

Great Lakes Environmental Education



Special Report

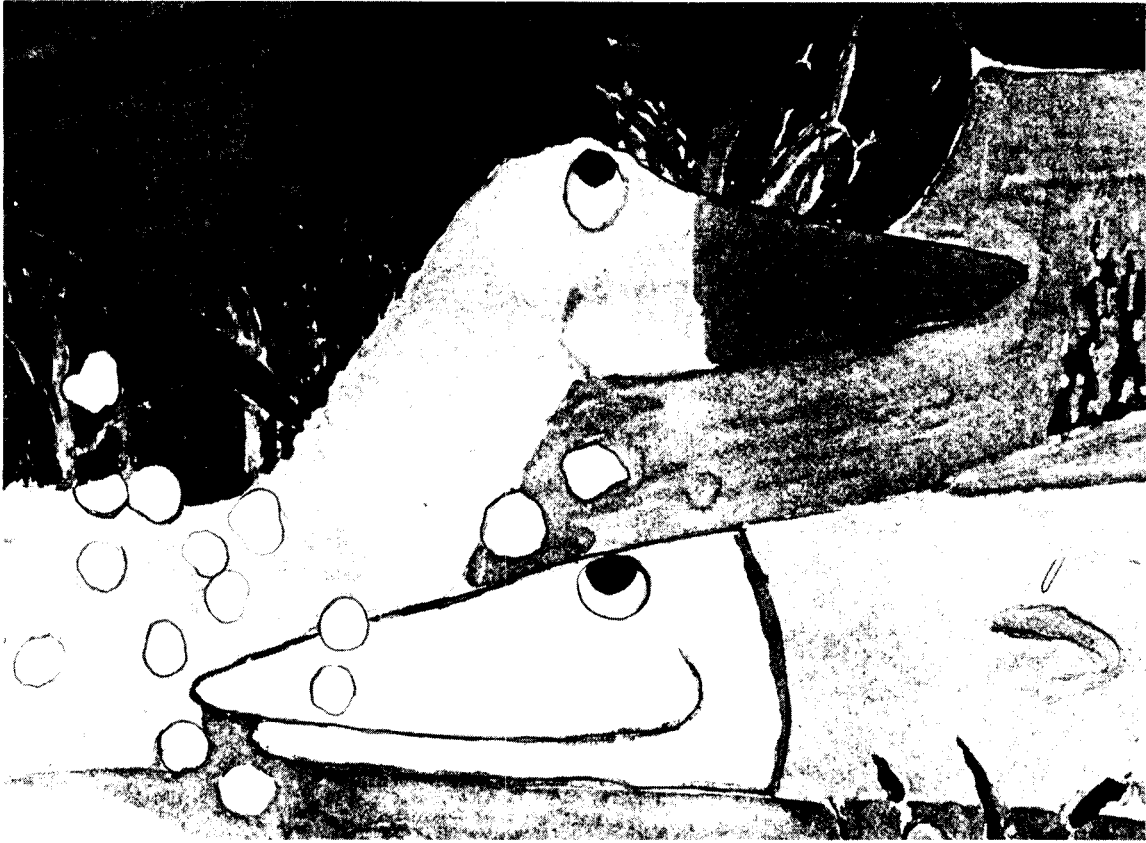


Illustration by Darryl Jenkins, Grade 8

**SPECIAL REPORT ON GREAT LAKES
ENVIRONMENTAL EDUCATION**

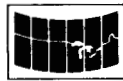


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Limited copies of an accompanying videotape program are available
on loan from Information Services, International Joint Commission,
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I N T E R N A T I O N A L J O I N T C O M M I S S I O N

Agreed to on April 9, 1991 in Washington, D.C.

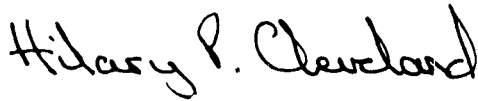
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I. C O N T E X T



In April 1990, the International Joint Commission (Commission) submitted its Fifth Biennial Report on Great Lakes Water Quality to the Federal Governments (Parties) and to the states and provinces in the Great Lakes - St. Lawrence basin (jurisdictions). In its report, the Commission identified the importance of the environmental education process to Great Lakes Water Quality Agreement (Agreement) work and the need to promote educational programs in the formal school structure and in the workplace, involving civic, labor, professional and service clubs and organizations, public service television and radio programs, and articles for print and other media. To raise the public's knowledge about the importance of a healthy environment and what individuals can do to prevent, avoid and remediate degradation of the ecosystem, the Commission recommended that

"the Parties prepare and urge the use of public information and education programs;

the Great Lakes states and provinces incorporate the Great Lakes ecosystem as a priority topic in existing school curricula; and

jurisdictions use the Great Lakes Areas of Concern as focal points for the development of educational programs and materials."

