



The Baltic Sea Project

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Baltic Sea
hosts
millions of
seabirds



- **BSP conference in Valmiera - Latvia**
- **Let's Take Care of the Planet**
- **Education for Sustainable Development**
- **BSP programs**

Cover photo: **Redshank** (*Tringa totanus*). PHOTO BY ARNE ADER



The Baltic Sea Project

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The BSP objectives are:

- to increase the awareness of students related to the environmental problems in the Baltic Sea area and provide them with an understanding of the scientific, social and cultural aspects of the interdependence between man and nature,
- to develop the students' ability to conduct research on changes in the environment,
- to encourage students to participate in developing a sustainable future.

The BSP uses the following methods:

- building networks of schools, teachers and educational institutions in the Baltic drainage area,
- creating and developing educational approaches and joint programmes for environmental and international education,
- organising joint activities and events, publishing the BSP Newsletter and providing other relevant information.

The basic characteristics of the BSP schools are:

- active participation in seeking solutions for the environmental problems in the Baltic Sea area,
- networking,
- a pilot that promotes environmental education in the spirit of the Rio Declaration, Agenda 21 & Baltic 21, and Agenda 21 for the Baltic region.

The educational approach for the BSP is:

- to achieve a balance between the holistic approach and individual subject studies,
- to change the role of the student from passive recipient to active constructor,
- to change the role of the teacher from supervisor to guide in the learning process,
- to use networks for providing participants with opportunities to learn and pass along new ideas,
- to use international co-operation as an inherent element in the school work.



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Dear Readers,

For UNESCO the Baltic Sea Project for schools has been a very dear and successful initiative for already more than 20 years.

Therefore it is a real honor but at the same time a huge challenge for Estonia to take over the presidency of a project with such a long and outstanding history. Let me assure you, we plan to take our job seriously.

In recent years Estonia has worked hard with our ASP schools network. We now have clear criteria for schools and joint events taking place every year. And just as education for sustainable development is now placed right at the core of the UN system, the BSP project is a significant one for our ASP network.

The UN decade is coming to its end in 2014 but the new millennium development goals will be even more about sustainability and education than before. This is why UNESCO continues to value highly initiatives which contribute to education for sustainable development.



During our BSP presidency we aim to develop the existing programs, search for new methods for learning and teaching and find ways how to make better use of the collected data. I hope that we can be creative in modernizing the learning process and use our potential in digital solutions. Hopefully this process will be an exiting one for all of us.

Finally I would like to thank the Estonian Ministry of Education and Research, the Estonian Ministry of Environment, and the Estonian Environmental Investment Centre for their support and Tartu Environmental Education Centre, who is the coordinator of this project during our presidency.

But my special thanks goes to all of you: the success and the future of a project always depends on the participants.

Kerli Gutman,
Secretary General,
Estonian National Commission for UNESCO

Dear BSP participants,

It is really a great pleasure for Estonia to take over the role of the BSP coordination. Estonia has the great of honour of taking over the coordination of the BSP. We wish to thank all the students, teachers and coordinators in the participating countries, who have assisted in the project's functioning and activities.

Some issues require a joint contribution by various countries, and the protection of the Baltic Sea is one such issue.

For me everything starts from our daily choices and decisions. What role does the sea play in the decisions that we make everyday? For most of us, this is our only sea. I have met young people at a camp far from the sea, in Southern Estonia. They have asked, "Why are we having our camp so far from the sea?" The answer is really simple – to demonstrate that you are you are impacting the environment with your actions wherever you are.

In the beginning, you can affect the condition of the Baltic Sea by modifying and being aware of your daily choices and consumption patterns. The Baltic Sea is highly sensitive to the human activities that take place at sea and in its catchment area, which is home to some 85 million people from nine countries.



The Baltic Sea is one of the most unique marine ecosystems in the world because of its specific geographical, climatic and oceanographic features. But there are also many serious problems like eutrophication, over-fishing, irresponsible maritime activities, hazardous substances, and invasive species.

There is a common concern about the state and future of the Earth, and some political steps have been taken to meet the challenge. The results are visible and there are some indications of recovery. In 1980s the ozone hole was a serious problem, but thanks to concrete actions, recovery is on the way. If we talk about the Baltic Sea, we can also see a recovery related to the multiplicity of some endangered species and the reduction of some hazardous substances, as well as nitrogen and phosphorus. For broader results, we need to act jointly by cooperating with our neighbouring countries.

We are part of the whole. For better understanding, we can learn more about risk management and see how things on the other side of world also affect us. Every thought and act has an impact.

Kersti Sögel,
General Co-ordinator of the UNESCO Baltic Sea Project



International Conference of the Baltic Sea Project

Local Resources for Sustainable Development

► **IEVA ŠVARCA**, Education Programme Assistant, Latvian National Commission for UNESCO and Velga Kakse, former General Coordinator of the BSP

From 27 to 30 August, 2012, 193 students and teachers from nine Baltic Sea Region countries participated in the international Local Resources for Sustainable Development Conference of the Baltic Sea Project in Valmiera, Latvia. The conference was organised by the Latvian National Commission for UNESCO and National Centre for Education with the support of the Ministry of Education and Science of the Republic of Latvia, the Valmiera City Council, the joint-stock company “Latvia’s State Forests”, and Publishing house “Lielvards”.



The main objective of the conference was to raise awareness about the importance of local resources and their contribution to sustainable development. Various activities were organised in order to reach this goal and to give students the opportunity to learn about the BSP. The conference programme included an exhibition of posters about the sustainable use of resources in the students’ home countries, as well as lectures, workshops, excursions and social activities.

WELCOME TO VALMIERA!

The conference was opened by Ms. Dagnija Baltina, Secretary-General of the Latvian National Commission for UNESCO (LNC UNESCO). Ms. Baltina pointed out that the Baltic Sea Project (BSP) is significant and unique due to its holistic approach and inclusivity. The stability of the BSP through time proves that the project has fulfilled its aims and has contributed to sustainable development. Ms. Lauma Sika,



Ms Dagnija Baltina, Secretary-General of the LNC UNESCO.

Opening ceremony - G. Vasilevskis, L. Sika, B. Molnika.

Deputy State Secretary of the Latvian Ministry of Education and Science, reminded the audience that sustainable development is not complicated: “Sustainable development means the joy of living”. Mr. Rolands Bebris, Deputy Director of the Department of Environmental Protection in the Latvian Ministry of Environmental Protection and Regional Development, emphasized the strong bond between production, pollution and the environment.

The hosts of the conference, Mr. Janis Zemlickis, headmaster of the Valmiera State Gymnasium, and Mr. Arturs Skrastins, headmaster of the Valmiera Elementary School, said it was their great honour to welcome the participants of the conference in Valmiera and wished them a pleasant time and success at the conference. The formal part of ceremony was followed by musical and artistic performances by students from Valmiera and the Latvian Olympic BMX Racing Team with Mr. Maris Strombergs, gold medallist at the London Olympics.

After the opening ceremony, the students were given an introductory lecture about the Baltic Sea Region by Mr. Andris Andrusaitis, Associate Professor at the University of Latvia and Programme Manager of the project titled “Science for Better Future of the Baltic Sea Region project.” The professor’s presentation was called “Baltic Sea Region: an Outlook for the Coming 40 Years”. He focused on four main challenges



THE BSP CONFERENCE



Workshop „Rivers“.

that our society will face in the next 40 years related to demographics, globalisation, the sustainability of resources and climate change. The presentation gave a challenging background and called on students to be responsible for the future of the Baltic Sea Region.

Another introductory lecture was given by Ms. Liga Zute-Abizare, Communication Programme Manager from the joint-stock company “Latvia’s State Forests”. Ms. Zute-Abizare provided the audience with an introduction of sustainable development related to recreation, environmental education and forestry.

WORKSHOPS AND EXCURSIONS

Workshops and excursions were available on both days in the morning and in the afternoon, so students and teachers were free to choose three workshops and one excursion.

The Air Quality workshop was led by Ms. Anda Deksnė, a chemistry teacher at the Rujiena Secondary School and her students. The workshop analysed air quality with the help of lichens. Students were introduced to the basics of lichen structure and told how the lichen-indication method works. Furthermore, students were introduced to the BSP air quality protocol and instructed how this protocol can be filled properly. Afterwards students were sent to various places in Valmiera for air quality research. Most of the groups found good air quality with insignificant pollution. Polluted air was measured near the main roads, leading to the conclusion that places with intensive traffic are more polluted. Afterwards students found different materials for creating their own artistic installations of lichen, which were exhibited in Valmiera Elementary School.

The Rivers workshop was led by Mr. Andris Urtans, Senior Expert from the Nature Conservation Agency, and Ms Liesma Abolina, Coordinator of the BSP Water Quality Programme. Students participating in this workshop were first introduced

to the Place a Stone in the Stream initiative, which explains how rivers can be protected from eutrophication with by intentionally placing stones in riverbeds. It was explained to the students how such purification of rivers can contribute to water quality in the Baltic Sea Region. Later on, the workshop participants visited local rivers to check the water quality. The method used to assess the water quality is based on the composition of the aquatic fauna that is present. Students were able to check the composition of the fauna with the help of special determinants. Overall, the quality of water was good.

The Environmental Measurements workshop was led by Ms. Agnese Brangule, a lecturer from Riga Stradini University, and Mr. Ilmars Rikmanis, a teacher from Riga State Gymnasium No 1. This workshop provided students with the opportunity to assess water quality in the laboratory and check to see whether the water is drinkable or not. Students carried out different experiments to determine the water’s pH value, density, colour, hardness, boiling points, as well as the concentration of salts, amount of phosphates and iron ions in the given water samples.

In the Art workshop, which was led by art teachers Ms. Kristine Zemlicka-Bralena and Ms. Gija Karane, the participants expressed themselves in an artistic manner. This workshop focused on natural and local resources, which also correspond to the topic of the conference. The workshop participants were introduced to Latvian pottery traditions and were asked to create their own works of art. Local resources, such as clay from Vaidava, and various herbs were used to make artistic compositions inspired by reproductions of works by Latvian artists. At the end of the workshop, the sculptured pottery was exhibited at the Valmiera Elementary School.

Mr. Dainis Ozols, the Senior Expert from the Nature Conservation Agency, conducted the Mineral Resources workshop, which dealt with such diverse and abundant local resources as rocks and minerals. The participants were introduced to the rocks and minerals that are mainly found in Latvia. It was explained how to identify rocks and minerals by examining different parameters: colour, hardness, reaction to acid, etc.

