

# CONTENTS

<b>EDITORIAL</b> - The 15 <sup>th</sup> Anniversary of the Baltic Sea Project within UNESCO ASPnet .....	4
<b>VARIA</b>	
<b>COD CONFERENCE (ESD)</b>	
Learning to change our world: international consultation on education for sustainable development .....	5
The Nacka Conference on Sustainable Fishing ....	6
Excerpts from the speech of Lena Sommerstad, Sweden's Minister for Environment .....	8
Textile Design – "Save the Cod" .....	9
Young Environmentalists .....	9
Science at school .....	10
Barbecue memories .....	10
Prejudices about the Baltic States – the Seminar..	10
Music for the cod .....	11
Drama .....	11
Over-fishing: a case of inadequate property rights .....	12
The Polish Baltic cod case .....	14
Students' impressions and memories .....	14
<b>PROGRAMMES</b>	
<b>AIR QUALITY</b>	
"The Baltic Sea Project" - sounds interesting! .....	15
Air Quality 2004 - report .....	16
Meri-Pori International Camp School 2004. Thanks to the Pine Needle Project .....	16
Students need to touch and to feel .....	17
<b>BIRD ECOLOGY</b>	
Bird Ecology – Year 2004 - winter and spring bird counting report .....	18
Ringed mute swans .....	19
European birdwatch .....	19
Siemianówka bird ringing camp in Poland .....	20
<b>ENVIRONMENTAL HISTORY</b>	
Environmental History - Agriculture .....	22
Heads of the Jasiołka River throughout the centuries .....	23
Comenius meeting in Soenderborg. October 4th – 8th 2004 .....	24
<b>COAST WATCH</b>	
BSP Coast Watch.....	26
Coast Watch on Skodsborg beach (Denmark) ....	26
Coast Watch in Kołobrzeg (Poland) .....	26
Coast Watch in Jurmala (Latvia) .....	26
Coast Watch in Kolkas Rags (Latvia) .....	26
<b>PHENOLOGICAL STUDIES</b>	
Phenological Studies - Year 2004 .....	27
Phenological Studies. Third seminar for students in Schleswig-Holstein, Germany .....	27
<b>RIVERS</b>	
Rivers which flow into the Baltic Sea.....	29
Research of the town watering place cleanness and its usefulness for recreation.....	29
"The Orunski Stream Research" .....	30
<b>VARIA</b>	
<b>NETWORKING</b>	
Bridges across the Baltic Sea.	
<i>Kaunas, Lithuania - Falun, Sweden</i> .....	32
The international year of water celebration.	
German – Polish cooperation.....	33
Polish BSP Schools - students' co-operation .....	34
Sustainable fishery .....	34
Forestry Project. Vecpiebalga (Latvia) - Linkoping (Sweden), 2001 – 2004 .....	35
<b>LATVIA</b>	
Memories of... " On the Threshold – Baltic 21" ...	38
The summer camp in Ruienā .....	38
Fire in nature – friend or foe? .....	39
What do we know about waste? .....	40
<b>POLAND</b>	
A mine behind the window - the residents' drama .....	41
Charming places in Poland .....	42
Our adventure with BSP .....	42
The impact of Nowa Huta steelworks on the Niepołomice forest .....	44
<b>GERMANY</b>	
Agenda 21 NOW! 2004 and 2005... - <i>The Internet Conference for students in its fifth and sixth year</i> .....	46
Beauty in the neighbourhood - the Quarry of Baddeckenstedt .....	48
<b>Meeting Maths</b> .....	49
<b>COORDINATORS</b> .....	50

## The 15<sup>th</sup> Anniversary of the Baltic Sea Project within UNESCO ASPnet

It is unbelievable that time goes by so quickly. In November 2004 I had the pleasure to meet **Liisa Jääskeläinen** from Finland, the founder of BSP, a very kind, friendly, energetic, professional and creative person. She is an authority for us with her wide knowledge about Education for Sustainable Development. She was the first general co-ordinator of the BSP in the years 1989-1992 and for a long time the national co-ordinator of Finland. This year she has become involved in the national co-ordination again.

### General co-coordinators of the Baltic Sea Project in the years 1989–2006



The year 1989 marked an official beginning of the project. If you are interested in details of its history, please read Liisa's article: "Where has the BSP brought me?" in Newsletter No. 2/1999 (pages 6-7). During last eleven years I have had an honour to cooperate with all general co-ordinators of the BSP: **Siv Sellin** from Sweden (1993-1997), **Birthe Zimmermann** from Denmark (1997-2000) and **Ute Groenwoldt** from Germany (2000-2003) and I have solely good memories of the times spent with them. All of them are friendly, helpful and kind people. Fifteen years seems to be a long period of time, but on the other hand it is very short, considering how much work has been done. The first issue of the BSP Newsletter was published in June 1990, now you can read the 25th one. All issues edited by successive general coordinators are available electronically at [www.bspnews.kiss.pl](http://www.bspnews.kiss.pl), but you can also find them in about 100 countries, six continents, hundreds of libraries, schools and institutions.

What a wonderful job has been done by teachers and students involved in the project! We can really be proud of the six BSP Learners' Guides. Here are the acknowledgements to the co-operating teachers from the Baltic countries:

1. 1994. **Siv Sellin, K.L. Person:** "Working for better Water Quality in the Baltic Sea" Learners' Guide No. 1; pp. 204 (The editorial committee: dr Siv Sellin, Sweden; Liisa Jääskeläinen and Hannu Kuitunen, Finland; dr Juri Martin, Estonia)
2. 1998. **Siv Sellin, K.L. Person:** "Working for better Air Quality in the Baltic Region" Learners' Guide No. 2; pp. 166 (The editorial committee: dr Siv Sellin and Birgitta Berggren, Sweden; Laima Galkute, Lithuania; Anne Kivinukk and Maris Maja, Estonia; Birthe Zimmermann, Denmark)

3. 1998. **Siv Sellin, K.L. Person:** "From Words to Action" Learners' Guide No. 3; pp. 134
4. 2000. **Birthe Zimmermann:** "Working for better Rivers in the Baltic Region" Learners' Guide No. 4; pp. 206 (The editorial committee: Per Werge, Denmark; Risto Hamari, Leena-Riitta Salminen and Jarkko Suvikas, Finland; Velga Kakse, Loreta Urtane and Andris Urtans, Latvia; Ingvar Lennerstedt and Jan-Erik Wallden, Sweden)
5. 2003. **Birthe Zimmermann:** "An Agenda 21 for the Baltic Sea Region", Learners' Guide No. 5; pp. 147
6. 2004. **Per Eliasson:** "Environmental History", Learners' Guide No. 6; pp. 163 (The editorial committee: Per Eliasson, Sweden; Jolanta Mol, Poland; Christian Bo Bojesen, Denmark; Mirdza Zommere, Latvia)

During those fifteen years tens of BSP meetings, teacher training courses and workshops were organized. BSP schools work on national and international level. Every year lots of them organize student exchanges.

Thanks to Liisa's creative ideas, her determination, hard work and persuasiveness she managed to gain the support of all Baltic countries. This is how the Baltic Sea Project "was born" in 1989 and has been developing ever since as a very intelligent "teenager".

*Which point is the BSP at now? We have entered the United Nations Decade of Education for Sustainable Development and I think that we are well prepared to face the challenge.*

I am very pleased to be able to take this opportunity and wish all our readers Merry Christmas and a Happy New Year!

General Co-ordinator of the Baltic Sea Project  
Jolanta Mol

Photo: J. Mol



Ewa Rudomino

## Learning to change our world: international consultation on education for sustainable development

Learning to change our world: international consultation on education for sustainable development took place in Göteborg, Sweden on the 4th-7th of May 2004.

Some 350 participants from 80 countries and 6 continents were personally invited to take part in the consultation. They represented a wide variety of professionals: teachers, educators, NGOs' representatives, students, scholars, researchers, education officials and politicians, so practice could meet theory and a true dialogue was possible.

The consultation was opened by the Swedish Prime Minister – Mr Goran Persson. He talked about issues such as equity, equality, economic development, which is not harmful to anyone, and solidarity among countries and generations. He also promised to include sustainable development in the Higher Education Act as it is already in the case of legislation concerning kindergartens and schools.

**Organization of the consultation reflected the motto "reflect – rethink – reform".**

BSP on ESD conference in Göteborg, May 2004

From the left: Anne Kivimäki (Estonia), Birthe Zimmermann (Denmark), Jolanta Mol (Poland), Per Eliasson (Sweden), Velga Kakse (Latvia), Siv Sellin (Sweden)



Photo: Ewa Rudomino



"Baltic 21", LG No. 5, Birthe Zimmermann



Poster of BSP: Jolanta Mol 44



Photo: Ewa Rudomino

"Environmental History", LG No.6, Per Eliasson

**On the first day "reflect"** started with a plenary session and was followed by the first round of workshops. The participants, divided into groups of approx. 20 persons representing diverse backgrounds, discussed their priorities and expectations. At the end of the day, all the information was shared with other groups with the help of the reporting staff.

**The second day "rethink"** was dedicated to field visits. The participants were divided into new groups and had the opportunity to visit various institutions working for the concept of sustainable development – schools, IHE, museums, science festivals etc. Many strategies were discussed, some of them were complementary, while others represented opposite points of view. The main factor was the socio-economic situation of a given region, for example ICT is a great opportunity, but the ingenious knowledge cannot be neglected.

**On the third day, "reform"**, the participants created new groups, according to new themes that emerged during previous days. This way everybody could discuss whatever he or she felt was important and what was not on the agenda. The range of subjects was quite wide and reflected the most popular problems concerning sustainable development.

The consultation provided great opportunity to discuss problems, create networks, share experience and work out solutions. The idea of "consultation" allowed the event to be much more than just a conference where the communication is going in one direction only. We all hope that it will help us to make the world better, even if it means just a small step forward.

Ewa Rudomino - senior specialist

Ministry of National Education and Sport, Poland

rudomino@menis.gov.pl

To find out more, visit [www.learning2004.se](http://www.learning2004.se)

Photo: J. Mol

Photo: J. Mol

## The Nacka Conference on Sustainable Fishing

During one week in late September hundreds of young students from schools all around the Baltic Sea met at Nacka Gymnasium in Stockholm to learn about and discuss sustainable fishing and over-exploitation of the cod in the Baltic Sea. We presented the background, the idea and the programme of the conference together with the invitation in the last issue of the Newsletter. The results and the conclusions from the meeting and the workshops will be presented in the next number. For the moment, just let us give you a report of the five days full of activities.

It all started on Monday, September 20. Ferries from Helsinki, Tallinn and Gdańsk brought young delegates and teachers from Finland, Russia, Estonia, Latvia and Poland to Stockholm. Additional delegates from Germany and Denmark/Faeroe Island arrived by air and many others came by roads and rail from other parts of Sweden. After checking in at the hotel in central Stockholm we all met in Nacka Gymnasium to have lunch and start the conference. The Headmaster of Nacka Gymnasium gave us a few words of welcome and the organizers informed us about all events, workgroups, hours and facts that were to be kept in mind during the conference. The delegates were also presented to and acquainted with the students and other teachers from Nacka Gymnasium who were in charge of different activities during the coming week.

A Tourist and Travel Education Programme Class from Nacka Gymnasium made use of the conference to practise their skills as tourist guides and make sure that the delegates could find their way to and from the hotel, different workshops, seminars and study visits, etc. They were assisted by the International Education Programme Class, which produced and distributed an English language tourist guidebook especially for this event. Students from the Natural Science Education Programme Class prepared and installed eight different scientific cod themes on the web and acted as tutors for these thematic studies. Eight art and drama teachers and some of their students were likewise responsible for another day full of creative work.

Finally, an invited delegation of 18 students, teachers and environmentalists from Uganda, Tanzania and Kenya in East Africa also took part in the conference in order to study and learn about the ongoing BSP activity. Together with teachers and students from Nacka Gymnasium and with young environmentalists from Stockholm they are to form a BSP analogue network around Lake Victoria.

The delegates also had to know and find each other and their working groups. On the cover of the personal conference notebook and on the individual name badge each delegate was informed on which group and activity he belonged to. When shifting from one activity to another he also shifted to a new group with new members of whom he had known no one before. This was a complicated system that could possibly end up in chaos and it was tested directly after the welcome ceremony in the assembly hall by asking the scientific cod theme groups to meet with their tutors. Luckily it proved to work well. Eight different groups consisting of members from different countries found each other, their tutors and their ways to their computer rooms, where they were informed about their website, their theme and their coming duties.



*Participants at the conference room.*

An hour later the tourist guides took over and the groups were guided around the school and its surroundings. The tour ended in a nearby restaurant where the cod theme groups were seated together with their theme tutors and tourist guides. Teachers and invited guests had their own tables and at 6 p.m. 185 people were ready for the official opening and the welcome dinner of the conference. The Swedish Minister for the Environment Lena Sommerstad, the Council Chairman Anders Henriksson from the Municipality of Nacka and the State Secretary Carl Lindberg from the Ministry for Education as well as the BSP National Coordinator Gabriel Brandström from the Swedish School Authorities spoke to the delegates and wished them luck in their coming work. After a delicious Libyan buffet it was time for music and dancing, first performed by a band (listen: [www.svensk.pop.com](http://www.svensk.pop.com)) and then followed by a disco that was arranged by students from the Education Program for Music Production. By midnight the tourist guides had escorted all the delegates safely back to the hotel.

On the following day the conference started at 9 a.m. The art and drama groups met their teachers and once again the delegates found their ways into new groupings and activities. The different groups met for an hour and were informed on

» and discussed the general outlines of how to perform their coming creative task. Then, once again new groups were formed. Their main activity of the day was to participate in different seminars. Each delegate attended one seminar out of six before lunch and another one after lunch. The division into seminar groups enabled all country fellow delegates to share the knowledge from all seminars. Students from an English Language Programme at Nacka Gymnasium also attended the seminars with the task to write essays reflecting the seminar themes and discussions. Some of these essays are published in this number of the Newsletter to give you an insight into what took place in the different seminar rooms.

At 3 p.m. it was time for coffee, served by Nacka Gymnasium students, and after that the guides took the different art and drama groups to see the city of Stockholm, to eat in a downtown restaurant and to have a chat around a dining table. They discussed and planned how to perform the approaching creative work. The guides delivered the delegates safely back to the hotel before midnight.

Wednesday was booked for the work in cod groups with eight multidisciplinary scientific themes. The work started early in the morning and each group had its own computer room, its own website loaded with information and its own well prepared tutors. The task was to study, learn and design a poster presenting the group's discoveries. The results of these efforts were impressive indeed and they will be accounted for separately by the tutors who will publish a series of popular scientific essays in the coming number of the Newsletter. The themes, the facts and the information are still available on the web (see: [www.nackagymnasium.nacka.se](http://www.nackagymnasium.nacka.se)). Late in the afternoon on the same day all the conference delegates went out to the archipelago to have a barbeque close to the Baltic Sea.

The next day was also a special day for work. It was time for the art and drama groups to carry out and create what they had planned. Within eight different artistic forms of expression they had the mission to give voice to the last shoal of cod in the Baltic Sea and under the guidance of the expert teachers in specially equipped workrooms they did a wonderful job. The very good artistic performances presented the day after were the results of the creativity of the groups consisting of many different nationalities that meet and get close and are inspired in the process of labour. While planning the conference we discussed how to set up the groups. We believe that our final decision to keep the national/school groups together when it came to sharing the rooms etc., but mix as much as possible during the working hours, optimised the outcome of



*International cod group*

the conference in terms of both social and learning processes. The day ended in the school canteen with a grand buffet of Swedish seafood specialities. This was the last night of the conference, many delegates had made new friends, and the concluding disco dancing was a proof of that.

The next day was Friday, September 24, and the last day of the conference. It was the day to expose the results from the other days of work. The "cod groups" demonstrated and presented their posters in the assembly hall and all conference delegates could learn from the findings of other groups. In total, it was an impressive amount and diversity of knowledge about the modern and historical fishery, the Baltic Sea habitat, the reproduction biology, the lessons from other catastrophes and the need to protect the cod in the Baltic Sea, as well as about the agreements and opinions regarding the cod fishery in the Baltic Sea countries. At the same time the artistic groups showed their creations. The textile design, the sculpture, the digital photo and the painting groups proudly presented their beautiful productions. The poetry group climbed the platform and recited aloud. The three groups working with drama, stage design and music production concluded the closing ceremony with a successful performance.

Most delegates returned home the same afternoon. The conference was over. The organizers were tired but happy. We thank all the delegates for their commitment and good work. We also thank Sida, the Visby Program, UNESCO, Nacka Council, our school and all the others who gave us financial support and helped us in any other way. We hope that all conference delegates will remain spokespeople for sustainable fishing in the Baltic Sea.... SAVE THE COD.

*Rolf Erikson and Susanne Mellvig*  
 Nacka Gymnasium; Griffelvägen 17, 131 40 Nacka  
 Tel: +46- (0) 8- 718 81 54 (school), Fax: +46- (0) 8-718 82 98  
[susanne.mellvig@nacka.se](mailto:susanne.mellvig@nacka.se)

## Excerpts from the speech of Lena Sommerstad, Sweden's Minister for Environment

I am very pleased to be here; it is exciting indeed to meet so many students from the Baltic Sea area, and from the riparian states of Lake Victoria. Your project is important for several reasons.

**- Firstly, it is important because you take part in the most significant political effort of our times, the effort to secure sustainable development worldwide.** As you all know, we face great challenges on this planet, and we must respond to these challenges with coordinated action across the borders.

We must co-operate to fight climate change and to protect the natural resource base, above all our biological diversity, including our fish stocks.



*The performance at the opening ceremony.*



*Do you feel well in the net?*

**- Secondly, your project is important because you show that co-operation is possible in spite of long distances.** By building networks from the Baltic Sea to Lake Victoria, you develop the idea of partnership and collaboration as the basis for our global effort to secure sustainable development, an idea that was at the core of the World Summit for Sustainable Development that was held in Johannesburg two years ago.

**- Thirdly, your project is important because you use education as a tool for securing sustainable development.**

Education was pointed out at the Johannesburg Summit as a prerequisite for sustainable development, both because knowledge is fundamental to social and economic progress and because education is essential for understanding what sustainable development is about. In December 2002, the General Assembly decided upon The UN Decade 2005-2015 on Education for Sustainable Development.

If there is no awareness of the challenges we have to tackle, there can be no basis for political action. Awareness is the key to being able to cope with the threat of an accelerated degradation of our ecosystems, which may eventually undermine functions that are vital for the existence of human beings on this planet. Every child and adult must have a basic awareness that man and nature are intertwined.

You focus, within your project this time, on sustainable fishing. This connects directly to one of the main commitments that governments made in the Plan of Implementation at the WSSD Summit in Johannesburg.

I am pleased that you have chosen the topic of sustainable fishing and have brought students from Europe and Africa to discuss this issue. Already at the WSSD, Swedish and African delegations discussed the possibilities of working together on the management of shared waters.

I am convinced that cooperation, in the way you do it in the Baltic Sea Project, is the way forwards both to bridge gaps between countries and stakeholders and to improve coordination between scientists and experts.

Today, we know that we must apply an integrated ecosystem approach and we have started to discuss how this can be done in practice. In particular, we need to develop our cross-border collaboration. Our seas are public goods, open to use for everyone, but with nobody responsible for the final outcome of unsustainable patterns of use. If we cannot agree on how to protect our seas together, they will not be protected at all.

It took some time before Sweden started to act with real strength to protect the fish stocks of our waters. Now, however, the marine environment is on the top political agenda. Our government has worked hard in recent years to protect the cod stock. In particular, we have argued in international negotiations that no fishing at all is possible on the eastern cod stock of the Baltic Sea, in line with scientific advice. Despite the inability to reach an international agreement due to strong pressure from other countries, within and outside the European Union, Sweden continues its efforts in this field.

### **To conclude:**

I am convinced that your project will contribute in significant ways to our knowledge about sustainable fishing, and to our common efforts to protect the Baltic Sea.

As young people, you can look at our modern history with a critical distance. You have the power to make changes, on the basis of dialogue and knowledge of the course of history and our common future.

