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People and Environment, Ploiesti, Romenia

by
Adrian Georgescu
and
Cristina Motoi

People and Environment, Ploiesti, Romania, is an article describing the activities of a non governmental organization concerning itself with the environment and environmental education. One of the things they focus on is unique type of fish, the Romanichtys valsanicola. They describe activities they have undertaken to save this special fish. Another activity described is the water monitoring of surface waters in Romania.

Gente y medio ambiente, Ploiesti, Romania es un articulo describiente las actividades de una organización dno gubernamental relacionados con el medio ambiente y la educación ambiental. Se centran sobre un tipo unico de pez llamado el Romanichtys Valsanicola. Describen actividades que han tenido que desarrollar para solvar esta

Introduction

"People and Environment" is a non-governmental, independent, non-profit organization located in Ploiesti, one of the most industrialized - and most polluted - cities of Romania. This NGO is formed by chemical engineers, chemists, biologists, computer engineers who work in the petroleum processing and petrochemistry research field. Also there are school teachers, research assistants and students, most of whom are involved in research projects concerning environmental protection. Primary aims of the NGO "People and Environment" are:

- collecting information about pollution versus time variation for some highly polluted areas;
- acting as an information center;
- increasing public communication and improving access to environmental information;
- distributing informations to NGOs, local authorities and private individuals;
- monitoring water quality of the Teleajen and Prahova rivers, which are in a critical situation;
- supporting environmental education of children;
- preserving species and ecosystem diversity;
- cooperating with Romanian and foreign NGOs, with private citizens and local authorities and maintaining dialogue with the scientific community concerning environmental protection;
- increasing environmental awareness in the region and in the country.

Romanichthys Valsanicola

The activity for preserving species of some of this NGO's members, begun before the (political, ed.) events of December 1989. In autumn of 1989, they organized, in cooperation with scientists in the field, three expeditions (September, October, November 1989) in the Vilsan River Valley. The aim of these was to save an endangered fish species, the Romanichthys valsanicola (a Percidae fish).

The discovery of this very secretive, nocturnal fish in 1956 in Romania, has been a surprise for ichthyologists round the world and it was necessary to change the classical systematics of Percidae family. Members of our group have succeeded in keeping three individuals of Romanichthys valsanicola alive in a specially designed aquarium.

This fish species is unique in the world, both from biological and historical standpoints because it lives only in Romania, in the Vilsan River and it is a living fossil. Because of the continuous destruction of their natural habitat, this rare, unique and scientifically valuable species of fish is endangered. This fish was included on the Red List of the European Endangered Species approved by the E.E.C. (46th session, 1991, Resolution D 46).

From October 25 - 31 of 1992 we organized an international search expedition during one week to check if the Romanichthys Valsanicola species still survives in the Vilsan River and to assess its present population.

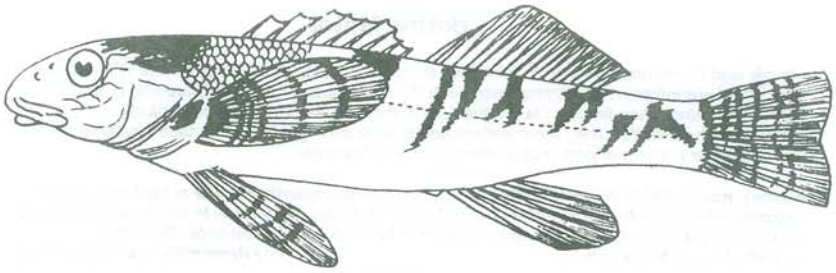


Figure 1: Romanichtys valsanicola

Action-taking

Scientists in the from Germany, France and Greece have agreed to participate in the monitoring excursion. Together with these European specialists we intend to develop an international plan of cooperation for the protection and saving of Romanichthys valsanicola. There is now a proposal to declare the Vilsan River Valley a National Protected Area. This will be submitted to the Ministry of Environment, the Romanian Academy of Sciences and Argeç Prefecture.

In order to underscore the importance of this endangered species, a 45 minute professional video film will be made, showing its discovery, history of faunal investigations, scientific importance, its habitat and destruction as well as the proposals for its protection. The movie will have an English version and 14 copies will be distributed to Romanian TV, grant raising and important environmental international organizations. It will illustrate the importance of Ramanichthys valsanicola and the importance of international cooperation in preserving nature.

Our organization is founded around a core of scientists from the Activated Carbon Laboratory in the Research Institute for Petroleum Processing and Petrochemistry (ICERP) Ploiesti. They have more than 10 years experience in the field of air, water and wastewater purification by adsorption of activated carbon, along with regeneration of spent activated carbon. These scientists received a grant from AIDRom in July 1991 to buy water testing equipment, chemicals, technical journals and scientific books in the field of air, soil and water pollution control and purification.

Publications

In December 1991, our group published a four volumes collection of all the ecological and pollution news that had been published in major Romanian newspapers and journals in Romania since January 1990. These volumes, more than 300 pages, included not only full articles but also subject index, author index, polluted area maps and index and abstracts in Romanian and English for all the articles presented. These volumes are very important as information sources for everyone who is concerned with pollution and environmental protection in Romania. Most articles from these volumes can be used for environmental education.

