports." September 1994.

Keniry, Julian and Brian Trelstad, "Student Environmental Organizations," in *The Campus and Environmental Responsibility*, David Eagan and David Orr, eds. San Francisco: Jossey-Bass Publishers, 1992, pp. 103-112.

Keniry, Julian. *Ecodemia.* Washington, DC: National Wildlife Federation, 1995.

"Letter of Understanding and Agreement between the United States Environmental Protection Agency and George Washington University," signed December 12, 1994 by Carol M. Browner (Administrator, US EPA) and Stephen Joel Trachtenberg (President, GWU).

Lieberman, Gerald. *Pieces of a Puzzle: An Overview of the Status of Environmental Education in the United States.* A report prepared for the Pew Charitable Trusts, Philadelphia, 1995.

Loeb, Paul Rogat. *Generation at the Crossroads.* New Brunswick, NJ: Rutgers University Press, 1994.

Manning, Anita. "Eco-studies are blooming at colleges," *USA Today*, April 19, 1995.

Mattes, Kitty Beer. "How to Study the Environment?" *Harvard Magazine*, March/April 1994, pp. 28-32.

Nasar, Sylvia. "A Hard Act to Follow? Here Goes. Wanted for Econ 101: The Next Samuelson (Money Is No Object)." *The New York Times*, March 14, 1995, p.D1.

National Pollution Prevention Center for Higher Education World Wide Web site. URL http://www.snre.umich.edu/nppc/

New York Public Interest Research Group. "Ralph Nader presents: Students As If They Matter: A Look at the Public Interest Research Groups." Washington, DC: Center for the Study of Responsive Law, 1982.

North American Association for Environmental Education. "State Environmental Education Organizations." Envirolink gopher on the Internet, 1994.

O'Reilly, D., Deegan, J. and L. Colombo. *Environmental Studies: 2000. An overview of undergraduate, interdisciplinary environmental programs and the careers of their graduates.* Boston: The Environmental Careers Organization, 1995.

Orr, David W. *Ecological Literacy: Education and the Transition to a Postmodern World*. Albany: State University of New York Press, 1992.

Pascarella, E. T. and P. T. Terenzini. *How College Affects Students.* San Francisco: Jossey-Bass, 1991.

"PIRGs' 20th Anniversary," C*ALPIRG Citizen Agenda*, vol. 8, no. 3, spring 1992.

Princeton Environmental Reform Committee (Princeton, NJ). "Princeton University Environmental Audit 1995."

Program in Environmental Studies (Middlebury College, Middlebury, VT). Course description sheet. 1994-95.

"The Report of the President, 1994: Environmental Studies at the University of Georgia." Athens, GA.

Roark, Anne. "UCLA Identifies a Major Source of Pollution—Itself." *Los Angeles Times*, June 15, 1989, p. A1.

Schneider, Keith. "Student Group Seeks Broader Agenda for Environmental Movement." *The New York Times*, October 7, 1991, p. A12.

Sierra Student Coalition, Brochure. Providence, RI, 1995.

Simpson, Walter (University Energy Officer, SUNY Buffalo). "Recharging Campus Energy Conservation: The View from SUNY Buffalo." November 8, 1993.

Smith, April and Robert Gottlieb, "Campus Environmental Audits: The UCLA Experience" in *The Campus and Environmental Responsibility*, David Eagan and David Orr, eds. San Francisco: Jossey-Bass Publishers, 1992, pp. 9-18.

Smith, April and the Student Environmental Action Coalition. *Campus Ecology: A Guide to Assessing Environmental Quality and Creating Strategies for Change.* Los Angeles: Living Planet Press, 1993.

Smith, Melissa, ed. *Service Matters.* Providence, RI: Campus Compact, 1994.

Soto, Chris, ed. *Campuses Working for a Sustainable Future.* Washington, DC: National Wildlife Federation, 1994.

Stevens, William K. "Scientists Say Earth's Warming Could Set Off Wide Disruptions," *The New York Times*, September 18, 1995, p. A1.

Student Environmental Action Coalition, *1993-94 Annual Report*. Chapel Hill, NC: Student Environmental Action Coalition, 1994.

— Brochure. Chapel Hill, NC: 1995.

— Conference program for "Catalyst" (held at the University of Illinois at Champaign-Urbana). Chapel Hill, NC: Student Environmental Action Coalition, 1990.

— Conference program for "Common Ground" (held at the University of Colorado at Boulder). Chapel Hill, NC: Student Environmental Action Coalition, 1991.

Threshold: the movement magazine of the Student Environmental Action Coalition. March 1995. Published by the Student Environmental Action Coalition, in Chapel Hill, NC.

Tufts Environmental Literacy Institute. "TELI Course Revision Summaries." Tufts University, Medford, MA. No date printed. Available from Second Nature.

Union of Concerned Scientists, "World Scientists' Warning to Humanity." Cambridge, MA: Union of Concerned Scientists, 1992.

United States Environmental Protection Agency document EPA 430-F-95-030. "Green Lights: College and University Program." Washington, DC: EPA, 1995.

University of Colorado Student Union Environmental Center. Brochure. Boulder, CO, spring 1995.

Valen, Gary L. "Hendrix College Local Food Project," in *The Campus and Environmental Responsibility*, David Eagan and David Orr, eds. San Francisco: Jossey-Bass Publishers, 1992, pp. 77-88.

"What is SEAC?" *Threshold: the movement magazine of the Student Environmental Action Coalition*, March 1995, p. 2.