*I wish you good luck in your work and a fruitful continuation of the project at the next meeting in Mwanza in Tanzania.*

*Minister of Environment - Ms Lena Sommerstad*

*Excerpts by Jolanta Mol*

## Textile Design – “Save the Cod”

The first thing we see when we enter the room is a big table. Around the table there are several people of different nationalities. They are all working with different kinds of textiles in bright colours. It's almost quiet. In the background you can hear the faint sound of the radio that slowly fills the room. The concentration is high. They are all working together to finish their project on time. The project is to show the consequences of over-fishing the cod. Sara, 19, from Göteborg shows us the project they are



all working on. It's a big piece of fabric which is divided into four smaller squares. Each square contains a cod in different conditions: the happy cod; the cod trapped in a net; the almost dead cod and finally the over-fishing of the cod. This visually explains that over-fishing will lead to extinction. A picture says more than a thousand words.

Paulina, 17, from Poland is really enjoying this piece of work. She says that she is really glad that we are all part of this project because people can talk and draw conclusions together. Raivis, 17, from Latvia and Max, 15, from Russia are not enjoying the textile work as much as Paulina. They laugh and say that this is the girls' work. Even so, they are both concerned about the cod's survival. They take this project very seriously and hope that the last couple of days will lead to an improvement in the situation of the cod.



It was good to see that so many young people from a variety of different countries and cultures can get along and work together. We hope that the work they have done will lead us to a better future for the cod.

Anja and Karin SU3

## Young Environmentalists

When we entered a classroom at Nacka Gymnasium, Oscar from the Swedish Environmentalists welcomed us. He and four other Environmentalists from other countries were going to lead a discussion about the environment. He invited us to sit in a circle with other young people from the countries around the Baltic Sea and Lake Victoria in Africa.

First he gave a short introductory lecture on the Swedish Environmentalists and after that everyone introduced themselves by saying their name, country and an environmental problem that they were interested in. Many of the students found it hard to speak English, but they did their best and supported each other.



After the introduction, Oscar introduced the questions they were going to discuss. We were all divided into groups of four and the questions were:

- What can I do for a better environment?
- What can I do together with other people?

We went around to different groups and listened to what they had to say. The discussions were a bit slow at first, probably because the participants were very insecure about their English. After a while the tension eased a bit, and some really good ideas were put forward. One group thought that organic food should be a lot cheaper than it is today, another group thought that people should go by bus a lot more and set up environmental organisations in their schools. One of the groups had a very interesting discussion about the fact that different countries have different problems, so it is not possible for everyone to work on the same problems.

Then it was time to sum up the discussion with the whole class. Everyone seemed to have enjoyed the discussion.

Oscar finished it off by saying again a few words about the Swedish Environmentalists and showing us a movie about their actions.

The environment is an important issue, and today's discussion was interesting and we learned a lot from it. Thanks to the Swedish Environmentalists and to young environmentalists around the globe, there is still hope for our environment.

By: Ximel Bladh, Mimmi Ingevall Madsen SU3

## Science at school **Barbecue memories**

As we walked into the room, all the pupils sat down quietly looking around, full of expectations.

The lecturer, Sven Ahlin from Kalmar, tried to break the ice by introducing himself and letting everyone tell about the environment they live in and their relation to the Baltic Sea and Lake Victoria.

Linda, a girl from Uganda, told us about the problems around Lake Victoria. She said that swimming in the lake was impossible because of parasites, bacteria, chemicals and oil in the water. Despite this the inhabitants drink the water after it has been cleaned, still ignorant of the nitrates it contains.

Then it was our turn to talk about the Baltic Sea. We realized that the pollution in the water was worse here than we could think. The pike don't reproduce as they did 25 years ago. Mr. Ahlin told us that it could be caused by algae, bridges that partly stop the circulation of the water, and the pollution from heavy traffic. Everybody had started feeling relaxed by then and Agatha from Poland shared her thoughts with us.

The problem in Poland is the rivers. Old mills and factories dump their discharges in the rivers. A positive thing is that Poland is getting economic support from the Scandinavian countries.

After the break Sven started to talk about the main subject: how to measure the amount of nitrates in water and their content in the drinking water from Lake Mälaren. Before he came to Stockholm he ran some tests in his home area, Kalmar. The result was 20 milligrams nitrate/litre. The test he did in the classroom, on the water from Lake Mälaren, showed that there was less than 1 milligram nitrate/litre. An interesting conclusion of the seminar was that the Swedish media make us believe that the Swedish water quality is better than in other Baltic Sea countries, which is not true. The fact is that in some places the environment is much cleaner than in Sweden.

*By: Moa Sjögren, Linnéa Olander and Emma Stolt. SUB, Nacka Gymnasium*

The Cod Conference was an unforgettable event for all of us.

Apart from giving us the chance to broaden our knowledge in ecology and exchange ideas with students from other countries it was also a fantastic opportunity to socialize and simply spend nice moments together in an eco-friendly atmosphere.

During the barbecue, organized on 23rd September, we could get to know our new friends a little better amidst the breathtaking scenery of the Archipelago.

It was especially interesting to chat with students from the Lake Victoria region with whom we tried to find solutions to similar problems in Europe and Africa. A little later we did our best to make tasty marshmallows and hamburgers – a source of vital energy after a long intellectual struggle in the workshops. After this meal we took a short walk along the rocky shore and took some photos to show the beauty of the Swedish landscape to our friends in Poland. Unfortunately, it soon began to get dark and we had to return to our hotel. But the memories of this wonderful experience will stay with us forever. It was fantastic to meet people with similar interests and we are sure that the happy moments spent together will make integrated cooperation much easier for us all in the future.

We are looking forward to meeting each other once again on another conference.

*By Students from the ILO Katowice, Poland*



## **Prejudices about the Baltic**

When I first heard that something called the Baltic Sea Project was to be held at Nacka Gymnasium, I was interested and I thought this project sounded like a great idea. Environmental issues are always important and young people should definitely take part in dealing with them.

Although I didn't get to experience much of the big conference concerning cod fishing in the Baltic Sea, I did take part in a seminar on Tuesday 21st September. The topic of this seminar was what prejudices existed about the Baltic States. A man called Jan Wester from the environmental organisation Fältbiologerna gave a lecture. He is also a university student and he has written an essay on what prejudices the Swedish have about the environment of the Baltic States and how many of them are true. Now he was to tell us about his findings.

In the audience there were many students from different countries such as Poland, Latvia, Russia and Germany, some Swedish students and some teachers. It was fun to have people from so many different countries in the same room.

Jan Wester started by handing out a questionnaire for the audience to fill in. It listed several statements about Sweden and the Baltic States which we were to rate. All the students and teachers did their best to fill it in although most of us often had doubts about what to write, because we simply hadn't been thinking much about this interesting topic before.

After everyone had finished the questionnaire, Jan organised a practical exercise on values, in which the whole audience took part. It was an interesting exercise and there was some discussion since people had different ideas about the statements. It's



## Music for the cod

As we were walking down the corridor we heard a strange sound. Someone was singing a Britney Spears song... but they had changed the lyrics. Instead of "Hit me baby one more time" they were now singing: "Save the cod in Baltic Sea".

We went straight into the room and sat down to watch the two students doing their best - performing! The two lead singers were from Russia and Poland and the third girl, who didn't sing because of her sore throat, was from Estonia. We were stunned by their performance. They were absolutely brilliant! We could really tell that they did this to try to help save the environment around the Baltic Sea. We had a little chat with the girls during their lunch-break to get an idea of why they did this and if our thoughts were accurate. And they were. When we asked the first question: "Why do you do this?" they looked at each other and they both said, "To help make a better world for the cod in the Baltic Sea of course". But the Polish girl quickly added, "And we also want our children to live in a good environment"



We also asked them what they thought of the whole project and they enthusiastically replied, "It has been great, we've learned lots and it feels like we have made a difference." They all said they liked Sweden and the way they had been taken care of during their stay. They also added that Stockholm was an excellent choice to have this conference because of its reputation of the cleanest Capital city in the world.

*From the two music reporters:  
Niclas Gråberg  
and Max Szybkowski*

## Drama

**"- Cut! Miriam, you have to throw the garbage on the cod"**

The preparation for the major drama production for tomorrow is taking place here in the drama studio. The first thing we see when we enter the room is a person lying on the floor, without saying a word. It is Krzysztof Szade from Poland, who plays the cod, the main character in the play.

There are eight characters in the play. There are some nice people who want to save the cod and others who don't care about the cod at all; Miriam plays one of them. She goes around throwing garbage in the sea where the cod lives. When Miriam goes away, two youths find the cod under all the garbage and save it from dying.

The young people we meet come from different countries. Most of them live around the Baltic Sea, but there are also students from Africa. The only language



they have in common is English, which they all speak at different levels. It is very nice to see that all students who are participating in the play are very active and support the drama teacher in putting together a good play.

A couple of minutes later the play is almost done. But everyone seems to have forgotten about a good ending. So suddenly the drama teacher yells:

"- The end, we must have an end..." it is quiet for a while, everyone is thinking, um... "I know what we'll do", the drama teacher has got an idea. "How about if you two come to the beach where the cod is lying and you start picking up the garbage and you find the cod and rescue it. What do you think?"

"- Yeah, that's a good idea, and we say to the cod that we are its friends and that it mustn't be afraid".

"- Good, and the cod can end the play by pointing out all the people who are being mean to it. That will give the audience something to think about".

## States – the Seminar

» always fun to talk to people from other countries and to hear their ideas and opinions. I think all delegates shared that view.

After the exercise was finished, we sat down again. The next thing Jan did was to show us his essay and tell us about what prejudices Swedes have about the Balts and the Baltic environment. This I found interesting, for what the research showed was that Swedes think the Baltic environment is much more polluted than the Swedish woods and water. However, Jan's statistics showed us the opposite! Most of the Swedes who had filled in his questionnaire had actually thought there was less extinction of animals in Sweden and that it was safer to pick berries etc in Sweden. According to the statistics there is either no difference between Sweden and the Baltics, or even the Baltic environment is cleaner. This fact was new to many of us and it was interesting to see everyone's reactions.

After Jan Wester had finished his lecture, his colleague from Fältbiologerna, Ingrid, spoke about Fältbiologerna and their roles, and she told us about different projects that young people could take part in, both in Sweden and in other countries. This was the end of the seminar, and both Jan and Ingrid had done an excellent job. As we went for lunch, I knew all of us who had taken part in the seminar had learnt something.

I have only seen a tiny bit of the Baltic Project, but I'm sure all the delegates from all different countries had a great time and that they got to learn and experience a lot.

*Klara Söderström SU3*

*By: Annika, Marie and Jessica J.*

## Over-fishing: a case of inadequate property rights

Scientific evidence indicates that the Baltic Sea cod population is perilously low. This is unfortunate not only because the cod provides livelihood for thousands of fishermen and coastal villages around the Baltic, but is also valued by other members of the society. The cod is valuable to the recreational fishing market and also as a species worth preserving for future generations. It is even important for the balance of species in the Baltic ecosystem. The cod fisheries have not only been poorly managed, as indicated by their poor condition, but they are also proving very difficult to be improved. New regulations do not have the desired effect, i.e. the pressure to reduce fishing. Fishermen are resisting catch reductions – despite the fact that these reductions are meant to be beneficial in the long run for the interests of the fishing industry!



*Dr Mark Brady*

### The Race-to-Fish

The question that needs to be asked is therefore, why overexploitation of such a valuable natural resource cannot be terminated. The answer is actually fairly straightforward: because fishermen do not have fishery property rights. Without the security that only the ownership of a resource brings, it is economically rational for fishermen to fish as if there was no tomorrow. That is to ignore the future and think only in the short-term manner. This behaviour is known as the Tragedy of Open-Access where “freedom of access brings ruin to all”.

Fishery is a renewable natural resource so it should be managed on a long-term or sustainable basis. That means catches should be low enough to guarantee a high reproduction rate and the costs of fishing ought to be kept as low as possible to provide fishermen with a good income. If the fishery is not managed so as to obtain the highest possible level, but to bring sustainable income for fishermen only, then the society’s limited resources are being wasted. When fishery is exploited on a short-term basis, catches and the cost of catching fish will be too high. The long-term result will include depleted fish stocks and lower income for fishermen. This is the situation in the Baltic today. The consequences of the lack of property rights are deeper and more difficult to circumvent than it might first be imagined. The situation causes the development of the so-called “race-to-fish” between fishermen: the only fish a fisherman has the right to are those he catches himself, so he must catch them first.

### Fisheries Management in the Baltic Sea

The cod fishery is managed in the following way. First a total allowable catch (TAC) is agreed upon by the nine countries permitted to fish the Baltic. The TAC should be based on scientific advice but is in the end a result of political bargaining. Each country is then allotted

a predefined percentage of the TAC, after which their professional or licensed fishermen are allowed to catch the fish. The problem is that thousands of fishermen who fish in the Baltic have no guaranteed individual catch. Instead they must compete with other fishermen to catch fish first. Though time and catch restrictions are often used to try and give all fishermen an equal chance to make a catch, these regulations don’t remove the underlying problem: the race mentality. It only makes it more costly and more difficult for various classes of fishermen to catch the fish. Consequently, fishermen are often against such restrictions. Instead they plan their fishing activities on the premise first in, first served! This results in the need to have a bigger or faster vessel than it is really necessary. Instead of using their skills to catch fish in the best or most efficient way so as to maximize their income and protect the fish stock for the future, they are induced to catch fish the fastest way - otherwise they might return to the harbour empty handed.

The “race” situation also means that any new rules or regulations introduced by one country’s government will be interpreted as a handicap by its fishermen: their chances of catching fish will be reduced. Similarly, improved fishery control might reduce current catches but won’t provide any guarantee for better catches in the future for the individual fishermen. They will, in other words, gain no or little personal benefit by supporting the control authority. Trying to impose new regulations and improve fishery control without addressing the property rights issue is therefore like trying to swim against the current in a river. If the fishing authorities continue to swim against the interests of individual fishermen, they are fighting a losing battle. This is the predicament in the Baltic Sea. The fishery, according to the scientific evidence, is on the verge of collapse and nothing seems to be helping. Similarities to the situation in the northern Cod fishery off Newfoundland before it collapsed in 1992 are strikingly apparent.

## »» Creating biologically and economically sustainable fishery

The first step towards creating a biologically and economically sustainable fishery is to engender individual fishermen with a sense of ownership in the fishery. That means the benefits of stock recovery and better fisheries management must accrue to them personally and not as a group. The only way to do this is through the introduction of property rights in the fishery. It is through ownership that individuals in well functioning sectors of the economy obtain rewards of personal saving and investment, e.g., forestry and agriculture in Sweden. Without ownership in the fishery there is no personal benefit of short-term sacrifice - reduced fishing - to obtain a long-term benefit - a biologically and economically sustainable fishery. Those fishermen who decide to catch fewer fish will surely go out of business whilst the others continue to fish (also going out of business in the long-term). This is obviously a great dilemma for individual fishermen and the industry as a whole. And this no-win situation needs to be dealt with.

Property rights can in reality only be introduced in sea fishery indirectly. Nevertheless, the benefits can be identical to pure property rights (i.e. a single owner). Two examples of rights based on management systems are individual transferable quotas (ITQ) and community rights. For illustrative purposes consider the example of an ITQ system. In such a system fishermen receive a well-defined property right in the TAC. Just as each country is allocated a certain percentage of the Baltic cod TAC, each fisherman should know exactly how much fish he is entitled to catch. With well-defined property rights it is meant that each individual fisherman's share of the TAC should be:

- Exclusive or personal, so that all the benefits of ownership accrue to the fisherman,
- Permanent, so that there is no foreseeable risk of the government taking it back,
- Secure, in that it is protected in law and in practice, just as ownership of a car or house, and
- Transferable, so that the fisherman is free to sell or lease his quota to someone else, which ensures that the fishery is managed efficiently.

As it is generally not possible or too costly to create perfect property rights in the economy, it is more useful to think of property rights in terms of their quality. How well are each of the above mentioned criteria met? This is illustrated in Figure 1. The longer the arrows are, the better the quality of property rights.

### Advantages of Rights Based Management

The advantage of a rights based system over the race-to-fish system is that each fisherman knows exactly how many fish he is entitled to catch, and therefore can focus on finding the least costly or most efficient way of doing it. If he wants to catch more fish he must buy a greater share of the catch from other fishermen, rather than "race" them. Similarly if he becomes ill or wishes to stop fishing he can sell or rent his share of the catch to other fishermen. This reduces the costs of catching fish and

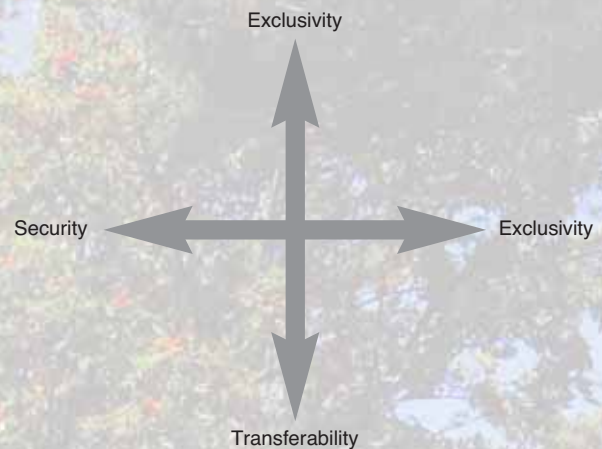


Figure 1. Characteristics of well defined property rights.

thus increases fishermen's incomes. Furthermore, if the stock is allowed to grow through a stock recovery plan that results in a higher TAC in the future, then catch entitlements will also grow - since each fisherman receives a percentage of the TAC - thus guaranteeing each fisherman a personal benefit of reduced fishing. Since a catch entitlement is an asset that can be sold, its value will reflect the state of the fishery. A healthy stock with a good catch potential will imply a high value - just as a healthy company has a high share price - whilst an over-fished stock will induce a low value. Fishermen will not be willing to pay much for a share in a fishery that yields low catches. In other words it will be in each fisherman's own interest to see that the stock is managed well, because the value of their fishing entitlement will depend on it.

Bearing in mind that a fishing right is an asset, it will also be beneficial for individual fishermen to support improved control of the fishery. That is, it will also be in their interest to improve the efficiency and success of fisheries control: just as it is in the interest of house owners to lobby for a well functioning police force. Without this factor, house ownership would have little value, as the house would be too easy to break into. This is the essence of having property rights: individuals take better care of things that have a personal value to them and they will work to have this value protected.

Property rights, however, cannot be expected to solve all problems associated with fisheries, especially those associated with the marine environment. For example, conservation of unique habitats might require the creation of marine reserves. Environmental labelling could help consumers to express their preferences for various fishing methods. One thing seems certain though - without engendering fishermen with a sense of property in the Baltic fisheries there will be no long-term solution to the problems in the Baltic Sea fisheries. Poor experience of regulated fisheries management around the globe provides ample evidence of this.

Author: Dr Mark Brady, Senior Researcher  
Swedish Institute for Food and Agricultural Economics (SLI)  
Box 730, S-220 07 Lund, Sweden  
mark.brady@sli.lu.se, www.sli.lu.se

## The Polish Baltic cod case

The population of the cod in the Baltic Sea is still decreasing due to overfishing, eutrophication and factory pollution. More and more frequently Polish people can read newspaper articles about the cod situation, as for the last few years it has become a very important problem.

The questionnaire carried out among people from different social groups indicates that public awareness of the situation of the Baltic cod is on an average level. Over 65% of the respondents have some knowledge of this problem. In their opinion, negotiations between politicians and fishermen are thought to be a good solution.

One of the ways to save the cod in the Baltic Sea is to reduce fishing.

Currently in Poland this limit amounts to 15825 tonnes. This is the main cause of the dispute between scientists and fishermen. Both sides have their own reasons. The fishermen protest against fishing reductions. They claim that compliance with the reductions is unprofitable. It is necessary to compensate for their losses. They received compensation, which was financed by the European Union and the Polish government. It made it possible for some fishermen to resign from fishing and scrap their fishing boats.

The second way to protect the cod is inspection of the ships conducted when they enter the harbour, carried out by the Regional Inspection (with seats in Gdynia, Słupsk, Szczecin) which checks compliance with the norms considering:

- number of fish caught
- equipment: instruments and mesh size
- size of individual fish
- the time of cod protection
- fishing region

Unfortunately this solution seems also not to be good enough for the fishermen. Although they have stronger nets, more powerful engines and more modern ships, they have to invest big amounts of money to meet the norms. Considerably smaller size of the cod or stricter norms cause the quantitative decrease in the cod fishing. Changes of the cod prices during the last few years are illustrated by the Fig. 1.

