The Development and Implementation of an Outreach Environmental Education Program Utilizing Birds of Prey

A Project Report
Submitted in Partial Fulfillment of the Requirements for the Degree Master of Science
In Natural Resources/Environmental Education

University of Wisconsin Stevens Point

by

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March 2002
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Abstract

The project describes the process used to develop and implement an outreach environmental education program for the students in the Stevens Point Area Catholic School System utilizing resident birds of prey from Wind River Wildlife Rehabilitation and Release Center. The author is a wildlife rehabilitator working under the licenses and guidance of Wind River Wildlife Rehabilitation and Release Center, which is located in New London, WI. This project is unique because not only does it address the awareness goal of Environmental Education through a presentation of various wild animals, each presentation is followed by an individualized lesson plan based on the curriculum needs of the classroom teacher that will enable the students to address other goals of Environmental Education such as knowledge, values, citizen action skills and citizen action experience.

The groups of students field-testing this program belong to the Stevens Point Area Catholic Schools and range in age from kindergarten through twelfth grade. The logistics of this program included gaining support from the school system and from the wildlife center, developing the individualized lesson plan for each presentation, conducting an in-service for the faculty of the system focusing on how to schedule a program, delivering the programs to students and putting together a collection of activities that others could use in similar programs.
Acknowledgements

My deepest appreciation goes out the Randie Segal and Jon Williams, directors of Wind River Wildlife Rehabilitation and Release Center who allow me to work with these wondrous animals and expose the students to the beauty and magnificence of wild animals. I will never “get over” what a truly marvelous experience it is to hold a wild creature on your fist and feel the tremendous power they possess. The two of you have been instrumental in my growth as a person and an educator. Thank you Randie and Jon. Also, my thanks to the animals you house that allow me to do this work that means so much to me—especially to Isabo and Galileo.

I would like to thank the administration of the SPACS system, particularly Gregg Hansel, president and Tom Clark, principal of Pacelli High School for their tremendous support for the project from its inception. I was allowed as much time as needed to plan for, travel to and present these programs to the SPACS’s students and while it was the students who benefited directly, none of it would have been possible without the support of these two administrators.

To my fellow rehabilitator and partner in crime, Katy Riley, I owe such a debt of gratitude that I don’t know where to begin. It was Katy who got me involved in wildlife rehabilitation in the first place and to be honest, I don’t know what my life would be without it. I strive to emulate you in many respects since I admire your values, ethics and other personal qualities that you portray to the world on a daily basis. Thanks Katy!

I would like to thank the Professors at University of Wisconsin Stevens Point that are a part of the Wisconsin Center for Environmental Education and especially my advisor Dr. Dan Sivek. These professors have inspired me to continue in this field by their enthusiasm and genuine interest in their mission.

Lastly, a quick thank you to all those friends and family that have had to deal with me during this two-year period. I know that I can become so consumed by things that it is all I talk about and I appreciate your patience with me when I go overboard and bore the rest of the free world to tears with my rehab stories. Of course, just because I am finished with my project, it doesn’t necessarily mean I am done obsessing about “my” birds, but I’ll try to tone it down a bit!
# Table of Contents

- Approval page ii
- Abstract of Project iii
- Acknowledgements iv
- List of Appendices vii

## The Problem and Its Setting
- Statement of the Problem 1
- Subproblems 1
- Importance of the Project 2
- Limitations 6
- The Definition of Terms 7
- Assumptions 8

## Review of Related Literature
- Importance of Environmental Education 9
- Importance of Infusion of EE 11
- Wildlife Rehabilitation 12
- In-Servicing Techniques 15

## Project Methodology
- Treatment of the Subproblems 17
  - Getting support for project—Subproblem 1 17
  - Developing the program—Subproblem 2 18
  - In-Service—Subproblem 3 19
  - Delivering the programs—Subproblem 4 20
  - Generating handbook of lessons—Subproblem 5 21

## Results and Discussion
- Getting support for project—Subproblem 1 22
- Developing the program—Subproblem 2 23
- In-Service—Subproblem 3 25
- Delivering the programs—Subproblem 4 26
- Generating handbook of lessons—Subproblem 5 29

## Project Summary and Recommendations 30

## References Cited 33

## Appendices 35
List of Appendices

Appendix A: Faculty letter explaining program
Appendix B: Preliminary Program Ideas form
Appendix C: Form to Schedule a Wildlife Program
Appendix D: Evaluation of Wildlife Program
Appendix E: Wildlife Rehabilitator survey requesting lessons
Appendix F: What’s Wild?
Appendix G: Wildlife is Everywhere!
Appendix H: Animal Toons
Appendix I: No See ‘Ums
Appendix J: Shadow Play
Appendix K: Egg Toss
Appendix L: Too Close for Comfort
Appendix M: Classroom Carrying Capacity
Appendix N: Camouflage
Appendix O: Predator-Prey
Appendix P: How Many Bears Can Live In This Forest?
Appendix Q: Animal Poetry
Appendix R: Deadly Links
Appendix S: Habitat Lap Sit
Appendix T: Muskox Maneuvers
Appendix U: Stormy Weather
Appendix V: Adaptation Artistry
Appendix W: Scavenger Hunt
Appendix X: Wild Words...a Journal Making Activity
THE PROBLEM AND ITS SETTING

The Statement of the Problem

The purpose of this project is to develop and implement an outreach environmental education program for K – 12 students through the utilization of resident birds of prey from Wind River Wildlife Rehabilitation and Release Center.

Subproblems

1: Describe the project to the administration and staff within the Stevens Point Area Catholic Schools and the Wind River Wildlife Rehabilitation and Release Center and gain the support of both organizations.

2: Develop an interdisciplinary environmental education program (adaptable for any age level) using the resident birds of prey from Wind River Wildlife Rehabilitation and Release Center to enhance students’ knowledge base, attitudes, skills and actions toward the environment.

3: Develop a means for administrators/teachers to schedule the program and conduct an in-service for those administrators/teachers on how to incorporate the program into their curriculum during the school year.

4: Offer the programs within various disciplines throughout the Stevens Point Area Catholic Schools.
5: Create a generalized handbook of activities so that this program could be adapted to other locations by other individuals.

**The Importance of this Project**

Within the city of Stevens Point, there are numerous opportunities for students to be outdoors engaging in various environmental education (EE) activities. However, there is no longer a wildlife rehabilitation center within the city limits so students do not have many opportunities to interact with wildlife in a non-threatening environment.

As it is a private school system, SPACS does not fall under the jurisdiction of Wisconsin’s Department of Public Instruction (DPI). It falls under the jurisdiction of the La Crosse Diocese. The Diocese usually follows all the guidelines set forth by the DPI in manners of classroom requirements and curricula. However, the Diocese does not mandate the infusion of EE into the curriculum. Therefore, most of the EE work going on within the SPACS system is falling onto the shoulders of the science teachers. This project will encourage other disciplines, in addition to science, to involve their students in EE.

With this program in place, the students will have greater awareness and knowledge of these animals that are quite abundant within our natural setting as well as those that are native to Wisconsin. They will have the opportunity and experiences that will help them learn to place some value on these natural resources. They will experience opportunities to exercise citizen action skills and citizen action experiences as a result of having direct contact with these animals and participating in the accompanying activities.

The SPACS system is a private school system with many unique advantages when offering a program of this nature. One advantage of this program is the relatively small
number of students and faculty in the SPACS system, so it is fairly easy for someone to conduct an in-service for all the faculty/administration with regards to the program. Many times budget constraints may limit student offerings within the system, so a second advantage of this volunteer outreach program is its ease in implementation since there is virtually no direct cost to the schools. A third advantage with a program such as this is that with smaller class sizes, the students will really get a chance to ask questions and see the animals during the program with minimal distractions from other students. Lastly, and probably the best advantage one can see to this program is the fact that these students are part of a Catholic school system. The history of the Catholic Church is full of examples of environmental stewardship and this program will help to foster the idea of stewardship.

The Catholic tradition is rich in environmental stewardship and has been a proponent of environmental education in many arenas, not only their school systems. Catholics have had a long-standing tradition for caring for and fostering stewardship for the natural world. In Renewing the Earth, (U.S. Catholic Conference, 1991) the U.S. Bishops invited all educators to “…emphasize, in their classrooms and curricula, a love for God’s creation, a respect for nature, and a commitment to practices that bring these attitudes into the daily lives of their students and themselves.” They have also put forth the call to “advance the insights of our Catholic tradition and its relation to the environment and other religious perspective on these matters.” Per Binde (2001) states “The notion of God’s presence in nature is particularly strong in the Franciscan tradition [due mostly to the influence of St. Francis of Assisi]. Unspoiled nature was thought to communicate to the Christian the transcendent, mystical and unspeakable qualities of
God much better than...written tradition. The notion of a close relationship between nature and divinity has merged with environmental concerns called eco-theology.”

Binde continues, suggesting that fundamental to eco-theology are three main tenets:

1) Today the world faces major ecological crises that seriously threaten God’s creation and the existence of mankind.

2) Christians should act with force to solve environmental problems.

3) The situation requires a fundamental re-thinking of Christian theology.”

This concept permeates much of Catholic teaching and therefore Christianity as a whole is very supportive of environmental education especially within the school system. A 1999 article that appeared in the National Catholic Reporter written by Pamela Schaeffer said, “U.S. and Canadian Bishops have taken a dramatic step forward in the church’s engagement in the environmental movement by recognizing for the first time in an official church document [a pastoral letter] that nature, along with human beings, has rights. Bishop William Skylstad of Spokane, Washington, head of the steering committee for the pastoral letter project, told participants... ‘Nature has an integrity all its own, apart from human beings.’

In another article by Pamela Schaeffer in the National Catholic Reporter, Jame Schaefer gave examples of patristic and medieval writings that provide new resources for a Catholic environmental theology: the writings of Basil of Caesarea, of Augustine, of Bernard of Clairvaux and of Francis of Assisi, for example. Schaefer is quoted as saying, ‘We really have a treasure house in our tradition.’ Using the biblical theme of Jubilee Year 2000—so proclaimed by Pope John Paul II—and describing the earth as a ‘sacramental commons’ the letter insists that ‘respect of life needs to include all creation.’
Schaefer continues that according to the bishops, ‘This commons [the Earth] is not for humans alone. It is intended by God to provide for all of God’s creatures as they live in ecological relation.’ If that ethical vision is realized, ‘people will recognize the inherent value of creation and the dignity of all living beings as creatures of God.’

It was the intention of the author to increase the opportunities for environmental education for the students of SPACS through the utilization of this outreach program. Certainly, direct experience with wild animals and nature as a whole can only help to foster the Catholic tradition of stewardship that is so rich in their faith.
The Limitations

1: The project will not attempt to be the only method of introducing students to environmental education.

2: The scope of this project is limited to the school calendar year and does not attempt to continue environmental education programs in the summer months.

3: The availability of the birds and the author will need to be considered when scheduling a program.

4: As some students may be allergic to birds, it may not be possible to offer the program to all students.

5: Some administrators/teachers may not be interested in utilizing the program at all or may not allow live animals within their classroom so the program may have to be altered slightly.
Abbreviations and Definition of Terms

Diocese—an area marked off by boundaries that come under the leadership of and pastoral direction of a bishop. The diocese referred to within this document is the Diocese of LaCrosse, under whose jurisdiction SPACS falls.

