2007

Stewardship of creation: A guidebook for the Episcopal Church

Kristy LeAnn Chambers

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STEWARDSHIP OF CREATION: A GUIDEBOOK FOR
THE EPISCOPAL CHURCH

A Project
Presented to the
Faculty of
California State University,
San Bernardino

In Partial Fulfillment
of the Requirements for the Degree
Master of Arts
in
Education:
Environmental Education

by
Kristy LeAnn Chambers
June 2007
STEWARDSHIP OF CREATION: A GUIDEBOOK FOR

THE EPISCOPAL CHURCH

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June 2007

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ABSTRACT

The purpose of this project was to develop an environmental education program guidebook for use by the Episcopal Church. This project is in response to the Lambeth Conference, which in 1998, called for Anglican Churches around the world to find ways for congregations to address the many environmental concerns that face our world today. These concerns include overpopulation, unsustainable levels of consumption, poor quality of water, air pollution, and impoverished soil.

This guidebook includes the following four components: leadership development, activities for both adults and youth/family groups, camping, and a workshop on understanding issues to address the Lambeth concerns mentioned above. A variety of activities and events were field tested over a five month period. Each activity was analyzed and observed. At the end of the process eight activities were chosen to be included in the guidebook based on the following criteria: clear directions, participant interest, realistic expectations, and their ability to meet the objectives set down by the Lambeth Conference. The outcome of this project is a comprehensive small scale environmental education program that can be used by volunteers to create a meaningful program
experience. Although this guidebook was designed specifically for the Episcopal Church (an Anglican church) its approach and format could easily be adapted for use by other organizations to address some of today’s environmental concerns.
DEDICATION

For my family
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CHAPTER ONE
INTRODUCTION

Bishops and archbishops of the World Wide Anglican Communion meet once every ten years in what is referred to as the Lambeth Conference. The purpose of the conference is to discuss and resolve scriptural and secular issues. This scholarly project is a response to the void of environmental programs identified by the Lambeth Conference, held in 1998. The objective of this project is to help Episcopal congregations, a sub-church of the Anglican Church, to develop environmental education programs that will enable church members to become responsible environmental stewards.

At the Lambeth Conference, it was declared "that unless human beings take responsibility for caring for the earth, the consequences will be catastrophic" (House of Bishops, 1998, p. 9). Though these sentiments at the time were noble, this vision did not result in programs that addressed the very problems identified. These problems included "overpopulation, unsustainable levels of consumption by the rich, poor quality and shortage of water, air pollution, eroded and impoverished soil, forest destruction, and plant and animal extinction" (p. 9).
The official Lambeth Conference resolutions called for the World Wide Anglican Communion to examine the role of churches in the degradation and destruction of the world's resources and over all condition. The Lambeth Conference urged members of the churches to engage more deeply in solving these environmental problems facing the planet. However, the Lambeth Conference did not provide any direction on how these churches were to accomplish this.

Overlooked was how churches around the world could effectively change the attitudes of their members by creating programs with instruction in environmental education. The Lambeth Conference never addressed specific ways to develop and sustain responsibility for the environment; only its inevitable demise due to a lack of accountability was mentioned. Instead the Lambeth Conference chose to ask congregations to develop their own environmental education programs based on the existing attitudes and behaviors of its membership. Time and again these attitudes and behaviors are based on preexisting knowledge. According to James Elder, "Two out of three adult Americans still fail a simple environmental quiz" (2003, p. 18). Often it is easy for people to understand that environmental problems exist. However, it is not
always easy for them to believe that a change in their individual behaviors can have that big of an impact.

The Lambeth Conference was quick to point out examples of how humankind has negatively impacted the planet on which we live as well as areas of concern that require a commitment to change. These changes include "working for a sustainable society, recognizing the dignity and rights of all people, and the responsible use and reuse of all natural resources" (House of Bishops, 1998, p. 9). The examples were very valid and poignant; however, the conference failed to cite examples of how to change the mindset of people and address these impacts.

A fundamental concept lacking in the resolution from the Lambeth Conference was the importance of developing environmental literacy and the influence it would have on its church members.

According to an article written by environmental educators Volk and Cheak, "Environmental literacy demands critical thinking and effective decision making skills. Individuals must be able to weigh sides of an issue and to make informed responsible decisions" (2005, p. 101). This would be an important skill for those congregations who are seeking to organize programs with the intention of
benefiting the environment and promoting a change within their communities.

According to Hargrove (1986), throughout history, ecology and religion have walked on opposite sides of the fence. Many saw the world as being created for the use of humankind, and were often able to cite biblical reference to back up their claims. Today the winds of change have shifted our perception of what creation means. Christians, Muslims, and Jews alike are taking on the persona of stewards with an emphasis of acknowledging the importance of caring for the created Earth as opposed to viewing it as "a tool for man's use" (Hargrove, 1986, p. 191) and thus the resolution of the Lambeth Conference is timely in its concern for environmental stewardship.

The intention of this project was to develop a guidebook that will help Episcopal congregations to form a structured, meaningful and momentous environmental program at the church level in response to the Lambeth Conference. This project addresses theological aspects, as well as provides guidance in the form of activities, workshops, training and resources. The educational programs are based on outdoor education which takes youth and adults outside to learn using experiential techniques and place-based education which takes participants out of the classroom.
and puts them into their own communities using a constructivist learning theory. This will allow for participants to construct new meaning and understanding by building on already existing knowledge. By using these approaches participants will be able to develop a deeper understanding of scientific knowledge and new discoveries.

This program will also help participants to change their existing behaviors, increase their knowledge of environmental issues, and understand the importance of their actions through the development of environmental literacy. This project addresses the areas overlooked in the resolutions passed at the 1998 Lambeth Conference and will be important to forming a true base of environmental sustainability and accountability.
CHAPTER TWO

RATIONALE

Introduction

In this chapter literature is reviewed which is pertinent to creating a program guidebook for the Episcopal Church. This guidebook is intended to be used by congregations who want to establish an environmental education program at local churches. First, this review examines how environmental education, when aimed at a global citizenry, can produce citizens who are not only knowledgeable about environmental issues, but who are also motivated to find creative and ecologically sound solutions to those issues. Next, I review the importance of achieving environmental literacy as it pertains to changing the attitudes and habits of citizens, and explore a variety of delivery modes used for developing environmental literacy. Finally, to better understand why an environmental project designed for a church could be helpful for its members to develop environmental literacy, the connection between ecology and religion, discussing both the negative and positive impacts this connection has had on the environment, is explored. An understanding of these impacts will assist in developing the leadership
workshop for this project, and explain the important historical relationship between the church and the environment. A summary of this research can be found in the last part of the literature review.

Defining Environmental Education

Professionals in the field have often had a difficult time defining environmental education. Since 1968 the term seems to have been batted around like a proverbial tennis ball, with each group taking a swing at it, and leaving their indelible fingerprint before once again tossing the term in a different direction. According to John Disinger, "Schoenfield was the first to use the term in the scholarly literature" in 1968 (2005, p. 18). However, the first most comprehensive definition seems to come from William Stapp and his graduate students who, in 1969, chose to address the definition of environmental education by expressing it as objectives to be met. According to Stapp et al., "Environmental education is aimed at producing a citizenry that is knowledgeable concerning the biophysical environment and its associated problems, aware of how to help solve these problems, and motivated to work toward solutions" (1969, p. 31). It was further noted that, "the evolving goal of environmental education is to
foster an environmentally literate global citizenry that will work together in building an acceptable quality of life for all people" (1969, p. 23). And though this may not be a definition of what environmental education is, it certainly describes what environmental education should do. Stapp et al. also wrote that "man is an integral part of a system from which he cannot be separated" and "has the ability either to strengthen, weaken, or maintain the interrelations between the system's major components" (1969, p. 31).

According to The Tbilisi Declaration, a key guiding document in the field of environmental education, "environmental education should provide for all ages, at all levels and in both formal and non-formal education" (1977, p. 13). Participants in environmental education programs learn how they "play a productive role towards improving life and protecting the environment with due regard given to ethical values" (p. 13). The Tbilisi Declaration also stated that two important goals for environmental education programs are to:

First, succeed in making individuals and communities understand the complex nature of the natural and the built environments and second, cater to all ages and socio-professional groups in the population. It
should be addressed to the general non-specialist public of young people and adults whose daily conduct has a decisive influence of the preservation and improvement of the environment. (p. 14-15)

These two goals become an important aspect of programs that are working with church congregations because in order for programs to be effective they should encourage initiative and a "sense of responsibility and commitment to build a better tomorrow" (p. 14).

Another way to define environmental education would be to define what an environmental educator should be. According to John Hug's essay, "Two Hats," "an environmental educator is any world citizen who uses information and educational processes to help people analyze the merits of the many and varies points of view usually present on a given environmental issues" (2005, p. 47).

Formal education is not necessary for environmental education to occur. The truth is that formal education is only one of "many influences on the development of positive environmental attitudes" (Elder, 2003, p. 62). According to John Elder, statistics show that "95% of all learning takes place outside of school walls" (p. 62). This makes being an environmental educator, according to
John Hug’s definition, a very important task because “environmental education is effective in teaching positive environmental attitudes and values when programs and methods designed specifically to accomplish those objectives are used” (Iozzi, 1989, p. 3).

Achieving Environmental Literacy

Whether we are aware of how to fix the problems or not or not, the public is “aware that there are environmental problems and that they believe sustainability is an important goal” (Elder, 2003, p. 15). Unfortunately we still lack a basic fundamental understanding of the complexities of the issues.

Environmental issues have been in the public’s eye now for decades and “while our awareness on environmental issues is growing, our understanding of those issues is not” (p. 18). The development of environmental literacy in our society would help us to better facilitate an understanding because “environmental literacy is the capacity to act in daily life on a broad understanding of how people and societies relate to each other, natural systems, and environmental education” (p. 15). The development of environmental literacy among the world’s citizenry also has the potential to be a unifying social
force. According to Elder, environmental literacy “has the prospect of building alliances with business, health care, environment, education, and religion” (2003, p. 90).

In order for environmental literacy to occur there needs to be a development of environmental sensitivity. It is because of environmental sensitivity that we seek out ways to use our environmental literacy to perpetrate change. There are five essential components to environmental literacy: awareness, knowledge, attitudes, skills, and action. Awareness is “holding a general impression consciousness about something” (Elder, 2003, p. 15), while gaining knowledge requires an “orderly comprehension, application, analysis, synthesis of the material” (p. 15). Many educators believe that “attitudes change primarily from a variety of life experiences” (p. 17), while skill development is often “an essential part of a formal (or non-formal education program” (p. 17). Action is the ultimate goal of any program. However, action often requires “adopting new behavior” (p. 15). In order to be successful it is important that educators address all five of these components together as one collective unit.

Today most environmental education materials “focus more on developing awareness of environmental problems
than on building knowledge” (Salmon, 2003, p. 384). This is where we may be falling behind. Studies today clearly show that “students do not lack concern; they lack understanding” (p. 384). A development of environmental literacy in our citizens will help to fill this gap. Research conducted on the effects of an environmental education program on students, parents, and communities resulted in very positive outcomes for those involved in the program. Researchers found that students who participated in programs came into “contact with all kinds of issues in the community” and were able to “hone very preliminary skills as researchers and interviewers” (Volk & Cheak, 2005, p. 93). This has important implications for the future because these participants “seem to be aware of the importance of being future-oriented when they talk about the need for change” (p. 94). This research clearly shows the importance of environmental programs by producing participants who leave the program with a “feeling of competence with taking environmental action” (p. 93).

