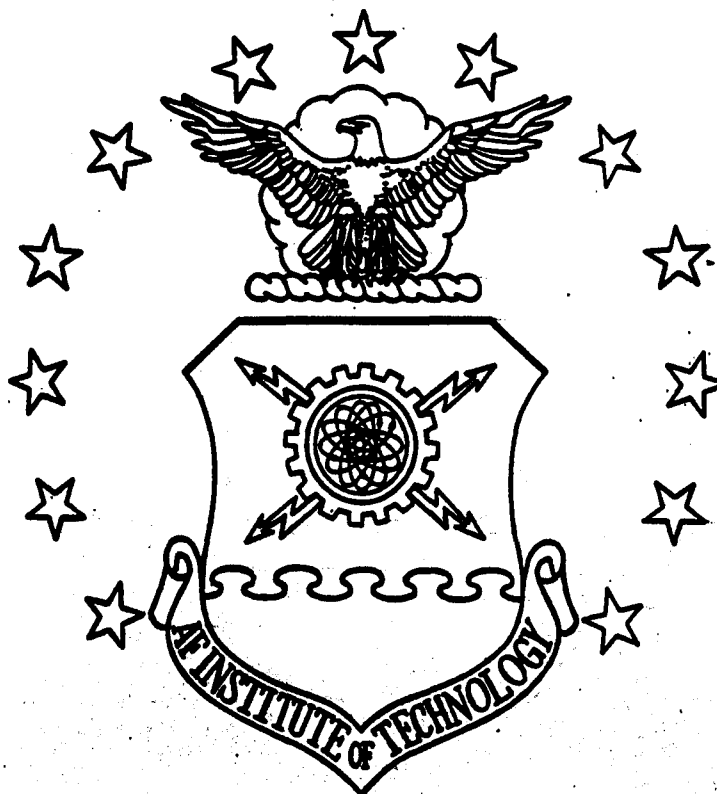




THE RELATIONSHIP BETWEEN
ENVIRONMENTAL ATTITUDES AND
ENVIRONMENTAL BEHAVIORS AMONG AIR
FORCE MEMBERS

THESIS

Daniel T. Holt, Captain, USAF

AFIT/GEE/ENV/95D-06

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Daniel T. Holt, Captain, USAF, B.S., M.A.

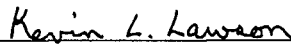
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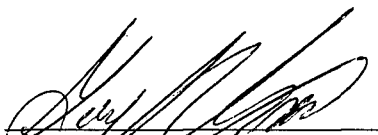
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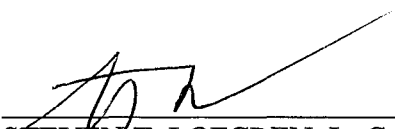
In Partial Fulfillment of the

Requirements for the Degree of

Master of Science in Environmental and Engineering Management


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**THE RELATIONSHIP BETWEEN ENVIRONMENTAL ATTITUDES AND
ENVIRONMENTAL BEHAVIORS AMONG AIR FORCE MEMBERS**

THESIS

Presented to the Faculty of the School of Engineering

of the Air Force Institute of Technology

Air Education and Training Command

In Partial Fulfillment of the Requirement for the

Degree of Master of Science in Environmental and Engineering Management

Daniel T. Holt, B.S., M.A.

Captain, USAF

December 1995

Approved for public release; distribution unlimited

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I would like to close by acknowledging the contributions of over 1,000 anonymous Air Force members who took the time to complete my written questionnaire. Your responses and comments have made it possible for all of us to better understand the relationship between environmental attitudes and environmental behaviors. I sincerely hope that I have accurately conveyed your individual and collective wisdom.

Danny Holt

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Abstract

A questionnaire was distributed to nearly 2,000 randomly selected active duty Air Force members assigned to locations throughout the continental United States. The survey was designed to determine the extent to which Air Force members expressed support for environmental issues. In addition, the survey measured how frequently Air Force members engaged in specific behaviors that were deemed environmentally protective. Although the Air Force members expressed relatively strong support for environmental issues, they only occasionally engaged in activities that contribute to the preservation or protection of the environment. Correlation analysis revealed that the pro-environmental attitudes were positively linked to the environmentally protective behaviors measured. However, the relationships were only moderate.

THE RELATIONSHIP BETWEEN ENVIRONMENTAL ATTITUDES AND ENVIRONMENTAL BEHAVIORS AMONG AIR FORCE MEMBERS

Chapter 1

_Introduction

Background

The business practices on a Department of Defense facility have significant environmental ramifications. For example, a typical Air Combat Command base disposes of 30 - 150 tons of hazardous waste per year, disposes of 7000 - 9000 tons of solid waste per year, and emits 1000 - 1500 tons of air pollutants per year. In addition, on the 24 Air Combat Command bases, there are 336 active restoration sites; of those, ninety-seven are listed on the Environmental Protection Agency's National Priority List (Madrid, 1995).

Recognizing that the Department of Defense's practices have environmental impact and that environmental preservation is a good business practice, the Department of Defense leadership established the goal of becoming the government's leader in preserving environmental quality. A former Secretary of the Defense clearly communicated this when he said, "I want the Department of Defense to be the Federal leader in agency environmental compliance and protection" (Cheney, 1989).

The Air Force has focused its attention and its fiscal resources in four main arenas: restoration, compliance, conservation, and pollution prevention. The environmental restoration budget grew from 100 million dollars in 1989 to more than \$500 million in 1994 with a goal to reduce all high and medium risk restoration sites to low risk sites by the year 2000. Money allocated for environmental compliance has also been increased, from \$250 million in 1989 to \$650 million in 1994. These resources were to ensure that all Air Force activities comply with all federal, state, and local regulations (Allen, 1994). With the objective of stopping pollution at its source, the pollution prevention program budgets have steadily risen during this time reaching a high of \$137 million in 1995 (Smith, 1995).

Largely, the money spent and the programs instituted have emphasized mission-related activities and the work place. Recently however, Air Force leaders have shifted their focus and recognized the need to foster a significant level of individual commitment. For example, the Commanding General of Air Force Material Command, was quoted as saying, "Strong environmental leadership is essential...I want all individuals, at every level, to be aware and personally involved in our command environmental leadership role" (Raymond, 1995). Thus, as the programs have evolved, bases have attempted to influence the individual's behavior outside of the work place. Today many bases have recycling programs, composting programs, and household hazardous materials collection programs.

With this new emphasis on individual commitment, the leadership has recognized that simply investing fiscal resources does not guarantee success. In many cases, environmental improvements depend on individual commitment. This commitment is seen

when pro-environmental attitudes and pro-environmental behaviors are integrated into an individual's everyday life.

This integrative approach is being implemented at all levels of the Air Force. As an example, Air Combat Command (ACC) has focused its efforts on applying innovative technologies, practices, and processes to preserve the environment. However, the key to the effort "is increasing the understanding and commitment of ACC personnel. The success of our work demands a total team approach" (Blevins, 1995: 253).

Thus, Air Combat Command has included an Outreach and Awareness program into its pollution prevention and conservation program, contending that individuals must be committed, know how to act, and act accordingly for the prevention and conservation efforts to be effective. The concept behind the Outreach and Awareness effort is described below:

Outreach and Awareness embody the concept of BE-KNOW-DO used to educate and instill a sense of responsibility. First we must BE--be aware, possessing the information and knowledge necessary to understand the complexity of our interaction with our environment. We must also BE concerned, willing to make a commitment not just because the law requires it, but because it's the right thing to do. Second, we must KNOW the requirements, recognizing the technologies and practices available to minimize our impact, and how to use them...Finally, we must DO the right thing, proactively incorporating sound environmental practices into the way we do business today (Blevins, 1995: 253-254).

As a predecessor to this Outreach and Awareness effort, Air Force leadership should attempt to understand whether Air Force members are concerned with, committed to, knowledgeable about, and participating in environmental protection today. Michael Maloney and Michael Ward eloquently state:

We must 'go to the people' in an attempt to understand these [environmental] behaviors. We must determine what the population knows regarding ecology, the environment, and pollution; how they feel about it; what commitments they are willing to make; and what commitments they do make. These are necessary antecedent steps that must be made before an attempt can be made to modify critically relevant behaviors. (1973: 584)

This research is focused towards that end. Unfortunately, environmental awareness and environmental behaviors are not simple concepts to define; therefore, they are difficult dimensions to measure. The environment is an all-encompassing term. Technically speaking, the environment is "anything that exists outside of the self and conceptually the environment can range from the very local to the global" (Gooch, 1995: 514). Including such a vast domain, it is complicated and difficult for researchers to measure an individual's 'environmental concern'.

Environmental concern is different things to different people. Many individuals limit their concern to the quality of the air, water, and land. While some people are concerned with the simple prevention of litter, others equate environmental concern with ecology and the preservation of ecosystems or biodiversity. Still others are concerned with the urban environment, including problems such as mass transit, housing, and industrial pollution. On a global scale, concern may be directed towards global warming, population control, depletion of fossil fuels, or preservation of the rain forests.

Based on these varied domains and levels of concern, individuals often appear to behave in a paradoxical fashion concerning the environment. The following example identifies some of these apparently inconsistent attitudes and behaviors:

A Los Angeles resident, responding to a survey, strenuously advocates preservation of wilderness areas against any economic development. The same person owns a \$50,000 [approximately \$150,000 in 1995] suburban tract house, recycles his soda bottles, commutes an hour to work as a salesman for an air conditioning company, and with his recent pay raise has just taken up skiing at a new resort in the Sierra Nevada. What are his environmental values and which indicators should be used to measure them? (Andrews and Waits, 1978: 5-6)

This example is not exhaustive but does highlight some of the inconsistent personal attitudes and behaviors. With these inconsistencies, it is difficult to determine what an individual actually believes and does concerning environmental protection. In addition, it is difficult to determine what should be used to indicate an individual's beliefs and actions concerning the environment and how inconsistencies among attitudes and behaviors should be dealt with to accurately assess an individual's attitudes concerning the environment.

Researchers have suggested that instruments designed to measure "primitive beliefs" are best suited to assess environmental attitudes (Gooch, 1995). That is to say, the instruments must tap deep-seated beliefs concerning the environment rather than superficial opinions concerning particular issues (Unger, 1994). One such method of examining the environmental attitudes has focused on the assumption that human attitudes and behavior are dictated by cultural forces. Therefore, environmental concern must be measured with respect to the cultural forces that are present within a specific society and dictate the attitudes and behaviors of the citizenry.

The "new environmental paradigm" scale, developed by Dunlap and Van Liere (1978: 10), reportedly measures environmental attitudes at the cultural level described

(Scott and Willits, 1994; Gooch 1995). The scale was developed based on the concept that nature is delicately balanced, the earth has limited resources, and human efforts to dominate nature lead to environmental problems. These concepts are in stark contrast to cultural norms that have been taught in America. Instead, Americans traditionally believe in individualism, technological development, and economic growth (Dunlap and Van Liere, 1984). These notions were developed at the inception of our country during an era of abundance and are inversely related to environmental concern (Dunlap and Van Liere, 1984). Thus, the environmental attitudes measured using the "new environmental paradigm" scale reflect the deepest levels of environmental concern and are linked to the cultural climate within American society.

In an effort to tap the basic values and beliefs of each individual, the environmental paradigm scale, as developed by Dunlap and Van Liere (1978), is used in this research effort to assess the environmental attitudes of Air Force members. Knowing the Air Force's emphasis on environmental issues, it is hoped that by using this instrument and questioning Air Force members concerning their most deep-seated beliefs, that "politically correct" responses are avoided. Instead, it is hoped that only truthful responses are generated. The specific research objectives are discussed in the following section.

Research Objectives

This research is designed to measure the extent to which Air Force members express support for environmental issues and the extent to which they participate in environmentally protective behavior. It provides the baseline that can help guide the Air

Force's environmental education efforts and future environmental programs. To date, there has been no research done to measure the environmental attitude and environmental behavior of individual Air Force members. This research is designed for that purpose. Specifically, this study will measure the extent to which Air Force members subscribe to the 'new environmental paradigm' (have a pro-environmental attitude) and the extent to which Air Force members engage in environmentally protective behavior.

Additionally, this research will determine if there is a correlation between an individual's environmental attitude and his or her environmental behavior. This correlation will be useful in determining if the environmental philosophy and environmental objectives fostered by the Air Force have been embraced by its members and they are reflected in actions. If they have not, the conditions required to strengthen the attitudes and behaviors, as well as the relationship between the two, warrants examination.

It is important to note that environmental problems can not always be solved with the application of a new technology. Instead, many solutions may require a change in human behavior. Understanding what Air Force members know, think, feel, and do regarding the environment, nature, and pollution is an important first step. This information is critical in order to follow up with relevant and effective environmental programs.

Chapter 2

Literature Review

The purpose of the literature review is to investigate the research to date which measures the extent to which individuals express support for environmental issues and the extent to which individuals participate in pro-environmental behavior. Additionally, research focusing on determining the relationship between attitudes and behaviors is reviewed.

Environmental Attitudes

As discussed in the previous chapter, what constitutes environmental concern is difficult to define and thus difficult to measure. This section addresses how researchers have attempted to measure environmental attitudes and the specific instruments they used to measure these attitudes and concerns. Most instruments are designed to measure “environmental concern” by determining the opinions held among individuals, voters, and consumers concerning environmental issues. However, the attitude research has advanced to the point where researchers have attempted to measure the environmental beliefs from an American cultural perspective.

General Environmental Concern. Since the first Earth Day in 1970, concern for the environment has “had its ups and downs...in the public’s mind,” but it “has been a persistent concern” (Gillroy and Shapiro, 1986: 270). In a survey conducted by Gallup and Newport (1990: 7,11,12), when asked, “do you consider yourself an

environmentalist,” 73 percent of the respondents replied “yes” with 35 percent of those claiming to be “strong environmentalists”. In this same study, over 70 percent of the individuals questioned believed the American public, American business and industry, and the government were “not worried enough” about the environment.

Still, based on some opinion surveys, one could claim that environmental issues have not gained widespread public support. For example, when asked “what do you think is the most important problem facing this country today,” a mere two percent of the respondents volunteered the environment as the most important problem (Dunlap and Scarce, 1991: 659). Repeatedly when the public was asked to identify what they perceive as the “most important problem” facing the nation, the environment has not fared well (Bosso, 1994; Dunlap and Scarce, 1991).

Other researchers have agreed. When the extent of environmental concern is measured using “most important problem” polls, the results are misleading and suggest that the public is not concerned about environmental issues. Because “most important problem” questions are very headline-sensitive, researchers claim that an accurate assessment of public concern can not be determined by using them (Buttel, 1987). Typically, support for an issue, as measured with these types of polls, demonstrates a steep decline as the media loses interest and other issues move into the forefront. This suggests that these types of questions may not be the most accurate in measuring of the American citizens’ environmental concern.

A more accurate assessment of environmental beliefs and attitudes can be attained by determining the extent individuals are concerned about specific problems or the

opinions they hold concerning specific environmental issues. Typically, these research efforts focus on the most basic environmental issues, such as: pollution, natural resources, energy, and wildlife (e.g. Dunlap and Scarce, 1991; Gallup and Newport, 1990; Rohrschneider, 1988, Horvat and Voelker, 1976). In most cases, this research has suggested that respondents are concerned about these specific environmental issues.

Another common theme in the literature is to determine the trade-offs individuals are willing to make in an effort to preserve the environment. In other words, respondents are forced to make a choice between protecting the environment and some other objective. One common item forces respondents to choose between environmental quality and the economy. For example, one study asked which of the following statements most closely expressed an individual's opinion: "we must sacrifice economic growth in order to preserve the environment," or "we must be prepared to sacrifice environmental quality for economic growth." In 1990, 64% of those questioned reported the former most closely expressed their opinion (Dunlap and Scarce, 1991).

This economic theme is evident in much of the market research. Particularly, industry is interested in the public's willingness to pay for environmental protection (Roper Organization, 1990; Dunlap and Scarce, 1991; Hackett, 1995). Presumably, if consumers were willing to pay more for environmentally friendly products, industry would respond and target these consumers through advertising campaigns. This research has not been promising; the Roper Organization (1990) found that most consumers are not willing to pay a lot more for environmentally friendly products.

In summary, the focus of many research efforts are very basic environmental issues. They attempt to assess the level of public concern by measuring support for particular policy alternatives and the trade-offs consumers are willing to make. However, these studies and polls do not attempt to measure the philosophical environmental concerns or attempt to address the how the environmental attitudes of the citizenry are derived. The following section deals with the research that has focused on these broader issues that many researchers contend are vital when measuring environmental attitudes.

Cultural Perspective. Researchers have suggested that the environmental problems in the United States can be attributed to an anthropocentric world view. This is the idea that humans are the focus of all activities and that the earth and all of its resources are valuable to the extent to which they satisfy human needs. More specifically, many believe that environmental problems actually originate from traditional economic beliefs and cultural values.

This cultural basis of ecological problems was further explained by using the concept of a "dominant social paradigm." Dennis Pirages describes the "dominant social paradigm" as "the common values, beliefs, and shared wisdom about the physical and social environments" (1977: 6) which comprise a society's world perspective. These values are passed from generation to generation through socialization and education processes and form the basis for the society's culture. Put more simply, the dominant social paradigm guides an individual and defines what is considered acceptable or desirable behavior.

In the United States, philosophers have stated that this world view is characterized by the human belief in growth and prosperity; faith in science and technology; and the belief in abundance of resources (Kahn et al, 1976). Dunlap and Van Liere (1984) found that these basic beliefs, along with the belief in a limited government and the belief in individual rights, characterize the dominant social paradigm within American society. Additionally, they found that support for this dominant social paradigm was inversely related to support for environmental preservation. Still, these researchers have argued that this dominant social paradigm is being challenged with a new perspective that values the environment more highly. They call this new perspective the "new environmental paradigm" (Dunlap and Van Liere, 1978).

Support for the "new environmental paradigm" can be determined by measuring an individual's attitude toward three broad philosophical concepts. These concepts are: humans should be part of, rather than the rulers of, nature; economic growth should be limited; and, human activities should be balanced with nature (e.g. Albrecht et al, 1982; Scott and Willits; 1994). Individuals who believe in these concepts are said to be more deeply concerned with the environment than those individuals simply interested in pollution control, natural resource preservation, and population control (e.g. Commoner et al, 1994; Leopold, 1966; Goldsmith, 1993).

Many researchers have assessed the extent to which different groups support the 'new environmental paradigm' (Albrecht et al, 1982; Arcury, 1990; Dunlap and Van Liere, 1978; Geller and Lasley, 1985; Noe and Snow, 1990; Edgell and Nowell, 1989). These studies provide important information about an individual's attitude toward the

environment. Generally, these studies have indicated that most citizens hold deep-seated pro-environmental attitudes (express support for the 'new environmental paradigm').

These studies do not, however, provide any insight that shows whether individuals that subscribe to the 'new environmental paradigm' (have pro-environmental attitudes) engage in more ecologically responsible behaviors.

Environmental Behavior

Unlike environmental attitude research, few studies are intended solely to measure overt environmental behavior. Most environmental behavior measures are devised based on some theoretical conceptualization. Van Liere and Dunlap define this term with respect to environmental concerns. They say that a theoretical conceptualization is "the implicit or explicit assumption regarding what constitutes respondents' expression of environmental concern, and thus what specific strategy should be employed to measure that concern" (1981: 653-654). For example, in a behavioral context, studies have examined the effect perceived locus of control has on environmental behavior (Sivek and Hungerford, 1989-90; Tucker, 1978; Trigg et al, 1976) or the effect perceived seriousness of environmental problems has on environmental behavior (Culen et al, 1986). This theoretical conceptualization dictates the types of items used to measure pro-environmental behavior.

Still, many researchers have directed portions of their research to simply measure overt environmental behavior in an effort to assess environmental commitment. Most often, researchers have simply asked respondents about specific activities (Scott and Willits, 1994; Gallup and Newport, 1990). For example, Gallup and Newport (1990:10)

asked, if an individual or other household member has “specifically avoided buying a product because it was not recyclable?”

Obviously, the results from this type of behavioral research are misleading (Scott and Willits, 1994). In both of the sources cited above, the items designed to measure the extent to which individuals participate in environmentally protective behavior were phrased in a way that engaging in a specific activity on a single occasion yielded a positive response. A single instance of participation does not necessarily indicate commitment or frequent participation in environmentally protective behavior. Therefore, to measure environmental commitment with environmental behavior items researchers must distinguish between commitment and basic participation.

Another methodology might better distinguish commitment from basic participation. Ebreo and Vinning (1993-94) were interested in examining consumers' beliefs about the environmentally-related attributes of consumer goods. Their research took a quantitative approach to an environmentally protective action. Specifically, to determine the extent individuals participate in recycling activities, participants were asked if they had recycled over the last year. As a follow-up, the recyclers then identified the amount (some, almost all, or all) of materials they had recycled. Though not specifically designed to do so, this methodology not only measured how many individuals have recycled but to some extent distinguished the dedicated recycler from the less motivated recycler.

In a further effort to distinguish between casual and deep commitment to environmental protection, behaviors have been measured using frequency-of-behavior

scales. These scales are designed to measure how often an individual participates in a specific environmentally protective behavior (Larson, Forrest, and Bostian, 1981; Roper Organization, 1990). For example, the Roper Organization developed a list of activities and attempted to determine if individuals made "a real effort to do it [the environmentally protective behavior] on a regular basis, or does it from time to time when it's convenient, or doesn't really bother about it" (1990: 91). Some of the activities included are: recycling various products, using products from environmentally responsible companies, and writing letters to congressman concerning the environment.