DNR—Department of Natural Resources

DPI—Department of Public Instruction

EE—this abbreviation will be used for Environmental Education.

Environmental Education—education that is designed to help students become aware, knowledgeable, skilled and dedicated citizens in areas dealing with the environment. (Wisconsin Department of Public Instruction, 1994)

IWRC—International Wildlife Rehabilitation Council, a professional organization dedicated to improving wildlife rehabilitation and wildlife rehabilitators.

Rehabber—someone who holds federal and state licenses to rehabilitate wild animals.

SPACS—represents Stevens Point Area Catholic Schools.

Wind River—this shortened name will be used when referring to Wind River Wildlife Rehabilitation and Release Center which is located in New London, WI. The mission of Wind River is to provide care for orphaned and injured wildlife until such time as those animals can be returned to their natural environment.
Assumptions

1: The administrators/teachers of SPACS will actively use this outreach program.

2: All administrators/faculty within SPACS will receive in-service training about how to use this program, particularly within their own area of expertise (grade level, subject area, etc).

3: If the person who is working with this program is NOT a wildlife rehabilitator and does not hold the permits to run the program, they will seek the advice of a licensed wildlife rehabilitator at Wind River to continue this project.

4: Wind River will continue to remain in operation.

5: The birds' safety and care will be foremost in the planning of any program.
REVIEW OF RELATED LITERATURE

Importance of Environmental Education

In one of the sidebars found within the Wisconsin Department of Public Instruction's A Guide to Curriculum Planning for Environmental Education, David Oates is quoted as saying, “If humankind adopts the ethics of belonging to the earth, then it will indeed belong. It will fit in; it will be fit; it will survive. If on the other hand it does not adopt this sense of belonging, then not-belonging to will ‘come true’: humanity will inevitably pollute, breed, or explode itself out of existence. It will have proven maladapted, failed the test for survival.” (Wisconsin DPI, 1994) This is the entire philosophy of EE, the working within the realm of education to teach students how to work with the Earth: to learn how to work with and within our natural environment. It is the goal of EE to teach children of today how to examine the effects of our living on this planet and make changes, if necessary, to help ensure the sustainability of the ecosystem. This goal is further broken down into five subgoals of awareness, knowledge, attitude, citizen action skills and citizen action experience. A good EE program will address all five of these subgoals to help ensure that the citizenry is well equipped to handle the situations dealing with environmental issues. It is important not to stop at the awareness and knowledge subgoals. Hungerford and Volk (1990) are quick to point out, “If environmental issues are to become an integral part of instruction designed to change behavior, instruction must go beyond an ‘awareness’ or ‘knowledge’ of issues. Students must be given the opportunity to develop the sense of ‘ownership’ and ‘empowerment’ so that they are fully invested in an environmental sense and prompted to become responsible, active citizens.”
Environmental education requires an interdisciplinary effort. It is not expected to be a stand-alone course added to the already crowded school day. Ham, Rellergert-Taylor and Krumpe stated (1987) that, “Conceptual barriers to EE include the misconception that EE is restricted to science curricula, de-emphasizing its role in other areas.” It is important that students be exposed to as many different situations as possible when exploring the realm of EE. Outdoor nature sites, formal school programs as well as non-formal educational opportunities are all utilized in the teaching of EE concepts. Katherine Emmons’ (1997) study on outdoor education sites in Belize found that, “Environmental Education programs are often multi-faceted endeavors that include efforts to develop participant’s senses of appreciation and respect for the natural world. Direct experience also appeared to play a role in the student’s development of concern and empathy. Contact with the natural environment...[and] new perceptions of the aesthetic qualities of the forest might have given students new reasons to be concerned about problems. Through direct experience, influence of role models and the opinions of others, students in this study were able to experience more positive aspects of nature and reduce negative associations.”

It is evident as one reviews the literature that contact with natural animals, plants and ecosystems foster a greater appreciation for, a greater responsibility for, and call to action toward the environment. In 1985, Stephen Kellert published a research paper that compared a group of students who only had lecture-based material to students who were exposed to the identical information in numerous ways. Students were tested with regard to their awareness levels, knowledge base, emotional responses and actions regarding the material. The students scored better on all levels of EE goals when they were exposed to the actual animals discussed. Furthermore, those that were also members of hunting
clubs and other outdoor activities did even better. He concluded that for most students, the “…transition between grades 2 – 5 is best suited for changing affective/emotional concerns. Grades 5 – 8 offers the most promising possibilities for developing cognitive and factual understanding of animals while grades 8 – 11 would appear to be most appropriate moment for fostering ethical and ecological appreciation of animals and the natural world.” All of this coincides directly with the subgoals that are set forth by the Wisconsin Department of Public Instruction (1994) in their *Guide to Curriculum Planning In Environmental Education*. David Orr (1999) insists that, “Ecological education will require the reintegration of EXPERIENCE into education, because experience is an indispensable ingredient of good thinking.” He continues by stating, “But we must go further…the time has come to think about how we might reconnect things that we dedicate part of the curriculum at all levels to the study of a thing or a place in our environment—a river, a mountain, a valley, a lake, soils…or even a small town. Real things engage all the senses, not just the intellect.” Once again, that is the goal of an integrated EE program—to utilize our natural world and to connect the different curricula to study the impacts of that particular thing or issue. It is impossible to study all these interactions within the realm of any one particular class or discipline or grade level. It is necessary to abandon traditional curricula delineations and to start making those connections both for our students and for the community at large.

**Importance of Infusion of Environmental Education**

It has been repeatedly shown that students learn these environmental concepts best when they are integrated across the curriculum and throughout the academic life of students. It is particularly helpful if the students are actively engaged in activity as
opposed to the traditional teaching method of “teacher—lectures, students—take notes”.

In “Inspiring Teens: Learning by Doing” written by Laura White and Mark Johns (1996), they learned that by adopting the philosophy of delivering material in a lab activity, the students learned better. “If we can provide fun, hands-on activities for them to learn about the environment and all its complex cycles and interactions, we can instill a sense of stewardship.” Stewardship is the goal after all, to get students to care enough to DO something about an environmental problem or issue. They concluded that if teens have the opportunity to witness and assist in projects carried out to protect the natural resources at the nature center; they feel compelled to do it in their own back yard.

Deborah Simmons came up with the same conclusions through her research entitled More Infusion Confusion: A Look at Environmental Education Curriculum Materials (1989). She states that “the rationale for infusing EE is compelling: by incorporating EE throughout the total curriculum at every grade level, a more comprehensive treatment of environmental concepts can be accomplished. In this [infusion] approach, EE is neither another add-on to the curriculum, nor is it another subject that needs to be fit into an already overburdened schedule.”

**Wildlife Rehabilitation**

Wildlife Rehabilitation programs are ideally set up to rehabilitate the animals that are orphaned or injured until they can be returned to the wild. Unfortunately, for an animal that is too badly hurt to be released back into its natural habitat, that goal cannot be realized. It is in those instances that, if someone has the correct permits, the animal can be used for educational purposes, if there is a need for education and the animal will not be unduly stressed by that experience. Wildlife Rehabilitation programs are ideal
opportunities to introduce people to environmental concerns, particularly youth. Craig Cylke, director of the Ellijay Wildlife Rehabilitation Center said, "Being able to touch people when they are young is important. Our children today have an awesome responsibility: to take this Earth and turn it around. If we don't act now, it will be too late (Partain, 2000).

Many people question why anyone would spend so much time, money and effort to work with these “abundant” animals. Most animals that are acquired for educational purposes are not endangered species after all. In terms of conservation, wildlife rehabilitation centers have very little significance, but they are contributing to the education of the public in these species and ways to reduce the incidents of human-wildlife interactions. “The peregrine falcon, the whale and the wolf rally sympathy where ecosystem functions do not” (Clement, 1986). In addition, agencies such as the Fish and Wildlife Service don't have the manpower to handle individual animals that may need care; their interest is in the species as a whole. They look to rehabbers to perform the service work for the individual animals in need of care, primarily because, as Patrick Martin, a wildlife biologist employed by the New York State Department of Environmental Conservation says, “…increasingly [large] members of the public are concerned about the welfare of individual animals” (Gilbert, 1998). A recent study of visitors to the national forests of Montana and Northern Idaho found that the top two reasons people listed for visiting those areas were to view the scenery and to see wildlife (Richie, 1995). Things that we can see and experience we will try to understand and will gain a deeper appreciation for. As Lao Tsu once said, “We will only conserve what we love. We will only love what we understand. We will only understand what we are taught.” People are searching for ways to incorporate nature back into our lives. “The
challenge of conservation lies in expanding memories to encompass an appreciation of the worth of all living things, even those we cannot see" (Richie 1995). Also, in light of the fact that many of the injured animals brought to rehabilitation centers are sent there due to human’s interference with their habitat, it is important to note that rehabbers are necessary to keep people aware of their influence in the natural world. Through education, we can change the way that people view their role in society and nature.

Sometimes to get people interested in the grand scheme of things, you need to have them focus on one particular part, in this case one animal. As has been noted time and time again, you have to “hook” people in and sometimes by focusing on just one animal or particular species...wildlife rehabilitators can be introducing the general public to the ideas of habitat preservation, biodiversity, wise-use of resources, etc., at a very personal level. “Wildlife rehabilitators are in a unique position to educate the humane-oriented public about the needs of wildlife populations” (Strang, 1986).

Along similar lines, research has studied what effect, if any, the mere presence or absence of animals within a high school biology classroom would have on students’ learning. The conclusions of the study “lent empirical support to the long and widely held belief about the importance of living materials in the biology classroom. Perhaps the mere presence of attractively displayed living materials in the classroom serves to arouse student curiosity and interest and thus serves to stimulate learning beyond that which would normally be expected to occur in a ‘barren’ classroom” (Saunders and Young, 1985).

The International Wildlife Rehabilitation Council (IWRC) has annual meetings in which they discuss numerous things, including the best methods for educating the public about environmental concerns and wildlife. During the 1998 convention, Katherine
Johnson held a workshop entitled, “The Effective Use of Non-Releasable Wildlife in Education.” In it, she assures us that “Using non-releasable wildlife in your presentation gives your audience an introduction to issues almost without words. They could be seeing up close a species they never knew about before. As they learn about this animal's adaptations and niche in the environment, they can come to understand how important its role is in a healthy ecosystem. The fact that this animal was most likely the victim of a human/animal interaction also bears a profound message for the audience.”

During the 1996 conference of the IWRC, Louise Sagaert and Cathy Gidner-Worthington reflected on wildlife rehabilitation and education. They said that, “Wildlife rehabilitators have a far greater potential to save animal lives through education than through actual hands-on rehabilitation. Education is a powerful tool in these efforts to help animals. The creation of educational programs can maximize the number of animals helped by reaching more members of the general public.”

The program that the author is developing will incorporate the wildlife rehabber within the educational setting. The most important link between the two will be the classroom teacher. It is important that the classroom teacher understand how to incorporate this program into their schedules. This will be accomplished through a system wide in-service.