"What is SEAC, what was SEAC, what could SEAC be?" *Threshold: the movement magazine of the Student Environmental Action Coalition*. February 1995, p. 23.

"Workshop on the Principles of Sustainability in Higher Education," a report to the President's Council on Sustainable Development. Sponsored by Second Nature (Cambridge, MA) and the Association of University Presidents for a Sustainable Future (Medford, MA).

World Commission on Environment and Development. *Our Common Future.* New York: Oxford University Press, 1987.

World Resources Institute. *The Crucial Decade: The 1990's and the Global Environmental Challenge.* Washington, DC: World Resources Institute, 1989.

Yale Daily News. *The Insider's Guide to the Colleges.* New York: St. Martin's Press, 1995.

Yoshitani, Miya. "SEAC turns six." *Threshold: the movement magazine of the Student Environmental Action Coalition*. April 1995, pp. 10-13.

Zook, Jim and Colleen Cordes, "Education Cuts Reduced in GOP-White House Compromise," *The Chronicle of Higher Education*, July 14, 1995, p. A24.

Appendices

Appendix A

STATISTICS ON THE INSTITUTIONS AND FINANCES OF HIGHER EDUCATION

Institutions of Higher Education: Breakdown, 1992

	Universities	4 years only	2 years	TOTAL	
Public	94	503	1,005	1,602	(45%)
Private	62	1,493	416	1,971	(55%)
TOTAL	156	1,996	1,421	3,573	(100%)
	(4%)	(56%)	(40%)	(100%)	

Source: US Department of Education, cited in *The Almanac of Higher Education*, 1995.

Voluntary Support for Higher Education, 1992-93

Millions of dollars

			Percentage increase	
Source	Amount	Fraction of total	1-year	5-year
Alumni	$2,980	27%	5%	46%
Other individuals	$2,530	23%	1%	31%
Corporations	$2,400	21%	6%	30%
Foundations	**$2,200**	**20%**	**5%**	**37%**
Religious org's	$250	2%	4%	27%
Other org's	$840	8%	9%	46%
TOTAL	$11,200	100%	5%	37%

Source: Council for Aid to Education, cited in *The Almanac of Higher Education*, 1995.

College and University Responses to Financial Pressures, 1989-94

Public *vs.* Private Institutions

	Public	Private
Changes in academic programs		
Reorganized academic units	51%	29%
Consolidated academic programs	39%	31%
Introduced new academic units	66%	67%
Reduced size of academic programs	32%	36%
Increased size of academic programs	50%	60%
Increased scrutiny of academic programs	72%	70%
Reviewed each academic unit's mission	69%	75%
Introduced or expanded revenue-generating academic programs	51%	49%
Planned academic programs with business	60%	28%

College and University Responses to Financial Pressures (continued)

	Public	Private
Cuts in programs or faculty		
Eliminated academic programs	43%	33%
Out of institutions eliminating programs:		
1 to 3 eliminated	62%	83%
4 to 6	21%	3%
7 or more	16%	14%
Out of all institutions:		
1 to 3 eliminated	27%	27%
4 to 6	9%	1%
7 or more	7%	5%

Source: *Campus Trends*, 1994, published by the American Council on Education, cited in *The Almanac of Higher Education*, 1995. Based on responses to a survey sent to senior administrators at 508 colleges and universities in winter 1994. Response rate 80 percent.

Administrators' Views on Campus Operating Budgets

Public *vs.* Private Institutions

	Public	Private
Institutions that:		
Had mid-year budget cut, 1993-94	23%	23%
Rate finances as excellent or very good	31%	45%
1993-94 budget *vs.* 1992-93		
Increased > 5%	20%	36%
Increased 3-5%	32%	46%
Increased < 3%	21%	14%
Decreased	13%	3%
Expected budget changes for 1995-99		
Increase > 5%	26%	49%
Increase 3-5%	39%	40%
Increase < 3%	22%	6%
Decrease	7%	2%

Source: *Campus Trends*, 1994, published by the American Council on Education, cited in *The Almanac of Higher Education*, 1995. Based on responses to a survey sent to senior administrators at 508 colleges and universities in winter 1994. Response rate 80 percent.

Appendix B

FOUNDING YEARS FOR ACADEMIC ENVIRONMENTAL PROGRAMS

Data are taken from Peterson's second edition of Education for the Earth: The College Guide for Careers in the Environment *(1995). Many major colleges and universities with environmental studies and sciences programs are not listed in Peterson's, but the high number of programs that are and the data included still make the book a valuable source for this report. The environmental sciences programs are taken from under the heading "ENVIRONMENTAL SCIENCES: Environmental Sciences" in Peterson's subject index, and the environmental studies programs are taken from under "ENVIRONMENTAL STUDIES: Environmental Studies."*

Environmental Sciences

Antioch College	1967
Lamar U-Beaumont	1968
Texas Christian U	1968
U of Wisconsin-Green Bay	1968
Washington State U	1968
Bowling Green State U	1969
Alabama A&M U	1970
Principia College	1970
Slippery Rock U of Pennsylvania	1970
U of New Haven	1972
Georgetown College	1973
Middle Tennessee State U	1973
Rutgers State U of NJ, Cook College	1973
Ferrum College	1974
SUNY-Plattsburgh	1974
New England College	1975
Northern State U	1975
U of Denver	1975
U of Massachusetts-Amherst	1975
U of Michigan-Dearborn	1975
Nazareth College of Rochester	1976
William Patterson College of NJ	1976
Clinch Valley College of U of VA	1979
Marist College	1979
U of NC-Chapel Hill	1979
U of Dubuque	1980
Barnard College	1981
Allegheny College	1982

