



The Baltic Sea Project

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Gulf of Finland Year 2014



- **At the Dawn of the BSP**
- **Schools act for saving the Baltic Sea**
- **Borders - a New Comenius Project**
- **BSP programs**

Cover photo: **The Ringed Seal** (*Pusa hispida*). PHOTO BY KAIDO HAAGEN



The Baltic Sea Project

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Editor: Anne Kivinukk, Environmental Education Association Etalon

Publisher: Tartu Environmental Education Center
Lille 10, Tartu 51010, Estonia

Phone: + 372 736 6120

E-mail: teec@teec.ee

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All correspondence should be addressed to:

Gedy Siimenson

Tartu Environmental Education Centre
Lille 10, Tartu 51010, Estonia

Phone: + 372 564 668 87

E-post: gedy.siimenson@teec.ee

Logotype: Modified after Karin Peterson

& Kjell-Ake Holmberg/Hompe

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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.



Ühinenud Rahvaste
Hariduse, Teaduse ja
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The Baltic Sea Project



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Dear readers!

The first year of the Estonian presidency of the Baltic Sea Project has passed quickly and it is time to sum up our experiences and set new goals for the future.

As promised, during our first year as the general coordinator of the project we have tried to take the first steps in developing the programs and searching for new learning and teaching methods, as well as finding ways to make better use of the collected data. I feel that some positive changes have already occurred, and hope there are more to come. I would like to thank you all for your contribution and motivation!

The Baltic Sea Project is now 25 years old and we have a general coordinator who is the same age! I hope this combination will bring us luck in achieving our aims for the future: applying for EU finances in order to strengthen the cooperation

between the different stakeholders, to produce a new Learners' Guide and search for new partners.

The UN Decade of Education for Sustainable Development will come to its end this year but a thematic framework will follow and this clearly demonstrates that education for sustainable development continues to be very significant for UNESCO.

I would like to thank the Tartu Environmental Education Centre and the financial supporters of our project – the Estonian Ministry of Education and Research and the Ministry of the Environment. Finally, I would like to thank Kersti Sõgel for her dedicated work and wish our new general coordinator Gedy Siimenson all possible success!

Kerli Gutman
Secretary-General
Estonian National Commission for UNESCO



Dear BSP participants,

It is a pleasure to announce the 25th anniversary of The Baltic Sea Project!

The fact that the Baltic Sea Project has provided everything that is now called education for sustainable development for all these years is remarkable. After all the negotiations, decision-making, acquired knowledge, skills, attitudes and values, BSP has grown bigger. The knowing that the hard work of the participating teachers, students and coordinators has been noticed and it has been fruitful, should give them all even more willpower to continue with the various actions designed to increase the awareness about the problematic condition of the Baltic Sea. I thank you from the bottom of my heart – you have made the BSP a wonderful example of an international network in the UNESCO Associated Schools Project Network.

This newsletter is the second edition published in Estonia, supported by the Tartu Environmental Education Center, Estonian Ministry of Education and Research, and Estonian Environmental Investment Centre. It provides an insight to all the wonderful educational events that have been organized, the methods that have been used, and the new connections made in 2013, as well as what to expect in 2014. Enjoy reading! Your suggestions about the newsletter or any other matter are always appreciated.

Although this year marks the end of the United Nations Decade of Education for Sustainable Development (2005-2014), we will continue shaping the future together. Be kind to one another and continue looking after our common sea!

Gedy Siimenson
General Coordinator of the UNESCO Baltic Sea Project



At the Dawn of the BSP

► **LIISA JÄÄSKELÄINEN**, *initiator and first coordinator of the BSP, Counselor of Education, Finnish National Board of Education, currently working on the reform of the basic education curriculum*

At the end of the 80s the world was worried about the potential confrontation of the superpowers and the alarming news concerning the state of the environment. The state of the Baltic Sea was one of the deepest concerns for Finns. At that time I was acting as a coordinator of the UNESCO Associated Schools Project (ASP) in Finland and shared these concerns. The ASP was a pilot project for the implementation of international education, which, already in those days, included a seed for environmental education. What could educators do in order to diminish the tensions in the region and make a contribution to a cleaner Baltic Sea?

I compiled an initiative for the Finnish National Commission for UNESCO designed to promote cooperation between educators in order to work for a cleaner Baltic Sea. The formulation of the BSP was started. Naively, I thought that the environment was such a non-political issue that no one would reject it. Some of my colleagues were more doubtful: "The Soviet Union will never join, the DDR will never join." Mr Erkki Aho, Director General of the Finnish National Board of General Education and chairman of our National Commission for UNESCO, took the initiative to a meeting of the European Ministers of Education and later also to the General Conference of UNESCO. The BSP was added to the UNESCO program and budget for 1990 - 1991. I worked for the first three years as the general coordinator of the BSP.

Via their commissions all the states on the coast of the Baltic Sea were invited to attend a meeting in Helsinki by the Finnish National Commission for UNESCO. They all said yes. The BSP started to create a new kind of cooperative practice involving the educators from countries sharing common

environmental problems. From the very beginning the project was aimed at developing school-specific, national and international models of action by the following means:

- building a network of ASP schools, educational institutions and INISTE¹ teachers and schools located in the Baltic Catchment Area;
- collecting and developing common programs for environmental education;
- organizing joint activities and events; and
- publishing the BSP newsletter and other relevant information.

Personally, I also had the pleasure of introducing the ideas of the BSP to the interregional meeting of the IRP² in Bangkok, Thailand. During subsequent years, the BSP's stimulating ideas were initiated and implemented around the



The Lithuanian students at the opening ceremony of the international conference in Kotka, 1992.

PHOTO: REET KRISTIAN



world. UNESCO supported many associated projects and still does. The BSP has inspired teachers working for a better environment of the Danube, Volga and Mtkvari (in Turkey, Georgia and Azerbaijan) Rivers, Lake Victoria, the Gulf, Sea of Japan, North Sea, Caribbean Sea ...the reader may know many more. In Finland, many waterway-specific local initiatives were implemented.

The possibility of Trans-Baltic cooperation deeply inspired many educators at the end of 80s and beginning of 90s. Due to the Cold War, Trans-Baltic cooperation between educators was precluded for decades. A strong flavor was added to the BSP activities by historical momentum – the Soviet Union collapsed, the Baltic States re-declared their independence, East and West Germany were joined, and Poland reinstated its democratic constitution. During the same years, a serious revolution in the understanding of learning and the construction of knowledge started to occur, at least, in Finland. This opened the way to reforming teaching methods – and this revolution is still underway. Science teachers were very involved in the task related to the Baltic Sea. It was much easier to motivate Trans-Baltic educational cooperation by peer learning methodologies of science education than that by furthering *détante* as such in education.

In September 1992, about 350 people gathered in Kotka, Finland to celebrate the first period of the BSP, to learn practical working methods and make future plans. The discussion paper produced for the conference underlined the

importance of **organizing meaningful sequences of learning activities** including elements such as

- identifying an environmental challenge to be worked with
- sensitizing experiences (contacts with nature, esthetic experiences)
- scientific study
- using different types of information sources
- documenting and compiling reports
- drawing conclusions
- identifying conflicting values and aims of the different groups of interest involved
- planning and implementing activities aiming at the protection of the environment and the furtherance of sustainable development. And all this with personal involvement, devotion to life-preserving values and an orientation on the future.

When I recall this, I recognize how long we have been working with the challenge of interdisciplinarity. Some answers will be provided by the reform of the basic education curriculum, which is currently underway in Finland.

Through the BSP Newsletter, I convey my warm gratitude to all of you who have kept the BSP flame live and who have created new visions and methods, as well as organized meaningful sequences of learning activities. The BSP, with its associated projects supported by UNESCO, continues to shine and demonstrate its potential for fostering global responsibility. This is what we need more and more of in the future.

People make things happen. The BSP coordinators in Latvia, in 2012.



¹⁾ INISTE International Network for Information in Science and Technology Education
²⁾ IRP Interregional Project to Ensure an Improved Multiplier Effect of Results Obtained through the Associated Schools Project



■ **Oskars Selikovs**
2005-2009; high school student

My brightest memory connected with the BSP is the people that I met. It was very interesting to meet pupils from different countries. I realized that only together can we change the world and the BSP made me see that first of all you have to change yourself.

■ **Daina Ozolina**
1997; PR specialist at the Ministry of Defense of Latvia

I took part in the BSP "From Words to Action" in Nyköping, Sweden in June 1997, and this was my first international experience. There are two bright moments and two life lessons I learned from this event - Carpe diem! and sustainable development. The participation in the improvisational theatre play gave me the feeling that everything can be changed in a second; the important thing is to make the right decision. And the visit to the eco house with its solar panels and environmentally friendly sewage and water supply systems made me realize the importance of long-term thinking for better living. We enjoyed the event and our stay in Nyköping so much that we almost missed our ferry to Riga. Teacher had to make a call and they delayed the ferry for 10 minutes for us to board.

■ **Jānis Jekovičs**
2008- 2011; high school student

It was a great opportunity for me to get new experiences and knowledge about exploring nature and understanding different people. If someone gave me the chance to do that again, I wouldn't think twice, I would automatically sign up. Actually, I still maintain contacts with friends I met at the BSP camp. It's really good chance for every student to get more friends, practice English and, of course, to be ready to take care of something important that links us all together - the Baltic Sea.

■ **Agate Reuta**
2005-2009; HR management-personnel specialist

My brightest memory is the excursion to the Visaginas Nuclear Power Plant in Lithuania, it was so impressive and that was the time when I realized that, due to this project, I had a unique opportunity to see it. And even better, I became such good friends with the Lithuanian students that I started learning their language while I was there. Honestly, it is difficult to choose one bright memory, because the entire time that I participated in BSP projects was like an adventure. And now I am still very proud that I took part in such a notable organization. Thank you!

■ **Triinu Orumaa**
1992-1994; social pedagogue at the Pirita Secondary School of Economics

For me the best part of the BSP was the international meetings. It was amazing to meet so many people of your own age who shared the same interests. Plus the nice weather, interesting workshops and presentations, cheerful evening activities - that is pretty much all that is needed to create the cheerful easy-going atmosphere that we all enjoyed. Still, my brightest memory from Kotka is our "hotel", which was an old boat in a small harbor. We slept in tiny cabins and climbed narrow stairs. It was a real seaside life experience!