The social aspects of sustainable development were examined in the workshop titled “Revolution – Evolution – Change. Transitions in Societies of 21st Century”. The workshop was led by Mr. Martin Jarrath and a team from Humboldt Gymnasium in Trier, Germany. Participants from different nations shared their experiences concerning social problems in their countries and discussed ways to solve them. They concluded that society should be more responsible for the economic welfare and social well-being of generations to come. Students came up with some solutions for problems in the demographics and education sectors. Firstly, each country should improve social security and provide support for large families. Secondly, in regard to education, the students suggested that the role of modern technologies in schools be increased.



ENTERPRISES WORKING FOR SUSTAINABLE DEVELOPMENT

The students and teachers had an opportunity to visit local companies in Valmiera to get a better understanding of the practical uses for local resources and sustainable development in action. They were introduced to the production process and learned how the companies use local resources and contribute to sustainable development. The students visited local joint-stock company “Valmieras stikla šķiedra”, which is one of the largest exporters in Latvia. The company uses such local resource as quartz sand for the production of glass fibre. During the visit, the students made a tour of the premises and were given an explanation of glass fibre production. The company’s representatives demonstrated the air filter systems and highlighted how they have contributed to sustainable development by reducing average resource consumption by 27 % in the last seven years.

The conference participants also visited “V. L. T.” Ltd., which contributes to sustainable development by recycling paper and cardboard. The recycled material is used for the production of egg cartons. This company avoids using hazardous substances in the production process. A group of students visited SIA “Valmieras mēbeles”, where the students were able to see how various pieces of furniture are made. The company’s policy is to ensure the reasonable use of resources.

VALPRO Ltd. is one of the world’s leading companies in the production of metal cans and fire-extinguishers. Most of the products are made of recycled metal.

Another way to learn about the principles of sustainable development was provided by a visit to the Grow Energy biological farm. The farm produces biogas, which is a renewable energy source. Energy in the form of heat and electricity is distributed to the other local farms. This company demonstrates how the reasonable use of slurry can be successfully provide economic benefits and limit CO₂ emissions.

The students from Vidzeme University of Applied Sciences introduced the participants to the history of Valmiera.

EVALUATION

The last round of workshops at the conference started with short summaries from the workshop leaders and participants.

The summaries were followed by an interactive evaluation of the conference with the help of modern technologies and support from the Publishing house “Lielvards”. Most of the participants enjoyed the conference in Valmiera and confirmed that they had the opportunity to actively participate. With the help of the interactive evaluation, everyone was able to see the results immediately.

THANK YOU/PALDIES LATVIA!

The closing ceremony was kicked off by Mr. Guntis Vasilevskis, who is the head of the National Centre for Education. Mr. Vasilevskis thanked the conference organisers and participants and pointed out the significant contribution made by the BSP to environmental education. The ceremony was continued by Ms. Velga Kakse, BSP General Coordinator, who expressed her gratitude to all the participants for their attendance and work during the conference. She also presented the national coordinators with certificates for their great contribution to the BSP.

Ms. Baiba Molnika, Education Programme Director from the Latvian National Commission for UNESCO, concluded by saying that the BSP is a great initiative for the promotion of inclusive, participatory education. It has maintained its reputation as a great project that is widely acclaimed by students and teachers. Thereafter, Ms. Molnika officially handed over the presidency of the BSP to Estonia.

Ms. Ailīne Lotman, Coordinator of the Education Programmes from the Estonian National Commission for UNESCO, expressed her great desire and sense of honour in taking over the coordination of the BSP, which will provide an opportunity to increase the scope of the project and improve the work on it.

Ms. Kersti Sögel, the new BSP General Coordinator from Estonia, said that Estonia now faces serious challenges in improving project performance and the development of new resolutions for the BSP. The closing ceremony was followed by a video about Estonia and a group photo of the participants and organisers of the BSP’s Local Resources for Sustainable Development conference.

National and program coordinators.





THE BSP CONFERENCE



Our Impressions of the BSP conference in Valmiera:

■ Anna Ziębińska, teacher:

Those few days in Valmiera were very interesting, dynamic and effective. We had a chance to listen to the lectures, taking part in various workshops and excursions. The aim of this international meeting was to point out that all of us are responsible for sustainable development in our local environments. We had an opportunity to share our experiences, knowledge, to discuss about our social, economical and political problems and what is the most valuable to meet people from other countries. It was amazing, unique and inspiring meeting.

■ Hania Wyciszczok, student:

This camp was also a unique opportunity to meet people from all the Baltic Rim countries – we could talk to each other about our cultures, discuss different ideas and opinions and have fun together. Being among people who really care about our environment was extremely motivating and inspiring experience. I will never forget this amazing journey.”

■ Wiktoria Dyjas, student:

We participated in very interesting workshops and excursions. E.g we could examine air quality, do chem-

The students of the II Liceum Ogólnokształcące z Oddziałami Dwujęzycznymi im. Marii Konopnickiej at the BSP Conference in Valmiera

ical experiments and get to know structure and chemical and physical properties of rocks and minerals.

We spent a lot of time with our new friends from different countries and shared our experiences and ways to care for environment. We tried to find a solution to improve quality of environment. I broadened my knowledge of ecology and had a wonderful time on sightseeing of Valmiera, took part in lectures and admired breath taking landscapes of Latvia.

■ Agata Pietrzyba, student:

We could take part in many great workshops and amazing excursions. We went to the glass fiber factory, we could also see furniture production. During the workshops we sculpted in the clay, we examined the water and air quality, we developed our knowledge about morphology of rocks. Our trip was amazing. The weather was great. We could admire the breath taking Latvian landscapes, which we will never forget.



Kamilla Lundoff and Carolione Høye Larsson, students. Skolen ved Vierdiget, Dragør:

The first workshop, “Air Quality” was about assessment whether the air was polluted or not, using lichens. Lichens are composite organisms that grow on trees. We were given a form to evaluate whether the air was polluted or not, a map to find a tree in a specific area, and then we had to do an art piece of lichen.

The second workshop “Rivers” was about determining the water quality of a river, catching living organisms from the river and dividing the species into groups. By running a bunch of tests, and by dividing the species into groups, we could determine the water quality of a river, and see just how many different species lived in that specific site.

The workshop “Revolution – Evolution Change” was about first thinking of what changes, big or small, have happened in the past 40 years or so. Next we divided the changes into different subjects like “economy, environment, education” etc. We now chose a subject to discuss in new groups. We discussed what could happen, and what we could do in order to prevent bad things, and speed up good developments.

The excursion was to Valmiera’s glass fiber factory. First we had a short and interesting lecture about the factory and then we were shown around. We saw different buildings - where the different processes took place.



Participants from I Liceum Ogólnokształcące im. Henryka Sienkiewicza w Łańcucie, Poland:

This lovely city located in north-east Latvia amazed our young scientists. The meetings were organized in modern school. We were impressed with advanced laboratories, school pond, rich rocks and minerals collections and also amphitheater! We felt like being sent back to Roman times!

Participants had unique occasion of associating with Latvian nature. They also could develop their scientific skills through different workshops. Choosing the right workshop wasn't easy. They all were extremely fascinating!

However this was not the end of the attractions. We could choose between different trips: to the furniture factory, extinguisher factory... and even to the biofuel factory

“Grow Energy”. Even though smell wasn't the nicest, place was worth to see!

The emotions were risen up thanks to the posters contests. Each representative presented their own poster about their country. Choosing the best one wasn't easy at all. Each of the posters was exactly thought and polished. Despite the fact that competitors did great job, our poster made by Magdalena Szydełko won the first prize!

Even though conference was over representatives didn't want to leave Latvia. They stayed a couple days more to visit the capital – Rīga. Everybody loved that city in at once. It's architecture and old buildings amaze everybody. Students get to know a lot of interesting facts about this city.

However everything good doesn't last long. After a few wonderful days our scientists had to go back to the common life, but richer in new knowledge and experiences. They all hope to come back there in future to find out new mysteries.



Smiles from Poland

We LOVED the BSP-camp. Not only did we learn a lot, we also met some wonderful people, and got many new friends. It was surely an experience for life. We would highly recommend this to anyone out there who likes working with the environment and meeting new people. The BSP conference is a great project that inspires many young people to make a change.

PHOTOS:

The students visited Valmiera's glass fiber factory, a local joint-stock company, which is one of the largest exporters in Latvia.

Lichens are composite organisms that grow on trees. Hypogymnia physodes.

Exhibition Poster.





Youth EUROPEAN Conference

14th-16th
may 2012

In the Committee
of the Regions
headquarters

Brussels



Let's Take Care of the Planet

► **BIRTE REICHEL**, *BSP Coordinator, Roskilde Gymnasium*

CREATING COOPERATION

At the BSP Camp in September 2011, Lydia Nicollet, Project Coordinator for the French organization Monde Pluriel, sent an invitation to cooperation between BSP and the Let's Take Care of the Planet network, which is a cooperative network between 16 European schools.

The aim of the Let's Take Care of the Planet project is to educate young people to take responsibility for securing a sustainable future and act accordingly.

Two BSP schools, Søndervangskolen in Sønderborg and Roskilde Gymnasium, took up the challenge and chose in all five students to represent Denmark at the youth conference Let's Take Care of the Planet on May 14-16, 2012.

With them the students had a list of "responsibilities and actions" which are to be implemented to create a more sustainable development in the future. At the conference, besides students from Danish BSP schools, there were also students from the BSP network in Poland, Sweden, Lithuania, Russia and Germany.

DEDICATED YOUNG PEOPLE

I had the pleasure of accompanying the Danish students to the conference in Brussels. All the participating young people were incredibly dedicated and they worked feverishly to reach a collective plan for future solutions, among those an open letter with suggestions on how to solve the global environmental problems, a letter which was handed to the political decision-makers in the EU: (http://confint-europe.net/public/PROJET_20102012/Conf_Europe_Mai_2012/PRODUCTIONS/open_letter_16mai2012.pdf)

While the participating students worked in their workshops, other workshops had been arranged for the accompanying teachers, during which we discussed the possibilities for cooperation among the schools across national borders.