Environmental Studies

Middlebury College	1965
Texas A&M U	1969
Bemidji State U	1970
UC-Santa Barbara	1970
Utah State U	1970
Williams College	1970
Alfred U	1971
Cal State U-Sacramento	1971
Evergreen State College	1971
East Stroudsburg U of PA	1972
Florida International U	1972
New College of U of South Florida	1972
Northland College	1972
U of Vermont	1972
U of Washington	1972
Union College	1972
Warren Wilson College	1972
Richard Stockton College of NJ	1973
St. John's U	1973
SUNY-Binghamton	1973
U of NC-Wilmington	1973
Western Michigan U	1973
Ramapo College of NJ	1974
St. Lawrence U	1974
U Michigan-Dearborn	1975
Northeastern Illinois U	1977
Brown U	1979
Oberlin College	1981

Environmental Sciences (cont.)

U of New England 1982
Concordia College 1984
Marywood College 1984
Ramapo College of NJ 1984
Concordia Lutheran College 1986
DePaul U 1986
U of Maryland-Eastern Shore 1986
Delaware Valley College 1989
Franklin Pierce College 1989
US Military Academy 1990
Jacksonville U 1991
Alaska Pacific U 1992
Duke U 1992
Lehigh U 1992
Michigan State U 1992
Midwestern State U 1992
Occidental College 1992
Catawba College 1994
Cleveland State U 1994
Louisiana Tech U 1994
New Mexico State U 1994
SUNY-Oneonta 1994
U of Connecticut 1994

Environmental Studies (cont.)

Allegheny College 1982
U of New England 1982
U of NC-Asheville 1982
Yale U 1984
Bucknell U 1989
SUNY-College of Env. Sci. & Forestry 1990
Ohio Northern U 1991
U of Nebraska-Lincoln 1991
U of Nevada-Las Vegas 1991
US Military Academy 1991
Bethel College 1992
Naropa Institute 1992
Occidental College 1992
Knox College 1993
Shenandoah U 1993
U of Southern California 1993
Western State College of CO 1993
Antioch College 1994
Cleveland State U 1994
Denison U 1994
Eckerd College 1994
U of the Pacific 1994

Appendix C

CALCULATIONS FOR MOST POPULAR MAJOR DEGREES

Top ten Bachelor's degrees conferred at U.S. institutions of higher education

1991-92

	No. of students earning degree	Percentage earning degree
Business mgt.	256,603	23%
Social sci. & history	133,974	12%
Education	108,006	10%
Psychology	63,513	6%
Health professions	61,720	5%
English lang. & lit.	54,951	5%
Communications	54,257	5%
Visual & performing arts	46,522	4%
Biol./life sciences	42,941	4%
Liberal/general studies	32,174	3%
Other	281,892	25%
TOTAL	1,136,553	100%

Source: US Department of Education, cited in the *Almanac of Higher Education*, 1995

Number of colleges and universities at which a major degree is favorite

Based on institutions listed in the Yale Daily News *Insider's Guide to the Colleges*
Graduating class of 1994

	No. of schools major is favorite	Percentage of schools
Business	73	22%
English	50	15%
Biology	41	13%
Psychology	37	11%
Engineering	30	9%
Political Science	24	7%
Economics	13	4%
Elementary Education	10	3%
History	7	2%
Art	6	2%
Other	37	11%
TOTAL	328	100%

"Business" includes business, business administration, accounting, finance, management, and marketing; "English" includes English and literature; "engineering" includes mechanical, electrical, and other branches of engineering; and "political science" includes political science and government.

Ap

TIMELINE OF ENVIRONMENTAL EDUC

This timeline was compiled to give an overview of the chronology of events and births of organizations des

	Selected Major National Events	Environmental education at colleges and universities
1962	*Silent Spring* published	
1965		Middlebury College begins nation's first undergrad. env. studies program
1969	Santa Barbara oil spill; National Env. Policy Act	
1970	Cuyahoga River burns; 20 million Americans celebrate first Earth Day; Clean Air Act	
1970-74		Surge of new env. stud. & sciences prog's
1971		
1972	Clean Water Act	
1973	Endangered Species Act	Am. Society for Env. History
1977		
1980	Love Canal evacuated	
1985	Ozone hole discovered	
1987		
1988	Greenhouse summer	
1989	Exxon Valdez oil spill	International Society for Ecological Economics
1990	200 million world-wide participate in Earth Day	Tufts Environmental Literacy Institute Talloires Declaration drafted (U. Presidents for a Sustainable Future); Mgt. Inst. for Env. and Business
1990-?		Surge of new env. stud. & sciences prog's
1991		National Pollution Prevention Ctr
1992	Rio Earth Summit	*Ecological Literacy* published
1993		Second Nature; Assoc. for the Study of Lit. and Env.; Undergrad. env. major at Harvard
1994		Consortium for Env. Ed. in Medicine; Env. literacy requirement at U. Ga.; Middlebury College env. stud. gets a small building and a secretary
1995		

Simple listing of an organization indicates the year in which it was founded.

report, and to place them in reference to each other and to selected major national environmental events.