Delivery Modes of Environmental Literacy

The five essential components to environmental literacy require different modes of delivery in order to
be effective. Two of the most effective modes are outdoor education and place-based education.

**Outdoor Education**

Outdoor education can occur in a variety of outdoor settings including: vacant lots, walking around the block, or neighborhood parks. The important aspect to remember is that, "Providing a positive learning experience is always important" (Richardson & Simmons, 1996, p. 2). With outdoor education a basic understanding of educational foundations and theories is helpful but it is not necessary to lead an effective outdoor learning experience. Outdoor Education can help to foster the development of civic responsibility because students learn by doing. There are three components of environmental literacy that can be developed effectively through outdoor education. Because outdoor education uses experiential activities students are able to gain knowledge, develop attitudes, and expand their skills. Does there need to be a formal school setting for environmental education to occur? The answer is no. Outdoor education is a perfect example of how to provide a positive learning environment outside of a formal school setting. According to John Muir, "In the planting of her wild gardens, Nature takes the feet and teeth of her flocks into account and makes
use of them to trim and cultivate, and keep them in order, as the bark and buds of the tree are tended by woodpeckers and linnets" (1918, p. 94).

**Place-Based Education**

Place-based education is the process of using the local community to teach across the curriculum thus allowing students to make real world connections to what they are studying. Place-based education works well outside the formal school setting because it allows students to develop an awareness of the world and can use a constructivist theory technique to help students build on their existing knowledge and learn how to take action. Some often wonder how place-based education is different from environmental education. The answer is that "Place-based education takes us back to basics, but in a broader and more inclusive fashion" (Sobel, 2005, p. 9). It allows the leader to include both natural and built ecosystems as well as the historical aspects of that community in the lesson.

**Ecology and Religion**

As John Muir so eloquently put it "Everybody needs beauty as well as bread, places to play in and pray in, where nature may heal and give strength to body and soul"
(Muir, 2006, p. 198). It is from these very sentiments that congregations should look to and find inspiration for changing the future.

Four hundred years ago the ecological footprint of European Christians was becoming noticeable and spreading. As Europeans began to move into the Americas they took with them the biblical belief that it was their Godly right to have dominion over the Earth and bend it to their will. According to David and Eileen Spring, “The biblical religion set man over nature and gave him authority, indeed encouragement, to govern and control it” (1974, p. 50). In the new world Native Americans were increasingly concerned about what they were seeing in the character of these newcomers. According to David Orr, “Native Americans detected the lack of connectedness and rootedness that Europeans, with all of their advancements, could not see in themselves” (2004, p. 18), and a Micmac Chief noted, “miserable as we seem in thy eyes, we consider ourselves much happier than thou, in this that we are very content with the little that we have” (Gardner, 2002, p. 41).

As time progressed and science became an important pursuit people looked for ways to subdue the Earth. The Earth appeared to become a lab for experimentation and
control. Spring and Spring noted that “scientific technology is the fullest development of this controlling status of mankind” (1974, p. 50). Bible interpretation simply became fodder for ideas that needed to be scientifically disproved, and any biblical authority regarding the stewardship of creation was put on the back burner.

In the three largest monotheistic traditions of Judaism, Christianity, and Islam, “morality has traditionally been human focused, with nature being of secondary importance and with God transcending the natural world” (Gardner, 2002, p. 14). The basis for this idea comes from many passages of religious text which appear to give humankind dominion over the planet. However, in the article, “The Bible on Environmental Conservation: A 21 Century Prescription,” an entirely different picture is now being painted, one that shows that “nature belongs to God and exists for His pleasure, not men” (Johnson & Johnson, 2000, para. 4). The common connection among different faith groups that are working to improve and increase environmental awareness and concern is the belief that “God cares about the environment and holds people accountable for its sustained management” (Johnson & Johnson, 2000, para. 4).
Until recently “Christians have been relatively quiet about environmental problems, but this is changing” (Joranson & Butigan, 1984, p. 14). The move is now towards a more conscientious effort to establish environmental programs at the congregational level. What many churches must now realize is that “education is a key element” (Bayes, 2005, p. 31-32) and that both clergy and lay people must be prepared to take on the role of educator. Congregations have the ability to bring considerable assets to any of their efforts towards a sustainable world. These assets according to Gary Gardner are “moral authority, a large base of adherents, significant material resources, and a community-building capacity” (Gardner, 2002, p. 11). Religion can be an important source of “change within individuals and across societies” (p. 12) by changing “the fundamental philosophical grounding of which a person lives his or her life” (p. 12). When religious groups become involved in making fundamental or conceptual changes, “they do so in powerful ways” (Gardner, 2006, p. 67).

Summary

The literature reviewed for this project indicates that environmental education should not only be provided
to students in a formal classroom setting, but to students of all ages and at all levels, adults and children alike, according to the Tbilisi Declaration (1977, p. 13). Environmental education does not have to happen just in a traditional classroom; it can happen outside and by studying our communities. One primary goal of an environmental education program is to develop environmental literacy. Through the internalization of environmental literacy citizens will be able to change the way that they live.

Ecology and religion have had a long history. Originally people believed that they had a biblical right to control the earth and all its resources. Today this belief is shifting to a belief that is a moral obligation to care for the Earth and its resources. A congregation working as an organized group to perpetuate environmental sensitivity and an environmental education program can provide a next step in promoting environmental literacy.
CHAPTER THREE
METHODOLOGY AND FINDINGS

To my knowledge the Episcopal Church has been working for nearly ten years to bring environmental awareness to the forefront. The most effective way to achieve this awareness is by developing environmental literacy within the church community. There are five essential components to developing environmental literacy, they are: awareness, knowledge, attitudes, skills and action. Upon researching different programs available to church congregations I was unable to find a guide book that would not only help congregations implement an environmental education program but one that would also address the five essential components mentioned above. In order to fill this void a project was developed, with the purpose of increasing environmental literacy by addressing the groups need for awareness, knowledge, attitudes, skills and action within a church community.

The first goal of this project is to develop a strong leadership base. To achieve this goal a leader’s workshop was developed based on two of the essential components, “knowledge” and “awareness.” At the workshop volunteers who are interested in leading activities will be able to
gain knowledge in a variety of environmental education techniques such as demonstrations and presentations. The introduction of these techniques will help future leaders to deliver activities that are both meaningful and stimulating. Through discussions and readings future leaders will also learn about other resources for extended learning. Those attending the workshop will also become familiar with the opinions of professionals in the field regarding the growth of environmental education outside of the traditional classroom setting.

A second goal of this project is to develop environmental sensitivity with in the community. The development of environmental sensitivity is an important element of the program because environmental sensitivity helps to shape our attitudes toward the environment as a whole. In order to achieve this, a camping excursion using both outdoor education and place based education delivery methods has been created. Attitude towards the environment is another important essential component of environmental education. Unfortunately in many urban areas it is difficult to develop. This component will make it easier for members of the congregation to experience environmental education in an outdoor setting.
Another goal of this project is to address the wide variety of interest and concerns that the church community may have. The various activities chosen for this project address many problems often discussed in the media reports of today such as invasive species and oil spills. These activities will allow participants to gain skills and learn how to take action toward not only the problems in each activity, but others as well. To better facilitate learning through the existing knowledge and skills of the participants I have applied two different learning theories to the activities. The adult activities use a constructivist approach and were designed to build on the preexisting knowledge of the participants as well as to stimulate further discussion regarding the topics.

The family and youth activities were designed using an experiential approach this will allow students to learn through experimentation and deeper their knowledge through hands on activities.

The final objective of project is for participants to become more knowledgeable about environmental issues. In order to achieve this objective a workshop was developed to introduce participants to the various components that constitute an issue, to discover local issues and to learn how to define the parameters of these issues. The workshop
will use the children's book, *The Great Kapok Tree*, to help participants to better understand how the all of the different players in a particular issue can have a variety of values and points of view. This workshop will give the participants a opportunity to have a personal experience in breaking down and understanding an environmental issue and develop the skills necessary for analyzing other environmental stories as they are reported in the media.

In order to examine the content and parameters of this project, a model environmental program was field tested using the guidebook. Volunteers were invited to participate in a variety of workshops and activities over a three month period. Three different areas were observed during field testing: unclear directions, lack of interest in the topics by the participants, and participant enthusiasm. The results of the field testing were quite positive. It was found that those participating in the program were enthusiastic about the topics being studied. Participants understood what was being asked of them and they also felt confident in making suggestions for other areas of interest as well as topics for possible group projects. Over all the volunteers expressed a continued interest in the project as well as enthusiasm for participating in future activities.
Religion has long been a source for societal change and has the potential to deeply affect how humans relate to the natural environment around them. A growing religious interest in environmentally responsive ethics and practices suggests that the world’s religions are beginning to use their many resources to “advance their positions as leaders for change” (Gardner, 2002, p. 15). These resources include: political influence, large organized groups, a common morality, and the ability to model practices and programs for similar groups. These resources become important tools when applied to making changes in important areas of need and concern.

The Lambeth Conference (1998) identified the following four areas of concern: economic reform, development of a sustainable world, responsible use of all resources, and sanctity of all life. By applying the congregation’s considerable resources to these concerns, substantial changes for future generations could be created. The Lambeth Conference identified the need for economic reforms which would establish a just and fair trading system both for people and for the environment.
The conference called on its congregations to look for ways to address a very serious and global problem.

But how could a single congregation make changes which may lead to political influence and change? The answer is simple. Unlike other organizations, faith groups are unique in their ability to attract politicians to listen to their causes. There are two reasons for this. One, many political leaders are beginning to associate themselves with faith-based organizations such as churches, temples, or mosques. According to an article in the Boston globe, Hillary Rodham Clinton stated that there must be a way for religious people “to live out their life in the public square” and there is now a movement to find “faith-based solutions to social problems” (Sen. Clinton, 2005) which is gathering momentum. Second, there is the seemingly necessary affiliation between church goers and politicians that becomes important around campaign time. “In the United States, candidates from all political parties often are seen in pulpits or at church functions delivering their messages or seeking endorsements” (United Methodist Church, 2007, para. 3). Often politicians will seek out congregations in the hopes of making a connection to registered voters. This could potentially provide congregations with an opportunity to have their causes
heard by the very people who will be making the policies that will affect the environment of the future.

In order for congregations to work effectively and efficiently they must work as a well-oiled machine. Often natural leadership abilities are fostered and honed within congregations. Most faith-based groups already provide training resources and opportunities for these leaders to become stronger and more effective in their leadership roles. They also offer opportunities to learn other skills such as fund raising and promotion. This is done to create a strong and effective group that can carry out the work of the organization. It is because of this already existing strength that religious organizations are perfect groups to work on environmental concerns that will effect change. This ability to pull together leaders and volunteers into a well-organized group can provide a quick response team to address local concerns, provide educational opportunities, and complete projects. Congregations also represent substantial physical and financial assets. They have the capabilities to self-support programs, provide leadership, and provide organizational skills that can educate whole populations on becoming a more sustainable society in a sustainable world.
From my own experience I can see that there is a common morality which ties a congregation together and is likely to be perpetuated through future generations. This common morality can also help to perpetuate ideas and concerns about the state of our world today. One concern that the Lambeth Conference addressed was that all people recognize the sanctity of all life, especially the rights of future generations. For many faith-based groups this is a fundamental belief that is enjoying resurgence. As this belief becomes part of a group’s common morality and important to the group, the ideas and concepts regarding it will have a chance of being continued well into the future.