GETTING THINGS DONE

After the conference the students in the Danish delegation immediately went from words to action and contacted the Mayor of Roskilde, Joy Mogensen, to give her the open letter.

NEXT STEP

At Monde Pluriel's initiative a methodological meeting was held on September 24-26, 2012 in Barcelona, where I participated as a pedagogical consultant and representing BSP.

The purpose of the meeting was to plan the guidelines for the next three years in the Let's Take Care of the Planet network, and the aim is to revise existing teacher's guides and to hold regional conferences and a European conference in 2015.

It is the plan that schools in Denmark and schools in other countries which are associated with BSP network are to continue to expand the cooperation within the Let's Take Care of the Planet network. Both BSP and the Let's Take Care of the Planet network are working on raising the consciousness of young people and getting them to engage themselves in environmental problems and sustainable development both on the local and global level.





Our Planet – Our Responsibility

► **MARIA JENSEN, SIDSEL POULSEL, LÆRKE VEJSNÆS,**

Roskilde Gymnasium

■ Sunday May 13, 2012

On Sunday we arrived in Brussels full of expectations and ready to meet the other committed young people. The first day was spent on strengthening the bonds among all us young people from different countries. Young people from 14 countries gave presentations about their own countries and their knowledge of one of the other countries. Later we tasted typical desserts from other countries and came to see the many differences in spite of the short distances.

■ Monday May 14, 2012

On Monday we went to CoR (Committee of the Regions), which is an EU institution where the conference took place. We held a meeting in the conference hall and felt like real members of the European Parliament. We sat each in our own office chair with a microphone and computer screen which zoomed in on whoever was speaking. All around us in glass cages there were interpreters who translated into eight different languages.

After the welcome we went to the workshops, which we had joined beforehand, and which were based on the “responsibilities and actions” which the various countries had prepared. There were eight workshops, which were all focused on various aspects of sustainability. We joined the groups worked on energy and consumption.

In the evening there was a joint arrangement with Body Music, which later was to turn into a flash mob in front of the European Parliament. We used our bodies to send a message with rhythm and dancing and at the same time we strengthened our bonds even further.

■ Tuesday May 15, 2012

We finished our suggested solutions in each workshop, which together were to constitute a collective plan for future solutions framed as an open letter. Afterwards we were divided into groups, and some went into Brussels to look at city ecology, while others visited the European Parliament. We had another session of Body Music, and this time we actually picked up some of the choreography, which we were to perform in front of the European Parliament on the final day.

The same evening was also a night off and we went out to dinner. We had Ethiopian food and taught the French organizers Danish. It was quite a pleasant evening.

■ Wednesday May 16, 2012

Wednesday was the last real conference day, and we were busy getting everything ready for “la grande finale”. We created a blog and a documentary video with a message from the participants at the conference, which was to be presented at a parallel conference in Rio in June 2012 in Brazil.

There was a giant closing ceremony during which the open letter was presented to several high-ranking politicians, among those Climate Commissioner Connie Hedegaard, representatives of the EU Regional Committee and the European Parliament. On this occasion we performed our flash mob for the first time and showed our results.

Later we did a flash mob in front of the European Parliament. For the flash mob we all carried plastic bottles which we used to produce quite a racket as we sent out our message of taking good care of the earth. When we finished our message was written on the bottles. At the same time we also handed out our open letter to passing parliamentarians.

■ Thursday May 17, 2012

It was time for a sad goodbye to an educational conference and lots of new friendships – quite a bit wiser than before and determined to hold on to our new friends.

It was an unforgettable tour and we learned a great deal and have become inspired to fight for more sustainability. On top of that we have got a lot of new friends and a wonderful experience.

Posters created by the French young delegates during the 2nd National Conference - 12th-13th May 2011





Alssundgymnasiet Sønderborg

Education for Sustainable Development Status from the Danish BSP school, Alssundgymnasiet Sønderborg

► **BIRTHE ZIMMERMANN**, *teacher of biology, local BSP coordinator and coordinator of the Academy for Talented Youth, Alssundgymnasiet Sønderborg, Denmark*

In June 2000 Alssundgymnasiet Sønderborg hosted the BSP conference, “On the Threshold – Baltic 21” and in 2003 Learners Guide 5 was published based on the outcome of the conference. By then “Education” had become an important sector in Baltic 21, the Agenda 21 for the nine Baltic Sea States.

In the suggestions for preparatory work for Education, some questions were asked: We can answer a clear “yes” to the question, “Is ESD part of the overall goal in your educational institution?” We can answer “we all are, students, teachers and staff alike” to the question, “Who is responsible at your school?” We can answer “in theory yes, but in practice no” to the question, “Are all subjects involved?”

ECO-SCHOOL AND THE GREEN FLAG AS A SYMBOL

In 2010-2011 a pilot project was carried out in Denmark to offer the eco-school award – the green flag - also to upper secondary level schools, and our school was part of the pilot work. Visions and ambitions to get the green flag made the members of the eco-council an innovative and gifted group of students to work with. The students come from various classes and work between lessons, and two teachers assist as consultants and coordinators. I am one of the two.

WASTE

In 2010-2011 the annual theme was on how we treat waste, an ever-lasting problem. But how to change waste into a new resource?

We put cardboard boxes in all classrooms to collect waste paper. Local scout groups then collected the paper at school, sold it and made money for their activities.

Cigarette butts as an environmental threat was also a topic dealt with. Scientific work of the impact on seedlings sprouting was analyzed during regular lessons. In fact 5

million cigarette butts are just thrown on the ground every day in Denmark. Should someone work to pick them up the cost would be 0,2 euro per butt – a reflection that inspired a neighboring school to also do something about it.

CELEBRATION

Finally in May 2011 we could invite our mayor, Mrs Aase Nygaard, and ask her to hoist the first green flag to the top of our flagpole as a symbol that our school works for sustainable development. One student had prepared a special gift for her – a necklace made of recycled rubber from the inner tube of a bicycle combined on a copper thread from a former wire. Innovative use of waste indeed!

HOLDING THE GREEN FLAG

You only may have the green flag on your pole for one year. So how could we keep it? The eco-council decided that nature at school premises deserved more attention and made a “nature trail” using QR codes to inform others of our indoor and outdoor biotopes.

As rain has really caused local disasters, e.g. removing the railroad track connecting Sønderborg to the rest of Denmark and destroying the road from Sønderborg to Graasten more than once, we have worked with green roofs as a means of delaying run-off of water and monitoring the climate.

Our school is constructed with a greenhouse roof connecting the buildings and this gives a warm, Mediterranean indoor climate with green plants, among them an olive tree old enough to provide us with olives used in biology and biotechnology. Energy glass has replaced former one-layer ordinary greenhouse panes, making the climate even more pleasant and saving lots of energy during cold winters.

The roofs on the buildings are partly flat – excellent for Sedum mats to create a blooming and rain-delaying green roof, and partly with an angle facing southwards that would be the ideal place for solar cell panels.



PHOTOS:

Cardboard boxes were put up in all classrooms to collect waste paper. Local scout groups then collected the paper at school, sold it and made money for their activities.

Cigarette butts have negative impact to environment. 5 million cigarette butts are just thrown on the ground every day in Denmark.

Green roof at or school for monitoring the flow of rain going down the drain.

The Mayor of Sønderborg Mrs Aase Nygaard visited the school in May 2011. One student had prepared a special gift for her – a necklace made of recycled rubber from the inner tube of a bicycle combined on a copper thread from a former wire.

How can we change a gray concrete wall into a green biotope?

So the eco-council has a vision: To one day make our school Zero-energy consuming. Solar panels should create energy enough for all electrical devices at school, and solar panels heat enough for warming up water and houses. From vision to fact might take time and effort, though.



SUSTAINABLE DEVELOPMENT

Social studies made a national conference at our school on sustainable development, and in November 2012 our minister of environment, Mrs Ida Auken, paid our school a visit and met and discussed with the students. Our provincial town has a Project Zero on CO₂ emissions, and as the ICT stage has made us use only half the amount of paper we used to, perhaps renewable energy might make us even more sustainable.

CONTINUATION AND MOTIVATION

Motivation is crucial when dealing with education and young people. Our students are 16-19 years of age, and having them with us only for three years makes continuation important in our work. When students keep graduating and leaving our school new students of course come in. In order to keep up a continuous effort on sustainable development and to get new ideas we often need a “carrot” for students to become engaged and involved. The BSP has helped us on this matter: Invitations to small groups to participate in environmental camp schools, conferences and workshop activities can be used as a means of selection of new members for the eco-council. Exchange visits of entire classes another. By being part of a network that continuously inspires others you realize the importance of being innovative, creative and of taking part. Our next local goal – apart from putting up solar cells on the roofs – is to change a gray concrete wall into a living green biotope perhaps with nesting boxes for happy city birds? We are thankful for sharing our ideas within the Baltic Sea Project, and we wish the BSP a sustainable future.





In the process...

Lithuanian "Žibury's" Gymnasium in Prienai – the most ecologic school in the entire Suvalkija region in Lithuania

➤ **RŪTA BARCYTĖ**, student, Rasa Kučinskienė, Teacher Methodologist of Biology: Prienai "Žibury's" gymnasium, Lithuania

*We built the ecologic house that is also logical.
We use the wind and sun, and preserve the environment,
The wing catches the whiff of wind and sun illuminates even the cellar,
The wind is turning, the sun is heating – the natural resources are not destroyed even by time.
The sun sets and then evenings come with the "Acme Baltica" light.
When the walls are heated, no timber is needed,
Thanks to geothermal energy the warmth is no stranger,
The gardens are blooming on the roof; the warmth will not disappear if plants remain.
We have used the entire space to build a bioma,
We will filter all waste water and pay the tribute to nature.
We will keep in step with nature and that will be the "house of Suvalkija region".*

Such was the poem by Tautvydas Vencius and Dalia Petkevičiūtė, that started the presentation of the ecologic house, which was designed by the team of "Žibury's" Gymnasium in Prienai in the event "Tour of Acme and Ecofans in Lithuania".

"Žibury's" Gymnasium in Prienai became the most ecologic school in the entire Suvalkija region in Lithuania due to its constant ecologic activity, participation in the ecologic projects and events. Thus on May 2 the team of seven eleventh formers and teacher of biology and initiator of the environmental activity in the gymnasium, Rasa Kučinskienė, took part in the closing event of the ecologic initiative "Tour of Acme and Ecofans in Lithuania" uniting all the Lithuanian schoolchildren, which took place in the Museum of Energy and Technology in Vilnius.