This approach does distinguish the active participant from others. Still, the domain of environmental behaviors is extremely large (Earth Works Group, 1989). Thus, individuals may participate actively in certain activities that are not mentioned by the researcher. Many researchers have documented this shortcoming when they have attempted to measure environmental behaviors (e.g. Unger, 1994; Scott and Willits, 1994).

In summary, environmental commitment is difficult to measure with behavioral scales. Still, it is generally believed that behavioral changes are required in order to solve environmental problems. Therefore, researchers continue to measure the extent to which certain groups participate in environmentally protective behavior. In addition, most researchers agree these scales must be capable of distinguishing the dedicated from the non-dedicated participant.

Another common theme in the literature focuses on the correlation between environmental attitudes and environmental behaviors. The following section discusses the

research uniquely directed towards exploring the relationship between environmental attitudes and environmental behaviors.

Environmental Attitude - Environmental Behavior Relationship

As discussed previously, research generally shows that many individuals hold pro-environmental attitudes; however, at best only a few individuals engage in ecologically responsible behavior. In an early study, Maloney and Ward (1973) measured the attitude-behavior relationship using four subscales. These subscales were designed to measure what an individual was willing to do concerning the environment (verbal commitment), what factual information the individual knew about the environment (knowledge), what degrees of emotion an individual had towards the environment (affect), and what an individual actually did in an effort protect the environment (actual commitment). They found that people expressed relatively strong verbal commitment towards environmental preservation and were emotional about it; however, most people knew little about the environment and actually did little in an effort to protect its quality.

Still, many presume that people that who have a higher or deeper level of concern for the environment (strong pro-environmental attitudes) are more likely to act in an ecologically responsible manner. In one case, this presumption was operationalized and supported when a group of individuals were asked to identify an environmental problem they found important. These individuals then indicated if they had actually acted in an attempt to solve that problem; in fact, over 50% of those questioned had taken action to solve the problem they identified (Culen et al, 1986).

Unfortunately, the bulk of literature does not support the claim that attitudes are strongly correlated to behaviors. Many researchers have directly measured the statistical correlation between an individual's environmental attitude and his or her environmental behavior (e.g. Dunlap and Van Liere, 1978; Van Liere and Dunlap, 1981; Smythe and Brook, 1980; Scott and Willits, 1994). The results have consistently indicated a weak positive correlation between an individual's environmental attitude and his or her environmental behavior.

Unger (1994) claims that the environmental attitude-environmental behavior relationship is weak because of fundamental flaws in the measurement instruments. He suggests three reasons why these instruments are flawed. The reasons are: the attitude measures fail to measure the most deeply held beliefs concerning the environment; the specific attitudes measured are not associated or linked to the specific behaviors; and the existence of confounding issues that effect the environmental behaviors.

Another researcher explains the weak environmental attitude-behavior relationship based on utility theories (Uusitalo, 1990). That is to say, most individuals desire a collective public welfare, such as environmental quality. However, individuals would rather not make individual sacrifices or change their standard of living in order to attain that collective good. When an individual is faced with an actual choice between an environmentally protective behavior that serves the collective good or a non-protective behavior that might serve their own interests, the individual will chose the activity that best serves their own interest or personal utility. Therefore, while many individuals make verbal commitments to protect environmental quality, many believe that the behavior

required to attain environmental quality often calls for personal sacrifices and individuals are not willing to make those sacrifices.

Overall, most researchers agree that, "both attitudes and actions need to be considered in assessing the environmental concerns of the citizenry. Moreover, it is relevant to ask how different segments of the population differ in regard to environmental attitudes and behavior" (Scott and Willits, 1994: 241).

Chapter 3

Methodology

This research project was conducted in three phases. First, a questionnaire was developed that was designed to measure the environmental attitudes and the environmental behaviors of Air Force members. Secondly, the questionnaire was evaluated through a pilot study that was conducted at Wright-Patterson Air Force Base, Ohio. This pilot study was designed to determine the statistical reliability and validity of the items used in the Environmental Attitude and Behavior Scale. Finally, a mail survey, using the validated questionnaire, was conducted to determine the extent to which Air Force members support environmental issues and participate in environmentally protective behavior. The data was then used to determine if there was a correlation between environmental attitudes and environmental behaviors.

Questionnaire Development

A 35-item questionnaire was developed to measure environmental attitudes, environmental behaviors, and demographic information. A complete copy of the questionnaire is provided in Appendix A. The development of the questionnaire is discussed below.

Environmental Attitudes. Environmental attitudes were measured using twelve items devised by Dunlap and Van Liere (1978). They claimed that these twelve items measured an individual's support for the 'new environmental paradigm' and that this support represents a single pro-environmental attitude. Other researchers found that these

twelve items actually measure up to three separate attitudes (e.g. Albrecht et al, 1982; Scott and Willits, 1994). Specifically, one study (Albrecht et al, 1982) concluded that the items measure the three following attitudes: (1) humans should be part of, rather than the rulers of, nature; (2) economic growth should be limited; and (3) a balance between human activities and nature should be preserved. In addition, the researchers found sufficient reliability to warrant future use as a multi-dimensional scale. Specifically, Cronbach's alpha was 0.71 for the balance of nature scale, 0.62 for the limits to growth scale, and 0.69 for the man over nature scale (Albrecht et al, 1982).

This research assumed that the twelve items measured three separate attitudes as suggested by previous researchers. The items and the attitudes assumed to be measured are listed in Figure 1.

Figure 1: Environmental Attitude Items

Attitude 1: Balance of Nature

1. The balance of nature is very delicate and easily upset.
2. When humans interfere with nature it often produces disastrous consequences.
3. Humans must live in harmony with nature in order to survive.
4. Mankind is severely abusing the environment.

Attitude 2: Limits to Growth

5. We are approaching the limit of the number of people the earth can support.
6. The earth is like a spaceship with only limited room and resources.
7. There are limits to growth beyond which our industrialized society cannot expand.
8. To maintain a healthy economy we will have to develop a steady state economy where industrial growth is controlled.

Attitude 3: Man Over Nature

9. Mankind was created to rule over the rest of nature.
10. Humans have the right to modify the natural environment to suit their needs.
11. Plants and animals exist primarily to be used by humans.
12. Humans need not adapt to the natural environment because they can remake it to suit their needs.

This portion of the survey was introduced to the respondents in the following manner: "We would like to get your opinion on a wide range of environmental issues. For each of the following statements please indicate the extent to which you agree or disagree" (Dunlap and Van Liere, 1978: 12). Each of the items was be accompanied by five response categories: (1) Strongly disagree, (2) Mildly disagree, (3) No opinion, (4) Mildly agree, and (5) Strongly agree.

The first eight items were worded such that agreement shows support for the attitude being measured. Respondents assigned scores on an automated scoring sheet such that a one meant the respondent "Strongly disagrees", a two meant the respondent "Mildly disagrees", and so on. The remaining four items (items 9, 10, 11, and 12 in Figure 1) in the attitude survey were negatively phrased. This means that if a respondent 'disagreed' with the item the respondent was actually indicating support for the environmental attitude in question. As an example, we will look at the following statement, "humans need not adapt to the natural environment because they can remake it to suit their needs" (item 12 in Figure 1). If the respondent agreed with this statement, he was indicating support for an anthropocentric world view and was affirming a human's right to dominate nature. On the other hand, rejection or disagreement indicated support of the idea that humans should be an integrated part of nature. Therefore, the latter (a negative response) was defined, for the purposes of this research, as the most pro-environmental attitude. Thus, the four negatively phrased items were reverse-scored.

Environmental Behaviors. Environmental behaviors were assessed using eleven items devised by this researcher that were hypothesized to measure two principal

behaviors, namely 'consumer' behaviors and more general 'ecologically responsible' behaviors. The items used are listed in Figure 2.

Figure 2: Environmental Behavior Items

Behavior 1: Consumer Behavior
1. Avoid buying or using aerosol sprays.
2. Specifically avoid buying a product because it was not recyclable.
3. Boycott a company's products because of its record on the environment.
4. Read labels on products to see if the contents are environmentally safe.
5. Use biodegradable plastic garbage bags, soaps and other items.
Behavior 2: Ecologically Responsible Behavior
6. Voluntarily recycle newspapers, glass, aluminum, motor oil, other items.
7. Contribute money to an environmental, conservation, or wildlife preservation group.
8. Take more care in the use of chemicals.
9. Attend a meeting related to ecology.
10. Do volunteer work for an environmental, conservation or wildlife preservation group.
11. Track my congressman's and senator's voting records on environmental issues.

Each item shown in Figure 2 has been used in a similar form in previous surveys (Gallup, 1991; Roper Organization, 1990; Dunlap and Scarce, 1991). However, they are presented differently in this study. For this research effort, 'consumer' behaviors were said to be specific actions that were taken by an individual when he or she was purchasing products. 'Ecologically responsible' behaviors were said to be specific actions that were taken by an individual which generally reflect environmental responsibility.

This portion of the survey was introduced to the respondents in the following manner: "Here is a list of things that people have told us they have done about the environment. Please read the list and indicate how often that you, or someone in your

household, makes an effort to do each of the items.” Each of the items was be accompanied by the following scale of five responses: (1) Always, (2) Most of the time, (3) Occasionally, (4) Seldom, and (5) Never. As before, respondents assigned scores on an automated scoring sheet such that a one meant the respondent “Always” acted in the manner specified, a two meant the respondent acted in the manner specified “Most of the time”, and so on.

With only a few exceptions (Larson, Forrest and Bostian, 1981; Roper Organization, 1990), previous research did not measure behavior on a frequency-of-behavior scale. Instead, statements have been worded in a way that the respondent may have participated in an activity on a single occasion to yield a favorable response (e.g. Scott and Willits, 1994; Maloney, Ward, and Braucht, 1975). For example, one study (Maloney, Ward, and Braucht, 1975) used the following statement: “I have attended a meeting of an organization specifically concerned with bettering the environment.” If the respondent had attended a single meeting, he could respond ‘true’. According to the researchers, this indicated an actual commitment and interest in environmental quality. However, a single occurrence does not translate into strong commitment. Therefore, a more accurate assessment of environmental commitment is gained by using the frequency-of-behavior scale defined earlier.

Demographics. Many researchers have attempted to measure the correlation between environmental concern and demographic variables (e.g. Van Liere and Dunlap, 1981; Scott and Willits, 1994). This earlier research suggested that age, level of education, income, and political ideology were linked to environmental attitudes and

behaviors (e.g. Tognacci, 1972; Van Liere and Dunlap, 1981). Overall, research suggested that a younger, well educated, politically liberal individual was more likely to express concern for environmental issues.

This research project did not attempt to determine the effects of demographic variables on environmental attitudes and environmental behaviors. However, the following information was collected: grade, time-in-service, age, gender, family income, level of education, and location of residence. The specific demographic items are contained in Appendix A along with the entire questionnaire. This information was collected for use during a future research project.

Questionnaire Evaluation

A pilot study was conducted to determine the statistical reliability of the items used in the attitude and behavior questionnaire.

Sample. A sample of 116 active duty Air Force members assigned to Wright-Patterson Air Force Base, Ohio was polled. The sample for the pilot study included members that ranged in grades from E1 through O4 and came from a variety of military career fields.

Statistical Analysis. This section discusses the statistical techniques used to determine the constructs measured by the questionnaire, to determine the reliability of the items used in the questionnaire, and to determine the validity of the items used in the questionnaire. In addition, the results from this analysis are discussed. SAS software, Version 6.08, was used to accomplish all of the statistical calculations during the course of this work.

Factor Analysis. Factor analysis was used to determine the dimensionality and construct validity of the survey instrument. Orthogonal rotation (Varimax) was used. This rotation technique redefines the factors. It creates very distinctive factors and leads to either very high (close to 1.0) or very low (near 0) factor loadings. By redefining the factors using this technique, more meaningful conclusions can be drawn from the results and clear definitions of the of the attitudes that are being measured by the questionnaire can be derived (Kachigan, 1991). The twelve attitudinal items and the eleven behavioral items were factor analyzed independently. Those questions dealing with demographic information were excluded.

Previous research showed inconsistent conclusions detailing the number of attitudes measured by the twelve items designed to measure environmental attitudes. For example, the first study using the twelve attitude items suggested that the items measured a single environmental attitude or the tool was uni-dimensional (Dunlap and Van Liere, 1978). However, other research suggested that the items measured two (Scott and Willits, 1994) or three (Albrecht, et al, 1982; Arcury, 1990; Edgell and Nowell, 1989; Geller and Lasley, 1985) dimensions. That was, the items actually measured two or three different attitudes. If the items measured only one dimension and they were summed for the correlation tests, a low score would have been interpreted as a lack of concern for environmental issues. On the other hand, if the scale measured separate attitudes then an individual could show support or concern for some environmental issues and disregard others.

Environmental Attitudes. From the pilot study data, the factor analysis on the environmental attitude items resulted in the identification of three factors. The results of the factor analysis using the principal components method are shown in Appendix B. The loading for each item on each of the factors is identified in the following discussion.

The factor loading data suggests that the twelve attitude items measure three distinct environmental attitudes. This result was consistent with the claims made by Albrecht, et al (1982) discussed previously. The factor loading rotated with a varimax rotation are shown in Table 1. These factor loadings represent the degree to which each of the items is correlated to each specific attitude or factor.

There were four items that were loaded on the factor titled balance of nature. These questions measured the degree to which the subjects felt: (1) nature is delicately balanced and fragile, (2) man has a negative impact on that delicate balance, (3) man must preserve that delicate balance.

There were four items that were loaded on the factor titled limits to growth. These questions measured the degree to which the subjects felt: (1) the earth has limited room and resources, (2) the earth has limited capacity to support humans, and (3) there are limits to industrial growth.

There were four items that were loaded on the factor titled man over nature. These questions measured the degree to which the subjects felt: (1) man was created to rule over nature; (2) man had the right to alter/modify the natural world; or (3) plants

and animals exist only to serve man. As discussed earlier, disagreement with these items was defined as a pro-environmental attitude.

Table 1: Varimax Rotated Factor Loading of 12 Attitude Items

			Factors		
	ITEM		Balance of Nature	Limits to Growth	Man Over Nature
			Loading		
Item	Factor 1: BALANCE OF NATURE				
1	The balance of nature is very delicate and easily upset.		0.79067	0.26470	0.13391
2	When humans interfere with nature, it often produces disastrous consequences.		0.73778	0.26293	0.28862
3	Humans must live in harmony with nature in order to survive.		0.69398	0.15505	0.08306
4	Mankind is severely abusing the environment.		0.57934	0.55305	0.13777
	Factor 2: LIMITS TO GROWTH				
5	We are approaching the limit of the number of people the earth can support.		0.11764	0.84910	0.13366
6	The earth is like a spaceship with only limited room and resources.		0.18398	0.66745	0.25163
7	There are limits to growth beyond which our industrialized society cannot expand.		0.16109	0.70553	0.04265
8	To maintain a healthy economy we will have to develop a steady state economy where industrialized growth is controlled.		0.32448	0.67114	0.05131
	Factor 3: MAN OVER NATURE				
9	Mankind was created to rule over nature.		0.05997	0.19590	0.78566
10	Humans have the right to modify the natural environment to suit their needs.		0.25515	0.17933	0.68341
11	Plants and animals exist primarily to be used by humans.		0.01705	0.19558	0.86055
12	Humans need not adapt to the natural environment because they can remake it to suit their needs.		0.38218	-0.19293	0.62755

Environmental Behaviors. The results of the factor analysis suggested that the eleven behavioral items measured two factors or dimensions. However, the analysis did not support the content of the two factors that was presented in the Questionnaire Development section of this chapter. The factor loadings, rotated with a varimax rotation, are shown in Table 2. In addition, the results of the factor analysis using the principal components method are shown in Appendix B.

Originally, the items were intended to measure “consumer” behavior and “ecologically responsible” behavior. Consumer practices included product selection and selection processes (Figure 2 and items numbered 1 - 5 in Table 2). Ecologically responsible behavior included recycling practices, donation of time and money, and political awareness (Figure 2 and items numbered 6 - 11 in Table 2).

However, the respondents did not distinguish between consumer behavior and ecologically responsible behavior as originally defined. Instead, the results of the factor analysis indicate that two other categories of environmentally protective behavior are measured by the eleven behavior items. Specifically, respondents did not distinguish recycling actions (item 6 in Figure 2) and the careful use of chemicals (item 8 in Figure 2) from certain consumer behaviors (such as, avoiding aerosols, avoiding non-recyclable products, reading labels, and selecting biodegradable products). In addition, respondents did not associate boycotting a company’s product (item 3 in Figure 2) with the consumer behaviors described above. Instead, they associated this item with the remaining behavior items.

As a result, the behavior subscales were redefined to reflect the dimensions indicated by the factor analysis (shown in Table 2). The first factor represents consumer/household practices. There were six items that were loaded on this factor. This factor dealt with the frequency the subjects participated in specific "consumer or household" behavior. Consumer practices include avoiding the purchase of specific products and process of selecting the products purchased. Additionally, household practices include: recycling products, using environmentally friendly products, and using chemicals carefully.

Table 2: Varimax Rotated Factor Loading of 11 Behavior Items

		Factors	
ITEM		Consumer/ Household Practices	Political Behavior
		Loading	
Item	Factor 1: CONSUMER/HOUSEHOLD PRACTICES		
1	Avoid buying or using aerosol sprays.	0.61792	0.36551
2	Specifically avoid buying a product because it was not recyclable.	0.69395	0.43944
4	Read labels on products to see if the contents are environmentally safe.	0.64301	0.43470
5	Use biodegradable plastic garbage bags, soaps, and other items.	0.76744	0.25149
6	Voluntarily recycle newspapers, glass, aluminum, motor oil, other items.	0.76537	0.11055
8	Take more care in the use of chemicals.	0.79976	0.01391
	Factor 2: POLITICAL BEHAVIOR		
3	Boycott a company's products because of its record on the environment.	0.43433	0.68691
7	Contribute money to an environmental, conservation, or wildlife preservation group.	0.45422	0.55065
9	Attend a meeting related to ecology.	0.11623	0.86124
10	Do volunteer work for an environmental, conservation or wildlife preservation group.	0.15045	0.83237
11	Track my congressman's and senator's voting records on environmental issues.	0.17301	0.72800

The second factor represents political behavior. There were five items that were loaded on this factor. These items measured the frequency which the subjects (1) boycotted a company based on its environmental record, (2) donated money or time to a conservation, preservation or wildlife group, and (3) tracked their representatives or senators record concerning the environment.

These results are consistent with a study conducted by Larson, Forrest, and Bostian (1981: 22). Specifically, these researchers measured "household environmental activism" and "political environmental activism." They found that consumer choices, recycling practices, and careful use of chemicals all represent household practices. In addition, they linked "political environmental activism" to some of the following behaviors: tracking a candidate's environmental stand, attending environmental meetings, volunteering time, signing a petition, and subscribing to environmental magazines (Larson, Forrest, and Bostian, 1981).

While any individual can choose to participate in either of the behaviors described, there seems to be a different level of commitment associated with consumer/household practices and political behavior. Purchasing specific products, avoiding specific products, recycling products, or using products carefully require individual commitment. These activities may be engaged in for many different reasons other than environmental preservation. For example, the purchase of a specific cleaning product that happens to be environmentally friendly could be due to availability. Therefore, the fact that the action results in environmental protection could be purely coincidental.

On the other hand, the items that ask if individuals attend an ecology related meeting, track a congressman's voting record, or boycott a company's product require specific and directed motivation. In essence, these political behaviors require substantial commitment and are directly correspond to an individual's specific concern for environmental quality. The consumer/household practices may be done for various other reasons.

Reliability. The reliability (internal consistency of the items) of the attitude and the behavior survey items was estimated in two ways in order to determine if the items within each factor warranted continued use in the mail study. First, the reliability was estimated by calculating Cronbach's alpha. Previous research suggested that the reliability of the items in the attitude survey was sufficient to justify using them; Cronbach's alpha has been measured and ranges from 0.62 to 0.81 (Albrecht et al, 1982). There was no previous reliability data available on the items used to measure environmental behaviors.

Additionally, the reliability for each environmental attitude subscale (as determined by the factor analysis to be: balance of nature, limits to growth, and man over nature) and each environmental behavior subscale (as determined by the factor analysis to be: consumer/household practices and political behavior) was determined by estimating the split-half reliability of the subscales (Kachigan, 1991). The correlation coefficient calculated was then adjusted using the Spearman-Brown prophecy formula (Carmines and Zeller, 1979) to determine the reliability coefficient of the entire subscale. These results were compared to Cronbach's alpha determined previously.

Environmental Attitudes. The reliability estimates for the attitude factors are shown below in Table 3. Each of the three subscales had sufficient levels of reliability to warrant use during the mail study. The Cronbach's alpha coefficient ranged from a high of 0.8067 for the balance of nature subscale to a low of 0.773 for the man over nature subscale. The split-half reliabilities were similar. They ranged from a high of 0.800 for the balance of nature subscale to a low of 0.73 for the man over nature subscale.

Table 3: Attitude Subscale Reliability for Pilot Study

Factor	Subscale	Cronbach's Alpha	Split Half Reliability*
1	BALANCE OF NATURE	0.80670	0.80049
2	LIMITS TO GROWTH	0.781486	0.769208
3	MAN OVER NATURE	0.772679	0.731085

* Adjusted using Spearman-Brown Prophecy procedure

Overall, it was determined that each of the attitude factors had sufficient reliability to warrant use during the mail study. In addition, the reliability analysis revealed that each item contributed significantly to the reliability of each subscale. Thus, no items were deleted from this portion of the questionnaire. Tables that detail these results are available in Appendix B.