We posed a question to the previous BSP students: "What is Your Brightest Memory in connection with the BSP?"

■ **Hannah Peterson**
1992-1998; environmentalist

I have lots of good memories from BSP - what we did during the BSP years was truly student science! One of the good memories I have is in connection with the international BSP meeting in Sønderborg, Denmark, for which a BSP song was composed. Each country translated the song into their language and sang it during the opening ceremony.

■ **Mārtiņš Vaivads**
2012; high school student

My most valuable memories of the BSP are the simple, yet thought-provoking discussions about the condition of the Baltic Sea. It was nice to see that everyone (teachers, students, etc.) participated in trying to find solutions to the problems - every opinion was considered and discussed; everyone was given an opportunity to express their outlook.

■ **Sintija Kalnina**
2005-2010; Communication assistant at Swedbank

There are a lot of bright memories in connection to the Baltic Sea Project, and they all are really good and wonderful. But if I have to identify only one, it could be the evening when we (Latvians and our new Finnish friends) got lost in Stockholm. Although it was a little scary, we had such a good time talking and wandering through the streets of Stockholm. As you can see, my current profession is not directly connected to the environment or nature, but the knowledge I acquired by participating in the Baltic Sea Project, has enriched me personally. And I don't mean only all the interesting and useful conferences that raised my awareness about the environment as a very important component of life, but also lots of the unforgettable trips and adventures, multicultural experience and friends.



PHOTO: EERIK KEEREND

Gulf of Finland Year 2014

On 21 January 2014 the international Gulf of Finland year was opened in Helsinki, aimed at improving the ecological situation of the gulf. Three neighbouring countries will cooperate to this end – Finland, Estonia, and Russia.

At the opening ceremony in Helsinki it was admitted that even though the Gulf of Finland is in a better state today than it was decades ago, serious work is still needed. Currently the gravest problems of the gulf are eutrophication and the burden imposed on the marine environment by intensifying ship traffic. As the environmental problems arise directly from the economic activities of the surrounding countries, their cooperation is also needed in the sphere of environmental protection. The cooperation partners are committed to the project on a high political level – Presidents of all the three countries are the patrons of the Gulf of Finland Year.

For the Gulf of Finland Year, cooperation has been planned on many levels. Researchers will use state-of-the-art methods and models to identify the exact ecological situation of the gulf and develop proposals to improve it. The researchers are focusing on five topics:

- fish and fishery;
- pollution and ecosystem health;
- marine bio- and geodiversity;
- maritime safety;
- maritime spatial planning.



As a result of the Gulf of Finland Year, a Gulf of Finland Declaration will be formulated, setting out the main measures to improve the health of the gulf. The declaration will outline the initial protection and sustainable use of the sea until the year 2021. Furthermore, young people of the three countries will draw up their message for the sea. The joint message will be delivered to the heads of all the three states.

The Gulf of Finland will be a topic of discussion in the region throughout the year. Ministries, cities, business and NGOs will participate in the project. Various events will be held for researchers, schools, politicians and the public. An extensive cultural programme has been designed to encourage the public to think about the health and future of the Gulf of Finland.

More information about the Gulf of Finland Year can be found on the website [HTTP://WWW.GOF2014.FI](http://www.gof2014.fi)



Protect the Baltic Sea

► **ANNIINA LAITAKARI**, *Piispanlähde School, Kaarina, Finland*

My little cousins from Kuopio hadn't never swum in a sea, not until a couple of years ago. Their first touch with the Baltic Sea was at Hovirinta Beach during their visit to us here in Kaarina. They thought that it was really exciting to swim in the sea...

I feel that we are too used to the Baltic Sea. It has always been there, near to us. We have been able to swim, paddle, fish and sail there. But what if the Baltic Sea did not exist tomorrow anymore? What if it was full of pollution or just disappeared? What does the Baltic Sea mean to us?

Throughout the history the sea has been very important to people. It's a source of food, you can clean yourself in it and you can use it as transportation route. That's why the early Finns have moved near to the Baltic Sea. Nowadays our sea is important for the fishing industry, tourism and "ordinary people". Imagine how you would feel, if the Baltic Sea was just a dirty pond!

The truth is that the Baltic Sea is one of the most polluted seas. It can still be saved, though, but the saving process must be started immediately. Otherwise we may not be able to enjoy our precious sea anymore.

People have already done a lot, but it is not enough if we intend to save our sea by the year 2021. There are many ways to help, but none of them is easy or simple. Different foundations like BSAG (Baltic Sea Action Group), The Finnish Association for Nature Conservation and WWF have been a great help in this saving process. They all have put a lot of effort into fundraising and sharing information for the benefit of the Baltic Sea.

National and International summits and agreements between coastal countries and companies are needed to jointly find the solution. One of the main agreements is the Helsinki Convention, which has laid the basis for a permanent body, a Baltic Marine Environment Protection Commission - Helsinki Commission, also known as HELCOM.

People's own decisions and actions are also very important, e.g. minimizing the use of private cars, endorsing organic food, reducing the eating of farmed salmon. People should also stop throwing things to the sea that do not belong there. We must also encourage the politicians to make sustainable decisions. Everything that's good for the environment is good for the Baltic Sea! Every one of us can help to save our sea! Somebody just give me only one reason, why this wouldn't be important.

“The most important thing is to convince people about how essential it is to save the Baltic Sea.”



This drawing (fragment) was made at BSP Winter Camp in Estonia. Author Helen Birnbaum



Meeting a frog. The Santahamina school wants to increase awareness about the Baltic Sea on several levels: increase knowledge, but also give the children concrete experiences of *being* by the sea and give them a chance of *feeling* it.

Creating a Connection to the Sea in School

► **TINA NYFORS**, project expert at the Citywater project, co-funded by the EU Life+ program, Helsinki Environment Centre, Finland

How about having a school day on the beach? You and your fellow class mates collect algae and beautiful stones, meet small insects, see a jellyfish (*Aurelia aurita*) in the shallow water close to the shore, and perhaps a frog comes jumping through the sand.

This has been experienced by pupils aged 6-12 years on a Baltic Sea day organized by their school, Santahamina primary school, in Helsinki in Finland. The school is located in close connection to the sea, and this is something that the teachers have wanted to use in their teaching.

There is an environment group working actively in the school, consisting of two pupils from each group, five teachers and members of the school's personnel. The tasks of the Environment Group consist e.g. taking care of the environmentally sustainable way of doing things in the everyday work and also educating others working in the school. The interest in the Baltic Sea made the school join **the Baltic Sea Challenge**, an international network for saving the Baltic Sea.

We want to increase awareness about the Baltic Sea on several levels: increase knowledge, but also give the children concrete experiences of *being* by the sea and give them a chance of *feeling* it, says Päivi Haapaharju, teacher and a member of the school's Environment Group.

SATURDAY SCHOOL DAY BY THE SEA

As part of the Baltic Sea engagement the school has organized a "Saturday school day" where the pupils spend the day outdoors by the sea, experiencing and investigating it from dif-

ferent angles. Workshops with themes such as history, plants, birds, art, and geography give the children a firsthand experience of their environment, and they document their experiences through taking pictures and videos with iPads.

When linking knowledge, experiences and feelings, then a connection is created to the Baltic Sea and the local environment. Having a relation to the environment opens up for a willingness to receive and understand information, Päivi Haapaharju explains.

This is one of the main principles of environmental education, and the thematic workshops have turned out to be a good tool. The questions posed by the children and their willingness to get to know more and understand have been guiding the learning process.

The Santahamina school, who joined the Baltic Sea Challenge network in June 2013, works with Baltic Sea issues in two ways; first, awareness was raised in the own school. A teacher with a background as a marine biologist compiled an information package about the Baltic Sea and held an internal education for the other teachers. Now all teachers in the school are able to implement issues related to the Baltic Sea in their teaching.

The second step was bringing out the message to other schools and organizations in the area. This is done by the school's environmental group that consists of elder pupils and teachers who do visits in order to increase awareness about the Baltic Sea.

SCHOOLS ACT FOR SAVING THE BALTIC SEA

The Baltic Sea Challenge cooperates with several schools, among the 200 partners there are 16 schools and education



Kim, 7 years: "We have been painting art works of the Baltic Sea, without using any pencils. We have been painting with natural material, with what we found on the beach."

Join the Baltic Sea Challenge!

The Baltic Sea Challenge network welcomes all cities, municipalities and organizations around the Baltic Sea to join the network. It is easy to join: you can read more about the Challenge on the website WWW.BALTICSEACHALLENGE.NET and please be in contact with the coordinators that will guide you forward!



EU Life



The Baltic Sea Challenge

The Baltic Sea Challenge is an international network for saving the Baltic Sea. Focus is on concrete action at the local level. Among the partners are cities and municipalities, schools and education institutions, NGOs, labour unions and companies. Partners do actions that improve the state of the local waters as well as of the Baltic Sea as a whole.

The Baltic Sea Challenge was initiated in June 2007 when the Mayors of the Finnish cities Turku and Helsinki made a commitment to improve the state of the Baltic Sea. By their own commitment the cities want to show initiative and reduce their loading to the Baltic Sea, and inspire others to do the same.

institutions. As part of their engagement in the Baltic Sea Challenge, schools have for example increased environmental awareness through providing courses related to the Baltic Sea. Also higher education institutions have joined the challenge and actions they have done include for example produced a web portal about the Archipelago Sea, provided education about oil spill prevention, and invested in water quality measurement equipment.



Algae *Fucus vesiculosus* found by the shore, collected by the pupils during the Baltic Sea Day. The children saw jellyfish (*Aurelia aurita*) in the shallow waters by the shore.



