

Towards a More Sustainable Curriculum

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Abstract:

The purpose of this report is to provide information on how sustainability can be a priority of the Smith College curriculum. Courses from three liberal arts schools with established Environmental Studies programs (Middlebury College, Mt. Holyoke and Wellesley) in the Natural and Social Sciences were compared to Smith, and a survey of current Smith students was conducted. Smith offers more courses with at least some mention of environmental issues than I expected, and has nearly as strong an offering as Mt. Holyoke (which offers a major in Environmental Studies). Compared to Wellesley and Middlebury, however, Smith is noticeably weak. Student responses to the survey indicated a strong personal interest and belief in the importance of sustainability and more than ninety-percent supported the creation of an Environmental Studies major at Smith. However, almost half of the respondents had taken zero courses at Smith with at least some environmental content. Faculty and student interest in incorporating sustainability into the curriculum is apparent, but the lack of organization is a large obstacle -- any progress seems to be mainly due to individual faculty effort.

Introduction:

The driving force behind this project is personal experience. I did not know the Environmental Science and Policy program existed at Smith until my second year here, and it turns out that if it were offered as a major (or if “creating your own major” was less ridiculously difficult), I would have majored in it. The Program is starting to have better publicity, but the range of its influence and importance is limited to a handful of classes and events and a small number of students.

Knowledge of environmental processes and problems is becoming increasingly important in all areas of work and life. One of the purposes of undergraduate education is to give students tools for a successful life – without a basic understanding of sustainability, students may have

acquired tools by the time they graduate, but no idea how (or why) to use them wisely. Any “green building” or conservation practices at Smith are half-hearted gestures if there is not a reciprocal force in the curriculum. As an educational institution, Smith’s curriculum is the embodiment of its mission statement, the ultimate indicator of its values, and is what truly shapes the people who choose to spend four years of their lives here as students. “All education is environmental education”, writes David Orr (12) – this is true whether the educators acknowledge it or not. What is omitted is just as important as what is explicitly taught, if not more so. Professor Richard White recently completed a report on sustainability at Smith College, strongly emphasizing the importance of full institutional commitment to sustainability. He cites Smith College’s two demonstrated commitments, 1) its own economic sustainability and 2) social sustainability (most recently in the form of encouraging and supporting diversity on campus). The missing commitment is to environmental sustainability, the one factor that the other two, economic and social well-being, are completely dependent upon for their welfare. (1)

Sustainability does not only involve energy use and consumption management, and it does not happen without effort. It requires interest and understanding before any material changes can manifest. This research was conducted to get a sense of how well sustainability is addressed in Smith College’s curriculum right now, to compare Smith’s curriculum with three other liberal arts schools of similar size and resources, and to solicit student opinions and experience of the Environmental Science and Policy program.

Methodology:

Determining the schools to study and the departments to focus on

Research for this project was split between Sarah DiLaura and myself. Our first objective was to compare Smith’s environmental course offerings to schools comparable in size and resources, but with established programs in Environmental Studies/Science. Middlebury College (Middlebury, VT) stood out as a model for sustainable curriculums; Wellesley College (Wellesley, MA) is a strong competitor with Smith for prospective students and offers a major in Environmental Studies; Mt. Holyoke College (South Hadley, MA) is another competitor that offers a major, and is right in the Five College area. Sarah researched Middlebury and Wellesley, and I researched Smith and Mt. Holyoke. After choosing the schools, we needed to

decide which departments' courses we were going to look at, since surveying the entire catalog would be neither practical nor especially informative. We looked at the Environmental programs of each school, and found that their main participating departments could be placed into either a Natural Science or Social Science category. All of the schools had core departments in common with varying degrees of activity. From the Natural Sciences they are: Biology, Chemistry, Environmental Studies, and Geology. From the Social Sciences they are: Anthropology, Economics, Government (or equivalent), Public Policy (if applicable, or equivalent), and Sociology.

Categorizing courses (the Art of reading course catalogs)

We agreed to approach our research as if we were prospective students with a strong interest in environmental issues and sustainability. This meant that we would categorize courses by their description in the course catalog alone, using the 2002-03 catalogs. Course description is generally what students go by when choosing which courses to take if they are enrolled, or possibly which school to go to if they are prospectives. The description is a good indicator of what the professor(s) thinks is the most important aspect of the course since there is so little room available and a semester of work must be condensed into a few lines – only the highlights will be mentioned. A course was rated “Strong” if 1) it was a core course for the school’s Environmental major/minor, 2) its overall focus was on demonstrating the interaction between a specific discipline and environmental issues. For example, at Smith, *GOV 250 Case Studies in World Population* is considered a Strong course for 2002-2003 even though it is not mentioned in the ES&P course listings. It is considered “strong” since its focus is

the international political ramifications of transboundary environmental problems and growing competition for scarce and valuable resources...emphasis will be placed on the prospects both for conflict and cooperation in addressing global problems. (246)

“Moderate” indicates 1) a course that is not core to the Environmental major/minor, but which has at most half of its focus on environmental issues (if more than half, then it is considered “strong”), or 2) a course which is considered core to the Environmental major/minor, but which actually does not strongly attempt to integrate the discipline with environmental issues. For example, at Mt. Holyoke, students can take *GEO 203 Introduction to Geographic Information Systems* as one of two natural science core courses for the Environmental Studies major. The

course description does not mention anything other than the aspects of the software that will be taught –GIS is readily applied to real-world problems such as deforestation, runoff, population growth centers, etc, but this connection is not made explicit in the course description. (227)

“Slight” is for a course that is not core for the Environmental major/minor, and 1) covers issues that are strongly related to environmental concerns but does not make the connection explicit, or 2) an introductory course that will briefly mention environmental issues in the context of the course’s discipline. An example of the former would be, at Smith, *ANT 231 Africa: A Continent in Crisis*. The description mentions issues such as urbanization, class privilege, gender relations, civil war, and increasing conflict between contemporary and traditional African societies, without showing how the non-human environment affects and is affected by them all. (84) An example of the latter case for classification would be, at Smith, *ECO 123 Introduction to Economic Thinking*. The purpose of the course is to give an overview of the discipline to non-economics majors, and it “applies economic reasoning to some of the most pressing issues of our times”, one of which is “environmental damage and restoration”. (165)

The “Weak/No” category is for courses that make no explicit mention of environmental issues and which do not cover material that could easily be put into an environmental context. An example of a Weak/No course is *CHM 222 Chemistry II: Organic Chemistry*. The course is entirely focused on the “theory and practice of organic chemistry”, leaving little to no room for application of organic chemistry principles to environmental issues or for discussion of the effects of toxic organic compounds on the environment.