Sustaining the Project

We intend to continue and to improve this project. For the volumes 5 (Jan.-June) and 6 (July-Dec.), covering 1992, the numbers of the newspapers and journals analyzed will be twice in comparison with the last four volumes (20 newspapers and journals). Larger Romanian and English abstracts will be added and the Subject Index (in Romanian and English) will be extended.

In February 1992, our group received a request from the Environmental Protection Agency of Calarasi district, to test the water in the drinking wells of a number of houses and a school from the Curcani Village.
The water has been contaminated by an under-

ground, leaking tank which held petroleum residues used as fuel for road construction works. Our staff are now working out a project, for an emergency ground water purification system for drinking purposes at the village school.

Earth Day '92

Acting accordingly to its primary aims of rising public awareness and concern for environmental problems and for beginning a sustained environmental educational program for children as well as for adults, our group initiated and organized on April 22, 1992, a full day activity program dedicated to the celebration of the Earth Day.

Activities included in this program were relevant for the significance of the Earth Day as a worldwide celebration. They were a means to stimulate the public concern for pollution problems and nature protection such as: planting of 1000 trees, special school and high-schools lessons concerning environmental protection, with teaching aids provided by our staff, book exhibition presenting the existing documentary found in the environmental protection field at the "Nicolae Iorga" Library-Ploiesti, environmental films and videos projection for more than 700 children, distribution of advertising loose leafs, publishing of a half newspaper page material in the local newspaper PRAHOVA in its April, 22 issue, a chalk drawing on asphalt contest for children and, finally, an outdoor performance by the Children's Club artistic team. More than 1000 participants, children and adults joined these activities.

Water Quality Monitoring

Members of our environmental education team are involved in the activities of the ecology classes of the Children's Club from Ploiesti (about 5000 children members). They help the Children's Club to produce an important educational Aquarium to teach children about ecology and water pollution. In addition the children examine a piece of the Danube watershed. Because the pollution of the Danube River is mainly generated by its tributaries, our group made a map of the Prahova and Teleajen Rivers basin showing the main pollution sources and pollutants.

These heavy polluted rivers are tributaries of the Ialomi a River (one of the Danube River tributaries) already known for its high level of pollution (for more than 50% of its length is of the poorest quality category). Data for this map were supplied by the Environmental Survey and Protection Agency of Prahova district.

The map was submitted to the Government of Romania, US AID, US EPA, the Operation Service of EC-PHARE, to the Environment and Health Centre (WHO) and the World Bank, at their representatives meeting in Bucharest, on May 26, 1992 and was included to the priority areas list in the Romania Environment Strategy Paper.

On the Prahova and Teleajen rivers our experts already begun to run field tests for physico-chemical water characteristics measurements in some focal points established together with the local environmental authorities. Data collection and assessment, as well as proper communication system will be established with the local environmental authorities, in order to make the appropriate recommendations to reduce the pollution of these surface waters and further reducing of the Ialomia and Danube rivers pollutants charge.

Global Solidarity

There is a permanent need for public information as a basis for an environmental and educational activities. The importance and the significance of the Earth Summit - the United Nations Conference on Environment and Development (UNCED), held in Rio de Janeiro on June 3-14, 1992 as well as the significance of the World Environment Day 1992 Celebration on the 5th of June, can not be emphasized enough. To underscore even more strongly the importance of these two events, our group provided a special anniversary cover (special philatelic envelope). This special anniversary cover was sent, as symbol of our respect for their activity in the protection and improvement of the environment to personalities, institutions and NGOs in our country and abroad.

Closure

Our group will continue on conducting environmental research, providing monitoring data and initiating environmental education projects. In order to be most effective we organized in several working teams:

- the *research team*, working in the water and air pollution assessment and control;
- the *environmental education team*;
- the *conservation team*, working in the preservation of threatened ecosystems and species;
- the *socio-eco-awareness team*, working raising public awareness through manifestations

To fulfil its projects, our group cooperates with local and national governmental institutions as well as with NGOs from our country.

Note from the editors: If you would like to get in touch with 'People and Environment' in Romania, please contact the secretariat of CEI and the Global Forum (see cover page).

Green Schools, A Beginning,

By
Jim Presley,
Dyce Academy, Aberdeen Scotland.

The Beginning

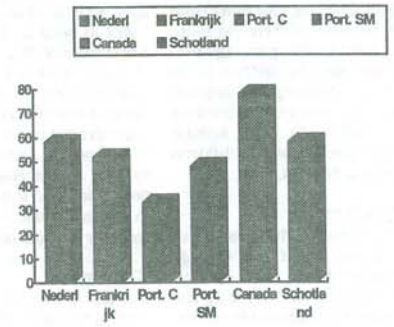
What a great place the last Caretakers conference was to throw up new ideas. One afternoon a group of teachers got together to informally discuss some of the issues that were close to our hearts at the time. The group's discussions ranged over a number of different topics and information was exchanged about educational experiences in Europe and North America. One of the main issues arising was : "How environmentally friendly are our schools?" Everybody agreed that it would be a good idea to try and stay in touch and exchange information on environmental matters. To encourage this we decided to carry out an environmental audit on our individual schools and to circulate the results.

The Audit

Before a school can start to become more environmentally friendly it must know what is happening within the school at the present time. The way to do this is to carry out an environmental audit of all the aspects of school life. The Scottish Environmental Education Council (SEEC) had already devised an environmental audit which they kindly agreed to let us use (see the guidelines listed here-after, ed.). The audit is user friendly and allows pupils to investigate many aspects of the schools environmental policies and practice. Pupils can by carrying out a questionnaire research energy, transport, living things, recycling, purchasing policy and pollution. At the end of the audit they can build up an environmental profile of their school and award themselves a score. The Audit was circulated to fourteen centres in Europe and North America during October 1992.