Environmental Behaviors. The reliability estimates for each of the environmental behavior factors are shown below in Table 4. Each of the two subscales had sufficient levels of reliability to warrant use during the mail study. The Cronbach's alpha coefficient ranged from a high of 0.8584 for the consumer/household

practices subscale to the low of 0.8361 for the political behavior subscale. The split-half reliabilities were similar. They were 0.8724 for the consumer/household practices subscale and 0.816 for the political behavior subscale.

Table 4: Behavior Subscale Reliability for Pilot Study

Factor	Subscale	Cronbach's Alpha	Split Half Reliability*
1	CONSUMER/HOUSEHOLD PRACTICES	0.858401	0.87240
2	POLITICAL BEHAVIOR	0.836121	0.81618

* Adjusted using Spearman-Brown Prophecy procedure

Overall, it was determined that each of the factors had sufficient reliability to warrant use during the mail study. In addition, the reliability analysis revealed that each item contributed significantly to the reliability of each subscale. Thus, no items were deleted from this portion of the questionnaire. Tables that detail these results are available in Appendix B.

Validity. 'Content validity' implies that the items reflect the domain that is being measured. 'Content validity' is not determined using statistical techniques; instead, it is determined through a review of the literature and review of previous research in the area being studied (Emory, 1980). Factor analysis does contribute to this effort by revealing which items are highly correlated with specific attitudes or behaviors.

The attitude items were assumed to have 'content validity' based on the research done by Dunlap and Van Liere (1978). These researchers reported that the environmental attitude items were constructed after a detailed review of the literature and consultation

“with several environmental scientists and ecologists” (1978: 12). It was concluded that these twelve environmental attitude items, in their original form, would adequately assess the extent to which Air Force members subscribe to environmental attitudes.

The environmental behavior items were designed to determine the frequency an individual participated in specific actions that were associated environmentally responsible behavior (for example recycling, monetary contributions, and care of household chemicals). Unfortunately, there was no way to include all possible actions that characterize the behaviors being measured. However, every attempt was made to minimize the common environmentally protective behaviors that were not included. Overall, these items appeared to have ‘content validity’ and could be used to assess an individual’s environmental behavior.

Mail Study

A mail survey was administered using techniques that were devised and tested by Dillman (1978). Specifically, Dillman (1978) details the methods to construct questionnaires, to conduct a mail surveys, and to increase response rates.

Sample. A random sample of 1,988 active duty Air Force members was mailed questionnaires. The Air Force members queried ranged in grades from E1 through O6. Airmen in their first term of enlistment, general officers (grades O7 - O10), and members assigned overseas were not included in the population. Appendix C contains a detailed breakout, based on grade, of those who were mailed surveys; in addition, Appendix D contains a listing of the grades of those Air Force members who actually responded to the mail survey.

First term airmen were discounted because, in many cases, they have not made a commitment to the service; therefore, it was believed, their values and beliefs may not coincide with those generally held by career Air Force members. General officers were not queried for two reasons. First, due to their organizational position, general officers may not have the same values and beliefs that are typically held by other officers (Marumoto, 1988). Second, the Military Personnel Center (MPC), the final approving authority for the survey, believed that surveys inconvenience general officers. Therefore, MPC rarely approves surveys designed to query them (Hamilton, 1995). Finally, for convenience, the population was limited to Air Force members assigned to bases located in the continental United States.

The members' addresses were drawn from the MPC's data base that contains personal information unique to all military members. The members were selected using a three-step process. First, a listing of the social security numbers for all Air Force members that fell within the criteria defined above was generated. Next, social security numbers were selected randomly using Mathsoft's Mathcad 5.0 Plus program. A listing of uniformly distributed random numbers was generated that ranged from 1 to the number of social security numbers within a matrix. The random numbers identified specific matrix cells that contained the member's social security numbers. Finally, the social security numbers that had been randomly selected were entered into the MPC's computer system. This identified the member's name along with the unit and base the member was assigned to. The algorithm used to make the random selections is provided and discussed in Appendix C.

Of those questionnaires mailed, forty-one were returned undelivered. The main reasons given were insufficient addresses, the addressee's retirement, and the addressee's change in duty station. In one instance, a comment indicated that the addressee had been transferred but another member of the office had completed and returned the questionnaire. A total of 916 (47% of those delivered) members returned completed questionnaires.

Cover Letter. The questionnaire was accompanied by a cover letter (shown in Appendix A). The letter stressed the following to the respondents: the responses were confidential; the surveys were not connected with any form of inspection or audit; and, all responses were important. Often, respondents are concerned that their answers will be used for purposes other than research and fear their responses will have negative repercussions on them at a later time (Dillman, 1978). From reading this letter, it was intended that the respondents become confident that the information gathered will not be used in a manner that negatively effects them. And, all respondents would feel that their responses were important.

Statistical Analysis. This section discusses the statistical techniques used to determine the extent to which Air Force members express support for environmental issues and the extent to which they participate in environmentally protective behaviors. In addition, the method to calculate the correlation between attitudes and behavior is explained.

Environmental Attitudes. The extent to which Air Force members showed support for environmental issues was determined using summary statistics. In

addition, composite scores for each subscale (as determined by factor analysis) were calculated by summing the scores of relevant items. A high composite score for a subscale reflected a pro-environmental attitude; low composite scores indicated lack of concern.

Environmental Behaviors. The extent to which Air Force members participated in environmentally protective behaviors was determined using summary statistics. In addition, composite scores for each subscale (as determined by factor analysis) were calculated by summing the scores of relevant items. A high composite score for a subscale reflected frequent participation in the environmentally protective behavior; low scores indicated infrequent participation.

Environmental Attitude - Environmental Behavior Relationship. The bivariate correlation among the subscales (as determined by the factor analysis) was calculated. This technique determined if a member's expression of support for environmental issues was related to the frequency that the member participated in environmentally protective behavior.

Chapter 4

Analysis

The purpose of the analysis section is to discuss the results from the mail study.

The data from the mail study was used to determine the extent to which Air Force members express support for environmental issues and the frequency they participate in environmentally protective behavior. In addition, the bivariate correlation between the attitude scales and the behavior scales was calculated to determine the extent to which environmental concern was related to participation in environmentally protective behavior.

Environmental Attitudes

Overall, Air Force members indicated support for the pro-environmental position expressed by each of the attitude items. This section discusses the extent which Air Force members express support for each of the attitudes measured. In addition, a composite score for each attitude subscale is determined by summing the scores of the relevant items. A high composite score for a subscale reflects a pro-environmental attitude; low subscale scores indicate a lack of concern. The high and low are determined based on the number of items included for each subscale. Based on the notion that each environmental attitude subscale is comprised of four items, the subscale score ranges from a possible high of 20 to a minimum of 4. More practically, a subscale score of 20 indicates that the respondents "Strongly agree" with the attitude in question, while a subscale score of 4 indicates a "Strong disagreement" with the subscale.

Balance of Nature. The mean subscale score of slightly less than 15.9 (shown in Table 5) indicated that Air Force members agreed with the notion that nature was balanced and humans must live in harmony with nature in order to survive.

Table 5: Summary Statistics for Environmental Attitude Subscales

Factor	Subscale	N ^a	Mean	Standard Deviation	Sum
1	BALANCE OF NATURE	914	15.87856	3.58797	14513
2	LIMITS TO GROWTH	904	14.00996	3.56321	12665
3	MAN OVER NATURE	913	14.39869 ^b	3.95491	13146

^a Number of cases varies due to missing data. Respondents were instructed to skip over which they did not understand or did not wish to answer.

^b Items were reversed score to compute mean. A high score indicates support for the environmental issue; this support implies disagreement with the relevant items.

Additionally, support for this construct showed that Air Force members believed that man was abusing the environment, and his interference with nature often leads to disastrous consequences. Specifically, over 75 % (see Table 6) of queried members mildly or strongly agreed that the balance of nature is delicate and easily upset while a much higher percent (nearly 85%) agree that humans must live in harmony with nature in order to ensure human survival. In addition, nearly eighty percent of the Air Force members agreed that mankind is severely abusing the environment. However, fewer (70%) agreed that when humans interfere with nature it often produces disastrous consequences.

Limits to Growth. The results dealing with this subscale were more inconsistent. While the mean subscale score (approximately 14.0) indicated a mild level of agreement

with the concept of the earth's and the economy's limits, one item seemed to vary considerably. Nearly 71% (see Table 6) of Air Force members agreed with the idea that the earth has limited resources and room. However, less than half indicated that we are approaching the limit of the number of people the earth can support. In addition, only a slight majority of Air Force members agreed with the notion that there are limits to economic growth and economic growth must be controlled (approximately 54% and 55% respectively).

Table 6: Environmental Attitudes of Air Force Members

		Percent Response				
	ITEM	Strongly Disagree	Mildly Disagree	No Opinion	Mildly Agree	Strongly Agree
BALANCE OF NATURE						
1	The balance of nature is very delicate and easily upset.	4.6	15.1	4.5	40.3	35.5
2	When humans interfere with nature, it often produces disastrous consequences.	4.0	18.5	7.3	41.9	28.2
3	Humans must live in harmony with nature in order to survive.	2.6	6.2	6.3	35.4	49.4
4	Mankind is severely abusing the environment.	4.2	11.1	5.7	32.6	46.4
LIMITS TO GROWTH						
5	We are approaching the limit of the number of people the earth can support.	10.3	18.3	23.0	28.6	19.9
6	The earth is like a spaceship with only limited room and resources.	5.8	10.6	12.8	37.8	33.1
7	There are limits to growth beyond which our industrialized society cannot expand.	6.8	17.5	21.8	29.3	24.6
8	To maintain a healthy economy we will have to develop a steady state economy where industrialized growth is controlled.	10.4	12.7	21.4	35.3	20.1
MAN OVER NATURE						
9	Mankind was created to rule over nature.	33.4	20.2	14.4	14.0	17.9
10	Humans have the right to modify the natural environment to suit their needs.	23.3	34.2	9.9	25.9	6.8
11	Plants and animals exist primarily to be used by humans.	35.7	27.5	10.3	16.9	9.6
12	Humans need not adapt to the natural environment because they can remake it to suit their needs.	39.6	35.2	12.9	8.9	3.5

Man Over Nature. Again, responses within this subscale were somewhat inconsistent. Overall, the mean subscale score (approximately 14.4) indicated a mild level of disagreement with the concept that humankind exists to dominate nature or the notion that nature exists merely as a resource for humans' exploitation.

While nearly a third of the respondents expressed the belief that humans were created to rule over nature, the majority of individuals rejected that idea. Similarly, the majority (57.4 percent) of Air Force members rejected the idea that humans have the right to modify nature to suit their needs. In addition, an overwhelming majority (74.8 percent) disagreed with the statement, humans need not adapt to the natural environment because they can remake it to suit their needs.

Environmental Behaviors

The majority of Air Force members indicated at least occasional participation in consumer/household environmentally protective behavior. However, the majority indicated less than occasional participation in environmentally related political activities. This section discusses the extent which Air Force members express support for each of the behaviors measured.

Consumer/Household Practices. The mean subscale score of slightly more than 19.0 (shown in Table 7) indicated that the Air Force members queried occasionally engaged in consumer/household practices that were environmentally friendly. The composite score for the subscale was determined by summing the scores of the relevant items. A high composite score for the subscale indicates a frequent participation in

environmentally protective activity; a low subscale score indicates infrequent participation. The high and low are determined based on the number of items included for the subscale. Based on the notion that the consumer/household practices subscale is comprised of six items, the subscale score ranges from a possible high of 30 to a minimum of 6. More practically, a subscale score of 30 indicates that the respondents “Always” participate in consumer/household behaviors that are environmentally protective, while a subscale score of 6 indicates that they “Never” engage in the activity described.

Table 7: Summary Statistics for Behavior Subscales

Factor	Subscale	N ^a	Mean	Standard Deviation	Sum
1	CONSUMER/HOUSEHOLD PRACTICES	905	19.02541	4.95850	17218
2	POLITICAL BEHAVIOR	902	9.16075	3.62714	8263

^a Number of cases varies due to missing data. Respondents were instructed to skip over which they did not understand or did not wish to answer.

Still, the demonstrated commitment to environmentally protective behavior within this subscale was inconsistent. Specifically, over 50 percent (see Table 8) of those questioned never or seldom avoid buying a product because it is not recyclable. Yet, a much higher percentage (nearly 44%) avoid buying or using aerosol sprays most of the time or always. While 54.4 percent of the respondents never or seldom avoided buying products if they are not recyclable, it appeared that the majority of respondents voluntarily recycle certain items on a regular basis (64% most of the time or always recycle newspapers, glass aluminum, motor oil, etc.). Presumably, an individual can recycle

without actually avoiding certain purchases. Additionally, over 70% always or most of the time take more care in the use of chemicals.

Table 8: Environmental Behavior of Air Force Members

		Percent Response				
	ITEM	Never	Seldom	Occasionally	Most of the Time	Always
CONSUMER/HOUSEHOLD PRACTICES						
1	Avoid buying or using aerosol sprays.	14.6	15.8	25.9	33.8	10.0
2	Specifically avoid buying a product because it was not recyclable.	23.9	30.5	29.8	14.4	1.4
4	Read labels on products to see if the contents are environmentally safe.	19.7	22.4	29.4	20.9	7.8
5	Use biodegradable plastic garbage bags, soaps, and other items.	9.4	17.3	31.6	31.8	9.8
6	Voluntarily recycle newspapers, glass, aluminum, motor oil, other items.	7.0	9.1	19.9	31.0	33.0
8	Take more care in the use of chemicals.	4.4	7.0	15.2	42.7	30.7
POLITICAL BEHAVIOR						
3	Boycott a company's products because of its record on the environment.	39.2	26.4	20.9	9.2	4.4
7	Contribute money to an environmental, conservation, or wildlife preservation group.	32.7	25.8	25.0	9.1	7.3
9	Attend a meeting related to ecology.	66.9	22.9	7.8	1.5	0.9
10	Do volunteer work for an environmental, conservation or wildlife preservation group.	60.1	23.1	12.8	2.8	1.2
11	Track my congressman's and senator's voting records on environmental issues.	63.2	18.7	11.1	5.0	2.0

Political Behavior. The results dealing with this subscale were extremely consistent. The mean subscale score (approximately 9.1) indicated that respondents seldom participated in environmentally political behavior. The composite score for the subscale was determined by summing the scores of the relevant items. A high composite score for the subscale indicates a frequent participation in the environmentally protective activity; a low subscale score indicates infrequent participation. The high and low are

determined based on the number of items included for the subscale. Based on the notion that the political behaviors subscale is comprised of five items, the subscale score ranges from a possible high of 25 to a minimum of 5. More practically, a subscale score of 25 indicates that the respondents "Always" participate in political behaviors that are environmentally protective, while a subscale score of 5 indicates that they "Never" engage in the activity described.

The low subscale score is reflected in the results that are associated with each item. In all cases, nearly 60% (shown in Table 8) of Air Force members polled never or rarely participated in the specific activities identified.

Environmental Attitude - Environmental Behavior Relationship

The bivariate correlations among the five scores were all positive and statistically significant at the 0.0001 level (shown in Table 9). The balance of nature subscale had the largest r values linking it to the two behavior subscales. Specifically, the balance of nature subscale was linked to the consumer/household practices subscale with an r value of slightly more than 0.4. This suggests that when an individual believes in the notion that nature is a delicate, interdependent system that the same individual would more frequently participate in consumer/household practices that are considered to be environmentally protective. Similarly, an individual having that same belief could be expected to more frequently participate in environmentally protective political behaviors (r value of 0.3). While these correlations suggest a positive relationship between the balance of nature subscale and the behavior subscales, these correlations are only moderate. Thus,

expressing support for the balance of nature subscale is not definitively related to frequent participation in the environmentally protective behaviors described.

None of the other attitude-behavior correlations exceeded 0.28 (shown in Table 9). As discussed above, this result suggests that there is some positive relationship between pro-environmental attitudes and participation in environmentally protective behaviors. However, it also suggests that pro-environmental attitudes are not strong predictors of pro-environmental behaviors.

Table 9: Correlations Relating Attitude Subscales and Behavior Subscales

	Consumer/ Household Practices	Political Behavior
ATTITUDES		
Balance of Nature	0.40076 903	0.29682 900
Limits to Growth	0.23398 893	0.25136 891
Man Over Nature	0.28350 902	0.20327 899

NOTE: All correlations coefficients are statistically significant at the 0.0001 level

Chapter 5

Conclusions

The goal of this research project was to measure the extent to which Air Force members support environmental issues and participate in environmentally protective behavior. The information collected was used to determine if there was a correlation between the environmental attitudes and the environmental behaviors of Air Force members. The following section discusses the conclusions drawn from the data collected during this research effort. In closing, recommendations for future research efforts are made.

Environmental Attitudes

Air Force members overwhelmingly viewed nature as a delicate, interdependent system that is in a balanced state. Additionally, they noted that this balance is subject to disturbance by human activities. They also agreed with the idea that man is severely abusing the environment.

Air Force members were less consistent in their feelings about the limits to growth and the human's place in the ecological order. Generally, they supported the notion that the earth has certain carrying capacities which limit the growth of industry and population. Specifically, the majority of respondents acknowledged that there are limits to growth for industrialized society and expressed support for the notion of a steady state economy. In addition, they agreed with "earth is a spaceship" metaphor; that is, the earth has limited

space and resources. Still, fewer Air Force members believed that society is approaching the natural limits with respect to population.

Generally, Air Force members viewed themselves as a integral part of the ecological order. They claimed that humans should not act irresponsibly and must be stewards who adapt their behavior in ways that are consistent with that natural balance. Still, nearly a third of the respondents seemed to believe that humans rightfully rule over nature and that humans have the right to modify the environment to suit their needs.

More specific environmental attitudes and beliefs were expressed through the individual comments. The word-for-word transcriptions of the comment sheets are shown in Appendix E. The comments indicated the diverse and extreme opinions that are typical when environmental issues are discussed.

Environmental Behavior

In most cases, Air Force members report some level of involvement in environmentally protective behavior. More specifically, Air Force members occasionally make environmentally protective consumer choices like avoiding aerosols and non-recyclable products. Similarly, Air Force members occasionally engage in environmentally protective household practices such as recycling materials and using chemical products carefully. However, most Air Force members indicated that they have never taken active political efforts to preserve environmental quality.

While lack of commitment is often cited as the reason for occasional involvement in environmentally protective behavior, moderate participation in environmentally protective actions may be due to a number of reasons. First, the domain of

environmentally protective behaviors is vast. It is unreasonable to expect that the list of environmentally protective behaviors included in the questionnaire is all inclusive. Thus, individuals may regularly engage in environmentally friendly activities not addressed in the questionnaire.

In fact, there are a number of activities that were not included that Air Force members might be expected to participate in. For example, many Air Force bases require the composting of yard waste; many bases have household hazardous waste collection programs; and some bases sponsor ride-sharing programs. None of these items were mentioned in the questionnaire used. Thus, it is possible for some Air Force members to demonstrate care for the environment by engaging in activities not included in the questionnaire that was used.

Secondly, it is possible for an individual to engage in one of the activities identified and not others. For example, while an individual may not specifically avoid or boycott a company's product, that same individual may recycle the items purchased from that company. Thus, it is difficult to assess the true frequency that an individual participates in environmentally protective behaviors.

However, based on the behaviors chosen conclusions may be drawn concerning the individual's commitment towards protecting the environment. By examining the behaviors chosen, tentative conclusions can be made concerning an Air Force member's commitment towards protecting the environment. Generally, the political realm of environmental activities is a more telling gauge of an individual's commitment to solving environmental problems than the pro-environmental behavior associated with household or

consumer activities (Larson, Forrest, Bostian, 1981). For example, following the voting patterns of a congressman or representative, joining wildlife preservation societies, or boycotting a company's products indicates a special, motivated concern for environmental quality. In contrast, the decision to purchase or use certain products that are recyclable might simply be based on cost, expedience, or habit. Thus, Air Force members may not be strongly committed to preserving environmental quality. Instead, they may engage in environmentally protective behavior for non-environmental reasons or they may simply have different level of environmental concern.

Still, the political realm of environmental activities may not be the most telling gauge of environmental commitment within the Air Force community. Military members' political involvement may be limited for a number of reasons unrelated to environmental issues. First, while military members have the same political rights as other citizens, the manner in which they exercise those rights may be limited in some cases by regulation. The military, as an organization, must remain politically neutral and divorced from partisan politics. Thus, its members' activities and involvement are guided under strict regulations. While members are not required to forego all political involvement, Air Force members may find it more convenient not to participate in any political activities due to the imposed standards.

Secondly, members are often geographically separated from their home of record. Because of this separation, members may not see an opportunity or take the time to stay current on 'home town' issues or officials' activities. Thus, while political efforts to preserve environmental quality generally indicate deep commitment, it may be

unreasonable to expect this measure to accurately assess how deeply the Air Force community is committed to preserving environmental quality.

Overall, the environmental behavior items used do not specifically address the motivations that drive each individual's behavior. Thus, the level of individual commitment can not be accurately assessed with the present research effort. In order to draw more reasonable conclusions, a researcher might consider adding questionnaire items or rephrasing items in order to further assess the level of commitment associated with the specific behavior.