The term “With at least some environmental content”, that we used for several of the graphs, means that we merged the data from all courses that fall into the Strong, Moderate or Slight categories.

Finding trends

I repeated this categorization process for Smith courses from 1987 to 2002. The Environmental Science and Policy program officially began in 1996, and I wanted to get a sense of what the courses were like before the program existed, and what has happened since it began. Only

courses that were actually offered that academic year were counted – if a course such as Environmental Chemistry was listed in the course catalog but was not being offered that year, it was not counted.

Asking for information

Sarah and I contacted people active in the Environmental program at each school as needed, for information such as the number of majors/minors in the program, or their thoughts on the program in general. Lastly, we constructed a survey for current Smith students and randomly distributed 500 of them into student mailboxes the beginning of April and were collected until the end of the month. The survey was composed of eight questions, asking for information on their familiarity with Smith's ES&P program; their major/minor/year; the number of courses they have taken at Smith with some environmental content; if they would be interested in more courses with an environmental/sustainability component; if they would be interested in Smith offering a major in Environmental Studies; and their personal beliefs and level of action regarding sustainability and environmental issues.

Results: Smith College

Since 1987 there has been a steadily increasing number of courses offered at Smith with at least some environmental content, especially since the institution of the Environmental Science and Policy program in 1996 (see Figure 1). The dips in the graph are mainly due to courses offered in alternate years.

Breaking this information down into Natural and Social Sciences, we see in Figure 2 that since the institution of the ES&P program, the Social Sciences have generally been the larger contributor of courses with at least some environmental content. To determine why this is, the number of courses from Social and Natural Sciences are shown in their Strong, Moderate or Slight categories by year since 1995-96 (Figure 3). The Social Sciences have contributed a greater number of courses that fall into the Slight or Moderate categories than the Natural Sciences, while the Natural Sciences have generally contributed more courses in the Strong category.

Considering the Natural and Social Sciences separately, in Figures 4 and 5 each are broken down into their component departments. Of the Natural Sciences (Figure 4), Geology has been the strongest source for courses with at least some environmental content since 1998-99. The Biology department has recently made the greatest increase in courses offered, Geology has actually slightly decreased its offerings, the Chemistry department is slowly incorporating environmental content into their courses, and the sole Environmental Science and Policy course offering is the EVS 300 seminar that was instituted in 1996. Of the Social Sciences (Figure 5), Economics has generally provided the most courses with at least some environmental content since 1996-97. However, the Government department has recently been making great strides, as has Anthropology, and they are currently the two top contributors. Sociology as a whole remains low and Public Policy, as a small program, contributes few total courses.

Smith in relation to other schools

Figures 6-17 share the same color-coding as explained in Figure 6, and both the number of courses offered and the percentage they make up of the total are shown. Figures 6-9 are the total course offerings from the Natural and Social Sciences of Smith (Figure 6), Mt. Holyoke (Figure 7), Middlebury (Figure 8), and Wellesley (Figure 9). Middlebury has the strongest overall offering, with 34% of its Natural and Social Science courses having at least some environmental content. Wellesley has the second strongest offering at 30%, Smith is third at 26% and Mt. Holyoke is last with 21%.

The Natural Sciences of each school are broken down in Figures 10-13, and the Social Sciences in Figures 14-17. Middlebury (Figure 10) has an overwhelmingly strong environmental focus in the Natural Sciences with 52% of their courses (which corresponds to 46 actual courses) offered falling into the Strong category, and 69% total having at least some environmental content. Wellesley (Figure 11) is second with 32% (22 actual) Strong courses offered and 59% total with at least some environmental content. Mt. Holyoke (Figure 12) is third with 17% (15 actual) Strong courses and 36% total having at least some environmental content. Smith (Figure 13) is close to Mt. Holyoke, with 14% (10 actual) Strong courses and 32% total with at least some environmental content.

The Social Sciences produced much weaker results from all four schools. Smith (Figure 14) actually offers the most Social Science courses with some environmental content, at 23% (30 actual) of the total. Mt. Holyoke (Figure 15) has only 11% (14 actual) with some environmental content, and is tied with Middlebury, which also offers 11% (17 actual). Wellesley (Figure 17) is slightly better with 13% (17 actual).

Survey results

115 of the 500 surveys were returned within the month. Not every question was answered on all surveys, leading to some differences in total number of answers for some questions.

To get a sense of who was responding, we first broke the information down by class year (Figure 18). The majority of respondents were seniors (36%) and sophomores (33%). First-years made up 21% and juniors 10%.

Respondents represented an astonishing range of majors (Figure 19), with greatest representation in Biology (10%), Government (9%), and Psychology (7%).

Almost three-quarters of respondents were aware that there is an ES&P program at Smith (Figure 20). Most (40%) heard of it through the course catalog, while 30% found out about it through events, 23% through faculty, staff, or other students and 7% replied “other” (Figure 21).

Although there was a great amount of awareness of the program, almost half of respondents (44%) have not taken a course at Smith with any environmental content (Figure 22). The number of students who have taken 1-3 courses is almost equal to those who have taken none (45%), 2% have taken 4-6, and 9% have taken 6 or more. To see if there is a correlation between number of courses taken and major, we broke this information down into Science, Non-Science, Undecided and Double Majors (Figure 23). The majority of all courses taken with some environmental content were by Science majors. Only about 15% of the science majors who responded had not taken any courses with environmental content, compared to almost 50% of non-science majors. A little more than 20% of science majors had taken 6 or more courses, compared to about 5% of non-science majors. Double majors were hard to place in either science or non-science since they often incorporated aspects of both, so they remain in their own category with almost 70% of double major respondents having taken 1-3 courses. Undecided

majors were mostly first-year respondents, so the 40% who have taken 1-3 courses with some environmental content is fairly remarkable considering most undecided respondents have been here for only two semesters.