The Results

By Christmas time six centres had returned the completed audits. These returns ranged from completed questionnaires to much more additional information about the school and how they were implementing environmental policies. It was obvious from the returns that pupils had taken an active part in compiling the environmental profile of their school. As expected no two school had identical profiles or marks. Each school had it's own strength and weaknesses.



The Future

At the present time the results are being collated and distributed to the participating schools and hopefully this will lead to further exchanges of information. Each school is now hopefully in a position to see what steps can be taken to improve it's environment. The benefits have been not only that groups of pupils in different parts of the world have had the opportunity to become more environmentally aware but also they have raised the awareness of the school community as a whole, especially those who have responsibility for formulating and implementing school environmental policy.

Editor's note: The graph show the scores obtained by schools from Holland, France, Portugal(2), Canada and Scotland, using the Audit as explained on the following pages.

Guidelines for Auditing your School

(source: All about Audits: SEEC Stewardship Scheme, Scottish Environmental Education Council, Stirling, Scotland)

- It is important that a positive attitude is adopted towards an environmental audit. Most people want to help the environment but they don't want to be told a list a thing of what they must not do.
- As many people in as many areas as possible should be involved: cleaners, janitors, school board, etc. This gives an opportunity to reach out into the community and for co-operation to take place.
- Before beginning an audit it is important that everyone understands the issues involved e.g. saving aluminium cans is not just to make money for a worthwhile cause, but primarily to save energy.
- Deciding how the audit findings will be used afterwards is important before other questionnaires are made up.
- Initially, an audit could be started by one class who could explain to the school Assembly what they were doing. They could set up an audit team or teams and select areas or categories which they wish to cover. Alternatively, it could be managed by each class taking responsibility for one particular part of the audit.
- It is hoped that school auditing would become part of an on-going process e.g. it could be reviewed each year in Environment Week.
- Ideally, the audit could become part of an Environmental Policy for the school.
- In your particular situation you may have things which you wish to add to this audit. This would be welcomed by the Stewardship Scheme.

Scoring

The audit is divided into categories. This is for ease of management and some are obviously closely interrelated (e.g. pollution, transport).

Score on the following basis:

Yes, we do this	2
Yes, we partly do this or we have begun to	1
No, we don't do this	0
No, we don't do this as we have no control over it. Find out who does!	NC
More research required into this	R

Transport

How many of the adults in the school:
-car share --
-have cars with catalytic converters --
-regularly use public transport, cycle or walk to work --
How many children come to school using methods other than a car?

Score >75% = 2 points
25%-75%= 1 point
<25%= 0 points

Score 2 for yes, 0 for no on the following:

Do all school vehicles run on unleaded petrol (if diesel, are they regularly serviced)?
Does the school run cycling proficiency tests for pupils?
Does the school have a safe area for storing cycles? (e.g. shed, racks)

Transport score: -- out of 16

Pollution

Does your school have a litter policy?
Has your school eliminated the use of aerosol sprays and fire extinguishers that contain CFCs?
Do the school cleaners use environmentally friendly-products? (e.g. free of phosphates)
Are toxic chemicals from the school laboratories disposed of safely?
Is the school boiler regularly checked?
Does your school have a no-smoking policy?

Pollution score: -- out of 12

Living Things

Has the use of pesticides/weed killers been discontinued on your school grounds?
Is your school making an effort to make the grounds and play areas attractive to people and wildlife? (e.g. by leaving part of the grass uncut or installing a bird feeder).
Does your school do ecological fieldwork:
within school grounds?
outside the school grounds?
Does your school encourage the growing of houseplants in rooms and corridors?
Does your school run an environmental club?

Living Things score: -- out of 12

Recycling

Does your school have a system for recycling:
- waste paper and cardboard?
- glass (e.g. bottles and broken glassware?)
- cans?
- plastic?

Does your school collect organic material for composting? (e.g. leaves, uncooked vegetable waste)
Does your school recycle other material?

Recycling score: -- out of 12

Energy for Heating and Lighting

Does your school have double glazing?
Does your school have insulation of:
- roof spaces?
- floors?
- walls?

Is your school heating controlled by an efficient control system?
Are your school radiators/heaters fitted with thermostats or your doors with fitted self-closing springs?
Can the heating in different areas of the school be controlled seperately?
Does your school have any other energy-saving measures? (e.g. lowered ceilings, lagged pipes)
Does your school have draught-proofing of doors and windows?
Have you any measures to save on lighting? (e.g. "Switch off" signs on switches)
Does your school have energy-efficient light bulbs fitted?

Heat and Lighting score: -- out of 22

Purchasing Policy

Does your school purchase recycled stationery?
Does your school purchase other items of recycled materials? (e.g. toilet paper, towels, test tubes)
Double your score if you can list four or more items.
Does your school refuse to buy timber products made from threatened tropical hardwoods?
Do you reuse packaging? (e.g. plastic bags, boxes, yoghurt cartons)
Do you reuse paper? (both sides)
Do you reuse envelopes?
Does your school avoid the use of disposable plastic or styrofoam cups, plates or cutlery?