The whole team of Ecofans, which represented "Žibury's" Gymnasium in Prienai and entire Suvalkija, had clear objective – to create a project of ecologic and energy-saving house. Although the really valuable exhibits of technical value were attracting attention, but the team cared only about methodi-



Ecofans planted the oak in the yard of Žiburys' Gymnasium in Prienai together with their teacher Rasa Kučinskienė and headmistress I. Šneiderienė.

LEFT PHOTO: Team of Ecofans in the Museum of Energy and Technology in Vilnius, by the project of ecologic house.

cal distribution of the work, because the teams of all the regions had to prepare and present the projects of their ecologic houses in 30 minutes, for construction of which various waste was used. If compared to ordinary dwelling or office building, our house uses much less energy. We used natural insulation means – straw and clay – resuming raw material. The wind power station was made to generate electricity, while the solar batteries were designated to produce thermal energy. The building is also ecologic, as its roof is planted with grass and the parterre is arranged to insulate the warmth. The diligent team has also created the biofilter for waste water, which resulted in small pool's bioma. After the houses had been created, all the teams were listening to the concert among the first turbine of Vilnius and other unique exhibits, and congratulated the winners. After the event all the participants were invited to admire the technical exhibits.

All the members of the team were happy that they had an opportunity to participate in such an event and use their ecologic knowledge. Besides, the received oak was also a good reason to feel joy – the whole team of Ecofans and their leader R. Kučinskienė together with the headmistress I. Šneiderienė planted the oak in the yard of "Žiburys" Gymnasium. Now the oak may become a symbol that manifests the works of schoolchildren and teachers of "Žiburys" Gymnasium in Prienai in the name of ecology and for the future of our Earth.



Youth Forum for Sustainable Peace and Development

From April 18 to April 22 the Lebanese UNESCO national Commission had issued an invitation to an exciting cocktail of presentations, discussions, exchanges of experiences, planning of future cooperation and sightseeing.

Recycling of treated household waste water for flushing toilets, dialogue and cooperation between students and old age pensioners, and teaching illiterates are just some examples of the many actionable projects which were presented to the participants in the Youth Conference in Beirut on sustainable peace and development.

The participants were a teacher and two students from ASP schools and the National Coordinator from each of the participating countries: Jordan, Oman, Germany, France and Denmark. From Lebanon there were five teachers and 10 students. The Danish participants were from Gefion Gymnasium and from Ungdomsbyen (Youth Town).

Before the conference the schools had worked together in pairs. The Danish Gefion Gymnasium worked with Rawdat Al Fayhaa Secondary School from Tripoli in northern Lebanon. The partner schools had agreed on a common subtheme within the overall title of the project. The titles of the cooperative themes were e.g.: Cultural Diversity, Making Illiteracy History, Environmental Issues and Actions, Water Management and Heritage: Customs and Traditions.

At the conference the partner schools presented the results of their work. Besides there were introductions by two experts followed by group work, exchange of experiences among the national coordinators, the formulation of suggestions for celebrating the 60th anniversary of the ASP network in 2013, and a tour of the National Museum of Beirut, Byblos, the Lady of Lebanon-Harissa and downtown Beirut.

Link: www.unesco-asp.dk and Facebook

Carsten Skjoldborg,
ASP National Coordinator, Youth Town



BALTIC SEA HOSTS MILLIONS OF SEABIRDS



► **VELJO VOLKE, ANDRUS KUUS, RIHO KINKS,**
Estonian Ornithological Society

WHAT ARE IMPORTANT BIRD AREAS?

Nine countries share responsibility for the Baltic Sea, which is a small sea on a global scale, but ecologically unique as the world's second largest brackish (low salinity) body of water. The Baltic Sea is assessed to be one of the most polluted seas of the world, but it still hosts hundreds of thousands to millions of birds on passage, and during the winter and breeding time.

In order to ascertain the most valuable areas and gathering sites for birds, and to monitor the status of the bird population, the avifauna of the Baltic Sea is examined from ships, planes and the shore.

The most modern tool is radar, which records information on bird movements in a defined region. Currently, a special bird radar installation is operating in Estonia on Kihnu Island. In addition, birds are monitored at the migratory gathering sites of waterbirds, i.e. the "bottleneck" areas, such as Põõsaspea and the Sõrve peninsula in Estonia. Bird censuses

are conducted on the small islands in the sea. Famous bird banding stations (such as Hanko in Finland, Kabli in Estonia, Pape in Latvia, and Rõbatši in Kaliningrad) are located on the shore of the Baltic Sea. One of the most extensive undertakings is the census of wintering waterbirds, which is conducted every winter by birdwatchers in more than a hundred countries, including on the shores of the Baltic Sea. All interested party can participate. In regard to its avifauna, the Baltic Sea is one of the best researched regions in the Europe. Throughout the Baltic Sea, areas that are of significant international importance for birds have been identified, which are called Important Bird Areas (IBA).

IBAS AND EUROPE'S NATURE PROTECTION POLICY

The IBA programme was initiated in 1990 by the BirdLife International, one of the world's largest conservation partnerships. BirdLife's IBA programme aims to identify, document, safeguard, manage and monitor a network of sites of international



The picture has been taken at the offshore shallows near Tallinn, Estonia in November 13th, 2012. Lately two diving duck species – Long-tailed Duck (*Clangula hyemalis*) (flock in the photo) and Velvet Scoter (*Melanitta fusca*) — were reclassified in the IUCN Red List of Threatened Species from the Least Concern (not endangered) to Vulnerable and Endangered, respectively.

PHOTO BY VELJO VOLKE / BIRDLIFE ESTONIA

importance for birds. IBAs form a worldwide network of sites for the conservation of birds. In Europe it is one of most important bases for the establishment of the Natura 2000 network. The effective conservation of these sites will contribute substantially to the protection of the world's biological diversity. In total, 121 IBAs have been identified in the Baltic Sea. The vast majority are “combined” sites, including the sea and some land – islets or coasts. The designation of new offshore sites is foreseen in the coming years.

THE CRITERIA FOR SELECTION

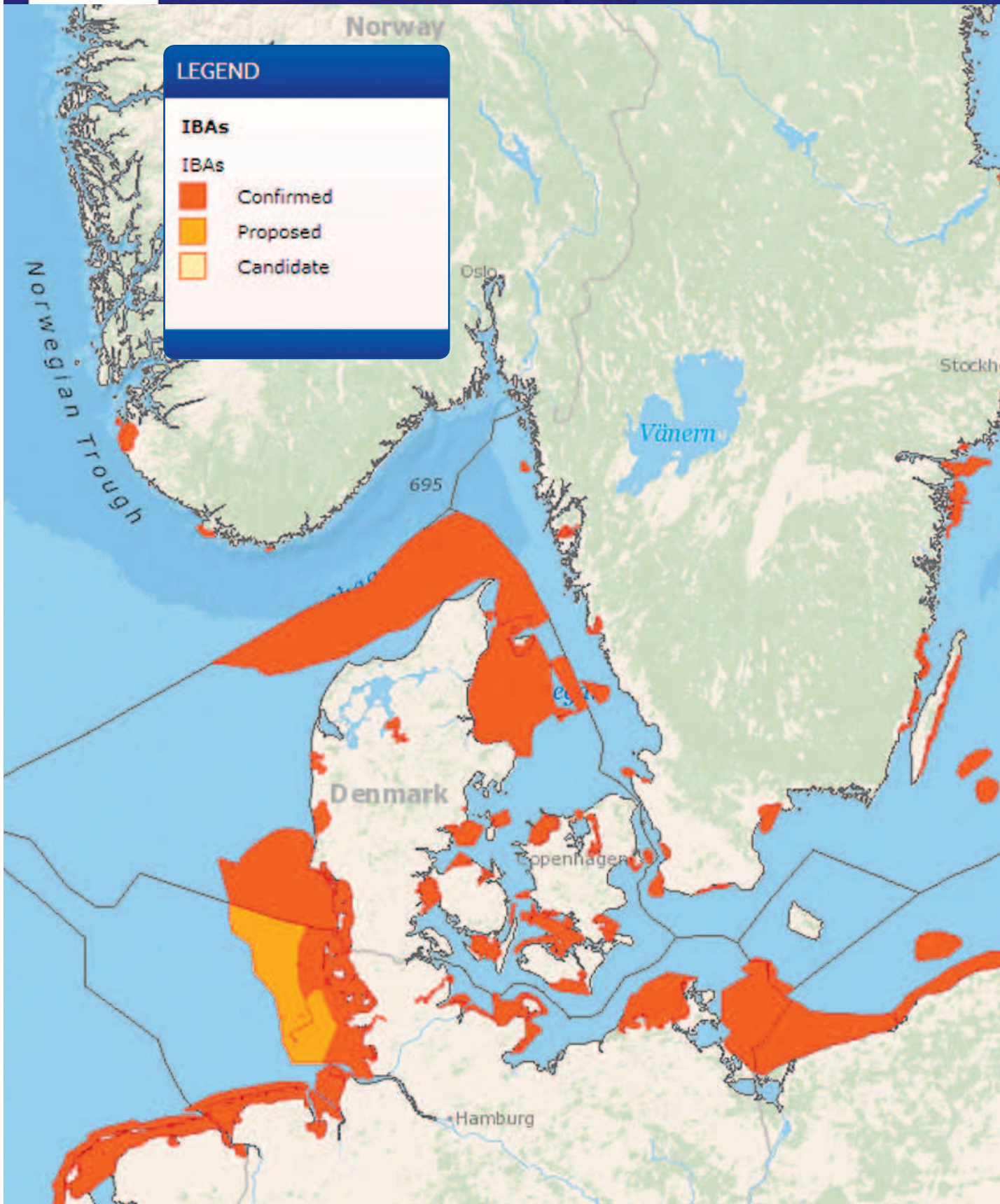
The selection of IBAs is based on predefined numerical criteria. Based on the international importance of a site for a species it may be categorised at three distinct geographical levels as being of Global, European or European Union importance. In the last decade more attention has been paid to the selection of marine, especially offshore IBAs. Marine sites are of the greatest importance for birds based on the following four aspects.