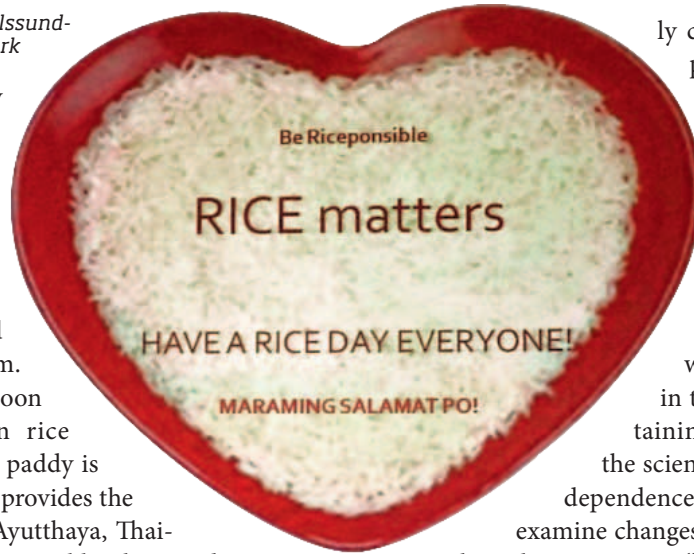
HOPE for the Asian - Pacific ESD Rice Project

> **BIRTHE ZIMMERMANN**, *Alssund-gymnasiet Sønderborg, Denmark*

I have recently planted my first rice ever, and first time experiences seem to linger in my mind forever. I just threw the plants up into the air, and they came down, roots first, and stuck in the wet mud that was prepared for them. The brown mud patch was soon transformed into a green rice paddy. I learnt that the rice paddy is part of a school garden that provides the Jirasartwitthaya School in Ayutthaya, Thailand, with the fruit, rice and vegetables they need. The 4000 pupils come here to participate in the procedures, the preparation of the soil, the planting and nursing plants, and the harvest. The Thai king's "sufficiency economy philosophy" is carried out in practice here.

ESD RICE WORKSHOP 16-19 DECEMBER 2013

I am here on a kind invitation from the Asian-Pacific Cultural Center for UNESCO (ACCU) to be a key note speaker and to share my personal experiences on organization and structure in the UNESCO Baltic Sea Project, and on challenges met and obstacles overcome, when focus in the BSP shifted from Environmental Education (EE) to Education for Sustainable Development (ESD). Mr. Nagata, Professor, University of Sacred Heart, Tokyo - known by many BSP members - follows up, bridging the west with the east. Sustainability is a concept that includes us all at a personal, local, national, regional and global level. We all need to grasp the concept and to make an effort for our one planet. Participants from India, Indonesia, Korea, the Philippines, Thailand and Japan met in Thailand for the first time. On day one they worked in national groups presenting their ideas of the ESD Rice concept. Rice is the entry point and in focus, be it production of rice, products made of rice, biodiversity connected to rice paddies, sufficiency economy, culture and lifestyle and rice festivals. In a part of the world where risk disasters - tsunamis, earthquakes, floods, typhoons - are increasingly frequent the concept of sustainability is close-



ly connected to climate change, peace issues and social skills.

HOPE

What is the connection between UNESCO ASPnet schools in the Baltic Sea Project and the UNESCO ASPnet schools in ESD Rice Project? In the BSP students work for a better environment in the Baltic Sea area and for obtaining a better understanding of the scientific, social and cultural interdependence between man and nature. To examine changes a timespan is needed. This is how the programme "Environmental history" developed among BSP teachers and became an important tool. The work in the ESD Rice workshop is based on principles that can be made into a beautiful flower with several petals.

- H** for a holistic approach,
- O** for a project based on ownership,
- P** for partnership and participation, and
- E** for empowerment of people.

Methodology is very similar to methods used in the Baltic Sea Project.

DESD - THE UN DECADE FOR EDUCATION FOR SUSTAINABLE DEVELOPMENT 2005-2014

If successful the ESD Rice Project will be an important contribution to the UN Decade (2005-2014). Members of the Baltic Sea Project have worked with the ESD concept long before the UN Decade. Learners Guide 3 "From Words to Action" and "On the Threshold Baltic 21" have served as pilot functions for schools in promoting and implementing ESD. But education for a sustainable world is constantly needed, our world is constantly changing, and continued dialogue is needed. Challenges such as funding, curriculum, language, will have to be overcome, and teachers, principals, colleagues and students have to be committed to the project. Otherwise it will not succeed.

Much still needs to be done in terms of development and implementation, but like the Baltic Sea Project has sister projects around the world, e.g. The Blue Danube River, the



PMO, the Sandwatch in the Caribbean area etc. I really hope that the Asian-Pacific countries will overcome the challenges, develop their “ESD Rice – English” and programmes and flourish from the mutual benefits that is the outcome of international cooperation. On the first day the six groups consisted of national member only. On the second day the six groups merged into four international groups and worked on developing their rice paddies that requires energy from the sun, but that can also be challenged due to insects, floods and other hazards.

Jirasartwittahaya school in Ayutthaya, Thailand, hosted the workshop during an impressive day, and participants met staff and students presenting their skills – so rich in diversity! The ending was likewise impressive with a light and sound show performed among the UNESCO World Heritage ruins. The workshop was organized by Asia-Pacific Cultural Centre for UNESCO and UNESCO in cooperation with Thailand National Commission for UNESCO. Thank you for the wonderful experiences – and good luck: I really hope that the Baltic Sea Project has a viable sister project in the Asian-Pacific region! After the workshop my optimism is intact, despite the challenges and obstacles and barriers that have to be overcome. Together you can.



RICE, a staple food product in the Asian-Pacific area is the common denominator for the schools working in the ESD RICE Project. In Jirasartwittahaya School pupils present their work to the workshop participants.

PHOTO: BIRTHE ZIMMERMANN

The Jirasartwittahaya School garden gives food for thought and stomach. Participants in the ESD RICE workshop transformed this brown patch in the school garden into a green rice paddy in just 15 minutes. An almost symbolic starting point.

PHOTO: BIRTHE ZIMMERMANN





A global Internet conference
Agenda 21 NOW! in Trier, 2013.

PHOTO: MARTIN JARRATH



AGENDA 21 NOW!

► **MARTIN JARRATH,**
Agenda 21 NOW! coordinator

// **A**genda 21 NOW!”, the global communication project for students on sustainability, has been described in the BSP Newsletter several times, and this article is not going to be a repetition. This time, before describing what we are heading for in this year’s campaign, I’d like to talk about two persons who have been working in the team since its very beginning.

First of all there is **Thomas Detsch**, 33, an IT engineer, who currently works as such for a large US IT-company in Stuttgart. Thomas graduated on the day of our first conference, 5 June 2000, when he had to pass his final oral examination at Anna-Schmidt-School, Frankfurt am Main, Germany. By then, being an IT genius as a school student already, Thomas had created – programmed – Agenda 21 NOW!’s Internet communication platform that once a year

brings hundreds or thousands of participants from five continents in touch.

Thomas passed his examination, and the first conference went very well even though a heavy thunderstorm, nicely illuminating the skyline of Frankfurt’s skyscrapers, affected our web server for a certain time in the early morning on that day.

Since that time Thomas has been responsible and further developed what is the technical heart of our conference. If you take part on 10 April this year, if you can read what other participants have written, if you add your own contributions at our upcoming fifteenth conference, if you enjoy a (hopefully!) great conference it is Thomas’ technical work, it is Thomas’ software that enables our worldwide communication.

The second person to be mentioned here is **Johannes Steinmann**, 28, a doctorate student of engineering and former student of Comprehensive School Kandel, Germany where I once taught. Johannes operates and takes care of



the Internet server Thomas' software is running on. Besides Thomas' software, it is a quick and well-looked-after Internet server that makes our project possible. Recently, Johannes moved our conference to a state-of-the-art server, for maximum performance and safety.

Johannes joined the project in the year 2001 when he was a school student, and he has been part of the Agenda 21 NOW! team since.

In February 2013, a year ago, I changed my place of work from the city of Trier in Germany's southwest to a school in Flensburg, on the northernmost tip of Germany. Since then, Agenda 21 NOW! has successfully developed a joint activity, with students from secondary and upper secondary levels from both my former and my current school preparing and running the annual conference as well as the website. It is really nice seeing students from Humboldt-Gymnasium Trier and Kurt-Tucholsky-School Flensburg working together on many different levels.

HERE ARE A FEW WORDS ABOUT THE TOPIC OF THE UPCOMING CONFERENCE 2014:

Both the mentioned schools, my current one in Flensburg as well as the former one in Trier, are situated in a border region. The city of Trier is close to the countries of Luxembourg and France, and Flensburg is even closer to neighbouring Denmark. Even though the Schengen treaty allows free travelling between all these countries, the borders are still there, and it is not only the political borders that prevail. Cultural borders, language borders, borders of understanding and many more don't just disappear because it has become easy to cross the old boundaries between countries. We have found out that a lot of prejudices exist on all sides of the given borders, and we would like to set these prejudices in focus during our next 24-hour global conference on 10 April.

Knowing a bit about a lot of prejudices in Europe, we are quite sure there are such prejudices about neighbours all over the planet, in all areas, on all continents. We assume that focusing on and working with prejudices is a good idea for a conference with students on sustainable development. Our hope is that in this way we can work for more social sustainability.

The first global Internet conference started in 1999. It is really nice seeing students from different schools working together on many different levels and issues.

PHOTO: WWW.AGENDA21NOW.ORG



During the conference we will ask the participants to mention all kinds of prejudices they might have or know. We would like to jointly analyse these prejudices, together with international experts, and draw conclusions that will be summarised in a resolution. The participants may vote on the resolution a couple of days after the conference. During the conference there will be conference rooms and workshops with one workshop preparing the resolution text throughout conference day.

As always the conference will be a written conference. This means the registered participants will write messages and replies to messages within conference rooms and workshops. All messages will be available throughout the conference, and any message may be replied to at any time. Therefore, if you don't have time to stay online for the whole 24 hours, it makes sense to come back to the conference at times to see new replies and new messages, and to write more replies and messages ...

As said before, the next conference is on 10 April, 2014, the duration is 24 hours, from 00:00 to 24:00 h UTC. The exact topic is: "Prejudices against the world – the world against prejudices". See you on the net then?