Campus environmental stewardship	Student environmental activism
	Students help lead first Earth Day
	First student PIRG's are formed
An est. 50 campuses have recyc. prog's	
	Est.: a few hundred campus env. groups
Master's students complete thesis on UCLA's env. impact; Cool It! (now Campus Ecology)	SEAC becomes a nat'l org. after its first conference, Threshold.; Nat'l student campaign for greening campuses
Office of Env. Ombudsman created at U. of Kansas; Student "Ecolympics" save Harvard $500,000 in energy use	Nat'l student env. campaigns for Earth Day, forests, clean air; Save James Bay! campaign in NY; 7,600 attend SEAC's Catalyst conf.; 2,000+ campuses have env. groups
>100 campus groups do env. audits	
Brown Is Green	Green Corps founded; Sierra Student Coalition founded; *Student Env. Action Guide* published
Campus & Env. Responsibility published	Campus GreenVote founded, and runs student voter registration campaign
Campus Ecology published; Students for an Energy Efficient Env.	
George Washington U. and EPA launch Green University Initiative	Campus Earth Summit; delegates draft *Blueprint for a Green Campus*
Ecodemia published; Est. 2,700 campuses have recycling prog's; Coll. and U. Recycling Council	Free the Planet! Emergency Campus Env. Conference; 4th Nat'l SEAC Conf.

Appendix E

THE TALLOIRES DECLARATION: UNIVERSITY PRESIDENTS FOR A SUSTAINABLE FUTURE

Twenty-two presidents, rectors, and vice chancellors of universities from all over the world convened at the Tufts European Center in Talloires, France from October 4-7, 1990 to discuss the role of universities and, in particular, the role of university presidents in environmental management and sustainable development. The following declaration was the result; over 200 university leaders have signed it since it was drafted. The Association of University Presidents for a Sustainable Future is the member organization of signatories, and is located at Tufts University in Medford, MA.

We, the presidents, rectors, and vice chancellors of universities from all regions of the world are deeply concerned about the unprecedented scale and speed of environmental pollution and degradation, and the depletion of natural resources. Local, regional, and global air pollution; accumulation and distribution of toxic wastes; destruction and depletion of forests, soil, and water; depletion of the ozone layer and emission of "green house" gases threaten the survival of humans and thousands of other living species, the integrity of the earth and its biodiversity, the security of nations, and the heritage of future generations. These environmental changes are caused by inequitable and unsustainable production and consumption patterns that aggravate poverty in many regions of the world.

We believe that urgent actions are needed to address these fundamental problems and reverse the trends. Stabilization of human population, adoption of environmentally sound industrial and agricultural technologies, reforestation, and ecological restoration are crucial elements in creating an equitable and sustainable future for all humankind in harmony with nature. Universities have a major role in the education, research, policy formation, and information exchange necessary to make these goals possible.

The university heads must provide the leadership and support to mobilize internal and external resources so that their institutions respond to this urgent challenge. We, therefore, agree to take the following actions:

1. Use every opportunity to raise public, government, industry, foundation, and university awareness by publicly addressing the urgent need to move toward an environmentally sustainable future.

2. Encourage all universities to engage in education, research, policy formation, and information exchange on population, environment, and development to move toward a sustainable future.

3. Establish programs to produce expertise in environmental management, sustainable economic development, population, and related fields to ensure that all university graduates are environmentally literate and responsible citizens.

4. Create programs to develop the capability of university faculty to teach environmental literacy to all undergraduate, graduate, and professional school students.

5. Set an example of environmental responsibility by establishing programs of resource conservation, recycling, and waste reduction at the universities.

6. Encourage the involvement of government (at all levels), foundations, and industry in supporting university research, education, policy formation, and information exchange in environmentally sustainable development. Expand work with nongovernmental organizations to assist in finding solutions to environmental problems.

7. Convene school deans and environmental practitioners to develop research, policy, information exchange programs, and curricula for an environmentally sustainable future.

8. Establish partnerships with primary and secondary schools to help develop the capability of their faculty to teach about population, environment, and sustainable development issues.

9. Work with the U.N. Conference on Environment and Development, the U.N. Environment Programme, and other national and international organizations to promote a worldwide university effort toward a sustainable future.

10. Establish a steering commitee and a secretariat to continue this momentum and inform and support each other's efforts in carrying out this declaration.

by:

Jean Mayer
President and Conference Convener
Tufts University, USA

Pablo Arce, Vice Chancellor
Universidad Autonoma
de Centro America, Costa Rica

L. Avo Banjo, Vice Chancellor
University of Ibadan
Nigeria

Boonrod Binson, Chancellor
Chuialongkorn University
Thailand

Robert W. Charlton
Vice Chancellor and Principal
University of Witwatersrand
Union of South Africa

Constance W. Curris
President
University of Northern Iowa
USA

Michele Gendreau-Massaloux
Rector
l'Academie de Paris
France

Adamu, Nayaya Mohammed
Vice Chancellor
Ahmadu Bello University
Nigeria

Augusto Frederico Muller, President
Fundacao Universidade Federal de
Mato Grosso
Brazil

Mario Ojeda Gomez
President
Colegio de Mexico
Mexico

Calvin H. Pimpton
President Emeritus
American University of Beirut
Lebanon

Wesley Posvar
President
University of Pittsburgh
USA

T. Navaneeth Rao, Vice Chancellor
Osmania University
India

Pavel D. Sarkisow, Rector
D. I. Mendeleev Institute of
Chemical Technology
USSR

Stewart Saunders
Vice Chancellor and Principal
University of Cape Town
Union of South Africa