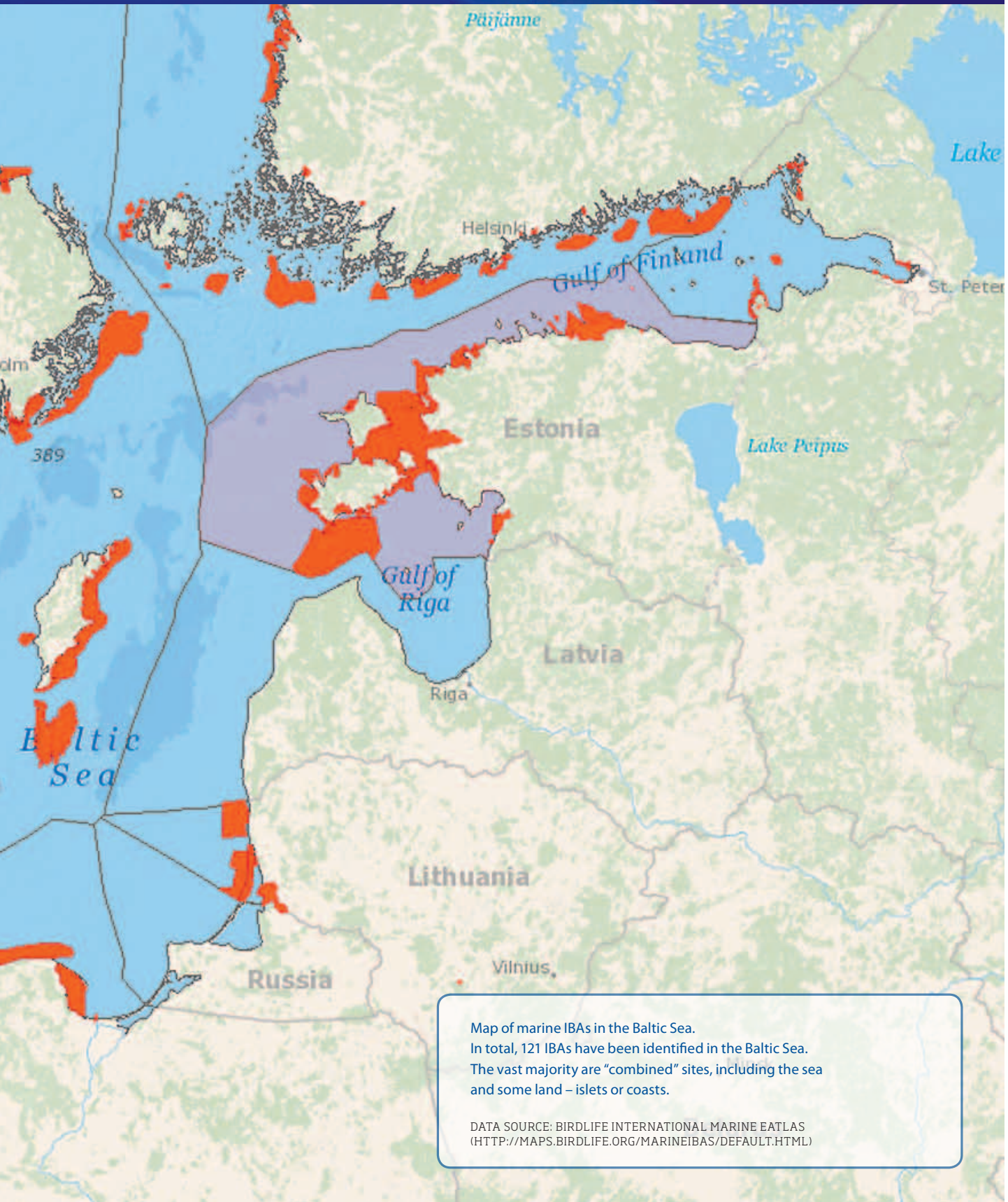
- Congregations of non-breeding waterbirds. For example, high numbers of sea ducks, such as Long-tailed Ducks (*Clangula hyemalis*) are concentrated on offshore and near-shore shallows on migration stop-over, and for moulting and wintering. An IBA is identified when the site is known to be used regularly by 1% or more of the migratory (waterbird) species in any season, or at least 20,000 waterbirds in any season. This is the most common type of marine IBAs in the Baltic Sea and important congregations of migratory waterfowl are represented in more than half of the Baltic Sea's IBAs. Long-tailed Duck is one of the most important species in this type of IBAs.
- Breeding colonies. Often large breeding colonies of waterbirds are found on the coasts and islets of the Baltic Sea. The surrounding marine area is important as feeding grounds. The offshore boundaries of IBAs are drawn to including the foraging range of the bird species. Sometimes birds fly very far, for example, a foraging radius of 15 km is used to identify IBAs around Great Cormorant (*Phalacrocorax carbo*) colonies; for the rare Caspian Tern (*Sterna caspia*) and Little Gull (*Larus minutus*), the radii are 16 and 20 km, respectively. Seaward extensions around large breeding colonies are the second important type of IBAs in Baltic and elsewhere.
- Areas for pelagic marine species. These sites comprise marine areas remote from land where pelagic seabirds regularly gather in large numbers, whether to feed or for other purposes. These areas usually coincide with specific oceanographic features and high biological productivity. Pelagic species, such as albatrosses and petrels (*Procellariiformes*), have great conservation importance, but are bound mainly to oceans and not so much to the Baltic Sea.
- Migratory “bottlenecks”. These are sites with geographic positions that seabirds fly over or around in the course of regular migration. These sites are normally determined by topographic features, such as headlands and straits. Migratory “bottlenecks” were originally defined to protect the most important migration sites for raptors (*Accipitriformes*), cranes (*Gruiformes*) and storks (*Ciconiidae*). Criteria for seabird migratory “bottlenecks” are under development. The identification of migratory “bottleneck” IBAs is very important because several countries around the Baltic Sea have plans for developing large offshore wind plants.



Marine e-atlas

Delivering site networks for seabird conservation







Common environmental researches in the whole BSP area

Environmental Measurements Programme, 2011-2012

➤ **ANJA HOKAJÄRVI**, *Coordinator of Environmental Measurements Programme, Meri-Pori Upper Secondary*

THE PINE NEEDLE PROJECT

The program is supervised by Hanna Numminen. Nineteen schools from 10 countries participated in the Pine Needle Project: Latvia (2 schools), Lithuania (1), Poland (3), Sweden (4), Germany (1), Finland (2), Denmark (1), Estonia (3), Austria (1), Russia (1).

The schools got instructions, plastic bags, and bottles for samples in November. The sampling time was at the beginning of January.

The state of the wax layer upon the needles was examined by scanning electron microscope pictures and sulphur content was examined by the X-ray fluorescence method. For these studies, we got help from the industrial laboratories of Sachtleben Pigments and Outotec.

The participants in the Pine Needle Project each year get a report that includes the results of all participating schools.

At the end of May, we had our international environmental camp school. Our guests visited Sachtleben labs in order to see how this kind of measurement can be done.

CHEMICAL WATER ANALYSIS PROJECT 2011-12

Anja Hokajärvi from Meri-Pori Upper Secondary School supervises the program. Total nitrogen [Ntot] and total phosphorus [Ptot] is measured in different parts of the Baltic Sea.

Fourteen schools from six countries participated: Poland (5 schools), Sweden (3), Germany (2), Finland (1), Denmark (1), Estonia (2)

The schools got instructions and bottles in the middle of October and the sampling time was at the beginning of November. The samples are measured by the Finnish Institute of Marine Research. The schools will get the report in order to make their own conclusions.



Are there any sharks in the Baltic Sea?

Ecological Workshops - Hel Marine Station

September, 23-26, 2012, Gdynia-Hel, Poland

➤ **ANNA ZIĘBIŃSKA**, *teacher, Maria Konopnicka Secondary School Katowice, Poland* ➤ **PATRYCJA WOJTKOWIAK-SKÓRA**, *teacher, Gdynskich Nauczycieli Bohaterów II Wojny Światowej Secondary School, Gdynia, Poland*

From 23 to 26 September 2012, a group of nearly 30 students and two teachers from two Polish schools (Gdynskich Nauczycieli Bohaterów II Wojny Światowej Secondary School No. 10 in Gdynia and Maria Konopnicka Secondary School No. 2 in Katowice) participated in ecological workshops at the Hel Marine Station in the Gulf of Gdańsk in Poland.

The workshops were organized by biology teacher Patrycja Wojtkowiak-Skóra and students from Secondary School No. 10 in Gdynia. Our two schools have cooperated in the Baltic Sea Project for a few years.

HEL MARINE STATION

The Hel Marine Station was established in 1992 as a part of the Institute of Oceanography, which is part of the Faculty of Oceanography and Geography at the University of Gdańsk. This is the only station of its kind in Poland and on the southern and eastern coasts of the Baltic. The Hel Marine Station is a place to conduct research on the open sea and in the coastal zone of the Gulf of Gdańsk and the Puck Bay. The main purpose of the Hel Marine Station is to study the function and protection of the marine ecosystem. The research efforts of the team at the Hel Marine Station are focused on



A group of nearly 30 students and two teachers from two Polish schools participated in ecological workshops at the Hel Marine Station in the Gulf of Gdańsk in Poland.



- the biology and ecology of the fish found in the coastal zone of the Baltic,
- the biology and ecology of Baltic marine mammals and
- the protection of rare species and biotopes in the Baltic.

The research, breeding and rehabilitation centre for grey seals at the Hel Marine Station is visited by over 450,000 people every year. The Hel Marine Station has a long-term project to restore grey seals to the Polish waters of the Baltic Sea. The Hel Marine Station is also an educational institution. Among the most popular classes is “The Blue School”, which offers lessons, lectures, seminars in the ecology of the sea and biology of marine organisms to schools at all levels. For more information about The Hel Marine Station, see www.hel.ug.edu.pl.

OUR DAYS AT HEL MARINE STATION

During the workshops, we broadened our knowledge about the biology and ecology of the Baltic Sea. We visited the Hel Marine Station Museum and watched films about the fauna and flora of Puck Bay and about new, invasive species in this area. We also took part in practical activities both at the Hel Marine Station and in the open air. Some of us had an opportunity to perform an autopsy on pike (*Esox lucius*) from Puck Bay. This was a part of an experiment conducted by PhD students that work at this institution. For some of us, it was extreme and incredible sight and left a deep impression. We had also the possibility to investigate and analyze biological data – we caught some organisms that live close to the shore. We used special nets, which two students drew through the water. The students had to wear special waders to avoid getting soaked. We assessed the quality of the sea water according to instructions of the coastal watch program. One of the most attractive activities was the possibility of being very close to seals, when they were being fed by the keepers and volunteers. Those few days at the Hel Marine Station were amazing and unforgettable.