**In-Servicing Techniques**

In order for this outreach program to be successful, the faculty and administration at SPACS will need to learn how to effectively use the program. Many in-servicing techniques have been tried and some are more effective than others. Betty Hone, in an article for the *Journal of Environmental Education* (1975) warns us to “focus on learning by doing to maximize on-the-job transfer and feedback for other meetings.” For this
particular program, the author will have to set up initial training for the faculty and then to do some follow-up work to make sure that the program is being utilized. It is important to note, “Some research indicated that EE is not solely concerned with the outdoors but relates to the entire classroom environment including the teacher-student interactions and the philosophical framework of the classroom.” (Rakow, 1985) This is an indication to the author to be sure to explain all the ramifications that this type of program can have on the students. It is important to set up the framework for the students before, during and after the actual wildlife program to maximize the effects and relationships to EE. By setting this as a priority within the context of the in-service for the faculty, the author will make sure that “an awareness of environmental issues permeates the curriculum to the extent that EE is no longer viewed as a science subject, but as a way of life.” (Rakow, 1985)
PROJECT METHODOLOGY

Treatment of the Subproblems

The following methods were used to solve each of the subproblems identified in the development and implementation of an outreach environmental education program for K–12 students through the utilization of resident birds of prey from Wind River Wildlife Rehabilitation and Release Center. The methods used for field-testing the program within SPACS and the development of the handbook of activities are described so others can use them in a similar situation.

Subproblem One

The first subproblem was to describe the project to the administration and staff within the Stevens Point Area Catholic Schools and the Wind River Wildlife Rehabilitation and Release Center and gain the support of both organizations.

The project began in the fall of 2000 with informal talks with the director of Wind River Wildlife Rehabilitation and Release Center, Randie Segal, while the author was volunteering for that organization. It was determined that a severe need for this outreach program exists within the Stevens Point area since there is no longer a wildlife center in this area of the state. The author obtained permission from the director of Wind River to begin organization of this outreach program using their permits and animals.

The school system was equally willing to utilize this opportunity to expose the students to wildlife and environmental issues in general. As the school is a private school, it does not fall under the mandates of DPI in regards to the infusion of environmental education. Because of that, many times EE is slighted or fit into the
curriculum in a piecemeal manner with small amounts handled in many classes without any solid follow through or continuous thread permeating the system. The administration of SPACS (Gregg Hansel, President) was convinced that this type of organized program would benefit both faculty and students within the Stevens Point Area Catholic Schools. Informal talks with the faculty members at one of the systems’ elementary schools and the high school echoed this sentiment with positive comments regarding the anticipated usage of the program. It was the author’s impression from these informal talks that the program will be utilized by a variety of the faculty throughout the system.

At the onset of this project, it was yet to be determined the amount of time that the author would be allowed out of class to do programs. The author set up a meeting with the administration of SPACS once the fall schedule had been determined to discuss the logistics of release time. Since the administration was in such favor of this type of outreach being available for its students, the author was granted as much release time as needed to conduct the project.

The author also sent out a letter to the faculty within the SPACS system enclosed with the initial beginning-of-school paperwork in August to garner an idea of specific units teachers may have interest in for presentations. This initial information from the faculty gave the author some lead-time to begin developing programs even before the first program with students was scheduled. A copy of that letter and survey are found in appendices A and B. All of this groundwork was completed in the late summer of 2001.

**Subproblem Two**

Developing the interdisciplinary EE program was the second subproblem for this project. The program needed to be adaptable for any age level and incorporated the
resident birds of prey from Wind River Wildlife Rehabilitation and Release Center to enhance students’ knowledge base, attitudes, skills and actions toward the environment. The author contacted the DNR to acquire a current list of the licensed wildlife rehabilitators within the state of Wisconsin. The author used this list in order to poll seventy of the larger wildlife rehab centers in the state that are actively involved in education programs and requested any copies of lesson plans that they might be currently using which could subsequently be of use for this project. The author also searched for lessons via the Internet and other libraries for wildlife rehabilitation activities. Once the initial research was completed, the author correlated the wildlife lesson plans with the topics requested by the SPACS faculty, EE goals, and specific grade levels. The final breakdown for the handbook of activities consists of numerous lessons that have been field-tested as a part of this project as well as other activities suitable for use in school age programs but not yet field tested. Every attempt was made in the selection of the activities to incorporate different disciplines and integrated lessons, as well as plans that would cover all five EE goals (from awareness to experience). The initial research and contact letters to wildlife rehab centers went out in July of 2001 with responses collected by August 2001. The development of individualized lesson plans was completed during the 2001–2002 school year.

**Subproblem Three**

The third subproblem was to develop a means for various administrators/teachers to schedule the program and conduct an in-service for those administrators/teachers on how to incorporate the program into their curriculum during the school year.
The author created a simple form for administrators/faculty members to fill out when they are in need of a program. A copy of that form is found in appendix C. There was an hour during the opening in-service of the school year set aside as time for the author to present these forms and formally explain this program to the teachers. In addition, the author made sure the faculty had advanced notice of this program through the early August mailing that had been sent to them. Focus during the in-service then pivoted on the fact that the program, by its nature, will require at least a two week lead time so that the program can be tailored to the teacher’s individual needs/wants and so travel arrangements for the birds can be accommodated as well. The in-service for the teachers was completed during the late summer of 2001, just before the students arrived for the new year and will continue to be conducted every year as new faculty members are added to the system ensuring that all SPACS teachers/administrators are aware of this outreach program.

**Subproblem Four**

Offering the programs within various disciplines throughout the Stevens Point Area Catholic Schools was the fourth subproblem of this project.

Once the faculty and administration of the SPACS system had received instructions on the methods and means for scheduling a program, the author attempted to scatter the programs throughout the year, holding at least one program a month for various schools and grade levels throughout the system. The programs have lasted anywhere from 45 minutes to a half day depending on what each teacher/class has in terms of requirements of the program. Due to the tiring nature of the program to the birds
themselves, the actual contact time with wildlife is never more than 1 ½ hours. Any additional time needed for the rehabber to conduct the follow up activity is spent with the students without the animals being showcased.

At the end of each program there is an informal analysis of the program between the students and the presenter with a formal evaluation to be filled out by the teacher regarding the quality of the program. This information was used to determine changes needed in the program and to generate the handbook of activities for others to use.

Copies of the formal evaluation form can be found in Appendix D.

**Subproblem Five**

The last subproblem of this project was to create a generalized handbook of activities so that this program could be adapted to other locations by other individuals.

Once the program had been up and running for one semester, the author began to assemble the lesson plans used throughout the various programs into a generalized handbook for others to use. Some of these lesson plans may be from other wildlife centers or activity books and others will be lesson plans that have been created by the author. All attempts were made to equally distribute the lesson plans over various grade levels and goals of EE.
RESULTS AND DISCUSSION

This chapter presents the results of the Wildlife Education Outreach program as it exists after only one year of operation. The program will likely change as time goes on and the needs of the students and teachers of the SPACS system changes.

Subproblem One

Before anything else could be accomplished for this outreach EE program, the project had to be described to the administration and staff within the SPACS system as well as to the Wind River Wildlife Rehabilitation and Release Center. Very early in the formation process of this outreach wildlife education program, the author had received permission from both SPACS and Wind River, and the administrators of those organizations, to embark on this project. Wind River is always looking for avenues of educating the public since many of our “patients” arrive at the center due to human interaction. They were excited that there was a new opportunity to reach the youth of the Stevens Point area through this outreach program. The administration of SPACS was eager to have this program available for students beginning as soon as possible. They were especially excited about the program being available for all K – 12 students in the system and being offered across many disciplines and not simply the science students. The only thing that had yet to be determined was the amount of time she would be allowed out of the classroom for the transportation of the animals between New London (where Wind River is located) and Stevens Point and the actual deliverance of the program. Currently, the program duties are being split between Tracey Miller and Katy Riley. Katy Riley is the librarian at Pacelli High School and is a fellow volunteer wildlife rehabilitator working with Miller at Wind River. As it was immediately recognized by the administration of
SPACS that this program would be of great value for SPACS students, both women were given unlimited time off from classroom/work duties in order to deliver programs and transport the animals. Within the first four weeks of organizing the logistics of the program, SPACS faculty members had scheduled twelve programs for students within the system encompassing many grade levels, disciplines, and school buildings throughout the system. Approximately half of those programs were presented in the fall of 2001. The response has been tremendous toward the animals and the program itself with very positive feedback coming back on the teacher comment forms. [These comments are discussed in detail in Subproblem Four]

**Subproblem Two**

The second component as a part of this project was to develop an interdisciplinary EE program for all age levels and incorporate follow-up activities as extensions of that program. Each scheduled presentation begins with a seminar on wildlife and wildlife rehabilitation that lasts about a half hour. This seminar consists of general characteristics of whatever species of bird the rehabber has brought for the program, the details behind this particular birds’ injuries and reason for non-release, habitat components that are of importance, what the students can do to care for an animal they think is injured and a question and answer segment. In addition to that seminar, the main emphasis of the outreach program is to tailor the Wildlife Education program for each individual teacher requesting one. What sets this program apart from other Wildlife Rehabilitation presentations are the follow up activities presented to the students after that initial seminar portion. In order to facilitate the arduous task of gathering these activities, the author sent out a questionnaire to 70 of Wisconsin’s Licensed Wildlife Rehabilitators to
inquire whether or not there were any “canned” lesson plans that could be incorporated into this program. The questionnaires (see Appendix E) went out in the summer of 2001 with results being tabulated in the early fall of 2001. Although only 24 rehabilitators responded to the questionnaire, valuable information was gained. Of the rehabbers that responded to the questionnaire, none provide follow up lessons or activities for their audiences after their programs. They only present the birds’ information with simple ecological ties such as habitat and care for creatures. Therefore, they couldn’t supply this project with any leads as to where to acquire good lesson plans. As this survey turned out to be a dead end, the success of this portion of the project rested on the author’s research skills and educational background to locate some of these activities. While many good resources were unearthed during the research phase of this project through various activity guides and books, Project Wild: A Secondary Activity Guide (1986) has been an invaluable resource for this aspect of the program. There are many activities located in this single source that relate to wildlife rehabilitation and raptors in general and have been very easy to apply to this outreach program. Within Project Wild, there are various activities for each grade level and discipline. Each topic that had been requested by SPACS faculty, with the exception of one, had at least one correlating activity from which the author could choose for implementation into that presentation. The only presentation thus far that didn’t ask for a formal follow up activity still had excessive exposure to the animal. The teacher’s focus was for the students in her Introduction to Art classes to have the opportunity to “draw from life.” So, the follow up lesson was simply to extend the raptor’s (a red-tailed hawk named Isabo) visit. Isabo remained in the classroom for an extra day so that students had a total of 3 hours to observe and draw her realistically. Normally, the author will not showcase an animal for longer than 1 ½
hours, since Isabo was “perched out” and not on the author’s fist the entire time, it wasn’t
tiring to her to be on display longer than usual. A copy of each of these lessons is
supplied in the back appendices of this publication…Appendices F - X.