Attitude-Behavior Relationship

Statistical analysis revealed that pro-environmental attitudes were positively related to environmentally protective behaviors. However, the relationship was moderate. Thus, one pervasive question has come from the correlation between environmental attitude and environmental behavior subscales: if Air Force members are so concerned about the environment, why aren't there more environmentally protective actions?

As discussed above, many Air Force members report taking some environmentally protective actions. This is indicated by the number who in engage in some protective consumer and household practices. Still, few individuals "always" engaged in these environmentally protective consumer and household practices. Even fewer engaged in politically related activities.

Normally, researchers conclude that modest participation in environmentally protective behaviors indicates a modest concern for environmental issues. Overall, this

may not be true. There are a number of explanations for an individual's failure to take environmentally protective actions. First, there are certain institutional and structural barriers facing individuals who are interested in preserving the environment. Specifically, individuals may not have the means to participate in a specific activity. For example, airmen living in the dormitories may not access to a recycling system.

Secondly, individuals may not see themselves as the cause of environmental problems. Instead, many individuals may see industry and government as the culprit. Thus, they do not see a need to adopt personal behaviors in efforts to preserve environmental quality. Instead, many believe it is the responsibility of industry to take the lead in solving and preventing environmental degradation.

In conclusion, for environmentally protective actions to take place, pro-environmental attitudes and beliefs are necessary but may not be sufficient, given the numerous barriers and perceptions towards those actions. Until some of the institutional and structural barriers are removed, it may be unreasonable to expect a strong positive correlation between environmental attitudes and environmentally protective behaviors.

Future Research

This section discusses the areas where future research is needed to further understand the extent to which Air Force members support environmental issues and participate in environmentally protective behaviors.

Questionnaire Development. There is a need for future research that develops new instruments that measure environmental attitudes among individuals. First, the

attitude items used for this research address a narrow scope of environmental attitudes. They do not provide the researcher insight into the complete realm of values or beliefs that an individual may have concerning the environment.

Environmental beliefs are characterized by as a continuum of attitudes and beliefs concerning a number of issues. Thus, individuals that are deeply concerned with the environment reportedly adhere to a number of well-defined social and political principles, while those with an anthropocentric view adhere to another set of contrasting principles. For example, a deep environmentalist might believe that mankind is depleting resources, overpopulating the earth, and relying on growth and technology too greatly. In contrast, those holding an anthropocentric view might believe in infinite resources with technology enhancing their abundance. Of course, between each of these extremes, many individuals hold more moderate opinions relative to these issues (Kahn et al, 1976; Wall, 1995).

In this research effort, the attitude items used measured whether an individual embraced an extreme position that most researchers associate with deep environmental commitment. Thus, a certain level of bias was intentionally introduced. One respondent provided the following example:

Using the verb "interfere" in question 14 and the phrase "often produces disastrous consequences" slants the question. "Interfere" suggests we [humans] don't belong with nature in the first place, and the above phrase is an editorial opinion you seek to support with affirmative answers. If the results of your survey behave like most surveys, biased questions result in biased data, often because respondents fail to see the bias in the questions. How about rewording: "Human interaction with nature can produce disastrous consequences." If you feel like my rewording takes the edge off the question, then that just points out the difference between a slanted and an unslanted one.

While the items were not "good, objective" survey items, they adequately determined the extent to which Air Force members embraced an extreme environmental perspective. This perspective is characterized by the notion that nature is in a balanced state which can be disturbed by humans. Thus, the bias in the item discussed above was intended.

Still, the items used did not provide insight to exactly where on the continuum of environmental attitudes the typical Air Force member might be found. Additional items might provide this insight. For example, the following question might be added: "By developing new technologies and using them responsibly, scientists can replace depleting resources." By agreeing with this item, an individual reveals a faith in technology and believes it should be used responsibly. Thus, while the individual may believe in the notion that the earth has limited room and resources, the responsible use of science and technology may preclude any notion that humans are actually approaching those limits.

In summary, there is a need to assess why individuals hold certain beliefs. Presumably, this will provide some insight as to why individuals engage in environmentally protective behaviors. Thus, effective programs can be developed that are designed to protect the environmental quality. The environmental attitude items used during this research effort do not provide this information.

Demographic Predictors of Environmental Behaviors. Another common theme in the literature is to analyze the relationship of various demographic and social characteristics to environmental attitudes and behaviors (e.g. Scott and Willits, 1994; Noe and Snow, 1990; Van Liere and Dunlap, 1981). In one of the most comprehensive

examinations, Van Liere and Dunlap (1981) tested a number of popular hypothesis concerning social variables and the environment. Originally, they hypothesized that a younger, affluent, well educated, liberal who resides in an urban setting would be more concerned for environmental issues than others. They concluded that environmental concern is relatively strong amongst the group described. However, they noted that environmental concern is not limited to individuals having those specific demographic characteristics.

It was never the intent of this research to determine the correlation between environmental attitudes, behaviors, and social characteristics. However, the following information was collected: grade, time-in-service, age, gender, family income, level of education, and location of residence (on or off base). A complete listing of demographic items is shown in Appendix A with the frequency counts of the responses shown in Appendix D. In view of this, there are a few suggestions for future research that might improve the knowledge and understanding about the attitudes and behaviors concerning Air Force members and the environment.

First, a researcher could characterize Air Force members based on a detailed review of literature. This characterization, coupled with the existing research relating demographic information to environmental concern, could be used to develop detailed hypotheses concerning the attitudes and beliefs of Air Force members. The data collected during this mail survey could be used to determine if Air Force members actually believe and behave as hypothesized.

In addition to examining individuals, researchers may examine environmental attitudes from an organizational perspective. By examining organizations such as Air Combat Command and Air Force Material Command, hypotheses could be developed concerning members' attitudes and behaviors relative to the organization's doctrine, mission, published goals, and environmental initiatives. By conducting interviews of Air Force members at all levels of an organization, the general environmental beliefs and values could be assessed. Coupled with the data collected during this research effort, this information might be used to critically review an organization's environmental efforts.

Comparison of Air Force members to General Public. Future research is needed to determine the extent to which the attitudes and beliefs of Air Force members are consistent with other groups in American society. A researcher might anticipate differences when comparing the attitudes and beliefs of Air Force military members to other groups. However, this hypothesis may not be true. Therefore, many programs predicted to fail within an Air Force community may be effective if the attitudes and beliefs of Air Force members are consistent with other segments the population.

Environmental Education Experiment. Researchers may look to assess the extent to which formal environmental education efforts alter or modify pro-environmental behaviors (Smith-Sebasto, 1995). An experimental design might be a method to effectively determine if formal education can create a population of citizens that are aware of environmental problems and motivated to work toward their solutions.

Specifically, the Air Force, which has experienced moderate success with certain programs, might develop a formal education program to focus on a specific problem and

advocating a specific pro-environmental behavior with the effectiveness measured through self-reported questionnaire. For example, Luke Air Force Base, Arizona was faced with a state mandate to reduce the number of individuals who drive to work alone by 5 percent annually in 1990. Unfortunately, the base has struggled to comply during each of the reporting periods (Kuhn, 1995). A formal education effort may help Luke Air Force Base overcome the resistance to ride sharing and get Air Force members personally involved in preserving air quality.

Summary

Overall, Air Force members expressed relatively strong support for environmental issues. However, Air Force members only occasionally engaged in activities that contribute to the preservation or protection of the environment. Still, correlational analysis revealed that the pro-environmental attitudes were moderately linked to the environmentally protective behaviors measured.

In closing, this research suggests that the Air Force members are aware and concerned about the environment. Therefore, Air Force leadership may not want to devote its resources and time to further develop environmental awareness among its members. Instead, they might attempt to determine what variables influence individual participation in environmentally protective behaviors and determine ways to eliminate any barriers that prevent these individuals from engaging in those behaviors.

Appendix A

Survey Package



DEPARTMENT OF THE AIR FORCE
AIR UNIVERSITY (AETC)

Air Force Institute of Technology
Department of Engineering and Environmental
Management
2950 P. Street
Wright-Patterson AFB, OH 45433-7765

Dear Recipient:

Enclosed is a questionnaire which is part of a research study on the attitudes and behaviors of Air Force members concerning environmental issues. The work is being conducted by the Air Force Institute of Technology's Engineering and Environmental Management Department.

The information gathered will only be used by the researcher to evaluate potential improvements to existing environmental programs. This research is not connected with any government inspection or audit. Even if you have no direct involvement in environmental issues we still need your participation. You are one of a small number of Air Force members selected to give their opinion on these matters. Your name was drawn in a random sample of the entire Air Force. In order for the results to truly represent the thinking of Air Force, it is important that each questionnaire be completed and returned.

Please don't tell us what you think we want to hear -- tell us what you **think**. There are no right or wrong answers. We simply want to hear your honest opinions. If there is a question on the questionnaire which you do not understand or do not wish to answer, please skip over it. Your responses to the questions will be completely confidential. Your name will never be recorded anywhere on the questionnaire

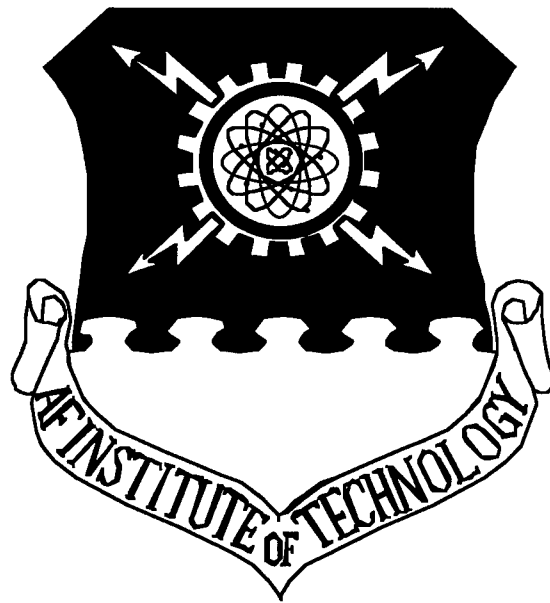
Please take time to complete the attached survey and return it in the postage paid enclosed envelope. We would be happy to answer any questions you may have about the questionnaire or this research project. The principal researcher can be contacted a DSN: 785-2998 or Commercial: (513) 255-2998. The faculty research advisor is Lt Col Steve Lofgren; he can be contacted at the same numbers. If we are not there, please leave a message and we will return your call.

Your assistance is greatly appreciated and will help us understand a little more about the relationship between environmental attitudes and environmental behaviors.

Sincerely,


JAY E. DEJONGH, Colonel, USAF
Associate Dean,
Graduate School of Engineering

AIR FORCE INSTITUTE OF TECHNOLOGY



ENVIRONMENTAL ATTITUDE AND BEHAVIOR SCALE

**SURVEY CONTROL NUMBER
USAF 95-50
Expires on 31 September 1995**

INSTRUCTIONS

All items are to be answered by filling in the appropriate spaces on the machine scored response sheets provided. For your responses to be included in this research study, return the response sheet along with any comments you may have in the enclosed envelope **NO LATER THAN 31 July**. If there is an item on the questionnaire which you do not understand or do not wish to answer, please skip over it.

Please use a soft-lead (No. 2) pencil, and observe the following:

1. Make heavy black marks that fill in the space (of the response you select).
2. Erase cleanly any responses you wish to change.
3. Make no stray markings of any kind on the questionnaire.
4. Do not staple, fold or tear the response sheet.
5. Do NOT write your name anywhere on the response sheet so that your responses will be anonymous.

Each response block has 10 spaces (numbered 1 through 10). The questionnaire items normally require a response from 1-5 only, therefore, you will rarely need to fill in a space numbered 6, 7, 8, 9, or 10. Respond to questionnaire items by marking the appropriate response from those below the instructions given in each section. The following example is shown:

Scale:

- 1 STRONGLY DISAGREE
- 2 MILDLY DISAGREE
- 3 NO OPINION
- 4 MILDLY AGREE
- 5 STRONGLY AGREE

Sample item:

There is not much that one person can do to help the environment.

[If you "Mildly agree" with the sample item, you would "blacken in" the block preceding the word "Mildly agree" on the questionnaire.]

Sample response:

1	2	3	4	5
O	O	O	●	O

BACKGROUND INFORMATION

First, we would like to ask some questions about yourself. This information will help us interpret the results.

1. What is your pay-grade?

- 1 E1 - E3
- 2 E4 - E6
- 3 E7 - E9
- 4 O1 - O3
- 5 O4 - O6

2. Which organization are you assigned to?

- 1 Air Combat Command
- 2 Air Education and Training Command
- 3 Air Force Materiel Command
- 4 Air Force Space Command
- 5 Air Force Special Operations Command
- 6 Air Mobility Command
- 7 Pacific Air Forces
- 8 United States Air Forces in Europe
- 9 Field Operating Agency/Direct Reporting Unit
- 10 OTHER

3. How long have you been in the Air Force?

- 1 1 - 5 Years
- 2 6 - 10 Years
- 3 11 - 15 Years
- 4 16 - 20 Years
- 5 21 - 25 Years
- 6 Over 25

4. What is your age?

- 1 18 - 25 Years
- 2 26 - 35 Years
- 3 36 - 45 Years
- 4 46 - 55 Years
- 5 Over 55

5. What is your gender?

- 1 Male
- 2 Female

6. What is your gross annual FAMILY income (all family members including yourself)?

- 1 \$0 - \$14,999
- 2 \$15,000 - \$29,999
- 3 \$30,000 - \$44,999
- 4 \$45,000 - \$59,999
- 5 \$60,000 - \$74,999
- 6 Over \$75,000

7. Do you live on base?

- 1 Yes
- 2 No

8. If you live on-base, what type of on-base housing do you occupy?

- 1 Military Family Housing
- 2 Unaccompanied Personnel Housing
- 3 Temporary Lodging Facility
- 4 Other
- 5 Not Applicable

9. If you live off-base, do you own or rent your housing?

- 1 Own
- 2 Rent
- 3 Other

10. If you live off-base, what type of housing do you occupy?

- 1 Single Family Detached
- 2 Townhouse/Condominium
- 3 Apartment
- 4 Mobile Home
- 5 Other
- 6 Not Applicable

11. What is the highest educational level, credential, or degree that you have completed?

- 1 High School Diploma or Equivalent
- 2 Some College
- 3 Completed Associate's Degree
- 4 Completed Bachelor's Degree
- 5 Some Graduate Work
- 6 Completed Graduate Degree

12. Have you ever attended an environmental training class sponsored by the Air Force?

- 1 Yes
- 2 No
- 3 Don't Know

We would like to get your opinion on a wide range of environmental issues. For each of the following statements please use the following scale to indicate the extent to which you agree or disagree.

- 1 STRONGLY DISAGREE
- 2 MILDLY DISAGREE
- 3 NO OPINION
- 4 MILDLY AGREE
- 5 STRONGLY AGREE

- 13. The balance of nature is very delicate and easily upset.
- 14. When humans interfere with nature it often produces disastrous consequences.
- 15. Humans must live in harmony with nature in order to survive.
- 16. Mankind is severely abusing the environment.
- 17. We are approaching the limit of the number of people the earth can support.
- 18. The earth is like a spaceship with only limited room and resources.
- 19. There are limits to growth beyond which our industrialized society cannot expand.
- 20. To maintain a healthy economy we will have to develop a steady state economy where industrial growth is controlled.
- 21. Mankind was created to rule over the rest of nature.
- 22. Humans have the right to modify the natural environment to suit their needs.
- 23. Plants and animals exist primarily to be used by humans.
- 24. Humans need not adapt to the natural environment because they can remake it to suit their needs.

Here is a list of things that people have told us they have done about the environment. Please read the list and use the following scale to indicate how often that you, or someone in your household, makes an effort to do each of the items.

- 1 NEVER
- 2 SELDOM
- 3 OCCASIONALLY
- 4 MOST OF THE TIME
- 5 ALWAYS

25. Avoid buying or using aerosol sprays.
26. Specifically avoid buying a product because it was not recyclable.
27. Boycott a company's products because of its record on the environment.
28. Read labels on products to see if the contents are environmentally safe.
29. Use biodegradable plastic garbage bags, soaps and other items.
30. Voluntarily recycle newspapers, glass, aluminum, motor oil, other items.
31. Contribute money to an environmental, conservation, or wildlife preservation group.
32. Take more care in the use of chemicals.
33. Attend a meeting related to ecology.
34. Do volunteer work for an environmental, conservation or wildlife preservation group.
35. Track my congressman's and senator's voting records on environmental issues.

We would appreciate any comments you may have. Please use this sheet for comments and return it with your response sheet. Also, please identify any questions which appear unclear or ambiguous.

Comments:

This image shows a full page of blank, lined paper. It features approximately 20 evenly spaced horizontal black lines across its entire width, typical of standard notebook or legal stationery. The background is a uniform off-white color, and there are no margins, text, or other markings present.

Appendix B

Pilot Study Data

This appendix contains the demographic characteristics of the respondents, the frequency tables for the pilot study, and other statistical calculations. The total cumulative frequency varies from item to item due to missing data. Respondents were instructed to skip over items which they did not understand or did not wish to answer.

A. Demographics

GRADE:

E1 - E3	14
E4 - E6	58
E7 - E9	10
O1 - O3	32
O4 - O6	1

COMMAND OR UNIT OF ASSIGNMENT:

Air Combat Command	1
Air Education and Training Command	31
Air Force Material Command	80
Field Operating Agency/Direct Reporting Unit	2

TIME IN SERVICE:

1 - 5 YEARS	52
6 - 10 YEARS	34
11 - 15 YEARS	17
16 - 20 YEARS	10
21 - 25 YEARS	3

AGE:

18 - 25 YEARS	53
26 - 35 YEARS	50
36 - 45 YEARS	12
46 - 55 YEARS	1

GENDER:

MALE	89
FEMALE	27

REPORTED FAMILY INCOME:

\$0 - \$14,999	11
\$15,000 - \$29,999	50
\$30,000 - \$44,999	42
\$45,000 - \$59,999	7
\$60,000 - \$74,999	4
OVER \$75,000	2

LOCATION OF HOUSING

Reside on Base	50
Reside off Base	66

REPORTED LEVEL OF EDUCATION:

High School Diploma or Equivalent	12
Some College	50
Completed Associate's Degree	15
Completed Bachelor's Degree	16
Some Graduate Work	17
Completed Graduate Degree	5

ENVIRONMENTAL TRAINING EXPERIENCE:

Yes	29
No	75
Don't Know	12

B. ENVIRONMENTAL ATTITUDES

FREQUENCY TABLES

	ITEM	Response				
		Strongly Disagree	Mildly Disagree	No Opinion	Mildly Agree	Strongly Agree
BALANCE OF NATURE						
1	The balance of nature is very delicate and easily upset.	5	18	5	42	46
2	When humans interfere with nature, it often produces disastrous consequences.	3	18	11	48	36
3	Humans must live in harmony with nature in order to survive.	2	4	5	43	62
4	Mankind is severely abusing the environment.	3	15	7	38	53
LIMITS TO GROWTH						
5	We are approaching the limit of the number of people the earth can support.	10	19	23	42	22
6	The earth is like a spaceship with only limited room and resources.	3	12	11	50	40
7	There are limits to growth beyond which our industrialized society cannot expand.	7	11	25	47	26
8	To maintain a healthy economy we will have to develop a steady state economy where industrialized growth is controlled.	10	12	28	44	22
MAN OVER NATURE						
9	Mankind was created to rule over nature.	37	26	22	9	22
10	Humans have the right to modify the natural environment to suit their needs.	31	29	15	35	6
11	Plants and animals exist primarily to be used by humans.	34	28	18	24	12
12	Humans need not adapt to the natural environment because they can remake it to suit their needs.	47	35	19	10	5

PRINCIPLE COMPONENTS FACTOR ANALYSIS

Factor Pattern

	ITEM	Factor 1	Factor 2	Factor 3
		Loadings		
Factor 1	BALANCE OF NATURE			
1	The balance of nature is very delicate and easily upset.	-0.45424	0.70140	-0.12195
2	When humans interfere with nature, it often produces disastrous consequences.	-0.37230	0.74700	0.01200
3	Humans must live in harmony with nature in order to survive.	-0.44946	0.54955	-0.09228
4	Mankind is severely abusing the environment.	-0.12850	0.76017	-0.25711
Factor 2	LIMITS TO GROWTH			
5	We are approaching the limit of the number of people the earth can support.	0.39951	0.67186	-0.37639
6	The earth is like a spaceship with only limited room and resources.	0.27932	0.65605	-0.18503
7	There are limits to growth beyond which our industrialized society cannot expand.	0.26335	0.56120	-0.37581
8	To maintain a healthy economy we will have to develop a steady state economy where industrialized growth is controlled.	0.11639	0.64044	-0.36694
Factor 3	MAN OVER NATURE			
9	Mankind was created to rule over nature.	0.26398	0.55478	0.53082
10	Humans have the right to modify the natural environment to suit their needs.	0.07211	0.60813	0.43508
11	Plants and animals exist primarily to be used by humans.	0.31779	0.56696	0.59721
12	Humans need not adapt to the natural environment because they can remake it to suit their needs.	-0.24515	0.42047	0.58327

Variance explained by each factor

FACTOR1	FACTOR2	FACTOR3
1.119970	1.709347	4.712579

CRONBACH'S ALPHA CALCULATIONS

Balance of Nature Subscale

4 'VAR' Variables: BAL1 BAL2 BAL3 BAL4

Variables are associated with questionnaire items as shown below:

BAL1: The balance of nature is very delicate and easily upset.