> DARIA WIĘCŁAWSKA AND PRZEMEK BRYL

commented on the day:

“...We had an excellent chance to be in a place that only a few people have the chance to see from the inside. For a day we became members of the Seal Aquarium at Hel. We enjoyed cleaning up the space where seals live. Performing an autopsy on fish was also a fascinating experience, especially for those, who are very curious about this big and very small world. The most amusing thing was exploring the fauna of the Baltic Sea, putting on big, unusual trousers. We looked so funny wearing them and laughed all day. We enjoyed our stay, the place, our new friends, the tasty waffles and the charming sunsets. We hope we will be able to come here again.”

Some of us had the opportunity of performing an autopsy on fish from Puck Bay





South Baltic WebLab in Lithuania

> **MARIA R. JENSEN SONDERSKOVSKOLEN**, Denmark

PROBLEMS OF THE BALTIC SEA

The Baltic Sea suffers from many problems, and it is known that in 2100 the water will rise by 1 metre because of climate change.

The Baltic Sea area also suffers from eutrophication and oxygen depletion, erosion, oil pollution, algae bloom, over fishing etc. But what can we do to help the Baltic Sea? First of all, we need to understand why these things are happening. In case of the algae bloom we need to study the concentrations, development, and spread of the algae.

WHAT DID WE FOCUS ON?

The students from five different countries participated in an environmental camp in Lithuania in the South Baltic. All students were divided among five groups: hydrography, phytoplankton, Cyanobacteria, meiobenthos, and macrophytes. Each of the groups included one participant from each of the five countries. The idea was that the students would continue to speak in English instead of their native languages.

A DAY ON THE CURONIAN LAGOON

The day after we had been assigned to our different groups, and received a briefing about what we were going to research, we went to the Curonian Lagoon to get our research samples. On the boat there were five stations for taking various samples. At each monitoring station on the lagoon, we would



Taking water samples.

PICTURES BY IDA BROE LARSEN

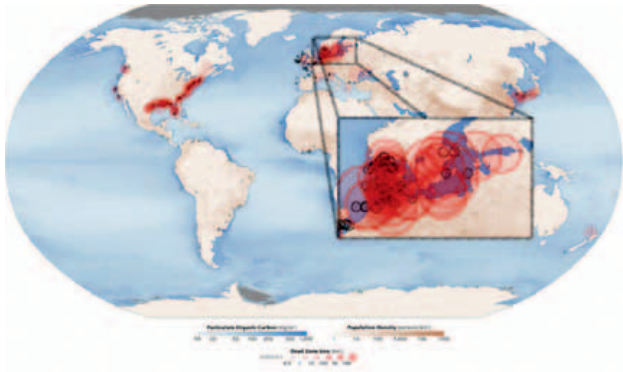
move clockwise to the next station to take a new type of sample. In this way, we could try the different sampling methods for different samples.

We took many different samples on that day. We took sediment samples, and searched some of them for living organisms that could be seen by the naked eye. We used a Secchi disk to measure the transparency of the lagoon. We took



Danish and Swedish delegates counting phytoplankton.

RIGHT: All the participants and teachers at the sand dunes of Lithuanian. A UNESCO World Heritage site.



Map of the world's eutrophication. It clearly shows that the Baltic Sea is one of the worst areas in the world.

The Curonian Lagoon, Lithuanian.



water samples for the examination of the algae the lab later on, measured the salinity of the water and took other important measurements.

WATCHING AND LEARNING

The next day all the students had to examine the samples, count, distil and do other things.

The Phytoplankton group spent the first few days looking at phytoplankton through a microscope and learning how to identify them and to identify living and dead plankton. After we were able to reliably tell them apart, we started counting the number of colonies, filaments, and single cells. In case of the colonies, we studied how many cells they consisted of. All the groups had to make a poster for presentation on the final day of the camp, so all the groups worked hard on completing their research, and making diagrams for the posters to illustrate our discoveries.

LECTURES AND QUIZZES

Some scientists that supervised the groups also presented lectures to the students. All the students had to take notes at the lectures. Later, a quiz about the lecture was organised. All the groups competed against each other, and tried to give the

most correct answers. In this way all the students learned quite a lot.

NOT ALL HARD WORK

We did more than do research and work on our posters. On some days, we visited the surroundings, and some UNESCO World Heritage sites (Witches Hill and the sand dunes). We also did other interesting things: biking, visiting national parks, museums with the motto: "See the Sea", and an aquarium (we are marine scientists after all). Each delegation gave a presentation about their country, and afterwards we had a party. The last evening at the camp the coordinators arranged a beach party with a barbecue.

WHAT DO I THINK AS ONE OF THE DANISH DELEGATES?

My own opinion of this camp was that it was great and well organized. It was also a great camp for bonding, since we all became great friends and I still exchange e-mails with delegates from the other countries.

To participants next year: I hope you enjoy yourselves, make new friends, and of course, learn a lot!





The coastal flora of the Borki Pond in Katowice

➤ **DARIA BIERNACKA**, student ➤ **JOLANTA MOL**, teacher, ILO z Oddziałami Dwujęzycznymi Katowice, Poland

My adventure with ecology and the Baltic Sea Project started in high school. Taking part in workshops and outdoor activities at the University of Silesia made me decide to study the coastal flora of a local pond located at the Szopienice-Borki landscape in Katowice. Joints of the complex arose on the former sand pits that were mined for the mining industry and as a result of surface deformation due to underground mining.

Collecting the materials took me a couple of months and lasted from May to August 2012.

In total, I was able to collect and catalog more than 40 species belonging to 21 families. Among the families *Asteraceae* had the most representatives. You can see the clear dominance of perennial specimens.

What particularly surprised me was the few amount of invasive species and not too many of them. It is a rare situation because usually there is a displacement of native species

by invasive and a much larger share of the latter quantity in the flora.

Among the most abundant terrestrial plant specimen was the common yarrow (*Achillea millefolium*), but when it comes to the most common aquatic plants species it was the Eurasian watermilfoil (*Myriophyllum spicatum*).

An interesting specimen, which I had a chance to observe in several species of water clusters was - *Najas marina*. It is rare in Poland, especially in the southern areas, and its presence may indicate the salinity of the local water. This is a very characteristic plant due to the spikes occurring on the stem, and the brittleness it exhibits in water.

My goal was to collect and catalog the aquatic and terrestrial plants occurring on the waterfront strip that can benefit from such a herbarium and the resulting list by students of local schools for independent research on the species composition of plants growing on the pond. I hope that in the future my work will be used by them.



Daria Biernacka studied the coastal flora of a local pond located at the Szopienice-Borki landscape in Katowice. Daria hopes, that the other students of local schools can use the results of her observations.

PHOTOS: JOLANTA MOL , DARIA BIERNACKA



The diversity of trees and shrubs in two cemeteries in Myslowice

> **DAGMARA HAN**, student > **JOLANTA MOL, MAGDALENA KUBICA**, teachers in II Liceum Ogólnokształcące z Oddziałami Dwujęzycznymi, Im. Marii Konopnickiej, Katowice, Poland

In my research, I have taken into account two cemeteries situated in Myslowice in the Silesian Voivodeship – a Catholic cemetery founded in 1811, and the Protestant one founded in 1885. They are specific habitats, where you can find a variety of interesting species of trees planted on purpose as well as feral species and the ones growing there because they also grow in the neighbourhood. The aim of my research was to describe the tree and shrub species diversity in those cemeteries, to compare the results and focus people's attention on the problem of the conservation of old trees in those two sites.

I identified 28 species of trees and shrubs (17 species of trees and 11 species of shrubs) in both cemeteries. In the Catholic cemetery I found 200 individuals representing 10 species. The species that I identified in both places were: the maple (*Acer platanoides L.*) and the European larch (*Larix decidua Mill.*). I also paid attention to autochory of many species, for example the northern red oak (*Quercus rubra L.*) in the Catholic cemetery or young common horse chestnuts (*Aesculus hippocastanum L.*) in the Protestant one. The northern red oak (*Rhododendron L.*) is an invasive species and in the future it might dominate the flora of the cemetery. However, it is still young enough to be removed.

People believe that cemeteries are special places where the past meets the present. Apart from its main function, cemeteries also play an important role in the ecosystem. They are cultivated green areas, which give a chance of survival to many species of plants and animals living in urban areas. That is why cemeteries should be protected in order to serve the generations to come. Unfortunately, many cemeteries are vandalized and neither local authorities nor local inhabitants try to prevent it.

A tree in a cemetery is not only a plant, it is also a symbol. Evergreen plants found in cemeteries reminds us of immortality, while trees losing their leaves are the symbol of resurrection. The 'weeping' forms are the symbol of mourning and sympathy. Many trees that I found in both cemeteries are more than one hundred years old. Because the cemeteries are



Dagmara identified 28 species of trees and shrubs in two cemeteries situated in Myslowice.



An old *Robinia pseudoacacia*, which is about to be cut down.

PHOTO: DAGMARA HAN -

underfinanced and not well maintained, the only form of care is cutting down old trees which are ill.

The circumference of the specimen of robinia pseudoacacia (*Robinia pseudoacacia L.*) found in the Catholic cemetery is 315 cm. It is estimated that the tree is 130-150 years old. In both cemeteries you can also find very old specimens of common horse chestnuts (*Aesculus hippocastanum L.*), beeches (*Fagus sylvatica L.*) and birches (*Betula pendula Roth*). Some of those trees should be examined because some of them might turn out to be natural monuments. On the list of natural monuments located in Myslowice, there are not any trees growing in either of the two cemeteries. If we do

not take any measures, those old trees will disappear soon.

It is obvious that old trees can be dangerous to people. They can cause accidents unless they are well maintained and examined regularly. The EU countries control trees in order to avoid accidents, especially in urban areas. One of the parameters used is the possibility of minimizing the risk. Thanks to such a policy, old trees are protected.

Trees have many important functions. They improve air quality, reduce consequences of the greenhouse effect and air pollution, help decrease 'an urban heat island' effect, reduce noise and retain water and moisture in the soil.