More information about the conference can be found on the website [HTTP://WWW.AGENDA21NOW.ORG](http://WWW.AGENDA21NOW.ORG)



BORDERS - a New Comenius Project for BSP Schools

► **UTE GRÖNWOLDT**, National BSP Coordinator in Germany

Did you ever pay attention to the borders around you and inside you? The Baltic Sea Project is 25 years old in 2014 – and we are mostly focused on our similarities. Well done. But the borders still exist – whether obvious or hidden, they are there!

- Geographical and political borders
- Language borders
- Cultural borders
- Socioeconomic and small-scale borders (inside countries, towns...)
- Borders in our heads

Our brainstorming on this topic was one of the liveliest and most enlightening debates for me.

What are they: Burden or Benefit? Bridges or Barriers?

We think we should take them into account, and so we started a new Comenius Project for 2013 - 2015, titled “**Borders: A Burden or Benefit - Bridges or Barriers?**”



Four countries, Poland, Sweden, Denmark, and Germany are participating in the project.

Seven BSP schools at different levels with hundred of participating students and teachers with an unknown number of nationalities and identities are participating!

In this project we will focus on

- Raising our awareness about all types of borders, including those in our heads;
- Increasing our sensitivity about the existence of such borders including the need for them, as well as the challenges and opportunities they entail;
- Developing action competence related to all these borders and making a greater contribution to a sustainable way of living together.

A hundred and ten very committed BSP teachers and students came together for the first meeting on the island of Sylt

The first project meeting took place on the Sylt island, Germany

PHOTO: WWW.SYLT.DE

in Northern Germany. The purpose of this meeting was to come together, plan the project activities, organize the international school workshops related to the main topic, elect the students representatives, and start the multimedia communications.

The next meeting will take place in Stockholm, Sweden in May 2014. Do you have any ideas, questions or suggestions? We are really interested in! Please contact your BSP coordinators or send a mail to the author: UTEGROENWOLDT@T-ONLINE.DE.

By the way, do you think we should start planning something similar in the future? We do! Where are the borders? Are there burdens or benefits – bridges or barriers?



In 2012–2015 the Heart of the Baltic Sea Project is at the **Tartu Environmental Education Centre**

► **SIRJE JANIKSON**, *national BSP coordinator in Estonia*

Since 2012 the Baltic Sea Project has been coordinated by Estonia, mediated by the **Tartu Environmental Education Centre**. As the new eco-friendly building of the Centre was completed last year, we would like to introduce to the readers both the activities of the Centre and the building in which it operates.

DIVERSE CENTRE

The Tartu Environmental Education Centre is an open and friendly institution valuing children as well as the environment – both are taken good care of.

It is our wish that Estonia should care about the environment and pursue an environmentally sustainable lifestyle from generation to generation, that people should notice

and know the natural environment around them and care about all living beings and their living environment. Dedicated to this goal are the children's and youth's hobby school (Tartu Nature School), Environmental Information Centre and Adult Training Centre. Special attention is being paid to young people. The various curricula offered to schools, kindergartens and families as well as the daily work of the Tartu Nature School are based on environmental sustainability principles and promote eco-friendly habits among young people. Teachers and support staff all act in an eco-friendly way because they know that each action will change the world.

THE NEW BUILDING WAS MADE ECO-FRIENDLY

The newly opened building was inspired by a pattern of the cracks of a drying tree stump. The three wings of the building



The new eco-friendly building of the Tartu Environmental Education Centre was completed in 2013.

A greenhouse of the Nature School. All rainwater falling on the roof is collected and used to water the greenhouse plants. The fruits from the greenhouse are used in the organic kitchen and fed the mini-zoo animals.

The Nature House is open for both the young and the old.

PHOTOS: JAAN SOKK

are the three cracks in the stump, housing the greenhouse, Environmental Information Centre, and Nature House. The latter is like the pulp of the tree and the source of paths and study trails into the park that surrounds the house. The entire park is used as a study area with study corners, an organic garden and a playground located in its different parts.

The walls of the building are boarded with natural-hued larch and the roof is covered with seamed metal as typical for the district. The house has been effectively thermally insulated, which is why the heating energy consumption of the rooms is minimal. Passive solar energy is also used. Rainwater falling on the roof is led to tanks under the greenhouse. The collected rainwater is used to water the plants in the greenhouse and garden. The fruits grown there are used in the organic kitchen and fed to the mini-zoo animals. Green waste from the park is composted on the spot. The decomposition process, the formation of compost and the soil organisms living in it are visible through the glass walls of the compost boxes.

Pupils and teachers of the BSP schools are welcome to discover the activities of the centre and its new building.





“Energy saving is one of key factors affecting decisions on conservation and renovations works in our school.”

How Important is Energy Saving for You?

> **TERESA KAMIŃSKA**, *Mariusz Zaruski Lower Secondary School in Ustka, Poland*

Climate change is a global issue today. Man has huge impact on these changes by energy production and usage methods. We use energy every day, almost at every turn. The result is greenhouse gas emissions into the atmosphere.

Learning about saving energy and using it reasonably should play an important role in our education. We aim to increase consciousness of next generations.

Decreasing energy usage by replacing the current devices with more energy-saving ones and keeping in mind not to waste energy has big influence on customers as well. The lower we keep energy usage, the lower the bills we get.

Students of Mariusz Zaruski Lower Secondary School in Ustka took up a task to prove that everybody can contribute to energy saving. They decided to find out the most energy-

wasting places of the school and draw a saving plan. The main goal was to achieve better energy performance.

While preparing for the task, the students went to municipal heating plant together with an energy performance auditor. During the next weeks, the team was also working to find places in the school where energy could have been used in a smarter way.

The students looked for ways how the school could decrease its energy use and bills as well. The renovated part of the school has glass walls, ceilings and large windows in halls. Thanks to glass parts, vast majority of daylight can enter the building. Additionally, lots of sunlight warms up the interior. Lamps located by monitoring cameras and in the toilets are equipped with movement sensors and the ones located outside the school (which are high quality, sodium, high pressure lamps), switches on and off using twilight sensors. Every



A class of ecological and touristic profile from Mariusz Zaruski Lower Secondary School in Ustka visited a municipal heating plant.

PHOTO: TERESA KAMIŃSKA

Energy audit discussion. Energy performance auditor Mr Eugeniusz Trzpis visited the school and gave his advice concerning sustainable energy use in school.

PHOTO: TERESA KAMIŃSKA

classroom is equipped with fluorescent lamps, which meet special regulations for classrooms and consume as little energy as possible. Solar panels for water heating purposes are installed on the roof. Our old TV sets and CRT monitors are regularly replaced with modern ones. There are also building insulation works in progress.

Many more actions should be undertaken to improve energy performance. Unfortunately, those most important are expensive, so the actions must be spread across several years. The most substantial work is wall and roof insulation (with mineral wool), especially at gyms and sports halls. We also do our best to modernize the heat distribution center, install building automation and change the design of radiators and room ventilation. The rest of less-expensive solutions can be applied gradually (i.e. changing the sports hall's windows, the doorsteps or the radiator heat reflectors). Some of these solutions are now at their early stage.

The students presented their final results to the board of directors.





Visiting the Seals

► **KAIDO HAAGEN**, *photographer*

When visiting someone for the first time, you are usually overwhelmed by excitement and anticipation. What will they look like? How will they react? Will they appreciate me? Further contacts become easier once these questions have been answered.

I clearly remember my first underwater encounter with a grey seal about ten years ago. I blamed the muddy water and poor equipment for not getting a good picture of the animal. In retrospect, my failure was obviously due to my own lack of knowledge and experience. This photo was taken on one of my most recent encounters with this wonderful creature. The conditions were almost the same as the first time but this time the result is good enough to share.

The trick to taking underground pictures of a seal is to get close enough for a good shot within about one meter. However, you cannot approach them; they have to come to you, because you can't compete with seals when it comes to swimming. With sufficient knowledge, it is possible to increase the likelihood of a close encounter, but luck will always play a big role. When you finally have those few valuable seconds for a good shot, it's up to your professionalism whether or not you can make the most of the moment. In this case, I was able to snap three pictures of two playful young grey seals. Only one of the pictures turned out well.

More underground photographs are available at WWW.KAIDOHAAGEN.COM

Playmates.

PHOTO: KAIDO HAAGEN



THE STORY OF A PICTURE





Common Environmental Researches in the Whole BSP Area

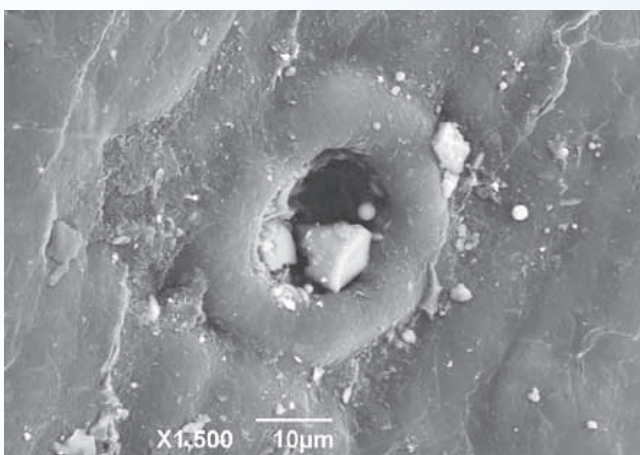
Sampling Trip of the Meri-Pori Upper Secondary School to the Kola Peninsula

> **HANNA NUMMINEN**, Meri-Pori Upper Secondary School, Finland

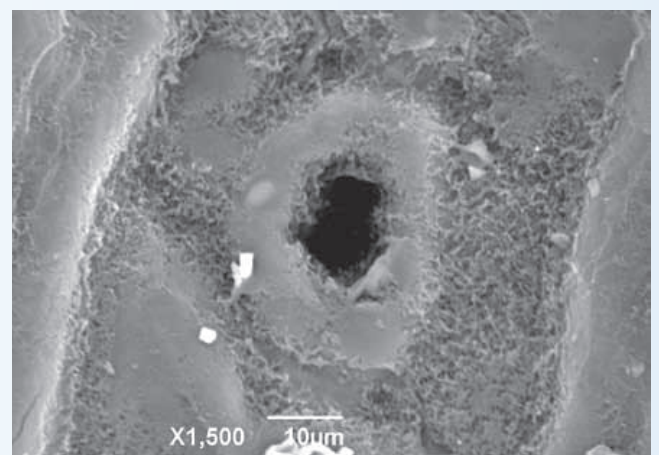
This was already the seventh needle sampling trip of the Meri-Pori Upper Secondary to the Kola Peninsula Russia. The aim of the trip is to collect needles from exactly the same places every time. Then the amount of total sulphur, copper and nickel is measured from them. Especially the total sulphur quantity of the pine needles is generally used as an indicator when the sulphur deposition is studied. We study how far do emissions of the Monchegorsk smelting plants have an effect. The clos-

er the sampling place is to the smelting plants (especially to the North) the bigger the amounts of the impurities are in the needles and the *Pinus sylvestris* trees are not doing well. Very near the smelting plants there are no trees at all.