BAL2: When humans interfere with nature, it often produces disastrous consequences.

BAL3: Humans must live in harmony with nature in order to survive.

BAL4: Mankind is severely abusing the environment.

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
BAL1	116	3.91379	1.20556	454.0	1.0	5.0
BAL2	116	3.82759	1.11336	444.0	1.0	5.0
BAL3	116	4.37069	0.86003	507.0	1.0	5.0
BAL4	116	4.06034	1.12898	471.0	1.0	5.0

Cronbach Coefficient Alpha

for RAW variables : 0.80670

for STANDARDIZED variables: 0.803651

The bolded column below indicates Cronbach's alpha value if the corresponding item was deleted from the subscale. The overall reliability coefficient was not increased significantly by deleting a single item. Thus, all items warranted continued use.

	Raw Variables		Std. Variables	
Deleted Variable	Correlation with Total	Alpha	Correlation with Total	Alpha
BAL1	0.684806	0.727138	0.679765	0.723589
BAL2	0.702591	0.717275	0.688246	0.719313
BAL3	0.469100	0.822670	0.468137	0.823696
BAL4	0.653590	0.742364	0.646064	0.740376

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 116

	BAL1	BAL2	BAL3	BAL4
BAL1	1.0 0.0	0.64316 0.0001	0.43366 0.0001	0.55969 0.0001
BAL2		1.0 0.0	0.38517 0.0001	0.62405 0.0001
BAL3			1.0 0.0	0.38873 0.0001
BAL4				1.0 0.0

Limits to Growth Subscale

4 'VAR' Variables: LIM1 LIM2 LIM3 LIM4

Variables are associated with questionnaire items as shown below:

LIM1: We are approaching the limit of the number of people the earth can support

LIM2: The earth is like a spaceship with only limited room and resources.

LIM3: There are limits to growth beyond which our industrialized society cannot expand.

LIM4: To maintain a healthy economy, we will have to develop a steady state economy where industrial growth is controlled.

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
LIM1	116	3.40517	1.21568	395.0	1.0	5.0
LIM2	116	3.96552	1.04616	460.0	1.0	5.0
LIM3	116	3.63793	1.11431	422.0	1.0	5.0
LIM4	116	3.48276	1.16830	404.0	1.0	5.0

Cronbach Coefficient Alpha

for RAW variables : **0.781486**

for STANDARDIZED variables: 0.780980

The bolded column below indicates Cronbach's alpha value if the corresponding item was deleted from the subscale. In all cases, the overall reliability coefficient was not increased by deleting an item. Thus, all items warranted continued use.

Deleted Variable	Raw Variables		Std. Variables	
	Correlation with Total	Alpha	Correlation with Total	Alpha
LIM1	0.676745	0.678484	0.680584	0.677581
LIM2	0.547769	0.747992	0.543907	0.749085
LIM3	0.586164	0.728654	0.579679	0.730933
LIM4	0.542523	0.751508	0.543153	0.749463

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 116

	LIM1	LIM2	LIM3	LIM4
LIM1	1.0 0.0	0.57174 0.0001	0.57141 0.0001	0.44884 0.0001
LIM2		1.0 0.0	0.35470 0.0001	0.40504 0.0001
LIM3			1.0 0.0	0.47609 0.0001
LIM4				1.0 0.0

Man Over Nature Subscale

4 'VAR' Variables: MAN1 MAN2 MAN3 MAN4

Variables are associated with questionnaire items as shown below:

MAN1: Mankind was created to rule over the rest of nature.

MAN2: Humans have the right to modify the natural environment to suit their needs.

MAN3: Plants and animals exist primarily to be used by humans.

MAN4: Humans need not adapt to the natural environment because they can remake it to suit their needs.

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
MAN1	116	3.40517	1.48018	395.0	1.0	5.0
MAN2	116	3.37931	1.30321	392.0	1.0	5.0
MAN3	116	3.41379	1.37093	396.0	1.0	5.0
MAN4	116	3.93966	1.14428	457.0	1.0	5.0

Cronbach Coefficient Alpha

for RAW variables : 0.772679

for STANDARDIZED variables: 0.771246

The bolded column below indicates Cronbach's alpha value if the corresponding item was deleted from the subscale. In all cases, the overall reliability coefficient was not increased by deleting an item. Thus, all items warranted continued use.

Deleted Variable	Raw Variables		Std. Variables	
	Correlation with Total	Alpha	Correlation with Total	Alpha
MAN1	0.602670	0.705217	0.595034	0.704629
MAN2	0.549078	0.731298	0.549451	0.728680
MAN3	0.692957	0.651730	0.683526	0.656010
MAN4	0.469256	0.768540	0.470714	0.768669

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 116

	MAN1	MAN2	MAN3	MAN4
MAN1	1.0 0.0	0.42452 0.0001	0.63229 0.0001	0.35854 0.0001
MAN2		1.0 0.0	0.51977 0.0001	0.38285 0.0001
MAN3			1.0 0.0	0.42625 0.0001
MAN4				1.0 0.0

SPLIT HALF RELIABILITY CALCULATIONS

Balance of Nature Subscale

1 'WITH' Variables: B2

1 'VAR' Variables: B1

The variables are defined in the following manner. Note: Variables BAL1, BAL2, BAL3, and BAL4 are associated with questionnaire items as defined above in Cronbach's alpha calculations.

$$B1 = BAL1 + BAL3$$

$$B2 = BAL2 + BAL4$$

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
B2	116	7.88793	2.02064	915.0	2.0	10.0
B1	116	8.28448	1.75849	961.0	2.0	10.0

Correction Using Spearman - Brown Prophecy Formula:

$$\text{Reliability} = \frac{2 * r}{1 + r} = \frac{2 * 0.66735}{1 + 0.66735}$$

Limits to Growth Subscale

1 'WITH' Variables: L2

1 'VAR' Variables: L1

The variables are defined in the following manner. Note: Variables LIM1, LIM2, LIM3, and LIM4 are associated with questionnaire items as defined above in Cronbach's alpha calculations.

L1 = LIM1 + LIM3

L2 = LIM2 + LIM4

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
L2	116	7.44828	1.85728	864.0	2.0	10.0
L1	116	7.04310	2.06584	817.0	2.0	10.0

Correction Using Spearman - Brown Prophecy Formula:

$$\text{Reliability} = \frac{2 * r}{1 + r} = \frac{2 * 0.62497}{1 + 0.62497}$$

Man Over Nature Subscale

1 'WITH' Variables: M2

1 'VAR' Variables: M1

The variables are defined in the following manner. Note: Variables MAN1, MAN2, MAN3, and MAN4 are associated with questionnaire items as defined above in Cronbach's alpha calculations.

$$M1 = MAN1 + MAN3$$

$$M2 = MAN2 + MAN4$$

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
M2	116	7.31897	2.03704	849.0	2.0	10.0
M1	116	6.81897	2.57614	791.0	2.0	10.0

Correction Using Spearman - Brown Prophecy Formula:

$$\text{Reliability} = \frac{2 * r}{1 + r} = \frac{2 * 0.57615}{1 + 0.57615}$$

C. Environmental Behaviors

FREQUENCY TABLES

		Response				
	ITEM	Never	Seldom	Occasion-ally	Most of the Time	Always
CONSUMER/HOUSEHOLD PRACTICES						
1	Avoid buying or using aerosol sprays.	22	15	34	32	13
2	Specifically avoid buying a product because it was not recyclable.	26	38	33	15	4
4	Read labels on products to see if the contents are environmentally safe.	27	26	39	19	5
5	Use biodegradable plastic garbage bags, soaps, and other items.	13	23	41	29	10
6	Voluntarily recycle newspapers, glass, aluminum, motor oil, other items.	11	15	30	33	27
8	Take more care in the use of chemicals.	11	13	31	38	23
POLITICAL BEHAVIOR						
3	Boycott a company's products because of its record on the environment.	49	30	25	5	7
7	Contribute money to an environmental, conservation, or wildlife preservation group.	45	21	29	14	7
9	Attend a meeting related to ecology.	79	20	12	4	1
10	Do volunteer work for an environmental, conservation or wildlife preservation group.	65	26	17	6	2
11	Track my congressman's and senator's voting records on environmental issues.	78	22	11	2	3

PRINCIPLE COMPONENTS FACTOR ANALYSIS

Factor Pattern

	ITEM	Consumer/ Household Practices	Political Behavior
		Loadings	
Factor 1	CONSUMER/HOUSEHOLD PRACTICES		
1	Avoid buying or using aerosol sprays.	0.70006	0.15918
2	Specifically avoid buying a product because it was not recyclable.	0.80609	0.15774
4	Read labels on products to see if the contents are environmentally safe.	0.76584	0.12617
5	Use biodegradable plastic garbage bags, soaps, and other items.	0.73030	0.34477
6	Voluntarily recycle newspapers, glass, aluminum, motor oil, other items.	0.63194	0.44573
8	Take more care in the use of chemicals.	0.59050	0.53956
Factor 2	POLITICAL BEHAVIOR		
3	Boycott a company's products because of its record on the environment.	0.78759	-0.20045
7	Contribute money to an environmental, conservation, or wildlife preservation group.	0.70839	-0.08781
9	Attend a meeting related to ecology.	0.67635	-0.54571
10	Do volunteer work for an environmental, conservation or wildlife preservation group.	0.68136	-0.50122
11	Track my congressman's and senator's voting records on environmental issues.	0.62602	-0.40990

Variance explained by each factor

FACTOR1	FACTOR2
5.443477	1.439737

CRONBACH'S ALPHA CALCULATIONS

Consumer/Household Practices Subscale

6 'VAR' Variables: CON1 CON2 CON4 CON5 ECO1 ECO3

Variables are associated with questionnaire items as shown below:

CON1: Avoid buying or using aerosol sprays.

CON2: Specifically avoid buying a product because it was not recyclable.

CON4: Read labels on products to see if the contents are environmentally safe.

CON5: Use biodegradable plastic garbage bags, soaps, and other items.

ECO1: Voluntarily recycle newspapers, glass, aluminum, motor oil, other items.

ECO3: Take more care in the use of chemicals.

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
CON1	116	2.99138	1.27515	347.0	1.0	5.0
CON2	116	2.42241	1.08067	281.0	1.0	5.0
CON4	116	2.56034	1.14428	297.0	1.0	5.0
CON5	116	3.00000	1.11901	348.0	1.0	5.0
ECO1	116	3.43103	1.24568	398.0	1.0	5.0
ECO3	116	3.42241	1.20254	397.0	1.0	5.0

Cronbach Coefficient Alpha

for RAW variables : **0.858401**

for STANDARDIZED variables: 0.860860

The bolded column below indicates Cronbach's alpha value if the corresponding item was deleted from the questionnaire. In all cases, the overall reliability coefficient was not increased by deleting an item. Thus, all items warranted continued use.

	Raw Variables		Std. Variables	
Deleted Variable	Correlation with Total	Alpha	Correlation with Total	Alpha
CON1	0.607118	0.843321	0.609075	0.845288
CON2	0.705124	0.825630	0.706810	0.827506
CON4	0.651756	0.834118	0.655545	0.836922
CON5	0.709842	0.824065	0.712931	0.826368
ECO1	0.626356	0.839153	0.624529	0.842524
ECO3	0.606693	0.842399	0.606245	0.845793

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 116

	CON1	CON2	CON4	CON5	ECO1	ECO3
CON1	1.0 0.0	0.52642 0.0001	0.48606 0.0001	0.54237 0.0001	0.46768 0.0001	0.37099 0.0001
CON2		1.0 0.0	0.57341 0.0001	0.62560 0.0001	0.51599 0.0001	0.47710 0.0001
CON4			1.0 0.0	0.61120 0.0001	0.42083 0.0001	0.45842 0.0001
CON5				1.0 0.0	0.46163 0.0001	0.49758 0.0001
ECO1					1.0 0.0	0.57979 0.0001
ECO3						1.0 0.0

Political Behaviors Subscale

5 'VAR' Variables: CON3 ECO2 ECO4 ECO5 ECO6

Variables are associated with questionnaire items as shown below:

CON3: Boycott a company's products because of its record on the environment.

ECO2: Contribute money to an environmental, conservation, or wildlife preservation group.

ECO4: Attend a meeting related to ecology.

ECO5: Do volunteer work for an environmental, conservation or wildlife preservation group.

ECO6: Track my congressman's and senator's voting records on environmental issues.

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
CON3	116	2.06034	1.16685	239.0	1.0	5.0
ECO2	116	2.28448	1.26358	265.0	1.0	5.0
ECO4	116	1.51724	0.87955	176.0	1.0	5.0
ECO5	116	1.74138	1.00538	202.0	1.0	5.0
ECO6	116	1.53448	0.92718	178.0	1.0	5.0

Cronbach Coefficient Alpha

for RAW variables : **0.836121**

for STANDARDIZED variables: 0.845413

The bolded column below indicates Cronbach's alpha value if the corresponding item was deleted from the questionnaire. In all cases, the overall reliability coefficient was not increased by deleting an item. Thus, all items warranted continued use.

	Raw Variables		Std. Variables	
Deleted Variable	Correlation with Total	Alpha	Correlation with Total	Alpha
CON3	0.673487	0.793401	0.673944	0.808035
ECO2	0.569539	0.830928	0.563250	0.837381
ECO4	0.711933	0.789452	0.723968	0.794259
ECO5	0.719040	0.781487	0.726934	0.793432
ECO6	0.573173	0.820414	0.579177	0.833254

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 116

	CON3	ECO2	ECO4	ECO5	ECO6
CON3	1.0 0.0	0.51315 0.0001	0.57936 0.0001	0.55452 0.0001	0.50040 0.0001
ECO2		1.0 0.0	0.42197 0.0001	0.53072 0.0001	0.38122 0.0001
ECO4			1.0 0.0	0.73277 0.0001	0.54307 0.0001
ECO5				1.0 0.0	0.46674 0.0001
ECO6					1.0 0.0

SPLIT HALF RELIABILITY CALCULATIONS

Consumer/Household Practices Subscale

1 'WITH' Variables: C2

1 'VAR' Variables: C1

The variables are defined in the following manner. Note: Variables CON1, CON2, CON4, CON5, ECO1, and ECO3 are associated with questionnaire items as defined above in Cronbach's alpha calculations.

$$C1 = CON1 + CON4 + ECO1$$

$$C2 = CON2 + CON5 + ECO3$$

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
C2	116	8.84483	2.82105	1026	3.0	15.0
C1	116	8.98276	2.93104	1042	3.0	15.0

Correction Using Spearman - Brown Prophecy Formula:

$$\text{Reliability} = \frac{2 * r}{1 + r} = \frac{2 * 0.77368}{1 + 0.77368}$$

Consumer/Household Practices Subscale

1 'WITH' Variables: E2

1 'VAR' Variables: E1

The variables are defined in the following manner. Note: Variables CON3, ECO2, ECO4, ECO5, and ECO6 are associated with questionnaire items as defined above in Cronbach's alpha calculations.

$$E1 = CON3 + ECO4 + ECO6$$

$$E2 = ECO5 + ECO6$$

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
E2	116	4.02586	1.98893	467.0	2.0	10.0
E1	116	5.11207	2.48043	593.0	3.0	15.0

Correction Using Spearman - Brown Prophecy Formula:

$$\text{Reliability} = \frac{2 * r}{1 + r} = \frac{2 * 0.69035}{1 + 0.69035}$$

Appendix C

Random Selections

This Template is designed to randomly select a certain number of social security numbers from a given list.

ORIGIN = 1

The Matrix M loaded with the social security numbers of all officers fitting the following criteria:

- (1) All Officers grades O1-O6.
- (2) All Officers assigned to bases located in the Continental United States.

M := READPRN(officer)

The following calculation determines the number of respondents needed to produce a result with a given degree of accuracy, a value. In this example, a was assumed to be 0.05.

d := .05 z := 1.96

$$n := \frac{\text{rows}(M) \cdot z^2 \cdot .25}{\left[d^2 \cdot (\text{rows}(M) - 1) \right] + (z^2 \cdot .25)} \quad n_a := \text{floor}(n) \quad n_a = 382$$

The matrix r is constructed. Each cell contains a value that is randomly generated from a uniform distribution that ranges from 1 to the number of officers social security account numbers given in n. The number of iterations is defined by the value calculated above. In addition, a number of extra values are selected.

i := 1..(n_a + 50) r_i := floor(rnd(rows(M)))

The values from the matrix r are used to identify specific cells in the original matrix M. Thus, specific social security account numbers which are unique to each individual are identified.

$$\text{select}_i := M(r_i)$$

The social security account numbers selected are then written to the file SSANS.

PRNPRECISION := 10

PRNCOLWIDTH := 10

WRITEPRN(ssans) := select

This approach has one inherent flaw. The RND function contained in the software returns a random value based on a uniform distribution. Therefore, it is possible for it to return the same value for successive iterations and therefore identify the same social security number repeatedly.

In essence, this is a selection with replacement scheme. However, based on the numbers of each group (over 70,000 officers and over 300,000 enlisted) it was predicted that the RND function would not randomly select the same value frequently.

The file SSAN was sorted in ascending order and when like social security numbers were selected only a single survey package was sent to the individual selected. Based on this simple rejection scheme, extra cells or social security numbers were required to ensure the number of participants required were selected.

Grade	Air Force Population Size ^a	Sample
Airmen (E1-E3)	65,604	1,140
Non-Commissioned Officers (E4-E6)	218,154	- ^b
Senior Non-Commissioned Officers (E7 - E8)	46,136	442
Company Grade Officers (O1- O3)	49,344	406
Field Grade Officers	31,364	- ^c
TOTAL:	410,602	1,988

^a Numbers provided are published in USAF Almanac, May 1995. These numbers include those that are assigned to overseas locations. There are an estimated 70,000 Air Force members assigned overseas. However, a breakdown based on rank was not provided; therefore, those individuals are not subtracted from the totals above.

^b The non-commissioned officers were grouped with the airman. Thus, a total of 1,140 members was selected from the total of approximately 283,758 airmen and non-commissioned officers.

^c The Field grade officers were grouped with the company grade officers. Thus, a total of 406 members was selected from the total of approximately 80,708 company grade officers and field grade officers.

Appendix D

Mail Study Data

This appendix contains the demographic characteristics of the respondents, the frequency tables for the mail study, and other statistical calculations. The total cumulative frequency varies from item to item due to missing data. Respondents were instructed to skip over items which they did not understand or did not wish to answer

A. Demographics

GRADE:

E1 - E3	4
E4 - E6	518
E7 - E9	159
O1 - O3	138
O4 - O6	93

COMMAND OR UNIT OF ASSIGNMENT:

Air Combat Command	312
Air Education and Training Command	142
Air Force Material Command	108
Air Force Space Command	52
Air Force Special Operation	17
Air Mobility Command	152
Pacific Air Forces	13
Field Operating Agency/Direct Reporting Unit	3
Other	38

TIME IN SERVICE:

1 - 5 YEARS	302
6 - 10 YEARS	318
11 - 15 YEARS	85
16 - 20 YEARS	116
21 - 25 YEARS	76
OVER 25 YEARS	17

AGE:

18 - 25 YEARS	277
26 - 35 YEARS	395

36 - 45 YEARS	203
46 - 55 YEARS	37
OVER 55	1

GENDER:

MALE	740
FEMALE	167

REPORTED FAMILY INCOME:

\$0 - \$14,999	66
\$15,000 - \$29,999	353
\$30,000 - \$44,999	244
\$45,000 - \$59,999	138
\$60,000 - \$74,999	53
OVER \$75,000	49

LOCATION OF HOUSING

Reside on Base	314
Reside off Base	595

REPORTED LEVEL OF EDUCATION:

High School Diploma or Equivalent	103
Some College	371
Completed Associate's Degree	130
Completed Bachelor's Degree	99
Some Graduate Work	57
Completed Graduate Degree	149

ENVIRONMENTAL TRAINING EXPERIENCE:

Yes	246
No	566
Don't Know	92

B. Frequency Tables

Environmental Attitudes:

		Response				
	ITEM	Strongly Disagree	Mildly Disagree	No Opinion	Mildly Agree	Strongly Agree
BALANCE OF NATURE						
1	The balance of nature is very delicate and easily upset.	42	138	41	369	325
2	When humans interfere with nature, it often produces disastrous consequences.	37	169	67	383	258
3	Humans must live in harmony with nature in order to survive.	24	57	58	324	452
4	Mankind is severely abusing the environment.	38	102	52	298	425
LIMITS TO GROWTH						
5	We are approaching the limit of the number of people the earth can support.	94	167	210	262	182
6	The earth is like a spaceship with only limited room and resources.	53	97	117	346	303
7	There are limits to growth beyond which our industrialized society cannot expand.	62	159	198	267	224
8	To maintain a healthy economy we will have to develop a steady state economy where industrialized growth is controlled.	95	116	195	321	183
MAN OVER NATURE						
9	Mankind was created to rule over nature.	305	185	132	128	164
10	Humans have the right to modify the natural environment to suit their needs.	213	313	91	237	62
11	Plants and animals exist primarily to be used by humans.	327	252	94	155	88
12	Humans need not adapt to the natural environment because they can remake it to suit their needs.	362	322	118	81	32

Environmental Behaviors

		Response				
	ITEM	Never	Seldom	Occasion-ally	Most of the Time	Always
CONSUMER/HOUSEHOLD PRACTICES						
1	Avoid buying or using aerosol sprays.	133	144	237	309	91
2	Specifically avoid buying a product because it was not recyclable.	218	279	272	132	13
4	Read labels on products to see if the contents are environmentally safe.	180	203	269	191	71
5	Use biodegradable plastic garbage bags, soaps, and other items.	86	158	289	291	90
6	Voluntarily recycle newspapers, glass, aluminum, motor oil, other items.	64	83	182	283	302
8	Take more care in the use of chemicals.	40	63	138	386	278
POLITICAL BEHAVIOR						
3	Boycott a company's products because of its record on the environment.	358	241	191	84	40
7	Contribute money to an environmental, conservation, or wildlife preservation group.	299	236	228	83	67
9	Attend a meeting related to ecology.	610	209	71	14	8
10	Do volunteer work for an environmental, conservation or wildlife preservation group.	549	211	117	26	11
11	Track my congressman's and senator's voting records on environmental issues.	571	169	100	45	18

C. Correlational Analysis

Attitude - Behavior Subscale Correlations

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
Balance of Nature	914	15.87856	3.58797	14513	4.0	20.0
Limits to Growth	904	14.00996	3.56321	12665	4.0	20.0
Man Over Nature	913	14.39869	3.95491	13146	4.0	20.0
Consumer/ Household Practices	905	19.02541	4.95850	17218	6.0	30.0
Political Behavior	902	9.16075	3.62714	8263	5.0	25.0

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

	Balance of Nature	Limits to Growth	Man Over Nature	Consumer/ Household Practices	Political Behavior
ATTITUDES					
Balance of Nature	1.0 0.0 914	0.51364 0.0001 903	0.47087 0.0001 911	0.40076 0.0001 903	0.29682 0.0001 900
Limits to Growth	-	1.0 0.0 904	0.32246 0.0001 901	0.23398 0.0001 893	0.25136 0.0001 891
Man Over Nature	-	-	1.0 0.0 913	0.28350 0.0001 902	0.20327 0.0001 899
BEHAVIORS					
Consumer/ Household Practices	-	-	-	1.0 0.0	0.59642 0.0001 895
Political Behavior	-	-	-	-	1.0 0.0 902

Appendix E

Survey Comments

These comments are word-for-word transcriptions, with the exception of spelling errors, from the comment sheets that were returned along with the automated response sheets. Nonstandard grammar and word choice were preserved. In addition, the emphasis placed on certain words (for example, underlines or certain words written in all capital letters) was shown in the original handwritten comments.