The Baltic cod problems have become a subject of international debates and conferences. Hopefully, they will be solved before the cod becomes extinct.



Photo: Leszek Terlecki

Paulina, Paulina and Joanna

Prices of cod (zł/kg), milk (zł/l) bread (zł/kg)

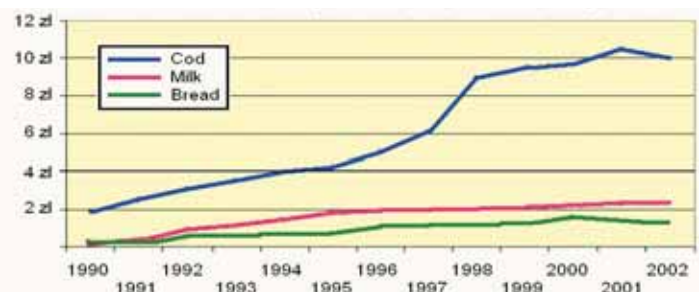


Fig.1 Comparing changes of cod prices with changes of milk and bread prices

Students: Paulina Jaranowska, Paulina Witort, Joanna Wolska; Teacher: Leszek Terlecki  
 III LO im. M. Kopernika, ul. Sybiraków 3, 10-256 Olsztyn, Poland, tel.+48(89)526-44-22, e-mail: lo3@lo3.olsztyn.pl

## Students' impressions and memories

*The first ferry trip, the first international conference, new friends from all over the world and, what is most important, the opportunity to learn a bit more how to save the Baltic cod - we could experience this during our marvellous stay in Nacka.*

*Each day was full of interesting activities - from working in the Cod Workshops, through taking under consideration our talents in the Art groups, to sightseeing in the breathtaking Stockholm. All the seminars and practical classes were extremely mobilizing and showed us the truth about the cod existence in the Baltic Sea, as well as ways how to deal with this crucial environmental issue. What really impressed us was the incredibly efficient organization and the great working conditions, which seemed to be almost incredible to do with such a large group of strangers from numerous countries from Europe and Africa. Even though the hosts of the conference planned something for every minute of our stay, we still had some time to make friends with teenagers of other nationalities, with whom we still keep in touch. Perhaps in the future the present conference participants will greet younger generations at similar meetings playing the role of the organizers?*

*We would like to thank the conference organizers Susanne and Rolf, for their incredible engagement in preparing all the activities. It was a great adventure which will live in our memories forever!*

Weronika Galert and Piotr Kuszewski, II LO, ul. Głowackiego 6; 40-052 Katowice, Poland



Students from Katowice

Photo: J. Miel

## “The Baltic Sea Project” – sounds interesting!

**It was June. The end of a school year, the birds were singing, summer was about to start in a few weeks. We thought all schoolwork had ended. We were wrong... (smile).**

**There were five of us. Three girls and two boys who didn't expect they would join an international science project. Our biology teacher told us about it. “The Baltic Sea Project” – sounds interesting! Why not do something more during the summer” – we asked ourselves.**

We detected the local air pollution using bioindicators – lichens, pine and spruce trees and tar spot fungus. At first we researched the coverage and number of kinds of lichens in leafy forests, on north and south side of five trees. Then we checked the needle loss, the age of needles and the occurrence of fear shoots on spruce trees branches.

We carried out this research in five different places in Poland: at the seaside, near Koszalin and in the lowlands, between Poznań and Wrocław: in

coverage is about 90%. Pine trees look good – first class of needle loss, mainly six generations of needles. The mean value of fear shoots occurrence is 1.

Leszno is a town with the population of 60 thousand and some industry so in the forest nearby there is a second zone of lichens (according to the BSP counting) - a few kinds of crustose. Spruce trees generally look good – the first class of needle loss, from 3 to 6 generations of needles and no fear shoots. The air quality near Leszno is average.



Grzegorz Lorek

can confirm that there is high air pollution rate in Góra. The condition of spruces is alarming – we noticed large needle loss: no more than 3 generations of needles and sometimes some fear shoots. The second zone of crustose lichens and also second zone of coverage is about 40 to 60%. The main sources of pollution are: the sugar factory, boiler house and exhaust fumes. Thirty kilometers from Góra, Polkowice and Lubin are situated, where copper is mined.



Photo: David Mazur

Grzegorz Lorek (left) with his students



x - places of our research

Leszno, Osieczna and Góra (see the map). According to the results, we can state that the air quality is much better in the north of Poland than in the centre.

In Darłowo, which is 30 km north of Koszalin, there isn't much industry and there are almost no factories – only some small holiday resorts. The electricity is produced by wind mills, so the air quality is rather good. We classified it as the fourth zone of lichens. We observed many kinds of crustose, foliose and fruticose lichens. The total lichens

Osieczna is a town with the population of 2 thousand and situated 10 km north-east of Leszno. The forests generally belong to the second zone of lichens. There are few kinds of crustose lichens. Pine trees don't look as good as in the area of Leszno – the second class of needle loss, from 6 to 11 generations of needles and no fear shoots. The air quality near Osieczna is average.

Góra is a town with a population of 14 thousand and situated 80 km north of Wrocław. According to the research we

**Thanks to this research we learnt something about the environment. We also saw what the ecologists' work looked like. We found out how air pollution affects our forests.**

Students: Joanna Zborowska, Aneta Rzepka,  
Robert Miszczuk, Marek Hojnacki,  
Teacher: Grzegorz Lorek  
Zespół Szkół Ogólnokształcących nr 1  
ul. Kurpińskiego 1, 64-100 Leszno, Poland  
E-mail: lorman@leszno.edu.pl



## Air Quality 2004 - report

30 schools from 4 countries participated in the programme: Poland (15 schools), Latvia (12), Lithuania (2) and Denmark (1). Teachers and students sent 39 filled protocols. They estimate the air quality using bioindicators - condition of coniferous trees (firs, spruces sometimes pines), lichens and tar-spot fungus (*Rhytisma acerina*) presence. The most common method used was the lichen scale. Some schools were not able to investigate forest damage in coniferous and maple trees due to the lack of these species in the studied area.

On the basis of the conducted research no difference in the air quality in 4 countries participating in the programme as well as in their particular regions could be noted. According to the protocols the best condition of the air can be observed in Latvia. The condition of fir and spruce trees is rather good and in many protocols presence of very sensitive fructicose lichens e.g. extinct or extremely endangered in many European countries *Usnea* species, has been recorded. In Lithuania there are some differences between the countryside with cleaner air and more polluted areas near towns. The observations conducted in Denmark show differentiation between the town centre and the neighbourhood of the school. Air quality in Poland ranges from really clean to extremely polluted. Probably the main source of pollution is industry. In industrial regions, like Black Silesia in southern Poland, the situation is very bad. There are no lichens and tar-spot fungus at all and coniferous trees are usually badly damaged. In weakly industrialised parts of the country the air is less polluted and in some traditionally agricultural regions, holiday and spa resorts (usually in northern Poland) seems to be really clean. Even lichen *Usnea*, very rare among Poland's species, was noted here. Usually the air quality in the centre of a city is different from the quality observed in suburbia and surrounding areas. It is also different in places situated in dales and high above the sea level (e.g. Izery Mountains).

The most active schools working within AQ programme - I LO im. H. Sienkiewicza, Łańcut, III LO im. M. Kopernika, Olsztyn (Poland), Vecpiebalga Regional Country Gymnasium, Vecpiebalga Secondary School (Latvia), Lapes Basic School, Kauno (Lithuania).

**It is very important for the teams working in the Air Quality programme to exchange information and compare results. So I would like to invite more schools from other Baltic Sea countries and regions to join our project.**

*Air Quality Programme co-ordinator: Dr Beata Węgrzynek  
University of Silesia, PL-41-205 Sosnowiec, ul. Lwowska 6/49  
Tel.: +48-32 2009 448, Bwegrzyn@us.edu.pl*

## Meri-Pori International Camp School 2004 Thanks to the Pine Needle Project

### About the Pine Needle Project

Vecpiebalga Secondary School (Latvia) has taken part in the Pine Needle Project for ten years. The project was organised by Meri-Pori Upper Secondary School (Finland). 10 countries and 18 schools are the participants of this project: Austria, Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Poland, Sweden and Russia. They all gather pine needles in their countries, taking two samples every year – one from polluted and one from clean area, and send them to Finland. Here, with the help of a special system it is possible to estimate the amount of sulphur and wax in the needles. The results show the level of air pollution.

### Where do our samples come from?

We take the samples from two different places. One of them is Cesis (town) near a big road with heavy traffic and a railway. The air there is very polluted and the amount of sulphur has risen to 1057 ppm this year. The other place is in Vecpiebalga – quite far from densely inhabited places and intensive traffic, isolated from the rest of the world by a forest. There the estimated value was 993 ppm. If we compare this year's results with the previous year, we see that the average value has



*Students take samples of water from the river*

decreased moderately during the testing time from 1300 ppm to 1000ppm. It is a proof that the air is getting cleaner.

### Eleventh International Camp school 2004

This year, due to our participation in this project, 4 students and 2 teachers have gone to Finland, where we took part in the Eleventh International Camp school 2004. During five

»» days we saw and visited Kemira Pigments Industrial Park, where we were acquainted with the use of x-ray fluorescence method in the analysis of the total sulphur content of pine needles, and with the scanning electronic microscope used to study the wax layer of needles. We visited Seitseminen Nature Protection Area, Kirrinsanta Wind Power Centre, Fortum Coal Power Plant in Taholuoto, and Yyteri Nature Path. We listened to lectures about nature protection in Finland and other countries. We did some studies in chemical water analysis, air quality and using epiphyte lichen as

bioindicators, and we also watched birds. In the camp we got a lot of information about environmental activities in other countries, and we can use them in our country too. The trip to Finland was very interesting for me because it was not the first one. I went to Meri-Pori together with our teacher Klavs Zommers and a group of students when I was a student. Now I am a teacher at my previous school, and went to Finland for the second time.

Teacher: Dace Radvilavica,  
Vecpiebalga Secondary School, Latvia

## Students need to touch and to feel

### BSP Air quality program in Częstochowa

This year 22 students from the first class of Jan Kochanowski Secondary School in Częstochowa have started to work with the BSP "Air Quality" programme.

Częstochowa is situated in the Cracow - Częstochowa Highland, which is an area characterized by several kinds of natural beauty. That is why we decided to check the air quality in this region.

For comparison we chose two forest areas. The first was situated near our school and the second one we tested was situated about 30 km north-east of our school in Garnek village.

#### Working methods

To determine air quality, students used bio-indication methods like: needle trees method, occurrence of lichens method and occurrence of tar spot fungus method.

Students worked in groups and they prepared special summary cards which included all observations made by the participants.

#### Results of the forest research

The results of the research can be summarized by one important conclusion. In the forest area near Garnek village numerous tree and ground lichens can be observed. The lichen occurrence is an indicator of low air pollution level due to the fact that lichens are pioneer organisms very sensitive to air pollution, especially SO<sub>2</sub>. There were numerous examples of lichens on the pine trees just like:

- *Desmococcus sp.* (indicates air pollution of approximately 170 uq SO<sub>2</sub>/m<sup>3</sup>)
- *Hypogymia physodes* (indicates air pollution of 100-70uq SO<sub>2</sub>/m<sup>3</sup>)
- *Usnea florida* – rare occurrence (air pollution indicator of 40-30uq SO<sub>2</sub>/m<sup>3</sup>)

Apart from all that we could find several species which like warmer exposed places (*Cladonia chlorophaea*).

We decided to observe maple trees near the forest boundaries. On the maple leaves we found the tar spot fungus – *Rhytisma acerinum*. The occurrence of this fungus indicates that the air is not very polluted in the area.

#### Results of the research in the forest near our school

We were also looking for lichens in the forest near our school.

Because our school is situated close to the main city road we could not find lichens there. The air is too polluted. We could find only little tar spot fungus on the maple leaves.

#### Conclusion

Our observations head for one conclusion: if we are closer to the city centre the air is much more polluted. The main sources of pollution are factories and heavy road traffic. The outdoor air pollution research was a great opportunity to extend educational school programme on environmental protection.

**The most important thing is that for real understanding of natural phenomena students need to touch them and to feel them.**



Students from J. Kochanowski Secondary School in Częstochowa, Poland



BSP school coordinator: mgr Lena Czaja  
Biology teacher: mgr Ewa Żółtowska  
Complex of J. Kochanowski Secondary Schools  
ul. Warszawska 142, 42-200 Częstochowa, Poland

## Bird Ecology – Year 2004

### - winter and spring bird counting report



Dear teachers and pupils who took part in the Bird Ecology Programme,

I would like to thank all of you for your contributions. The results were gathered despite the severe weather conditions, especially in January, when hardly anybody wants to go out. **My special thanks are for the children from Secondary School from Kaunas – Lithuania**, who showed great ecological awareness taking care of the birds wintering in their town.

Now I want to share the results with all participants, because sharing results is an important part of the scientific process. By discussing your results and the interpretation of your results with the others you let them know about your important findings.

Scientific research papers are written so that scientists can share their results and ideas with other professionals. Scientific papers give other researchers several specific kinds of information:

- **What were our questions?** The question was “How many birds of different species winter in chosen water bodies in some of the Baltic Sea countries?”

- **How did we do our research?** We did our research simply by counting birds once in January on chosen water bodies. The results from Denmark, Estonia, Lithuania, Latvia and Poland were sent to the Programme Coordinator.

- **What data did we collect?** Besides the number of birds - temperature, water coverage with ice, visibility, strength and direction of wind were recorded. The short description of the observation area was also given. I have received the data from fourteen schools.

- **What do the data mean?** The data show that along the Baltic coast the most numerous bird species were: Long-tailed duck (*Clangula hyemalis*), Goldeneye (*Bucephala clangula*), Tufted duck (*Aythya fuligula*), Pochard (*Aythya ferina*) and Scaup (*Aythya marila*). In the inland water bodies the most numerous species were: Mallard (*Anas platyrhynchos*), Mute swan (*Cygnus olor*) and Black-headed gull (*Larus ridibundus*). The air temperature varies from minus one to minus ten degrees Celsius and ice coverage varies from almost full to no ice at all.

- **What conclusions can we draw from our research?**

It is obvious that the Baltic Sea is a very important wintering ground. During mild winters over 4 million long-tailed ducks, 1 million common eiders, 0.9 million velvet scoters and 0.8 million common scoters winter there. Our results are somewhat similar. Surprisingly, very few common eiders were observed, which was noticed by Ms Birthe Zimmermann from Denmark.

Most of the inland water bodies, like fish-ponds and dam-reservoirs, freeze up. The main exception is the Vistula River, which generally does not freeze up in some parts, especially its urban part in Kraków. Every winter from 400 to 800 mute swans gather there as well as from 500 to 1000 mallards. In addition, they are fed by the Kraków's inhabitants so they stay there all winter. Considering the Vistula River our results are the same, whereas on the Rożnowski dam-reservoir the second most numerous species was Goldeneye. The results from fish-ponds and ponds in the parks are the same as from the Kraków's part of the Vistula River.

#### Similar results

The fact that our results are similar to those obtained by other scientists indicates that they are credible. I hope that the next data will be as reliable as the data I have obtained.

#### Spring bird counting

Spring bird counting has not become as popular as winter counting yet. Only five schools have sent me the results so far. The most impressive results are from Lihula Gymnasium from Estonia. The pupils were counting birds in the Matsalu National Park and they observed: Whooper swan (*Cygnus cygnus*) in an incredible number of 8000 individuals, Tufted duck (*Aythya fuligula*) 2000, Cormorant (*Phalacrocorax carbo*) 1500, Bewick's swan (*Cygnus columbianus*) 1000 and Goldeneye (*Bucephala clangula*) 400. Students from Liceum Ogólnokształcące in Miechów have also interesting results. The amount of birds they saw is not as impressive, but they observed Pygmy cormorant (*Phalacrocorax pygmaeus*) which very rarely appears in Poland.

In April water birds are on their way to their breeding sites. They use every possible water body as a source of food and a resting place. That is why they are seen in such abundance.

*Wishing the participants all the best I hope that our cooperation will last at least one more year.*

Andrzej Śliwiński

Bird Ecology Programme Coordinator  
32-200 Miechów, Konopnicka Street 10, Poland  
www.andrewsl@wp.pl or  
www.andrewsl@miechow.com



## Ringed mute swans

While we were doing our winter counting we also wrote down the numbers from the swans' neck-bands. Because the bands are relatively broad it is possible to read the number from the long distance. They are an additional means of marking swans. The basic way is putting a metal ring on the bird's left leg. The ring has a unique letter-digit code, so we are able to identify every bird. Polish ring code consists of two letters and four digits. Sometimes on the bird's other leg a yellow plastic ring with the code consisting of two letters and two digits is placed. Due to its size you can read the number when the bird is walking or diving, from the distance of more than ten meters.

Every year more and more Mute swans winter in Poland. In the 1950s and 1960s, when the Mute swan bred only in the northern part of Poland, only a small number of swans spent winter on the Baltic coast. In the 1970s and the beginning of the 1980s, distinctly more Mute swans were spending winters on the coast, as well as in many places in western Poland. Additionally, in lower numbers they were wintering in the Masuria Lakes region and in several sites along the Vistula river between Gdańsk and Cracow. Since the second half of the 1980s these birds have been spending winters in the whole country on unfrozen or partly frozen sections of rivers, ponds, dam-reservoirs and waste water treatment plants. The biggest wintering site in Poland is the Gulf of Gdańsk, where large flocks stay in the shallows south to the Hel Peninsula and in the neighbourhood of the beaches between Gdańsk and Gdynia.

Along with the growth of the Mute swan population in Poland, the number of birds wintering has risen from several hundred in the 1960s to 20.000 by the end of the 1990s. In the strongly polluted Vistula river in Cracow more than 1000 Mute swans winter every year. It is not only caused by the fact that the river is unfrozen but also that the birds are fed by Cracow's inhabitants. It causes irreparable harm to the birds because they lose their natural willingness to migrate.



The group of young ornithologists from Mlechnów

Photo: Andrzej Śliwiński



Photo: Andrzej Śliwiński

In the year 2003 we observed five Mute swans with neck-bands wintering on the Vistula river in Cracow. All of them had been ringed in Upper Silesia. This year we have also observed five swans ringed in Upper Silesia, one of which has been observed for the second time. It is a female ringed on 8th September 2002. Her code is 47CY. To our surprise, the sixth swan was ringed in Hungary on 25th January 1998.

If you observe ringed swans during your counting, please let me know.

Andrzej Śliwiński - Bird Ecology Programme Coordinator

## European birdwatch

Every year at the first weekend of October the European Birdwatch takes place, organized by BirdLife International.

In every country the event is coordinated by the BirdLife Partner organization.

**European Birdwatch appeals to people to participate, to have fun, to learn about nature conservation** and to help BirdLife International to continue protecting birds and their habitats.

Thanks to its popularity, this happening is the world's most successful public event dedicated to birds.

Every three years European Birdwatch expands beyond the borders of our continent and becomes a global event. This year our European Birdwatch was World Birdwatch and more than 100 countries participated.

This year the Bulgarian Society for the Protection of Birds officially coordinated the most popular BirdLife event in Europe. Year 2004 is special, because of the 25th Anniversary of the Birds Directive and the main theme of European Birdwatch was promotion of Important Bird Areas and Special Protection Areas.

**I would like to implement this event into BSP – Bird Ecology schedule.** The task is relatively easy; you count the birds and send the results to your national BirdLife coordinator. They

should be sent by email on Sunday and should contain the three most abundant bird species as well as the total number of the birds which were seen and noticed rarities. The whole list with observed species, place description and the number of participants can be sent later.

I have already received the results from some Baltic Sea countries.

**Germany:** Starling – 28758; Chaffinch – 12922 and Barn Swallow – 10329 (contact person – Markus Nipkow [markus.nipkow@nabu.de](mailto:markus.nipkow@nabu.de))

**Latvia:** Starling – 9523; Crane – 6241 and Bean Goose – 5291 (contact person – Ilze Strausa [ilze@lob.lv](mailto:ilze@lob.lv))

**Lithuania:** Starling – 37699; Wood Pigeon – 25249 and Lapwing – 14278 (contact person – Gintaras Riauba [gintaras.riauba@birdlife.lt](mailto:gintaras.riauba@birdlife.lt))

**Sweden:** Barnacle Goose – 205637; Eider – 135009 and Pigeon – 69789 (contact person – Andres Arnell [info@sofnet.org](mailto:info@sofnet.org))

**Poland:** Lapwing – 7998; Starling – 5827 and Greylag Goose – 4558 (contact person – Hanna Rachwałd [hanna.rachwald@otop.org.pl](mailto:hanna.rachwald@otop.org.pl))

I kindly invite all of you to participate in European Birdwatch 2005. If you have any questions, please do not hesitate to ask.