The ability to model practices and programs for similar groups may be one of the easiest ways that a congregation can effectively work for change and ensure the responsible use and recycling of natural resources. Groups of similar organizational backgrounds will often look to others for examples. Particularly, those groups such as the Episcopal Church, which work as part of a hierarchy, will be called upon by their leaders to share with other churches and surrounding groups. This could potentially lead to a domino effect of enormous potential
as each church is engaged to model their programs, ideas, and concepts.

Religion changes society by providing meaning to one's worldview. Today, "82.4% of the world's populations are recorded as adherents to some form of organized religion" (Gardner, 2002, p. 17). Through political influence, leadership and organizational skills, shared morality, and modeling, congregations can provide an important and potentially colossal link between the environmental concerns of today and the environmental changes of tomorrow.
CONCLUSIONS AND RECOMMENDATIONS

Conclusions

Many experts in the field of environmental education tell us that EE must take place both inside and outside the traditional classroom to students of all ages and at all levels. They also tell us that it is a necessity to develop a citizenry that can solve the environmental issues we face today. The 1998 Lambeth conference told Anglican congregations around the world that they needed to find ways to become responsible stewards of the Earth or the consequences would be catastrophic. Unfortunately even though they resolved their selves to recognizing many of the world’s environmental concerns they did not make any recommendations or suggestions on how individual congregations should set about to resolving these concerns. This project is a perfect meshing of the two.

The project itself was designed to fill the void left by the Lambeth conference by drawing on both the theoretical principals of environmental education and the theological reasoning behind becoming stewards of creation. Ecology and religion have had a long historical association. In the past this relationship has had many
negative connotations. Today, we see this relationship shifting into a more positive stance where churches are looking for ways to become care takers instead of consumers. This particular project is an important link between ecology and religion that will help move environmental education forward.

Recommendations

The guidebook was designed to be user friendly. However, I do have a few recommendations for those congregations who want to use it to develop environmental education programs for their communities. These recommendations will help to keep the project components effective.

The most important recommendation I can make is that when beginning the initial program it might be helpful to recruit the first volunteer leaders from members with experience in teaching. This will make planning and implementing the actual program a little easier. Leaders with some teaching experience will be able to become familiar with the curriculum guides and resources quickly. They will also be more familiar with writing lesson plans and organizing field trips.
Another recommendation centers on the actual planning of activities. When conducting any of the activities the leaders should anticipate any problems, such as unclear directions or unrealistic expectations due to time constraints, long before the activity takes place. Many of the activities found in commercial curriculum guides are written in narrative form. To help the activity run more smoothly it may become necessary to rewrite the activities into a lesson plan format.

My final recommendation concerns the worship bulletin. The Sunday service bulletin can be modified to meet the needs of any denomination. All of the readings listed in the service came from the King James biblical version and were not modified in any way. The emphasis on the readings is based on the environment and either the importance for carrying for Gods' creation or the beauty associated with it. Other readings can be substituted for these, but I would recommend that they remain along the same theme. The service can also be modified for other religions as well. Again the importance of the service is based on recognizing our place in the environment and celebrating the beauty of the world and the importance of caring for it. When using this emphasis any type of
service can be modified into a one with an environmental undertone.
APPENDIX A

LEADERSHIP DEVELOPMENT
LEADERSHIP DEVELOPMENT

The establishment of this new environmental education program will begin with a leadership training session. Through this training session all participants will develop a uniform understanding of both the program’s goals and its philosophies.

The Leaders' Workshop was designed for two reasons. First, this workshop will help equip anyone who is interested in leading activities or organizing events with the necessary tools and skills needed to be an effective leader within the program. Second, this workshop will not only insure continuity of the work produced, but also the unification and organization of the volunteer leaders involved in the program.

Additional components of the Leaders' Workshop include a resource list and a Sunday bulletin. A list of resources will be introduced to the volunteer leaders. This resource list will provide anyone who is interested in planning activities or events the flexibility of being able to expand the program into areas of their own personal interest. This list is by no means exhausted; it only represents a small number of available guides and resources.

A completed Sunday service bulletin has also been included as part of the leadership development. It will allow congregations to include Sunday worship services as part of the program. This will help provide a sacred connection between the work being done by the congregation and the divine reasons for conducting this work.
LEADERS’ WORKSHOP

AGENDA

WELCOME AND INTRODUCTIONS

OPENING PRAYER

Leader: The Lord be with you
Response: And also with you
Leader: Let us pray

Today we come together to work for a widespread conversion and spiritual renewal in order that human beings will be restored to a relationship of harmony with the rest of creation. We pray that this relationship will be informed by the principles of justice and the integrity of every living being, so that self-centered greed is overcome; and that we may recover the Sabbath principle, as part of the redemption of time and the restoration of the divine rhythms of life. We pray for all this in the Spirit of Jesus Christ. Amen

WHERE DOES THE CHURCH STAND?

The World Wide Anglican Communion believes “that unless human beings take responsibility for caring for the earth, the consequences will be catastrophic.” This is because of:

- Overpopulation
- Unsustainable levels of consumption
- Poor quality of water
- Air pollution
- Eroded and impoverished soil
- Forest destruction
- Plant and animal extinction
- That the loss of natural habitats is a direct cause of loss of life and opportunity for millions of indigenous people and is causing the extinction of thousands of plant and animal species. Unbridled capitalism, selfishness and greed cannot continue to be allowed to pollute, exploit and destroy what remains of the earth’s indigenous habitats;
- That the future of human beings and all life on earth hangs in balance as a consequence of the present unjust economic
structures, the injustice existing between the rich and the poor, the continuing exploitation of the natural environment and the threat of nuclear self-destruction;

- That the servant-hood to God's creation is becoming the most important responsibility facing humankind and that we should work together with people of all faiths in the implementation of our responsibilities; that we as Christians have a God given mandate to care for, look after and protect God's creation.

(House of Bishops, 1998, p. 9)

WHAT IS OUR PURPOSE?

Our purpose as leaders in this program is to commit ourselves to:

- Work for sustainable society in a sustainable world;
- Recognize the dignity and rights of all people and the sanctity of all life, especially the rights of future generations;
- Ensure the responsible use and re-cycling of natural resources;
- Bring about economic reforms which will establish a just and fair trading system both for people and for the environment.

INTRODUCE GUIDEBOOK

*Stewardship of Creation: A Guidebook for the Episcopal Church*

- Introduce the resource page (Appendix A).
- Introduce the service bulletin (Appendix A).
- How to put together a lesson plan (Appendix A).
- Examine the sample activities in the guidebook (Appendix B). Discuss any other activities that volunteers may be interested in including in the program.
- Introduce the Campout material (Appendix C).
- Introduce the Issues Workshop (Appendix D).
- Discuss scheduling.

WHAT ARE THE POSITIVE EFFECTS OF AN ENVIRONMENTAL EDUCATION PROGRAMS?

Conduct a group discussion.
RESOURCE PAGE

The following list of resources has been assembled to help expand the program once it has been established. These resources provide opportunities for more in-depth study as well as activities for all ages. This is by no means a complete list of all available curriculum guides or activity books.

CURRICULUM GUIDES

Project Food, Land & People: Resources for Learning
FLP
P.O. Box 7600
Chandler, AZ 85246-7600
www.foodlandpeople.org

Global Warming and the Greenhouse Effect
Lawrence Hall
University of California, Berkley, CA 94720
www.lhsgems.org

CAMP ACTIVITY GUIDES

Guide to Happy Family Camping
By Tammerie Spires
Good Books
ISBN # 156148248X

The Kids Campfire Book: Official Book of Campfire Fun
By Jane Drake & Ann Love
Kids Can Press, Ltd.
ISBN #1550745395

Stories for Around the Campfire
By Ray Harriot
Campfire Publishing Company
ISBN #0961765305

Kids Camp! Activities for the Backyard or Wilderness
By Laurie Carlson and Judith Dammel
Chicago Review Press
ISBN #1556522371
LEN T E N O R A D V E N T S T U D Y R E S O U R C E S

Invoking the Spirit
By Gary Gardner
Worldwatch Institute
ISBN # 187807167X

Inspiring Progress: Religions' Contributions to Sustainable Development
By Gary T. Gardner
W.W. Norton and Company
ISBN # 0393328325
ADDITIONAL RESOURCES

Trained facilitators deliver Project Learning Tree, Project WET, Project WILD, and Project WILD Aquatic materials through professional development workshops. At these workshops, participants engage in cooperative, hands-on learning, experiencing the activities as they are presented by skilled facilitators and their peers.

Upon completing the training, participants receive the curriculum guides listed below as well as other water resource education materials, and leave prepared and inspired to teach about the environment in their classroom or informal educational setting.

For more information please contact the organization directly at the address or websites listed below.

Project WET
201 Culbertson Hall
Montana State University
Bozeman, MN 59717-0570
www.projectwet.org

Project WILD
5555 Morningside Drive, Suite 212
Houston, TX 77005
www.projectwild.org

Project WILD Aquatic
5555 Morningside Drive, Suite 212
Houston, TX 77005
www.projectwild.org

Project Learning Tree
1111 Nineteenth Street, NW, Suite 780
Washington, D.C. 20036
www.plt.org

- Municipal Solid Waste Module
- Green Works: Connecting Community Action and Service Learning Module
- Focus on Risk Module
- Places We Live Module
- Project Learning Tree, PreK-8 Curriculum Guide
CHILDREN'S LITERATURE

*From Seed to Pumpkin*
By Jan Kottke
Children's Press
ISBN # 0516235095

*Human Impact (The Restless Sea)*
By Carole Garbusn Vogel
Franklin Watts
ISBN # 0531166805

*A River Ran Wild*
By Lynn Cherry
Voyager Books
ISBN # 0152163727

*A Child's Book of Birds*
By Kathleen Daly
Doubleday
ISBN # 038509745X
O God, Holy Spirit, whose breath gives life to the world
and whose voice is heard in the soft breeze,
we need your strength and wisdom.
Come to us and be among us;
Come as the wind and cleanse us.
We join with your Creation and with each other
to sing the song of the stars;
to rejoice in the sunlight;
and to refresh the air.
THE LITURGY OF THE WORD

OPENING HYMN - #8

COLLECT FOR PURITY

GLORIA – S274

COLLECT OF THE DAY

O merciful Creator, whose hand is open wide to satisfy the needs of every living creature: Make us, we beseech thee, ever thankful for thy loving providence; and grant that we, remembering the account that we must one day give, may be faithful stewards of thy bounty; through Jesus Christ our Lord, who with thee and the Holy Spirit liveth and reigneth, one God, for ever and ever. Amen.

FIRST LESSON

A reading from Isaiah

Lift up your eyes on high, and behold who hath created these things, that bringeth out their host by number: he calleth them all by names by the greatness of his might, for that he is strong in power; not one faileth.

Isaiah 40:26

Reader: The Word of the Lord  People: Thanks be to God

Psalm 104 10-25

SECOND LESSON

A reading from Romans

For the invisible things of him from the creation of the world are clearly seen, being understood by the things that are made, even his eternal power and Godhead; so that they are without excuse. Because that, when they knew God, they glorified him not as God, neither were thankful; but became vain in their imaginations, and their foolish heart was darkened. Professing themselves to be wise, they became fools, And changed the glory of the uncorruptible God into an image made like to corruptible man, and to birds, and four footed beasts, and creeping things.

Romans 1:20-23

Reader: The Word of the Lord  People: Thanks be to God

SEQUENCE HYMN #416
THE GOSPEL

*Deacon:* The Holy Gospel of our Lord Jesus Christ according to Matthew

*People:* **Glory to you, Lord Christ**

Everyone then who hears these words of mine and does them will be like a wise man who built his house on the rock. And the rain fell, and the floods came, and the winds blew and beat on that house, but it did not fall, because it had been founded on the rock. And everyone who hears these words of mine and does not do them will be like a foolish man who built his house on the sand. And the rain fell, and the floods came, and the winds blew and beat against that house, and it fell, and great was the fall of it.”