Akilagpa Sawyerr
Vice Chancellor
University of Ghana
Ghana

David Ward
Vice Chancellor
University of Wisconsin-Madison
USA

Carlos Vogt
President
Universidade Estadual de Campinas
Brazil

Xide Xie, President Emeritus
Fudan University
People's Republic of China

Appendix F

RECOMMENDATIONS FROM THE *BLUEPRINT FOR A GREEN CAMPUS: THE CAMPUS EARTH SUMMIT INITIATIVES FOR HIGHER EDUCATION*

The Campus Earth Summit brought together 450 faculty, staff, and student delegates from 22 countries, 6 continents, and all 50 states at Yale University on February 18-20, 1994, to craft the Blueprint for a Green Campus*, a set of recommendations for higher education institutions across the globe to work toward an environmentally sustainable future. Copies of the* Blueprint*, a project of the Heinz Family Foundation, are available from Campus Green Vote, in Washington, DC.*

I. Integrate Environmental Knowledge into All Relevant Disciplines.

A. Integrate environmental knowledge into courses in all relevant disciplines.

B. Include a section in the academic mission statement, such as, "all students, upon graduating, will possess the knowledge, skills, and values to work toward an environmentally sustainable future."

C. Provide resources for appropriate faculty to integrate environmental issues and perspectives into their existing courses, by developing and launching faculty training programs, holding seminars, and providing funding.

D. Become a signatory to the *Talloires Declaration*, an international declaration of principles, dedicated to fostering environmental literacy and signed by over 150 institutions worldwide.

II. Improve Undergraduate Environmental Studies Course Offerings.

A. Assemble a review team of students, faculty, alumni, and outside experts to produce a report on the quality of any existing or proposed environmental studies course offerings.

B. Publicize and distribute the report; adopt the recommendations for the environmental studies course offerings.

C. Make a university commitment to provide funding for the costs of environmental studies courses and administration, and provide resources to hire and appoint faculty members and staff to lead such courses.

III. Provide Opportunities for Students to Study Campus and Local Environmental Issues.

A. Develop classes in which students can obtain academic credit for research on campus and local environmental issues.

B. Make a commitment to use these studies to help formulate more effective, innovative approaches to campus and local environmental issues.

IV. Conduct a Campus Environmental Audit.

A. Conduct an annual or biannual review of campus environmental issues and impacts, including, but not limited to: solid waste, hazardous substances, radioactive waste, medical waste, wastewater and storm runoff, pest control, air quality, the workplace environment, water, energy, food, purchasing policies, transportation, campus design and growth, research activities, investment policies, business ties, environmental education and literacy, job placement and environmental careers.

B. Issue a report providing recommendations for improved performance in each area, ranking priorities for action, and setting goals to be completed by the next audit.

C. Distribute to all members of the campus community, including trustees, high-level campus officials, staff, faculty, students, alumni, foundation donors, corporate donors, government officials, environmental leaders, community leaders and the public at-large.

V. Institute Environmentally Responsible Purchasing Policies.

A. Include environmentally sensitive specifications in all university goods and services contracts.

B. As an individual institution and through cooperative purchasing agreements with other universities and large institutions, purchase products with high recycled content, produced in an environmentally sustainable manner, which demonstrate maximum durability or biodegradability, reparability, energy-efficiency, non-toxicity, and recyclability.

C. Require every university department and program to meet university-wide purchasing standards.

VI. Reduce Campus Waste.

A. Establish a program to reduce, reuse, recycle, and compost a high percentage of campus waste.

B. Increase the percentage reduced, reused, recycled, and composted annually.

C. Expand the scope of waste reduction programs at all areas and facilities of the campus to include the following: glass, steel/aluminum cans, plastic, food waste, cardboard, bond and computer, paper, mixed paper, magazines, newspapers, construction debris (steel, wood, concrete, asphalt), yard waste, oil, leaves, tires, scrap metal, hazardous chemicals, telephone books, contaminated soil, and mattresses.

VII. Maximize Energy Efficiency.

A. Invest in energy-efficient technologies for heating, cooling, lighting and water systems in all existing and future campus buildings, and earmark the savings for further improvements in environmental performance.

B. Install meters to measure the use of heat, electricity, and water by building or department, and take ongoing meter measurements to set baseline data

and determine progress.

C. Raise campus awareness about the need for energy conservation and provide incentives for action, such as by establishing campus-wide "Eco-lympics" competitions.

VIII. Make Environmental Sustainability a Top Priority in Campus Land-Use, Transportation, and Building Planning.

A. Incorporate sustainable design principles into existing and future land-use, transportation, and building plans.

B. In land-use plans, include guidelines to promote compact development for all new campus growth and to insure that any proposed development will not have a negative impact on parks, forests, wetlands, wildlife habitats, agricultural land, watersheds, historic buildings, traffic congestion, or noise and air pollution.

C. In transportation plans, provide incentives for walking, bicycles, buses or rail, and ridesharing; discourage the use of single-occupancy cars by passing on the full cost of parking to drivers; and link transportation planning to land-use planning.

D. In plans for building construction or renovation, incorporate guidelines for energy-efficiency, proper ventilation, and non-toxic, environmentally-sound construction materials.

IX. Establish a Student Environmental Center.

A. Provide space, funding, and high-level support for a student environmental center as a durable institution from which to educate the campus and local community about environmental problems and their solutions.

B. Develop a Center membership program, and use Center-sponsored events and conferences to strengthen the network of students, faculty, staff, and alumni concerned about environmental problems.

C. If possible, support a full or part-time paid administrator/staffer for the center who can help students channel their interests into substantive reforms on the campus, local, state, national and global levels.