Student support for a major in Environmental Studies was greater than 90% with only 10 respondents expressing no interest (Figure 24). Almost 90% said that they believe a strong understanding of sustainability would be important to them after graduation, with 16 answering no (Figure 25). Most respondents (93%) said that environmental/sustainability issues were at least somewhat important to them personally (Figure 26). Responses were almost evenly distributed between “very important” (26%), “important” (30%) and “somewhat important”(37%). Seven people answered “not very important” and one answered “not important”.

Tables and Figures:

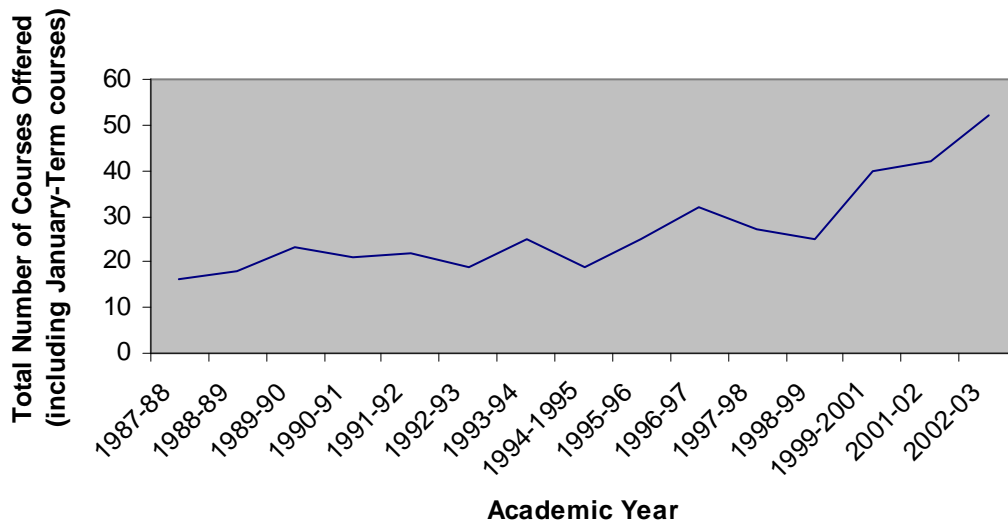


Fig. 1 Smith College Courses* with at Least Some Environmental Content

* Courses from Natural Sciences (BIO, CHM, EVS, GEO) and Social Sciences (ANT, ECO, GOV, PPL, SOC) including January-term courses

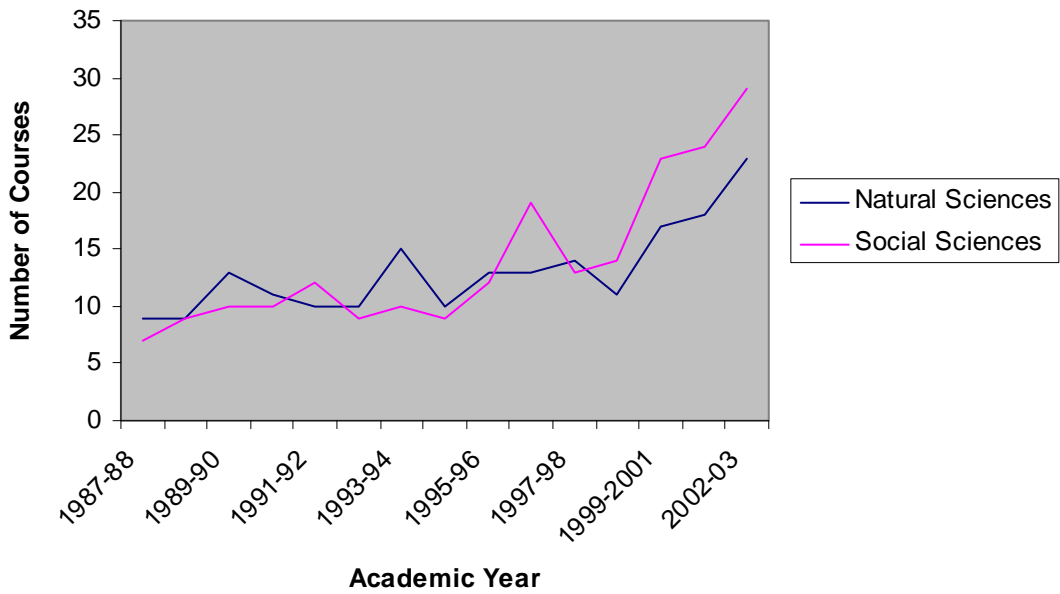


Fig. 2 Breakdown of Smith College Courses with at Least Some Environmental Content

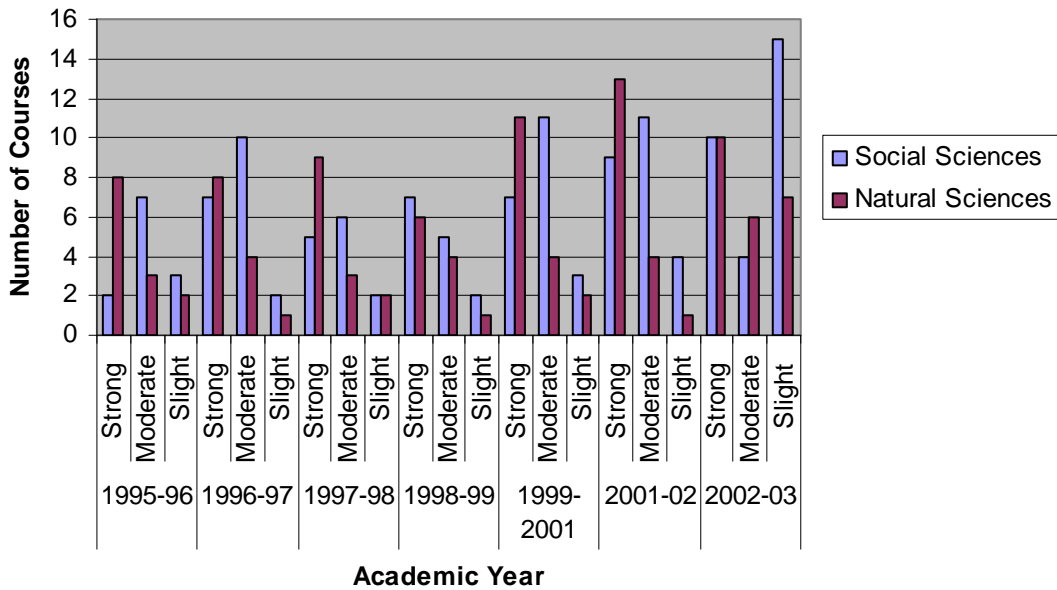


Fig. 3 Comparing the Strength of Course Offerings for the Natural and Social Sciences