Subproblem Three

Developing a means for administrators/faculty members of SPACS to schedule the
programs to come to their buildings and classrooms is the basis of this subproblem.
Conducting the formal in-service for the teachers of SPACS took place in the summer of
2001, just before school started so that the wildlife EE outreach program would be fresh
in the teachers’ minds before the chaos of a new school year ensued. The author, along
with Katy Riley (fellow rehabber), brought in two of the Wind River resident birds of
prey (a red-tailed hawk named Isabo and a barn owl named Phobos) and presented the
faculty and staff with the opportunity for classroom programs. After the faculty heard a
shortened version of the wildlife rehabilitation seminar to help them gain an
understanding of the style of outreach program being offered to them, the author then
focused the in-service on the procedure for setting up a classroom presentation. The
procedure involves filling out a form and sending it via email or inter-school mail to the
author. Prior to that in-service, each faculty member had also received a mailing
introducing the EE outreach program and the educational opportunities being offered to
their students, along with a preliminary survey on topic ideas. By the end of that in-
service in late summer, 8 programs had been scheduled and confirmed for the fall or
spring with topics ranging from adaptations to flight mechanisms and ages ranging from
kindergarten to eighth grade. The requests for the rest of the initial set of 12 programs
came during the first few weeks of school. Teachers were very excited about the
possibility of the program coming to them and the presentation focusing on whatever material they felt necessary for their grade level since the intent is to create tailor-made lesson plans based on the teacher’s curriculum needs. The in-service was a huge success and helped to clear up any confusion surrounding the program, such as how often the program could be offered and how much lead-time was encouraged to plan for an exciting program. This in-service will continue to be a part of each year’s beginning of the year in-service as there is teacher and administrative turn-over most years and in order to ensure that this program will continue in the future, repeating the in-service annually will be necessary. Also, by repeating the in-service each year, it is the author’s hope that teachers who currently don’t have a need for this type of program for their students may change their minds and try to schedule a Wildlife program for the following year after they hear feedback from other teachers who have experienced the program.

Subproblem Four

Subproblem four consisted of actually delivering the programs within various disciplines throughout the SPACS system. Teachers of the SPACS school system were instructed to sign up for a program in person, via email or through the sign up sheet given out at the formal in-service. There were also sign-up sheets at each school within the system’s main office in case someone misplaced theirs. As a result, many requests came in early for programs to be scheduled as a kick-off activity in the fall. Just before the end of the first semester, the author sent out a reminder note to all teachers within the system to put the idea of a spring program into their minds as they were planning the upcoming semester. A few more inquires came in as a result of that reminder letter.
The seminar portion of each program (covering wildlife in general, habitat, personal stories of the bird at the program, etc.) is fairly standard for each presentation. As the age of the students vary, the terminology used can change, but most of the information delivered in the seminar remains the same for each presentation. However, each of the programs was designed according to the individual teacher’s goals and this is where the follow up lesson plans and activities are used. A partial listing of programs that have been delivered thus far follows in order to illustrate the variance in age groups, buildings and activities. This will not purport to be a complete list of all the programs delivered, as many of them are similar (particularly if the ages correlated—e.g. fourth grade programs at two different schools were set up nearly identically).

One of the earlier programs took place in September for the eighth graders of St. Peter’s Middle School. The program was scheduled for a ½ day and included both a red-tailed hawk and a barn owl thereby requiring both rehabbers to be there as leaders, each one handling one of the birds. Originally, this had been scheduled as a program for outside at a nearby park, but the weather did not cooperate so plans changed and the program took place at the middle school. The sixty-plus students were separated into four groups that rotated between the owl, the hawk and two other activities led by St. Pete’s Middle School faculty. Then, the author led the students in the follow-up lesson adapted from Project Wild’s “Stormy Weather”. A second grade program held at St. Bronislava’s School consisted of a single presentation of Isabo, the red-tailed hawk, to one class of about twenty students and the follow up for a total of about an hour. The follow-up activity was “Wildlife is Everywhere!” another modified Project Wild activity where students search their classroom and the outdoors for evidence of wildlife. Katy Riley and Phobos, a barn owl, conducted the next two programs. One was for a third
grade science/religion class at a third school within the system, St. Stephen’s and the other was second grade interdisciplinary presentation at yet another school of SPACS, St. Stanislaus’. The third grade program had 30 students with follow-up lesson entitled “Too Close for Comfort” (exploring habitat stresses and “safe” distances from wildlife) and an in-depth discussion of St. Francis of Assisi and his role in Ecology, while the second grade program had 50 students involved with a repeat of the adapted “Wildlife is Everywhere!” program. The Introduction to Art students at Pacelli High School didn’t have a formal presentation at all, but rather, enjoyed an extended period of time with Isabo. The students were looking for an experience to “draw from life” and since the hawk was being observed in relative silence as the students’ worked, the author allowed the contact time of 1 ½ hours to be extended to a total viewing time of 3 hours over the course of a 2-day period. This Art experience encompassed about 45 students and two full days worth of activity. A fourth grade presentation at St. Stephen’s involved the presentation of Isabo, the red-tailed hawk, to about 60 students. This was a 2-hour presentation in which the follow up activity was adapted from Project Wild’s “Adaptation Artistry”. The last program included here was to Kindergarteners at St. Bronislava’s. Their follow-up activity was called, “What’s Wild?” looking at the difference between wild and domestic animals. Each of the activities named here can be found in the appendices along with other activities that are also suitable to use for school programs. At the end of each scheduled program, the lead teacher was asked to fill out the evaluation. The questions on the form and the mean score for each are tallied below. The scale used for the evaluation form was a simple 1 – 5 with 1 being “strongly disagree” and 5 being “strongly agree”.
Evaluation Results

- The students were actively engaged in the program 5
- The topics that you (the teacher) asked be addressed were addressed adequately through the program 5
- The quality of the program was what you expected 5
- Did the program help the students learn the required material? 5
- The presenter outlined goals of the program to the students before she began 4.8
- The animals were of benefit to your students 4.8
- Length of the program was adequate 4.8
- This program forms the entirety of your EE instruction 2
- Will you continue to use this program in the future? all responded yes

Subproblem Five

In the appendices, you will find copies of the follow-up activities selected by the author for the generalized handbook of activities, which is the topic of subproblem five. Most of the lessons have been used in this first year of the program with excellent success. Others are activities planned for future use and have been included here in the handbook without having been field-tested. Many of the lessons found in the handbook were presented to student groups as written in their original form. Others, due to time constraints or age limits, had to be modified. In gathering these activities, emphasis was placed on what the teachers of the SPACS system had indicated they wanted so inevitably some excellent materials covering some topics have been missed. This handbook is submitted as a springboard for anyone setting up a similar program so that they can add to or delete lesson plan ideas as they see fit for their own needs.
PROJECT SUMMARY AND RECOMMENDATIONS

The purpose of this project was to develop and implement an outreach environmental education program for K – 12 students through the utilization of resident birds of prey from Wind River Wildlife Rehabilitation and Release Center. While the project itself is off to a good start, it will take constant revising in order to keep the program fresh for students as they progress through the system. The first subproblem of obtaining support for the project from the SPACS system and Wind River was relatively easy. I had very little difficulty expressing the need of the students to those people in charge of both the SPACS system and Wind River, so I had no problem getting clearance to offer the program to as many of these students as time would allow. As situations may change in the future however, it is important to remember to keep the lines of communication open between all involved parties to ensure that this program can continue into the future. As an added bonus, I have received a lot of attention via the local newspaper regarding this program. The culminating experience of this project thus far had been an invitation by the University of Wisconsin Stevens Point to be the keynote speaker for their Women in Science day held in Spring 2002. I had the opportunity to share the “Wonder of Wild” with approximately 300 seventh and eighth grade girls who are all interested in the field of science. Not only was I able to share with them the wildlife program that I am accustomed to giving, but also I was offered the opportunity to encourage young ladies to enter the profession of Wildlife Rehabilitation and to foster them in their pursuit of science, perhaps through volunteering at a Wildlife Rehabilitation Center much like Wind River.

While the seminar portion of each talk is “standardized”, each one has its own unique sound and “flavor” since each audience asks different questions and reacts
differently to the information given. Therefore, all care is taken on the rehabbers' part to make the information uniform without it becoming a list of "rote" facts. As new information is learned about a species or a new animal is used for the presentations, the seminar portion is evolving to reflect those changes. The lesson plans garnered thus far as follow up activities with students are a good start, but it will take time each year to track the students and make sure that the nature of the program offered is different and do not become repetitive. Some aspects of the program will, by their nature, become repetitive (such as the information regarding the birds in general) but all care must be taken to provide the students with new lessons and experiences as they mature. To make certain that the goals of EE are offered to the students depending on their maturity is going to require intense record keeping and follow through by the curriculum committees within each building of the SPACS system and the wildlife rehabilitator conducting the programs. Lastly, I would like to reiterate that the lessons included in the "Handbook of Wildlife Lessons" are by no means meant to be considered an exhaustive or complete representation of available resources and it is recommended that anyone starting a similar program (or even using the lessons offered here) develop their own materials and to seek out new sources of lesson plans for use in school programs. This program (and similar programs) can have a profound effect on today's students and it is important that the lessons selected are age appropriate and gathered with the students' (and teachers') needs in mind. It is also important to go beyond the awareness goal for EE and include activities that get the students involved in EE action and experience as they mature.

While it has been mentioned already in other areas of this publication it is imperative that anyone starting this type of program follow the laws surrounding Wildlife Rehabilitation and Education programs set forth by the DNR. If you are not licensed to
work with these birds (or other wildlife), contact the DNR for a list of nearby people who are licensed. Most of the licensed rehabbers in WI will offer education programs when asked. It is also imperative that the safety of the animals used in these types of programs is foremost in the planning of the programs. Even when "education animals" are accustomed to giving these types of talks, stress levels need to be monitored to ensure that the program is not detrimental to them and will prove to be the positive experience it was intended to be.
References Cited


Appendices
Appendix A

To: All Administration/Faculty of SPACS
From: Tracey Miller
RE: An Outreach Wildlife Rehabilitation Program for your Students

A hearty welcome to all of the new members of our faculty and a welcome-back to all our veteran members! I am looking forward to an exciting school year and that brings me to the reason I am writing you today. As many of you may know, I began my Master’s Program this summer at the University of Wisconsin Stevens Point. I am pursuing a Master’s in Natural Resources in Environmental Education. I am working on my graduate project already and it involves all of you!

As many of you already know, I am also a wildlife rehabilitator working out of the Wind River Wildlife Rehabilitation and Release Center in New London, WI. My graduate project is to develop and implement an outreach program for the students of SPACS using the resident birds of prey from Wind River. It is my intention to offer these programs to your students beginning this fall. I have access to Red-tailed Hawks, Owls and a few other creatures that will help you incorporate Environmental Education within your classroom. I will do all the work! I can either use a generic lesson plan that I use during other programs or if there is something specific you are looking for (i.e., habitat, eating habits, flight, etc.) I will tailor a program to your needs. The programs can last anywhere from 45 minutes to a half day. These programs are NOT for Science teachers alone! I am looking forward to working with all age levels within the system and all sorts of different subjects as well.