The conditions of the needle foliage reveals the amount of impurities in the air, hence needles are used as so called bio indicators in environmental studies. The damage of the needles indicates a decrease in the trees energy and growth rate and even death. The cells of the surface layer protect the needles from e.g. dehydration. Scanning electron microscopy (SEM) photographs show the surface structure of pine needles. The air holes and lip cells surrounding it can be seen from the photographs. Moreover, the structure of the wax layer, and also different impurities caught in the surface of the needle can be observed.



This is an electronic microscope photo of a pine needle from a tree which grows near the Monchegorsk smelting plant. In the picture is seen that wax layer is totally worn away.



This needle picture is from a tree that grows in Nature Reserve Area of Värriö in the Lapland. Air is rather clear here although long distance deposition has some effect. The wax layer is in quite good condition but not perfect though.



A Diary of a Trip to the Kola Peninsula

➤ **TATU KORKIAMÄKI, KONSTA SANDBERG,**
Meri-Pori Upper Secondary School, Finland

■ Wednesday, February, 6th, 2013

We took off from our school at 5a.m. by bus. During the day we drove north to Lapland. At nightfall we arrived in Ivalo staying in a camping center called Ukontupa placed besides a beautiful mountain lake. We went to sauna and grilled some sausages.

■ Thursday February, 7th, 2013

We were supposed to leave early in the morning, but our bus was frozen. On that reason we had to wait until it was repaired. At afternoon we reached to the Raja-Jooseppi border station arrived to Russia. We also saw couple of moose on a frozen river. We took some needle samples from predetermined pines on our way to Murmansk where we arrived at evening. We stayed in a hotel, where we enjoyed a royal dinner and some piano music.

■ Friday February, 8th, 2013

After delicious breakfast we had few hours to explore Murmansk. Then we continued our trip towards Monchegorsk collecting a significant amount of needle samples near the metal smelting plants. There were hardly any trees from many kilometers north Monchegorsk. We stopped in the middle of an industrial desert to grill sausages. In the evening we arrived to a Monchegorsk school, where we watched a wonderful show, presented by the students. We also played volleyball together with the local people. We are grateful of the hospitality of the teachers and pupils of the Monchegorsk's School number 5.

■ Saturday, February, 9th, 2013

We headed south from the school early in the morning. On the way we took several needle samples and took some photos of the local nature. We drove through the Ainjärvi border guard station to Värriö Research Center (owned by University of Helsinki) using the snowmobiles. We enjoyed a good meat soup and went to sauna. After the trip Outotec Ltd of Pori took electronic microscope photos of the needles and the laboratory of Oulu University measured the quantity of copper, nickel, sulphur and iron in the needles. Then we made a report of our results with help of our teachers. This report is in Finnish language, but maybe later we can publish some of the results also in the Newsletter of the Baltic Sea Project.

■ Sunday, February, 10th, 2013

In the morning we got introduced with the operation of the research stations. After that we ride back to the bus by snowmobiles. We took our final needle sample and headed off towards Pori. We arrived at our school little after midnight and we could go back to our homes and warm beds.



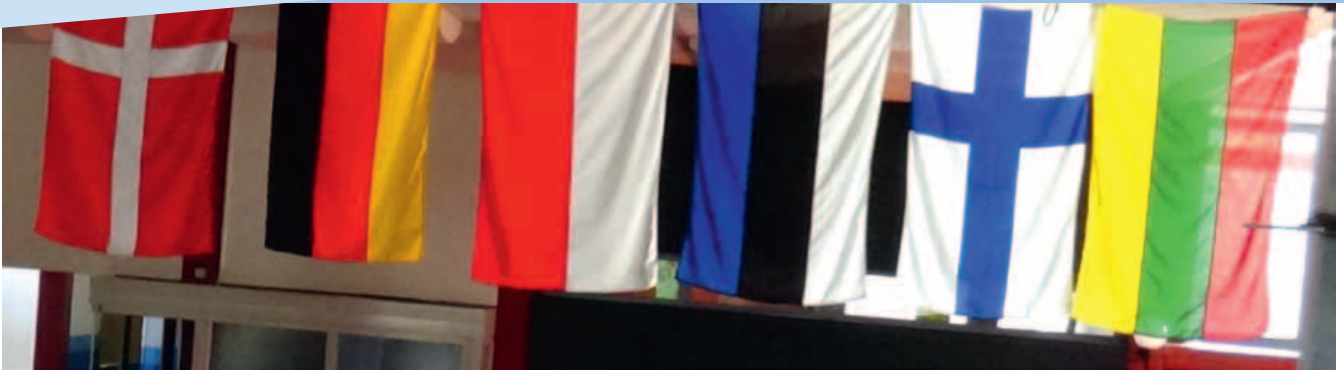
A snowmobile travel from From Ainjärvi border guard station to Värriö Research .



A group of students and teachers in the school of Monchegorsk.



Joonas is taking pine needle samples.



BSP International Science Camp 2013 in Kappeln

> **SARA FAERCH HANSEN, BENJAMIN CHRISTENSEN, MATHIAS KRISTENSEN, TOKE HOLST MOELLER, IDA MARIEGAARD**, Roskilde Gymnasium, Denmark > **FIE NIELSEN, AMALIE MARTINI, MADSDAMGAARD**, Skolen ved Vierdiget, Denmark > **AUGUSTINAS LESYS**, Vilniaus Žemynos gymnasium, Lithuania

We know a lot about space and the earth we walk upon, but only a fraction of this about the oceans that covers 70 percent of the surface of our planet. Why is it that we know so little? Because there is so much to be known. This is why it is very important to do research in marine life.

WHAT IS THE ISSUE?

The Baltic Sea is a very well examined sea because of the special conditions of the water and its surroundings. The Baltic Sea looks like a giant lake and it is only connected to the North Sea by the straits of Denmark and Kattegat. This results in only a small flow of new saltwater from the North Sea to the Baltic Sea. The flows of salt water are not frequent and therefore the Baltic Sea consists of brackish water and has a very low salinity. The flow of salt water contains oxygen that is used by bacteria for decomposing organic material. The low

salinity in the Baltic Sea has caused dead zones where no animals can live, because there is no oxygen. The salinity of the Baltic Sea is therefore closely watched to make sure the delicate balance of the ecosystem does not change drastic.

If we compare the same species of the North Sea to those of the Baltic Sea, the size of the fish of the Baltic Sea would be smaller than those of the North Sea. This is because of the low salinity of the Baltic Sea that causes the fish to use much more energy on their life processes. This has an effect on the size of the fish because it leaves them with less energy left for growing. As you can see the life in the Baltic Sea is tough and the salinity is only one of the factors that influence the ecosystem.

The Baltic Sea is surrounded by land and therefore there are released a lot of nutrients from the farming into the Baltic Sea. This results in a large bloom of algae. When these algae die they end on the bottom of the Baltic Sea as organic material that has to be decomposed by the bacteria which thereby use the oxygen in the water. As you can see this is not a bad circle and if it was not for the flows of new salt water from the North Sea, the Baltic Sea would have been one big dead zone. Luckily the flows of salt water keeps coming and though they are not frequent they still maintain the level of the salinity in the Baltic Sea. For now there is nothing to worry about, but



The groups sailed to different areas of the river and collected samples of plankton.





The in-door lessons took place in Klaus Harms Gymnasium. PHOTO: AUGUSTINAS LESYS



A model of the Baltic Sea.

it would be a good idea to keep the release of nutrients to the Baltic Sea on a minimum.

SCIENCE CAMP

On 2 September 2013, an international BSP Science Camp started on the outskirts of Kappeln, Germany. Kappeln is located on the northern bank of the Schlei River, about 35 kilometers southeast of Flensburg. Our science camp took place at Klaus-Harms school. The participants lived in tents around the school's athletic field.

THEORY AND PRACTICE HAND-IN-HAND

During the science camp we had several lectures and workshops. The lectures were given by experienced and talented people from around the Baltic Sea. Most had either PhD degrees or were PhD students. Most of the lectures dealt with a problematic situation and some research in the particular field: how we might make it worse and how we can stop it. The lectures also dealt with the tasks that the students had to undertake.

We took a boat trip into different areas of the river and collected plankton samples. On the boat trip we worked just like scientists when they examine the visibility, oxygen content or amount of algae in the water. This workshop was interesting because, afterwards, we took the samples inside to the workshops and examined the water samples. This really worked in connection with the different lectures, which were usually presented in the morning, in which the scientists told us about their work in and around the Baltic Sea. It made it all much more exciting when you could see a connection to the real work. We learned about how real biologists work and tried it out a little bit ourselves.

We modeled the changes in the salinity of the Baltic Sea and observed how it has influenced the marine ecosystems. We really liked doing these experiments and working with the other people from different countries.

FUN AND LEARNING

After dinner, the participants did team-building exercises with people who were complete strangers at the time. The students made some connections and started to recognise the faces of most of the participants. When competition exercises kicked off, there was a whole new spirit. The students had to work together to win. And winning was key.

The main part of the bonding was accomplishing during the no-limits free roaming time at the camp. It was spent buying sweets or soda from the shop or talking and spending time in the tents of the other groups.

PARTY TIME!

It was almost time to go back to home but there was one thing left – a party. The music was played by the Danish band “Copenhagen Hot Music”. Their cover of “Wake Me Up” by Avicii tore the place down. People were a bit shy at first, but when the last songs were announced and played, no one in the building stood still. It was the perfect ending to a good week.