*Matthew 7:24-27*

*Deacon:* The Gospel of the Lord

*People:* **Praise be to you, Lord Christ**

HOMILY

CORPORATE SILENCE

THE NICENE CREED

PRAYERS OF THE PEOPLE

CONFESSION OF SIN

THE PEACE

THE HOLY COMMUNION

OFFERTORY HYMN - *Lift up your heads ye mighty gates*

*Presentation of the gifts*

*Celebrant:* All things come of you, O Lord

*People:* **And of your own have we given you.**

EUCHARISTIC PRAYER C

*Sanctus & Benedictus - S130*

THE LORD’S PRAYER

The Breaking of the Bread
COMMUNION

COMMUNION HYMN - #340

POST COMMUNION PRAYER

CLOSING HYMN - #412

DISMISSAL

Deacon: Remembering that the creator has opened wide his hand to satisfy the needs of every living creature, Let us go forth into the world, rejoicing in the power of the Spirit

People: Thanks be to God.

PRAYERS OF THE PEOPLE

(bulletin insert)

We pray that your church will find ways to care for your glorious earth, our planet home, with its beautiful depths and soaring heights, its vitality and abundance of life, and together we ask that You:

Teach us, and show us the way.

We pray that the leaders of our city, our state, our country and all the governments of this world will find the wisdom to protect the mountains, the high green valleys and meadows filled with wild flowers, the snows that never melt, the summits of intense silence, and we ask that You:

Teach us, and show us the way.

We pray that the pure waters that once rimmed the Earth, horizon to horizon, that flowed in our rivers and streams, that fell upon our gardens and fields, will return to all parts of the world and we ask that You:

Teach us, and show us the way.

We pray for the land which grows our food, the nurturing soil, the fertile fields, the abundant gardens and orchards, and we ask that You:

Teach us, and show us the way.

We pray for the forests, the great trees reaching strongly to the sky with the earth in their roots and the heavens in their branches, the fir and the pine and the cedar, and we ask that You:

Teach us, and show us the way.

We pray for the creatures of the fields and forests and the seas, our brothers and sisters the wolves and deer, the eagle and dove, the great whales and the
dolphin, the beautiful butterfly and bee who share our home, and we ask that You:  
Teach us, and show us the way.

We pray for the moon and the stars and the sun, who govern the rhythms and seasons of our lives and remind us that we are part of a great and wondrous universe, and we ask that You:  
Teach us, and show us the way.

We remember all those who have lived on this earth, our ancestors and our friends, who dreamed the best for future generations, and upon whose lives our lives are built, and with thanksgiving, we call upon them to:  
Teach us, and show us the way.

And lastly, we call upon all that we hold most sacred, the presence and power of the Great Spirit of love and truth which flows through all the universe to be with us to:  
Teach us, and show us the way.
Today, we in the United States are driving much more than we were in years past, and our driving is having harmful consequences. Pollution from vehicles has a major impact on human health and the rest of God's creation. It contributes significantly to the threat of global warming. Our reliance on imported oil from unstable regions threatens peace and security.

Consider these facts.

- In 1994, nearly 60 percent of U.S. households owned two or more cars, and 19 percent owned three or more.
- Since 1970, vehicle miles traveled have increased 149 percent while U.S. population increased 39 percent.
- The 2000 census revealed that three out of four workers drive to work alone, an increase from both 10 and 20 years ago. Less than 5 percent use public transportation and less than 3 percent telecommute.
- Fuel economy for passenger vehicles peaked in 1988 and is at a 22-year low. This is due to the increase in vehicles from the "light trucks" category (SUVs, vans and pickups). Such vehicles are allowed by the federal corporate average fuel economy (CAFE) standards to use one-third more fuel than cars. Since the CAFE law passed in 1975 they have seen explosive growth (SUVs have increased by a factor of 10 since 1975) and now account for nearly 50 percent of the market.
- Tailpipe pollution from cars and trucks accounts for almost one-third of outdoor air pollution, including approximately half of the pollution that creates smog.
- Production and distribution of gasoline accounts for half of the toxic air pollutants released (e.g. benzene).
- Pollution from cars and trucks can help to cause acute respiratory problems, significant temporary decreases in lung capacity, inflammation of lung tissue, asthma attacks, impairment of the body's immune systems, and can increase a person's risk of cancer.
- For the first time recent studies have linked outdoor air pollution to birth defects, low birth weight, premature births, stillbirths, infant deaths and healthy, active children becoming 3-4 times more likely to develop asthma.
- In 1996 health-care costs due to transportation pollution totaled $56 billion.
- The largest source of global warming pollution in the United States is transportation (over 30 percent in 1998), and the United States is the world's largest emitter of greenhouse gases.
• An additional 80-90 million poor people could be at risk of hunger and malnutrition later in the 21st century simply because of global climate change.
• Global warming could increase the number of people impacted by flooding by 20-50 million.
• Human health risks will be greater in developing countries due to the potential for increased geographical distribution of infectious diseases such as malaria, dengue fever, yellow fever and encephalitis. For example, by 2080, an additional 300 million people could be at risk of malaria due to global warming.
• Large cities in the United States may experience, on average, several hundred extra deaths per summer due to global warming.
• In 2001 the United States imported over 50 percent of the nation’s oil, with about 25 percent coming from the Middle East.
• The United States spends $20-40 billion a year to defend Middle Eastern oil resources.
• The United States sends $200,000 overseas each minute to buy oil products.
• By 2020 oil imports are projected to be 64 percent.
• Up to 75 percent of the world’s oil reserves are in the Middle East and are controlled by the OPEC oil cartel.
Putting Together a Lesson Plan

The eight representative activities in the guidebook were adapted from curriculum guides found on the Resource Page. Using the following formats will help to turn any lesson into a well organized activity.

**Standard Lesson Plan**

The following outline represents a standard lesson plan format.

**AGE:** Applying an age parameter will help to remind you what activities are appropriate and inappropriate for the group you will be working with. If you have children attending that are older that the age parameter, pair them with the younger children. They can then participate in the activity, and help the younger children participate as well.

**GOAL:** This will help you decide what you want the participants to learn. There can be more than one goal, but no more than three. This will help to keep your activity very focused.

**MOTIVATION:** Plan something that will get the students' attention. It could be as simple as introducing some new vocabulary words or as elaborate as dressing in a costume.

**INSTRUCTIONAL STRATEGY:**

**Procedures** (broken down into steps): Put the steps for completing each activity in the order that they will occur. This will keep you organized and on task.

Model: A portion of the activity that is done by the instructor, such as displaying and discussing an animal.

Guided Practice: A portion of the activity that is completed with the assistance of the instructor. Guided practice activities might include discussing a reading and then writing answers to questions on a chart.

Independent Practice: A portion of the activity that students complete on their own.

**STUDENT GROUPING:** How are the students grouped? Whole class working together, small groups or individuals? This will help you when it comes time to transition from one size group to another.

**MATERIALS:** Everything that is needed to complete the entire activity.
TEACHER PREPARATION: What does the teacher need to complete prior to the activity? This will insure that you are prepared for the lesson.

DURATION: How long is the activity planned to take? This will help to keep you on task.

5E Lesson Plan

The following outline represents a 5E lesson plan format. This format is very useful when planning for science lessons. Each “E” can be moved into whatever order the teacher would like to apply them.

OBJECTIVE: This is where you decide what you want the participants to learn. There can be more than one goal, but no more than three is recommended. This will help to keep your activity very focused.

ENGAGE: Plan something that will hook the students’ attention.

Activity #1 Procedure: List all the directions necessary for completing the activity in order.

EXPLORE: A portion of the lesson that allows for the students to try an activity with support from the instructor or a partner.

Activity #2 Procedure: List all the directions necessary for completing the activity in order.

EXTEND: A portion of the lesson that allows the students to try an activity on their own.

Activity #3 Procedure: List all the directions necessary for completing the activity in order.

EXPLAIN: This is where the teacher will explain the concepts that the new students have been learning.

Activity #4 Procedure: List all the directions necessary for completing the activity in order.

EVALUATE: This is an opportunity to see what the students have learned. This can be done through illustrations, journal writing, or a worksheet.

Activity #5 Procedure: List all the directions necessary for completing the activity in order.
APPENDIX B

SAMPLE ACTIVITIES
SAMPLE ACTIVITIES

This section consists of eight sample activities, four for adults and four for children and families. These activities were chosen for their ability to be both engaging and educational.

The adult activities were specifically chosen for their ability to build on preexisting knowledge and provide stimulation for further discussion on each of the topics. Background information was also included for each of the specific activities to help supply additional facts that may be unknown to the participants. Each activity includes a detailed lesson plan, as well as participant’s pages, materials lists and ideas for extensions.

Family and youth activities were chosen to accommodate various age groups. They too are set up in detailed lesson plans which include participant pages, and materials list. However, the family and youth activities also include websites for students to visit, as well as the inclusion of children’s literature in each lesson.
NATIVE ROOTS

AGE: Adult

DURATION: 60 minutes

OBJECTIVE: One reason for plants and animals becoming endangered and extinct is not just habitat loss but the introduction of new species. The purpose of this activity is to explore the role of introduced species in local ecosystems and to recognize the importance of considering the possible effect these new introductions may have on the local ecosystem.

MATERIALS: World map, colored yarn (a different color for each group), scissors, Native Roots background information page (copy for each participant), participant page (copy for each participant), pencils, reference materials (books, encyclopedias, internet materials, magazines, etc), index cards, canvas bag or hat.

SPECIES LIST -

Exotic plants: Paperbark Tree, Water Hyacinth, Eurasian Milfoil, Eucalyptus, Purple Loosestrife.

Native plants: Desert Grape, Jojoba, Giant Clover, Golden Current.


Native animals: Tiger Salamander, Western Whiptail, Kingsnake.

TEACHER PREPARATION: Write the names of native and exotic plants and animals on index cards (one species per card) from the list provided. Collect research materials mentioned in the materials list. Make copies of participant page and background information page.

VOCABULARY:

Benefit – not causing damage to an ecosystem or species

Liability – causing extensive damage to an ecosystem or species or requiring funding to eradicate it.

Tradeoff – both a benefit and a liability
PROCEDURE:

Activity #1
Step #1 Introduce the vocabulary words listed above. Have participants read and discuss the background information page.

Activity #2
Step #1
1. Divide the class into pairs of participants.
2. Have each pair choose an index card from the bag (or hat).
3. Have each pair take a few minutes to discuss among themselves and decide if they believe that their species is native or exotic.
4. Have each pair reveal their belief about their species, and check the answer.
5. Distribute the participant page and explain the procedures for the activity.
6. Have each group research their species and complete the participant page.
7. Have participants create a network of the exotics they studied on the world map. Stretch a strand of yarn for each group from the location of the introduction to the site of origin of each organism.

Step #2 Using the data projector and laptop visit the website http://www.laspilitas.com as a group. (If you do not have access to this type of equipment you may want to suggest that participants visit this site on their own).

Step #3 Lead a discussion of what was revealed during this activity, any unknown facts, concerns, new information about invasive species, etc.
EXTENSION: Develop a list of ways that accidental introductions can occur and ways to help insure that this doesn't continue to happen. Discuss the importance of laws and regulations that prevent, control, and/or allow introductions of species. Investigate how humans have re-introduced some wildlife species into their original habitat where the species had previously become extinct. Have the participants distinguish some differences and similarities between “re-introductions” and “exotics.”