The following Special Report on Great Lakes Environmental Education builds on these previous findings.

II. B A C K G R O U N D



The public has certain expectations about governments' efforts to meet Agreement obligations. Public opinion polls in both countries show that citizens generally believe not enough is being done to clean up the environment, and that they support additional taxes for environmental rehabilitation. The same polls, however, also indicate that individuals are not inclined to voluntarily change those daily habits and behaviors which create pollution. In short, society is saying to governments: clean up the environment, but not at the expense of current lifestyles.

This dichotomy between citizens' personal sense of responsibility and the accountability they expect governments to assume for environmental protection inhibits the development of a broadly based environmental ethic. Environmental education can play an important role in ending this dichotomy.

While emphasizing the need for greater individual awareness and accountability for the health of our environment and the vital role education can play in reducing the contradictions between society's values and actions, we are not suggesting that governments and industries do not have an important role to play. Obviously, they do. A review of historical advertising practices reveals why Americans and Canadians generally believe that lawn weeds are bad, whiter products are better or plastic is a miracle. Times have changed. Governments, industries and the public must work together to create an environmental ethic that prevents pollution, avoids ecosystem exposure to persistent toxic substances, and leads to specific, funded programs to remediate existing environmental contamination. We believe environmental education is an essential tool to accomplish this goal.

III. V A L U E S
A N D B E H A V I O R



Why are individuals reluctant to alter those behaviors which cause the environmental contamination they find unacceptable? The answer lies in understanding how important the process of “valuing” is in the actions each person takes.

The process of valuing includes the ability to choose freely and thoughtfully from among a number of alternatives; the satisfaction derived from a particular choice; and a willingness to consistently and repeatedly affirm and act on that choice over time. Because individuals often do not have the opportunity to thoughtfully explore and discuss alternatives to environmentally unfriendly practices and behaviors, values are formed and actions taken without consideration of their environmental impacts.

Unless there is an increase in the extent to which environmental considerations are built into the process of values formation, and concomitant actions reflect those values, environmental policies will continue to be reactive in nature and lurch from crisis to crisis, rather than empower citizens to act according to environmentally friendly values.

A principal means to bring this about is through the educational process, in formal institutions and through general information and participation programs that increase understanding of, appreciation for and connections between the Great Lakes - St. Lawrence ecosystem, human health and society’s economic well-being. By education, we mean a process not confined to reciting facts and transmitting information, but one that also helps individuals to develop critical thinking skills and motivates them to seek the best decisions and actions for themselves and for society.

It includes education about the environment and humans’ role in it in grades kindergarten through eight, when values are formed, in grades nine through twelve, when values

are clarified and behavior can be matched to these values, and at the college, university or adult level when moral and cognitive skills are integrated and decisions are made based on personal and societal needs.

At the UNESCO Intergovernmental Conference on Environmental Education in Tbilisi, USSR in October 1977, environmental education was defined as “develop(ing) a citizenry that is aware of, concerned about the total environment and its associated problems, and which has the knowledge, attitudes, motivations, commitment and skills to work individually and collectively toward the solution of current problems and prevention of new ones.” The Commission believes these elements and goals of environmental education must receive increased stature and support from all governmental levels to help children and adults become environmentally literate citizens, and to develop a society whose actions better reflect the values it places on a healthy environment.

IV. S T A T U S
O F G R E A T L A K E S
E N V I R O N M E N T A L
E D U C A T I O N



A. The Parties and Jurisdictions

The Commission is encouraged by several recent initiatives undertaken by the Parties, particularly since the release of our Fifth Biennial Report. These are essential steps to develop and sustain a commitment by both countries to environmental education.

The United States recognized the importance of environmental education when it passed the National Environmental Education Act in November 1990. The act declares that

“It is the policy of the United States to establish and support a program of education on the environment, for students and personnel working with students, through activities in schools, institutions of higher education, and related educational activities, and to encourage postsecondary students to pursue careers related to the environment.”