General Comments Concerning the Environment

Interesting survey.

It's good to see the military getting involved!

Please don't waste my or any other member's time with stupid surveys. If this is your thesis topic, God help us!

This survey is a waste of my time, government money and paper!!

I am very tired of endless inquire, stop surveying me just because you can! This is directed at all USAF/DoD agencies that feel it's their prerogative to send these things out. Stop the madness--just say no!

My responses to the first part show that I'm aware and concerned--but the second part shows me I'm not doing anything about it.

Questions hardly scratch the surface

Short and sweet--took very little time

Nature is far more resilient than a lot of folks (especially the EPA) want to believe. we do have to use common sense on things, but not go overboard--look at Lake Erie.

I think that man has done irreversible damage to the environment unfortunately the human race isn't as indestructible as it likes to think. Thanks for including me in your survey.

I feel that people everywhere could do more (even little things) to help the environment.

We have seen in recent times that our planet has limited resources. We must work harder to help in protecting our planet so that its beauty can be enjoyed for countless millenniums and generations to come.

By completing this survey I have found myself to be at fault by not doing my part to preserve our environment. I think that the Air Force should look into offering some environmental training classes.

Indeed your questions have provoked much thought. You first measure the attitude and basically ask us what we're doing to forward our beliefs. Just reading the questions inspires me to further my beliefs in protecting the environment. In a way, your showing us how possibly hypocritical we are if we believe in protecting the environment, and still do nothing to prevent its destruction. Awareness is the first step. Action, coordinated action must follow.

I would personally like to see the results of this survey. Feedback is important. We need to know if the majority of those surveyed don't care about the environment. It would be a much needed wake up call, prompting more personal action to save our world.

We can no longer claim our ignorance. We know what damage we're inflicting. we've seen the results of our actions, or inaction. We are not innocent. Our base, Minot, recently enacted a mandatory recycling program. Bravo. Once people get used to it, it becomes just as easy as their other habits.

I commend your concern and hope that this survey is used properly. It takes committed people to start and maintain successful programs. Don't take this issue, our environment, lightly.

Didn't mean to sound preachy. Just wanted to tell you what I think. My family will do its part. Thanks for your survey. Believe it or not, I enjoyed it.

Your questions are somewhat general in nature and the available responses leave no room for qualifying an answer. Most of what man knows about the environment is based upon what is generally accepted or agreed upon by the experts who are labeled experts, by others based upon education years in the field reported research etc. However, just as it was during the time of Christopher Columbus when the prevailing experts agreed that the world was flat (based on research and belief) when in reality it was round, the experts on the environment are just as far removed. What proof do I offer? The one God of the entire universe and his word. Scientist and others may not believe that he exists or that his word has all of the answers that they seek; but, just as the world was really round, this is

even more true! Our environment is not danger bur rather something more important.

Some of your questions have no bearing on a person's feelings or beliefs on environmental issues and are very intrusive, personal questions. Additionally, you state not to place your name anywhere on the sheet so I can remain totally anonymous, yet by taking the demographics at the beginning of the survey looking at the postmark, you can narrow it down to just a few individuals.

I feel your survey did not begin to cover the ground it should have. You did not even touch on how environmental issues effect my job. i.e. do I use chemicals, do I need to use them, are current environmental constraints too restrictive, is the Air Force doing enough to minimize chemical use, etc. Maybe Greenpeace can use this data but as far as effecting change in the USAF it will not. This survey gives the appearance of someone doing research to complete their doctorate degree and not really beneficial to the Air Force population at all.

Let me close by saying, I am not a negative person. I love the Air Force and have served proudly for 18 years, but, we do a tremendous number of surveys annually, and taking time to complete one that only looks at personal beliefs and not the effect on the job is not beneficial to anyone.

I believe environmental conservation is, or at least should be, one of the biggest issues in today's world. In my opinion, the environment is being ruined by industry miles and miles of wide open fields and dense forests that used to be the home of many plants and animals are being destroyed to build real estate and industrial communities. Not because it's a necessity, but because the almighty dollar is calling. It can be spelled out as GREED.

The natural environment should not be taken for granted that it will always be here. Just take a look around at that area where you used to hunt or fish as a child and there's a 50-50 chance that it is still there. That special place where you have many good memories of spending time with a family member may now be replaced by a large factory or housing development. We have got to start thinking about our children and their children and so on. They are the ones that will suffer.

A growing population should find a way to adapt. Altering our natural environment is not the answer. It is only going to hurt us now and in the future. Environmental awareness is growing, but it is not reaching far enough nor fast enough. The lungs of the world are being destroyed.

This has been the first survey that I was actually willing to participate in. I credit the Air Force in taking a position in improving our environment. Everyone should take part in preserving our earth. We all live here and the Air Force is helping to make it possible for the next generation to enjoy what we have for so many years.

I feel that the government must impose stricter standard on pollution and deal out heavier punishments for violations of these standards. Conservation is an

extremely important issue and we must find an alternative to using trees for building and paper. We must stop having blatant disregard for the ecological systems and get off of the attitude that "the earth will not be exhausted in my lifetime." I know a lot of people who feel that way and that attitude really pisses me off to no end. If I could do something about it I would. It really sucks that my daughter has to grow up in this careless society. Every single tree that we cut down, every wild animal we kill has an effect on the course of the environment and with every stroke of the ax on the forests of the world is another stroke closer to cutting our own heads off. Upsetting the ecological balance of the world ensures our swift departure from the universe

My environmental attitude or belief is that we (humans) have been entrusted with the care of the earth. We must realize this as a responsibility and not take it lightly. We should be looking forward instead of concentrating on just today and stop fighting with each other. I try to imagine all people living in peace and appreciating nature for what she provides. This is a dream that I will never see, but it is still my dream.

I believe that if everyone began to take care of their own waste it would become a better place. Being in the Air Force I've learned how important it is to take care of the environment. More public awareness should be published.

I'm happy I had the opportunity to do this survey, cause up until this point, I have not thought about the issues that are brought up. From now on a better effort from my family and I will be made in environmental effects.

I think the Air Force as a whole can do a better job concerning recycling and unnecessary waste.

Lets get more involved and proactive with saving our planet for future generations.

I don't really believe that big business is causing most of the pollution. I do believe a lot of it comes from people like you and me. a little moral instruction could help a lot. I also do believe that the resources and means are out there to let humanity continue its current way of living. We just need to use them. Some organizations definitely take conservation a little too far. Just a little common sense and initiatives from everyone would definitely cleanup the world a lot. I would also recycle more it is were a little more convenient. Nature is usually pretty good about adjusting too us, but lets not abuse that relationship.

My perceptions about environmental concerns:

-Some laws are to restrictive. Balance needs to be established between preservation of a certain species of wildlife and the benefits to mankind. Right now I don't think this balance exists.

-Some environmental assumptions are taken as fact and acted upon before clear evidence exists to support it. No evidence, but I've heard the new refrigerant replacements are just as harmful as the old, or that the old weren't as bad to the environment as what was first thought. If this is true, we've spent a lot of money and wasted a lot of time for no good purpose.

-The United States has become environmentally conscience but much of the rest of the world could care less. We need to get developing countries involved with our environmental concerns, since much of our "industrial" base is moving abroad. A good example is the problems with our neighbor to the south and the pollution being poured into the Rio Grande river. If these countries continue to pollute without control, the whole world will be affected and it won't matter a whole lot what laws the United States has established or how environmentally conscience we've become.

-There seems to be a lack of facilities to collect or recycle chemicals (motor oil, anti-freeze, paint, etc.). Somehow, free facilities need to be provided for recycling, otherwise most people will get rid of these household chemicals in an environmentally harmful way.

I feel that environmental issues are important and professionally we have a responsibility to protect and preserve the environment. However, I fail to see the relevance of many of the questions asked in this survey.

I applaud you for any efforts you may be taking to improve the Air Force's track record on environmental issues. I believe we have acted somewhat irresponsibly over the years and should change our ways...now! As military members, we have a reputation for being trained and disciplined and I think we can educate our new people as they come in and reeducate those of us already in the military. I feel we need more environmental awareness on base and more recycling throughout the units, base housing and MWR facilities. I hope this survey assists you in at least some small way and that the environmental efforts continue.

The balance of nature is very delicate and easily upset. But, keep in mind signs of it being unbalanced do not become apparent until the problem is almost uncontrollable. When humans interfere with nature, disaster usually follows close behind. Take into consideration medicine and vaccines. They do well for right now. But has anyone noticed how much stronger and dangerous new diseases have become. We know that roaches and other living creatures mutate through generations to over come the effects of pesticides. How long before the earth creates a pesticide of its own to exterminate the human species, who at this point the majority tries so hard to live against nature instead of in harmony with.

Mankind is severely abusing the environment. If we weren't, how does one explain all the manmade disasters, the oil spills, the depletion of the rain forests. The rain forest has the cures to many diseases. Why haven't we found them? If an organization refused to stop destroying your home, or city and then asked for your help would you be so willing to help knowing that the destruction

of your home may never end. Earth is like a mother, she keeps giving and giving until she can give no more. I think Earth has given almost all she has to give. In order to maintain a healthy economy the United States government has to learn from other governments and economies around the world. Take for instance Japan. A very large number of people to feed and to clothe, yet somehow they manage not to import as many paper products. Where are their trees? Japan utilizes a crop known in slang as hemp. Hemp is a sister to marijuana (no THC). but it is not marijuana. Hemp can produce more clothing, paper, types of oils etc. at a lesser expense than the trees we have been using. Hemp is a very strong fiber. If we (the United States) want to save the forest and have a good impact on the Earth the lumber industry is one major area necessary to cut back on. But like most everything in the world today, it is all run by politics. We as a nation need to put greed and power aside and focus on a future that allows us to live in harmony with Earth.

We should use our resources wisely and not wastefully. I believe scare tactics have been used by both companies and individuals on the information about our environment for their monetary gain. More research and development is required on recycling materials so that we recycle all products for the least amount of money and don't recycle for recycling sake. In other words, don't recycle if it is cost prohibited. Thank you for your time.

As I see it, the same type of people have been in power for many years and "change" is not in their vocabulary. The United States is too restricting in the wrong areas. Swearing in public places is illegal in California, but allowing pollutants in the air we breathe, the food we eat, and the water we drink is still legal. I think our fore fathers and other ancestors would be disappointed in what we have done to our home, earth. They had more freedom, cleaner air. They did not have to worry about the fresh apple they picked having pesticides on it, or becoming sick from the steroids in the beef they ate. After 10's of years studying our problems of today, we will have bigger and worse problems to deal with. I don't think humans have learned that history repeats itself. A huge change in the way humans do things is needed in order to save a natural world. Has the government looked into the Japanese idea of growing hemp? Good luck with the survey. Maybe, hopefully you will find an answer. Thank you for your time and consideration. Maria Rogers.

Most people don't realize that disrupting the environment destroys nature's life cycle. I am a firm believer in protecting our resources, plants, and animals.

Being both a hunter and fisherman the environment is important to me. I believe you can have co-existence with nature and industry.

Environmental issues are receiving greater attention now than ever before. People need to be educated as to how they can do their part to reduce environmental stress. I feel that military members and their families do an

outstanding job conserving resources. I hope the information provided in this survey fulfills your needs.

Are there any Air Force regulations on starting or drastically improving the recycling program on base or within my squadron? If so, please print a small article in the Air Force Times so other people would also have this information.

I believe we were given the earth to use. This doesn't mean abuse. We are charged with the responsibility to be good stewards of this planet we have been given.

Earth was created in balance to support all living creatures. Man has taken on the task with tinkering with the balance. As with anything, adjustments can be positive or negative. To survive, we must strive to maintain the balance and respect the environment. If not, we will perish and the cycle will start again.

I love to be out in the woods. I enjoy the outdoors. I think it is sad to see more and more housing and businesses moving into rural areas. People are leaving the city mess behind.

What really gripes me and I suspect many others are one sided environmental laws that don't allow protecting your home or property. This is especially true around some beach and river front areas. Either nature reclaims it or the government condemns it when flooding occurs.

The so called clunker laws that allow companies to get "pollution credit" for buying and destroying old cars, running or not, so they can continue to pollute are another way environmentalists and polluters have manipulated good intentions. I hesitate to support many wild life groups because of hidden agendas to reduce or eliminate hunting.

There was a law about what constituted a wetland. From reading magazine articles I understood that some low areas of fields could be considered wetlands. Someone drafted a definition and now it is strictly applied, reasonable or not. My main problems with the current slant of laws revolves around the denial of property rights; and those in response to alarmists i.e. CFCs. The current pattern of environmental activism seems to be to slide laws through congress that people don't know or realize their impact on their life until it is too late. There seems to be no viable recourse for the affected people. Real, literally monumental problems, like the trash disposition from New York City don't seem to be worked as hard. The environmentalists consistently chip away at personal rights. Perhaps I dislike their unreasonableness, and am in a backlash mood.

We cannot destroy ourselves by destroying our environment. God already has a plan for us and this earth outlined in the New Testament. To say that humans have enough control over the environment to destroy the earth would be to contradict the word of God. I believe it's in our best interest to abuse the environment as little as possible and to manage our natural resources to maintain

the way of life that Americans now enjoy. but we cannot put animals above humans on the food chain, we are number 1.

The pendulum has swung over to the other extreme! I basically agree with straightening out the mess we had evolved into, however, we don't need to be eccentric about it.

I think too many people are hung up on environmental issues. God created us and this world we live in. He gave us vegetation to provide for us and the animals to have dominion over. He created us that we might fellowship with Him and marvel at his handiwork, which we call nature. It's arrogant to think that we could do any long-term damage to what God has created. He has set this world up in a way that it cares for itself, and the balance is not nearly as delicate as we would like to think. The whole universe was here before us and it will continue to be here after us.

I do believe that humans rule over animals and the environment. I think humans should be able to use them to meet their needs. However, it would be wise, if we replaced what we use so that future generations can also survive. For example, if you raise trees for lumber OKAY--but replant them. If you hunt for food--OKAY--but allow mating to take place to restock the animals. Recycling is so wonderful with whatever we can recycle--e.g. aluminum, newspapers, and bottles. I don't mind spending a little more for a product if it is recyclable.

The planet is for us to use. We (mankind) could not destroy the planet. We can however make it more difficult to survive on the planet.

No matter if we kill ourselves off or not, the planet will live on, its up to us to choose to live or die on it and the day is near when the earth will be fighting back.

Humans are completely destroying the whole natural environment. You should be scared to drink the water. Every drop has been through someone's kidneys at least once. I'm a country boy, hunting and fishing is survival that's the way it was supposed to be. Don't forget where you came from. I have much more to add but I don't think my opinion will carry much weight. The government should enforce the death penalty for the assholes who dump 55 gallon drums in the ocean. They do it for profit because of the corruptness of our government limits the amount a company can be fined (what a bunch of bullshit)!!

I believe that in our society, like Japan, we should be limited to the number of offspring we can produce. There already have too many unwanted children in this world. Why bring in more? More children means more trash, more landfills, and more mess. At least some people are giving the earth a chance by replanting and reseedling, putting land into the 10 year CRP program. We need to work

much more closely with the EPA, SCS (Soil Conservation Service), and the ASCS (Agriculture Conservation Stabilization Service) to help mother nature rejuvenate her world.

We can live in harmony with mother earth or we can destroy ourselves!
How long does man have to keep making the same mistakes before he seems to live at one with nature and the environment.

As a scientist, chemistry and biology major, I am concerned with the pseudo-science being touted in the media, i.e. global warming, ozone depletion, etc. The earth is not fragile and man cannot destroy it by normal means. Look at the destruction (and pollution) caused by volcanoes--more than man has ever put out--the earth cleanses itself. We need to be aware of problems and be good stewards but let's use common sense.

The only comment I have is that I have noticed a great deal of abuse when it comes to improving the base. They remodel things that do not need it. Waste a lot of resources just for appearance.

I think most of today's environmental issues are blown way out of proportion. Are we really worried too much about the spotted owl or just alarming too many people about something that was bound for extinction. Darwinism. If we were around with the dinosaurs, I doubt we'd be concerned if they went extinct. There are some issues that concern me, like dumping motor oil into someone's back yard. I don't think we, as humans, will destroy ourselves to make a buck.

Even though the Air Force asks it's members to be considerate of the environment, I still see oil and antifreeze dumped around the dorm areas.

I think most of the environmental people are misinformed about the condition of our planet. Though I believe it is important to be good stewards of what we have been given (I myself need to work on that), I don't think that we should walk around in a police zone nor be lied to about present conditions. Besides this earth will pass away and all things will become new. The earth is going to get tattered from common use. I think the big companies and manufacturers do more harm in an hour than the rest of the people do in a year.

People on this planet are so fired up about the environment. What we do to this planet is hardly significant. Mother earth does more damage to herself than we have done since we became industrialized when people are dead and gone this planet will still be here bringing forth new life. People need to get off their pedestal and just live life, not worry about who is going to take care of the planet when the time comes, Mother Earth will do her housecleaning and there won't be anything left. Then she will start over.

I think mankind is abusing the Earth's natural resources. However, I also think those resources are much more vast than the media portrays. I don't think the Earth's resources are as limited as currently thought; I think mankind was created to rule nature wisely, I don't feel we're taking care of the environment as we should.

The environmental issues facing our country are being ignored. The Air Force has programs operating at Fairchild that are helping. Commute Trip Reduction, Basewide Recycling, toxic and chemical awareness training all contribute to awareness. If you need any help please let me know. Deanne Witsch.

I believe that humans are going to ruin the earth, but proper living can extend the time to live. I believe that nature is important but putting thousands of people out of work for a bird that lives in another country because it was seen here is a crock.

The Air Force's policies in cleaning up the environment are admirable. Sometimes though, it seems there are no fixes for existing chemicals. Leadership expects the same results from a "so called" suitable substitutes. An example of such a chemical include aircraft soap. The OLD soap was in fact classified as toxic, but met leadership's expectations. The NEW soap seems to just move the grease around, but doesn't clean a thing. After waiting 2-10 years, a replacement may be imminent. Basically, we need to quit using the stuff and we do not have a plan.

The real challenge is to have a definite plan to replace toxic chemicals with non-toxic biodegradable ones, having the same or better results, at the time toxic chemicals are removed from service.

As far as environment issues, as long as there are scientist looking for bad things instead of good things and producing things that destroy it there will always be a problem. I'm just glad they discovered the problem now instead of later. My comment as far as nature is concerned; without it we will die. So if you are in it leave it as you found it. Land can not be reproduced like cars. The earth is only so big and that's it.

Mankind is destroying the ability of the earth to sustain life. The earth is capable of sustaining 40 billion people, but thru reckless destruction of resources for the "Almighty Dollar" this can not be counted on. Resources today are being used as if they will not be here tomorrow most likely because they won't.

Congress needs to get off of their duffs and start impressing life sentences to the CEO's, presidents, and anyone else associated with the willful violation of resources currently protected.

The earth was given to us all so we would be able to live, same goes for animals and vegetation. Mankind has uses them for profit instead and soon will be paying the price. People need to wake up and close these companies down that are making our ability to live harder each passing year. Only when we run out of clean air, water, etc. will we learn that the ones who have the means to stop this destruction have failed us. I'm sure we will realize then how disappointed the Lord is in us all.