Bird Ecology Coordinator - Andrzej Śliwiński

## Siemianówka bird ringing camp in Poland

### North Podlasie - a region rich in birds

North Podlasie, a region rich in forests, lakes, marshes and birds, is situated in the north-east of Poland. It is a region which preserves natural landscape (there is no industry) and it is one of the most beautiful and most interesting, as far as landscapes are concerned, regions of Poland. Białowieża Forest, Dojlidy ponds and Biebrza Marshes are only a few famous places worth seeing in this part of Poland.

### Siemianówka Reservoir - a fantastic terrain for birdwatchers

Near the border line between Poland and Byelorussia an artificial Siemianówka Lake is situated. The process of creating the Siemianówka Reservoir started in 1977 and finished in 1993. Now it is the biggest water reservoir in the region. It has 32 km<sup>2</sup>, the length of 13km and width from 1 to 4 km.

Unfortunately this artificial reservoir upsets the natural water balance in the Białowieża Forest and the flood waters of the Narew Valley.

On the other hand this is a fantastic terrain for birdwatchers because the lake area is full of various birds. The reservoir is surrounded by huge areas of marshes, bogs and cane fields, where an ornithological ringing camp takes place.

### The work of ornithologists and assistants is absorbing and very interesting.

The ornithological ringing camp is a place where ornithologists girdle birds. The camp, led by Michał Polakowski from the biology faculty of Białystok University, was held between July and November.



*All photos: Maria Kuc*

*Long-eared Owl  
Asiootus  
(Uszatka)*



*White Wagtail  
Motacilla alba  
(Pliszka siwa)*



*Great Tit  
Parus major  
(Bogatka)*



» The encampment is situated in little meadows, distant from villages, between the lake and the forest. In neighbouring bushes, fields, canes and forests nets and bird-traps were distributed.

The work of ornithologists and assistants is absorbing and very interesting. Every hour inspection of nets and traps is carried out. Then assistants bring out the birds and carry them to the ornithologist. He marks the type of bird, bends the ring, weighs them, measures the wing, tail and sometimes feet or claws. Some birds are used for experiments for orientation, but they are not harmed. All the results and observations are recorded in special codes and transmitted to the main ornithological station in Gdańsk.

Since February 2003 Siemianówka ringing camp has belonged to SE European Bird Migration Network (SEEN), which unites institutions from 24 countries.

Participation in that action gives us the possibility to learn about birds and things connected with their lives and behaviour. There is also a possibility to meet well known Polish ornithologists, who willingly talk about birds.

Despite pretty simple or even rough conditions in the encampment, people come to Siemianowka and take part in this exciting ringing camp.

### Birds of Siemianówka Reservoir

As I have already mentioned before Siemianówka lake and forests are an area where thousands of birds live, therefore the caught specimens can be very interesting.

For example we can meet here the biggest European



Hawfinch  
*Coccothraustes coccothraustes*  
(Grubodziób)



Eurasian Nightjar  
*Caprimulgus europaeus*  
(Lelek)



Black Woodpecker  
*Dryocopus martius*  
(Dzięcioł czarny)

woodpecker – the Black Woodpecker (*Dryocopus martius*). We can also meet the Hawfinch (*Coccothraustes coccothraustes*), Long-eared Owl (*Asiootus*), Eurasian Sparrowhawk (*Accipiter nisus*), Great Egret (*Egretta alba*) or Spotted Nutcracker (*Nucifraga caryocatactes*).

Because of the abundance of food and nesting places there are also a lot of little birds like tits, wagtails and Sedge Warblers (*Acrocephalus schoenobaenus*). During the camp between July and November last year over 4000 birds of 92 species were caught. Thanks to the guided register every year Michał Polakowski gets informed about "his" birds that someone abroad has caught. Last year he received messages from Italy, France, Hungary, Czech Republic and Lithuania.

Now I am looking forward to the next summer and the next ringing camp in Siemianówka. Fortunately during the long winter I can observe birds in Silesia with my colleagues from the school ornithological club.

Student: Maria Kuc; Teacher: Lidia Janas

II LO im. Marii Konopnickiej, ul. Głowackiego 6,

40-052 Katowice, Poland

e-mail: mariakatowice@wp.pl

[www.birding.gt.pl/siemianowka.html](http://www.birding.gt.pl/siemianowka.html), [www.avestom.republika.pl](http://www.avestom.republika.pl)

# Environmental History - Agriculture

Jacobson Gymnasium from Seesen and Nowodworski Secondary School  
from Cracow 16th – 23rd April, 2004



Anna Figiel

## In Cracow

We spent plenty of time in Cracow, not only watching its landmarks, but also getting to know each other. Although our aim was to show our guests a lot of our history, for which we are well-known all over Europe, there was also some time for integration. The first place visited by our guests was the main market square and its surroundings. Our guests were so interested in St. Mary's Church, that in spite of not being Catholics, they asked us to show it to them again. Later, we visited the Wawel Royal Castle. Our guests found many mistakes in the guide's presentation and they did not like the large number of details they were given. But all in all, they really admired the wealth of the castle and its chambers. Our skills in speaking English and German were put to test while visiting the Słowacki Theatre to watch the "Rigoletto" opera. We had to translate the dialogues and tell the plot to our guests, who did not understand Polish subtitles. Our guests also visited Collegium Maius. They could not have missed visiting our school. In the auditorium they told us about the agriculture in their area, and then they took part in the lessons in English.

## In Wieliczka Salt Mine and the Świątniki farm

On Tuesday our guests visited the salt mine in Wieliczka. Many of them admitted later that they had never been so deep underground. They really liked the salt sculptures and the fact of being so deep underground was a great attraction for them. Also on Tuesday we visited the farm in Świątniki near Cracow. Later, we visited a bakery, where, thanks to the kindness of the owners, we were treated with local dairy products and we learnt a lot about their production. After that visit it was high time for some meal, during which we had an opportunity to get to know each other.

## Auschwitz Museum

Our visit to the Auschwitz Museum resulted in various reactions among our guests, and we understand them. Many of them did not want to enter to watch some exhibits and some of them cried.

## Ecological farm in Stryszów

On Wednesday, on our way back from Auschwitz to Cracow, we came to visit the ecological farm in Stryszów, which is

a part of International Coalition to Protect the Polish Countryside. In June 2002 the ecological farm was visited by Prince Charles, the heir to the British throne. And in April 2002 ICPPC was awarded the Goldman's Award - the Ecological Nobel Prize. On the ecological farm we ate an ecological lunch - a local "genetically pure" meal without any preservatives. Later, we visited houses made of straw and clay only, supplied with electricity from their own power generators and containing their own purification plants. The effect was stunning!! You can find more information on the ICPPC web-site: [www.eko-cel.pl](http://www.eko-cel.pl), or you can write them on: [biuro@icppc.pl](mailto:biuro@icppc.pl). All in all, our guests and we were taken aback by such an ecological usage of modern technology.

## In Zakopane

The all-day-long trip to Zakopane was to be the final event of our exchange. During the walk in the mountains we were to teach our guests a little bit of the Polish language. In the remaining period of time there was a Polish language competition.

After the long walk in the mountains there was some time for lunch. We got back to Cracow and we enjoyed our last hours together.



Polish and German students in Zakopane.

Student: Piotr Gasiorowski  
Nowodworski Upper Secondary School  
Plac na Groblach 9, 31-101 Kraków  
[linguaoffice@wp.pl](mailto:linguaoffice@wp.pl)

## HEADS OF THE JASIOŁKA RIVER THROUGHOUT THE CENTURIES

### Invitation to a magical place

The reserve is situated near our school (about 50 km) but its environment differs considerably from the one which surrounds us. We were amazed by the beauty of nature, variety of floral assemblage and above all we were moved by the history of people who used to live there even fifty years ago. We are happy to be able to share our knowledge with other students and we invite you to this magical place where fragrance of history fills the air and Mother Nature astonishes its children.

### The biggest reserve in the Polish part of the Carpathian Mountains

The Jasiołka River's spring is one of the most important rivers in the south-east part of Poland. This region has an interesting history, which has to do with the location of these territories on the medieval trade route ("wine trade route") which led from Poland to Hungary. It is situated close to the Polish - Slovakian border in Podkarpacie province. It is a part of "Heads of Jasiołka River" nature reserve, the biggest reserve in the Polish part of the Carpathian Mountains. In this very region a small village – Jasiel came into being in the 16th century. Its population came from the south of Europe across the Carpathian Mountains and was called Łemkowie. The word "jasył", which the name of the village comes from, means bright,



Students from ZSP nr 5 in Krosno

clear water. In our poster we take into consideration changes in the environment caused by human activity, as well as the history of people living here and current condition of the environment. We have collected all information about this region on the basis of the notes from historical sources and conversations with a forester from Rymanów Forestry and with a worker of The Carpathian Landscape Park Group.

### Wine merchants

What we know about Jasiel's history is not much in comparison with neighbouring settlements. Hungarian wine merchants used to make their way through Jasiel because they wanted to bypass Jaslika town, where they would have to pay entrance duty fee. Jasiel's inhabitants were Greek Catholics. They farmed, bred cattle and made things of

stone. Houses in Jasiel were built along the river and the road which led through the valley. Fields were situated on hillsides around the valley. People separated their fields with balks, which prevented the soil from being washed away. Higher situated grounds were marked down as pastures. On steep slopes a forest was growing. On a hillside there are remains of an old Łemki cemetery near which the Soviet soldiers, who died in autumn 1944 during Dukiel'sko - Preszowska Operation, were buried. Old limes point out a place where an Orthodox Church used to stand.

### World War I

In winter 1914-15 fierce fights for Carpathian passes took place in the surrounding areas. In spring they turned into a Great War operation, in historical literature referred to as "Gorlicka Operation". Jasiel also suffered then – some buildings and the Orthodox Church were burnt. Before World War II there was also border guard in the village. Tragic events from the time after the war are also connected with this post.

### World War II

Although World War II has come to an end, more or less fierce fights with the Ukrainian army called UPA were taking place here. This army supported the Ukrainians who wanted to take over this area.

In spring 1946 the border guards in Jasiel were attacked by the joined forces of UPA (about one thousand people).



Jasiel

» Polish soldiers were surrounded and they defended the buildings in Jasiel for a few hours – until there was no ammunition left. Polish soldiers were captured. Officers and juniors (36 persons) were taken up a wooded hill and there they were tortured and then shot. Some Poles were freed but the fate of about twenty of them still remains unknown. Jasiel's community was accused of supporting the UPA forces and in 1945/46 it was exterminated by the Soviet Union. It was the end of Jasiel village. In the place of the former border guards post there is a memorial dedicated to the murdered soldiers of WOP. Near the road, on a stone, a special plaque was put.

### After World War II

The land of thereby Jasiel was joined with the National Farm in Moszczaniec. During the last years farming has turned out to be bringing losses and the houses have fallen into decay. Nowadays only wild fruit trees tell the story of old fruit orchards. Since 1993 the Jasiołka Valley, where Jasiel village had once been located, has been a part of the "Heads of Jasiołka River" nature reserve. Natural environment of the reserve is very interesting. The forest area occupies about 75 per cent of the Park's total area. These are mainly natural communities of Carpathian beech wood. The trees grow on the highest slopes along the border. Plant assemblages of

meadows, pastures, rivers, marshes and peat bogs can be found. Meadow areas are a very convenient habitat for raptors. *We can find here: the golden eagle, the common buzzard and the hawk.*

### There are so many places around us to discover...

The „Heads of Jasiołka River" reserve and Jasiel are points on a few tourist tracks and one horse route. In the area of a former village there is a free camp site complete with a shelter, place for bonfire and a homestead for horses.

*Students: Tomasz Bolak, Wojciech Strzelczyk*

*School coordinator: Dorota Mróz*

*e-mail: domroz@interia.pl*

*Zespół Szkół Ponadgimnazjalnych nr 5;*

*38-404 Krosno, ul Rzeszowska 10, Poland*

## Comenius meeting in Soenderborg October 4th – 8th 2004



### Amtsgymnasium in Soenderborg was filled with foreigners

Representatives from four partner schools met for discussion of, and reporting from, two years' work and in order to plan the activities during the final year of the Comenius project. In addition to this there was an exchange class from Germany. So the Amtsgymnasium in Soenderborg was filled with foreigners from Estonia/Tartu Tamme Gymnasium, Poland/Zespół Szkół Ogólnokształcących No 6 and Germany/Integrierte Gesamtschule Kandel. The general topic was environmental history. The first year we worked on garbage, air and water quality, the second year on food (especially Christmas food) and energy, this year's topic is consumption and consumerism. At our last meeting in Tartu, Estonia, we decided, together

with the students, that the end product should be a calendar 2006, showing the students' work during the three years. Some of the results are already available on our project website /[www.tamme.tartu.ee/comenius/](http://www.tamme.tartu.ee/comenius/)



### On the first day

Students from each country presented analyses of their national questionnaires. The aim of the questionnaire was especially devised for measuring students' personal consumption level in comparison with their income. Afterwards the Danish students gave their guests a conducted tour of Soenderborg, as did the teachers. In the evening the students were at their hosts' places and the teachers had a general conference during dinner.

### On the second day – a whole-day trip around the island Als

The Comenius guests and our host students went on a whole-day trip around the island of Als, where Soenderborg is the main town. The guests were very excited and pleased with Soenderborg's new and modern garbage recycling facility. It was positively surprising that somewhere in the world people actively use 23 different types of garbage containers in order to separate different types of garbage! After getting acquainted with the highest sundial in Northern-Europe, Egen Church and its special stables dating from the eighteenth century, all of us enjoyed walking in the beech wood, Noerreskoven, along the Baltic Sea.

### On Thursday morning

– Danish students are in the school while the Estonian, Polish and German students work on local consumption. On Thursday morning the German teacher Ralf Gauweiler introduced the Wiki-system, which is used as one part of the web conference, Agenda 21 NOW! ([www.agenda21now.org](http://www.agenda21now.org)). For several years this conference has been organised by the German partner school, now the other partner schools contribute as well. The Danish students

» had their normal lessons while the Estonian, German and Polish students were working on local consumption in Soenderborg. At first they worked with advertisements and the pictures in those, prices etc:

- Number of advertising magazines: 59 per week in a local household, number of pages: 1522, weight: 3262 grams!
- The prices are about twice as high as the ones in Estonia, but the cell phone charge, bath/toilet articles and furniture are cheaper;
- Coffee, alcohol and cigarettes are much more expensive in comparison with Estonia;
- The organising of goods and signs are quite the same as in Estonia.

Then the students went to a local supermarket to get a personal impression and compare Denmark with their own country.

Here are some impressions:

- "If you need assistance, press the button and they will come!"
- "There are connections between the goods: pasta/sauce, candles/candleholders;
- "A lot of young people work in the supermarket".



In the meantime the teachers planned the final Comenius meeting in Gdańsk in May 2005, the final version of the calendar and the evaluation of the entire three-year project. The participants enjoyed the lecture of Martin Klatt from the Southern Danish University Border Region Institute. After the lecture there was a good

discussion. Some of M. Klatt's conclusions were:

- Border regions are generally poor;
- Demography shows that the population becomes older because young people leave for the cities;
- Therefore the people of border regions are less educated than the average population in the country.

### STUDENTS' CONTRIBUTIONS:

#### Tuesday October 5th.

We started the day at 8.00 and after a short introduction in the auditorium we had a tour through the school buildings. Then a Danish teacher showed us some chemical experiments and we all had a lot of fun. At 9.00 we began preparing the results of the questionnaire and presented them with the other Comenius - students afterwards. After that we were divided into 3 groups in which we were supposed to discuss the results of our work. When the work was done, a few students went into the city and had a tour guided by the Danish students. After a long and productive day we relaxed with the Comenius and Exchange students from Germany in the local night amusement establishment, called "Bob's".

#### Thursday October 7th

We started our day in the computer class. One of the German teachers acquainted us with it and taught us how to use Agenda 21 NOW. We visited the web site, [www.agenda21now.org](http://www.agenda21now.org) and discussed what the new headline for the 2005 conference page should be. All groups brainstormed and offered some interesting solutions. We decided that the pre-conference will be held on 12th January (test conference) and the real conference will be on February 10th. Then we tried to edit a page, for which we used the online encyclopaedia called Wikipedia. Its address was <http://en.wikipedia.org/wiki/Wikipedia:Sandbox>. It was really interesting. At 10.00 we got some tasks on Consumption and Consumerism. First we had to make a one-day analysis on consumption in Denmark on the basis of some advertisements that had been collected during one week from one family's post-box. We did not imagine that so much



"garbage" is delivered to our post-boxes. Then we found some similarities and differences between our countries. Finally we found three items that we thought were cheaper in Denmark than in Germany, Estonia and Poland, and three items that we thought were more expensive in Denmark. At 11.00 we went to the supermarket in town. There we also carried out some easy tasks. We described and compared the goods, space, lighting and music. Then we tried to find some "ordinary" goods: milk, bread and so on and they were relatively easy to find. Some of us described consumption in Denmark.



We gave the task results to our teachers. In the evening we finished off our week with a party for all the Comenius students and 2b and their exchange guests. We all brought food and ate it in the canteen. Later we went to listen to the school's astronomy teacher who gave us a show on aliens and circles in the fields, supposedly made by aliens. We also watched part of an Arnold Schwarzenegger's film about people being pursued by aliens and witnessed an explosion of methane gas. On Friday morning all the guests departed.

*Urmas Tokko, Tartu Tamme Gymnasium,  
Tamme Avenue 24a, 50404 Tartu, Estonia.  
+372 7 461 728  
[www.tamme.tartu.ee](http://www.tamme.tartu.ee)*



## BSP Coast Watch

There is probably no doubt that life started in water. Our everyday life depends on water more than we usually think. "Water Quality" and "Coast Watch" are two BSP first common programmes.

Students from 4 countries (Denmark, Estonia, Latvia, and Poland) and 10 schools took part in the Coast Watch programme last autumn. 32 units or 16 km of coastline were surveyed. The explored areas were mainly sandy and stony. Bladder wrack (*Fucus vesiculosus*) was found in 26 units. Altogether 6 dead birds and 1 dead seal were found, all marked by Estonian students. No oiled birds were found. Remarkable is also the amount of litter. Household refuse in bags or piles or sacks was marked in 10 units. An average number of plastic bottles per unit was 8.5, glass bottles - 4.7 and plastic shopping bags - 4.5. Different plastic items were marked in 23 units. One group of students organised a clean-up event after the survey. The general situation in the surveyed areas is satisfactory.

## COAST WATCH ON SKODSBORG BEACH (DENMARK)

On Friday our 8th grade students went on a bike trip. We rode to Skodsborg (a seaport). Our teacher Ulla gave us some papers with assignments: we were supposed to answer a couple of questions like "What kind of rubbish can be found here?" Or "How many bays does the sea have?" We worked in groups and had to find various sorts of rubbish: home supply or sea-animals. At first it seemed to be a bit hard to separate all the rubbish we found into different groups. In general, I think that the trip went very well. What can be better than a trip to nature! On the other hand, we learnt a lot of new things as well.

*By Yeghishe Tsaturyan*



## COAST WATCH IN KOŁOBRZEG (POLAND)

On Thursday, 16th September we went to the beach and we did the coast-watching. We noticed that the beach was a bit dirty. People who drop litter on the beach and into the sea seem to be unaware of the fact that they are destroying nature and harming themselves this way. We hope it will change soon.

*By Katarzyna Sats*

## COAST WATCH IN JURMALA (LATVIA)

The area I observed is situated on the Riga Sea Gulf, near the town of Jurmala. This part of the beach holds a blue Flag, which means the beach has a certain (high) standard. Now autumn is coming, bringing storms as usual. Storms blow all garbage away and reveal ancient soil layers which contain old coins, tarred fishermen's boat parts etc. Last autumn walking along the beach after a storm, I found 24 toy-spades and many sandcake tins. This year the beach is clean. The city municipality is fighting against beach pollution and the results can already be seen. I wish it was like that in all parts of the world!