I will be in-servicing all of you on the logistics of the program (how to schedule, how far in advance, etc) during our fall in-service time but what I am asking for now is some ideas for lesson plans to develop. Could you take a moment to reflect on how this type of program could be used in your discipline/grade level and let me know what topics you would be interested in? I would like to conduct at least one program a month and if I could have an idea what type of programs you might be interested in I could begin working on the actual programs even before school starts. Please fill out the following form and drop it in the mail, use the inter-school mail or email me the info. I would sure appreciate your help! Thanks for all your time with this and I look forward to meeting all your students this year with my “special guests” on my fist! 😊

Best wishes for your school year!

Tracey Miller
Pacelli High School
Life Science Teacher
Appendix B

Preliminary School Program Ideas

Name: ___________________________  School: ___________________________

Age level: ______________________

Topic(s) to be discussed during the program: __________________________________

What subject(s) would you like this program to be used for? Art, Language arts, Science, Interdisciplinary, etc. __________________________________________________________

How long of a program are you looking for? (45 minutes to ½ day) ______________

When might you expect to need the program offered? ___________________________

Please send this back to Tracey Miller so that I can begin working on your program!

Thanks for all your interest and help!

Tracey Miller
2300 Clark St.
Stevens Point, WI 54481

OR use School Mail
Tracey Miller—Pacelli High School

OR email me!
tmiller@spacs.k12.wi.us
Appendix C

Scheduling a Wildlife Rehabilitation Program for your Class

Please make sure that this form reaches Tracey Miller at least two weeks before the date of your program. It is necessary for adequate preparation of the information and to arrange transportation of the animals to Stevens Point.

Date program requested for: ____________________ Time: ______________

Name: ___________________________________ School: ____________________

Phone number (I want to confirm with you): (W) ________ (H) __________

Age group of students: ________ Length of program: _______________

Number of students that will be present for the program: _______________

Topics you would like addressed? ___________________________________

Usually, these programs are done with raptors,

Specific animals that are available are Red-tailed hawks, barred owls, barn owls, Great Horned Owl and screech owl. Is there a specific animal you would like me to bring? ____________________

Occasionally, it can arranged that a mammal or reptile or other creature is available, any request for that this time? __________

Is there a specific subject you would like targeted? ____________________

Are there any students allergic to birds (or mammals)? yes no

Any other suggestions, concerns that I need to be aware of? ____________________

Once again, please make sure that I get this form via inter-school mail at least two weeks before you need the program to be delivered. If the birds are unavailable, we will need to reschedule. Please be flexible in your dates if possible. Thanks! I look forward to working with you and your students!
Appendix D

Evaluation of Wildlife Program

Name: ___________________________ (optional)  School: ________________

Date of program: ____________________  Age of students: ________________

Please circle your response to the following questions according to the following scale:

1—strongly disagree  2—disagree  3—neutral  4—agree  5—strongly agree

The students were actively engaged in the program  1  2  3  4  5

The presenter outlined the goals of the program to the students before she began  1  2  3  4  5

The topics that you asked be addressed were addressed adequately through the program  1  2  3  4  5

The quality of the program was what you expected  1  2  3  4  5

The animals were of benefit to your students  1  2  3  4  5

Length of program was adequate  1  2  3  4  5

Did the program help the students learn the required material?  1  2  3  4  5

This program forms the entirety of your Environmental Education program for the year?  1  2  3  4  5

Any comments?  ___________________________________________________________

__________________________________________________________

Suggestions for improvement?  ____________________________________________

Will you continue to use this program in the future? yes no

Please send back to Tracey Miller--Pacelli High School within 2 weeks of your program. Thanks for your help.
Appendix E

2300 Clark St.
Stevens Point, WI 54481

Dear «FirstName» «LastName»

My name is Tracey Miller and I am currently taking coursework to obtain my Master’s Degree in Natural Resources in Environmental Education. As part of the Master’s program, I am working on a graduate project regarding the development and implementation of a Wildlife Rehabilitation Outreach Program for my school district. I am currently a volunteer at Wind River Wildlife Rehabilitation Center working under Randie Segal. The focus of my project is to bring wildlife rehabilitation/education programs to the students of Stevens Point where I teach. It is my hope that you can help me in that endeavor.

I would like to ask your help in the gathering of Wildlife lesson plans that you currently use in your education programs. The programs I offer will cross all disciplines and age levels so any and all formal lessons would be appreciated. I would like to get a feel for the types of education programs you do and see if I could have copies of those lessons to adapt for my work with Wind River and the students of Stevens Point. I will be acknowledging all the centers that send lessons to me at the bottom of each lesson chosen to become part of the handbook. Once the handbook is completed, I will again contact you with information regarding duplicating prices in case you would like a copy of the collected activities to use in your own education programs.

In addition, I am working cooperatively with the Wisconsin Department of Natural Resources as they are in need of this information as well. Any information you can provide to me will be forwarded to that agency. Please take a few minutes to complete the enclosed questionnaire and return it in the stamped envelope by August 31, 2001. Thanks for all you are doing for the wildlife of Wisconsin!

Respectfully yours,

Tracey A. Miller
**Wildlife Education Survey**

1. Do you offer general education programs for the public? If yes, how often? Covering what topics? At your nature center or elsewhere? Please be as specific as possible.

2. I/We offer school-age programs to the following grade levels: (circle all that apply)
   
   K 1 2 3 4 5 6 7 8 9 10 11 12

3. I/We offer programs that cover the following topics: (check all that apply)
   
   ________ general knowledge of the animal(s)
   ________ habitat/niche of the animal(s)
   ________ interaction with humans
   ________ ways they can help to prevent further injuries to animals
   ________ other (please list)

4. I/We offer programs that cover these topics of environmental education: (check all that apply)
   
   ________ awareness—giving the participants a general sense that nature exists without going into too much detail/specifies.
   ________ knowledge—delving deeper into the ecology/niche/habitat of the species you are doing the program on. Passing on facts and information.
   ________ values/ethics—instilling in the participation some sense of the “right thing to do” in regards to wildlife and interactions.
   ________ citizen action skills/experiences—actually providing some skills and opportunities for the participants to make a difference via donations, letter writing campaigns, political action, habitat restoration projects, etc.

5. What species do you use in your programs? (please list)

6. Do you use any prepared lesson plans for your programs (i.e. from a published resource book)?—Or do you design your programs based on your audience? Please be as specific as possible—giving resource information if applicable.

As my project is to create an outreach environmental education program using Wildlife as its focus, any lesson plans you can send copies of to me would be greatly appreciated. Please mail this in the envelope provided by August 31, 2001. Thanks again for your time.
Appendix F

What’s Wild?

□ This activity is set up for students in grades K – 3 and would address the Awareness goal of EE.
□ The objectives are that the students will be able to 1) distinguish between wildlife and domesticated animals and 2) recognize that wildlife occurs in a variety of forms.
□ The method used is to have students find and classify pictures of wild and domesticated animals and create a collage.
□ This activity is suitable for infusing into a language arts, science or art class.
□ Duration: 60 minutes

Following the wildlife presentation, lead a discussion on animals that the students know. Perhaps it is their pet, or a classroom mascot or just wild animals they see outside their windows. Try to engage the students in a discussion of what makes an animal wild.

After the discussion, give students a collection of magazines. Split them into a domestic group and a wild group and tell the students to find animals in the magazines that represent their group.

Allow around 20 minutes for picture collection. Then, in smaller groups of 2 or 3, have the students make a collage or a mobile of their pictures. These collages/mobiles can then be displayed around the classroom.

Possible extensions:
□ Make a master list of the animals found and use them for a spelling unit.
□ If the students are making mobiles, have them construct the mobiles in layers representing where the animals are found...air, land or underground.

Project Wild (1986)
Appendix G

Wildlife is Everywhere!

- This activity is set up for students in grades K – 3 and would address the Awareness goal of EE.
- The objectives are that the students will be able to 1) state that humans and wildlife share environments; and 2) generalize that wildlife is present in areas all over the Earth.
- The method used is to have students search their environment for evidence of wildlife.
- This activity is suitable for infusing into language arts or science classes.
- Duration: 30 - 45 minutes

For this activity, stress to students that they are allowed to observe but not touch or disturb animals they see.

After the presentation, invite students to explore the classroom looking for signs of wildlife, past or present. It may be a spider web, dead insects on windowsills, holes along baseboards etc. After the students search for a few minutes, call them back as a large group to discuss what they have found. At this time, introduce the concept that humans and animals are constantly sharing environments even if we don’t notice it right away.

Expand the search to include the out of doors. Have students work in pairs and give them five minutes to explore a small patch of the schoolyard or playground. Indirect evidence such as feathers, tracks and the like are acceptable as well as direct evidence. Once again, call the students back as a large group to discuss what they found.

Talk to the students about what they have learned. Emphasize the point of sharing environments with wildlife all the time. Students may use their own past experience to share situations where they have come in contact with wildlife while on vacation or at Grandma’s or something similar.

Project Wild (1986)
Appendix H

Animal Toons

This activity is very simplistic in nature, but is a good starting point for all sorts of discussions on animals and their interaction with humans. The good aspect of cartoon animals is that they encourage interest and love for wildlife. On the negative side, children may be led to believe that animals will survive (like humans) even if humans continue to destroy their natural habitats.

☐ This activity is set up for students in grades K - 4 and would address the Awareness and Knowledge goals of EE.

☐ The objectives are that the students will be able to recognize anthropomorphism as it relates to animals found in television shows and cartoons.

☐ The method used is to have students discuss animal characters on TV or in movies and describe how they are portrayed as humans in those venues.

☐ This activity is suitable for infusing into language arts, social studies or science classes.

☐ Duration: 30 - 45 minutes

Lead the students in a discussion by asking them to name the places outdoors where animals really live—holes in trees, burrows, nests, hives, caves, ponds etc.

Using the animals you have brought with you and point out the differences between the animals you have in front of you (or classroom mascots) and the cartoon/TV animals discussed before.

Finally, lead students to name places where wildlife couldn’t live—shopping malls, apartment buildings, swimming pools, etc.

For wrap-up, ask the students the following questions:

--How are cartoon animals like people?

--Are animals really people? How do you know?

--Do you like or dislike the cartoon animals?

--Do you like or dislike real animals?

--Do animals live in houses? (some do, but most build nests and other kinds of shelter)

--In what ways are animals really like people? (eat, drink, sleep, work, etc.)

--In what ways are animals different from people?

--Can animals cry? Laugh? Feel pain? Show love?

--If you created a cartoon show with animals, how would you make them act?

Playing Lightly on the Earth (1997)
Appendix I

No See ‘Ums

This activity will allow kids to learn how animals and insects give clues to their existence, even when they can’t be seen.

☐ This activity is set up for students in grades K – 4 and would address the Awareness goal of EE.
☐ The objectives are that the students will be able to detect numerous pieces of evidence of animal existence.
☐ The method used is to have students search their environment for evidence of wildlife.
☐ This activity is suitable for infusing into language arts or science classes.
☐ Duration: 45 – 60 minutes

This activity is best done outside. Working in groups of 2 to 3, give the students 15 minutes to look for signs of wildlife; such as webs, holes and burrows, feathers, nests, tracks and other signs.

For the next 15 minutes, have these groups listen for sounds of wildlife: such as birdsong, rustling leaves, buzzing insects, etc.

Lastly, have the students spend 10 minutes searching for signs of eating; empty nuts, bones, nibbled edges of flowers and leaves, etc.