This policy statement, coupled with the act’s provision for environmental education grants to develop, among other things, demonstration projects to foster environmental cooperation with Canada, is positive and one the Commission sees as an essential, basic approach to Great Lakes environmental education. Such projects also directly reinforce Commission activities related to Great Lakes environmental education.

In Canada, the recently announced Great Lakes Initiative as part of the federal Green Plan includes education as one approach to environmental restoration and pollution prevention. The plan itself recognizes the importance of environmental education for all age groups, stating that

“Canada’s goal is to develop an environmentally literate society. One where citizens are equipped with the knowledge, skills and values necessary for action.”

The Commission recognizes that Canada's constitution provides for a federal system in which legislative, executive and judicial powers are shared or distributed between the federal and provincial governments. The Constitution Act of 1867 states that "in and for each province, the legislature may exclusively make laws in relation to education." In fact, each of the ten Canadian provinces has developed its own educational structures and institutions and, while they are similar to one another in many ways, they reflect the circumstances of regions separated by great distances and the diversity of the country's historical and cultural heritage.

At the jurisdictional levels, recent efforts also have emphasized increased support and use of environmental education in the Great Lakes region. Environmental education legislation passed in Ohio in 1990 provides up to \$1.5 million collected annually from air and water pollution penalties (fines) to develop elementary, secondary and collegiate curricula on environmental issues, training for elementary and secondary school teachers, and at least one scholarship annually in environmental sciences or environmental engineering at one or more of Ohio's colleges or universities.

Wisconsin passed the United States' first environmental education mandate in 1935, when it required teachers to have "adequate preparation in the conservation of natural resources." The law was updated in 1983 to require all persons seeking certification as science, agriculture, social studies, early childhood or elementary teachers to be competent in environmental education and its associated philosophy, goals and strategies before certification.

Pennsylvania also requires 30 hours of environmental science instruction at the high school level, a unique requirement nationwide. Interest in a secondary school elective course on the environment has grown in that state from 5,000 students in 1985 to over 35,000 last year. Clearly, such statistics show that children are eager to learn about the environment and how they can protect it.

B. Local and Individual Initiatives

While these initiatives are encouraging and worthy at the national and jurisdictional levels, many creative, interdisciplinary and highly effective programs have been and are being developed at the local level by individual teachers, often without the benefit of direct incentives, rewards or support. These educators are truly pioneers and deserve praise for the imagination and skill they bring to their classrooms. They also deserve greater encouragement and support from all levels of the community.

In time, these local initiatives will enlarge the percentage of teachers who present effective, interdisciplinary material on the Great Lakes and the environment to their students. However, the largely ad hoc nature of these efforts cannot provide the impetus necessary to ensure that every student learns about the Great Lakes - St. Lawrence Basin Ecosystem in a variety of subject areas and understands the role they play in its protection.

The Great Lakes - St. Lawrence basin community is at a crucial juncture: if we do not begin to address the societal issues and actions affecting our ecosystem, we will produce another generation that has not developed the knowledge, values and skills necessary to restore and protect the environment in which we live. Individuals must learn that by protecting the environment, they are protecting themselves.

C. Commission Initiatives

The Commission and its Great Lakes Science Advisory Board have initiated a variety of projects over the past six years to identify and encourage innovative environmental education programs in the region. The Science Advisory Board surveyed several hundred educators and producers of educational materials in 1984, 1987 and 1988 to determine what was available and was used most often. Survey results were used to produce the *Directory of Great Lakes Education Material*, now in its third edition.

These surveys show that more information and materials about the Great Lakes are being produced, and teachers are finding these materials useful in developing their own curricula and programs. Teachers are seeking out information on the lakes more often than ever before; of the 25,000 requests for Great Lakes information received annually by the Commission's Regional Office, approximately 60 percent come from teachers or students.

Clearly, however, even the best educational materials may be largely useless if teachers, adult leaders and decisionmakers do not know about them and how best to use them. As few as four percent of materials are used when simply given to teachers, while those provided in cooperation with teacher training have up to 78 percent use over a multi-year period.