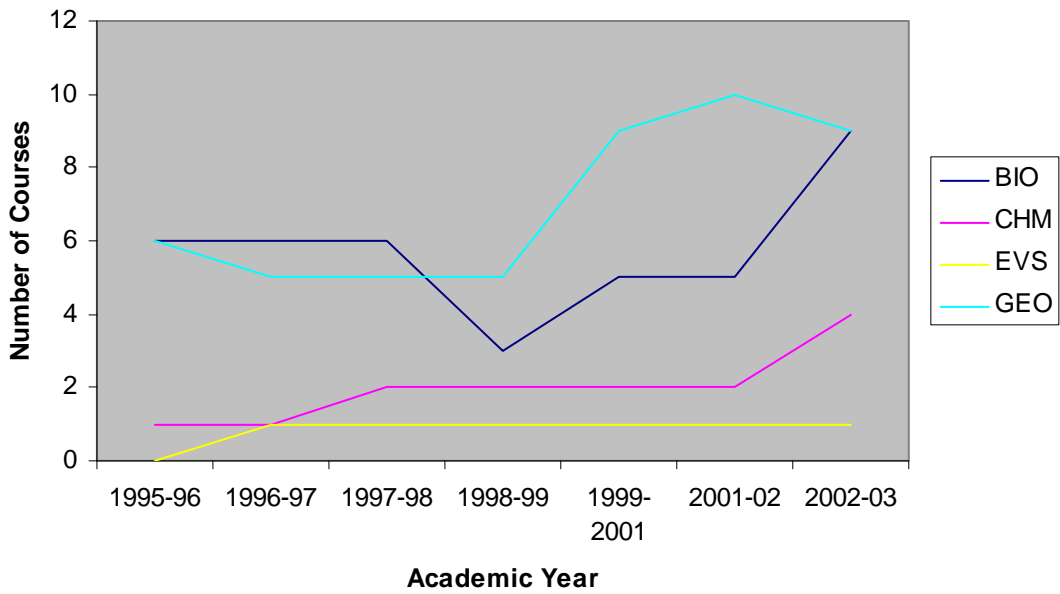


Fig. 4 Courses Offered in the Natural Sciences with at Least Some Environmental Content, Broken Down by Department

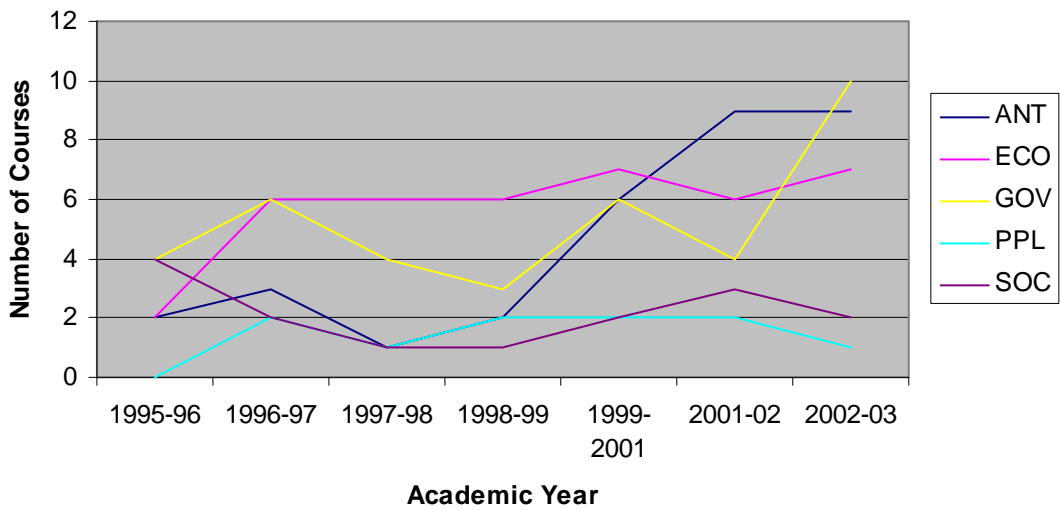


Fig. 5 Courses Offered in the Social Sciences with at Least Some Environmental Content, Broken Down by Department