Purchasing score: -- out of 16

General

Are parents involved in environmental projects?
Does your library hold a wide range of materials on environmental issues?
Are people from the local community/authority invited to come and give information on environmental issues?
Is there a person in your school that you can go to for information on environmental issues?
Has your school already undertaken a full environmental audit?

General score: -- out of 10

Synthesis

When you add up all the scores, you can get a maximum of 100 points. Use the following scoring table to help draw your conclusions:

90-100 You're doing great. Take a Green Medal
60-89 You're doing well. How about making it the whole way?
30-59 You've made a start but you're not a green school yet.
0-29 Plenty of room for improvement. Must do better.

If you would like to know more about environmental audits of schools or about exchanging data with other schools in other countries, contact Jim Presley of the Dyce Academy secondary school in Aberdeen, Scotland (see 1994 CEI conference announcement below for his address!)

The 1994 CEI-conference

In 1994 the annual conference of Caretakers will be held in Aberdeen Scotland. The conference will be organized by the environmental education team at Dyce Academy secondary school. This school has participated in all Caretakers conferences so far and looks forward to having this opportunity to host the 1994 conference.

The theme of the conference will be "**Sustainability**" and it is the intention that the conference participants will be involved in a wide range of practical, fieldwork and seminar type activities related to this theme.

The conference will run from 13 - 18 June 1994. Accommodation will be in a University residence in the city of Aberdeen. Further details, a detailed program and registration form will be distributed soon in the Global Forum.

In the mean time please note the above dates. Should you have any initial queries then please contact:

Raymond Jovett,
Assistant Head Teacher,
Dyce Academy
Riverview Drive,
Dyce Aberdeen, AB 2 ONF Scotland

Telephone: 44-224-725118
Telefax: 44-224-772571

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1815 GM Alkmaar
The Netherlands

Environmental Briefs

Environmental Education in a Krakow High School, Krakow, Poland

Krakow is an old and beautiful town acknowledged by UNESCO as a treasure of human heritage. I am interested in environmental education. I work with group of students who are very interested in ecological problems of our country and our planet. In September 1991 we started working on ozone problems within European educational ecological project "Ozone project-young reporters". We presented our work during ecological conferences in Geneva and Copenhagen. Our work was appreciated by a director of this project and one of my students was chosen to participate as young reporter in scientific researches in the North Pole. Our ecological group communicated with other groups through university computer network. We conducted local inquiries. We cooperated with scientists from the Jagiellonian University, Technical Academy and other institutions. We interviewed politicians, factory managers and environmentalists. We wrote articles on ozone problems and published them in Polish ecological paper "Green Brigades" in Polish and English edition. We organized ecological ozone conference in our school. We also organized the ecological exchange between Polish and Swiss students. Many articles were written about our work in Polish newspaper. We had interviews on the radio and the TV. We believe that is very important to create ecological awareness in our country and all over the world.

We would like to enrich our environmental knowledge, share new ideas and experiences with other schools. I have heard about Caretakers of the Environmental International-network of secondary-school teachers and students. I would like participate with my students in this network. Could other interested Caretakers contact me?

Maria Glowacka, biology teacher
Bronowicka 71/73
30-091 KRAKOW Poland

Solving the ecological problems of the Kola Peninsula, Murmansk, Russia

The Russian delegates to the Caretakers of the Environment conference from the Murmansk region have twice presented some of the ecological problems that they are facing. Now the All Union Nature Protection Society Presedium of Murmansk Regional Soviet has proposed some solutions (Ed.).

Setting up an ecological data system

Due to the extent of the ecological problems of the Kola Peninsula it is necessary to develop and install an up-to-date system for environmental monitoring. This includes:

1. Monitoring of atmospheric pollution including transborder flows;
2. Monitoring of atmosphere and water polluting sources by industry;
3. Analysis of acid rain;
4. Analysis of water quality;
5. Analysis of soils and processing of toxic waste;
6. Analysis of data obtained and modelling of state of the environment by extrapolating the various developmental options of industries.

The objective of the system is to provide the leadership and politicians of the region and the country with comprehensive and exact information for further planning of developments on the Kola peninsula as well as recovery of appropriate environmental status.

Two examples of what could be done:

Fitting boiler houses with dust-gas collecting equipment

It is necessary to design and supply equipment for collection and neutralization of sulphur compounds and nitric oxides in effluent gas of fuel oil burning boiler houses. Fuel oil consumption ranges from 90.000 to 150.000 tons per year, sulphur content from 1.0 to 2.5%, ash content from 0.05 to 0.1%.

Environmental Briefs

Utilization of scat from poultry plants

It is necessary to develop technology and supply equipment for processing and utilization of liquid scat from poultry plants of the Kola region. At present, scat storehouses have accumulated about 500.000 tons of scat with humidity of 95-98%. Annual yield of liquid scat amounts to about 50.000 tons with 95-98% humidity.

The suggestions presented are concrete and could be implemented with mutual benefit. This would make a considerable improvement to the ecological situation in the region. Also it would serve as a spectacular example of public organizations, including international, ones getting together in order to solve particular local problems. For more information contact:

I. Dulnev,
Vice-Chairman of the Presidium,
Murmansk, Russia
Polyarnye Zori st., 17/4
Phone: 42278, 42769

Exploring a Foreign Town

We live in a world which is more and more "urbanized" Environmental education must also focus on a methodology for surveying an urban environment. Environmental urban studies combined with the study of French as a second language can be done through a program developed by our school. Interested? Contact me at the address listed below:

Marc Mozzi
Collège Pierre Fouché,
66130 Ille Sur Tet
France

Association for University Environmental Education in Central and Eastern Europe

During the Conference on Environmental Education in Central Europe 2-5, September, Lake Balaton, Hungary the delegates of 22 participating countries from different parts of the world have realized the common interest to create a network between universities involved in environmental education.