*By Agnese Matvejeva*



## COAST WATCH IN KOLKAS RAGS (LATVIA)

We came to the Kolkas Rags parking-place and from there we walked to the seaside. Then we saw big stones. We realized it was a monument for those people who died in the sea. After that we went to Kolkas Rags. We saw cranes in the sky. Our classmate found a little jellyfish. Later we saw big white waves and little shells. We were very happy because we saw a lot of fascinating things and the air was cleaner compared with the air in Riga...

*Reet Kristian Program coordinator*

*Estonian Youth Work Centre, Uuslinna 10,  
11 415 Tallinn, Estonia, reet.kristian@entk.ee*





## Phenological Studies - Year 2004

**Fortunately, the number of schools participating in the Phenological Studies in spring 2004 increased once again. Observations were made in Estonia, Latvia, Lithuania, Poland and Germany.**

My group of students belonging to the UNESCO – Club of our school is interested in evaluating the reports coming this year as well as in further development of the programme. Although a large number of people are engaged in the programme we hardly have information about each other. In order to improve the communication and to make it more interesting for young people they have decided to write a letter to all active groups.

They would like an access to spring observations in a way which allows a fast and up to date view of latest information. To reach this target we are planning a special forum, linked to an internet activity as well as a mailing list. Additionally it is planned to work out a questionnaire to collect ideas of participating groups.

Unfortunately, we were not successful in getting the e-mail addresses or homepages of the active schools. Some letters were returned to the sender. We only got one response. This report should also be regarded as a call for creating a contact via internet. Please send us your e-mail and internet addresses!

*Students: Judith Rudolph, Victoria Graf; Teacher: Barbara Maitin  
Gymnasium im Schulzentrum Am Heimgarten;  
Reesenbüttler Redder 4 – 10, D – 22926 Ahrensburg  
e-mail: email@heimgartenschule.de;  
Internet: www.heimgartenschule.de*

## Phenological Studies. Third seminar for students in Schleswig-Holstein, Germany

**Nature Protection – Sustainability. Hoisdorfer Teiche  
April, 19 - 23, 2004**

### Workshops

- „ Nature Protection - concrete“
- “The area of ‘Hoisdorfer Teiche’ from past to present“
- “Investigation of water and sediment of ‘Hoisdorfer Teiche’“
- “Biodiversity - Recognition and Protection“
- “Nature - Print - Nature prints - Print of Nature“
- “Documentation of the students’ seminar and publications“

### The Hoisdorfer Teiche - from past to present

During their visit to a local heritage museum in Hoisdorf the students were informed about the history. While walking around, Mr. Hinrichs told the students about the origin of the ponds there. The ponds were made by people for fish breeding, but it's unknown who initiated this process. It could be farmers working for the knights of Hamme, who lived in the nearby castle, or the monks. In the afternoon the students had a discussion on the themes: ‘Ownership Depends on Settlement’ and ‘Water and Settlement – Possible Complications’. On the next day the students were trying to find out what had been done for nature protection here at the Hoisdorfer ponds. They took photos of the area,

which would allow them to see if the building density was in agreement with the idea of nature protection.

The fisherman, Mr. Kurt Raukuttis, visited the group on Thursday and together they discussed relationships between fishery and nature protection in the reserve.

The water message of this group:

*Clean water has to be available to all people.  
Water is not a commercial article but one of human rights  
- because it's a vital necessity!*



## »» "Biodiversity - Recognition and Protection"

On the first day the group collected ideas and was introduced to a special pedagogical method, called 'working at stations'. At every single station the students worked on various topics, like how to preserve biodiversity or the flying routes of storks.

After a long and intensive exchange of information on biodiversity, which was held on Tuesday, on Wednesday the group visited the farm Lütjensee. This farm's owner is Mr. Günther Fielmann, a well known manager.

Mr. Nattmeßnig guided the group and explained the diversity and specific features of the animals living there. Some of them are in danger of extinction or even are already on the 'red list'.

In the afternoon the participants constructed small tools for catching little insects. The insects, kept in test tubes, were examined and identified. On Thursday the group thought about their water message. They wrote it around a globe and decorated with colours. Finally, all insects were set free again. The water message of this group:

*Water is life. Life needs diversity. We have to recognize and preserve diversity. Protection of diversity is protection of water.*

### "Water and sediment tests in 'Hoisdorfer Teiche'"

#### 1. Measuring the actual condition of 'Hoisdorfer Teiche'.

At first the depth of visibility was measured by means of a Seci-disc and the temperature and conductivity by means of a conductor. Then the students took samples of water to determine the content of oxygen and the pH-mark to compare the water on the surface with the water in the depth. Samples of sediments were taken from the bottom of the pond, dried and burnt in a saucepan.



This way the students determined the biomass.

The water samples were tested every two hours all night and day and the results were put down in a graph. So the participants of the experiment could see that conductivity remained constant, while temperature, content of oxygen and pH-mark decreased at night.

On Thursday the group went out in a canoe to take samples of the deeper water. They repeated all tests with this water again and at last they could state that the water was rather clean.

The water message of this group:

*Water shortage is only one of one thousand causes of death.*

### "Nature Protection - concrete"

1. Which measures are we able to take ourselves?
2. Which measure are we NOT able to take ourselves - and why not??
3. Construction of a map as a source of information for visitors.

At first the members of this group collected the waste in the nearby area (27,2 kg in only one hour).

The next day they started preparing to construct a map for this nature reserve. In this map they explained the plant and animal world of this area to the visitors.

The map was then decorated with colours and paintings to help people find their way in this nature reserve. An old map was replaced with the new one.

Water message of this group:

*When the sky is crying - the earth is laughing. Water is a present and presents are to be cherished. Let's look after the water, or we'll have to die.*

### "Nature - Print - Nature prints - Print of Nature"

Construction of pictures by printing with nature materials

After the group had collected several materials in the wood they started learning about the method.

It is really very easy but impressive.

Using various colours and nature materials such as leaves, grass, flowers and bark the students printed a huge map.



Teachers: Rita Peters-Schüber und Ulli Tondorf  
Participants: Marcel Rompa, Lennart Raschkewitz,  
Christian Hauswald, Marlen Osbahr,  
Lasse Hellwagen-Puttjer, Svenja Radam, Cathrin  
Schmolke, Moritz Laß, Hauke Dahm



## Rivers which flow into the Baltic Sea

Three schools have sent in their river investigation protocols. The schools are: Ilguciens Secondary School, Riga, Latvia; Esbjergs Gymnasium, Denmark and Tartu Tamme Gymnasium, Estonia. Thank you very much.

Before the next number of the Newsletter is published I hope I will have found a way to develop the project so that more schools can find it interesting to participate in it. If you have any ideas please contact me.

The latest inflows of saline oxygen-rich water from Kattégatt to the Baltic Sea took place in 1993-1994. The increased oxygen concentration in the deep areas of the Baltic Proper led to its colonisation by macro fauna and benthic fauna.

Today again we experience a lack of oxygen in the deep areas. This means that about 38 000 km<sup>2</sup> of the bottom area, earlier inhabited by macro fauna, have become so called "dead" bottoms. The number of animals which have disappeared is estimated to 1-1.5 million tonnes wet weight.

(Swedish report on the environmental state of the Baltic Proper, 2003)

We can't change the weather systems but we can do something about over fertilisation.

Let us start a new River project that many schools would like to take part in.

Susanne Mellvig River co-ordinator

Nacka Gymnasium; Griffelvägen 17, 131 40 Nacka

Tel: +46- (0) 8- 718 81 54 (school), Fax: +46- (0) 8-718 82 98

susanne.mellvig@nacka.se

## Research of the town watering place cleanness and its usefulness for recreation

In the year of 1996 the city authorities decided to create an urban resort on Lake Elk. The resort was located on the earlier wood dumping for the nearest saw-mill. The wood had been stored there for many years.

After the bridge had been built and the gravel brought, it turned out that citizens are not eager to use the resort. The reason is that the water contains much organic contamination. We decided to check if this contamination could influence our health. To do it we have carried out a lot of tests.



Photos: Students conducting the biological researches



### Water quality tests by means of bioindicators

The method consists in the qualification of the class of the water cleanness, based upon the so-called water cleanness indicators of the spineless animals. The animals are captured with the help of a sieve. Their name is then determined with the help of an atlas.

Sample collecting place – city beach (Elk Lake)

date – 28/04/2003

time - 3.00 p.m.





Observed animals	Number of specimen	Quality coefficient	Product = number of specimen x quality coefficient
<i>Larva Ephemeroptera</i>	1	1	1
<i>Planorbis planorbis</i>	1	2	2
<i>Lymnaea peregra</i>	2	2	4
	total of specimen 4		total of products 7

#### calculation of the water cleanness class:

$$\frac{7 \text{ (total of products)}}{4 \text{ (total of specimen)}} = 1,7 \text{ (not corrected class of water cleanness)}$$

water cleanness class = 1,7 (not corrected water cleanness class) + 0,2 (correcting factor) = 1,9

Results: researched water has the II cleanness class.

**WATER REACTION =(pH):** Modal value of pH of water measurement amounts to 8  
**TOUGHNESS OF WATER(°d):** Measured value amounts to about 200d.

#### CONCLUSION

The tests were done in April. The condition of the water is satisfactory. Problems occur when swimmers start using the resort. Those people are causing increased movement of the water and blending organic particles from the bottom of the water. This contamination doesn't have negative influence on human body (data received from Sanitary Inspection Centre).

*Students: Jakub Ćwiklewski, Urszula Kupiec, Kamila Żukowska*

*Teachers: Anna Strykowska, Izabella Kasprzak*

*Zespół Szkół nr 1 im. Jędrzeja Śniadeckiego, 19 -300 Elk, ul. 11-go Listopada 24, POLAND*

## “The Oruński Stream Research”

We have examined the river called Potok Oruński, which is the main receiver of leakage from dumping ground. This water is also influenced by pollution from surrounding fields, allotments and rainy inflows.

#### The aim of our research

The aim our research was to answer the following questions:

1. What is the level of chemical and biological purity of the flow?
2. What is the amount of pollution carried by the Potok Oruński to the Radunia Canal and then to the Baltic Sea?
3. What are the possible sources of pollution?

We examined the river from September 2003 to February 2004. We considered all indicators according to the BSP methodology in the physico – chemical scale. We examined the river once a month. Within the scale of biological examining we defined the discovered species and characterized the coastal plants which would support the water self-purification process.





Lp.	Kind of executed mark	September 2003	October 2003	November 2003	December 2003	January 2004	February 2004	Individual
1	<b>Temperature</b>	15	7	3,5	2	1,5	0	°C
2	<b>pH</b>	6,2	6,2	6,2	6,2	6,2	6,2	—
3	<b>Leadership</b>	0,61	0,39	0,47	0,34	0,26	0,37	mS
4	<b>Translucence</b>	38	15	28	26	22	27	cm
5	<b>Dissolved oxygen</b>	10,15	12,17	13,36	13,84	13,56	14,62	mg O <sub>2</sub> /dm <sup>3</sup>
6	<b>Nitrates</b>	0,1	0,76	0,82	0,106	0,106	2,7	mg N <sub>NO<sub>3</sub></sub> <sup>-</sup> /dm <sup>3</sup>
7	<b>Nitrites</b>	0,003	0,007	0,014	0,014	0,015	0,02	mg N <sub>NO<sub>2</sub></sub> <sup>-</sup> /dm <sup>3</sup>
8	<b>Alkalinity</b>	5,0	3,5	4,6	5,1	5,0	6,5	mval/dm <sup>3</sup>
9	<b>Salinity</b>	0,9	0,9	0,05	0,05	0,08	0,05	‰

The level of the stream purity was defined on the grounds of the physical and chemical indications and bio-indicator records.

**Physical and chemical** evaluation was conducted according to the water purity classification used in Poland and to the standards used in European Union.

**Biological** evaluation was based on the grounds of close connections between living organisms and the environment they live in.



*Taking the samples at the river*



*At the school's laboratory*

## Conclusions

1. We should in the future try to control and reduce the stream's pollution, because all that is released into it is later carried indirectly into the Gulf of Gdańsk.
2. Analyzing the content of N (NO<sub>2</sub>) in the Oruński Stream we found that its influence on the level of pollution of The Radunia Canal and The Baltic Sea is small.

*Students: Magdalena Krefta, Ewelina Kamińska  
Complex of Engineering and Environmental Protection Schools in Gdansk*

## Bridges across the Baltic Sea Kaunas, Lithuania - Falun, Sweden

On September 9-17, 2004, 23 students and 4 teachers from Kaunas Jesuit Gymnasium and Vydunas Secondary School in Kaunas, Lithuania participated in the Baltic Sea Project activities in Haraldsbo Gymnasium in Falun, Sweden. The project was a great success and we, the Lithuanian team, want to express our admiration and gratitude for the Swedish hospitality, a warm and friendly welcome at Haraldsbo Gymnasium, the enthusiasm of the Swedish project team - Birgitta Berggren, Hakan Arvidson, Christina Ericols, Jan Eric Hagberg, Per Paulsrud, Jinan Husseini, as well as the school headmaster Peter Berglund, and the sincerity and care of the host families. Joint activities i.e. the Baltic Sea Project between Sweden and Lithuania started in 1996. Last year, a group of students from Haraldsbo Gymnasium and two teachers - Birgitta Berggren and Hakan Arvidson, came to Lithuania. Together with the team from Kaunas Jesuit Gymnasium our guests researched the water quality in Kaunas and Nida, did water tests along the Nemunas, explored the beauty of Kursiu Nerija (Kuronian Spit), which is part of the world heritage, and got acquainted with the paintings and music of M.K.Ciurlionis.

The visit of Lithuanian students and teachers to Falun was beneficial in many respects. Lithuanian students and teachers learnt much about the school system in Sweden, participated in research work organized by the teachers of biology Birgitta Berggren and Virginija Dmukauskienė, had exciting excursions, most frequently guided by Hakan Arvidson, to the World Heritage places in Falun.

Last, but not least, was an enchanting trip to the mountains, a visit to the museum of Andres Zorn, the master miners' estate of Gamla Staberg, participation in various school activities and formal and informal meetings with teachers and students. We, both teachers and students, were very much impressed by the school system in Sweden, to be more exact – by what we saw at Haraldsbo Gymnasium. The school is very well equipped, spacious and warm. The lessons here last longer than in our country, but this offers more opportunity to concentrate on the subject that is being taught, as well as a better chance for students to investigate, reflect and discuss. Team – work and cooperation, as well as individual research are very popular here. Teachers usually teach several subjects and what impressed us most is that they all speak English. Thus, there were no barriers for our communication. We could even joke in English.

At the English department we talked quite a lot about debate as a teaching method. Lithuanian students demonstrated a debate – "This House Condemns Gambling". In Lithuania debate, as an extra-curricular activity, has become very popular. Now it can be taught as an optional subject in the 11-th and 12-th grades. Teachers have started applying debate related methodology in their classes. Most of us believe that through debate and discussion we will be able to hasten democratic processes in our country, as well as make our citizens more open to new ideas and changes.

Fifty years of Soviet regime had some kind of influence on the population of Lithuania and though we have been enjoying independence for fourteen years already, there are still



attitudes, beliefs and principles which are painful reminiscences of the past. All of us admired the openness and tolerance of the Swedish people, as well as their strong sense of responsibility, dedication to work, family and the protection of the environment.

One thousand - year - old Copper Mines, the pride of the Swedish world heritage, impressed us greatly. Some of our students admitted that they had never imagined how much hard work and effort were required to get copper ore. None of us had ever been to a mine before, that's why the trip down the shaft, so deep under the surface, seemed rather scary and exciting. The history of "Fat Mats" was extremely romantic and sad. For us it sounded like a mysterious tale illustrating how man's fate was intertwined with the supernatural powers of the mine. In many ways, the mine had a similar effect on the lives of many other people who worked there. The ties with the mine were very strong indeed - the lives of the miners' widows who were allowed to open pubs when their husbands died, the crippled miners and exhausted workers living around the Mine in copper-red houses-all these reminiscences still echo in our memories.

During the stay in Sweden the students conducted research activities - they researched biotope in three different locations. In the first place it was a swamp, then - in a mountainous area and the last one - on top of the mountain. During the research the students had a chance to observe the variety of different species and draw conclusions. They also researched lichens, learned to recognize them and admired their beauty. Some of them looked breathtaking.

Our trip to Fulufjället was unforgettable. The magnificent view of the waterfall, rare plants, trees, bogs, birds, a hike up to the mountains and many other special moments with our Swedish friends made us feel that studies can be conducted not only in the classroom. Hands-on experiences are precious and unique in many ways. They allow us to get a deeper insight into the culture and life of another country; it broadens our views on the world and general understanding, as well as our knowledge of different subjects. At least we now feel experts in mining, copper ore production, biotope and the Swedish way of life.

When we arrived at the house of Hakan Arvidson, his wife Agneta met us with a question: - "I've just read a book by a Lithuanian writer Granauskas - "Life under the Maple Tree". What do you think of it?" This was more than a surprise. There is so much for us to learn.

Teachers: Virginija Dmukauskienė, Alma Gelbudiene, Alina Gutauskienė  
Kauno Jesuitu gimnazija, Rotuses a.9, Kaunas, Lithuania  
Tel: +370 7 302990, e-mail: alinag@takas.lt



## THE INTERNATIONAL YEAR OF WATER CELEBRATION GERMAN – POLISH COOPERATION

### III Liceum Ogólnokształcące in Głogów and Gymnasium in Eisenhiittenstadt

The year 2003 has been declared the “INTERNATIONAL YEAR OF WATER” by UNESCO. That is why we decided to celebrate that event very solemnly. There have been ecology oriented classes in our school for years, which work on BSP (The Baltic Sea Project). One of that project’s goals is doing the Rivers Programme – which we obviously try to actively participate in. This year we have got all the students to work on it, so at the beginning of March the Year of Water Organization Committee came into being. It has announced the following goals:



- **Lessons on water** in all groups, during various classes e.g. biology, geography, environmental protection, sport (water in sport), chemistry, physics and history. We are expecting posters to be made, which are going to be exhibited at the YEAR OF WATER exhibition on 22 March,
- **competitions**
  1. Poster on water entitled “Where water is, there life exists” (free form, the poster exhibition in the WATER PROTECTION WEEKLY on 1-6 April)
  2. Poem on the topic of water
  3. Essay developing the following idea: “What would you do if one day you turned off the tap and water didn’t run...”
  4. Miss Water and Mister Water Contest – in the Water Protection Weekly
- **The River Odra Water research** (at first during nature protection classes – March 2003, then during the Polish – German cooperation with the Gymnasium from Eisenhiittenstadt. That is our partner town and we have been cooperating with its school for years. However, this is the first time we have worked together in the field of ecology and nature protection.

Both Głogów and Eisenhiittenstadt are situated on the River Odra. We have visited the German iron works, which is one of the largest iron works in Europe. It has had an enormous impact on the town and region development as well as the level of their pollution.

We have examined together the physical and chemical properties of water and then the organisms living in water and being the Odra river pollution bio-indicators (the so-called Baur Method). We have tried to specify the river Odra class.

Unfortunately, the Odra cannot be regarded as a very clean river, as you can see in the table below.

WATER INTAKE PLACE	TEMP.	OXYGEN CONTENT MEASURING MACHINE	OXYGEN TABLE	ODOUR	PH	HARDNESS	COLOUR	PO <sub>3</sub> MG/L	NO <sub>2</sub> MG/L	SO <sub>4</sub> 2- MG/	NO <sub>3</sub> MG/L
1.Stadion Furstenberg	22 <sub>o</sub> C	9,6 mg/ l	8,82 mg/l		8,8 II class	> 2,7	brown	< 0,1	0-1 without class	<200	5- 10 II class
2.Bbuchwald Strasse	18, C	7,0	9,41 mg/l		8,23	> 2,7	brown	< 0,1	1 without class	200-400	10 III class
			POLSKA		GLOGOW						
1. Stroom	14 <sub>o</sub> C	-----	9,98 mg/l	WARM <sub>1</sub>	7,5 (I class)	5-10	transparent	0,07 III class	-----	-----	5- 7 II class
2. Odra I	15 <sub>o</sub> C	-----	9,76 mg/l	Specific1	7,5	5-10	brown	0,02 Iclass	-----	-----	5-7 II class
3. Odra II	17 <sub>o</sub> C	-----	9,37 mg/l	Specific – warm 3	7,5	5-10	brown	0,04 II class	-----	-----	5-7 II class
4. Odra III	16,5 <sub>o</sub> C	-----	9,46 mg/l	Specific2	7,5	5-10	brown	0,07 IIIclass	-----	-----	5-7 II class

Class of the Odra water in Germany – Eisennhüttenstadt = 2

Class of the Odra water in Poland - Głogów = between 2- 3

Teacher: Danuta Madroszkiewicz, III LO w ZS im. J. Wyżykowskiego, ul. Wita Stwosza 3a, 67-200 Głogów, Poland; e-mail: danalo3@wp.pl

## POLISH BSP SCHOOLS - STUDENTS' CO-OPERATION

Ustka is a popular seaside resort on the north coast of Poland.