THOUGHTS OF THE PARTICIPANTS

- I have never thought that, during summer of 2013, I would have an amazing opportunity to go to a country I have always liked and wanted to visit – Germany. It was one of the main reasons why I wanted to participate in the Baltic Sea Project. I also wanted to improve my English, learn more about the Baltic Sea and, of course, meet new people.
- During the week we learned how special the Baltic Sea is and how difficult it is to live in and adapt to it. We think it was a very interesting subject and really wish we could continue to learn more about this important subject.
- The week was both fun and enlightening. It was a place where you felt safe and could have fun with everybody. The teachers were great and motivated. The lectures were a bit boring at times, but nevertheless, it was a good week and really worth the mountains of homework we came home to.



Conference "Water" finished with common observations at the coast where the participants worked according to the BSP Coastwatch Programme instructions.

PHOTO: VELGA KAKSE.



2013 - United Nations International Year of Water Cooperation

➤ **VELGA KAKSE**, national BSP coordinator in Latvia

The United Nations (UN) has declared 2013 as the International Year of Water Cooperation. In this context the Baltic Sea project schools devoted their national activities to the theme "Water". Schools organized the Water days with different activities - competitions, lectures, exhibitions and workshops.

The spring of 2013 surprised everyone with amazing high spring water in Latvian rivers. Students carried out observations, took pictures and made up photo exhibitions.

All BSP school students participated in the project "Assessment of nearest waterway stretch for further improvement of water quality entering the Baltic Sea" observing their nearest river.

The Baltic Sea Project conference "Water" was held on May

10, 2013 in Jurmala, Latvia. The conference brought together 70 students and teachers from 14 BSP schools. The host of the conference was Pumpuri Secondary School and the conference was supported by the LIFE Project "Innovative approaches for marine biodiversity monitoring and assessment of conservation status of nature values in the Baltic Sea (MARMONI)", Nature Conservation Agency of Latvia, and Latvian National Commission for UNESCO and National Centre for Education. Nature Conservation Agency expert Andris Urtans delivered a lecture "Involvement of society in maintenance of Marine environmental Quality". He demonstrated examples of what we can all do to ensure that our nearest river would live. The representative from the UNESCO LNC Ilze Dalbiņa introduced the activities, which are devoted to the UN's International Year on Water Cooperation. Participants of the conference observed the coast, according to the BSP program "Coastwatch". Many students did it for the first time. They learned how to recognize algae and snails, counted waste and concluded that the beach is clean. What is the reason? Does the



The conference "Water" brought together 70 students and teachers from 14 BSP schools in Latvia.

PHOTO: VELGA KAKSE.



Spring 2013 surprised Latvians with amazingly high spring water in the rivers. Spring flooding in the Ogre River.

PHOTO: SANDRA JEKOVICA.



municipality regularly clean up the beach? Have the people become more conscientious?

During the conference, students were able to view their own-made photo exhibition on the spring high water in different areas of Latvia and participate in the contest "What do we know about water?"

On October 18, UNESCO Associated Schools Project and the Baltic Sea project conference "Living Water" was held in Riga. The conference was dedicated to the 60th Anniversary of UNESCO Associated Schools Project and the UN International Water Cooperation year.

The conference dealt with various aspects of water - water effect on our culture, traditions and the way of thinking, the symbolic importance of water, water treatment, conservation and management issues, river landscape management problems, integrated approach to water research and sustainable use of water in modern information society. Special attention was given to students and teachers contribution to sustainable development.

SOME IMPRESSIONS ABOUT THE CONFERENCE

■ Sintija Dzerkale, A.Upits Skriversi Secondary school, Latvia

In spite a rainy day was expected, everything turned out completely opposite - sun shined and we spent all day in interesting and active way.

We had observations at the seaside following the BSP Coastwatch programme and learned new things. We found out that the coast in Pumpuri is clean, because municipality of Jurmala takes care of it. Andris Urtans helped us to recognise different water algae and mollusks.

The arrangers organised a contest "What do we know about water?" The group from Skriversi got a second place and awarded the BSP caps. Skriversi Secondary school participates in the BS Project for many years already. We never miss any chance to learn something new, meet new people and open the door to never seen perspectives.



The annual BSP conference in Lithuania focused on the students' research work.

PHOTOS: GENUTĖ KUZMICKIENĖ.

Baltic Sea Project's Annual Conference in Lithuania

► **ELENA KAČKAITĖ**, *Vilnius Radvilos Gymnasium, Lithuania*

On the 23rd-24th of November, 2013, the annual national BSP conference in Lithuania took place. This time it was about environmental research in the Baltic Sea region.

On the first day, all participants had to present their research works. My school colleague Darius Gerčas and I presented a work about air quality in Vilnius. Every year, pupils from our gymnasium do research of CO₂ concentration on different streets in Vilnius and we could compare the data of different years. Also, Radvilos Gymnasium collaborates with Vilnius Gediminas Technical University and using their mobile laboratory, we investigated the concentration of other gases like NO₂ and SO₂, in the territory of our school. In our presentation we explained their influence to the environment and to people's health.

The conference was not only about pollution in streets. Some pupils presented their results of phenological studies, others talked about Baltic Sea research work or investigation of CO₂ concentration in premises. After the presentations, we had to work in small groups and do some practical activities. For example, we all had to bring some water from different pounds and, using litmus paper, we studied ions, iron and nitrogen concentration, and estimated pH of water. Later, we could see how special equipment investigates CO₂ concentration in room. Lastly, we all participated in a game called

“Mindfight”. Two teams had to answer all kinds of questions about biodiversity. We were all awarded mini prizes for our knowledge.

On the second day, we played a game that helped us get to know each other more closely. Then, in groups, we created short videos that had to introduce the Baltic Sea Project. Later we watched them and saw that some groups were really creative. All participants got certificates and some pupils were nominated in special categories. Our presentation about air quality was awarded as “most original”.

In my opinion, the Baltic Sea Project is really useful for young people because it gives them an opportunity to get more experience in research and development. I hope that future BSP events will be as interesting as this conference was.



After the presentations, the participants worked in small groups and did some practical activities.



PHOTO: ARTUR SAWICKI

National Ecological Olympiad for the Polish Schools

► **JOLANTA MOL**, national BSP coordinator in Poland, II Liceum Ogólnokształcące z Oddziałami Dwujęzycznymi im. Marii Konopnickiej

Our country is known for teaching students about sustainable development. One of the most important and successful events is the National Ecological Olympiad, which the students of upper secondary school can take part in. It is organized by Małgorzata Falencka-Jabłońska PhD, under the umbrella of the Polish Ministry of Education, the oldest ecological organization in Poland - the League for Nature Conservation and the Warsaw University of Life Sciences. Toyota Motor Poland was the main sponsor of this big event again.

In June 2013 the BSP Konopnicka Upper Secondary School in Katowice had an honor to assist in organising the XXVIII Ecological Olympiad. I have been asked to coordinate the organization of this most important ecological event in Poland. The Honorary Patrons of the Olympiad were the President of Katowice City and the Silesian Superintendent of Schools. Thirty five students from the biochemistry class - 1B1, Lidia Krzemień, a biology teacher, and Anna Ziębińska, a physics teacher, took part in hosting over 150 students, teachers and scientists from all Polish districts. They have done a good job.

The theme of sustainability and ecology is very popular, that is why over 31 000 students took part in the competition in 2013 and 112 finalists from 16 provinces came to Katowice for the final.

Students need to have the knowledge of sustainable environment, transport, energy, agriculture, industry etc. They must know the main ecological problems connected with water and soil protection, agriculture and forestry, food and

health, nature protection, air and its protection, waste, radiation, noise, remediation and legal issues related to economic and environmental protection in Poland. The best students who compete in oral exams for the title of a laureate have to recognize species of plants and animals, recognize voices of birds, as well as solve economic and legal issues.

The central final, which was held in the heart of Silesia, was a unique opportunity for Polish youngsters to learn how this region has changed over time. Nowadays Katowice is not so much associated with mines and steelworks polluting the environment, but is perceived as a clean and green Silesian city.

The inherent tradition of the Ecological Olympiad is a field trip. This time the finalists and their teachers visited one of the most modern Polish water purification plants situated in Goczałkowice, which produces water for 3 million inhabitants of the region. The Goczałkowice Reservoir on the Vistula was created in 1956. We could observe numerous species of rare birds there - a part of the land by the reservoir belongs to Natura 2000. We saw a fish farm - "Rybacówka fishing" and took a boat trip on the reservoir, whose area is 32 square kilometres and its capacity is 168 million m³.

All the participants and the students of Konopnicka school attended lectures held by the scientists and specialists working in the water cleaning plant and the water purification plant.

We are proud of our work and we are happy that we had the opportunity to share our knowledge about environment, we could discuss sustainable development in different provinces with the students from the whole country.

The XXVIII Ecological Olympiad will remain in our memory for a long time.



BSP PROGRAMS



Winners of the X Biological-Ecological contest organized by ILO in Łańcut.

Biology - Our Passion!

► **Students: MARTYNA BALAWEJDER, TOMASZ SKOCZYŁAS;**
Teacher: LUDMIŁA SMĘT - DUDZIAK. Liceum Ogólnokształcące
im. Henryka Sienkiewicza in Łańcut, Poland

Every year, students from ILO im. H. Sienkiewicza in Łańcut take part in several conferences, competitions, and workshops such as the Biology Olympiad, Ecological Knowledge Olympiad, as well as the national competition called Young People in European Forests (YPEF) and workshops aimed at balanced development, etc. During the 2012/13 academic year, the X Biological-Ecological Competitions with elements of sustainable development took place. It was organized for basic school students.

The pupils work on the Baltic Sea Project and participate in Air Quality, Water Quality and Bird Ecology programs.

On 18 April 2013, the former group IB, under the supervision of Ludmiła Smęt-Dudziak, took part in a scientific conference at the Tyszkiewicz Palace in Werynia, entitled "Biotechnology in the Nano-dimension", which included a biological workshop. The participants had an opportunity to listen to the lectures by distinguished Polish scientists who discussed issues concerning the application of nanoparticles in medicine, biotechnology and environmental engineering. Apart from the lectures, the students also took part in a biotechnological workshop where they learned about the practical work conducted in a lab.