Fourteen Central and Eastern European countries agreed to set up the Association for University Environmental Education in Central and Eastern Europe (AUEECEE).

The goals of this new Association are:
- to encourage and support the participation institutions;
- to exchange educational information and experiences;
- to enchance the mobility of students and faculty.

The Association is building a data base on:
1. Teaching staff exchange
2. Student exchange
3. Fund raising
4. Available environmental publications

If you are interested in joining, helping and supporting us please contact us providing a description of your activity field and name, exact postal address, fax, E-mail, phone number.

Association for University Environmental Education in Central and Eastern Europe,
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1014 Budapest, Hungary
Phone: 36-1-156-9539
Fax: 36-1-175-8939
E-mail: h3615jan@ella.hu

Developing a Cross-Cultural Sister Watershed Program

by

Global Rivers Environmental Education Network
216 S. State St., Ann Arbor, MI 48104, U.S.A.

Developing a cross-cultural Sister watershed Program is an article based on the GREEN Network, dealing with the problems of setting up a cross cultural partnership program. The aims of the program are to develop and interest and desire to explore and exchange information on ideas on a cross cultural level, meaning to exchange not only technical information but also cultural background information. The article describes problems and success using this program.

El desarrollo de un programa de impregnación transcultural es un articulo basado en la Red de Trabajo GREEN, relacionado con las problemas de elaborar unprograma cultural compartido. Los objetivos de este programa son el desarrollar, a la vez que crear un interés y un deseo de explorar e intercambiar información cultural. El articulo describe los problemas y los exitos obtenidos utilizando este programa.

Editor's note: This article is based on an extensive article written by the GREEN cross-cultural committee of 1991. This committee included ***William Stapp, Deepak Khatry, Margaret Pennock, Shirely Schumacher and Dennis Travis.*** *Global Forum's Arjen Wals who himself is associated with GREEN, abbreviated the article. This is part I of a two part series. Part II will focus on the theories of learning that underlay this cross cultural program.*

Nota del editor: Este articulo está basado solone un articuló escrita por el comité transcultural de GREEN de 1991. Este comité esta compuesta por ***William Stapp, Deepak Khatry, Margaret Pennock, Shirley Schumacher y Dennis Travis.*** *Arjen Wals, Global Forum, quien está relacianado con GREEN, ha resumido el articulo. Esta es la primera parte de una pequeña serie de dos partes. La segunda parte enfoca sobre las teorias de oprendizaje de este programa transcultural.*

GREEN

The Global Rivers Environmental Education Network (GREEN) seeks to bring people around the world closer together through the bond of studying and improving our common river systems. the network is an expanding global communication system that can provide students, teachers, and other professionals with the opportunity to exchange thoughts and experiences about rivers and relevant issues. Currently, more than 120 nations are a part of the GREEN network, and over 250 national and international rivers on five continents are involved in some aspect of the program.

One of GREEN's major visions is to enable students to understand water quality issues in relation to time and space, and from an ecological, economic, political and social perspective. Students and teachers are encouraged to exchange their observations and findings with students and teachers who share similar interests about water quality issues but may be from very different backgrounds. The goal of GREEN is to provide a more meaningful learning situation for students, as well as an opportunity to form partnerships across the globe to work towards the solution of relevant environmental issues. To achieve this vision of GREEN, cross-cultural sensitivity and understanding is needed.

Cross-Cultural Program

One of the more current aspects of the GREEN program is the cross-cultural sister watershed partnership. Sister watershed programs began on a pilot basis in January of 1991 between schools in Australia, Canada, Hungary, Mexico, New Zealand, Taiwan and the United States. In concert with monitoring their own local waters, sister schools shared information about each others interests and culture, the early settlement and development of their own local watershed and rivers, visions for future watershed and river uses, and action plans and strategies needed to sustain desired watershed and river uses.

Building upon the broader goals and objectives of the Global Rivers Environmental Education Network, this paper identifies the cross-cultural goals and objectives of GREEN; discusses relevant theories of learning and instruction; lays out a cross-cultural sister watershed framework (model) with suggested activities for planning, developing, implementing, and evaluating the program; identifies potential constraints, barriers and strategies for success; and describes ways to institutionalize programs for continued growth and development.

The partnership-model outlined in this paper allows for considerable flexibility and unlimited creativity and ingenuity depending upon participant interests, resources and constraints. Partners should view this program as non-restrictive and open ended, with opportunities to adjust the program to meet arranged needs and aspirations of those involved.

Through involvement in the GREEN network, students hare information, techniques, and different approaches to problem-solving. They can learn that their investigations have a purpose and are valued by their peers elsewhere in the world. Therefore, GREEN aspires to create an international network of aware, concerned,

and active students who will be prepared fully to take on the environmental challenges of today and tomorrow.