That is why we – citizens of Ustka – pay special attention to ecological education of our students in primary and secondary schools. The syllabus in the primary school is enriched with some issues connected with ecology. In our school – middle secondary school – we carry out the innovative curriculum 'ecology and tourism'. Because our students

are allowed to choose the orientation of their class, we have real 'eco-freaks' in the "ecology and tourism" class – students who are really involved and dedicated to ecology.

The curriculum of this class combines lessons about ecology with fieldwork, like hikes, so students also learn while taking trips.

Our school takes part in the Baltic Sea Project. We stay in touch with other Polish schools involved in the project. Thanks to their help and hospitality we are able to organize trips and meetings in order to exchange our experiences. We have already met students from Kołobrzeg (Zespół Szkół nr 2), Kraków (Liceum nr 1) and Warsaw (Gimnazjum nr 47).

The last meeting took place in Warsaw. The school has been dealing with the Baltic Sea Project for two years. We are both planning to take part in 'Rivers' Project. We managed to do some chemical tests of the Vistula and Słupia Rivers and, having compared the results, we found out that there was a major difference in the content of nitrogen compounds and hardness of water. Those results were much below the norm in the Vistula. Students also tested the water and they noticed the difference between the clarity of water. Since the local government in Słupsk activated the sewage treatment plant (app. 10 years ago), the Słupia has belonged to the second clarity group, while the Vistula is still in the third class. I strongly recommend the exchange of students and teachers with other schools. The trips to different and often unknown places give them opportunity not only to meet new people and take part in workshops, but also to see new places and some particularities of the regions. Those factors are always helpful in our everyday work with teenagers. Students find trips very interesting and entertaining. Thanks to them they can learn many new things and are also able to do the sightseeing. Those trips also broaden their knowledge and interests. It is a very good way to spend free time together.

Thanks to the Baltic Sea Project within UNESCO ASPnet we have the possibility to share ideas, learn history, culture and environmental problems, and to make friends in all Baltic countries. We would like to thank Mrs. Maria Adamiak from Kolobrzeg, Mrs. Anna Figiel from Krakow, Mr. Marek Wasowski and Mariola Kokowska from Warsaw for inviting us to their schools, for their help with organising meetings and workshops.



Taking samples  
at Vistula River

Photo:  
Teresa Kaminska

Teacher: Teresa Kaminska  
Secondary School, ul. Wroblewskiego 7, Pl-76-270 Ustka, Poland  
Tel: (+48) 59 8149 433, e-mail: teresa.kaminska@wp.pl

## Sustainable fishery

On Monday the 6 September 2 teachers and 3 pupils Anders and Mikkel from 9.b and Lærke from 7.b of Nærum Skole went to Sønderborg to attend a course in sustainable fishery.

First we were introduced to the other participants, 2 teachers and 2 pupils from Kołobrzeg in Poland, 2 teachers and 3 pupils from Warsaw, 2 teachers from Russia, one teacher from Estonia and one teacher with 2 pupils from Rødekro in Jutland. Afterwards we went on a little sightseeing tour in the area around Sønderborg. Amongst others we visited Dybbøl Mølle. There were a lot of beautiful views near the water. Some of the places had an interesting history, which they told us about. For dinner, which we had at one of the instructor's house, we had traditional Sønderborg cod and fish cakes.



On Tuesday morning we went to Sønderborg harbour to fish sea animals near the beach. Everybody was in the water, wearing waders, to fish with nets. The waders were waterproof, but Lærke managed to get soaking wet and had to go to the laundry to get dry. Many animals were caught, for example ordinary beach crabs, pipefish, shrimps and winkles. A bit later we were divided into three groups. Each group took a fishing boat and went out fishing. We didn't catch much, but we got a couple of cod and a stone. After we had fished we went back and had a wonderful dinner at Svend Oves place.

On the next day we chose the best of the pictures we had taken for the BSP homepage. Afterwards we went to Egetofte Nature School and saw a copy of an old Iron Age house. It was exciting and everybody tried to produce sparks with flint stone.

That was the last thing we did before we went home. The course was very interesting and we learned a lot about the animal life in the Baltic Sea, and about sustainable fishery.

### Sustainable fishery.

As you can read from the short text written by Anders and Lærke from Nærum Skole in Denmark, we had a fantastic course in sustainable fishery. It's primarily meant for children up to 16 years of age. Due to 2 very clever and pleasant instructors we had an extremely good and informative course.

It was a very good experience to observe the kids from 2 different schools in Denmark and 2 from Poland coming along so well. This is really the way to start an international cooperation.

Nærum Skole has also done the coastwatch and would like to share the results with other BSP-schools.

Teacher: Ulla Steenstrup, e-mail: ulla.steenstrup@skolekom.dk



## Forestry Project. Vecpiebalga (Latvia) - Linkoping (Sweden), 2001 – 2004

Going through the materials of our international project is like reading an exciting story with many people participating in it. It was 2000, when Swedish foresters from Linkoping Kommun finished their project in Latvia, Cesis region, making some forest trails in our forests. Following the trails it is possible to learn a lot about the forests and the ways to look after them. It was the time when our teacher Klavs Zommers met Bo Thor, the head of the forest district in Linkoping at the County Forest Board. Bo found a school and a teacher in Linkoping who agreed to co-operate with our school. So, Lena Sundstrom from Berzeliusskolan in Linkoping visited our school in Vecpiebalga in the spring of 2001, and our project started. Firstly, we did some research in the forests of our own countries. We addressed our own municipality asking to save forests around the biggest lake in Vecpiebalga. It was done not only to save the forest and its influence on waters, but also to save the protected species of plants there.



*Latvian group of pupils listening to Bo Thor's exciting story about the life of people, living in the forest centuries ago*



*Bo Thor – the head of the forest district in Linkoping at the County Forest Board*



*From the right –teacher Lena Sundstrom (Berzeliusskolan, Sweden) and Latvian girls Ita and Liga*

Students of both countries wrote letters to get to know each other and to improve their English language skills. On 26th March we got an official invitation from the County Forest Board and Berzeliusskolan, Linkoping, to visit their place. The time from 23 to 28 April, 2002 was the most interesting period for the research group of Latvian pupils: we went to Linkoping by ferry and saw the other country and the other kind of forests and forestry. There were 11 pupils and two teachers in the group. Lelde Vilkriste from State Forest Department of Latvia went to Sweden together with us. Most of our students went abroad for the first time; all was new for them. Later, when we were writing an article for our local newspaper about our week in Sweden, each of the pupils had something to say.

**Amanda:** Traffic is safer in Sweden. There were very many bikers everywhere. Lena, our project teacher from Berzeliusskolan, came by bike to school and to meet us elsewhere.

**Liga:** The hostel where we were staying during our visit was situated among many museums, in the suburbs of the city, so we saw Swedish families coming to visit museums. We could walk to the city centre on foot and see different places of Linkoping.

**Edzus:** We had quite a long hiking tour through the forest about 60 km from the city - about nine kilometres. We went to the forest together with the Swedish students and one exchange student

from the USA. Bo Thor's explanations about the history of the forestry in the region were very interesting.

The trees in the forest were the same as in Latvia, but there were so many stones and cliffs there that it was not easy to understand how it was possible to get the cut wood out of that kind of forest.

**Daina:** We spent a full day at Berzeliusskolan. Our project teacher Lena is a Science teacher for the older students. It was a nice chance for us to participate in lessons - Physics, Mathematics, Biology, and Chemistry. There were quite many immigrant pupils at school. It was interesting that there were small animals kept in many classrooms at school to teach pupils to take care of them. Among them were various snakes.

**Liga:** I felt like a minister while visiting the Town Hall one evening. We got to know a lot about Linkoping City and its problems. The university education is free of charge in Sweden, but you need quite a lot of money to pay your living expenses, books and other study materials.

**Ilze:** We spent the other day out of the city visiting beech forests, a nature museum and birdwatching places at Takern Lake. I liked the museum very much; there we had a possibility to touch, to listen, to smell things, to press the button and to hear the song of the bird.



»» Table 1. Sweden, Berzeliusskolan, October, November 2002

Sort of wood	Volume cm <sup>3</sup>	Start mass/g	End Mass/g	Fresh g/cm <sup>3</sup>	Dry g/cm <sup>3</sup>	% of water in wood	Annual rings in cm
Pine 1	441.5	427.22	160.79	0.968	0.364	62.4%	1.83
Pine 2	385.97	N/A	172.04	0.768	0.446	42.0%	1.42
Pine 3	433.956	411.63	157.21	0.949	0.4	57.8%	1.85
Spruce 1	367.5	246.19	165.83	0.670	0.451	32.6%	6.2
Spruce 2	365.65	244.0369	166.69	0.667	0.456	31.7%	5.8
Spruce 3	311.5	204.23	136.33	0.656	0.438	33.2%	6
Birch 1	262.608	249.712	150.77	0.994	0.533	39.6%	5.45
Birch 2	249.2	223.678	132.19	0.898	0.530	40.9%	2.5
Birch 3	214.368	183.831	111.71	0.858	0.521	39.2%	2.46

Table 2. Latvia, Vecpiebalga Secondary School, October 2002– March 2003

Sort of wood	Volume cm <sup>3</sup>	Start mass/g 26.11.02	End mass/g 26.03.03	Fresh g/cm <sup>3</sup>	Dry g/cm <sup>3</sup>	% of water in wood	Annual rings in cm
Pine 1	470.36	461.33	410.42	0.980	0.872	10.6%	3.9
Pine 2	451.45	448.28	400.58	0.992	0.887	10.4%	3.6
Pine 3	468.57	451.34	403.20	0.963	0.860	9.9%	2.7
Spruce 1	476.42	468.40	408.34	0.983	0.857	12.4%	3.3
Spruce 2	458.31	452.51.	387.60	0.987	0.846	13.9%	2.97
Spruce 3	572.12	568.44	492.13	0.994	0.860	13.3%	4.55
Spruce 4	594.64	582.52	490.15	0.980	0.824	15.3%	4.65
Birch 1	584.34	569.31	498.10	0.974	0.852	11.9%	1.3
Birch 2	558.46	544.35	467.24	0.975	0.837	13.5%	1.9
Birch 3	562.38	558.41	481.68	0.992	0.856	13.5%	1.7

Table 3. Latvia, Vecpiebalga, March, April 2004

Sort of wood	Weight/g before drying	Weight/g after drying at heaters	Weight/g after intense drying in a special oven	Lost weight in grams	The lost water in %	The left % of water measured with a tester	Annual rings in cm
Pine 1	486	456	452	34	7%	11%	2.94
Pine 2	564	504	502	62	11%	9%	3.16
Spruce 1	444	414	410	34	7.6%	10%	4.65
Spruce 2	402	378	374	28	7%	9%	5.8
Spruce 3	378	357	350	28	7.4%	9%	5.12
Spruce 4	468	460	456	12	2.6%	10%	3.3
Spruce 5	476	432	426	50	10.5%	10%	4.6
Birch 1, a little rotten	560	440	350	210	37.5%	9%	3.2
Birch 2	612	604	600	12	2%	11%	2.85

» **Girts:** I liked all the museums that we saw. But the "Fenomenmagazinet" was the best. I could try to examine my own power, eyes, ears and flexibility. I held a python in my hands; it was quite heavy. Our other pupils were as brave as me, they were not afraid of exotic animals.

**Ita:** Linköping was a city I liked very much, especially Gamla Linköping (Old Linköping); it was the Open Air Museum of the city with people living and working there in the old style.

At the end of our visit our project teachers made a decision to continue our co-operation. So, during the next two school years we tested the quality of wood cut in both countries. We did it by choosing the freshly cut wood of spruce, pine and birch trees, making pieces with volume of one cubic decimetre (5 to 10 to 20 cm). We counted the year rings and calculated how many rings there were in 1 cm. We weighed every piece of wood. Then we did the drying of the wood.

The drying process was done in a different way at the two schools. Students of Berzeliuskolan had a chance to use special ventilated drying equipment and they finished drying the wood in a month. As we had no such equipment at school we dried the wood using common heaters at home, and the process took longer. We sent the results to Sweden, but we did not know if the wood was dry enough. Therefore we repeated our experiment during another year, starting the drying in the room, but finishing it at a woodwork enterprise in a special oven. After finishing the drying process the humidity that was left was measured with a special tester. We were told that it was not possible to get the wood completely dry. In most cases 8 to 12% of water was left in the wood, depending on the use of the materials.

You can see the results in tables 1, 2 and 3.

**Swedish students came to a conclusion that the spruce had the lowest weight percentage of water and the pine – the highest. The spruce had the largest number of annual rings per centimetre; it means that it grows at the slowest rate. The birch had the highest dry density and should consequently be the hardest of these three sorts of wood.**

As it is possible to see from tables 2 and 3, the results of the experiment in Vecpiebalga were quite different from the one done in Linköping. This could be caused by different soils, different climate and different cutting time of the tested trees. It was the southern slope of a hill; quite dry in wintertime, when the trees were cut for our second testing in 2004.

Coniferous trees were rich in resin.

There was quite a big difference in the number of annual rings of birches on the first and the second occasions. During our first testing, the chosen pieces of birch trees had the smallest number of annual rings in one centimetre. It could be due to richer soils: many former arable lands have overgrown with forest during the wartime, mostly with birches. They are big enough to be cut down now.

We learned that the width of annual rings is different in the sectors of a trunk oriented to the south or north. The builders of log houses in Latvia say that the trees must be cut in the right season for every sort of wood, and the tree must fall northward after cutting it. As the rings are narrower in the northern sector of the trunk, there would be less damage done to building material while falling that way.

We got some comments from Bo Thor, Head forester of Linköping Kommun, about the results of our experiments after sending them to Sweden. Students understood that it was difficult "to be a scientist". Many factors could be the cause of the different results (species, age, habitat, time of the year, quality of wood). Next time it would be better to choose one species of tree.

It's good that students got to know about special equipment that is used to dry timber, and that it is possible to test how dry the timber is after drying. Students understood which species of trees were harder. The thing that will have to be tested next time is the timber shrink. A piece of wood has to be measured in many directions before and after drying. It's really important if the wood is being prepared for floors. The other interesting thing is to get to know how wet the timber is when it becomes rotten. The strength of wood could be tested by a load test: cut sticks of different tree species, hang loads to them and watch at which point the sticks break.

#### **Which trees are the best for using outdoors?**

You can test it letting the chosen wood stay outdoors without any paint and impregnation. So there are a lot of characteristics of wood students should get to know if the project was to be continued.

*We would like to thank our partners in Linköping for the great chance to visit Sweden and to work together.*

*Students of Forest Project group  
Teachers: Irena Avotina, Mirdza Zommere  
Vecpiebalga Secondary School in Latvia*

*Photo: Adam Musiał*

## Memories of... “ On the Threshold – Baltic 21”

4<sup>th</sup> International Students’ and Teachers’ Conference  
in Sønderborg, Denmark, June 18<sup>th</sup> - 22<sup>nd</sup>, 2000

**Thinking about BSP always brings back memories of...**  
When I think about BSP the first thing that comes to my mind is the conference in Sønderborg “On the Threshold – Baltic 21”. My adventure with BSP started in Konopnicka Secondary School, where Dr. Jolanta Mol organized The Eco-Club called “Demeter”.

We took part in many environmental projects. One of them was water quality test.

My friends and I conducted our research on the rivers of Upper Silesia. I presented this project during the conference in Denmark.

### “On the Threshold - Baltic 21” conference in Sønderborg

It was June four years ago when a group of students from Konopnicka School went to Sønderborg to present our work during an international conference “On the Threshold - Baltic 21”. During our stay in Denmark we were organized into workshop groups, each focused on one of the seven sectors within Baltic 21: sustainable agriculture, energy, fishery, forestry, industry, tourism and transport. There were about 400 students, teachers, politicians and coordinators from 21 countries, not only from the Baltic Sea Region. There were also members from the Caribbean, Bulgaria or Romania. All these countries work on The UNESCO Sisters project and that was why we all met at the conference. Students working in each workshop group had an opportunity to participate in various activities, trips, lab works and interesting lectures. The most important piece of work was the final resolution. All workshop groups contributed to the final version of the text, whose most important statement was a list of suggested actions which should be taken in each sector in order to ensure a sustainable development in the Baltic Sea Region.

### Friendship & knowledge

A conference like this one is always a great occasion to learn new things and share your knowledge with others and what is more - you can make a lot of new friends from the Baltic Sea Region! I am really happy that I could participate in the BSP conference. It was one of the most interesting experiences in my life. Moreover, I know that the others share my point of view and my feelings about this meeting. Wojtek from Glogów and Teiksmā from Latvia, who I got to know in Sønderborg, are still my good friends with whom we often talk about those four days in Denmark. “The Baltic Sea has given us the chance to enjoy its beauty, yet its waters need you to be aware and to take care. Together we shall work on how to protect it: we will respect its waters, air, forest, land and combine our efforts to grant healthy lives for the future generations”.

Agata Daszkowska; e-mail: a\_daszkowska@interia.pl

## The summer camp in Ruiena

Ruiena is a small town in the north part of Latvia. The town is picturesque and very green. The neighbourhood of our school includes many beautiful trees, the River Ruja and meadows full of wild plants, flowers and animals. This summer our 7-9-year-old pupils had an interesting summer camp together with the children from Riga. Our pupils helped them to explore the environs of Ruiena.



*Kids – Vika, Marinika and Dima found small water animals.*

### Kids from the city closer to the nature

The summer camp was held in July and the children participated in lots of different activities connected with nature exploration. They picked up small plants, leaves and flowers in the meadows near the school and made colourful pictures of them. Work with water animals proved to be very interesting for them. The kids looked for small animals, caught them onto their sieves and from there transferred into white boxes with water. Then each group tried to compare their animals with pictures on work sheets.



*Kids on the farm.*

The children visited the farm and saw many domestic animals – a horse, a cow, rabbits, turkeys, geese, hens, chickens, and ducks. Children could stroke the animals and birds and were very happy. It was important for the children from a big city because some of them had never been on the farm before. During this camp the crops were investigated, too. We found four kinds of cereal crops – rye, wheat, barley and oats.

*Teacher: Maija Serikova*

*Ruiena Secondary School, Rigas iela 30, Ruiena, LV-4240*

*rujiena.vsk@tvet.lv*

## FIRE IN NATURE – FRIEND OR FOE?

I have seen many fires on pastures and meadows during the last four years (2001 - 2004). Especially in the spring of 2002: old grass of uncultivated areas was being burnt and there were very many fires in the forest that year. They made me think about the causes of the fires.

Why do people burn the grass?

Why do forest fires start?

Is it nature itself or do people make the grass and the forest burn?

I read that forest fires, caused by people, had been known since the Neolithic era. In the 17th century forests of one of the regions of Latvia – Kurzeme – were so frequently destroyed by fires that there were not enough trees to cut down for heating houses and cooking.

In ancient times people burnt forests to clear areas for agriculture, and cinder, acquired from the burnt wood, served as the only fertilizer.

Nowadays, when the cultivation of agricultural areas has decreased in our region, grass is burnt instead of being scythed or mown. People aren't able to develop any farming due to the lack of money and they use the cheapest way to clear away the last year's grass. They do not think what harm they do to nature. Or, maybe, they do not know that it is not good to burn the grass. They say: the new grass grows faster if the old one is burnt.

I interviewed Arnis Gertners, the chairman of the Fire Prevention Department of the State Forest Service. He said that there hadn't been as many forest fires as in 2002 in Latvia for the last 80 years. The summer was very dry and every spark could cause a fire. Only about 10% of all the forest fires were caused by nature itself, all the others were the result of various activities of people who weren't attentive enough while using the fire.

I wanted to understand what changes in nature follow the grass and forest fires. I did my research in different biotopes: the burnt and unburned meadow, the forest and the edge of the forest. During the last 3 years I have studied the changes in plants. I found plants of 7 families, 36 species. After burning of the grass the number of species decreased, especially the number of papilionaceous plants and some other plants, which bloom in midsummer. The total number of plants increased a little, but the diversity of the grassland was lost.