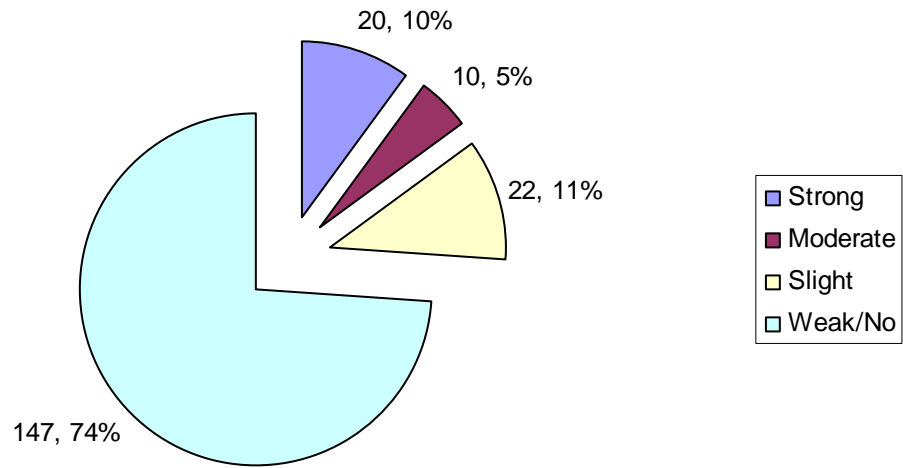


Fig. 6 Breakdown of Courses in the Natural and Social Sciences at Smith College

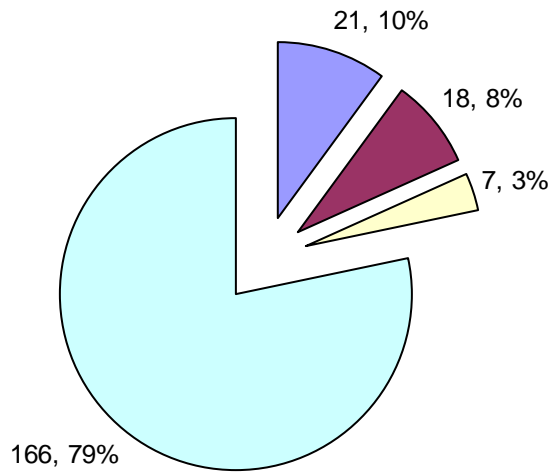
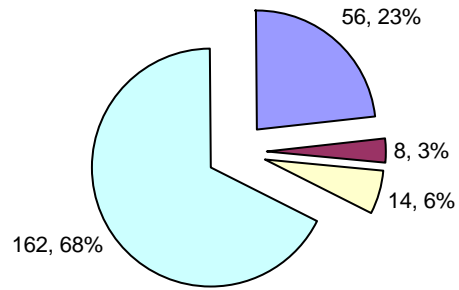
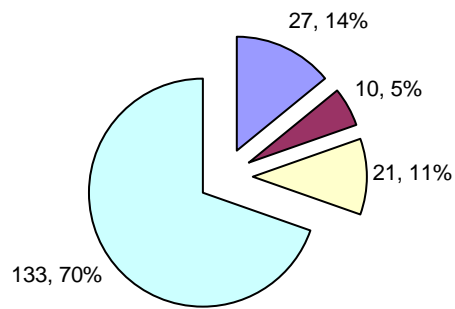


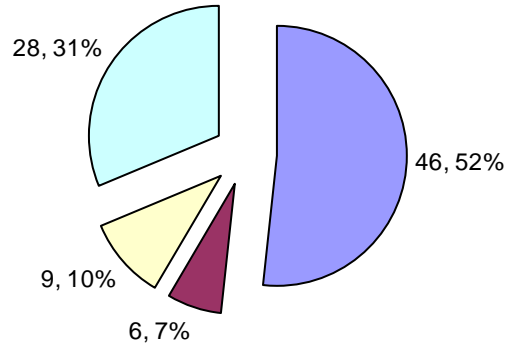
Fig. 7 Breakdown of Courses in the Natural and Social Sciences at Mt. Holyoke College



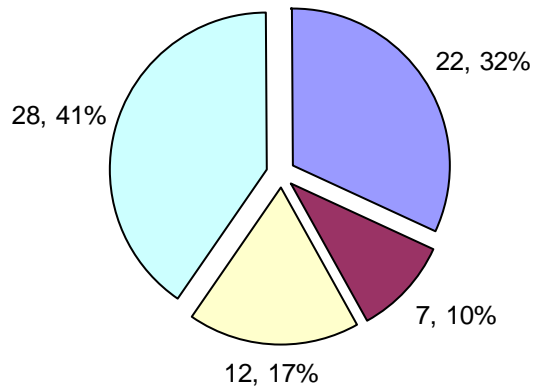
n **Fig. 8 Breakdown of Courses in the Natural and Social Sciences at Middlebury College**



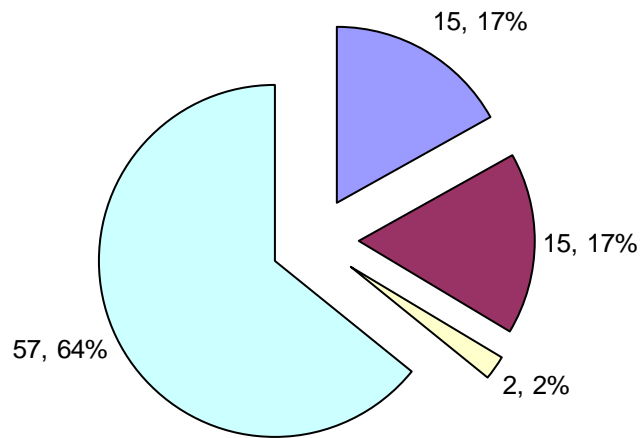
n **Fig. 9 Breakdown of Courses in the Natural and Social Sciences at Wellesley College**



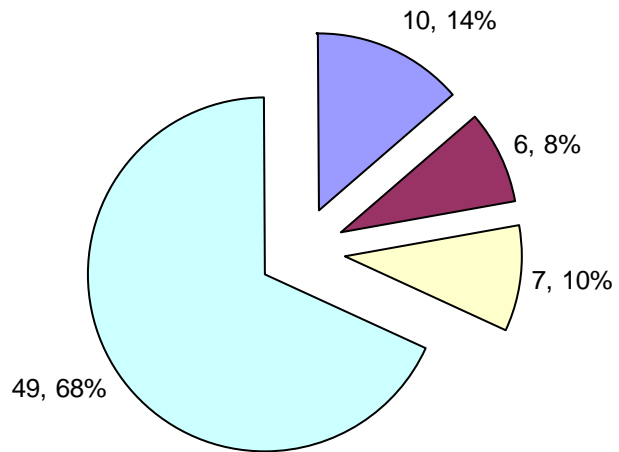
n **Fig. 10 Breakdown of Courses in the Natural Sciences at Middlebury College**