X. Support Students Who Seek Environmentally Responsible Careers.

A. Provide funding and resources to the career placement office for staff to assist student efforts to find careers in organizations working for an environmentally sustainable future. These include comprehensive and accessible job and internship listings, alumni contacts, recruitment opportunities, and environmental career guidance.

B. Provide staff and funding support for students, faculty, and staff to organize an annual "Careers in the Environmental Field" panel that brings environmental leaders and alumni from different sectors (government, business, academia, the media, non-profits) to campus to speak to students about their work.

Appendix G

RECOMMENDATIONS FROM THE WORKSHOP ON THE PRINCIPLES OF SUSTAINABILITY IN HIGHER EDUCATION

The workshop was held under the auspices of the President's Council on Sustainable Development Public Linkage, Dialogue and Education Task Force, February 24-27, 1995, in Essex, Massachusetts. The meeting was sponsored by Second Nature, Cambridge, MA; and the Association of University Presidents for a Sustainable Future, Medford, MA.

Actions by Institutions of Higher Education

1. All college and university presidents and deans of professional schools should **sign and implement the *1990 Talloires Declaration: University Presidents for a Sustainable Future*,** which has been signed by 215 university presidents from 42 countries and on which many of the following recommendations are based.
2. All institutions of higher education should **follow the recommendations contained in the *Blueprint for a Green Campus***, crafted by the Campus Earth Summit at Yale University in 1994.
3. All higher education institutions should **develop a 10- to 20-year plan** to make environmentally just and sustainable action a goal and a central thrust of their education, research, operations, investment, recruiting and community outreach activities.
4. Higher education must rapidly **engage in education, research, policy formation, and information exchange on population, environment, and development** to move toward a sustainable future. These efforts should encourage the development of lifelong learning programs and strategies for the existing and future workforce.
5. Leaders in higher education should use every opportunity to **raise public, government, foundation, and university awareness by speaking out publicly** on the importance of moving society on a just and sustainable path. They should encourage the involvement of government, foundations, donors, alumni and industry in supporting university research, education, outreach, policy formation and information exchange programs in environmentally sustainable development.

6. Higher education leaders should **advocate for a shift in research funding priorities** toward interdisciplinary, population, environment and development research. Research funds earmarked for traditional disciplines often encourage the continuing compartmentalization of problems and solutions.

7. Leaders in higher education must **create institutional infrastructure for education about sustainability** by:

   - Creating programs that 1) develop the capability of faculty to engage in education, research, outreach, and policy formation; and 2) provide information exchange programs that empower students to pursue sustainable life styles. These programs should result in knowledge and values about the environment, natural resource management and development, and should become an integral part of the normal teaching within all academic disciplines.
   - Changing tenure and promotion requirements so that they reward and encourage interdisciplinary work on environment, population, and sustainable development; faculty must not be penalized for multidisciplinary initiatives. For example, innovation and creativity might be encouraged by instituting campus-wide tenure hearings.
   - Creating and funding positions for interdepartmental and interschool faculty who will research and teach topics dealing with population, environment, and sustainable development. These changes in infrastructure might include establishing multidisciplinary and interdisciplinary structures within the university, such as "centers of excellence" for research, education, and policy development. Existing faculty could be encouraged to participate in these centers by giving them release-of-time from narrow department-restricted activities. Hiring of new faculty for positions within traditional departments should be based not only on a candidate's ability to meet crucial department needs, but also on his/her potential contribution to interdisciplinary programs. "University" professors—not beholden to any individual discipline—could be hired; they could act as the interface between disciplines.
   - Developing an institutional role or structure—a provost, a dean, or teams of administrators, faculty, and/or students—to promote and continually focus the institution on sustainability.
   - Encouraging multidisciplinary thinking and action with the use of internships, capstone courses and integrative seminars, as well as work study programs, case studies and community service.
   - Establishing programs to produce experts in environmental management, sustainable economic development, population, and related fields.
   - Reshaping university career services so that they facilitate the placement of environmentally literate graduates.

8. Leaders in higher education should establish institutional policies and programs to guide faculty, staff, administration, and students in **implementing environmentally sustainable practices in the daily operations of the institutions**. Examples might include:

   - Conducting a campus resource and environmental audit with public disclosure. This should include full student participation.
   - Encouraging programs in energy and water conservation, waste reduction and recycling.
   - Creating a 10- to 20-year plan to reshape the physical plant, bringing it into conformity with requirements for sustainability.
   - Harnessing institutional buying power and investment to support a just and sustainable society, such as investing endowments in local community energy efficiency. Universities should shift a minimum of 1-5 percent of their purchasing each year toward products from environmentally sustainable enterprises, such as sustainable agriculture. This gradual shift is reasonable, practical, and would help create a market that encourages sustainable practices.
   - Offering retirement programs for faculty and staff that include environmentally sustainable and just investment vehicles.

9. Institutions of higher education should **orient education and research toward environmental, economic and social sustainability in the communities** and regions in which these institutions are situated.

10. Institutions of higher education in the U.S. should **develop cooperative programs with universities and professional schools in other countries** to promote faculty and student exchanges, collaborative research, and educational programs that develop international understanding and action toward sustainability.

11. Universities should **establish partnerships with primary and secondary schools** to enhance the latter's capacity to teach about population, environment, and sustainable development issues.

12. Higher education should **work with employers** to encourage placement of graduates in organizations working toward or practicing environmentally just and sustainable action.