Cultural Sensitivity

In a network, comprised of linkages and partnerships, good communication is crucial. We are all aware of the recent rapid expansion of communication technology. However, technology is merely a tool whose existence alone will not bring about communication if there is no commitment to improve the ability to communicate. Communication will not succeed if the communicators fail to try to understand each others perspectives and situation.

Perspectives an situations are a result of tradition, culture, and experiences. It is not enough to know that some person is engaged in some activity or that some event is occuring. It is important to know the why behind the action or the occurrence, and try to understand it from the perspectives of the people who are involved.

Often, people tend to be judgmental and condemn another persons actions without knowing what makes that person act the way he or she does. In such instances, a cross-cultural and a contextual awareness and understanding are invaluable. The problem in the example above will not disappear or go away by pointing fingers at the desperate farmer who is cutting down a tree in order to cook a family meal or to keep the children warm. Understanding the farmers plight, and working with the farmer to help resolve the problem may yield better results. In order to achieve improved understanding and cooperation, we need to cross cultural boundaries. One of the important aspects of this program is not only to collect and send information to ones partners, but to try to understand what

issues are involved, reflect on what has and is occurring, and determine the cultural biases, the consequences of actions being considered and taken, and what new approaches and actions could be successful.

Goals of the Program

With the above in mind, the overall goals and objectives of the Cross-Cultural Sister Watershed Program, are:

1. **Cross-Cultural Readiness**. To develop and interest and desire to explore and exchange information and ideas on a cross-cultural level.

* To provide the opportunity, infrastructure, and training to enable students, teachers, administrators, and parents to obtain the attitudes, skills, and sensitivity to enter into a cross-cultural educational program.

2. **Cross-Cultural Background**. To develop an understanding and sensitivity to cross-cultural roots, differences, and similarities.

* To encourage among students the recognition of differences and similarities between members of the same, as well as different, cultural, socio-economic, or religious groups.

3. **Watershed Understanding**. To develop an understanding of past and present watershed practices and patterns on a cross-cultural, interdisciplinary level (in land-use, ecological, economic, political, social, and technological areas) that have influenced the quality and uses of particular rivers over time.

* To have students collect past and present information on their local watershed that is relevant to the existing quality of their rivers water.

4. **Watershed Information and Ideas Exchange**. To develop ways to collect, reflect and communicate information and ideas cross-culturally between watersheds.

* To increase students and teachers thinking and communication skills necessary for successful cross-cultural exchange.

5. **Cross-cultural change Processes**. To identify strategies designed to improve the water quality within each of the watersheds being studied.

* To increase students thinking about another cultures point of view, and strategies relevant to bringing about change within each of the watersheds being studied.

6. **Student Empowerment**. To empower students to take appropriate actions on a personal, school, neighbourhood, community, or regional level to improve the water quality of rivers based on their cross-cultural exchange of information, ideas and aspirations.

* To encourage participants to locate, assess, and identify a way to work toward the solution of at least one relevant local water issue.

7. **Working Peace System**. To work toward an arrangement to improve the quality of water

in the sister watersheds, one that breaks away from the traditional link between authority and political boundaries, to enable people to plan together for the common good of the affected people.

* To encourage diverse groups of people who are dependent upon the same international river to plan together and, in the process, to gain a greater respect for the other people involved in the partnership, a more lasting trust. Such an opening, to consider new and challenging ideas and strategies, might link people without violence to work toward a more peaceful and liveable world.

8. **Cross-Cultural Evaluation Process.** To provide a comprehensive cross-cultural program evaluation which focuses on changes in areas such as: the affective, cognitive, and skill domains; critical thinking; empowerment; change strategies; and communication technology.

* To provide an evaluation model that will involve students, teachers, administrators, and parents in an on-goging evaluation process, and to use the information collected to improve the instructional program.

Thus, the overall goal of the cross-cultural component of the GREEN program is to enable students to develop interdisciplinary and holistic analytical skills by providing them with an interactive learning opportunity. The students learn about rivers from other cultures and societies in order to analyze their understandings of, and attitudes toward, their own rivers. Such awareness and understanding could pave the way for mutual tolerance, assistance, and cooperation, as well as directing the students in becoming more responsible global citizens.

The Pilot Program: a nine step model

At the pilot stage, one of each partnership in the cross-cultural exchange was a North American school familiar with the GREEN program. Based upon the field testing of the pilot material, the Handbook for Teachers; Establishin a Cross-Cultural Sister Watershed Program, was rewritten and available for the second round of the cross-cultural partnership.

The cross-cultural exchange component of GREEN has been developed to provide a framework (model) for sharing observations, knowledge, ideas, and solutions with people from diverse backgrounds. Typically each prospective participating school in the exchange program will begin with these steps: 1). Contacting and formalizing a cross-cultural arrangement with the GREEN Project; 2). Preparing students for a cross-cultural exchange; 3). Developing pen-pal relationships; 4). Researching the historical background and anticipated issues associated with the river system; 5). Monitoring the benthic macroinvertebrates and physical-chemical quality of the river water; 6). Visualizing the desired condition of the river at a time in the future; 7). Identifying the laws, policies and responsibilities of regulatory agencies related to maintaining and improving river water quality; 8). Developing and carrying out an appropriate action plan on an individual, school, neighbourhood, community or regional level; and 9). Evaluating the cross-cultural sister watershed program.