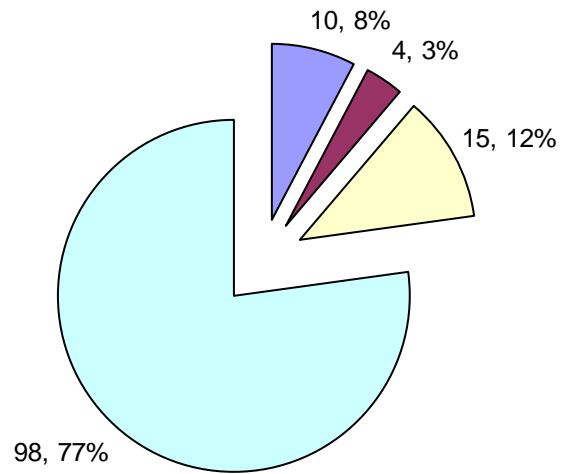
n **Fig. 11 Breakdown of Courses in the Natural Sciences at Wellesley College**



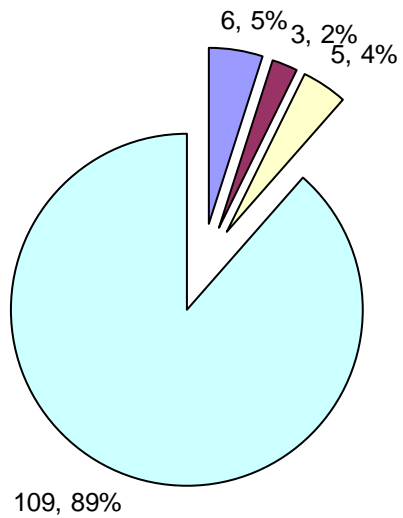
n **Fig. 12 Breakdown of Courses in the Natural Sciences at Mt. Holyoke College**



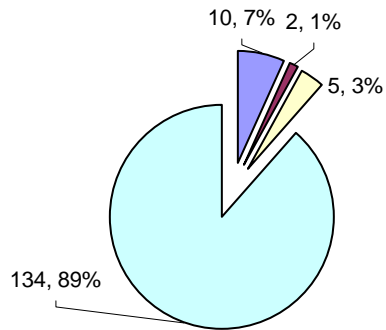
n **Fig. 13 Breakdown of Courses in the Natural Sciences at Smith College**



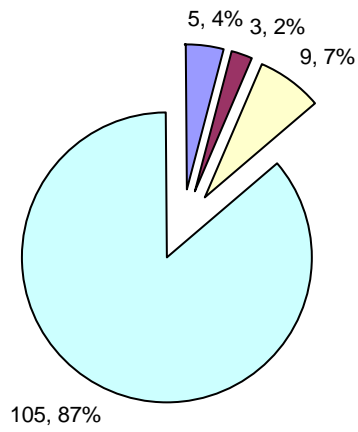
n **Fig. 14 Breakdown of Courses in the Social Sciences at Smith College**



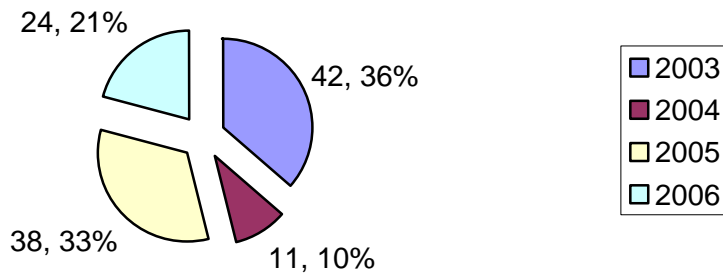
n **Fig. 15 Breakdown of Courses in the Social Sciences at Mt. Holyoke College**



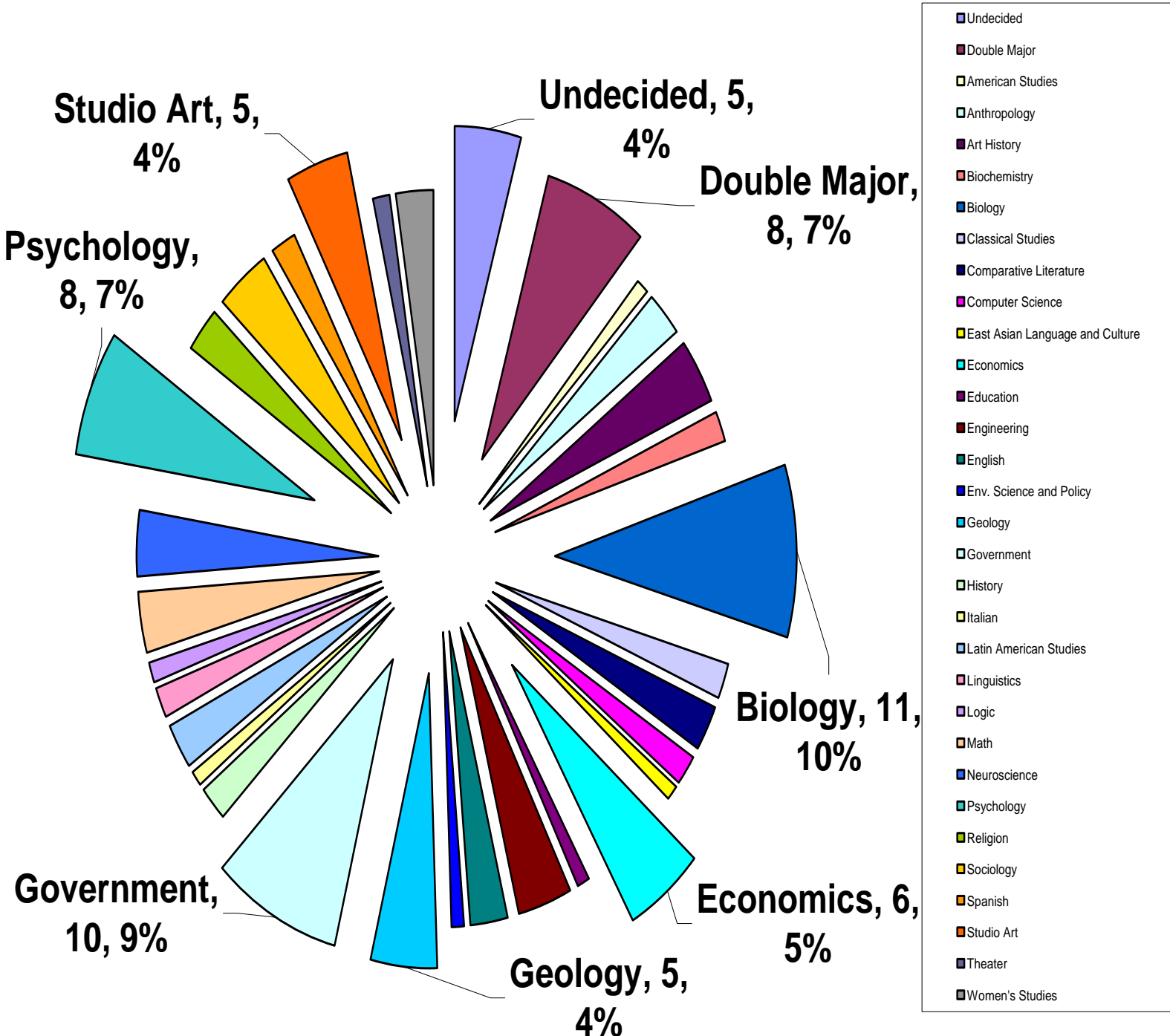
1 **Fig. 16 Breakdown of Courses in the Social Sciences at Middlebury College**