I'm a firm believer in proper management of our environment; however, there is no silver bullet like some environmental organizations would like us to believe. Care of the environment takes time.

The industrial revolution allowed this country to grow and develop into the greatest nation on earth, often at the expense of our environment. Since the early 1960's, we've made tremendous progress towards improving our environment, but only in these areas where clear scientific evidence has shown how we can improve. We've installed scrubbers on our factory smokestacks; prohibited the dumping of toxic chemicals into our lakes, rivers, and groundwater supply; and reduced our automobile exhaust gasses.

Can we do more? Of course, but radical solutions and legislation based on weak scientific data is not the answer. Only through an active partnership between researchers, industry, and government can we improve. I hope your research contributes to intelligent, fact-based dialogue on proper environmental management for the Air Force, DoD, and others.

As an atmospheric scientist and space physicist, I am sensitive to environmental issues. I do not like to see air, water, or ground pollution and I do my part to pick-up litter when I see it and discourage others from polluting in general. However, having studied at UCLA under Turcoe, Siscoe and Kirelson...I believe that the US environmental policies are too radical with respect to ozone depletion, global warming, and deforestation. Also I believe US environmental policies are lacking on electromagnetic and ground water pollutants. We need to get back to a scientific balance and challenge non-professional zealots. Thank you for the opportunity to respond.

We must balance environmental issues with common sense and cost analysis. For instance, we are paying thousands of dollars to repair a fuel containment dike that has a hairline crack. There has never been a fuel leak since it has been built and even if there was, the fuel would be pumped out of the containment dike before there would be substantial absorption in the soil.

We also must set priorities and limits on endangered species and plants. Do we make a farmer's land unusable because of an endangered insect? Some may theorize that that particular insect may have a cure for cancer one day. By using that ideology, abortion may have killed future presidents. Come ON!

Your questions seem calculated to divide "environmentalists" from the rest of society, but there are considerable differences between non-hard core environmentalists. Are you only interested in the extremes? If so this is a good research tool, but if you want to look at the whole spectrum you could add some questions. I am not an environmentalist, but I consider myself a serious conservationist and take my responsibilities of conscientious stewardship seriously. Unrelated comment...Air Force folks are sick to death of surveys, you caught me on a good day.

I think that most of the questions were biased against business growth and industrialization. While there have been abuses, there has also been some good things created. Yet not one question asked; has any good come out of industrialized society? Is mankind all bad? Over the past few years have more and more businesses begun to voluntarily take steps to lessen or redress the environmental impact they have? OR can government regulations to protect the environment be too restrictive? Go to extremes or fail to do what they were intended?

I think the USAF has better things to do, than to waste taxpayers time and money doing research for the liberal environmentalist "wackos"! That seems to be in the minority. The minority is trying to speak for the majority of the sane, normal, everyday, average American. In this day of budget cuts, where we can't get enough people and resources to do our everyday job of training to fly, fight, and win for war, I am sitting here filling out yet another waste of time survey for some egghead professor so they can justify more government regulations to ruin our country. Come on gentlemen--let's use our time more constructively and solve things that pertain to what we are all about being prepared for war and let the private sector do this kind of research. A concerned Air Force NCO!

The questions were very clear and easily understood--I truly feel that the "pro-environment" movement has gotten a bit out of hand in America--Lest we forget that modern man has only been involved in heavy industry from about the middle of the 19th century to present day. The earth (being in the order of 4 billion years old) has survived a lot worse (i.e. floods, earthquakes, reversal of the poles etc.). I find it hard to believe that plastic and CFCs really are doing that much damage to the "fragile earth."

I do not support the environmental groups because they are run and supported by liberal extremists. The EPA has too much power. Take the use of freon in car air conditioners. There is no proof there is a hole in the atmosphere caused by the use of chemicals. This is just a theory. Many hard working Americans have lost their jobs due to companies having to abide by stupid EPA regulations. We are now importing lumber from Canada etc. Because lumber harvesting is being too limited. Our economy follows the rise and fall of construction of homes etc.

It now costs me \$40.00 to service the air conditioning in my car. It did cost \$1.25 for a can of freon. Let's be smart when imposing regulations. We are supposed to be a free country.

From what I've been able to ascertain, we have been bombarded by a largely one-sided story when it comes to ozone depleting chemicals/products/processes. There is significant scientific evidence against the ozone hole issue (or myth) suggesting we are wasting our time worrying about it. Pinatubo alone blasted away more ozone than we could in thousands of years of continuous aerosol venting. The hole has been shown to be cyclical in nature...much more is there. Read, What Ever Happened to the American Dream by Larry Burkett.

The Air Force has swung way left on the environmental pendulum wasting scarce defense dollars on non-defense environmentalist issues in order to be politically correct. I hope this survey is not an indicator of further movement in this direction. Spend all the money you like to change my opinion...you won't succeed.

I don't think it is a good idea for the Air Force to be using the kind of "loaded questions" as in this survey to encourage or promote environmental political correctness! In my opinion, environmentalism is an overt POLITICAL movement and the military should not be involved in this way or any other.

I don't think this survey could be helpful in anyway. Studies have been done for years on our impact on the environment. Why would you ask me about things that have already been identified instead of asking how we could help the environment. While working in the control tower, I have seen hydraulic leaks and fuel spills considered to small to clean up. Since we already know this is bad for the environment, why aren't you asking for preventive and corrective actions.

I personally believe the Air Force has become carried away with environmental issues and precautions. I work in a pneudraulic shop. I waste at least 2 hours per workday standing in the pharmacy trying to get hydraulic fluid or hose glue for our daily jobs. When these items were stocked in our shop we took the same precautions to ensure these items were handled and disposed of correctly. these new environmental standards being set by the Air Force were already being followed by DoD employees and the military without the new pharmacy system. This new system is inconvenient, wasteful, time and money consuming and has no actual benefit for the environment.

The issue is not whether or not the earth has enough room and resources! The issue is allocation of resources. The earth has plenty for everyone. Don't get me wrong--I'm not advocating that Government redistribute wealth and resources. Its up to individuals to look around then, recognize real needs, and share what they

have. I do believe that the earth and everything on it were created for the benefit and use of man. But with that comes a responsibility to use resources wisely, to keep in mind the future, to manage responsibly--to use what we need and care for what we've been given.

Some environmental concerns are warranted. However, the environmental movement and groups have gone so overboard that I'm totally fed up with the whole mess. Anytime we place the needs of nature and animals over the needs of man, something is definitely wrong with our thinking.

I work with fuel, and I am not given all the resources I need in order to maintain a positive control over the fuel. If we are serious about the environment, we need to be given adequate resources--it's a lot cheaper than cleaning up after the fact.

NEVER send this type of survey to me again! If you need touchy/feelly type answers ask Jane Fonda. I have a real job and don't have time to waste satisfying the needs of ivory tower individuals who are well and truly out of touch with the Air Force and its mission.

I think your questions are skewed and you will probably read what you want to from the way I answered. For example: Question 18: Only an idiot with no brain would disagree with the statement. Question 19 is the same way, of course there are limits to industrialization. This whole survey is offensive. The whole issue between humanity and the environment is balance. To take any other view really shows ignorance. Of course, we have to live in balance with nature and the environment. It really doesn't take too much thought to figure out that humans are in charge and must be responsible in how the environment is handled. On the other hand, some of the environmentalists go crazy over one little "bud" or "dart" or "lizard" or "bug" that really doesn't make any difference to the environment. If it doesn't make it, so it becomes extinct, no big deal! Have a nice day! Maybe you should spend your time and money doing something else rather than wasting your time and mine by another stupid survey!

The pantheistic slant of these questions is disturbing. As a Christian I believe God created the earth for man to use as is needed. This "stewardship" also explicitly implies responsibility but in no way puts the "needs" of "mother earth" above man.

This survey was a waste of time, resources etc. How many trees were sacrificed to print this garbage. If the Air force has people who are employed to write these kind of surveys we are in big trouble. The Air Force is about air and space warfare, not about what type of container my cereal comes in. Another prime example of people needing a job!

Environmentalism is the last refuge of Marxists who wish to destroy capitalism and the US. The earth was made for man. Five of the biggest LIES ever perpetrated are: (1) Ozone hole (fabrication) (2) Global Warming (lie) (3) Asbestos Removal (scam) (4) Endangered species (junk science) (5) Wetlands (communist propaganda).

The EPA is too powerful. They have a stranglehold on progress! The ozone hole warnings are a fluke. The ozone hole was first identified in 1952! Long before mass production of CFCs! The oceans evaporate more chlorine each year than all of mankind's total production. Volcanoes spew more chlorine and other CFC type compounds for each major eruption (i.e. Mount St. Helens, Pinatubo, etc.) than all of mankind total production. One--and only one--rabid French "scientist" is worried about the ozone hole to cause world-wide panic in the early 80's leading ultimately to the Montreal Protocol. The US was blackmailed with international sanctions into signing it.

Toxic waste is another issue--if distributed evenly throughout the world, the toxicity would be nil. We haven't made any new stuff, we've merely collected and concentrated existing materials for human use. Evolution, Darwinism, survival of the fittest, is a natural process. We can't hurt the earth permanently. We can poison the heck out of individual sites. I believe in wildlife management through organized and moderately regulated hunting. I believe recycling is smart but why is it so expensive? Recycled paper costs more than new paper--someone's gaining on other people's belief in recycling. That's wrong.

Dupont has been the single largest producer of refrigerant since the inception of air conditioning. Air conditioning used to use ammonia as a refrigerant. Then amid cries of public safety (not unlike the environmental hysteria of late) Dupont stepped up with R-12 and R-22 and others. Now 30 years later it's suddenly bad. R-12 is out of production R-134A is the hot ticket developed by--DUPONT! Environmentally conscious folks are expected to retrofit old systems with large profits for Dupont. How long before these new refrigerants are deemed "bad"? Who will Profit?

It is probably a little late to worry about some ecological mishaps. Disposal of nuclear waste is one for an example. How can we properly dispose of it? We in the military have caused a lot of problems, i.e. dumping of aviation fuel. I pray that there is a way we can get our arms around this environmental issue. We humans have contaminated the soil, our food chain contains a lot of toxic materials etc. I am not sure what can be done.

I have found portions of this survey insulting lacking in intelligent content and completely useless as a survey. The environmental issues were being raised 30+ years ago on a total social level that reached probably every home group and class of American society. This survey seems to have forgotten that and started once again to reinvent the wheel by finding out if we know you can recycle soda cans. Today's Air Force is very intelligent riddled with enviro-friendly regulations

and instructions, even mandatory recycling programs, reduction of chemical inventory, and a whole wide ranging facet of programs that not only increase awareness but completes actions as well. As a shop supervisor, I can not believe the basic awareness your survey is looking for is not already out there, if its not excuse me for being naive. Msgt Roger Johnson. And if you will provide a privacy act statement on your next survey I will provide my identification number for your use.

Mankind inevitably dominate those beings with whom the Earth is shared. We must use some of the Earth's natural resources toward our well-being. The effects on the environment by modern industrialization should be monitored and new methods should be produced that are "cleaner". Recycling, also makes good sense but it will never become commonplace until it becomes profitable to business and consumers.

The main reason I filled this out is I figured you'll get back maybe 20% of your submissions. To get more participation you really should be more specific as to how you plan on helping the environment. I basically was bored for five minutes when I got this so I gave it a shot.

I had no real inclination on how to approach this for the benefit of the Air Force. I assume you don't need a name or social security number on the form since you said we're anonymous.

Just a tip the environmental subject is extremely sensitive to Air Force members. It is okay for a pilot to dump 20,000 pounds of gas into the atmosphere in about 30-45 minutes, but EPA "hawks" are everywhere to see if some one puts used motor oil in the wrong place or throws a flashlight battery in the trash. The concept is good , but the federal bureaucracy is ruining support for it by picking on the little guys, not the big bureaucracies. To cite a motorist for excess exhaust near Cape Canaveral, FL or a boater for exceeding 5 mph for fear of endangering the manatee and then allow the shuttle to dump billions of tons of pollutants on the area just doesn't make sense.

Mother nature has been quite successful in eliminating all kinds of species from this earth to include insects, mammals, and humans. To think that legislation can some how protect or stave off mother nature is unrealistic. When it comes time for us to go the EPA and its rules won't be a factor. This is just another good idea blown out of proportion and made into a job corps, social program. To expect the little guy to support a system that so disproportionately punishes them is not very bright. Toby Whelchel. PS Completing this survey cost the taxpayer about \$85.00.

I don't get the connection between environmental attitudes and behaviors and the benefit to the Air Force. You should have told us what this data will be used for other than evaluating potential improvements to existing programs. I get the perception this is being done to boost someone's GPA. I hope the Air Force gets a good return on this investment!

Overall, for every Air Force survey I have participated in, I have taken much of my time and effort to ensure that they all were properly filled out and accurately represented my disposition. No offense, but I truly believe that any survey I've filled out to include this one have done virtually no good in the long run or at all. It's too bad that we as responsible USAF members waste our natural resources (paper) in a seemingly pointless cause as surveys.

Your survey does not take into account people's responses to use industrialization and technology to live in outer space or on other planets. The earth is not a finite environmental barrier in which mankind will live forever. Technology will help us live and work in space and tap the resources of the uncharted. I consider this survey to be invalid on environmental issues because of how people might interpret the questions on industrialization--limited to earth's environment or expanding to outer space.

I would also like to inform you of something I think should be of a concern to all military members. I have learned through my church that over 50% of Procter and Gamble's proceeds are donated to Antoine Levay who is the head of the satanic church. In addition to this, Procter and Gamble also still tests its products on animals. I believe that this should be publicized to military personnel more so that it would help them understand why so many others are against Procter and Gamble.

Policy Recommendations:

The Air Force needs to have more classes on environmental issues as they do on quality. It would help both the Air Force and our planet.

We need to have more training for all Air Force personnel for a better Quality Air Force.

I've seen in the Air Force, more involvement of its members in environmental issues, but I still believe we need more education and information throughout all the levels to increase the overall participation. We are on the right track, but not everyone knows where the track is. Support of any program beneficial to our environment should begin from the top on down. Goals and achievements should be established for each organization.

Start educating the Air Force community with classes about what they can, can't and should do!

I think the Air Force community can do a lot more in the area of environmental support: mandatory on-base recycling in housing and main base,

cater to businesses that use recycled items (e.g. oil, paper, metals, and plastics), engineer work space that easily support environmental issues and recycling.

Recently my work center submitted a suggestion that would eliminate a chemical that can damage the environment. Not only can it damage the environment but also medical problems for those who use it and work around it. If the Air Force is so concerned about the environment and their people, how come the reason for turning down the suggestion was that it would cost too much money?

Being in the military and working with hazardous chemicals has afforded me knowledge in this area and made me more aware of the dangers. Many individuals in the civilian sector are not given such information. The better communication in this area the more people will listen and understand. Also, the easier you make it to recycle the greater the effort people will make to recycle. The harder you make it, people will pollute more. Case in point, I went to a gas station last Saturday to discard some used motor oil. The attendant told me EPA requires them to deny access to that container on the weekends. Most individuals are going to try to take their used oil on the weekends. If they cannot, they will probably dump it somewhere else, i.e. on the ground or in the woods. If the EPA really wants to make a difference, they are going to have to make it easier for the average consumer, not easier for the EPA!

Please do not create the requirement for a mandatory Air Force training class to make us more environmentally friendly. A block of instruction in basic, technical schools, and/or Career Development Courses (CDCs) would be useful and appropriate to educate and provide awareness.

I wish the folks from Environmental Management would get up a program with guidelines, technical orders, and regulations to govern hazardous waste control more closely. Perhaps squadron monitors could be appointed throughout the USAF? Not only for Hazardous waste, but anything that could be considered harmful to our surroundings. Safety monitors have enough to deal with. Environmental Monitors could report directly to the governing body for Environmental Welfare.

Comments Concerning Survey Construction:

I feel that this survey, while necessary, was not fair and accurate measure of certain people's feelings toward the environment. The question which prompted the taker of the survey to respond on a 1-5 scale (one being strongly agree and five being the opposite) left little room for a person like myself who feels that, while the welfare of the environment is vital to the survival of the human race, it is not in the dire straits as some would have us believe. Furthermore, the wording of these questions was such that it was prohibitive to those of us who believe in more of a middle ground. For example, the statement "Mankind was

created to rule over the rest of nature.” Leaves no room for the explanation that, while I do agree with the statement, I feel that it does not come without great responsibility to take care of the environment. Merely annotating a number one on the questionnaire seems to imply that nature is ours to do with as we see fit regardless of the consequences. Nothing could be farther from the truth. Perhaps some rewording on your part or possibly the addition of a greater number of choices on opinion would provide more accurate responses from which to derive your data.

This is the most absurd survey I have ever had the displeasure of reading. The way the questions are worded are pointed and one sided. For example question 16 the word severely. If I answer strongly disagree does that mean mankind is just abusing the environment but not severely? Question 14 takes it for granted that mankind has interfered with nature. I'll answer all your questions with this statement. Mankind is not separate from nature rather we are part of it. Our actions are part of the order of things and therefore part of nature.

Who wrote these questions? The slant is toward an environmental nut and anyone who doesn't think a certain way is wrong. The questions should be modified to allow a greater spectrum of answers. By the way, was this done on recycled paper and vegetable based ink used, so we don't pollute?

I noticed on question 8, there were five possible answers including “Not Applicable”. Then on question 9, it was not an option and I feel it should be. I live on base and I put “Other”, but I think “Not Applicable” would be a better answer.

Question 11. No response for post-graduate achievement (doctoral).

Questions 3,4, and 6. By using ranges instead of exact numbers you “condemn” yourself to non-parametric statistics.

In the demographics section, consider adding college major and duty title/description. A biology major/physician might be expected to have quite a different opinion than a Ph.D. computer engineer.

For questions 13-24 I do not like the choice “No Opinion” although I had to choose it a few times. I don't have enough background information on how much the earth can sustain to make a definite answer. Perhaps an answer such as “Need More Information” would be a wiser choice to some.

Using the verb “interfere” in question 14 and the phrase “often produces disastrous consequences” slants the question. “Interfere” suggests we don't belong with nature in the first place, and the above phrase is an editorial opinion you seek to support with affirmative answers. If the results of your survey behave like most

surveys, biased questions result in biased data, often because respondents fail to see the bias in the questions. How about rewording: "Human interaction with nature can produce disastrous consequences." If you feel like my rewording takes the edge off the question, then that just points out the difference between a slanted and an unslanted one.

As with most Air Force surveys, the questions on the whole seem slightly weighted. Number 16 for example should not have the word "severely" in it.

I found that most of these questions did not lend themselves to a sliding scale very well. For example: Question 13 is a 5 in some areas and 1 in others. I can see the results of this survey being twisted to meet the needs of any group that wants to use it.

Thanks for keeping it short. More often than not, if a survey is very long (and anonymous anyway) I'm less inclined to participate.

Question 30 should be broken down. Mainly keep newspapers, glass, and aluminum together and chemicals (i.e. motor oil) in another question. I take my motor oil to be recycled ALWAYS.

Anyone that writes a survey knows that, properly written, a survey will consistently reveal the answer the said writer desires. Whatever that may be! Enough said.

Most "so-called environmentalists are liberal socialists who abandon common sense to pursue their social agenda.

I felt that the questions were definitely slanted towards a Christian faith which may have resulted in an inaccurate response since I don not believe in Christianity. Specific questions were number 21. Also, most questions and statements appear to be extremely Liberal in nature, and being a conservative it was hard to be honest. Specific questions: 16, 17, 20, 27, 31, 33, 34, and 35

I am "surveyed out" I have done survey after survey--I've thrown away some and was sent several more copies until I responded. (Really--Air Force medical surveys) I am amazed at the number of pieces of paper that go through my hands. Consider this when you do future surveys. Explore the possibility of using e-mail. You could reach as many people quicker, cheaper, and without using a single sheet of paper. (Nor killing even one of you precious trees) or consider putting your information on half the paper. You used 6 pages for this survey, when it could have easily been done on three.

Demographics:

The question as to my gender I feel is irrelevant.

My annual income does not pertain to this survey.

Question 7 and 8: I live in base housing that is off base. (Question 10: a Duplex).

Question 12: The only environmental class or training that the Air force held that I've attended was held when we were closing Bergstrom AFB, TX. Everybody was just in this "environmental mode" from TMO to CE it should always be emphasized.

General Comments Concerning Questions 13-24 (Environmental Attitudes):

Your questions 13 thru 24 are stupid and sound like they were made up by a high school freshman. I choose not to be a part of this.

Questions 13-24: Seems you already have the obvious answers. So why ask these questions?

These questions are not original. They taste of the environmentally conscious sect of our society. You need to do think session to develop questions that go beyond the ground already covered.

If I disagree with the statement provided, then I do not necessarily agree with the corollary. If you wish to know my beliefs regarding nature and the environment then ask. If you want me to express my opinion by filling in circles...don't hold your breath.

Questions 13-24 are extremely vague. Most of those questions could be answered "It Depends." I think my views are what most Americans have -- the silent majority if you will. I believe we can use nature to our benefit but that doesn't mean abuse it. Use nature conservatively and responsibly. I don't think it's responsible government to ban for instance logging in an area because of an endangered microorganism or fauna. On the other hand, I don't think it's responsible government to allow uncontrolled clear cutting of our nations forests on public or private land. However, it looks like the supreme court disagrees with my opinion on endangered species.