The **first step** in becoming involved in the Cross-Cultural Sister Watershed Program starts when a school contacts the GREEN Project and expresses an interest in becoming a partner in the Program. The GREEN Project in return, sends a questionnaire to the inquirer, requesting more specific information which would be helpful in the consideration and selection of a cross-cultural partner. The Handbook for Teachers: Establishing a Cross-Cultural Sister Watershed Program is sent to the inquirer. The Handbook contains specific information regarding: a framework for establishing and implementing a Cross-Cultural Sister Watershed Program (program goals and objectives, program design, how to get started, classroom activities, evaluation, etc.); the process and guidelines for selecting a cross-cultural partner (school program, class interest, existing relationship, community heritage, language, rural-urban, etc.); key elements in the Program design (developing cross-cultural sensitivity, pen-pal relationship, watershed analysis, river walk, water quality monitoring, communicating watershed/river information, identifying laws and regulating agencies and responsibilities, visualizing the future, developing an action plan, evaluation, etc.) and a formal memorandum of agreement between the GREEN Project and partners (tasks, timeline, funding/fundraising, resources available, etc.).

The **second step** of the cross-cultural sister watershed program focuses on a series of activities for students which are designed to foster greater understanding and respect for other cultures — and in particular the culture of the emerging partnership. The draft Handbook for Teachers: Establishing a Cross-Cultural sister Watershed Program, prepared and distributed to participating pilot schools, contains many suggestions regarding ways to become more informed about another culture. Often this entails visiting a local library, inter-

viewing particular residents in the community, viewing special video-TV-radio programs, or sending class representatives to embassies or consulates to obtain specific information on the perspective partners society. Also the Handbook for Teachers: Establishing a Cross-Cultural Sister Watershed Program, contains activities available to the teacher and students for these purposes: to orient students to the cultural diversity present in the classroom; to examine cultural stereotypes; to formalize and prepare for a cross-cultural exchange; to check for bias in classroom instructional materials; and to participate in other culture building activities.

The **third step** involves establishing a pen-pal relationship between students in the partnership schools. Teachers asked each student to prepare a series of short letters to the participants in the partnership school (or to a particular student in the partnership school). In the pilot programs students were encouraged to write about their own: family; neighbourhood; school programs and structure; personal interests, hobbies and aspirations; life in the community; impressions of the river they will be studying, etc. Each letter included a small photo of the student (clipped to the top of the letter) and often a photo of their community and/or river. In addition to the topics listed above, students often described other aspects of their personal lives. The teachers and students became engaged in an activity with their classes: how might they describe their community setting to someone who has never visited their community, region or nation? It was emphasized that pen-pal letters would be sent from each class to their partners at approximately the same time. If translation was necessary, then the schools used the skills of students in their language clases or community residents to translate information.

The **fourth step** of the sister watershed program involved students in becoming much more informed as to past and present watershed practices. Developing this understanding usually involved five steps. It was suggested that the class divide into sub-groups and that each group take responsibility for one component. The activity involved researching and organizing watershed information to be sent to the sister school by mail, computer, short-wave radio, FAX, or traveler. The areas of focus were:

1.Gathering information about the physical characteristics of the watershed and river including its length, size, location of population centers, soils, topography, special features, the location of the school on the watershed, and other pertinent information.

2.Reviewing the early human settlement patterns within the watershed and along the river, its use by native peoples and early settlers, and the origin of the rivers name.

3.Researching the past and current uses of the watershed and river, for example, agriculture, logging, fishing, urbanization patterns, municipal and industrial uses, and recreational opportunities.

4.Identifying and researching current patterns that have implications for changes in water quality, and critical issues associated with the watershed and river water quality, including those that are concerns of the students.

5.Describing peoples hopes and visions for their local river in the future, including the aspirations of the students involved in the program.

Students gathered the information using newspaper articles, historic records, journals, focused interviews, recordings, tapes, museum exhibits and material, and record of societies and various community and state organizations and institutions. The students had an opportunity to gether information from local and elderly people who know the history of the river through personal experiences. The information each group developed was edited and sent to the sister watershed group through appropriate communication channels.

The **fifth step** encouraged students to walk along the river to record land-use practices, and monitor the river for benthic macroinvertebrates and physical-chemical parameters (both partner school groups performed the same land-use activities and water quality tests). The information was communicated to their partner school by the most appropriate communication channels. Then the classes spent considerable time gathering information from other up and down stream locations, frequently graphing the material by hand or computer, and reflecting on what the results indicated.

The **sixth step** consisted of the students obtaining information on the laws, policies, standards and responsibilities of water quality regulating agencies on a federal, regional, state, county, or local level. Usually this material was formalized into a chart and available for class members interested in contacting organizations and decision-makers when carrying out their action plans. This information was communicated to their cross-cultural partners.

The **seventh step** focused on visualization — a

technique used by people to help solve problems and to envision solutions. In reference to a local river or stream, students developed a vision of the watercourse they were studying. Students focused on what their hopes and aspirations are for the uses, conditions, and polans for their river in the future. After their prior experiences with their watershed through interviewing, monitoring, and considering trends and future opportunities, the students generated more comprehensive ideas regarding uses and the future of their river.

The **eighth step** addressed the students action plan on individual, school, neighbourhood, community, and regional level. Riverse face many problems, and these problems often cause feelings of helplessness and apathy among people. It was, therefore, important that students be given opportunities to become involved in meaningful actions that create positive changes. The previous activities in this section extended students knowledge about rivers, awakened their concerns, provided tools for gathering more information, and generated ideas for change. This action plan was designed to be a culmination of those activities; using skills developed, it was an opportunity to take some appropriate action at a level that was relevant to the students.