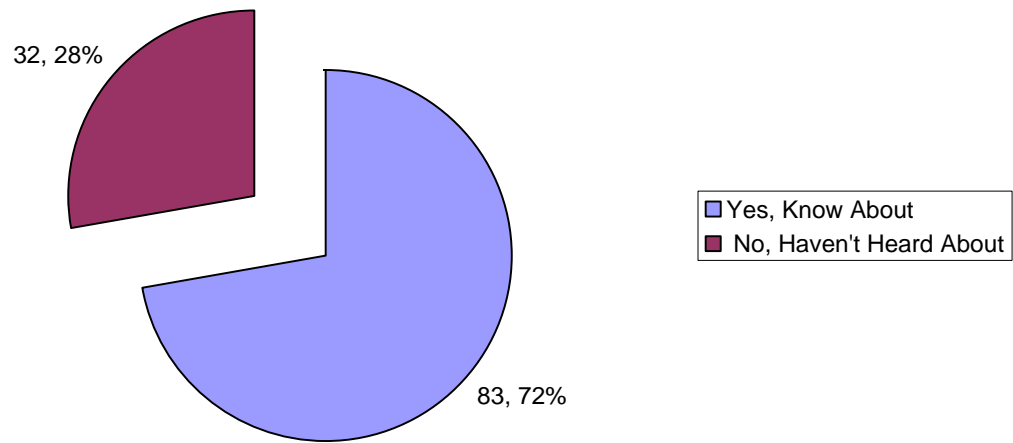
1 **Fig. 17 Breakdown of Courses in the Social Sciences at Wellesley College**



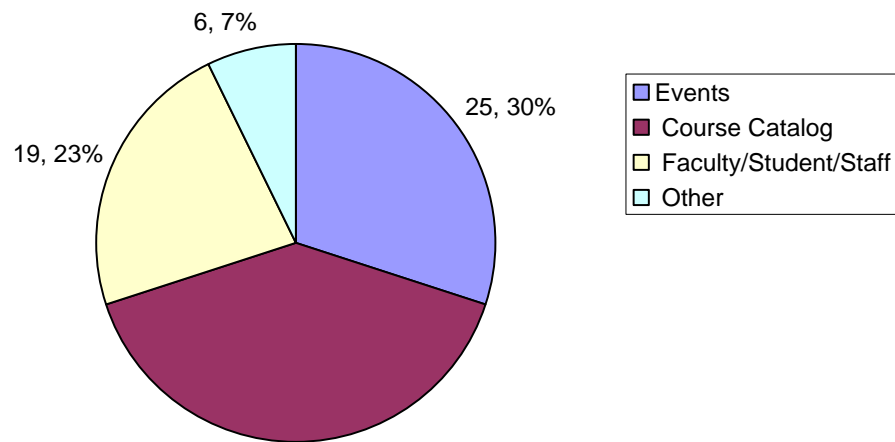
1 **Fig. 18 Student Response to Survey by Class Year**



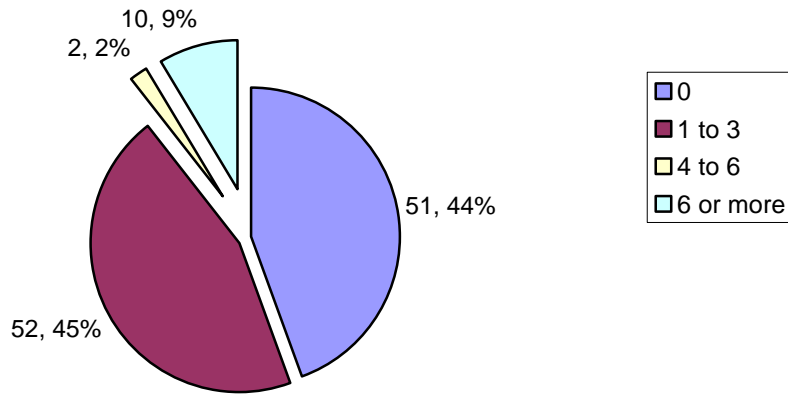
n **Fig. 19 Student Responses to Survey by Major**