Call the students back and lead them in a discussion making sure to cover these questions:
--What clues did wildlife leave behind?
--Can you guess what type of animal left each clue?
--Did you spot the animals or bugs making sounds?
--How do animals sense that humans are nearby?
--Why do most animals stay away from people?
--What are some clues that people leave behind?

Playing Lightly on the Earth (1997)
Appendix J

Shadow Play

This activity is a great tie-in with camouflage discussions and would need to be done outdoors on a sunny day.

☐ This activity is set up for students in grades K – 4 and would address the Awareness and Knowledge goals of EE.

☐ The objectives are that the students will be able to see how animals protect themselves by concealing their shadows.

☐ The method used is to have students imitate animals and try to disguise their shadows.

☐ This activity is suitable for infusing into language arts, physical education or science classes.

☐ Duration: 30 minutes

Each child will need an oversized shirt that will act as wings when their arms are raised. Take the children outside and have them find their shadow. Using their hands, have them create “ears” on their heads. Have the student identify the type of animal they are currently portraying and then instruct them to turn their body so that their “ears” disappear.

Next, have the students stand up straight and stretch their arms out into “wings”, making the biggest shadow they can. The next instruction will be for them to watch their shadow and find a way to make it small.

Lastly, without hiding behind anything, the students are to find a way to make no shadow at all.

Questions to follow up are:
--Is your shadow bigger or smaller than you are?
--Do you have a shadow on a sunny or a cloudy day?
--How did you make your shadow grow bigger? smaller?
--How did you make your shadow disappear?
--If you were a butterfly, how could you make your wing-shadow smaller?
--Which is easier to spot—an animal with a shadow or an animal without a shadow?
--Why do animals and insects want their shadows to disappear?

Adapted from Play Lightly on the Earth
Appendix K

Egg Toss

This activity looks at different nesting materials and how nests protect eggs.

- This activity is set up for students in grades K – 4 and would address the *Awareness and Knowledge* goals of EE.
- The *objectives* are that the students will explore how nesting material absorbs shock and affords protection for animals.
- The *method* used is to have students create different protective coverings for eggs and then collect nesting materials to see which works the best at protecting their “babies”
- This activity is suitable for infusing into *language arts or science classes*.
- Duration: 45 – 60 minutes

The leader will have to provide natural nesting materials from outdoors such as weeds, leaves, brush, etc. You will need 2 raw eggs and string, masking tape and/or yarn for wrapping up the eggs.

Have the students build a protective covering around one egg by layering material around it, holding the layers in place with string, yarn or tape. Keep layering until you have a soft, strong ball around the egg.

Gently toss the egg back and forth. It’s okay if the ball hits the ground. After a while, unwrap your egg just enough to see if it is still whole.

If your egg breaks, wrap the second egg with different materials. If it is still whole, continue to use your first egg. This time, try dropping your ball from a distance—from a tree limb or a window.

Questions to follow up:

- Why are you unlikely to get hurt if you fall into a pile of leaves or tall grass?
- Why do animals use leaves and grass to build their nests?
- Why are we using an egg instead of an apple in this exercise?
- Leaves, grass and moss are soft, but are they also strong?
- Why would birds want to lay their eggs in nests?
- If your egg broke, what do you think caused it to break?
- If you had to build a nest for yourself, what materials would you use?

Adapted from Play Lightly on the Earth
Appendix L

Too Close for Comfort

- This activity is set up for students in grades K – 7 and would address the Awareness and Knowledge goals of EE.
- The objectives are that the students will be able to 1) describe possible negative consequences for people and wildlife under conditions of crowding; and 2) identify ways people can behave in order to reduce negative consequences of crowding for wildlife.
- The method used is to have students experiment with physical distance and levels of comfort in humans, estimate appropriate distances between humans and wildlife under various conditions, hypothesize about indicators of animal discomfort, and summarize reasons to avoid animal discomfort through crowding.
- This activity is suitable for infusing into a language arts, science or social studies class.
- Duration: 10 - 30 minutes depending on age of students.

This activity works especially well when the topic of habitat loss was a part of the program delivered. Introduce the concept of discomfort from crowding by asking for a volunteer from the class and having them stand in front of the group. Approach that student slowly, asking the student to tell you when they begin to feel uncomfortable because of your closeness. Discuss what physical reactions students may experience when uncomfortable due to crowding, such as avoidance of eye contact, nervousness, sweaty palms, etc.

Talk about the fact that wildlife may also feel uncomfortable when they are feeling crowded. Ask the students why the animals may feel this way (fear of predation, need to protect young, etc.). Discuss adaptations animals have to counter these feelings, such as the ability to run fast, fly away, etc.

Have the students make a list of animals they are likely to encounter in the wild. Have them estimate what distance should be maintained from each animal species—both for personal safety and the safety of the animal. Emphasize that these are just estimates and it is better to stay farther away than you think when confronted with the actual situation.

Have students hypothesize about various behaviors they could look for as signs that an animal might be uncomfortable. (foot stomping, teeth grinding, nervously looking around, fleeing the area, etc.)

Discuss ways in that wildlife harassment could be taking place unintentionally, such as getting too close to photograph, calling or heckling animals (especially at zoos), hiking near a nesting bird, etc. Summarize reasons it is important to minimize such disturbances from people for wildlife.

Project Wild (1986)
Appendix M

Classroom Carrying Capacity

Excellent for looking at limiting factors, habitat components and carrying capacity in the wild.

- This activity is set up for students in grades K – 6 and would address the *Awareness, Knowledge and Issues* goals of EE.
- The *objectives* are that the students will be able 1) define carrying capacity; and 2) give examples of factors which can influence the carrying capacity of an area.
- The *method* used is to have students sit unusually close to each other and describe the results.
- This activity is suitable for infusing into *language arts, social studies or science classes*.
- Duration: *K – 3; 20 minutes, 4 – 6; 45 minutes*

Ask the students to sit close together in a group on the floor. They should be fairly tightly packed together. Tell them to pay attention as you give them a short lesson (this could be on carrying capacity for instance, or spelling or something else). Conduct the lesson for about 5 to 10 minutes depending on the age of the students. Then ask the students to describe what happened during the lesson. Did they feel crowded? How did they act? Is this the way they usually act when they are sitting at their desks?

*For K – 3 students:*
What if you were animals and you were this crowded? You might be domesticated or wild animals, would you be able to live? Is there enough room for you? What would you need in order to survive?

*For 4 – 6 students:*
After students have returned to their seats, continue the discussion on carrying capacity. Ask them how the behavior of animals may change if a population suddenly exceeded the carrying capacity of a habitat, or if the habitat was suddenly decreased? Why might an animal population exceed the carrying capacity of a habitat? How might a habitat suddenly be decreased in size? Ask for human-caused and natural reasons. How can people maintain or increase the carrying capacity of a wildlife habitat? How did they increase the carrying capacity of their classroom instruction area when they were sitting so crowded? (They increased the available area by moving back to their seats) With wildlife, some of these ways are reducing the animal population by hunting or moving some animals to another area or by adding some essential components of habitat for them (such as adding a backyard feeder or water supply).

Project Wild (1986)
Appendix N

Camouflage

This activity needs to be done at night so that the “hiders” will be harder to spot by the “seekers”

☐ This activity is set up for students in grades 2 - 5 and would address the Awareness and Knowledge goals of EE.

☐ The objectives are that the students will be able to see how camouflage will help wildlife.

☐ The method used is to have students search their environment “hiders” who are using camouflage to become “invisible” to the “seekers”

☐ This activity is suitable for infusing into science classes.

☐ Duration: 20 - 30 minutes

Divide group into two teams, hiders and seekers. The hiders are to scatter along a length of trail. The distance they will place themselves off the trail will depend on how much light is available naturally and whether or not the seekers will have flashlights. At some point along the trail, each seekers’ full body will be viewable, so they will have to try to use the natural objects to blend in with their profile. Send the searchers out looking for the hiders. Tell them to use not only their senses, but also the intuitive nature that we all share of knowing when something is “out there”. Once a seeker has passed by a hider, the hider can reveal him or herself.

Sharing Nature with Children (1979)
Appendix O

Predator-Prey

This game introduces food chains to students.

☐ This activity is set up for students in grades K – 4 and would address the Awareness goal of EE.

☐ The objectives are that the students will be able to link predators with their prey species and explore different hunting methods.

☐ The method used is to have the students role play a game with predators (blindfolded) hunting p

☐ This activity is suitable for infusing into physical education or science classes.

☐ Duration: 20 minutes

Have the students form a circle about 15 feet across. Choose two students to be blindfolded and act as the predators in the center of the circle. Have the rest of the students decide what type of predator they are and to name a prey species that they should hunt for. The predators will then try to hunt for their prey species by listening for them. The other students will wander in the general vicinity and should be mimicking various prey species so that the predator has to distinguish between prey it would hunt for and other prey organisms. If the predator can find its prey, he or she would go and tap the prey on the shoulder.

Variation: attach bells to certain prey and/or the predators to encourage changing their hunting methods.

Sharing Nature with Children (1979)
Appendix P

How Many Bears Can Live in this Forest?

- This activity is set up for students in grades 3 - 9 and would address the Awareness, Knowledge and Issues goals of EE.
- The objectives are that the students will be able to 1) define carrying capacity; and 2) describe the importance of carrying capacity for wildlife and people.
- The method used is to have students become “bears” to look for “food” and “habitat components” during this physically involving activity.
- This activity is suitable for infusing into math, social studies, physical education or science classes.
- Duration: 20 - 45 minutes

For the materials for this game, you will need five colors of construction paper (2 or 3 sheets of each color), a felt tip pen, envelopes (one per student), pencils and one blindfold.

Cut the paper into 2” by 2” pieces. For a group of 30 students make 30 cards of each color as follows:

- orange—nuts Mark 5 pieces N - 20; the rest N - 10
- blue—berries Mark 5 pieces B - 20; the rest B - 10
- yellow—insects Mark 5 pieces I - 12; the rest I - 6
- red—meat Mark 5 pieces M - 8; the rest M - 4
- green—plants Mark 5 pieces P - 20; the rest P - 10

The following estimates of total pounds of food for one bear in ten days are used for this activity:

- nuts—20 pounds—25%
- berries—20 pounds—25%
- insects—12 pounds—15%
- meat—8 pounds—10%
- plants—20 pounds—25%

Total: 80 pounds in ten days

In a fairly large open area scatter the colored pieces on the ground. Have each student write his or her name on an envelope. This will represent the student’s “den site” and should be left on the ground at the starting line on the perimeter of the field area.

Have the students line up on the starting line, leaving their envelopes between their feet. Give them the following instructions: “You are all now black bears. Among you is a young male bear that has not yet found his own territory. Last week he met up with a larger male and before he could get away, he was hurt. He has a broken leg. (Assign one student as the crippled bear. The crippled bear must hunt by hopping on one foot.) Another bear is a young female who investigated a porcupine too closely and was blinded by the quills. (Assign one student to be the blind bear. She must hunt blind folded.) The third special bear is a mother bear with two fairly small cubs. She must gather twice as much food as the other bears. (Assign one student as the mother bear.)”
Do not tell the students what the colors, initials, and numbers on the pieces of paper represent. Tell them only that the pieces of paper represent various kinds of bear food; since bears are omnivores; they like a wide assortment of foods, so they should gather different colored squares to represent a variety of food.