13. Higher education should work with the U.N. Commission for Sustainable Development, the U.N. Environment Programme, the Secretariat of the University Presidents for a Sustainable Future, Second Nature, the Management Institute for Environment and Business, and other national and international organizations to **promote a worldwide higher education effort toward a sustainable future**.

Actions by the Stakeholders in Higher Education

1. **Tuition payers** (parents and students) should encourage higher education institutions to provide students with the knowledge, skills and values needed to carry out their lives in an environmentally just and sustainable manner. For example, student environmental organizations should be encouraged to pressure the universities to institute change.

2. **Communities in which higher education institutions are located** should request active administration, faculty and student assistance in making their communities sustainable, and in ensuring that the university itself has only a positive environmental impact on the community.

3. **Funders of education and research** (governments, industry and foundations) should gradually shift their support over the next decade to educational efforts and research that promote environmentally just and sustainable action.

4. **Future employers of graduates** of higher education (industry, government, environmental organizations) should communicate with the leaders of these institutions about their desire to hire graduates who have the knowledge, skills and values to help move their organizations on an environmentally just and sustainable path. Future employers should immediately establish and utilize recruiting criteria and strategies that support this desire.

5. **Professional associations** should insist that environmental literacy and an understanding of sustainability be a core component of professional training, and **accreditation boards** should establish the ability to demonstrate and apply this knowledge as a requirement for certification.

6. **Faculties at institutions of higher education** should individually and collectively work with the leaders of the institutions to create the incentives and programs that would encourage and reward research and teaching that promotes environmentally just and sustainable action. Faculty should also insist on the option of investing their retirement funds in investment vehicles that promote environmentally just and sustainable action.

7. **Alumni and others who donate time and money** to higher education should use this leverage to make environmentally just and sustainable action a goal and a central thrust of their institution's education, research, operations, investments, recruiting and community outreach. One effective way to do this is to make donations contingent on the development and implementation of an appropriate 10- to 20-year plan. Another is to create endowments for "systems" professorships.

8. **All levels of government which provide subsidies** to higher education (e.g., tax free status, land, equipment) should develop strategies to communicate with and influence higher education to produce a workforce with the knowledge, skills and values to help move society on an environmentally just and sustainable path. Included must be the development of lifelong learning programs to help the workforce adapt to change.

9. **The President's Council on Sustainable Development** should initiate an effort to develop a sustained long-term partnership among all major stakeholders to help the higher education system make this transition to sustainable development in its teaching and practice. This could be initiated by a 12- to 18-month project in which participants from all the stakeholder groups explore the intellectual, institutional and operational changes that are necessary to make the shift, and examine cost effective, high leverage options for instituting these changes. The project could culminate in a conference of the most influential leaders in each of the stakeholder groups (*e.g.*, university presidents, corporate CEOs, government agency heads, faculty and student leaders) to consider strategic options and recommend actions stakeholders can take to help make sustainable development a foundation of higher education.

Appendix H

CONTACT LIST OF ORGANIZATIONS

American Society of Environmental History
701 Vickers Ave.
Durham, NC 27701
Tel.: 919-682-9319
Fax: 919-682-2349
E-mail: dwilliam@nov.snu.edu

Association for the Study of Literature and the Environment
c/o David W. Teague, Secretary
University of Delaware
Parallel Program
333 Shipley St.
Wilmington, DE 19801
Tel.: 302-573-5463
E-mail: teague@strauss.udel.edu
URL: http://faraday.clas.virginia.edu/~djp2n/asle.html

Association of University Presidents for a Sustainable Future-Secretariat
177 College Ave.
Medford, MA 02155
Tel.: 617-628-5000 x2154
Fax: 617-627-3099
E-mail: secretariat@infonet.tufts.edu

Campus Ecology
National Wildlife Federation
1400 16th St., NW
Washington, DC 20036
Tel.: 202-797-5435
Fax: 202-797-6646
E-mail: midatlan, midwest, soeast, or western@nwf.org
URL: http://www.nwf.org/nwf/prog/campus.html

Campus Green Vote
1731 Connecticut Ave., NW
Suite 501
Washington, DC 20009-1146
Tel.: 202-234-5990
Fax: 202-234-5997
E-mail: cgv@igc.apc.org
URL: http://www.cgv.org/cgv/

Center for Respect of Life and the Environment
2100 L St., NW
Washington, DC 20037
Tel.: 202-778-6133
Fax: 202-778-6132
E-mail: crle@aol.com

College and University Recycling Council
National Recycling Coalition
1727 King St.
Suite 105
Alexandria, VA 22314-2720
Tel.: 703-683-9025
Fax: 703-683-9026

Consortium for Environmental Education in Medicine
17 Msgr. O'Brien Highway
East Cambridge, MA 02141
Tel.: 617-227-8901
Fax: 617-227-0104
E-mail: ceem@2nature.org
URL: http://www.2nature.org/CEEM/CEEM.html

EPA Green Lights Program–-College and University Program
US Environmental Protection Agency
401 M St., SW
6202J
Washington, DC 20460
Tel.: 202-233-9183
Fax: 202-233-9578
E-mail: canales.dona@epamail.epa.gov
URL: http://www.epa.gov/docs/GCDOAR/college.html

Green Corps
29 Temple Place
Boston, MA 02111
Tel.: 617-426-8506
Fax: 617-292-8057
E-mail: greencorps@aol.com