While a single Great Lakes presentation might reach 30 students, a teacher training workshop of 20 teachers could reach up to 600 students, with the potential to reach tens of thousands of students annually. Recognizing this, the Commission's Science Advisory Board created an Educator's Advisory Council in 1989 to design and implement a series of teacher



Almost 1,000 educators participated in the IJC's live-by-satellite television conference.

training workshops in each Great Lakes state and province. The workshops provide information about the lakes, issues affecting them, and encourage incorporation of the Great Lakes into a variety of subject areas in formal and nonformal settings. The project will continue through 1992, and the Council is developing other initiatives to provide further training and to encourage teachers to infuse the Great Lakes into a variety of curricula.

Most recently, the Commission hosted a pilot live-by-satellite television conference, "Teachers Making a Difference," to build on its commitment to Great Lakes environmental education. Almost 1,000 educators, students and parents in 33 Great Lakes communities participated in the five-hour meeting, which provided a unique opportunity to discover how innovative Great Lakes programs and curricula can be incorporated into a variety of subject areas. Participants also focused on how these and other programs can encourage youth to develop the values that will lead to positive actions for the ecosystem.

The live-by-satellite television format was chosen because the immediacy and scale of information sharing could not be provided by any other process. By communicating directly with experts, community leaders, teachers and students who are involved in a variety of innovative programs, conference participants learned how educators in other areas are teaching about the Great Lakes. Thus, attendees shared experiences and developed ties with others in their own communities and throughout the basin.

The meeting was designed to strike a balance between presenting information and promoting discussion. The Commission recognized that the conference needed to serve as a point of reference on the state of Great Lakes environmental education, and at the same time motivate participants to take positive action.

The program focused on several innovative programs and on the educators who have created and shared these programs with others throughout the basin, and around the world. The program directed by Dr. Rosanne Fortner at Ohio State University, for example, has created a variety of Great Lakes curricula and an annual teacher training workshop for teachers in middle school grades. In Ontario, the Visions 2020 and popular NIMBI (i.e. "Now I Must Become Involved") boat cruise and environmental action project created by Pat Potter provided positive examples of how students can become informed and actively involved in improving the Great Lakes environment. Similarly, the Schoolship program in Traverse City, Michigan, led by Tom Kelly, takes children and adults on excursions aboard the schooners "Malabar" and "Madeline" to learn about the biology, geology, history and beauty of the lakes.

And in Detroit, Michigan, the Rouge River Interactive Monitoring Project was presented as an example of a program that integrates all elements of environmental education into a variety of subject areas. The program, created by Dr. William Stapp of the University

of Michigan and Mark Mitchell, focuses on developing the awareness and skills to reflect on personal and collective behaviors, attitudes and values about the environment, and to take action based on these new skills and levels of awareness. The Rouge program has expanded into 42 river ecosystems in the Great Lakes and spawned the creation of the Global Rivers Environmental Education Network, or GREEN. By linking students in Cleveland, Ohio via computer with students in Budapest, Hungary, the social, political, economic, environmental and aesthetic aspects of water quality issues can be discussed and compared at local, regional and even global levels.

The Commission believes that, based on feedback provided to date, the conference was extremely successful in motivating participants to provide a greater focus on the Great Lakes in their education programs. More than 95 percent of those who responded in subsequent evaluations said they would immediately initiate changes in their educational programs as a result of their participation in the conference. The majority of attendees also were enthusiastic about the use of satellite technology and felt a part of the information sharing network created through the live interactive format. Almost all sites felt more time was needed to discuss ideas and programs with others at their local sites, which shows an eagerness to interact and share with others in their own school districts and/or communities.

Recent actions by the program's participants are encouraging signs that many are, indeed, acting on this newly found zeal for Great Lakes and environmental education. A new program, "Great Lakes Alive," is being created by educators and students in Toronto who participated in the television conference. The program will provide boat tours and environmental action days in Lakes Erie and Ontario, using sponsorship funds from corporations and other interested organizations, and is designed to expand the successful NIMBI program. At least 18 communities have inquired about obtaining materials and program support to bring the Rouge River Interactive Water Monitoring Project to their local watersheds and schools since the program was highlighted during the satellite television conference.