Students must walk into the “forest”. Bears do not run down their food; they gather it. When students find a colored square, they should pick it up (one at a time) and return to their den to “eat” it (place it in envelope) before picking up another colored square. (Bears would not actually return to their den to eat; they would eat food as they find it.) Pushing and shoving—any competitive activity—is acceptable as long as it is under control. Snatching food right out from under the blind bear or the crippled bear is natural—but stealing from other’s dens is not. Remember that if bears fight (which they seldom do) they can become injured and unable to gather sufficient food, then they starve.

When all the colored squares have been gathered, the food gathering and hunting is over. Have students pick up their den envelopes containing the food they have gathered and return to class.

Explain what the colors and numbers represent. Ask each student to add up the total number of pounds of food he or she gathered—whether it is nuts, meat, insects, berries or plant materials. Each should write the total weight on his or her envelope.

Using a chalkboard (or similar) list blind, crippled and mother. Ask each of them what their totals are and place the total next to the appropriate title. Then ask each of the other students to tell you what they gathered. Place their totals on the board as well. Add the poundage gathered by the entire class. This is the total amount of food that was available in this habitat. Tell the students that a bear needs 80# of food for the 10-day time span we were simulating. Which bears survived? Is there enough food for all the bears to survive? If not, how many bears can live in this area? What would happen to the extra bears? Would they all starve? How many pounds did the blind bear collect? Will she survive? What about the mother bear? Did she get twice the amount needed to survive? What will happen to her cubs? Will she feed cubs first, or herself? (Herself. If cubs die, she can have more next season, if she dies the cubs will die also.)

Finally lead the class to the discussion on carrying capacity and the idea that a habitat can only support a certain number of animals.

Project Wild (1986)
Appendix Q

Animal Poetry

☐ This activity is set up for students in grades 4 - 9 and would address the Values goals of EE.
☐ The objectives are that the students will be able to recognize and experience the inspirational value of nature.
☐ The method used is to have students go outside to imagine themselves as animals and then write poetry.
☐ This activity is suitable for infusing into a language arts, or science class.
☐ Duration: 30 - 45 minutes

Everyone can be a poet—at least to some extent, yet lots of people think that any kind of poetic expression is beyond their capabilities. This activity is designed for every student (or group of students if you prefer) to create a poem.

Go outside. Find a pleasant setting and ask everyone to pick an animal to think about. Wild or domestic, it doesn’t matter. Ask everyone to close their eyes for a few minutes and imagine they are the animals, living in its natural environment. Give everyone five minutes to go find a spot to “become” that animal. Imagine how long it lives, where it travels, how other plants and animals look from its perspective.

When the students return, ask them to write a short poem about their animal. Poems can be free verse or rhyming. Cinquain and haiku are interesting forms as well.

Project Wild (1986)
Appendix R

Deadly Links

- This activity is set up for students in grades 4 - 9 and would address the Knowledge and Issues goals of EE.
- The objectives are that the students will be able to 1) give examples of ways in which pesticides enter food chains; and 2) describe possible consequences of pesticides entering food chains.
- The method used is to have students become "hawks", "shrews", and "grasshoppers" in a highly-involving physical activity.
- This activity is suitable for infusing into a social studies, physical education, or science class.
- Materials: white pipe cleaner pieces and colored pipe cleaner pieces (2/3 white and 1/3 colored) -30 per student is recommended and a bag for each student.
- Duration: 30 - 45 minutes

This activity works well when talking about pesticides and human interference with wildlife. At the older grade levels, this activity is perfect for illustrating the concept of biological magnification...the concentration of toxic materials as one travels up the food chain.

Tell students this is an activity on food chains. If this term was not discussed previously, take the time to establish a definition. Food chain—a sequence (or chain) of living things in a community eating the member below it. (Grasshoppers eat plants, shrews eat grasshoppers, hawks eat shrews...etc.)

Divide the students into three groups. In a class of 26 students, there should be 2 hawks, 6 shrews and 18 grasshoppers. (Work with approximately 3 times as many shrews as hawks and three times as many grasshoppers as shrews if your numbers differ) Hand each grasshopper a bag to represent his or her stomach. Distribute the food pieces (pipe cleaners) around a large field, if outside is not a possibility, the gym or even a cleared area in the classroom will work.

The grasshoppers are first to go looking for food. The hawks and shrews are to sit quietly on the sidelines and "stalk" their prey. The grasshoppers will only have 30 seconds to collect as much food as they can. At the end of the 30 seconds, have the grasshoppers stop collecting.

The shrews are now allowed to hunt...the hawks are still stalking their prey and will remain on the sidelines. The time allowed for the shrews to hunt will depend on the size of the area you have...outside you may allow 60 seconds to hunt grasshoppers, but in the classroom, 15 seconds may be enough time. Any grasshopper tagged by a shrew must give its bag (stomach) to the shrew and then sit on the sidelines.
The next time frame (15 to 60 seconds depending on your situation) is time for the hawks to hunt shrews. The same rules follow: any grasshoppers still alive may hunt for food; the shrews not caught by hawks can be hunting grasshoppers. If a hawk taps a shrew, the shrew must turn over all the bags he/she has collected so far and then sit on the sidelines. At the end of the time period, gather all the students into a circle, telling them to bring whatever they have caught with them.

Have each student that is still alive count up the number of white and colored food pieces in their possession. List these totals on a board or piece of paper. Inform the students that there is a pesticide that has been introduced in this food chain via runoff in a local water supply. The multi-colored pieces of pipe cleaner represent the pesticide. Any grasshopper not eaten by a shrew that has even one colored piece of food is now dead as a result of the pesticide. Any living shrews that have \( \frac{1}{2} \) of their pieces in color will die as a result of the pesticide. The hawk that has the largest number of colored pieces will not die at this time, but it’s eggshells will become so weak that it will not be able to have offspring the following year. The other hawk is not affected at this time.

Lead the students in a discussion of possible uses for pesticides and how we can protect the wildlife that may come in contact with that pesticide. Try to encourage the students to offer alternatives to pesticides.

Project Wild (1986)
Appendix S

Habitat Lap Sit

☐ This activity is set up for students in grades 4 - 9 and would address the Awareness and Knowledge goals of EE.

☐ The objectives are that the students will be able to 1) identify the components of habitat; 2) recognize how humans and other animals depend upon habitat; and 3) interpret the significance of loss or change in habitat in terms of people and wildlife.

☐ The method used is to have students physically form an interconnected circle to demonstrate components of habitat.

☐ This activity is suitable for infusing into a science class.

☐ Duration: 20 minutes

This activity takes very little time, but has a lasting impact. Have the class number off from one to four. Have all the ones gather in one corner, twos in another, etc. You will need a large area to complete the lap sit in (ideally outside is best). Assign each group a concept as follows: “ones” = food, “twos” = water, “threes” = shelter and “fours” = space. Build a circle in chains of food, water, shelter and space. The four students of each chain should stand next to each other facing the center of what will be the circle. Once all the students are in the circle, ask them to turn to their RIGHT and take a few steps toward the center of the circle. They should now be standing close together with their toes touching the heels of the person in front of them.

Don’t panic—this will work! Ask everyone to listen carefully. Ask the students to place their hands on the shoulders of the person in front of them. At the count of three, ask the students to sit down…on the lap of the person behind them. If you notice a weak spot, immediately have students stand back up and make changes in order to try again. Once you get the circle formed, you will then say, “food, water, shelter and space in the proper ARRANGEMENT (represented by the newly formed, intact lap sit circle,) are what is needed for suitable habitat.

After the students understand the major point, pull out a component. Have them form the circle again and then explain that there is a drought this year and choose two of the “water” students to get pulled out of the circle. This will probably cause the circle to fall apart (or at least suffer some disruption). It is necessary to ensure everyone’s safety during this part of the activity since it is very likely that they will fall down.

Project Wild (1986)
Appendix T

Muskox Maneuvers

- This activity is set up for students in grades 4 - 9 and would address the Knowledge and Issues goals of EE.
- The objectives are that the students will be able to 1) evaluate the effectiveness of some adaptations in predator/prey relationships; and 2) describe the importance of predator/prey relationships as limiting factors in wildlife populations.
- The method used is to have students simulate musk oxen and wolves in a highly involving game of physical activity.
- This activity is suitable for infusing into a physical education, or science class.
- Materials: 12 “flags” of one color, 3 of another color
- Duration: 30 - 45 minutes

The activity is based on about 33 students. It will work with groups as little as 15 and as large as 50. If you need to, simply adjust the categories of musk oxen proportionately (approximately 4 times as many of both calves and cows as wolves; 2 times as many of both calves and cows as bulls; e.g., four calves, four cows, two bulls, one wolf).

This activity is best done outdoors! Once you have established an appropriate physical area for the activity, divide your group into four groups, consisting of 3 wolves, 6 bulls, 12 cows and 12 calves. Each will have a distinctive role. Provide each calf with a long, brightly colored “flag”. The flag should be affixed to the calf in a way that if could—if it were within reach—be removed by a wolf. Each wolf should also have a flag (from the other set of flags). The wolves should also wear their flags in a secure but accessible manner.

This activity provides students with an opportunity to experience adaptation behavior of both musk oxen and wolves. Musk oxen, herbivores, often graze peacefully in meadowed areas. While grazing, they spread out. Calves typically do not stray too far from their mothers, but the animals do not always stay clustered...except when predators appear! Begin the activity with the students grazing peacefully as musk oxen and the wolves out of sight of the herd.

These are the behaviors each animal should exhibit:

**Cows:** As soon as grazing begins, the cows should choose a lead cow to watch for predators. The cows should pick a signal the led cow will use to communicate to the rest of the herd that predators are approaching. When the lead cow signals that predators are near, all the cows move to form a circle around the calves to protect the calves from the wolves. With the calves in the center of a circle, the cows stand with their backs to the calves, facing outward to watch the wolves. The cows can move very little. Mostly, they stay firmly in one place, moving their upper bodies to block the wolves from reaching the calves. The cows cannot touch the wolves with their hands or feet.
Calves: The calves depend totally upon the cows for protection. Each calf is to hold onto a cow with both hands, around the cow's waist, and only follow the cow's lead. Calves cannot influence the cows' movement.

Bulls: The bulls are the active defenders of the cows and calves. As the predators near, the bulls form a circle around the cows, which in turn are forming a circle around the cows, which in turn are forming a circle around the calves. The bulls form as tight a circle as they can around the cows and calves, never any farther than one step in front of the circle of cows. The bulls can move, however—but only in a clockwise direction around the circle of cows! The bulls do have use of their hands. As the wolves attack the herd, the bulls try to "kill" them by pulling the flag out of their back pocket, or wherever the flag is attached to the wolf. When a bull kills a wolf, the wolf moves off to the side, "dead", but able to watch the remainder of the activity.