Adapted from Project WILD Aquatic Curriculum Guide
NATIVE ROOTS

BACKGROUND INFORMATION

An exotic plant or animal is one which does not naturally occur in that specific location. It "arrived" in that location through the intentional or accidental action of humans. Exotics that survive always affect local ecosystems. Biologists usually judge the consequences of these impacts based on how much they add to or detract from some important human endeavor. They also attempt to examine the effects upon other species of animals, plants, and whole ecosystems.

Over the years people have introduced various plants and animals into the waters and lands of our continent. Some introductions have been intentional and some accidental. Effects from the introduction of exotic or non-native species can range from detrimental to beneficial. Some introductions may have no noticeable effect. Many times humans have a limited understanding of the variety of effects that may result from an introduction. Some introductions may have both negative and positive effects, depending on one's perspective.

Both brown trout and scaled carp were intentionally introduced into American waters from Europe in the 1800s. Scaled carp are bottom insect feeders; they tend to destroy the spawn as well as the nesting and feeding sites of other fish. Carp also damage the suitability of some vegetation for waterfowl. Brown trout have adapted well and do not produce extensive negative side effects for other fish. They also are valued by many people who fish.

Another intentional introduction of an exotic species was the water hyacinth. These beautiful plants originally came from Brazil in the 1800s. Once introduced, they spread rapidly. They are now choking many of the waterways of the south. They live as a thick mat of floating vegetation that interferes with boating and cuts off sunlight that benefits other species.
Accidental introduction of exotic species has taken its toll in damaging effects on habitat for native species. Lamprey eels common to the ocean waters from Florida to Labrador swim inland to fresh waters to spawn. Natural barriers previously prevented them from reaching the Great Lakes. However, once shipping canals were opened up, the lamprey easily found its way to the Great Lakes. Once there, the lampreys decimated populations of native fish species. If they did not kill the fish outright, the eels injured and weakened them so that they became diseased and died. Another species accidentally introduced into the United States was the Norway rat. It arrived in the new world in ships coming from Europe. Its voracious habits result in an estimated 2.5 billion dollars in damage to commercial products each year. Untold damage occurs to other species and habitat due to its presence.

Biologists have attempted to minimize or control the damaging consequences that have resulted from introduction to exotics. These efforts are costly and often create problems of their own. For example, chemicals have been produced to kill lamprey eel larvae and a fish called the white amur is being introduced to feed on the hyacinth. Millions are spent of rat eradication each year.

Early in our country's history there were no laws regarding the introduction of new plant or animal species. Now, most states have laws that regulate this activity to prevent "mistakes" similar to those made in the past before people knew what could happen.

There are always trade-offs involved with the accidental or intentional introduction of a species into an ecosystem. Sometimes the impacts are difficult to judge ahead of time. Laws are intended to force a careful review of pros and cons before the intentional introduction of a new species is allowed. Introduction of a species that is judged or anticipated to have mostly detrimental impacts is usually not allowed.

*Adapted from Project WILD Aquatic Curriculum Guide.*
Determine the following facts about your species:

1. Was the species introduced intentionally (and why) or introduced accidentally (and how)?

2. What was its country or area of origin?

3. What is its impact on the area?
4. Create a two column list of benefit or liability for the ecosystem.

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5. What are the positive and negative effects?

6. What are the unknown effects or questions of concern?

7. Identify any potential tradeoffs.
8. Evaluate the appropriateness of a particular introduction using your personal judgments, as well as identifying and describing your own criteria. You might want to consider the potential introduction of a species that is common somewhere else but is not yet in your area.
THE POPULATION GAME

AGE: Adult

DURATION: 60 minutes

OBJECTIVE: The purpose of this game is for participants to simulate and examine a variety of issues that affect how much building, water consumption and agriculture the land will support based on population growth.

MATERIALS: Game kits for each group, pencils, participant data sheet, summary question sheet, background information.

TEACHER PREPARATION: Copy data sheets, copy summary question sheets, copy background information page. Prepare the game kits. Each game kit (5 players each) contains the following:

- 9"X18" piece of brown paper divided into 16 "plots";
- 64 water drop pieces;
- 64 green tree pieces;
- 16 houses;
- 50 people;
- 64 beans;
- One cup labeled "Allocated Water";
- Large zip lock bag for storage;
- Copy of the game instructions page.

PROCEDURE:

Step #1

- Have participants read from the background information page and discuss the contents.

Step #2

- Introduce the "Population Game" with the following statement: The purpose of this game is for participants to see first hand how choices in life style will eventually put unrealistic strains on the land which we live on. Also when we choose to limit our consumption of natural resources the end results are surprisingly different.
SESSION ONE

- Go over the rules and procedures of the game. Check to see that each participant understands how to play.
- Read "Setting the Stage."
- Go over the basic guidelines for session one.
- Remember to monitor each game for questions about how to play.
- At the end of round nine have each team report their results.

SESSION TWO

- Go over the basic guidelines for session two.
- In this session each team designs their own guidelines for the use of the land.
- Upon completion of each round have participants complete the data on the participant data sheet.

Step #3

Have each team report to the whole group (1) what their new guidelines were and (2) what were the new end results for their particular game. Lead a discussion of the end results and what the implications for the future may be.

EXTENSIONS:

Play the game but start with less water and a prairie instead of a forest to represent the situation that settlers found in the Midwest. Or start with a dry prairie and groundwater representing the situation in the Western United States; the water must be allocated for irrigation of cropland.

Play the game simulating the region that the participants live in currently. Session one guidelines will represent the historical perspective of the area, session two showing how the population is growing and needs to expand into undeveloped areas.

Adapted from Project Food, Land, and People.
THE POPULATION GAME

BACKGROUND INFORMATION

Population growth is one of the greatest challenges our world faces today. Few of us are really aware of the consequences of unchecked population growth, be it of rabbits, deer or people. Carrying capacity is an issue people need to understand.

Carrying capacity is the number of individuals the land can support indefinitely. A given piece of land, whether it is an acre or a continent, can support only a limited number of organisms. For example, when mountain lions were hunted to extinction on a plateau in Arizona, deer, the lions' prey, grew without control. Within a few years, many deer began to starve. The deer population had exceeded the ability of the plateau's food supply to support it.

Some people may not understand these relationships. We tend to think that the carrying capacity of land is limitless. Until recently, we have converted grasslands and forests to cropland to increase the land's ability to feed us. As a result, each U.S. farmer produces food and fiber for 129 people. It cannot be assumed, though, that our ability to increase the carrying capacity is unlimited. Also, it cannot be assumed that conversion of land can be done everywhere in the world.

Earth has been able to carry relatively small human populations practicing subsistence agriculture with ease. For instance, farmers in the Amazon basin practice a form of shifting agriculture called "slash and burn" in which forest material is cut, dried, and burned. Crops are planted immediately and thrive for several years because of the nutrients from the ashes. The soil is depleted in just a few years, however, and must be abandoned for a new part of the forest, where the process is repeated. When the farmers were few in number,
the rain forest suffered no long-term permanent effects because the land was able to recover.

In more recent times, the burgeoning human population has created greater demand on land, resulting in environmental changes few could foresee a generation ago. Some examples include nitrate pollution of groundwater, urban sprawl that develops over a million acres of farmland in the U.S. each year, and the selenium pollution of bird habitats in semiarid regions.

If people consciously alter the environment to support more of our number, then we must understand the effects of those alterations. We also need to understand that people can make conscious decisions about development of the land and the use of natural resources such as trees and water. Connecticut, for example, was 70 percent forested at settlement; over time it dropped to as little as 30 percent, through conscious decisions to alter the course of deforestation, the state is once again 70 percent covered with trees.

The population of a given area will likely fluctuate over time for any number of reasons. People may migrate in and out of an area in response to factors such as economics, lack of natural resources, drought, and so on. Populations also change as a result of wars, natural disasters, diseases, famines, and natural deaths.

Adapted from Project Food, Land, and People.
GAME PIECE MASTER SHEET - Homes

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63
The Population Game

Game Master Piece Page - People
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DATA INFORMATION

What are the guidelines for this game:

Predict the number of people this land can support:
# NEW GUIDELINES DATA SHEET

(One for each team)

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DATA INFORMATION

What are the NEW guidelines for this game:

Predict the number of people this land can support:
GAME INSTRUCTIONS

Directions: Chooses one person on the group to read the instructions. Begin with “Setting the Stage.” Once the game board is set up, read the basic “Game Guidelines” for Session one.

Setting the Stage: The carrying capacity of an area is the number of individuals the land can support forever. In this game, we will compare the carrying capacities of people and several imaginary land areas with resources. We will discover how decisions regarding land and resource use could affect carrying capacity.

The game board is divided into 16 potential “farms.” Before people arrived, a forest teemed with a variety of life forms, including birds, large and small mammals, fish, and insects. To represent this environment, four tree symbols are placed on each plot. An abundance of water flowed in rivers, lakes and streams. To symbolize this, four water symbols are placed on each plot. The game board is now set up and should look like this.

GAME BOARD SET-UP:
Basic Game Guidelines for SESSION ONE:

Each family builds one house on one of the plots.

The addition of each house requires the removal of two trees. This symbolizes the chopping down of trees to build the house. Only one house can be built on the same plot.

For each person added to the board, remove one water symbol to the Allocated Water Cup.

The conversion of forest to farmland for crops is represented by one bean replacing one tree.

When the resources (water or trees) run out or when there are no more unused plots for new houses, the game is over.

ROUND 1:

When the first family arrives, they cut down trees, build a house, raise crops, and consume water.

- Select any unoccupied plot and replace two trees with a house and four people (a couple and their two children).

- Move four water symbols, one for each person living here, to the cup marked Allocated Water.

- The couple now begins to farm. They clear land for this purpose — one tree for each person. Remove four trees and replace with beans to represent the conversion of forest to farmland for crops (this means you will now have removed a total of six trees).

The Recorder records the resource amount for round 1 on the Data Sheet.

ROUND 2:

Next, imagine the arrival of another family. As before, select an unoccupied plot, replace two trees with a house and four people, move four more water symbols to allocated water, and replace four trees with beans.

After the Recorder records the resource amounts for Round 2, continue the same way for round 3 and so on following the basic game guidelines.
Game Guidelines for SESSION TWO:

Begin the session by asking:

- What were some of the guidelines used in the early settlers’ simulation game (session 1)?

- What are some things we can do to change how we interact with the land?

- If you could change one guideline, what would it be? Why?

*Explain to participants that by changing guidelines we can affect the relationship between land development and the use of natural resources and, therefore, the carrying capacity of the land. Tell participants that in this session each group is to develop new guidelines or change the guidelines from session one to conserve and renew resources (for example, participants might require all settlers to use less wood when building homes or to replant trees).*

Encourage participants to consider issues such as water conservation, soil erosion, death, imports, or limits on growth. For instance, they might use the following as a new guideline. “After 10 trees are removed from the board, move one water symbol from the board area to a “Polluted Water” area. Remove one bean because of soil erosion and loss of soil fertility. As a result, the field becomes barren; participants will need to convert more virgin forest into farmland by removing a tree and replacing it with a bean. Repeat after the next 10 trees are removed.”

Distribute the “New Guidelines Data Sheet” to the Recorder in each group. Give participants time to generate new ideas and have the Recorders list the new guidelines of the “New Guidelines Data Sheet.” The Recorder guides the playing of the game again. Participants continue the game until the game pieces or resources run out.