Our society is still unaware of the importance of ecology. In my opinion, raising people's awareness in this respect is one of the most important issues in the 21st century.



BSP PROGRAMS



Mallards and swans are usual bird species wintering near Tallinn.

Look! There they are! Winter birdwatch of waterfowl in Tallinn

➤ **MARIIN PANTELEJEV, HANNA MARIA SAIK, EMIL LUIK,**
Tallinn English College

Birdwatches of waterfowl have been conducted in Estonia annually since 1967 in winters. The census involves all open waters both inland and on the coast. The census takes place within two weeks in January on two certain days. For example, in 2013 these two days were in January, 12th and 13th.

MIDWINTER WATERFOWL CENSUS OF 2013

Students of schools of Tallinn watched the birds on the 14. of January along the west coast of the Viimsi peninsula.

33 students from eight Tallinn schools took part this year. They were awarded for taking part of the celebratory bird quiz on Tallinn Bird Club's birthday on the 14. of December with a free excursion to the waterfowl census.

THE CENSUS

At first we hopped onto a bus from the parking lot of Tallinn railway station to the tip of the Viimsi peninsula, 10 kilometers to the west of Tallinn. There, the watchers immediately grabbed their binoculars to find out who was the big bird circling the sky above them. There was no doubt it was a

white-tailed eagle. From there, the bus turned back towards Tallinn again.

While in Estonia the results of the census are presented to the Estonian Ornithological Society by sectors, the way our coastal areas have been divided for better comparison. For example our groups passed 3 sectors along the sea coast during this day. The group of each school was given a task, so that every 5-member group focused on counting one waterfowl species in particular; either mallard ducks, goldeneyes, gulls, swans, mergansers or long-tailed ducks or perhaps an unknown species. To determine the species of unknown birds, ornithologists Thea Perm and Linda Metsaorg lended their helping hands.

It was very easy to count, due to great visibility and there was only -5 degrees Celsius. What made the census inconvenient were the strong south-eastern and western winds as well as towering waves. The bus traveled along the coastal road and stopped when necessary. Sometimes you could even count the birds from the window. The majority of mergansers (75 birds) had gathered to the tip of the peninsula. The mute swans kept to the small shadow of Pandjulaiu. There were 45 adolescent and 11 juvenile birds. There were only 5 whooper



swans, who could be told apart by the yellow and black colouration on their beaks. In the next sector we counted the most goldeneyes, whom there were 58.

We took a break in the cozy Rannarahva Museum in the village of Pringi, at the old Viimsi schoolhouse. There, we made ourselves familiar with portraits of the tough women of Naissaare, their party and bridal dresses, handicrafts and work equipment as well as the fascinating Naissaare legends.

At the third and last sector there was an annual gathering spot of swans, ducks and gulls, because that is where the sewage pipe enters the sea. The water should be rainwater, though most likely contaminated, so that the birds attempt to find food in it. In this location, the citizens and particularly children have a tendency to feed waterfowl. The sea remains free from ice, therefore no extra feeding is actually necessary or even permitted by environmental workers – it could, with time, change the migratory habits of birds. Some of the mute swans even walked by the snowy beach to greet our birdwatchers. There were 17 birds, out of whom 2 were young and grey-feathered. There were 39 mallards counted here, out of whom 21 were male and 18 female. There were 26 goldeneyes on the sea. The majority of birds there were European herring gulls (140), amongst whom there were numerous brown-patterned juvenile birds. 60 black-headed gulls were counted and 22 great black-backed gulls.

Altogether 609 waterfowls were counted in the Viimsi peninsula area, which is not a lot compared to last year, taking into account that the sea was still completely ice-free.

This day was interesting and abled us to recall some species we already knew and to learn species we did not know. Hopefully these findings help to reasearch birds need for different conditions and birds movement or travelling habits and discuss how changing the food availability may change birds travelling habits. We are sure we will participate in winter waterflow census next year too, if possible.

Rannarahva Museum, Pringi village exhibits everyday life of the Estonian people living by the Baltic Sea.





Trip to Zaton, Poland.

PHOTO: GRETA ALEKSYNAITE.

A tale of two rivers – Nemunas and Oder

➤ **GRETA ALEKSYNAITĖ**, student, ➤ **RASA KUČINSKIENĖ**, teacher in Prienai „Žiburys“ gymnasium, Lithuania

On the 14th of June a group of ten students and two teachers from Prienai “Žiburys” gymnasium arrived in Chojna, a small town in Poland near border with Germany. A group of Poland students with their teachers from Zespół Ponadgimnazjalnych school met us. So our week-long project adventures started.

Before our visit to Chojna we prepared for it very carefully and responsibly. First of all we gathered some useful and interesting information about the River Nemunas, its importance, influence in Lithuanian literature, painting, songs and inhabitants’ lives.

Our chemistry and biology teachers also helped us to examine the water from Nemunas, its purity, Ph, smell and colour.

We were living in our host school hostel with the group of participants from Poland. The students from Poland were very friendly and were doing their best to organize our activities interestingly.

We had various activities connected with our project: walking in the regional parks, visiting pensioners, listening to their stories about the value of river Oder in their lives and history, visiting the banks of Oder, introducing our project presentations. Sometimes we had very interesting and funny days making traditional Poland and Lithuanian dishes, painting posters of our project and of course some fun during the sport day.

We were deeply touched when our hosts took us to the monument of Steponas Darius and Stasys Girėnas, Myślubórz, the place in the forest where their plane crashed (Darius and Girėnas were Lithuanian pilots, emigrants to the United States, who made a significant flight in the history of world aviation).

The students from Chojna made a great surprise for us: an evening with lots of fruit and many little candles. We still remember and appreciate it. In the last evening we organized a games evening as thank to our friends for their hospitality and friendship.

We all spent our time purposefully and interestingly during our project in Poland. Moreover, we had valuable possibility to improve our English skills, learned a lot about two main rivers in Poland and Lithuania, Nemunas and Oder.

Students check the purity of water from Nemunas, Lithuania.

PHOTO: ARTUR HOVAKIMYAN





Increased amount of the vehicles impacts the natural environment, especially ground level of air.



Determining the impact of traffic on air quality, focusing on dust emissions based on the example of the city of Katowice

► **MONIKA SPACZYŃSKA**, student ► **DANUTA NABIAŁ-KOWSKA**, teacher in II Liceum Ogólnokształcące z Oddziałami Dwujęzycznymi, Im. Marii Konopnickiej, Poland

The aim of this study was to determine the effect of traffic on the environment, with particular emphasis on dust emissions based on the example of the city of Katowice. The improvement in the standard of living in Poland over the last 20 years has been accompanied, inter alia, by a very significant increase in the number of vehicles -- both private cars and vehicles used to transport goods. This has a huge impact on the purity of various components of the natural environment, especially ground level of air. Therefore conducting systematic research in this field is necessary and extremely important.

METHOD

Measurements of dust emissions were conducted in the centre of Katowice on National Road No. 79, about 200 meters from the Katowice Spodek, and at the reference point located in the Ochojec Floristic Reserve in Katowice-Ochojec. The content of the tested dust fractions (PM10 and respirable) in the air was determined by using a DustTrak model 8520, TSI, which is device for measuring dust levels.

RESULTS

Based on the results, it was concluded that there is a significant content (74.2-90.2%) of respirable dust fractions in the total amount of dust (PM 10) that is suspended in the air. It was found that a huge hazard to human health exists that is caused by dust that appears as a result of secondary pollution near the streets (linear emitters).

After an analysis of the literature on the topic, the study enabled the author to broaden her knowledge in this field and to learn how to conduct scientific research. Thanks to experience that was obtained, in the future it may inspire her to continue working on the protection of the environment. The author has previously prepared an article on the same subject, which is titled "The secondary emission of dust from linear emitters as a result of large traffic volumes" and was published in the quarterly publication called *Scientific and Didactic Equipment*. It should also be mentioned that the Baltic Sea Project enables students to develop their biological interests.



Investigations of air pollution in Prienai

➤ **JUSTINA KLEIZAITĖ**, student ➤ **VILIJA GUSTAITYTĖ, RASA KUČINSKIENĖ**, teachers in Prienai „Žiburys“ Gymnasium, Lithuania. Photos by Rasa Kučinskienė

Air pollution is one of the main concerns in today's world. There are many factors which pollute our environment. Therefore, our goal is to find out the sources of the pollutants, to evaluate the damage caused and to search for the most effective ways to reduce the pollution.

The students of the Prienai “Žiburys” gymnasium assessed the quality of air under the guidance of a biology teacher, Rasa Kučinskienė. The investigations based on the Baltic Sea project methodologies. While carrying out a study, they have also used a new method that is the determination of NO₂ con-

centrations by using a passive sampler method. This survey was conducted at Vytautas Magnus University's laboratory and it indicated that NO₂ concentrations do not exceed the limits (the usual rate is 40 mg/m³) in Prienai town. The results are presented in **Table 1**.

According to the findings, the cleanest air is in Basanavičius street and the park of Revuona. We tend to believe that reason for that there is no heavy traffic around those places. The most polluted air is around the Crossing of Vytautas and Martišius st., where ‘Čili’ pizzeria is situated.

Also, we used some other study methods such as lichenoidication and maple tests, which were introduced



PHOTOS:

The students of the Prienai "Žiburys" gymnasium assessed the air quality during their biology classes.

Passive accumulator used for air quality investigations.

Using bioindication method it is possible to assess the air quality on the base of various lichens species.

PHOTOS BY RASA KUČINSKIENĖ

to the Comenius project participants during the meeting in the gymnasium last October. The topic of the meeting was "The Determination of Air Pollution Caused by the Use of Fossil Fuels".

After all, we are pleased to have the opportunity to participate in various projects in order to gain some theoretical knowledge. Besides, we are so glad to know that our native town is not very much polluted. Thus, to maintain the same situation we should always do our best to make our planet as clean as possible for the future generations.