The **ninth, and final step**, was a student-teacher-administrator-parent evaluation of the total program and suggestions for improvement. Evaluation provided important feedback to students, teachers, administrators, and parents. The results helped to determine how effective the learning experience was, to identify the strengths and weaknesses of the program, and to provide suggestions for improvement. Evaluation is critical in all educational endeavors. There are two aspects of the sister watershed program being evaluated. The first is the function of the partnership and the strength of the linkage. The second focus of the evaluation is to assess changes in the student, in teaching practices, and in the institution as a result of the program. The latter evaluation could focus as well on changes in the affective, cognitive, and skill domains of students; empowerment of student/teachers; internal and external institutional changes; etc.

Some Examples

During the first year of exchange, the following were some of the interesting actions that occurred in the Cross-Cultural Sister Watershed Programs:

Barc High School (Barcs, Hungary) — Students collected photos, articles, and historic documents on two local rivers — the Drava and Rinya; obtained detailed topographic and hydrometric watershed data on these rivers; produced homemade videos on the rivers; monitored two local rivers for benthic macroinvertebrates and physical-chemical parameters; etc. The above material will be used to produce a public display about the River Drava and River Rinya in Barcs. The exhibit is intended to broaden the publics awareness and understanding of the importance of their river to their community and the problems that need to be addressed.

Cleveland School of Science (Cleveland, Ohio, USA) — Students contacted and interviewed Hungarian residents in the Cleveland area regarding the immigration of their ancestors to the Cleveland region during the industrial revolution to work in the steel mills. Hungarian residents also volunteered their services to assist in the translation. The Cleveland School of Science hosted the Cuyahoga River Student Congress and shared with participants their experiences with the cross-cultural sister watershed program with Barcs High School.

Loungsan Junior High School (Taipei, Taiwan) — A formal slide and written presentation was prepared and delivered by students and teachers to the Taiwan Environmental Protection Agency, including results of their investigations and a set of recommendations to improve water quality on the Tanshuei River. A formal report on the project is also being prepared for submission to the Taiwan National Science council, one of the sponsoring organizations of the Cross-Cultural Sister Watershed Program.

Sydney High Schools (Sydney, Australia) — Streamwatch, a program involving high school students from throughout the Sydney metropolitan region, published a Special Environmental Education Newsletter providing timely information on river water quality issues. Planned in three phases, Streamwatch will eventually involve up to 200 high schools in the Sydney metropolitan area. Monitoring information is communicated periodically to Streamwatch for dissemination and directly to the Sydney Water Board for follow-up action. The Sydney Water Board recently appropriated $ 850,000 for equipping the 200 secondary schools for monitoring four major catchment areas in the Sydney metropolitan area.

Mexican High Schools (Mexico) — Students contacted and received considerable local media coverage, including newspaper articles and television and radio news reports. Project Del Rio was the topic of a national television news broadcast on CNN. Students used a computer network called EcoNet to exchange data, questions, and ideas with other schools and resource professionals.

Editor's note: Since 1991 GREEN's cross-cultural program has expanded rapidly and new insights have been gained. We will ask GREEN to give us regular updates, but feel free to contact GREEN yourself at the address given on page 10

Globe Scope

Friends of PPLH Seloman, Indonesia

PPLH is the only environmental education centre in Indonesia. It was established to:
- Provide environmental education, for conservation, permanently in Indonesia;
- Promote applicable practical activities for conservation and sustainable development, to the people of Indonesia;
- Increase environmental awareness;
- Attempt to conserve endangered and useful flora and fauna;
- Provide a site for the practical application of knowledge taught by schools and universities.

The programs are designed to suit the needs of wide variety of groups: from students and educations; experts and professionals; industrialists and indeed anybody who has an interest or concern in the environment.

PPLH uses a variety of educational methods; Open discussions and seminars, and practise within our fields and the surrounding environment of tropical forest, volcanoes, and small villages. The organization has facilities for slide shows, video and a library for personal research. In addition, the site provides accommodation for residential courses and for those who wish to enjoy our relaxing surroundings longer.

Please help by contributing towards the cost of this international newsletter: It is important that PPLH stays in touch with our overseas friends and sponsors, but producing and distributing a newsletter is not cheap. The cost of a single newsletter is one US dollar, not including mailing costs. Please check the mail cost from your area and enclose it with the newsletter price.

For more information contact:
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Ozone Project/Young Reporters

The Ozone Project is environmental education project for secondary schools in Northern and Central Europe. Students generate, analyze and interpret there own air quality data. The data are exchanged through a network which also utilizes electronic mail. The schools involved also write their own newsletter and occasionally gather at a conference to discuss the project. If you would like to know more about the project write, fax or E-mail us:
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NAAEE Annual Conference in Big Sky, Montana, September 24-29

The North American Association for Environmental Education links thousands of environmental educators from the U.S.A., Canada and Mexico through a newsletter, publications, a variety of focus groups and annual conferences. The annual conferences provide a wealth of presentations, workshops, fieldtrips and keynote speakers. This year's conference theme is "Pathways to Partnerships: Coalitions in EE". Environmental Educators from outside of North America are welcome to attend the conference. If you would like to receive information about this major annual event, contact:
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