The domestic final of the national Young People in European Forests competition took place on 21 May in Warsaw. Six teams representing our school were in the final.

THE STUDENTS' RESEARCH WORK IN SCHOOL

During the current school year, our students Karolina Cebulak, Paula Czado, Tomasz Skoczylas and Jan Zając prepared their own research for 43th Biology Olympiad.

Karolina compared a variety of insects and the plants they pollinate, both in natural areas and on fallow meadows. The results clearly show that letting meadows lie fallow leads to a decrease in the diversity of meadow ecosystems.



During a biotechnological workshop the students worked in a lab on practical basis.



Thymelicus sylvestris
Tremella mesenterica
Scellfron spirifex

Paula, in turn, investigated the biological and chemical content of water in the Młynówka stream in Rakszawa. It turned out that, in the section running through a forest and meadows, the water quality in the Młynówka stream is classified as class 1. In the middle section, which runs through a village and fields, the water quality is class 1-2. The last section is class 3. The assessment scale for water quality used in the investigation conformed to the scale developed by Ministry of the Environment.

The research project carried out by Tomasz was a review of the forest in Rakszawa. He looked for rare, atypical and winter mushrooms. The most interesting of them were the *Tremella*, *Morchella esculenta* and the *Auricularia auricula-judae*, which is known as the mun mushroom and is very popular in Chinese cuisine.

Jan made a study of the influence of cytokinins and auxins on the morphology of the *Mimosa pudica*. During one month he grew plants in four groups. Then he compared them in terms of height, number of leaves, the number of side shoots and structure of the roots.



Have You Ever Seen Small Apples on the Oak Leaves?

> Student **GIEDRĖ VALENTINAITĖ**; Teachers: **RASA KUČINSKIENĖ, VILIJA GUSTAITYTĖ**, Prienai Ziburys gymnasium, Lithuania

Acorn crop is really abundant this year. *Quercus robur* (Latin quercus, „oak“ + robur „strength, hard timber“; Pedunculate oak in English) is the type species of the genus (the species by which the oak genus *Quercus* is defined), and a member of the white oak section *Quercus* section *Quercus*.

Oaks' population is large and widespread in Europe, Asia Minor, the Caucasus, and it is common in some parts of North Africa as well. According to the data of State Forest Management Institute, oaks occupy 1.99 per cent or 40734 hectares of the forest area in Lithuania. However, the number of pure oaks is limited. There are over 145 oaks - natural monuments in Lithuania. The oak is the strongest Lithuanian tree. Its lifespan usually ranges from 500 to 1000 years, but it is also possible to find some oaks even older than that. For example, Stelmužės oak is 1500 years old.

Acorns were used to feed pigs in the past. However, many animals still feed on acorns, for instance, some mammals such as bears, deer (sometimes they account for up to 25 % of their ration), wild boars, squirrels, mice and other gnawers. When it comes to the birds, notably jays often feed on acorns and they even distribute oak population by hiding acorns in the ground and sometimes forgetting them in there. Some pigeons, ducks and woodpeckers may pick them too.

One warm autumn day, on October 14th, I was having a pleasant walk in the village of Bagrėnas, when to my own surprise I found some fallen oak leaves, which had some incredible red balls – red apples. I collected them, since I wanted to find out what it was.

Later on I was able to figure out that it was the gall of parasitic insects and other creatures on the surface of leaves or tissues caused by deformation. They are formed when after copulation a female lays the fertilized eggs in the veins of young leaves on the lower side of the leaf. Then, in that place where the egg is placed a protective reaction occurs and a tuber begins to take shape, which is called 'gall.' The galls are spherical, rigid, red or light red, later brown tubers appear (Photo).

Wasps hatch from tubers, which belong to the family *Cynipidae* (Photo). The colour of their body is black, they have a red head, white or grayish – white eyes. The body is elongated, the sides are tight. That is why seen from the side the insect looks humped. The wings are slightly venous with an egg-shaped form, when put together reach far beyond the abdomen. The ovipositor of the female is hidden inside the abdomen and slightly sticks out of the body. The grub is white,

without legs, stocky and heavily bent. The head is slightly different with triple mandibles and without eyes.

Wasps usually have two generations: one normally reproduces sexually (of a male and a female, they impregnate and eggs are placed) in spring, and another one multiplies parthenogenetically (females only) in autumn. Wasps put eggs on the leaves, and then galls start forming. They overwinter and in spring a new sexual generation hatches (males and females) and the cycle repeats. An autumn generation often hatches before winter (11-12 months). Still as stated in a number of sources, they may overwinter in the galls.

I put oak galls into a jar, tied a cheesecloth on the top of the jar so that enough air could get into the jar and placed on the table. The room temperature was volatile, ranging from 16 to 19 C° degrees. In 5 weeks' time, on 18th November 2013 one wasp hatched, after one more week the other two wasps hatched. One wasp lived for 2 weeks (died on December 3rd, 2013) the other two for 3 weeks (died on December 13th, 2013). Adult insects do not eat because they are short - lived. They eat only at their larval stage.



The galls are spherical, rigid, red or light red, later brown tubers appear. Hatched wasps belong to family *Cynipidae*.

PHOTO: GIEDRĖ VALENTINAITĖ.

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Lyceum 179 is Open for International Partnership

► Students **OLGA LETUNOVSKAYA, ANNA SOBOLEVA, IRINA PETROVA**, science methodologist **ANNA OBUKHOVSKAYA**, translated by **ALLA KUSHKHA**, Lyceum No. 179 Saint Petersburg, Russia

Lyceum No. 179 in Kalininsky district in Saint-Petersburg as a UNESCO-associated school has participated in international projects for more than 20 years. Our school is a special one: advanced study of biology and chemistry starts from the 8th form; later in the 10th form, the medical subjects of anatomy and Latin are added on the basis of Saint-Petersburg State Medical Academy of I. I. Mechnikov. Educational efforts of our students and teachers are focused on 3 main directions:

- hydrobiology
- high technologies and ecology
- nanotechnology

The participants of a **Senior Students' Club** (which has been organised for 18 years already) are engaged in the scientific fields of aquatic toxicology, chemical analysis, normal physiology and microbiology. Research works are carried out in the school's water toxicology lab and chemical analysis lab where water, soil and air is tested. The results are represented at Olympiads, conferences and on-line seminars.

Our **High Technologies and Ecology Club** has been working for 7 years. Students are doing projects on nanotechnology, hydrogen energy and other forms of alternative energy. For these we use a solar panel installed on the roof of our school and meteorological setting with special computer program. A great help is the model of the 21st century eco-house designed by our students with a solar battery, a wind power generator and an electrolyser. The aim is to broaden the students' knowledge of alternative fuels, to show the role of the individual in preserving the environment, and to develop technical and convergent thinking.

Our social partner in this is the Ioffe Physico-Technical Institute of the Russian Academy of Science.

Particular attention is paid to health-saving activities. Lyceum No. 179 is a local resource center "**Healthy students - healthy generation**". In May 2014 we will hold a Russian Congress "Health-saving activities in educational institutions" with international participation. Teachers and doctors are invited.

ECOLOGICAL STATE OF THE COASTAL AREA OF THE GULF OF FINLAND

In summer 2013 a group of students and teachers of the school observed ecological state of the coastal area of the Gulf of Finland. The Gulf of Finland receives wastewater from St. Petersburg and other settlements such as Zelenogorsk, Sestrotetsk, Komarovo either after biological treatment in aeration stations, or crude. Therefore, the coastal zone, as well as



A model of ecological house of 21st Century is in operation.

the open part of the Gulf, is subjected to the anthropogenic eutrophication process.

The purpose of the work was ecological monitoring of some beaches in the northern part of the Gulf of Finland. During the expedition in 2013 we explored 60 km of coastal area from the 300th Anniversary of Saint Petersburg Park to Zelenogorsk. We used data on benthos and chemical water analysis from the previous years. Hydro-chemical and hydro-biological methods were used including bioindication on macrozoobenthos.



A solar panel on the roof of the Lyceum.



METHODOLOGY

For implementation of this goal the following tasks were performed:

- chemical water analysis;
- determination of species composition, density of macrozoobenthos;
- calculation of specific structure indicators.

The measurements were made using the following methods:

- Dissolved oxygen was determined using the Winkler method.
- Biochemical oxygen demand in 5 days was determined using the bottle method in oxygen modification;
- Nitrite, ammonium ions, phosphates and pH value were determined using the visual coloristic method (by the colour intensity of solutions);
- Overall hardness and chlorides were determined using the titrimetric method

CONCLUSIONS

Comprehensive studies highlighted an unsatisfactory state of the beaches of the north coasts of the Gulf of Finland from 2010 to 2013:

- Hydro-chemical situation indicates to the periodic pollution with nutrients and organic matter in the coastal area.

- In terms of benthos (the number of species, indicator species diversity index MUSIC) the pollution level was mainly average, occasionally strong.
- There was a trend of reduced pollution in the more distant parts of St. Petersburg.
- Pollution from the remote beaches of the city was the highest for the entire observation period in 2013.

We informed the citizens about the results of our observations. On the beaches of Zelenogorsk and the 300th Anniversary of Saint Petersburg Park we displayed information about the ecological state of the beach and water and distributed leaflets explaining the dangers arising from the pollution to human health.

Contact us for more information and partnership
WWW.LYCEUM179.SPB.RU



BSP PROGRAMMS



The students worked in groups having different exercises and observations. PHOTOS: ANDRY AUST

A Baltic Sea Day in Tartu Environmental Education Centre

> **KARIN KIVISILD, KARIN ORGULAS**, Põlva Co-Educational Gymnasium, Estonia

One day 10th grade students of Põlva Co-Educational Gymnasium participated in a Baltic Sea themed programme in Tartu Environmental Education Centre, conducted by Annelie Ehlvest and Aire Orula. When we reached the work room, 6 tables were set up. Each table, accompanied with instructions and tools, had a different problem to work on. Before the hard work started, our instructors introduced to us different environmental problems connected to our home sea. We worked in groups.