*Have participants discuss the game as played with the new guidelines compared to the game played in session one Use the summary questions to direct the discussion.*
SUMMARY QUESTIONS
(One for each team)

Directions: Record the new guidelines for your groups on this page. Discuss and write your groups' responses to five or more of the following questions:

NEW GUIDELINES:

1. What did you learn? What conclusions can you draw from this game?

2. How did the game change with your new guidelines? Which did you like better? Why?

3. What is the maximum number of people this land could support?

4. If two families arrived in each round instead of one, how would the results differ? How would the results differ if only one person had arrived in each round?

5. Give some examples of ways in which natural resources are managed today.

6. How have people managed to increase the carrying capacity of their land? What are some trade-offs that occur when people attempt to increase the land's carrying capacity?
SUMMARY QUESTIONS CONT.

7. Only 3 percent of the world’s land is suitable for agriculture. Why cannot more be used?

8. Make a list of actions people might take or have taken when they needed more space or more resources.

9. Examine the list of trade-offs you made for question number 6. What might be the effect of the trade-offs? For example, if people were to migrate from one region to another, what might be the effect on the region they left? On the region they entered?

10. While the world’s resources are limited human ingenuity has continuously increased the Earth’s human carrying capacity. What can you do to help “sustain” Earth’s carrying capacity? What are the relationships between carrying capacity and natural resources?
POLLUTION PUZZLE

AGE: Adult

DURATION: 60 minutes

OBJECTIVE: The purpose of this activity is for participants to examine some of the possible consequences of human-caused pollution for wildlife, people and the environment.

MATERIALS: cooking oil, motor oil (please have a plan for disposing of these oils properly), shallow containers, plastic containers, eye dropper, hand lenses, feathers (natural), liquid detergent solution, hard boiled eggs, plastic gloves (food handler), measuring tapes or rulers, desk light, white paper, pencils, paper towels, participant pages.

TEACHER PREPARATION: Mix detergent solution (one part dishwashing liquid to 100 parts water), boil eggs, copy participant pages.

PROCEDURE: Distribute the background information for people to read.

Activity #1

1. Divide class into groups of 3-4 people. Each team will have a shallow pan partially filled with water. Have each group add 1 teaspoon of oil to their pan.

2. Have participants observe the interaction of oil and water.

3. Using a ruler or measuring tape, have participants measure the area covered by the oil.

4. Have participants complete the calculations on the participant page.

5. Have participants discuss and compare estimates with other groups.

Activity #2 (Instruct the group to follow these procedures).

1. Put enough oil in a small container to submerge three hardboiled eggs.

2. Add the eggs.

3. Put the eggs under a good light (desk lamp), and watch closely.
POLLUTION PUZZLE

4. Remove one egg after 5 minutes and examine it – before, during and after peeling of the shell (remove the excess oil from the outside before attempting to peel the egg).

5. Remove the second egg after 15 minutes and the third egg after 30 minutes, repeating the procedure, and examining each carefully.

6. Discuss the observations.

Activity #3 (Instruct each group to follow these procedures).

1. Examine a feather with a hand lens and sketch their observations on the participant page.

2. Have the participants dip the feather in water for 1-2 minutes, examine it again with the hand lens, sketch their observations and compare them to the original observations.

3. Place the feather in oil for 1-2 minutes; then examine it with the hand lens, sketch it, and compare the drawing with the other sketches.

4. Clean the feather in detergent, rinse it in water and dry it. Examine it with a hand lens, sketch it, and compare the drawing to the previous drawings.

5. Discuss findings.

EXTENSION: Contact the local city or state environmental department to determine what forms of pollution cause problems in your area. A local wildlife rehabilitator or wildlife pathologist can provide insight into common pollution problems for nearby wildlife as well as give information about the impact of improperly disposed of toxins on local wildlife population.

Adapted from Project Wild Aquatic Curriculum Guide.
POLLUTION PUZZLE

BACKGROUND INFORMATION

The impacts of environmental pollution are often difficult to see. A major oil spill, however, provides dramatic evidence of potential harm on wildlife. Oil spills along coasts affect many parts of the environment, both nonliving such as water, ocean bottom, and shoreline and living such as birds, marine mammals and shellfish. Examples include damaging feathers of water fowl, killing embryos when oil seeps into eggs, suffocating fish when gills are clogged and killing marine and terrestrial animals by ingesting food and water contaminates by the oil. Oil-soaked animals may try to clean themselves and, in so doing, often ingest oil that kills them.

Federal, state, and local spill-response teams, as well as organizations and industry representatives, have prepared contingency plans for oil spill emergencies. When a spill occurs, the teams swing into action using the plans. Trained responders try to keep oil away from animals and marshes with floating barriers called booms.

They try to haze or encourage un-oiled animals, usually waterfowl, to move to safe areas away from the spill.

A rescue and treatment center is set up for animals injured by spilled oil. Oiled animals need trained people to collect, clean, and rehabilitate them in a facility with space, ventilation, controlled temperature, and hot and cold water. Professional bird-rescue organizations often have volunteers who have trained in advance for oil spills. Efforts by untrained people may have unfortunate consequences, such as frightening vulnerable birds and causing further injury as the birds attempt to flee. The process of using detergents to clean oil from the feathers of birds caught in spills may also damage the birds’ feather structure and arrangement, and thus the birds’ waterproofing.

Large oil spills account for just one way oil can pollute the environment. Many people who work on their own vehicles dispose of their waste oil improperly. They pour waste oil into storm drains, into sewers, or on the ground. Many people are surprised to learn that they and their neighbors can account for more pollution than large corporations.

Oil spills are just one example of the kinds of pollutants that can have adverse short and long term effects on wildlife, people, and the environment. Excess fertilizers, herbicides, and insecticides from agriculture lands and residential areas run off the land and can get into lakes, rivers, wetlands, and coastal waters. Bacteria and nutrients from livestock, pet wastes, and faulty septic
systems can likewise move over and through the ground into water sources and habitats. Soil from distributed sites, including agricultural land and construction areas, is also pollution. It is a major “nonpoint source” pollutant (can’t be traced to a single source) in our waters, and the soil often carries other harmful substances with it.

Adapted from Project Wild Aquatic Curriculum Guide.
Answers for Activity #1

There are 768 teaspoons in a gallon of oil. Calculate how much area could be covered by 1 gallon of oil.

Using the following information, estimate the area that might be affected by an oil spill involving the following:

A tanker truck holding 8,000 gallons =

A ship holding 300,000 gallons =

A supertanker holding 83,000,000 gallons =

Discuss and compare estimates with other groups.
Answers for Activity #2

Remove egg after 5 minutes and examine it – before, during and after peeling of the shell.

(Try to remove the excess oil from the outside before attempting to peel the egg).

WHAT DO YOU SEE?

After 15 minutes

WHAT DO YOU SEE?

After 30 minutes

WHAT DO YOU SEE?

What effects could oil have on the eggs of birds nesting neat the water?
Activity #3

Fresh feather

Feather in water

Feather in oil

Feather in detergent

Discuss any changes in the feather after exposure to oil and then to detergents. What effect could these changes have on normal bird activity?
FACTS Vs. FALSEHOODS

"The Truth is Out There"

AGE: Adult

DURATION: 60 minutes

OBJECTIVE: Participants will learn to develop and use their own criteria for evaluating the quality, balance, and fairness of informational presentations.

MATERIALS: Sample informational brochures and publications; Sample advertisements and articles from tabloid publications; markers, poster paper, bulletin board (or another form of display area).

TEACHER PREPARATION: Assemble a file of sample brochures from a variety of public and private agencies, organizations and government agencies. Topics may include such things as acid rain, water pollution, conservation, sewage treatment, hydroelectric power, and global warming. Collect articles which feature stories or advertisements from sensational and tabloid sources on such topics as science, health, the environment, new technology or new discoveries. Copy question sheet.

PROCEDURE:

Activity #1

1. Divide the class into pairs or teams.

2. Distribute the question page and a tabloid article to each group.

3. Ask the participants to review the article and answer the questions on the question page.

4. Encourage the participants to develop any other questions that they think might be useful.

5. Discuss the participants' results using the following question to help guide the discussion.

   a) What do you think about the overall quality of what you read?

   b) Do you believe the article?

   c) Would they buy the advertised product? Why or why not?
Activity #2

1. Distribute a second question page along with a sample of an informational brochure, handout, or pamphlet on an environmental topic.

2. Ask participants to evaluate these materials in the same way they did the tabloid items.

3. In addition to the questions on the question page ask the participants to consider the following:

   A. Whether or not the publication acknowledges different points of view or opinions about the topic, where these exist.

   B. Whether information or facts have been selected in order to support a view or develop a perspective. Does the material try to persuade the reader in some way, or is the reader invited to make up their own mind? What evidence can the students find to support their viewpoints?

4. Ask participants to report their findings by giving their brochure an overall rating from:


5. Have participants develop a checklist that they can use to evaluate informational materials, exhibits or presentations. What, in their view, should be the characteristics of an informational presentation:

   Of quality? Of balance? Of fairness?

6. Open the discussion to a few more questions. For example, ask participants whether or not it is possible to be forceful and effective in expressing one's views without becoming unfair or unbiased. Is it possible to separate one's own viewpoint from a publicly neutral position? To what extent do government agencies, citizen's groups, businesses, interest groups, and individual citizens have a responsibility to acknowledge other points of view concerning their policies and practices?

   After the discussion, see if the group wants to make any changes in their checklist for quality, balance, and fairness in informational presentations.
Activity #3

- Prepare a set of assignments in which groups will act as the designers and developers of an informational brochure or program. Have the participants draw assignments at random. Each team will prepare an informational presentation having two components:

1. A verbal presentation (10 minute maximum)

2. A display or prepared print brochure

- For the remainder of the class the group will apply the criteria from the checklist for quality to the presentations.

- Each group will then present their display or brochure while the remaining groups evaluate it for balance and fairness.

**EXTENSION:** Visit a site where information is provided that is related to the environment in some way. Using your criteria, evaluate whether the programs exhibits and/or printed materials appear to be balanced and fair.

*Adapted from Project WILD Aquatic curriculum Guide.*
FACTS VS. FALSEHOODS

BACKGROUND INFORMATION

People have many different points of view, particularly concerning issues. It is difficult at times to discern fact from falsehood, objectivity from subjectivity, and accuracy from exaggeration. Sometimes people are knowingly selective in what information they present about a topic. Other times they do not realize that they are presenting only a narrow view of the topic – that the way they see the world is not the only possible way to see it.

Everything is probably somewhat subjective. That is, everything is subject to an individual's personal filters and perspective. Objectivity is one goal of science. Even in the precise world of scientific measurement, pure objectivity without some influence on the part of the observer may be beyond reach. So objectivity is a goal; it is difficult, if not impossible, to achieve in a pure and technical sense.

If objectivity is so difficult to achieve, what can we do to develop our own skills of objectivity? One way is to become more discerning about balance and fairness. When you hear a speaker presenting information on a topic – particularly a controversial topic – is that person making an effort to describe the topic as a whole? Or, is the speaker selectively describing only his or her view? Does the speaker acknowledge that there are many differing points of view? Is the speaker presenting accurate information or opinion as if it were factually based? These are some of the questions this activity is designed to address. Providing information about the environment is a widespread activity in settings as varied as classrooms, national parks, reactor sites, industrial complexes and wilderness preserves. Some of the information is provided by the distribution of printed materials. In other cases the information is provided through presentation, possibly using many media and involving audience participation. The latter often combines people's passion for entertainment and recreation with their desire for self-education. Agencies of local, state, and national governments, as well as private entities, have recognized the economic benefits of attracting the public to natural and cultural sites of interest. Prepared lectures, exhibits, and handouts contain ecological, recreational, scientific, and historical information. The main purpose of those who prepare the materials and presentations is to inform the public.