International Society for Ecological Economics
P.O. Box 1589
Solomons, MD 20688
Tel.: 410-326-0794
Fax: 410-326-7354
E-mail: button@cbl.cees.edu
URL: http://kabir.cbl.cees.edu/ISEE/ISEEhome.html

Management Institute for Environment and Business
1101 17th St., NW
Suite 502
Washington, DC 20036
Tel.: 202-833-6556
Fax: 202-833-6228
E-mail: mebbell@aol.com

National Pollution Prevention Center for Higher Education
University of Michigan
Dana Building 430 E. University
Ann Arbor, MI 48109-1115
Tel.: 313-764-1412
Fax: 313-936-2195
E-mail: nppc@umich.edu
URL: http://www.snre.umich.edu/nppc/

Pollution Prevention, Education and Research Center
7440 Boelter Hall
405 Hilgard Ave.
Los Angeles, CA 90025-1600
Tel.: 310-206-2098
Fax: 310-206-3906
E-mail: pperc@ea.ucla.edu

Public Research Interest Groups: contact **USPIRG**
218 D St., SE
Washington, DC 20003
Tel.: 202-546-9707
Fax: 202-546-2461
E-mail: pirg@pirg.org

Second Nature
17 Msgr. O'Brien Highway
East Cambridge, MA 02141
Tel.: 617-227-8888
Fax: 617-227-0104
E-mail: info@2nature.org
URL: http://www.2nature.org

Sierra Student Coalition
223 Thayer St., #2
Providence, RI 02906
Tel.: 401-861-6012
Fax: 401-861-6241
E-mail: ssc@ssc.org
URL: http://www.ssc.org/SSC/

Students for an Energy Efficient Environment
c/o Randall Fine, President
P.O. Box 1874
Cambridge, MA 02238
Tel.: 617-493-5996 (606-268-4211 after June 1, 1996)
Fax: 617-493-1630
E-mail: fine@fas.harvard.edu

Student Environmental Action Coalition
P.O. Box 1168
Chapel Hill, NC 27514-1168
Tel.: 919-967-4000 or 800-700-SEAC
Fax: 919-967-4648
E-mail: seac@igc.org
URL: http://www.seac.org

Appendix I

KEY RESOURCES: WRITTEN PUBLICATIONS AND SAMPLE SITES ON THE INTERNET

Written Publications

(Includes essential resources not all listed in the reference section)

Blueprint for a Green Campus: The Campus Earth Summit Initiatives for Higher Education. A project of the Heinz Family Foundation. Washington, DC, 1995.

Collett, Jonathan and Stephen Karakashian, eds. *Greening the College Curriculum*. Washington, DC: Island Press, in press.

Eagan, David J. and David W. Orr, eds. *The Campus and Environmental Responsibility.* Jossey-Bass Publishers: San Francisco, 1992.

Education for the Earth: The College Guide for Careers in the Environment, Second Edition. Princeton, NJ: Peterson's, 1995.

Green Seal (in collaboration with the University of Maryland Center for Global Change). *Campus Green Buying Guide*. Washington, DC: Green Seal, 1994.

Keniry, Julian. *Ecodemia.* Washington, DC: National Wildlife Federation, 1995.

Loeb, Paul Rogat. *Generation at the Crossroads.* New Brunswick, NJ: Rutgers University Press, 1994.

Orr, David W. *Earth in Mind: On Education, Environment, and the Human Prospect.* Washington, DC: Island Press, 1994.

Orr, David W. *Ecological Literacy: Education and the Transition to a Postmodern World*. Albany: State University of New York Press, 1992.

Saphire, David. *Making Less Garbage on Campus: A Hands-On Guide*. New York: INFORM, 1995.

Smith, April and the Student Environmental Action Coalition. *Campus Ecology: A Guide to Assessing Environmental Quality and Creating Strategies for Change.* Los Angeles: Living Planet Press, 1993.

Student Environmental Action Coalition, *Student Environmental Action Guide.* Berkeley, CA: Earth Works Press, 1991.

Talloires Declaration. Available from the Association of University Presidents for a Sustainable Future (Medford, MA), 1990.

Workshop on the Principles of Sustainability in Higher Education, a report to the President's Council on Sustainable Development. Sponsored by Second Nature (Cambridge, MA) and the Association of University Presidents for a Sustainable Future, 1995.

Sample Sites on the Internet

Description	URL (Internet or Web address)
Blueprint for a Green Campus	http://www.envstudies.brown.edu/environ/blueprnt/
Boston U. Ctr. for Energy & Env. Stud.	http://cees-server.bu.edu/Default.html
Brown Is Green	http://www.envstudies.brown.edu/environ/
Committee for the Nat'l Institute for the Env.	http://www.inhs.uiuc.edu/niewww/cnie.html
Connecticut Green—Conn. College	http://camel.conncoll.edu/ccrec/greennet/c.green.html
EcoLogic—Rensselaer Polytech. Inst.	http://www.rpi.edu/dept/union/pugwash/www/
EcoWeb—U. of Virginia	http://ecosys.drdr.virginia.edu/
Env. Mgt.—U. of Wisconsin-Madison	http://env.fpm.wisc.edu/
Env. Studies—U. of Waterloo	http://www.fes.uwaterloo.ca/home.html
Greening the Maize & Blue—U. Michigan	http://www.umich.edu/~aduncan/gmbindex.html
Green U. Program—George Washington U.	http://www.gwu.edu/~greenu/
UB Green—U. of Buffalo	gopher://wings.buffalo.edu:70/hh/services/recycling

Also see Appendix H, Contact List of Organizations for associated URL's.