These questions are obviously written with an extreme biased in favor of environmental scare tactics.

Many of the questions (13-24) seem vague. i.e. the balance of nature? Does that mean humans vs. nature or does that mean nature vs. nature? Also, nature is generally quite strong and can bounce back, but earthquakes show how easily the balance can be upset.

Questions 19 and 24 were a little unclear, but I believe I got the point.

A few questions seemed broad and can be answered only most appropriately with "it depends". For instance, number 21; I believe man was created to rule over all but not to abuse the resources that exist. Number 22. There is nothing wrong with modification but again when convenience overrides replenishing our resources and killing our environment due to selfish greed it is wrong. For example, gas cars are very convenient, however, it has been proven that natural gas and electric cars are "better" for the environment, but those items are on the back burner because we have the resources of gas and oil and those cars run faster and longer and the cars, at present are less expensive than electric or natural gas. Number 23. Yes, plants and animals can be used as oxygen and food, however, when we depleted our forests and animal life due to greed of money or just for the sport, it is wrong.

The questions in part 2 are difficult to answer. I feel that it is important for humans to have a healthy respect for the environment. We cannot totally control nature, yet we can make enough changes that not all natural laws apply. While our technology allows us to support more people on the earth than scientists originally believed. This does not mean we can play God with nature. Nature has shown us time and again who is truly in charge through floods, hurricanes, and drought. All those questions about are we currently beyond the earth's limit, and economically do we need to control industrial growth--those I will leave to the experts. I believe we can make a difference. And that in order to maintain a healthy environment for future generations we need to show a healthy respect for nature and all her creatures. Each of which was put on this earth for a reason---to coexist as a part of a continually changing ecosystem.

About Man's Relationship with Nature: Yes, man effects the environment when he enters into it; but he does not have to conform to it. I live in the middle of the desert where temperatures reach 120°F but I wear 2 shirts and pants to work because we have constructed artificial living areas out of wood (when the nearest forest is 200 miles away) and the temperature is a cool 78°F. I have a pool surrounded by a grass yard, where before man, neither could be found.

About Man's Rights: Man as well as all living things, has a right to take any action required to fulfill himself. The ramifications of his actions are the only resistance encountered. Until man can fully appreciate his total impact on the environment, his actions will not change. He will continue to satisfy himself monetarily at the expense of the ecosystem in which he lives.

About the Frailty of the Environment: Before man, far worse was done to the environment and it recovered. Nature has a funny way of sidestepping and/or eliminating potential or current threats. The loss of species of animals and plants, however unsettling, is natural, and has been occurring for millions of years.

Evolution has done away with millions of individual species only to replace them with something equally unique.

If we continue growing and wasting at our present rate we will destroy this planet's ability to support man. Not all life, just man. This destruction is not as close as some environmentalists (Ed Bagly) think, but it will occur all the same. Can our present course be changed? I honestly don't think so. It goes too much against man's natural tendency to multiply, expand, and conquer. But even after we are gone, nature will find a way to replenish itself and start anew.

13. The balance of nature is very delicate and easily upset.

Man can not affect any changes to upset this.

14. When humans interfere with nature it often produces disastrous consequences.

Humans are a part of nature--how than can we "interfere" with nature. What ever we do is, by definition, part of the natural course of action.

Does not discuss the extent of human interference.

Like planting corn? Interferes with nature, no disastrous consequences.

The question was unclear. Interference by humans can be both good or bad at times. I am a big believer in both animal rights and the protection of the environment. However, I do not see much of this same attitude around the Air Force. In one office I was in, we collected cans. Unfortunately, no one came to pick them up weekly so the whole bag of cans would get tossed in the garbage bin. Most people in the Air Force are also conservative (compared to liberal). If you start talking environment and animal rights, they hand you a granola bar and turn up Rush Limbaugh real loud. Question 21 fits their way of thinking perfectly. I believe we need much more education throughout the Air Force on these issues and much more stress should be placed on recycling in the office environment.

16. Mankind is severely abusing the environment.

If I can always recycle used motor oil, why do tankers ground themselves. Do they know what LORAN and GPS is used for?

17. We are approaching the limit of the number of people the earth can support.

We pay farmers NOT to grow food.

Are you asking if we believe there is a limit, or if we believe we are close to that limit? It seems clear that there must be some sort of limit, and every time a child is born, we "approachin" it. I think you are asking whether or not we think we are "close" to the limit.

I believe we have already surpassed the number of people the earth can support.

What is considered a limit?

Finally, I feel compelled to respond to a particular question on the survey which disturbs me...I have heard this same statement over and over again and quite simply, it is not true. If each person in the world were allotted a single square foot in which to stand, one could fit the entire world's population in an area the size of New York City; while I agree that it would be uncomfortable, this merely illustrates my point that the overcrowding theory is a myth created by those of us who would have government controls on population, the economy (see question 20) and every other aspect of our lives. I feel that this question was prompted by alarmist rhetoric put forth by an extreme leftist minority with little regard for the facts or our civil liberties and as such I feel I must disagree even more strongly than your survey allows.

18. The earth is like a spaceship with only limited room and resources.

If you lived in a spaceship....LET'S GET REAL!

Yes, but our spaceship has a lot of room left.

Earth is like a spaceship? And life is like a tulip?

The earth is not like a space ship, but has limited room and resources.

19. There are limits to growth beyond which our industrialized society cannot expand.

Question was unclear, I answered no opinion because I did not know what the question was asking.

Question is unclear to what they are trying to say.

Wording of the question is confusing.

There must be a limit on growth if we are to maintain present standard of living, if not elevate everyone's standard of living.

There are limits of growth beyond which we should not expand. Human population expansion is threatening environments. Population control is needed.

Question 19 is unclear.

Could be worded better.

Are you asking if there is a limit to the growth of industrialization or an industrial society?

At Dyess AFB, TX there is a very aggressive program in place for recycling and reclamation of hazards. I'm sure their programs are not "sterling" but, I have been impressed at the time, money, and effort put forth in the areas.

I am not aware of programs--at least on my base (McConnell AFB) and if there are such programs they should be advertised better. I know we have established a new recycling program--but that is the only thing I am aware of!!

The reason I don't recycle at home is because the base does not make it easy or convenient. The days that they supposedly pick up recyclables, half the time they don't show up. I don't follow my Congressman or Senator because they change their views on issues like environment like I change my underwear. Thank you for not asking what race or ethnic group I was. It's nice to see a survey without that question. We are the human race.

This question is extremely ambiguous, almost to the point of being impossible to answer without much assumption and discussion.

Columbus wanted to explore and expand and asked his government for funds to do so. The government really couldn't afford much to give but they did. Because of that sacrifice America was found with great abundance of all necessary resources. If we would do the same in space. I believe we would find abundant resources as well as some that are superior to earth's resources.

I don't understand the statement what does it mean.

20. To maintain a healthy economy we will have to develop a steady state economy where industrial growth is controlled.

This question seems a little difficult to answer. I might strongly disagree if I knew what it means.

This question is extremely ambiguous, almost to the point of being impossible to answer without much assumption and discussion

Are you talking about state or national economies?

Could be worded better.

Is unclear.

History has shown that extensive industrial growth with limited or no environmental controls have made some countries (third world specifically) stable/wanted by second and world leader type countries. At times for the fact of the country has little or no environmental control, so they stabilize their economy are used as a medium to produce, store, or dump environmental hazards.

It is not necessarily the industry we need to control as much as it is the behavior of the consumer. If we control the industries output the reaction of the consumer toward the government, would be that of a drug addict who was forced to receive only a fraction of the normal intake. the government would be the bad guy, no matter who did it or how it was done. There is no other goal than to promote mass consumption of their merchandise. If we don't change that view in the eye's of the consumer it will do us no good to "force" industries to "slow down" output.

I don't believe we need to stop the growth of industries. I believe we need to very heavily penalize industries that by "so called" accidentally they damage our environment. They should be the ones who should be getting this survey and asked to abide by the laws made and even have Congress make more strict laws.

21. Mankind was created to rule over the rest of nature.

Assumes humans were created; they evolved.

The luck of evolution.

Mankind should rule but not destroy (in the bible).

Your survey is seriously leading and biased. The questions are phrased to make you answer pro-environmental. For example question 21: to say man was **CREATED** to rule over the rest of nature is ridiculous. We weren't created for this purpose but we do have a responsibility to manage our wildlife and environment in a responsible, science-based manner. If that means shooting a few wolves...OH WELL.

What if you believe in evolution vice creation.

In today's politically correct world, the use of the word "created" assumes a specific "belief" traditionally associated with the Christian religion.

Assumes one believes in creationism. I feel man evolved from a lower life form.

Biblical.

22. Humans have the right to modify the natural environment to suit their needs.

Does not address how much modification of the natural environment. Mild modification might be acceptable.

We have the right but we don't have the right to destroy everything.

In regards to question 22, as well as other related questions: Humans, in my belief, do not have a "right" to modify the environment; however, they certainly have the capability and privilege of doing such. A right ought to be considered an action that is performed that doesn't require and involuntary action from another living form. Therefore, humans have a right to think, or speak their mind because these actions don't require involuntary actions of other life forms. Modifying the environment is not a right--it is a privilege!

I don't feel that we as humans have the right to alter nature just because we can. I do feel that there is a lot of this occurring because of some powerful companies feel that they are doing this to help. I wish that we could go back to a time when every one respected nature and our environment. Someday there aren't going to be any of God's natural wonders left to enjoy. If people were smart they would understand that they can't alter natural disasters then they shouldn't try to alter nature or its creatures.

23. Plants and animals exist primarily to be used by humans.

According to the bible God made earth for man to rule over. But the plants and animals are here for us to enjoy not only to consume. Due to a strong greed the enjoyment has been erased from most of America's memory.

24. Humans need not adapt to the natural environment because they can remake it to suit their needs.

Are we agreeing to the reason (because...) or "need not adapt"? Its a bit ambiguous.

I had a hard time understanding this question.

General Comments Concerning Questions 25-35 (Environmental Behaviors):

Questions 25 -35 do not include many environmental efforts that most people regularly engage in. After reviewing my responses to those questions (with some embarrassment), I wondered what I do to aid the environment--here's what I came up with:

- Reduce amount of household garbage
- Avoid purchasing over-packaged consumer goods
- Conserve electricity, water, fuel oil
- Adjusted my driving habits and frequency to conserve fuel
- Stay informed about environmental issues in the news
- Mulch/chip lawn waste instead of bagging it in plastic

Some questions pertaining to my involvement answered "no" because the occasion has never come up. Probably would get more involved in meetings, etc., if the opportunity arises.

Due to a lack of knowledge on questions 25-35, its amazing education is not being spread worldwide. These issues seem important but are obsolete in the Air Force.

I have never have been given the opportunity to do the things mentioned in #33 or #34. I probably would if I could.

Dover AFB, Delaware recently started a base wide recycling program. I feel this is a very good program and hope that it will become an Air Force wide program, if it has not already.

I participate in the "Adopt a Highway" program on base for the community. I would like to see young people (teens) volunteer and help us clean the highways for a small profit. Also, all states should have the same value on recyclable bottles and cans. And last--if it's hazardous to the environment, people, and plants, then it shouldn't be sold to the public at any cost.

Making recycling centers more accessible can illicit more people to participate. Recycling centers need to use clear, concise instructions on what and how items can be accepted.

I try to take care of the environment, but I don't worry about it too much. I do the recycle thing--newspapers, cans, plastic bottles and what not--but I don't go to the point of boycotting companies based on their environmental report cards. I am proud to see that the Air Force takes such careful steps to preserve the environment whenever possible.

I use products from a company who provides environment safe chemicals not only for my personal hygiene, but they provide all my household cleaners also.

Everything is natural and non-toxic; I believe the environment is something we need to take care of and regardless who the person is or how much money a company makes, no one should be allowed to pollute our earth! We only have one earth to live on, and its not being taken care of properly. Excellent survey! I hope everyone takes it seriously.

We do not have the facilities to recycle here at this base as fare as the aluminum, plastic, paper, etc. The contract here is not very good and there is nothing set up for the dormitory people. We do not have the space to store recycle material and would appreciate something in the dayrooms or laundry rooms. We do have facilities for oil, but that is about all I know.

This survey makes one stop and think about the fragile environment. We as the human race have destroyed it; admitting this fact hurts. Some of the questions in the survey were not applicable to me as a military member. Do you honestly think I'd follow a crooked congressman or senator? Do you even for one second believe a politician cares for the environment? Also, I don't ever recall any ecologists providing the military with a seminar. The military members I'm in contact daily couldn't care less about our surroundings; otherwise they wouldn't stink it up with cigarettes. By the way, while you'd like to know what people are doing to preserve our ecosystem, did you stop and think about all the trees that were cut down to make the paper for the survey?

There are more environmentally safe products on the market; however of those advertised as "environmentally safe" some contain the same ingredients as their "counter parts" and just cost more. We have truth in advertising for food products why not have truth in advertising for other products, such as cleaning products.

Most companies are controlled by state and federal regulations environmental guidelines and violators should be charged and punished. Although awareness and education has come a long way more emphasis needs to be put individual responsibilities.

We do need to care more; but, we need leaders, strong leaders. People, such as myself, are lazy. We are willing to recycle, if it is easy. We need definite easy things to do. This can lead to more difficult tasks as people get use to doing the easy things. As of now the whole environmental matter is vague and associated with fanatics and freaks.

I rarely use household cleaners , I only use bleach or ammonia when cleaning. Most of the time I use plain water. I think industry should have some limits as to what it can produce. Some chemicals just shouldn't be introduced into society, every company has a new cleaning product and it may clean better (sometimes) but we just create more hazardous waste for our sewage treatment plants to filter out. I don't believe we can filter enough out to be safe.

Recycling seems to be the easiest way to help the environment. I personally recycle all I possibly can. I am not in it for the money, but, I know somebody out there is racking in the bucks. I would hope that more of my neighbors would get more involved in doing there part. Only if they could see a small benefit for their families.

Glad to see recycle bins at work for discarded paper and aluminum cans, but very sorry to see chemicals being sprayed on all the grass at Bolling AFB all summer. These are toxic to humans and animals and contribute to water pollution from run-off. There are more environmentally responsible yet effective ways to grow grass.

Being in the Air Force, I'm not to clear on the Air Force's position on recycling. Although we recycle paper, I'm not too sure what else needs to be done!

I would like to see the Air Force continue recycling programs for members, I currently use the recycle bins here on base.

I would have no problem with a recycling program. This base currently has no programs to encourage recycling. All military installations should have mandatory recycling programs. We should be setting the standard instead of trying to comply with each individual state's guidelines.

I think the government should get the companies to make their products environmentally safe if they are not doing so already. The only thing I do is recycle everything you listed except newspaper and glass.

Currently I travel a lot with my job, so I don't do volunteer work for anyone. Also, my state of residence is New Hampshire so I don't get information on legislator's track record.

I am under the impression that 50% of all our garbage can be recycled, so why are we still destroying the planet?

I recycle based on closeness to recycling area. I won't drive 20 miles out of my way to recycle. Proximity and ease are very important.

I need to spend my money on environmentally important items. I want to save our environment but am not getting involved and paying attention. Your survey should initiate my change in attitude and actions.

Our country needs to recycle more and replenish our natural resources such as trees. Companies should be allowed to harvest such things as trees. IF a

logging company would plant a tree for every one they take they would be able to harvest them again years from now. If this has been done just at the start of this century there would be trees almost a hundred years old ready to harvest now-- think about it.

I feel the air force should enforce a recycling program on each and every base. I know in my flight (150 enlisted & 1 officer), I'm the only one that makes the effort to recycle anything. Not only is it good for the environment it makes the Air Force money or money for Air Force use.

Cost beneficial, environmentally friendly products will usually win every time.

Recently, I resolved a cost/environment issue. My modeling air brush came with a can of not so friendly propellant. There is a more friendly can of propellant that costs just as much. OK. But still costly since the cans do not last long. I bought an inexpensive air tank that can be used to inflate tires, etc. and added a pressure regulator to run the air brush. It will take about three to four months to balance the cost of the tank/regulator against the little cans. On the environmental side there are not little cans of unfriendly or friendly propellant in the trash and in the air. I use a small amount of electricity to run the compressor at the gas station to pump up the tank (recycled air). And the tank is useful for other things. I have already used it to air up a flat tire so the can could get to the gas station for repair. I spray acrylics since they clean up with water, not nasty enamel thinner.

Though my concerns against damage being done to the environment is great, this survey will show that my actions to safeguard it are somewhat limited. This is because I believe that we must have balance in all thing, another point to consider is that actions such as recycling bottles, plastics, and other items, such as newspapers etc., have yet to be made more convenient. I can only speak for me but I'd try to do better if recycling areas were more within living distance and made convenient. My actions from making serious environmental damage includes getting oil, brake fluid, freon and coolant changes done at places with proper disposal facilities to protect local water tables, etc. I strongly disagree that growth must be controlled or limited to support mans existence on earth especially by government forces. Some sensible ideas to limit the use of natural resources are at our finger tips, things such as buying pre-owned homes. While this may hurt the home-building business somewhat it makes good sense on two grounds usually less expensive and doesn't require the use of natural resources which are hard to replace. Just a thought. I drive a 1972 automobile, that's another way although there may be harmful effects not as fuel efficient, uses old air conditioning system (not freon free) etc. The point is balance has to be achieved, if we all think and take small actions the end result is we'll see less deterioration and abuse of our eco system.

This questionnaire made me realize that I should be more aware of our environmental concerns. I SHOULD read the labels on the products I purchase, and I SHOULD avoid buying aerosol sprays and etc. Will I be more aware/ I don't know because the environment is not a major concern for me. I think about it, but I do have other concerns which outweigh my concerns for the environment; such as wife, son, house, van, job, education, my son's education etc.

I think the earth (nature) will move on regardless. We use its resources, but I don't think the resources are here for our use only. I think life is its own enemy, not the earth's. The earth won't suffer, life will suffer the consequences. And when we destroy what resources we have, we will all die off and the earth will repair itself and a new cycle will begin.

What I'm trying to say is--I have a problem with the destruction of the rain forests in South America; we shouldn't abuse our resources. But other concerns and debates are ludicrous and I'm tired of hearing about them; I'm not going to read the labels for everything I purchase. If we shouldn't use aerosol sprays, take them off the market; if we shouldn't use gas motorized vehicles, take them off the market. And provide the proper resources for chemical disposal--changing the oil in the car is a real pain.

Even though the environmental issue of today is a big concern, I don't practice personal environmental issues. However, in the field of fire protection, I understand and am trained extensively in the area of hazardous materials response for the career of fire protection. I know the environment is an important issue, but I don't stay awake at night thinking about it. I do my part.

The final section deals with only one main principle as far as I can relate to my own lifestyle, money. As selfish as this may be, I have to be concerned with being able to survive, in short, buying what is on sale and what I can afford. Whether I recycle or buy certain products, business is there to make their money without regards, for the most part, of being concerned with the common income. Whether we recycle or not, their plan and goal is to use and abuse resources to make money, which expands industry, which builds factories, where they must destroy the land, which pollute the environment.

25. Avoid buying or using aerosol sprays.

Given a choice I will buy aerosol sprays with non-ozone depleting propellants or pump spray bottles.

I am a firm believer that CFCs don't have any effect on the ozone layer and that it's a government scam to tax the heck out of refrigerant and cause skin cancer panic.

My Air Force job is required to use aerosol cans to stencil aircraft; but, it is filtered in order to meet EPA regulations. The question needs to specify the intent of the question as for home use.

We now use no CFC aerosols.

I have started buying a hair product in a spray bottle rather than in an aerosol can. I've done this in consideration of our ozone and environment.

This question goes on the assumption that the reader uses aerosol spray. I, however, have no use for them, but if I did I would use them.

26. Specifically avoid buying a product because it was not recyclable.

Our society should make more "durable" durable goods and we could cut down on recycling. I like older cars because components are rebuildable instead of replaceable.

27. Boycott a company's products because of its record on the environment.

I can't boycott the oil industry when it takes oil and gas to run my car, which society has made it a necessity to have this day and age.

29. Use biodegradable plastic garbage bags, soaps and other items.

Answered most of time only because those products generally only come in bio-degradable options. I haven't looked to find a product that was or wasn't environmentally safe.

30. Voluntarily recycle newspapers, glass, aluminum, motor oil, other items.

Voluntarily depends on availability of local government to make recyclable facilities/ centers accessible and available to consumers. If these facilities are available, I would eagerly use them, especially if money can be made and/or a charge for using them is not required.

Motor oil is a "required recycle" item. The others are not.

Our family does recycle our grocery bags.

My wife does all of the recycling.

32. Take more care in the use of chemicals.

Is this a safety issue such as not using items that may cause cancer (oil has warnings), or more along the lines of dumping oil and anti-freeze.

I could not determine what was being asked in question 32, so I skipped it. ("Take more care" of what?)

Take more care in the use of chemicals then what?

Question 32 is broad, what chemicals? Chemicals at home, at work?

More than what?

What kind of chemicals? Roundup, antibiotics, bleach?

Question seems ambiguous. "Take more care in the use of chemicals" concerning what? What kinds of chemicals, on the job stuff or what? Please be more specific.

33. Attend a meeting related to ecology.

We don't have any meeting relating to environmental issues on base or in the local community. So I couldn't answer question 33 correctly, because if we did have these meetings I would attend.

34. Volunteer work for an environmental, conservation, or wildlife preservation group.

I did volunteer work as a Boy Scout as a boy.

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