While the Commission believes these and other initiatives are positive steps to ensure that future generations acquire the knowledge, skills and values necessary to restore and protect the Great Lakes Basin Ecosystem, it recognizes that these initiatives are only a beginning. To ensure that Great Lakes and environmental education become priority topics for inclusion in a variety of subject areas in curricula throughout the Great Lakes region, the Commission believes current grassroots efforts must be strengthened through significant governmental support at the appropriate levels. In doing so, several constraints can be recognized and eliminated.



Illustration by Emily Reade, Age 7

V. C O N S T R A I N T S



As far back as 1980, educators understood the importance of developing environmental literacy in our youth. In a questionnaire completed that year throughout the United States, 93 percent of the teachers surveyed felt the achievement of environmental literacy should be a significant component of every student's education. And yet, neither the environment nor the Great Lakes have been infused into curricula. Why? In its research to identify and support innovative Great Lakes and environmental education programs, the Commission has found many reasons for this dichotomy.

Like all other subjects, the amount of time and study devoted to the lakes or to the environment is dependent on the curriculum guidelines provided by each state or province and local board of education. Great Lakes subject matter, in particular, is not required in curricula in any state or province in the basin. Financial assistance to support environmental education historically has been extremely low, even in those districts where the environment has been infused into the curricula.

Teacher confidence and training in Great Lakes and environmental issues also are constraints to its inclusion into the formal education system. Wisconsin is the only jurisdiction that requires teacher training in environmental education, let alone training in Great Lakes education. If teachers in all subject areas do not have the knowledge, skills and commitment to incorporate the environment in their curriculum, it is unlikely that environmentally literate students will be produced through our formal education structures.

Moreover, the environment is not the only extracurricular topic that educators are encouraged to embrace. Representatives of many other special interest groups — advocates for special education, gifted and talented programs, computer literacy and others — continue to try to convince educators of the need to incorporate these topics and philosophies into their

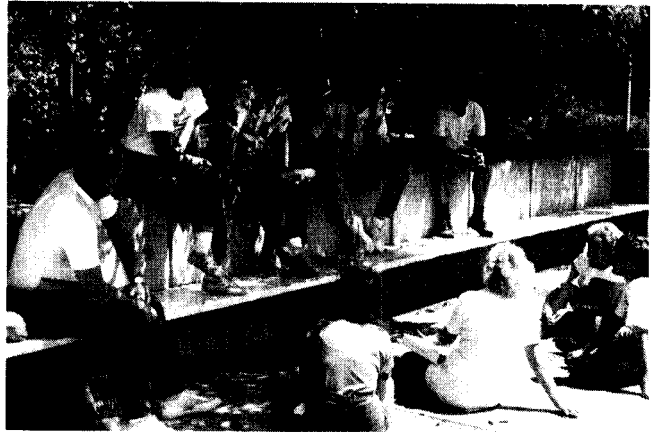
teaching practices. For those subjects outside the curriculum's mandate, it is extremely difficult for educators to be convinced that the extra time it takes to infuse other topics into established curricula is worth the effort.

Finally, classroom materials specifically on the Great Lakes are limited in scope, have not been well publicized and are not actively marketed to teachers in all subject areas. In the Commission's experience in marketing the *Directory of Great Lakes Education Material*, it has found that getting the message to teachers is extremely difficult, especially if they do not belong to teacher associations that publicize the material's availability. Because an easily recognizable and accessible source for Great Lakes education materials and curricula is lacking, a cohesive network of interested and committed teachers has not developed in the region. Those educators who do want materials have difficulty locating available resources.

Despite these constraints, several highly innovative educational programs have been created in the Great Lakes region, again through the grassroots efforts of individuals within or outside the educational system. Others are surely being developed by committed teachers and citizens throughout the region, but without an adequate matrix showing the presence or even absence of Great Lakes environmental studies throughout the region, it is impossible to quantify and/or qualify this conclusion.

*Throughout the basin,
teachers are learning how
to test for water quality,
identify benthic organisms
and develop Great Lakes
teaching materials in
training workshops.*

Credit: Karen Plass



VI. C O N C L U S I O N S
A N D R E C O M M E N D A T I O N S



Teachers and students in the Great Lakes region are providing an important message and opportunity to the federal, jurisdictional and local political leadership: by taking advantage of the grassroots efforts already underway to incorporate the Great Lakes and the environment into the learning setting, governments can provide the essential support and coordination assistance necessary to ensure that current and future generations are aware of and understand the value of a healthy Great Lakes - St. Lawrence Basin Ecosystem.