Wolves: Wolves begin the activity out of sight of the herd. They try to get as close as possible to the herd without being detected. Wolves typically work as a unit, so they can attempt a strategy for surprising the herd in order to kill the calves for food. The wolves are mobile, able to move at any time in any direction. They can use any maneuver (except pushing and shoving) to break the herd's defenses. Once a wolf kills a calf—by pulling the calf's flag out of its pocket—temporarily stop the game and move the calf's carcass to the side, where it too can watch the remainder of the activity!

A note about sound effects: This is not a quiet game much of the time. Wolves should be howling, communicating with each other in predetermined ways with signals and as part of their tactics to startle and confuse the musk oxen. The musk oxen moo loudly.

Muskox Maneuvers in Review:
a. Muskox herd grazes quietly. Wolves are out of sight of herd.
b. Wolves move in to attack herd. When lead cow spots wolves, the herd begins defense. A circle is formed, with calves in the center, cows facing out in a circle around the calves, and bulls in an outer circle, also facing the wolves. Each should behave appropriately as described above.

The activity can conclude in several ways. For example:
a) All the wolves could be killed
b) All the calves could be killed
c) The wolves could give up in frustration after a period of time with no success of catching a calf.
d) The wolves could kill one or more calves, and the activity conclude at this time, based on the notion that the wolves are going to eat the killed calves and the herd will move on.

Once the excitement and enthusiasm have peaked—sit down with the students to discuss what happened, and what the activity represents in terms of animal adaptation, predator/prey relationships, and limiting factors. Ask the students to describe and evaluate the predatory behavior of the wolves, and the various defense behaviors of the musk oxen...what would happen if the wolves could not get into the herd? What would happen if the wolves always got into the herd?
Project Wild (1986)
Appendix U

Stormy Weather

☐ This activity is set up for students in grades 4 - 9 and would address the Awareness goal of EE.
☐ The objectives are that the students will be able to generalize that humans and wildlife share environments and experience some of the same natural phenomena.
☐ The method used is to have students go on a “guided imagery” to experience a storm.
☐ This activity is suitable for infusing into a social studies, language arts, or science class.
☐ Materials: tape player if using background “music” of nature sounds
☐ Duration: 20 - 40 minutes

Provide the students with the following instructions:

“You are to try to imagine the things you will hear me describing. If won’t put in all the details—so you must try to see and feel as clearly as you can the things that I describe. Before we begin, I want you to decide who you will be during this activity. You may be either yourself, a pet, a wild animal or a farm animal. You don’t have to do anything special if you choose to be an animal. It is just that you will be visualizing things from the point of view of the animal you pick. Any questions? Okay, let’s see by a show of hands how many people and how many animals we will have for this activity...” [You don’t have to know exactly what type of animal the “animals” are, just get an idea of how many people vs. animals you will have.]

[Optional: You may want to play some background music of natural storm sounds if available while you are reading the situation to the students]

Now we are ready to begin. Get yourselves in a comfortable place. Don’t worry about who is sitting next to you. All of you will have your eyes closed. Just be comfortable, and do your best to imagine the things I will describe. Okay, close your eyes, and imagine what you hear...

It is a late summer’s night. There is a coolness in the air...you hear the sounds of summer...Somehow, you can feel some changes coming in the weather...In the distance, the dark sky is broken by bright flashes of lightning...The light is far away...After a long wait, a rolling rumble is heard...The lightning gets closer...The rumbles are louder...Suddenly, the lightning flashes and lights up the whole sky...You need to find shelter, to find a safe place.

The brilliant flashes of lightning pop and crackle all around you. The noise of thunder is crashing so that the earth seems to shake... There are no longer times of quiet between the rumbles of thunder and flashes of lightning...It becomes still...You notice scents in the air, things you can smell and feel...You begin to hear a new sound...You are not sure what it is...You again have to find shelter, if you had come out thinking the storm was gone...You need to find a place to stay dry...Suddenly the rain is pouring down with a
loud, rich sound...It rains, and rains...and rains...And then stillness...The storm has passed.

[Wait a few seconds and then tell the students,] *Open your eyes.*

Now it is time to find out what the students saw and felt during the guided imagery. There is no need to hear from every student, or any reason for them to feel pressure to share. Most often, they are eager to describe what they experienced. Let the students volunteer, being sure to include who they were as they describe their experience. Find out what shelter they found, and where and what happened to them throughout the storm.

After the students have shared their experiences, turn the discussion to the idea that many creatures share a common environment. Whether we live in the cities, in the country, in the desert or on a mountaintop, people are not the only living creatures there. Events like a summer storm, a strong wind and a heavy snowfall can all serve as special reminders that other creatures share our environments.

Project Wild (1986)
Appendix V

Adaptation Artistry

- This activity is set up for students in grades 4 - 9 and would address the Awareness and Knowledge goals of EE.
- The objectives are that the students will be able to 1) identify and describe the advantages of bird adaptations; and 2) evaluate the importance of adaptations to birds.
- The method used is to have students design and create imaginary birds and write reports including descriptions of the birds' adaptations.
- This activity is suitable for infusing into an art, language arts, or science class.
- Materials: drawing, painting, or clay sculpture materials
- Duration: 20 - 40 minutes

The major purpose of this activity is for students to realize that there are advantages for birds in looking how they do, recognizing some of the ways in which birds are physically adapted to their environments.

Using the list on the following page, discuss with the students the various adaptations of birds. Then, let the students know that they will be able to design their own original bird—one well adapted to its habitat. Each student will have to decide
  - where the bird will live
  - what it will eat
  - its type of mobility
  - its sex

[I have the adaptations all printed out and in various containers. Students choose one slip from each container to get their adaptations and then head off to create the bird with the adaptations they have chosen]

Send each student off to create their bird using the materials you have provided. In conjunction with each drawing or sculpture, each student should write a short report that includes the name of the bird, its food sources, habitat, and lifestyle. Students should also include their lists of adaptations, the reasons for those adaptations and the advantages provided by those adaptations.

Completed projects should then be presented to the class.
<table>
<thead>
<tr>
<th>Adaptation</th>
<th>Bird</th>
<th>Advantage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beaks pouch-like</td>
<td>pelican</td>
<td>can hold fish, a food source</td>
</tr>
<tr>
<td>long, thin</td>
<td>avocet</td>
<td>can probe shallow water and mud for insects</td>
</tr>
<tr>
<td>pointed</td>
<td>woodpecker</td>
<td>can break and probe bark of trees for insects</td>
</tr>
<tr>
<td>curved</td>
<td>hawk</td>
<td>can tear solid tissue, like meat</td>
</tr>
<tr>
<td>short, stout</td>
<td>finch</td>
<td>can crack seeds and nuts, a food source</td>
</tr>
<tr>
<td>slender, long</td>
<td>hummingbird</td>
<td>can probe flowers for nectar, a food source</td>
</tr>
<tr>
<td>Feet webbed</td>
<td>duck</td>
<td>aids in walking on mud, transportation</td>
</tr>
<tr>
<td>long toes</td>
<td>crane, heron</td>
<td>aids in walking on mud, transportation</td>
</tr>
<tr>
<td>clawed grasping</td>
<td>eagle, hawk</td>
<td>can grasp food when hunting prey</td>
</tr>
<tr>
<td>Legs flexor tendons</td>
<td>chicken</td>
<td>aids in sitting on branches, roosting, protection</td>
</tr>
<tr>
<td>long, powerful</td>
<td>ostrich</td>
<td>aids in perching, grasping</td>
</tr>
<tr>
<td>long, slender</td>
<td>heron, crane</td>
<td>aids running, transportation</td>
</tr>
<tr>
<td>powerful muscles</td>
<td>eagle, hawk</td>
<td>aids wading, transportation</td>
</tr>
<tr>
<td>powerful muscles</td>
<td></td>
<td>aids lifting, carrying prey, transportation</td>
</tr>
<tr>
<td>Wings large</td>
<td>eagle</td>
<td>aids flying with prey, soaring while hunting</td>
</tr>
<tr>
<td>short</td>
<td>songbird</td>
<td>darting quickly among tree branches</td>
</tr>
<tr>
<td>Coloration bright plumage</td>
<td>male birds</td>
<td>attraction in courtship, mating rituals</td>
</tr>
<tr>
<td></td>
<td>female birds</td>
<td>aids in camouflage while nesting, protection</td>
</tr>
<tr>
<td></td>
<td>change of plumage with seasons</td>
<td>camouflage, protection (brown in summer, white in winter), protection in shelter</td>
</tr>
</tbody>
</table>

Project Wild (1986)
Appendix W

Scavenger Hunt

☐ This activity is set up for students in grades 2 - 9 and would address the Awareness goal of EE.
☐ The objectives are that the students will be able to be aware of their surroundings and the natural things all around them.
☐ The method used is to have students go on a creative scavenger hunt.
☐ This activity is suitable for infusing into a science class.
☐ Materials: prepared list of items to find
☐ Duration: 20 - 40 minutes

Students will have to be creative to find some of these items. Stress to the students the importance of them only collecting those items that they can safely acquire without damaging any living thing.

Students will work in small groups to find the following items:

☐ a feather
☐ one seed dispersed by the wind
☐ exactly 100 of something
☐ a maple leaf
☐ a thorn
☐ a bone
☐ three different types of seeds
☐ one camouflaged animal or insect (return after game)
☐ something round
☐ part of an egg
☐ something fuzzy
☐ something sharp
☐ a piece of fur
☐ five pieces of man-made litter
☐ something perfectly straight
☐ something beautiful
☐ something that is of no use in nature [**everything in nature has a function**]
☐ a chewed leaf (not by you!)
☐ something that makes a noise
☐ something white
☐ something important in nature [**everything in nature is important, even poison oak is important to the animals that eat its berries!**]
☐ something that reminds you of yourself
☐ something soft
☐ a sun trap

Sharing Nature with Children (1979)
Appendix X

Wild Words...a Journal Making Activity

□ This activity is set up for students in grades 4 - 12 and would address the Awareness and Values goals of EE.

□ The objectives are that the students will be able to 1) observe and describe their surroundings, particularly in out-of-door settings; and 2) record their observations and descriptions in a written and visual form.

□ The method used is to have students go into an outdoor setting to make and write in journals they design.

□ This activity is suitable for infusing into a, language arts, or science class.

□ Materials: materials to make journals...construction paper for covers and unlined paper for the interior of the journal.

□ Duration: 20 - 40 minutes

Go outside to some pleasant outdoor setting. It might be an open area on the school grounds with clear sky above, near a large and inviting tree in a park that shades the earth on a hot day, or anything in between.

Ask the students to sit quietly, listening carefully for any sounds. Ask them to look with “soft” eyes—that is, eyes that do not focus specifically on any one thing, but broadly sense what is in the environment. The students may move their heads at first in a scanning motion until they are accustomed to seeing without focusing on one thing at a time. After about 10 minutes, talk with the students about what they see, feel and notice. Then, hand out the journal packets for the students to journal their own thoughts about what they felt, saw and noticed during their time alone.

The important thing to stress is that the journal is theirs—for them to fill with whatever they choose. It is not the same thing as a diary that might be written in every day. It is a special way to keep memories and ideas about things in the natural environment. Encourage them to take their journals with them sometimes when they are outside.

Discuss the value of journals. In addition to recording impressions, feelings and observations, a journal can become a log of important data to be referred to later. It can hold images as well as words.

Project Wild (1986)