Table. Determination of NO₂ in ambient air using passive sampling method

No.	Location (place)	Date	Time	Results
1.	A biology class in 'Žiburys' gymnasium in Basanavicius st.	2012 10 05 2012 10 18	8.46 14.47	5,27 µg/m ³
2.	The Housing estate in Statybininkai st.	2012 10 05 2012 10 18	14.28 19.53	6,03 µg/m ³
3.	The Carpark near 'Norfa' store in Kaunas st.	2012 10 07 2012 10 18	10.58 18.50	11,71 µg/m ³
4.	The Crossing of Vytautas and Martišius st., 'Čili' pizzeria	2012 10 07 2012 10 18	12.55 12.15	25,56 µg/m ³
5.	Krantas st. The Park of Revuona	2012 10 08 2012 10 18	8.20 12.08	5,56 µg/m ³





Prospectors of the Nature's Treasures

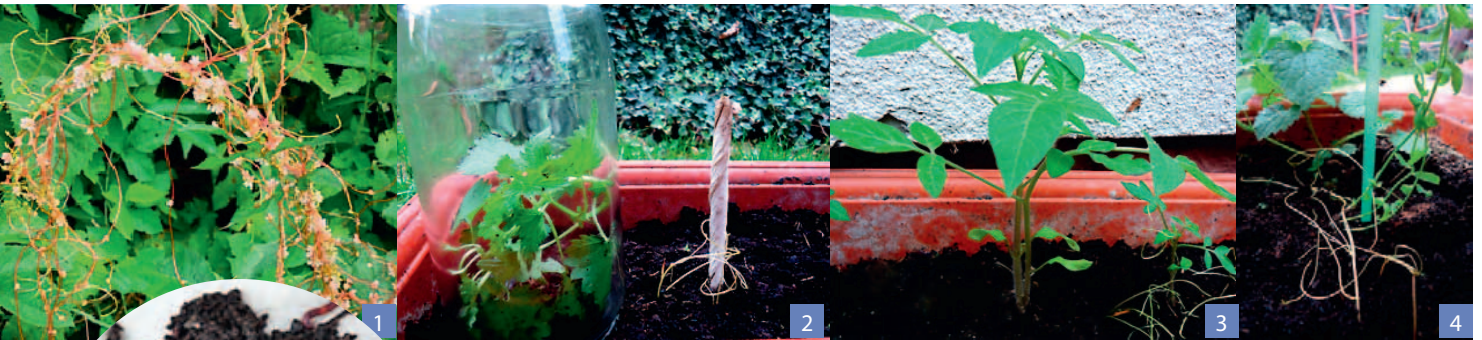
➤ **MAGDALENA SZYDELKO, GABRIELA TRĄD, URSZULA SKORUS**, students ➤ **LUDMIŁA SMĘT-DUDZIAK**, teacher in I Liceum Ogólnokształcące im. Henryka Sienkiewicza w Łańcut, Poland. Translated by Jakub Florek

Nature is never ending story, full of trivias and mysteries. Students from I High School named after Henryk Sienkiewicz in Łańcut are trying continuously discover something new. Inspired by our teacher Ludmiła Smęt-Dudziak we are becoming more and more environmentally aware.

der glass or the stick soaked with nettle decoction, the stick was always preferred.

It was found out that younger plants were also preferred by dodder. Planted between younger and elder tomato plants, dodder usually chose younger host.

It was also noticed that if there was linen plant between dodder and nettle, the parasite used to pass by the linen and move directly to nettle. It is supposed that the main criterion during choosing host plant is tigmotro-



This year XLII Biological Olympics were launched. Like every year our young scientists participated. Students preparing for the Olympics had to carry out their own experiments.

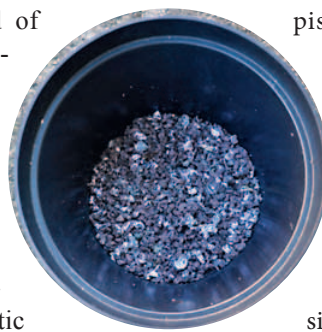
Urszula Skorus is especially interested in secrets that

occur in the world of

plants. She observed some insectivorous and parasitic species around Łańcut. She managed to identify a couple of localities of Round-leaved sundew *Drosera rotundifolia*, which is an insectivorous plant. She also observed Common toothwort *Lathraea squamaria* and Dodder plant *Cuscuta Europaea* - the last two are parasitic plants. Unfortunately, none of the mentioned species is common in the Poviát of Łańcut.

Urszula carried out some experiences on dodder plant in order to recognize her preferences regarding the host plant. It was observed that there are some special criteria that determine this choice.

When dodder was planted in the middle of circular bowl and surrounded by various plants, it used to "attack" nettle firstly, then came tomato, potato, sunflower, linen and wheat. When it was possible to use either nettle hidden un-



1. Dodder plant *Cuscuta europaea*
2. Dodder plant preferring stick soaked with nettle decoction
3. Dodder preferring younger host tomato plant
4. The parasite passing by the linen and moving directly to nettle
5. Red californian earthworm *Eisenia fetida*
6. Biohumus

pism, but in selection the most important is chemiotropism.

Wojciech Tupik focused on animals world. He grew common species of earthworm – Red californian earthworm *Eisenia Fetida*. He received biohumus (substance used in agriculture) by feeding his culture with various types of waste.

It is worth to pay attention to observations made by Paweł Ruman. His thesis concentrated on expansive plants like Policeman's helmet *Impatiens glandulifer*, Small balsam *Impatiens parviflora* and Japanese knotweed *Reynoutria japonica*. Brought from Asia to European botanic garden, they spread out to the whole Europe and threaten natural biodiversity.

There is nothing more precious and rewarding than self-conducted experiments and thesis. They are the best sources of knowledge about nature and its rules. That is why studies carried out for Olympiad are so important.

Let's appreciate the nature around us – there is nothing more beautiful.



Taking care of the birds in winter

➤ **IRENA MONTVYDIENĖ**, *Klaipėdos Hermano Zudermano gymnasium, Lithuania*

When the heavy winter cold comes to the city, not everyone dare to come outside. However nature life doesn't stop even during the hardest frosts. Birds, which spend their winter in Lithuania - great titmice, sparrows, nuthatches, woodpeckers and others- are not afraid of this kind of cold, but they often die because of the starvation as they are unable to find food on their own. In winter, birds need far more feed than in the summer.

In November, when the first snow started falling, the 6-graders in Klaipėdos Hermano Zudermano gymnasium were asked to count how many bird feeders are there around them. However, the results were not as good as expected, not many people feed the birds in Lithuania during the winter. Students discussed about how they could help birds to survive the winter and made simple bird feeders.

The work started with the conversation about the technique of making bird feeders. It doesn't require any expensive materials. In fact, various household waste (plastic bottles, buckets) or natural materials are a perfect fit. In autumn the



The most exciting part was staining the cones with fat, putting it in the mixture and attaching a thin wire.

teacher has asked students to collect some cones from the forest for this lesson. The last thing needed was the birds feed which is mostly broken grains, cereals, sunflower seeds and raw millet grains. Birds feed must be as natural as possible, free from mold, deterioration, without any spices or impurities.

The most exciting part was staining the cones with fat, putting it in the mixture and attaching a thin wire. Students made a huge plate of food for the birds.

In winter, birds need far more feed than in the summer.



Then, we decorated the trees in the school yard with our creations. However we could only watch the birds' ball out the window as they were very shy. When the bird feeder is empty it is very simple to add more feed.

By helping the birds survive the winter we also get advantage. In spring they will nest here and in search of food will destroy a lot of insect pest eggs and pupas. Moreover, it is useful and fun for the person itself to get to know the birds, to admire them, to learn kindness, responsibility, understand the processes taking place in nature.

Some students even decided to make some bird feeders by their home and then observe the birds. 'It's a pity that I live in the city. In the countryside there would be far more birds.' said Paulius.





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BSP EVENTS CALENDAR

WHEN?	WHAT?	WHERE?
April 29, 2013: Materials: Location: Number of participants: Language: Course cost: Application:	International Course on Science-on-Stage/I-stage: Monster Rain – Monitoring the Climate http://www.science-on-stage.de/page/display/en/3/39/0/istage-ikt-im-nawi-unterricht Allsundgymnasiet Sønderborg, Grundtvigs Alle 86, 6400 Sønderborg; Denmark, www.ag.s.dk Max. 30 science teachers (biology, physics, and chemistry) Danish & English (depending on participants) Teachers promoting Science on Stage/Developing Teaching Materials for ICT: Mrs. Birthe Zimmermann M.Sc. & B.A. (Biology & English) and Mr. Michael Lenft Jensen M.Sc. (Physics & Astronomy) 300 DKK including materials and lunch By April 15th to raan@universe.dk with name, school, subjects	in Denmark
May 10-12, 2013:	BSP Spring Camp in Kloogarand, coast of northern Estonia	in Estonia
August 12-18, 2013:	International Youth Exchange – Our Gold is Green, Lithuania	in Lithuania
September 2-6, 2013: The program includes: For more information:	Science camp in Kappeln, Denmark International camp – students will meet marine scientists – collaboration between the Danish BSP, the South Baltic Weblap, the German BSP School in Kappeln, and the German Institut für Forschung Ostsee Warnemünde (IOW). Field work and teaching at a high professional level, which means the students are introduced to the working methods and theory of a university environment. Testing the exercises from LG10 Teachers Guide No. 10 for BSP teachers (the book is in production). Development of an intercultural cooperation culture. English as the working language. Five to six teams from Denmark and one to two teams from the other BSP countries are expected to attend. Each team will be comprised of one teacher and four to five students. Researchers from South Baltic Weblap institutions will also participate. The Institute will provide the research ship, trainers and equipment; the Kappeln Secondary School will provide the location for staying overnight in tents during the first week in September (2 to 6 September 2013) and access to the school premises. The Danish schools must use the free travel by DSB to the German border. International participants will pay their own travel. An entry fee of € 40 Euro per participant. Approx. 100 participants. Soren Levring National Coordinator, Baltic Sea Project Sunderskov-Skolen, Grundtvigs Allé 100, Phone: +45 8872 7028, Mobile: +45 2790 3757, slev@sonderborg.dk	in Denmark
November 15, 2013:	National workshop for Estonian BSP teachers in Tartu, Estonia	in Estonia
November, 2013:	National conference titled “Environmental Measurements in the Baltic Sea Region”	in Lithuania

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- Please include the name of the author, title and description with any illustrations – photos, pictures, graphs or other scanned materials. The illustrations should be sent as separate attachments, please do not insert them in the Word document. Please observe the copyrights of any background materials; All photos and illustrations should be saved in JPEG format.

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Delegates of the BSP Conference



Valmiera, Latvia 2012