Sometimes the distortion of information, or at least its lack of completeness, may be intentional. At other times the limitations are a reflection of emerging and conflicting perspectives about what is accurate concerning the topic. Science itself is not free from controversy. Physicists argue about whether light is a wave or is a particle. Biologist debate whether or not wolves should be re-introduced to their former habitats, or whether Inuit should be allowed to
kill Bowhead whales. Aquatic biologists are on both sides of the fence regarding the introduction of exotic fish species; for example, controversy exists about those fish introduced to North American waters from other parts of the world. Those who sponsor the construction of dams, canals, aqueducts, locks, and those who propose large-scale diking and dredging projects, all must wrestle with the impact that the project may have on the aquatic habitat and its life forms.

Adapted from Project WILD Aquatic.
QUESTION SHEET

Does the article or advertisement cite or list facts? What are they?

Does the item make a claim? Is the claim based on or supported by facts, or by some sort of evidence?

Describe the claims and the supported facts and evidence.

Does the item or article base its claim or story on some part of science or technology? Is a scientific law or principle used to support the claims? If yes, what are they?

Is a scientist or engineer cited as an authority? Who is he or she and how is his or her expertise established? Which fields of science or engineering are employed?
FACTS Vs. FALSEHOODS

Is there any indication that the writer of the article stands behind its accuracy or validity?

Will the publishers or editors of the tabloid support the claims? Will the advertisers back up the products?

How could you go about checking or verifying the claims and facts in the article?

What is your overall assessment of the accuracy of the article or advertisement? Exceptionally accurate/Generally accurate/Somewhat accurately/Generally inaccurate/Exceptionally inaccurate.
We Love Pumpkins!

**AGE:** 6-12 years

**GOAL:** Students will learn about the various parts, and the historical importance of pumpkins.

**TEACHER PREPARATION:** Ask parents to donate pumpkins for this activity. Make a large poster identical to the “Pumpkins!” worksheet. Copy “Pumpkins!” worksheet and “Our Pumpkin” worksheet. Make pumpkin pudding.

**Pumpkin Pudding Recipe:** This is a traditional colonial recipe for pumpkin pudding:

- Slice off the top of a pumpkin (med size)
- Remove seeds and fill with milk.
- Bake at 350' until the milk is completely absorbed.
- Scoop out the pumpkin flesh to serve. Can be served with ice cream or whipped cream.

**MATERIALS:** The book From Seed to Pumpkin (source information found in Appendix A), large knife, large spoon, newspaper, pencils, worksheets, bowls, spoons, napkins.

**MOTIVATION:**

1. Invite the children to choose a pumpkin from the pile of pumpkins, or take a field trip to a pumpkin patch to purchase pumpkins (may want to dress in a colonial or pioneer costume to help the children make the historical connection).

2. Read the book From Seed to Pumpkin by Jan Kottke.
INSTRUCTIONAL STRATEGY:

Step #1

On a piece of poster paper write the following words and a simple definition for each word:

Blossom, Centimeter, Estimate, Flesh, Harvest, Pulp, Vine

Have the students read each word and the definition.

Step #2

- Put up the "Pumpkins!" poster and asked the class the following questions:
  What is a pumpkin? What do we know about pumpkins? Where do pumpkins come from?
- Record the responses on the poster.
- Pass out the "Pumpkins!" worksheet and ask the class to make a list of everything a pumpkin could be used for. Adult volunteers can help the younger students with spelling difficulties.

Step #3

- Use the following questions to talk about pumpkins:
  Where did pumpkins come from?
  To whom have pumpkins been important?
  Where do pumpkins grow today?
  Which part of the pumpkins do we eat?

- Spread out some newspaper and slice a large pumpkin in half (cross ways) to reveal the inside to the class. Let the students move around some of the seeds and fibers with a large spoon.
- Pass out "Our Pumpkin" worksheet.
- Identify each part on the real pumpkin and have the class match the word from the word box to the correct part of the pumpkin picture.

Step #4

- Serve the pumpkin pudding to the class.

Adapted from Project Food, Land and People Curriculum Guide.
We Love Pumpkins!

PUMPKINS!

NAME

Directions: Use this sheet to list possible uses for pumpkins, today and in the far past.
OUR PUMPKIN

NAME

What colors do you see on your pumpkin?

Using the following words, draw a line from each word to the correct part of the pumpkin.

stem  shell  flesh  seeds grooves
ribs  top  side  vine  leaf

What does the inside of the pumpkin look like? Draw it here.
FAR-REACHING DECISIONS

AGE: 12-15 years.

GOAL: Students will explore how choices we make about the foods we eat, the products we purchase, the energy we use, and the communities we develop affect distant communities.

TEACHER PREPARATION: Copy worksheets.

MATERIALS: Copy of Human Impact (The Restless Sea) (source information found in Appendix A), pencils, worksheets, craft sticks for student names.

MOTIVATION: Prior to the meeting have students visit www.earthday.net/footprint/index.asp to investigate ecological footprints.

INSTRUCTIONAL STRATEGY:

Activity #1

Step #1

Read from Human Impact (The Restless Sea) by Carole Garbuny Vogel, together as a group.

Step #2

Explain to the group that often simple choices that we make each day, such as what kind of shoes to buy, or what to eat for lunch, have impacts on other people in other places. These impacts are called ecological footprints. In this activity I want each of you to choose one simple choice that you made today (i.e., I drank orange juice today at breakfast).

• Distribute Ecological Footprint Concept Map worksheet.
• After students have selected their choice, have them write it in the center of the worksheet.
• Have students decide some of the impacts their choices may have had on other people or other places. (i.e. drinking orange juice may require harvesting by migrant workers, may require oranges being grown in other countries, etc.).
• Have students record these consequences on their Ecological Footprint Concept Map worksheet. Some students may want to add other layers, as needed, to the concept map beyond what is printed.
Activity #2

Step #1

- Explain to the group that many of the choices that we made in the first activity can be placed into four categories: food choices (the things we eat), consumer choices (the things we buy), community planning (the things we build), and energy choices (the resources we use).
- Break up the class into four groups and assign each group a category.
- Have the students choose a simple choice.
- Have students work to fill in the KWL Chart worksheet.
- Each group will then present their KWL chart and lead a closing discussion regarding items from the “Want to Learn Category.”

Adapted from Project Learning Tree Curriculum Guide.
FAR-REACHING DECISIONS

CONCEPT MAP

My Choice
KWL Chart

_In the K column make a list of facts that you know about your choice. In the W column make a list of ideas that you would like to learn more about. In the L column add the things that you have learned about this topic after the discussion._

<table>
<thead>
<tr>
<th>What we <strong>K</strong>now</th>
<th>What we <strong>W</strong>ant to know</th>
<th>What we <strong>L</strong>earned</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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</tbody>
</table>
Pollution Solution

AGE: 10-12 years.

GOAL: Students will be able to identify different forms of pollution.

TEACHER PREPARATION: Copy worksheets, map out walking tour.

MATERIALS: “Pollution Chart” worksheets, clip boards, pencils, *Where the River Runs Wild* (resource information found in Appendix A), newsprint, markers.

MOTIVATION: Read *A River Ran Wild* by Lynn Cherry.

INSTRUCTIONAL STRATEGY:

Activity #1

Step #1

- Write the following words on a piece of poster paper: pollution, acid rain, chlorofluorocarbons, greenhouse gases, watershed, and hybrid vehicles.
- Help the students come up with simple definitions for each word.

Step #2

- Lead a whole class discussion on the topic “What would life be like without clean air or clean water?”

Step #3

- Put the class into small groups of 2-3 persons and have each group list as many things as they can that might contaminate or make unsafe the air we breathe, or the water we drink.
- Have each group make a poster with their answers and post them in the class room.
Activity #2

Step #1

- Pass out the "Pollution Chart" work sheet and clipboards.

Step #2

- Lead a group on a walk around the neighborhood and have the students look for one example of pollution for each category on the worksheet.
- Have students write in their discovered examples while on the walk.

Step #3

- Return to the classroom and make a list of all the examples that students collected during the neighborhood walk.
- Post them in the classroom next to the posters.

*Inspired by Project Learning Tree Curriculum Guide.*
POLLUTION CHART

*Fill in what you see, hear or smell during the walking tour.*

<table>
<thead>
<tr>
<th></th>
<th>SEE</th>
<th>HEAR</th>
<th>SMELL</th>
</tr>
</thead>
<tbody>
<tr>
<td>LAND</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WATER</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AIR</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Animals Adapt

AGE: 7-12 Years.

GOAL: Students will learn about bird beaks and eating habits of specific birds based on their beak shapes.

TEACHER PREPARATION: Collect bird pictures and bird posters (the internet or local museum may be able to provide excellent resources); copy worksheet.

MATERIALS: Large bird poster or pictures of birds to pass around; paper cups to act as bird stomachs, one for each student bird. Food: 50 marbles to act as beetles, 100 beans to act as flies, 100 toothpicks to act as worms. Beaks: 10 spoons, 10 tweezers, 10 clothespins. Chalkboard, student journals, pencils, A Child's Book of Birds (resource information found in Appendix A), "Bird Beak" worksheet.

MOTIVATION: Read A Child's Book of Birds, by Kathleen Daly.

INSTRUCTIONAL STRATEGY:

All organisms exhibit some forms of adaptations to the environment that they live in. These adaptations enable them to survive and maintain their populations. One form of adaptation in birds can be seen in bird beaks. Over time bird beaks have evolved into a specialized tool that better enables them to live a particular lifestyle in a particular environment.

Activity #1

Step #1

• Use the explanation above to explain to students that animals adapt or change in order to better survive in their habitat.
• Have students look at the bird posters or pictures. Ask students to look closely at the beaks and note any specific characteristics of the birds which could help them to live in their habitats.
• Use the following questions to guide the students into thinking why a bird’s beak may have a certain characteristics.
• Where does this bird live? What do you think it eats? How would its beak help it eat that particular food?
Animals Adapt

Step #2

- Using the Bird Beak worksheet, have students make a quick sketch of some of the different beaks they see and write down what they are used for.

Activity #2

Step #1

- Invite the students to become birds for the rest of the class session. Distribute one paper cup to be a stomach for each student. Hand out one of the utensils (spoon, tweezers, clothes pins), to be a bird beak for each person. Engage the students in a discussion about picking up the food with the beak. Birds must pick up their food with their beaks. Remind them that they should not scoop up the food or use their fingers to pick it up. They should not use the stomach to pick it up either.

- In a large circle in an open area of the room, invite the students to shut their eyes and pretend they are asleep. Allow one student to lay one type of food out in the middle of the circle. Give the signal for the birds to wake up and begin feeding. Time them for one minute. Give the signal for the birds to stop feeding when the time is up. Turning on and off the lights makes a good signal.

- Have all of the birds using similar beaks get together and total the amount of food they got to eat. For example, all of the spoons total together, and all of the tweezers total together, etc. Have the students record the results on the journal section of the work sheet.

- Do the same thing with the next two types of food. Remember to give students time to record results in their journal section.

- Finally, mix the three types of food together and let another student spread it out in the designated area. When given the signal, the birds should make an effort to find the food. They will go after the kind of food that they find easiest to get. When finished, they can switch to items which are harder for them to pick up.

Adapted from Project WILD K-12 Curriculum & Activity Guide.
BIRD BEAKS

Draw the bird beaks inside each box. Remember to include what type of food that beak is used to eat.
<table>
<thead>
<tr>
<th>STUDENT JOURNAL:</th>
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</table>
APPENDIX C

CAMPOUT
CAMPOUT

Two camping trips will be part of the summer program schedule. All necessary forms for the trips have been included in this portion of the guidebook. Several resource books for the campout can also be found on the Resource Page in Appendix A. These include both campfire activities, and wilderness activities.