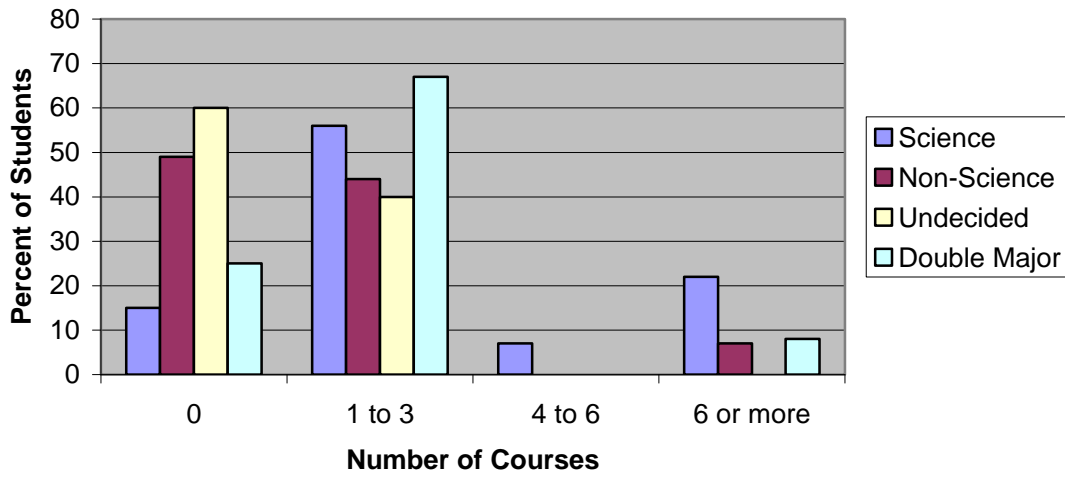
1 **Fig. 20 Student Responses to Survey Question, “Do you know that there is an Environmental Science and Policy Program at Smith that offers a minor?”**



1 **Fig. 21 How Students Heard of the Environmental Science and Policy Program**



n **Fig. 22** Number of Courses Taken by Survey Respondents (With at Least Some Environmental Content)



n **Fig. 23** Courses Taken (With at Least Some Environmental Content) Broken Down By Major of Survey Respondent

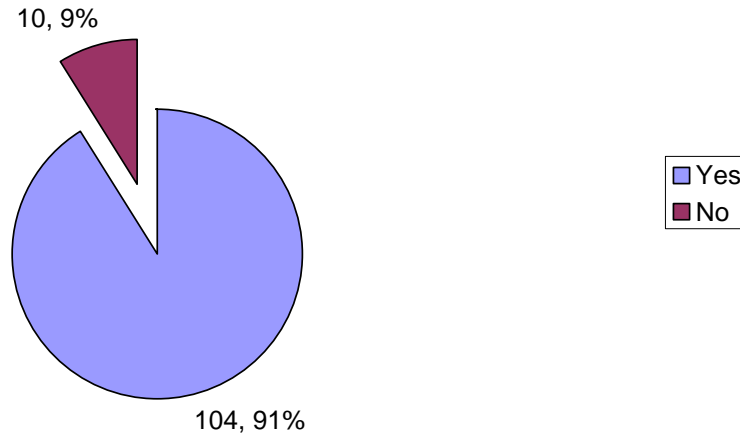


Fig. 24 Student Responses to Survey Question, “Would you be interested in Smith offering a major in Environmental Studies (not necessarily for yourself, but in general?)”

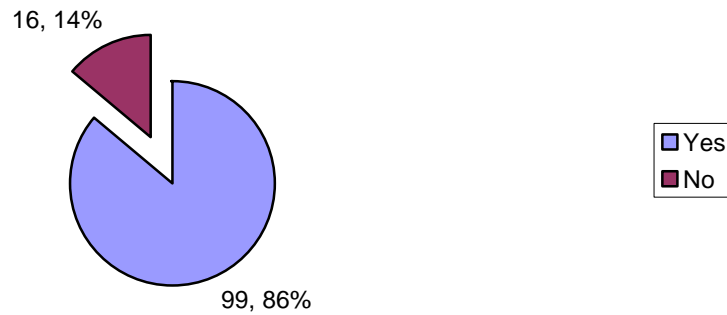


Fig. 25 Student Responses to Survey Question, “Do you believe that a strong understanding of sustainability will be important to you after graduation?”

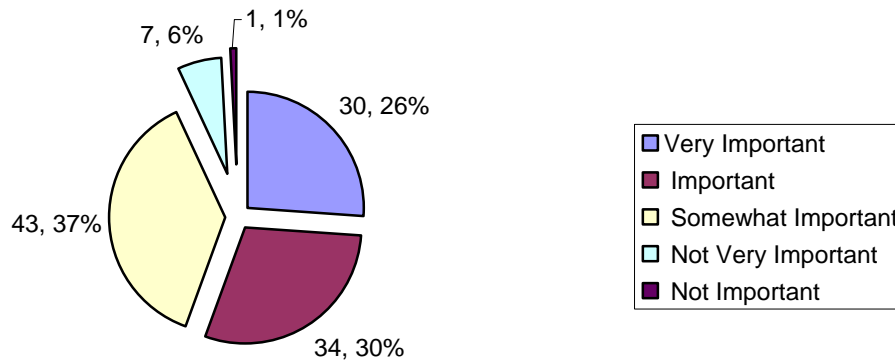


Fig. 26 Student Responses to Survey Question, “How important is learning about and being involved in environmental/sustainability issues to you personally?”

Discussion: Human issues (expressed in social terms) and non-human issues (mostly expressed in scientific terms) never exist outside of the environmental context, even though they mostly continue to be taught and discussed as such. The dichotomy between human and non-human itself is misleading, illustrated by the newer yet just as insidious idea of “The Environment” as a non-human entity that is being attacked by ignorant human pursuits. This idea of The Environment when used in teaching can turn people away who might otherwise be interested. For the ones who are not turned away, it can continue the lack of understanding of the interconnectedness of human and supposed non-human issues by doing more to place blame than to find solutions. Finding the balance between all competing interests is vital to fully understanding and pursuing environmental and sustainability issues.

The general increase in course offerings at Smith with at least some environmental content has been due in large part to increased participation of the Social Sciences. The ES&P program began when there was a very unbalanced offering of courses focusing on the scientific side of environmental and sustainability issues, but by 2003 there is starting to be a much better balance.

The main recommendation of this report is for Smith College to make an institutional commitment to sustainability. I second Professor White's recommendation (11) that Smith endorse the Talloires Declaration of the Association of University Leaders for a Sustainable Future, and, just as importantly, to make sure that this new commitment is reflected in the mission statement of the college. The budget problems are at present a hindrance to hiring new faculty with strong interests in sustainability, and may mean less support for possible programs like the Center for the Environment, however this should not stop discussion and planning within the departments for the time when these problems begin to be relieved.

Works Cited

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