Such action is vital to support and encourage those educators who have charted the path in Great Lakes and environmental education thus far. Even more important, governments must recognize that if present and future generations do not begin to place greater value on a clean environment and understand the effects of society's actions on the ecosystem, no amount of federal, state and provincial funds will be sufficient to control and remediate pollution. We must take seriously the role education can play in reducing these costs and eliminating pollution sources.

The Commission believes that the Great Lakes, and the Great Lakes Water Quality Agreement, offer the Parties and jurisdictions an excellent opportunity to develop a coordinated approach to environmental education in the Great Lakes - St. Lawrence basin. A coordinated approach throughout the eight states and two provinces in the basin could serve as an international model that creates the dramatic, positive changes in the level of importance our school systems, including colleges and universities, place on environmental education. The Commission therefore recommends that

1. *the Parties encourage the jurisdictions to cooperatively develop and implement an interjurisdictional agreement to increase the emphasis given to, and the number and quality of programs developed for, environmental education at all age and grade levels.*

As previously noted, many innovative and effective environmental education programs already exist in the region. Their expansion into curricula throughout the Great Lakes - St. Lawrence basin would be strengthened by additional support and recognition. New methods must be found to publicize and encourage incorporation of these and other promising programs into state, provincial and local curricula. Therefore, the Commission recommends that

- 2. Governments encourage and provide financial support for the establishment of a clearinghouse on environmental education materials and curricula. A Great Lakes Education Clearinghouse could be established in a location accessible to Canadians and Americans through mail, telephone, computer or in person. Such a clearinghouse could be established at a university, a nonprofit educational organization or similar entity to provide materials on database or hard copy, and would serve as a mechanism to publicize and widely distribute educational materials about the Great Lakes - St. Lawrence environment.*

Available research on teacher attitudes toward environmental education and their level of self confidence to teach these subjects yield conflicting results. Teachers firmly believe that environmental education should be part of curricula, but they are less certain of their ability to successfully teach about the environment and incorporate the goals and philosophy of environmental education. Without direction and guidance from the states and provinces, environmental education will not be incorporated into the formal school structures in the Great Lakes - St. Lawrence region. Therefore, the Commission recommends that

- 3. Governments encourage and provide financial support for the development of environmental education curriculum guidelines for all grades, levels and subjects in the Great Lakes - St. Lawrence basin school systems.*

Despite the best intentions, teachers cannot respond to these guidelines unless adequate materials and training also are provided. As previously mentioned, studies show that educators are more likely to incorporate the Great Lakes environment into their teaching setting once they are confident of their own knowledge of these topics. Therefore, the Commission recommends that

- 4. funds be provided through the U.S. National Environmental Education Act and specifically earmarked for development of classroom ready, hands-on curricula for teachers at all grade levels and in a variety of subject areas. Similarly, funds should be provided to support development of materials to suit curriculum guidelines when established in Ontario and Quebec. Further, educators should play a key role in developing these materials.*

5. *the Parties encourage the jurisdictions, and through the jurisdictions the school systems, to provide financial support for and coordination of teacher training programs aimed at developing environmental education skills and fostering the necessary teacher confidence to effectively teach interdisciplinary environmental education programs.*

The Commission, with its limited resources, will continue to encourage the development and use of environmental education materials in the Great Lakes - St. Lawrence region by exploring the potential for a second live-by-satellite television conference and supporting the work of the Science Advisory Board's Educator's Advisory Council. In particular, the Council is developing a pilot program for an annual, week-long workshop to be held this summer.

The Commission will continue to keep the Parties apprised of these and other initiatives, through this and other special reports as necessary. We note the Parties' increased recognition of environmental education in general, and ask that the Parties inform the Commission of its continued activities in this area, particularly in response to the recommendations and conclusions included in this report.

The last decade of the twentieth century must be seen as a crucial opportunity to create a healthy environmental ethic in American and Canadian society; an ethic of sustainable development that transcends the perception that the goals of economic growth and environmental protection are mutually exclusive. The creation of such an ethic is not a luxury, nor an unaffordable, elitist extravagance. Rather, respect for the ecosystems of which we are a part is inextricably linked to our preservation as a species. The Commission is convinced that the educational process is an essential avenue to create and sustain a healthy environmental ethic for decades to come.



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