**During the last three summers I participated in a project of The Baltic Institute of Coleopterology, counting the species and number of soil beetles to compare places damaged by fires with the unharmed ones. I came to a conclusion that the number of some species of beetles was smaller in the areas which had suffered from fires. I am going to continue the studies because the results of only two or three years of research are not sufficient.**

I questioned 130 people, pupils and adults of our parish to find out if they had enough information about the influence of fires on nature. 78% pupils and 72% adults answered that there was not enough information: therefore I made a poster and booklet on that topic.

I had an Environment lesson with the pupils of the third grade of our school. I saw that the children understood the problem and were ready to help to prevent grass fires.

If we compare the number of grass and forest fires in the last five years we can see that it was the smallest this year. This could be because of wetter weather, of course. But I think that TV programmes, information in newspapers and other places helped to prevent bad fires.

*I thank all pupils who behave in a nature-friendly way and think about the future of our environment.*



*Ita together with the pupils of the third grade after the Environment lesson.*



*Ita, visiting the specialist of the State Forest, Service Mr. Arnis Gertners.*

## What do we know about waste?

We have carried out an interesting project about waste and we would like to introduce you to its main ideas. Students from grades 6 and 7 took part in this project. The project had begun in the school year 2002/2003 on the theme "Waste. The necessity of sorting" and continued in the school year 2003/2004 on the theme "Packaging". Students did research work during the project week and after scheduled classes. In our town (about 4000 inhabitants) waste is not sorted. That's why we learn how to sort waste and start to be aware of its importance. In this way we form environmental awareness.

### The steps of the project

#### 1. Education and information gathering.

During this period instructive and educational lectures on waste management and packaging were organized for students. Screenings of educational films on waste sorting in Sweden and waste recycling in Germany were organized. Students got to know what waste is, what the different types of waste are, how to sort it and why it's necessary to do so. During the next school year students were taught and they learnt what packaging is. During the project work students made a questionnaire on waste management and packaging and interviewed their family members, workers in different workshops, shoppers, clerks and their peers in different places.



#### 2. Research work.

Students went to look for polluted places in the town and took snapshots. Having gathered the evidence, they cleaned these places. During the project work students had a possibility to go to the town of Valmiera and learn how waste is sorted there. (Valmiera – our district centre). Students were taken for an excursion to the factory where they produce egg boxes out of paper and cardboard. We continued our project during the summer (year 2003) and went to Salacgriva and Staicele, where we watched how cans, tins and paper bags were produced. During the project students made chemical experiments with different kinds of packaging. Students at their homes weighed household waste during one week to realize and draw conclusions on what kinds of waste should be sorted. They also found out how much waste "was produced" yearly by one family. This year students have individually done research on different package labelling (eco-marks).

#### 3. Project creative workshops.

##### STUDENTS:

- devised a game "Let's learn to sort waste"
- drew postcards on environmental pollution
- performed sketches on environmental problems ("waste management")
- made cartoons using computer technology
- sewed reusable bags
- made a raft of plastic bottles
- wrote articles on this project (printed in school and town newspapers)



### Conclusion

**We have learnt: what waste is; what hazardous waste is; how waste is sorted; why it is necessary to sort waste; what packaging is; what eco-marks are and what kinds of packages there are.**

**Students tried to sort out waste in their own homes for one week in this project. Every spring we organized joint events to clean up the surroundings of our school and the river Ruja.**

#### Extending the project

We think that this project can be extended. Students could make individual projects on the theme "How waste influences the environment?" Next year we are planning to organise co-operation with "Green Point" organization. We want to begin sorting out our school waste and organise the paper, glass and plastic events at school.

*Anda Deksnė*  
Ruiena Secondary School, Rigas iela 30, Lv – 4240 Ruiena,  
Tel: +371-4263445, andadeksne@hotmail.com

## A mine behind the window - the residents' drama

**Do you think that a mine behind the window is a nice view?**

**Isn't it burdensome to hear the noise of excavating and transporting stone?**

**Is it permissible to destroy the beauty of the Izerskie Mountains landscape?**

**Apparently, it is so. Nowadays, everything is possible if you have money.**

This drama takes place in Mała Kamienica, in the south-west of Poland, where a small firm called EuroMarket bought 77 hectares of ground from Agricultural Agency 'Exchequer' and from private owners. The grounds are situated around 4 villages: Kopaniec, Chromiec, Antoniów and Mała Kamienica. The area was bought on the pretext of opening a horse stud there. Nobody was protesting and the inhabitants sold their pieces of land willingly. These people thought that they had made a good deal. Soon afterwards EuroMarket sold the above mentioned area to a Pol Skal company. This year in May the company from Cracow applied to the Department of Province in Wrocław in order to obtain a concession for testing the rock raw material. Only then did the people realize what was going on, so they started protesting. The leaders of the protest were Lucjan Markindorf and Katarzyna Andrzejewska.

The students of Norwid Secondary School in Jelenia Góra decided to support those people. On November 5th, 2003 some students from our school and three teachers: Małgorzata Sobas-Drzazga, Mrs. Agnieszka Machalska and Mrs. Renata Kędzior took part in the meeting at our school, where we got to know that if the concession for the research was approved it would cause disastrous ecological and economical results for the municipality, such as:

- the mine would be established on the area of 77 hectares and with the depth of 70 m down to the core of the mountain slope,
- it would be a feldspar opencast mine in the close neighborhood of the houses, farmlands and it would even occupy a part of National Park,
- the exploitation might cause lowering of subterranean water and finally the widespread lack of water,
- it would cause the uncovering of old cemented mine tunnels, where uranium was excavated in the fifties and finally lead to the increase of radiation.

The economical aspect for the municipality is also very important. Site Planning Project is prepared for the Municipality and its settlements for the years 2002-2012. This project emphasizes development of agro tourism and business tourism. The mine would annihilate this undertaking, because it would destroy the landscape, which fascinates not only the local people but also foreigners, who have begun to settle down there.

Mr. Kotowski, Pol-Skal's chairman, assures the municipality, that it will only bring advantages. The mine and the factory will provide new places of work for approximately 30 people. In addition, for each tone of stone taken out of the ground the mine is going to pay 2,03 zł tax. 60 percent of this amount will be given to the local budget.



The mayor and the municipality council are against the mine,

too. A special local protest committee was set up, supported by the municipality. The protest was joined by the international associations and foundations, such as the Polish- Dutch foundation of wanderers and nature fans-Nemo. They were collecting signatures, writing letters, sending petitions and making demonstrations. Their petitions reached even the European Union Institutions, newspapers and German and English websites.

At the end of July the committee went to the mayor of Lower Silesia province, who had to make the decision concerning permission for the research of the ground. They hoped that psychological and economical aspect would work, but they were wrong. The only argument that was left was the legal aspect. 8 mistakes were made by the firm Pol-Skal, such as excavations 1 km from the protected zone. Those crucial faults didn't make any impression on the mayor of the province and on the geologist. The mayor of the province claimed that the research concession didn't mean immediately building of a mine. However, if such operation was performed, the area of 77 ha would be dug through with the ditches 2 km long, 3 m deep and 8 m wide. In this case this piece of land would turn into the battle-field. From this statement everyone could draw a conclusion that Pol-Skal was backed up by the mayor of the province. At that moment the company withdrew its application. The protesters speculate that it had happened because they had informed the media about this case.

In the area of Jelenia Góra district there were already established similar opencast mines. We can mention a basalt quarry (PRI- Bazalt) in Kwieciszowice, basalt mine Kozia Górka (NCC- Kruszyna) in Kłopotnica and opencast mine (also Pol-Skal) in Karpniki.

For the time being people from Stara Kamienica area won the dispute as the company withdrew its application, but the case has not been concluded yet. The protesters gain time that they should now use to prepare new arguments.

We, as the younger generation brought up on the ideas of nature preservation and respect for the environment, do not want to stay aside and watch passively what is happening. We intend to join the protest and assist those people fighting for their and our future, better future.

*Students: Lukasz Matula, Bianka Kukielka, Aleksandra Śnieżek*

*Teachers: Malgorzata Sobas-Drzazga, Agnieszka Machalska*

*II LO im. C.K. Norwida*

*ul. Gimnazjalna 2/4, 58-560 Jelenia Góra, Poland*

*mail: agazem@poczta.onet.pl*

## Charming places in Poland

The form IIb students (from III Liceum Ogólnokształcące - III Comprehensive School in Głogów, Poland), focus on geology and follow the BSP Project. On 23 April 2004 they made a trip to the Przemkowski Landscape Park, which is one of the most beautiful places in Lower Silesia and the whole of Poland.

The Przemkowski Landscape Park covers 37000 ha. It is situated in south-western Poland in the northern part of Lower Silesia, within the Lower Silesian Forests on the Legnicka Plain, only 30km away from the town of Głogów. The Park was founded in 1997.

It displays great geographical and biological diversity.

We visited the following places:

- the Stawy Przemkowskie (*Przemkowskie Ponds*) Nature Reserve with its rich fauna of birds.
- the Przemkowskie Bagno (*Przemkowskie Bog*) Ecological Land with its cane (*Phragmites communis*), sedge (*Carex sp.*), crane (*Grus grus*) and corncrakes (*Crex crex*).
- natural riverside with its alder (*Alnus glutinosa* and *Alnus incana*) and ash (*Fraxinus excelsior*).
- the pine forest with its unique *Lycopodium chamecyparisi* – the only one in Lower Silesia.
- the dunes left behind by the glacier, in the shape of a 6 km long strip of land, where only pines grow.
- the old wooden foresters' huts at the edge of the forest in the village of Wilkocin. There is an ancient firing ground nearby. One can visit many former Soviet Union bunkers there, which were occupied by the Soviet Army until 1992. Presently, bats are the only inhabitants of the bunkers.
- The curiosity of the Park – its oldest 750-year-old English oak tree (*Quercus robur*).



*Przemkowskie marshland*

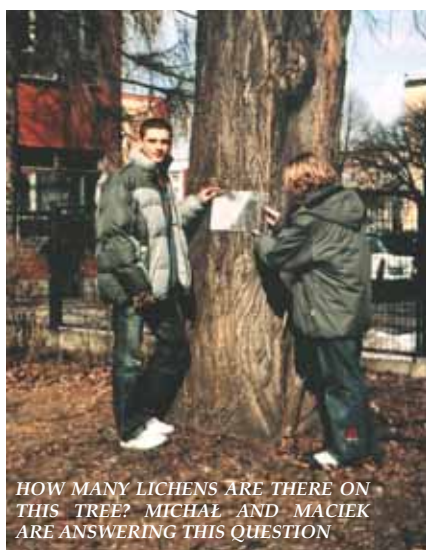


*Danuta Mądroszkiewicz with her students*

Moreover, the loveliest moor lands in Lower Silesia can be found in the Park. The best time of year to admire them is autumn. In September the Honey and Wine Festival is held there – and the local heath honey is considered to be the tastiest type. Agrotourism and ecotourism are developing wonderfully there.

III Liceum Ogólnokształcące, W ZS im. J. Wyżykowskiego, ul. Wita Stwosza 3a, Pl-67-200 Głogów; e-mail: danalo3@wp.pl

## Our adventure with BSP



*HOW MANY LICHENS ARE THERE ON THIS TREE? MICHAŁ AND MACIEK ARE ANSWERING THIS QUESTION*

Our adventure with BSP Unesco began at the beginning of the school year 2003/2004. Our professor Ludmiła Smęt-Dudziak, who teaches us biology, suggested our participation in the project. We agreed immediately. Together we decided that we would work on the following projects: "Phenological Studies", "Bird Counting", "Air Quality", "Environmental History" and "Oicosophy". In October we dealt with the "Air Quality" project. We learnt how to recognize the lichens. We examined the forms of coniferous trees and counted their branches. We could observe how human activity affects the trees.



*ALA AND KASIA ARE COUNTING THE NUMBER OF BRANCHES*



» We searched for Tar Spots Fungus on the leaves of maple trees. The area of our research was Łańcut and its countryside with the following villages: Gluchów, Wysoka, Korniaktów and Sonina.

The next project which we started dealing with was "Bird Counting". Although it was freezing cold and snow-covered trees sparkled in winter sunshine, we made some trips to the local water reservoirs: The Pond of Browar (Staw Browarny), the pond in Łańcut Park and the ponds in a nearby village, Korniaktów. We set off after having equipped ourselves with binoculars.

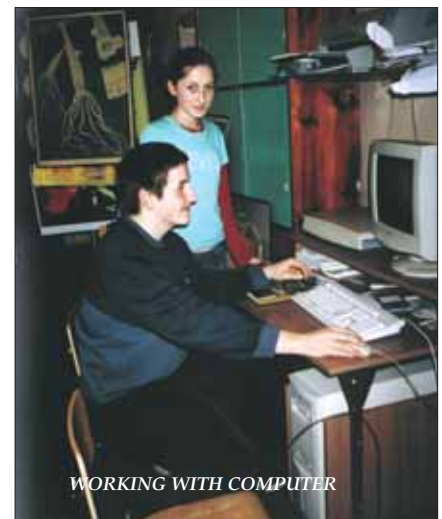


We needed to learn how to recognize the species of birds living in our region. This work caused many problems as birds would not stay in one place and kept moving around. It made counting very difficult. In spite of that we did it.

During the winter holidays we met to summarize our work and make the reports.

It is still spring. With its beginning we started the realization of the next projects. "Phenological Studies" are already in progress. We have been observing attentively the signs of nature waking up from winter sleep. We have been admiring the first flowers timidly parting their petals as well as buds on trees and bushes.

We have also been working on the "Environmental History" project. We are going to render the process of changes that have taken place in the Łańcut Park since the 18th century till now. For this purpose we started co-operation with the Castle Museum. An employee from the museum, Krzysztof, has been helping us. Thanks to him we have gathered a lot of information about the castle's past and present. We have divided ourselves into groups. Each group has been investigating a different historical period, starting from the times of Izabella Czartoryska Lubiomirska (1753-1816) through the times of Alfred I Potocki (1816-1862), Alfred II Potocki (1863-188), Roman and Elżbieta Radziwiłł Potocka (1889-191) up till now. We have found out that curators of the park aim at reconstructing its appearance from the times of its last owners (1816-1844).



Apart from the typically scientific research, some students from our school organized, as part of the "Oicosophy" project, a pantomime entitled "The Death of the Tree". This moving performance aims at rising people's awareness of the negative impact that human activity may have on the environment.

The research carried out on behalf of the BSP gives us a lot of satisfaction. Not only do we enrich our knowledge and acquire a lot of new skills, but we are also learning to work individually and in groups. In case of any doubts we can always ask our biology professor for help although she sometimes gets a bit irritated when we happen to be disorganized or careless. The BSP Project keeps us close to nature and makes it possible for us to learn about the flora and fauna of Łańcut and its countryside. We are becoming sensitive to the beauty of nature, which we do not pay attention to, running to school every day. We can feel like true biologists now!

We are grateful to the coordinator of BSP – Dr. Jolanta Mol for enabling us to work for the Baltic Sea Project.

*Ludmiła Smęt-Dudziak with students from I LO in Łańcut  
Author: Anna Adamek, Magdalena Czechowicz  
Photos: Katarzyna Szpunar, Dorota Pękala*

## The impact of Nowa Huta steelworks on the Niepołomice forest

Being home to one of Poland's biggest steel works complexes, Nowa Huta has had a tremendous impact on the surrounding area ever since the early 1960's. Because of wind direction (mostly eastbound) the complex never actually influenced Cracow itself; unfortunately this can't be said about the Niepołomice Forest. As one of Cracow's biggest green areas, the forest suffered greatly from pollution during the steel works' highest activity in the late 1960's and early 1970's. This project aims at presenting the actual impact of the complex on the forest.

The history of the forest tells us that the complex is but one factor influencing the flora and fauna of the woods. Back in the 14th century the forest became one of Polish kings' favourite hunting grounds. Despite this fact the woods had always been used by surrounding villages and the Benedictine Monastery as a source of timber. The timber from the forest had also been utilized for the repairs of royal buildings (including those in distant locations). As a result, the forest suffered from heavy deforestation. Its situation worsened, however, in the 17th century, when Polish kings moved their residence place to Warsaw, leaving the woods unattended. The reports from the 18th century state that the southern part of the woods fell victim to wasteful exploitation.

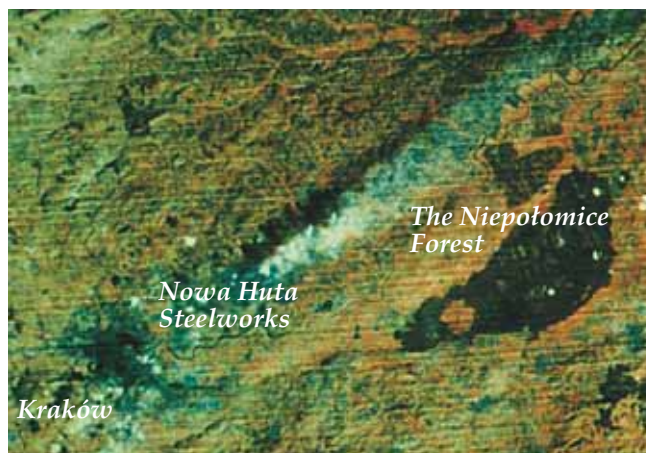
Due to the Austrian government's policy, the nature of this green area changed completely with the introduction of pine trees as substitutes for the destroyed oak, lime, alder, ash and elm trees (at the time, pine comprised 89% of the total forested area).

With the beginning of the 20th century the weakened forest was fatally affected by the pine noctuid and later in the 20's by the sawfly. Cutting down infested trees weakened further the forest, lowering its resistance to wind- and snow breaks. Thanks to the forest management plans, the woods were regenerated with oak, pine, lime, ash and elm.

During World War II the forest suffered again from deforestation (the biggest loss being 300-year-old, healthy oaks in the Koło section) due to the German activity. After the war new management plans introduced oak to the woods' northern part and pine to the southern one, along with several other plant

species such as beech, hornbeam, ash and alder. Two of the woods' most recent problems are road traffic and the steel works.

In the late 1950's the Niepołomice forest came under the influence of a newly built steel complex in Nowa Huta, suffering from heavy pollution from both the steel complex and Cracow agglomeration. The new management plan (for the period between 1957/58 and 1966/67) recognized the forest's economic and conservation value. Later in 1979 the entire woods were slated for conservation.



*"A satellite photograph shows a cloud of smoke and dust produced by the steelworks and dispersed by the winds over the area of tens of square kilometres"*

As far as polluting factors are concerned, gas emission was at its highest in the early 1970's but in the 1980's it was largely reduced (due to the shutting down of several installations of the complex and modernization of the others). Not all the data on gas emission are available, since taking measurements was not obligatory until 1967, when new laws protecting the environment were passed. The available data revealed, however, that:

- dust emission increased until reaching 104,8 thousand Mg in 1974, after which its level was consequently reduced, reaching 3,752 thousand Mg in 1998\*
- sulphur dioxide (SO<sub>2</sub>) was at its highest (75 thousand Mg) in 1977, in 1998 6,865 thousand Mg were emitted to the atmosphere
- CO emission reached its peak in 1980 (630,7 thousand Mg) and was reduced to 41,283 thousand Mg by 1998

» The earliest data on heavy metal emission come from 1983 (copper, chrome, lead and cadmium) and from 1992 (manganese and nickel) and show that:

- chrome emission was highest in 1986 (11 Mg) and in 1998 it was only 0,183 Mg
- copper emission was also at its highest in 1986 (12 Mg) reaching 0,352 Mg in 1998
- 1986 was also the year of top lead emission (43 Mg), which fell to 1,134 Mg in 1998
- cadmium emission also rose until 1986 (3 Mg), afterwards falling to 0.031 Mg in 1998
- the highest measured manganese emission was in 1992 (24,1 Mg), reduced almost fourfold by 1998 (6,386 Mg)
- nickel emission in 1992 was 0,8 Mg, lowering to 0,214 Mg in 1998

The research carried out by scientists from the Jagiellonian University proved that the trees exposed to the dust released by the steel works showed an increase in big timber growth. No clear relation, however, was found between pine corona damage and dust emission.