Activities should include a blend of hands-on experiences, movement activities such as games, and quiet activities such as interpretive journaling.

The following forms were developed specifically for this project and will help to make organizing a campout much easier. All of the forms have space to add information specific to the scheduled campout.

Form Index:

Registration Form
General Information
A Typical Day
Essential Items
Budget and Menu Worksheet
Permission Slip/Medical Release
Campout
Registration Form
(insert date here)

Please fill out an individual form for each camper in your family.

Name of Camper

Birth Date

Name of parent(s)

Address

Telephone:

Home ( ) Work ( )

Grade completed as of

(insert date of last school term)
Campout
Registration Form

Parent Statement:

1) I give approval for my child’s attendance at the Campout. I release (insert name of church and location here), and those in authority, from responsibility in case of accident.

2) To the best of my knowledge, my child is in good physical and emotional health and can participate in the camp program.

3) I give permission for my child to participate in field trips and/or excursions during the time he/she is a resident at the campout from (insert beginning date here) to (insert ending date here). These trips may include, but are not limited to, nature walks, hiking, and other locations for swimming, picnicking or special activities. I understand that transportation may be arranged for trips beyond reasonable walking distance from the camp site.

Signature of Parent/Guardian ________________________________

Date ____________________

Please indicate below (be specific) if you do not give permission for your child’s participation in one or more of the activities listed above.

__________________________________________________________

__________________________________________________________

__________________________________________________________
Campout

GENERAL INFORMATION

Camp Dates:

Camp Fees:

All registration forms must be returned (insert location for return here) no later than (insert deadline time period). Any questions regarding this year's camp should be forwarded to (insert name of contact person and phone number here).

Camp Location:

Emergency Phone:

Arrival: Check in will be at (insert location here) from (insert times here). If you are unable to check in during this time please contact (insert contact person's name here) to make other arrangements.

Medication: All medication, including vitamins, decongestants, analgesics, must be handed to the camp director upon arrival. Medication must be clearly labeled with your child's name and instructions for administration.

Money:

Departure: Campers will arrive back at (insert location here) on (insert date and time here). If someone other than a parent or guardian will be picking up your child please note that on the registration form.
Campout

CLOTHING AND OTHER ESSENTIAL ITEMS

☐ Hat/Visor
☐ Light jacket
☐ Comfortable shoes to hike in (tennis shoes are good, hiking boots are better) no sandals
☐ Sandals or thongs to wear around camp
☐ Pair of jeans
☐ Shorts
☐ T-shirts
☐ Underwear (1 per day)
☐ Socks to wear hiking (you must have a good pair of walking shoes and be wearing a pair of socks in order to go on the hike)
☐ Swimsuit
☐ Bath towel and washcloth
☐ Toilet articles: soap, toothpaste, toothbrush, brush, comb, etc.
☐ Flashlight
☐ Sun block (extremely important)
☐ Water bottle for the hike
☐ Sleeping bag and pillow
☐ You may bring a small backpack for the hike if you would like.

1. Please do not send expensive equipment. If you’d be really bummed if something you brought to camp disappeared or was broken, then don’t bring it.

2. Radios and tape players are allowed but only with headsets. Inexpensive cameras and books or magazines would be great.

3. PLEASE DO NOT SEND FOOD. (Special diets may be accommodated by prior arrangement with the camp chef).
Campout

A TYPICAL DAY

7:00 a.m.  Wake up bell
7:30     Morning Prayer and Breakfast
8:30     Camp Clean-up
9:00     Morning Lesson
10:00    Morning Activity
11:00    Hike or Day Trip
12:00    Lunch (or picnic)
1:00 p.m. Return from Hike or Day Trip
2:00     Free Time Activity/Games/Rest Time/Meditation
3:00     Evening Lesson
4:00     Evening Activity
5:00     Interest Group Activities/Workshops/Bible Study
6:00     Dinner
7:00     Clean-up
8:00     Camp Fire Activity
9:00     Night Activities
10:00    Bedtime
10:30    Lights out
Below are some areas to consider when planning your campout budget:

<table>
<thead>
<tr>
<th>ITEM</th>
<th>AMOUNT</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRANSPORTATION</td>
<td></td>
</tr>
<tr>
<td>Transporting Campers</td>
<td></td>
</tr>
<tr>
<td>Transporting Equipment</td>
<td></td>
</tr>
<tr>
<td>Insurance (if renting vans)</td>
<td></td>
</tr>
<tr>
<td>Fuel</td>
<td></td>
</tr>
<tr>
<td>SUPPLIES</td>
<td></td>
</tr>
<tr>
<td>School Supplies</td>
<td></td>
</tr>
<tr>
<td>Art Supplies</td>
<td></td>
</tr>
<tr>
<td>Copies</td>
<td></td>
</tr>
<tr>
<td>Supplies for Games</td>
<td></td>
</tr>
<tr>
<td>EQUIPMENT</td>
<td></td>
</tr>
<tr>
<td>Propane/Firewood/Charcoal</td>
<td></td>
</tr>
<tr>
<td>Ice</td>
<td></td>
</tr>
<tr>
<td>Plates, Napkins, Utensils</td>
<td></td>
</tr>
<tr>
<td>Sports Equipment</td>
<td></td>
</tr>
<tr>
<td>Food</td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>112</td>
</tr>
</tbody>
</table>
## CAMPOUT

### SAMPLE MENU

<table>
<thead>
<tr>
<th></th>
<th>Friday</th>
<th>Saturday</th>
<th>Sunday</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Breakfast</strong></td>
<td></td>
<td>French Toast Sticks</td>
<td>Scrambled Eggs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bacon</td>
<td>Sausage</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Syrup &amp; Butter</td>
<td>Toast/Jelly</td>
</tr>
<tr>
<td></td>
<td></td>
<td>O.J. &amp; Milk</td>
<td>O.J. &amp; Milk</td>
</tr>
<tr>
<td><strong>Lunch</strong></td>
<td></td>
<td>Grinder</td>
<td>Hot Dogs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Chip Bags</td>
<td>Macaroni Salad</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fresh Fruit</td>
<td>Fresh Fruit</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Water</td>
<td>Water</td>
</tr>
<tr>
<td><strong>Dinner</strong></td>
<td>Beef Stew</td>
<td>Chicken Legs</td>
<td>Lemonade &amp; Water</td>
</tr>
<tr>
<td></td>
<td>Biscuits</td>
<td>Mac &amp; Cheese</td>
<td>Lemonade &amp; Water</td>
</tr>
<tr>
<td></td>
<td>Green Salad</td>
<td>Green Beans</td>
<td></td>
</tr>
<tr>
<td></td>
<td>S'mores</td>
<td>Cupcakes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lemonade &amp; Water</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Campout
Permission Slip/Medical Release

Full name of minor has my permission to attend: (insert name of event) we will be leaving on: (insert date and time) and returning on: (insert date and time)

In case of medical emergency, I/We, the parent(s) or legal guardian(s), a minor, hereby authorize and consent to any x-ray examination, anesthetic, medical or surgical diagnosis or treatment and hospital care which is deemed advisable by, and is to be rendered under, the general or special supervision of any licensed medical personnel on the staff of any licensed hospital. This authorization is given in advance of any specific diagnosis, treatment or hospital care required, but is given to provide authority and power to render care which is deemed advisable in the best judgement of the physician.

DATE:________ SIGNATURE________________________________________

RELATIONSHIP_________________________BIRTHDATE OF MINOR:____________

DATE OF LAST TETANUS SHOT:__________

FAMILY PHYSICIAN:____________________ PHONE:__/__________

FAMILY DENTIST:____________________ PHONE:__/__________

ANY DRUG FOOD ALLERGIES:_______________________________________

SPECIAL MEDICAL PROBLEMS OR OTHER SPECIAL NEEDS:
______________________________________________________________

During this event I expect that I can be reached at:

PHONE:______/________________

If I can not be reached, please contact:________________________________

PHONE:______/________________

I will be making arrangements to have my child picked up by someone other than myself:

NAME:____________________________________ PHONE:______/______
APPENDIX D

ISSUES WORKSHOP
ISSUES WORKSHOP

The Issues Workshop was designed to help participants understand the players and various points of view within an issue. The workshop will use the book, *The Great Kapok Tree*, to examine how an issue can have a variety of players all with different points of views and values. Participants will then examine local issues to better understand all of the points of view associated with them. The objective of this workshop is to educate and equip a group of participants with the skills and tools necessary to better understand the dynamics that make up an environmental issue.
WORKSHOP - WHAT IS AN ISSUE?

OBJECTIVE: Participants will discover what constitutes an issue, discover local issues, and be able to define the parameters and participants of these issues to help them better understand the issues themselves.

MATERIALS: Newsprint, markers, pencils, "Kapok Tree" worksheet, copies of the book _The Great Kapok Tree_.

TEACHER PREPARATION: Purchase several copies of _The Great Kapok Tree_ (resource information found in Appendix A), copy "Kapok Tree" worksheet.

INSTRUCTIONAL STRATEGY:

Procedure: _Introduce the following vocabulary (write on newsprint pad and post)_:

**Issue**: An issue is a problem in which two or more parties don't agree on how to solve the problem.

**Problem**: Environmental problems usually involve interactions between humans. Problems arise when there is a risk associated with that interaction.

**Players & Positions**: Individuals and/or groups who are involved in this debate and their feeling regarding the issue.

**Belief**: An information-based assumption. It may be right or wrong but must be believed to be correct by a player.

**Values**: A worth attached to some event, place, or an idea.

The following list is made up of some of the most common values held by individuals:

- AESTHETIC
- ECOLOGY
- ECONOMIC
- EDUCATIONAL
- EGOCENTRIC
- ENVIRONMENTAL
- ETHICAL/MORAL
- HEALTH
- LEGAL
- POLITICAL
- RECREATIONAL
- SOCIAL
Solutions: The answers or strategies proposed to resolve an issue. A solutions is acceptable when the public is involved in the decision making process and a compromise, which conforms to law, is reached for managing the resource.

Activity #1 The Great Kapok Tree

Step #1

- Discuss the values section of the vocabulary lesson.
- Have participants define what they feel that each of the values represents for those who hold them (i.e. Aesthetic = Beauty).
- Make a poster of the results.

Step #2

- Group participants into pairs.
- Have participants read The Great Kapok Tree and complete the worksheets.
- Have groups share with the whole group their findings.

Step #3

- Have the participants look in local newspapers for articles discussing local issues. Have the group analyze the articles for the players and positions.
THE GREAT KAPOK TREE

The different animals in The Great Kapok Tree whispered their thoughts to the sleeping logger. Use the value chart to help you come up with values that match the statements of these characters.

<table>
<thead>
<tr>
<th>Animal Character</th>
<th>Statement</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boa Constrictor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monkey Troupe</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tree Frog</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The Great Kapok Tree Issue

*Use the story to fill in the parts of the table.*

<table>
<thead>
<tr>
<th>Problem</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Issue</td>
<td></td>
</tr>
<tr>
<td>Players</td>
<td></td>
</tr>
<tr>
<td>1. Man</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
</tr>
<tr>
<td>Beliefs</td>
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<tr>
<td>1. Man</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
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<tr>
<td>Values</td>
<td></td>
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<tr>
<td>1. Man</td>
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<tr>
<td>2.</td>
<td></td>
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<tr>
<td>Solution</td>
<td></td>
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</tbody>
</table>
REFERENCES