On the other hand, big timber growth, corona damage and the state of thickness are positively correlated. The three factors are negatively correlated with the dynamics factors (PAR, PBR). This proves that heavy metals do slow down organic matter decomposition, but, what is surprising, they speed up tree growth since they are often equipped with large amounts of particles such as:

- calcium,
- magnesium,
- phosphorus,
- nitrogen.

Further analysis of the gathered data shows that:

- the steel complex impact on the Niepołomice forest is not as serious as predicted, though it has led to several morphological changes
- reducing the emissions from the steel works did not result in rapid improvement of the forest's condition
- the current level of heavy metal and dust pollution is not high, but in the case of zinc and lead it is high enough to lower the dynamics factors
- zinc pollution does appear to be caused by the steel complex, whereas lead pollution is caused by the road traffic located near the forest. This kind of pollution may greatly enhance due to

the further road traffic development on the ring road, whose construction may end in the near future.

An interview with the works' chief executive of the environment protection sector revealed that the management of the works plan to reduce gas, dust and heavy metal emission by means of:

- destruction of shut down installations,
- shutting down or modernizing ineffective installations,
- building a modern heat plate mill.

None of these projects can be carried out, however, due to the funds shortages. So far the company has managed to:

- establish cooperation with several recycling companies (which have reduced largely waste production),
- build a purification plant (the complex used to pollute the Wisła river as well as the Niepołomice forest),
- shut down several installations, such as:
  - three blast furnaces,
  - one marten steel plant,
  - agglomerating plant no.1,
  - several coke batteries.
- modernize a couple of installations:
  - two blast furnaces,
  - a sintering conveyor belt.
- build a modern pro-ecological production series:
  - a blast-chamber coke battery capable of dry extinguishing of coke,
  - continuous steel cast installation\*\*

These have resulted in pollution reduction.

Although further modernization of the steel complex will not change the condition of the forest in any major way (as predicted both by the ecologists from the Jagiellonian University and the ecologists from the steel complex), it is advisable that the management staff find an investor to realize their projects. This may result in lowering the air pollution over Cracow and the surrounding area.

*Krzysztof Piwowarski,  
VI Liceum Ogólnokształcące  
im. Adama Mickiewicza, Kraków, Poland*

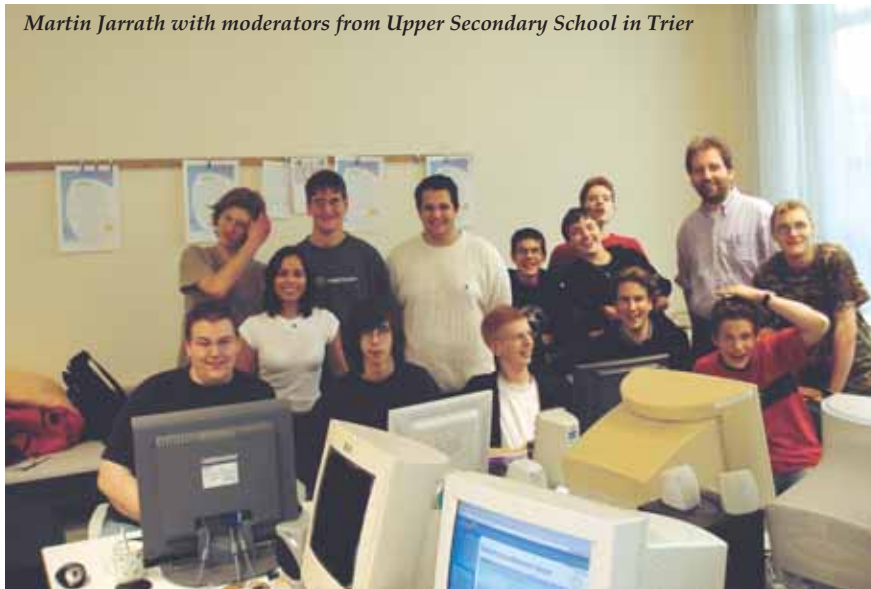
## Agenda 21 NOW! 2004 and 2005...

### The Internet Conference for students in its fifth and sixth year

*“we first announced our idea of a worldwide Internet conference beyond the Arctic circle, and Finland...”*

Looking back from the moment when I am writing these lines (27 October, 2004) it is now five and a half years since we first announced our idea of a worldwide Internet conference for students in March 1999 in Sodankylä / Finland (yes, the Sodankylä beyond the Arctic circle, and Finland, those days were a terrific experience I'll never forget!) during one of the BSP consultation meetings. Since then, five annual Internet conferences called “Agenda 21 NOW!” have taken place in the years 2000 to 2004, and we are in the middle of the preparation for the sixth conference on 10 February, 2005.

Martin Jarrath with moderators from Upper Secondary School in Trier



#### UNESCO ASPnet Germany made Agenda 21 NOW! a pilot project in late 2002

Since the conference on “Borders and Diversity” on 25 April, 2003 the project has expanded: Until then two German schools had been preparing and running the conference: Anna-Schmidt-School in Frankfurt am Main, where it all started in 2000, and Kandel Comprehensive School in Kandel, which joined in 2001. In summer 2003 I changed my working environment to Hindenburg-Gymnasium Trier in the far west of Germany. Moreover, in early 2003 Agenda 21 NOW! became part of the Comenius Project “Environmental and Cultural History of the Baltic Sea Region”. The four participating schools, not surprisingly all of them BSP schools, decided to make the preparation and the conference itself a part of their project work.

Hence, since the 2004 conference we are six schools cooperating to run “Agenda 21 NOW!”: Anna-Schmidt-School (Frankfurt am Main), Kandel Comprehensive School (Kandel) and Hindenburg-Gymnasium Trier in Germany, Amtgymnasium Sønderborg in Denmark, Upper Secondary School No. 6 in Gdańsk, Poland and Tartu Tamme Gymnasium in Tartu, Estonia.

#### *“some changes in the cooperation structure...”*

This expansion led to some changes in the cooperation structure, e.g. a change in the decision making process within “Agenda 21 NOW!” In the past the conference theme and the title had been adopted by all members of the team at a meeting about six months before the conference. Since all participating schools were located in Germany, such a meeting with more or less all team members was not a problem. This time it was completely different: it had to be delegates of all six schools during a regular Comenius Project meeting in Kandel in November 2003. It took us, teachers and

students from all the six schools, one day to decide on the theme as well as the title: “Focus on Food – Shape (y)our future NOW!”.

Another change has taken place on our website: in late 2003 we introduced interactive pages.

#### *“Wikipedia...”*

The idea of Agenda 21 NOW! is to have quality discussions among students (and teachers) who have prepared for the conference, e.g. during ordinary school lessons. Students and teachers who want to work on our conference theme prior to the conference may find different kinds of information as well as selected links on our website. Many of the preparatory articles had been written by students of Anna-Schmidt-School and Kandel Comprehensive School in the past.

Now all these pages are interactive, in wiki technology. This means that all preparatory texts and images (again being written by students from the Agenda 21 NOW!-schools), including the material from all the former conferences, are now available in a fully editable format. Hence, every registered participant may edit every sentence written on any of the interactive pages, the participants may add new words, sentences, pictures or even new pages – and also erase them, if they like to!

As in many other examples – the most famous and most successful one is the fantastic online encyclopaedia Wikipedia – this structure has not at all proven the typical teachers’ fears I also had when I heard of it for the first time (a lot of low quality data expected). The interactive pages developed the way Wikipedia and most other wikis on the net developed: the content quality and quantity are in time rising. Participants voluntarily added their own knowledge, we found mistakes being corrected, rewritten paragraphs and

» also new contributions. All this more or less worked on its own, surprisingly (or not surprisingly, as Wikipedia and other wikis show) without any need for active quality management by the Agenda 21 NOW! team.

**As in 2000 and 2002, the 2004 conference took place on the German ASPnet's international action day, this year on Monday, 26 April.**

**“the 1,160 registered participants from 50 countries holding a ticket for the conference... in 2004”**

A good conference needs good moderators. Therefore, on Friday and Saturday before the conference the moderators of the German schools – most of them upper secondary students – met for the traditional moderators' training course in Kandel. They were joined by **Jolanta Mol**, the new BSP general coordinator from Poland, who we had invited for the conference, and **Ute Grönwoldt**, the former general coordinator.

The upper secondary students from the three German Agenda 21 NOW!-schools learned about the special role a moderator plays in a conference and how to say (i.e. write) things adequately in different communication situations.

After these two demanding days for the team there was only a short time for relaxation. The team in Trier was to open the conference at 00:00 h U.T.C. on Monday – 2 a.m. our local time – so we met at school at 10 p.m. on Sunday evening to get the technical equipment ready for the conference.

As always the conference took place in a closed area on the Internet with conference rooms and workshops open exclusively for the 1,160 registered participants from 50 countries holding a ticket for the conference. Quick registration during the conference was also possible, and we manually checked all registrations for quality reasons.

During the conference the team of moderators in Trier, working during the entire 24 hours, had an exciting time, with somewhat calm periods during the first and final hours and intense activity especially in the late morning and at midday, i.e. in Europe's and Africa's morning and midday. As the great majority of the registered participants were from Europe and Africa (among the 1-10 countries only Indonesia was in a considerably different time zone) this shows very clearly when and where Agenda 21 NOW! is mostly used: at school, during lessons.

This is exactly what we had always intended: making an offer for ordinary school lessons, giving teachers and students the opportunity to make use of the unique facilities of the Internet communication. We experienced a 40 min web

server breakdown at best conference time in the morning which naturally caused a terrible lot of frustration within the team and most probably among many participants. However, after relaunch for more than three hours the communication activity was higher than at any time during any of the former conferences, and for the moderators it was demanding to monitor the discussions and do their job properly during these hours.

The discussions were intense, at least many of them. Once again our impression was that many participants were well-prepared, very interested and looking forward to meeting participants and experts from other corners of the globe. As always, some discussions were also very emotional, this was the time when the moderators had to do their very best to help the participants understand each other and thus calm down bad emotions.



*Training for moderators in Kandel*

For me, this shows very well the important role of skilled moderators in the Agenda 21 NOW! schools. 14 of them were students from Trier, my new school, and they voluntarily (nobody promised them good marks for this) did a technical as well as a moderators' job during 28 and a half hours without sleep in between. Never before have I seen such a fantastic group of well cooperating, constantly seriously working students. Thank you, folks, this was outstanding, you have done a great job!!!

Thanks also to everybody else, teachers, students and all the other cooperating people in the Agenda 21 NOW! schools. Unfortunately I did not personally, live and in colour, see you working, but it was a smashing day and an excellent cooperation!

**Agenda 21 NOW! in 2005**

**The next conference will be held on Thursday, 10 February 2005, on “Sustainable Consumption and Recycling”. See the flyer on the cover.**

**Martin Jarrath - Agenda 21 NOW! coordinator**

*Hindenburg-Gymnasium Trier*

*Augustinerstr. 1, D-54290 Trier, Germany*

*E-mail jarrath@agenda21now.org, http://www.agenda21now.org*

## Beauty in the neighbourhood - the Quarry of Baddeckenstedt

October 6th, 2004

Looking out of our classroom window we can see beautiful white and red rocks - like a wound in the hill. Just a walk away from our school lies the quarry of Baddeckenstedt at the southwestern flank of the "Elber Berg". The layers of two blocks - red limestones and white marl of the chalk-time - are about 100 million years old and were used as fertilizers for farming up to the year 1985.

As the factory closed the NABU Braunschweig (Naturschutzbund Deutschland) purchased this piece of land, fenced it in and locked it up, safeguarding it to protect animals and plants and give creatures a new and undisturbed habitat.



As we wondered about what this hidden beauty would be like and wanted to know a bit more of it we contacted the NABU in Braunschweig, got hold of the key and made an appointment with Silke Krause from the Untere Naturschutzbehörde Wolfenbüttel who showed us round giving some explanations.



And we were really thrilled. We walked about, watched the flying birds - smelled the plants, picked up stones and found many things that told us about the past.

You can find typical fossils of a chalk time warm flat sea like mussels, oysters and ammonites in large numbers and the quarry is famous among geologists for those finds.

If after a shower of rain there are small puddles of water, frogs, grounding toads and even salamanders come out from their hiding places.

Today the quarry has become the habitat for numerous bird species, insects, lime lean plants and little reptiles. The declared "Bird of the Year 2005" eagle-owl is said to live here. This rare bird usually broods in hedges and thick trees and is highly sensitive to disturbances. That is why the NABU very

reasonably said "No" when the district council of Baddeckenstedt wanted to make the people walk round the quarry and build up a public path for amusement.



Back at school we drew pictures, wrote reports about what we had seen and learned and made up stories about this fascinating witness of ancient times.



The following story - composed by thirteen-year-old Sarah - shows our visit to the quarry from a very different point of view, so-to-speak from "the bottom".

*Hello,  
Listen to me. I belong to the adders and my name is Addy. Today there were many little people and a few big ones at my place. They ran around like crazy and walked on the stones.  
I found this really outrageous because my comrades live under the stones. Finally I was almost trampled down but the little girl got caught in the bush and couldn't walk on. So I escaped. Because of these people I lost my home - they simply trampled it down. Then all of them stood still, turned round and walked away. My comrades and I wish that they would never come again.*

And that is what we all hope: may this place be left to itself in the future!

Christiane Determann, Schule im Innerstetal  
Lichtenberger Str. 4, 38271 Baddeckenstedt, Germany  
E-mail: ChrisDetermann@t-online.de



# Meeting Maths

*Every new body of discovery is mathematical in form, because there is no other guidance we can have.*

Charles Darwin

We would like to invite you to a mutual game. Below you can see some mathematical riddles, which will allow you to test your observation skills and abilities. The first two people to send us correct answers will receive a prize.

## The Journey of a Caterpillar

A caterpillar is creeping up a tree trunk on a straight line towards the nearest branch. The caterpillar's locomotive organ is clearly damaged, as the insect is hardly creeping, so during the first minute it has covered the distance of 5 dm,

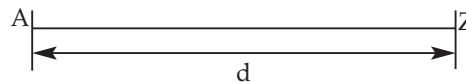
during the second –  $2\frac{1}{2}$  dm, during the third –  $1\frac{1}{4}$  dm, during the fourth –  $\frac{5}{8}$  dm, etc. The distance between the caterpillar and the first branch with leaves – the caterpillar's food – is a fraction of a centimetre more than one metre. How many minutes will it take for the insect to get to the branch? Will the caterpillar manage to do it before sunset (8 pm.) if it started its journey at sunrise (4 am.)?

## Achilles and a Tortoise

The issue of Achilles' race with a tortoise attracts not only the philosophers' attention. It was formed by Zenon from Eleia (more or less 500 B.C.), a Greek city in the southern part of Italy. Many Zenon's theorems have the nature of a paradox. Among dialectical proofs of these theorems, one particular theorem became popular – the one saying that the swift-footed Achilles will never catch up with the tortoise and that the arrow flown from a tensed bow is motionless at every moment, as it is continuously still. Let's examine the issue of Achilles and the tortoise from the mathematical angle.

### Here is the solution:

The tortoise is in point Z and Achilles in point A. The distance between these two points is d metres.



We assume that  $v$  [m/s] is the speed of the tortoise and  $w$  is Achilles' speed. Therefore:

- 1)  $d/w$  – the time in which Achilles will get to point Z
- 2)  $v \cdot d/w$  – the distance covered during this time by the tortoise
- 3)  $v \cdot d/w : w = vd/w^2$  – the time in which Achilles covers the distance covered before by the tortoise.
- 4)  $V \cdot vd/w^2 = v^2d/w^2$  – the distance covered by the tortoise during the time calculated in point 3) etc.

Consecutively, we calculate the pieces of time in which Achilles was running and the distance in them covered by the tortoise. We assume that  $T$  is the sum of all "pieces of time" in which the race lasted. Then:

$$T = \frac{d}{w} + \frac{vd}{w^2} + \frac{v^2d}{w^3} + \dots = \frac{d}{w} \left( 1 + \frac{v}{w} + \frac{v^2}{w^2} + \dots \right) = \frac{d}{w} \left( \frac{1}{1 - v/w} \right) = \frac{d}{w - v} \text{ seconds}$$

The sum of all distances covered by the tortoise is:

$$\frac{vd}{w} + \frac{v^2d}{w^2} + \frac{v^3d}{w^3} + \dots = \frac{vd}{w} \left( 1 + \frac{v}{w} + \frac{v^2}{w^2} + \dots \right) = \frac{vd}{w} \cdot \frac{1}{1 - v/w} = \frac{dv}{w - v} \text{ metres}$$

Because the initial AZ distance was d metres, then the distance covered by Achilles is:

$$d + \frac{dv}{w - v} = \frac{dw}{w - v} \text{ metres}$$

Having covered this distance, Achilles is going to catch up with the tortoise. If the initial distance AZ = 100m, Achilles' speed is 10 m/s and the velocity of the tortoise is 0,1 m/s, then:

$$\frac{dw}{w - v} = \frac{10000 \times 1000}{1000 - 0,1} \text{ cm} = 10001 \text{ cm} \approx 100,01 \text{ m}$$

This way Achilles will catch up with the tortoise after 10 seconds from the beginning of the race (more precisely about 10,001s)

Translation: Bożena Holeczek, Aleksandra Sendecka

Teacher: Anastazja Nędzi; e-mail: a\_nedzi@op.pl

II Liceum Ogólnokształcące im. Marii Konopnickiej, ul. Głowackiego 6, 40-052 Katowice, Poland



Photo: Adam Musiał

**Environmental History Programme**

Co-ordinator: Dr Per Eliasson  
Senior lecturer in Environmental History  
Lärovetenskapliga, Malmö Högskola  
S-205 06 Malmö  
Tel.: +46-40 24 0006  
e-mail: per.eliasson@lut.mah.se

**Water Quality Programme**

Co-ordinator: Ms Liesma Abolina  
Ilguciems secondary school,  
Dzirciema str. 109, LV-1055 Riga  
Tel.: +371-781 4354  
e-mail: liesma@promedia.lv

**DENMARK**

National Co-ordinator:  
Mr Sören Levring  
Sönderskovskolen  
Grundvigs Alle 100, DK-6400 Sønderborg  
e-mail: soeren.levring@sonderborg.dk

**ESTONIA**

National Co-ordinator:  
Ms Reet Kristian  
Estonian Youth Work Centre  
Uuslinna 10, EE-11 415 Tallinn  
Tel: +37-2 6380758  
e-mail: reet.kristian@entk.ee

**FINLAND**

National Co-ordinator:  
Ms Liisa Jääskeläinen  
National Board of Education, Box 380,  
FI-00531 Helsinki  
e-mail: Liisa.Jaaskelainen@oph.fi

**GERMANY**

National Co-ordinator: Ute Grönwoldt  
Ministerium für Bildung, Wissenschaft,  
Forschung und Kultur  
Brunswiker Strasse 16-22, D-24105 Kiel  
Tel: +49-431 988 2473  
e-mail: Ute.Groenwoldt@kumi.landsh.de

**LATVIA**

National Co-ordinator:  
Ms Velga Kakse  
Ministry of Education and Science,  
Centre for Curriculum Development  
and Examination,  
Valnu str.2, LV-1050 Riga  
Tel: +371-7814354, fax: +371-7223801  
e-mail: velgak@latnet.lv

**LITHUANIA**

National Co-ordinator:  
Mr Sigitas Juzenas  
Lithuanian Young Naturalist Centre  
D\_iaugsmo str. 44, LT – 2020 Vilnius  
Mobile: +370-610 67830, Fax: +370-5 2674873  
e-mail: bsp@centras.lt

**RUSSIA**

National Co-ordinator:  
Prof. Stanislav Babich  
UNESCO Centre  
28 Chaikovsky str., RU-191194 St. Petersburg  
Tel: +812-310 4729  
Fax: +812-325 3479 or 812-314 2336  
e-mail: stanislavbabitch@mail.ru

**SWEDEN**

National Co-ordinator:  
Mr Martin Westin  
Swedish National Agency for School Improvement,  
Karlbergsvägen 77-81, S-113 35 Stockholm  
Tel: +46-734 19 82 38  
e-mail: Martin.Westin@Skolutveckling.se

**POLAND**

National & General Co-ordinator:  
Dr Jolanta Mol  
Stowarzyszenie Komputer i Sprawy Szkoły "KISS"  
ul. Raciborska 3, PL-40-074 Katowice  
Tel./fax: +48 32 2 519 811, +48-32 206 15 81  
Newsletter's e-mail: bspnews@kiss.pl  
http://bspnews.kiss.pl