1. The first task of our group was about seals of the Baltic Sea and their protection. A brand new piece of information for us was that only two different species of seals live in Estonian waters: the ringed (*Pusa hispida*) and the grey seal (*Halichoerus grypus*) and they are both endangered species. Furthermore, we found out that seal pups are protected from overheating by their white fur and a ringed seal's breast milk had 13 times and a grey seal's 18 times higher fat content compared to human breast milk.

2. The second work table we visited was "Baltic Sea's salinity and biota", where we had to test different water samples taken from various parts of the Baltic Sea. We determined invertebrates who live in our sea and build up food chains.



The Baltic Sea has fishes with different shape and ecology.

3. We moved along to our third task, which was "Baltic Sea's biota is in constant change". We had to compare the length of journeys taken by the New Zealand mudsnail (*Potamopyrgus antipodarum*) and the soft-shell clam (*Mya arenaria*). The first creature got here from the waters of New Zealand through the Suez Canal with cargo ships and travelled about 26 000 kilometres. The soft-shell clam travelled only 8800 kilometres originated from Northern-America. We calculated the probability of having new species in the Baltic Sea, and their chances of survival.

4. We had two work tables about fish in the Baltic Sea. We compared the sprat and the Baltic herring and learned how to determine them. We found out that in addition to their size difference, if you were to touch the belly of the sprat, it would be rough and jagged unlike the Baltic herring's belly. We also fixed on which side a flounder laid on. We took notice that quite a few fish use protective colouring and shape to blend in with different waters and go unnoticed by their enemies. The fish with the most interesting shape was the straight nose pipefish (*Nerophis ophidion*). However, the plaice (*Platichthys flesus*) and the brill (*Scophthalmus maximus*) were also quite fascinating.

We also examined the reproductive biology of the stickleback (*Gasterosteus aculeatus*) and the eelpout (*Zoarces viviparus*). Sticklebacks are known for taking care of their children, eelpouts for their reproductive rate.

5. To learn about the history of the Baltic Sea we went to our next work table, which was called "The developing stages of the Baltic sea". Most of the developing stages of the Baltic Sea got their names from the Latin names of mollusks. Many species do not live in the Baltic Sea because it used to have fresh water but now its water is salty. The Baltic Sea is always developing!

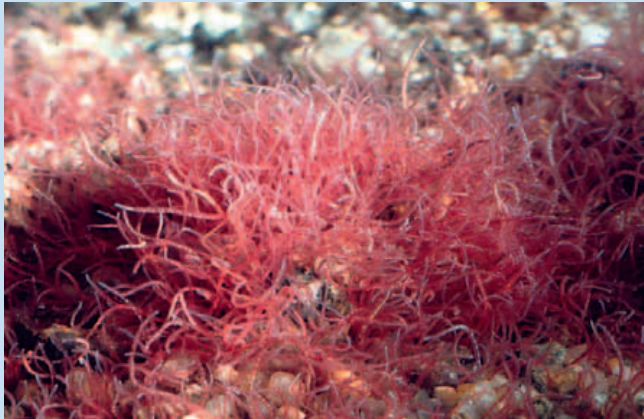
6. We got a chance to think about changes that humankind has caused at the work table "Oil pollution in water". We created our own small oil pollution and tried to eliminate it with different kinds of means and evaluate the efficiency of them. It was impossible to completely remove even the small portion of oil pollution, it was frightening that in reality oil pollution is many times bigger than the one in our cup. It was fun to explore the sea that we live by and depend on.

We had a chance to do practical work without even going to the seaside - it was a nice change to our usual classes.



Student's Research Work at Konopnicka School in Katowice

► **LIDIA KRZEMIEŃ, MAŁGORZATA ŁASZCZYCA,**
II Liceum Ogólnokształcące z Oddziałami Dwujęzycznymi Im. Marii Konopnickiej, Poland



■ Annelids as bioindicators

Student: Przemysław Bryl

Last year I participated in one of the Baltic Sea Project event – I took part in ecological workshops on the Hel Peninsula. That experience made me more interested in biology and inspired me to do my own experiment. I have done research about the small water annelids *Tubifex tubifex*. I wanted to find out if they are good bioindicators of water pollution. I have completed two 7 day observations of groups of these animals in four water types from four reservoirs in Silesia. After seven days, I checked their survival rate. In the more polluted waters, the *Tubifex* behaved more drowsily, but the survival rate was very similar to the survival rate in clean water. Therefore this species of annelids is very resistant to water pollutants, and unfortunately, cannot be used as a bio-indicator to identify the concentration of poisonous substances in surface waters.



■ Annam Walking Stick insects gave me a lot of joy

Student: Irena Kusa

The topic of my research was the influence of temperature on the growth of the Annam Walking Stick insects *Medauroides extradentata*. The stick insects are a species in the order *Phasmatodea*. Characteristic of this species are two thread-like antennae on their heads. To conduct this research I separated three



groups of nine stick insects each from the group of 27 specimens. The specimens in group A were kept at temperatures of 16-18 °C; group B was kept at 21-23 °C (this was the optimal temperature for this species); and the last one group C was kept at temperatures of 26-28 °C.

The research proved that the Annam Walking Stick insects achieved their largest size in the group with the highest temperature. I conducted the research for eight weeks. For this period of time I examined their life and behavior, which gave me a lot of joy.



■ The influence of heavy metals on plants

Student: Barbara Loppe

I did my research to find out how higher than normal concentrations of heavy metals affect radishes (*Raphanus sativus var. sativus*); especially their sprouts and growth.

Radishes are tasty vegetables used mainly in the food industry so it is important to make sure that they are not exposed to a penetration of heavy metals. This situation could be very dangerous because heavy metals have negative effect on people's health.

Heavy metals (I used iron, tin and copper) also have a negative effect on plants. They slow down the plants' growth. In hydroponics they can even stop it completely. I described this in detail in my research. It has also shown that it is easier for heavy metals to get into the plants when they are grown hydroponically rather than in the soil.



BSP PROGRAMS

Visiting a Meeting Place of People and Nature

➤ **STUDENT: PATRICIJA ANCE OŠENIECE**, *Teacher: Inta Ekte, Sikšņi Primary School, Latvia*

In 20 of September a group from Sikšņi Primary school went to expedition to Cape Kolka for coast watching and bird watching. Cape Kolka is the furthest North point of Kurzeme peninsula, in the territory of Slitere National Park. It is the meeting place of two seas, Riga Gulf and Baltic Sea, the meeting place of people and nature, the meeting place people and birds. Slitere National Park lies along the Baltic migratory flyways, making it one of the best places in Latvia for bird watching.

Previous year our school took part in a competition of collecting of waste paper. We got the third place and one of the prizes was possibility to go to bird watching tour by support of JSC Latvia's State Forests (LVM). Therefore we did bird watching, by leading of two famous Latvian ornithologists Kaspars Funts and Kārlis Millers. We did it the first time and it was really interesting and exciting. The ornithologists gave us the Birds Guide and special notebooks for making notes of birds we recognised. During the observation we recognised 20 species. Some birds were very close and it was possible to make a picture with simple cameras.

After bird watching we did the other job –coast watch. We observed seaweeds, littering and the area of site. Then we filled in the BSP observation forms, what we sent to programme coordinator Mr Peter Uhl Pedersen.



Birdwatching by the guidance of ornithologists Kaspars Funts and Kārlis Millers.

Cape Kolka is the furthest North point of Kurzeme peninsula. This is the meeting place of Riga Gulf and Baltic Sea.





PHOTOS: AGRITA BRIZGA



Some of the observations are made in a laboratory.

BSP Activities in a School No. 509 in St. Petersburg



> **IRINA TROFIMOVA**, teacher in a School No 509 in St. Petersburg, Russia

Our school No. 509 from St. Petersburg has been involved in the BSP for 6 years. During this time, our students have carried out a lot of different researches and become more conscious of the environment. The students are interested in “Rivers” and “Water Quality” programs.

For 5 years they have observed changes that occurred in the river Tihvinka. The Tihvinka River belongs to Baltic-Ladozhskiy basin and is related to the category of small rivers. The Tihvinka, the right inflow of the Syas River, springs from the Eglino Lake and flows into Syas on its 98th kilometer. The length of the Tihvinka is 158 km. Having studied the current condition of the Tihvinka River, we drew the conclusion that it is necessary to continue the work on studying the influence of human activities on a near-shore zone and the water quality and start inform the citizens in conformity with the results of the activity.

The students are especially interested in the study of benthos. We used the equipment from The Centre of the Environment. Thanks to the BSP, they got all the necessary equipment from Denmark.

We do part of our observations in a laboratory. The students really like it and they are planning further cooperation in this project. In May 2013 we took part in the project “Heavy Metals in the Air” in Finland.

Every year we have more and more students who are interested in the protection of the environment and want to improve its condition.

A short summary of observation:

Glass bottles	4
Foamed polystyrene and polyurethane	some
Sanitary material	some
Paper or lined paper drinks containers	2
clothing	some
Plastic shopping bags	20
Food, fish waste and bones	some
Vegetable waste	some
Packing waste	some

Near the water line we observed plants and found Brown Algae, thin band of Green Algae, some decaying algae. In the water we found jellyfish. There were many Baltic Clams, a few Mya Arenaria and Common Cockles. On the coast line we did not see any dead oiled birds or any oil pollution.

It was a great day, 40 students took part in our activities. It means that they got some interest and insight about nature, about importance of saving nature, about BSP. We hope that some of them will join in project’s activities, workshops and observations. We would like to say thanks to all of organisations, which helped us to do the observation and to know how to do it, BSP, JSC Latvia’s State Forests, Latvia Birds Fund and of course our friends and teachers, too.



During 10 days we observed the plants: pepper, radish, peas, barley, wheat, rye and watered them using solvent with three different concentrations.

PHOTO: RASA KUČINSKIENĖ

A Practical Solution to the Environmental Problems

► Student **SIMONA VAITONYTĖ**; Teachers: **RASA KUČINSKIENĖ, VILIJÀ GUSTAITYTĖ**, Prienai Ziburys Upper Secondary School, Lithuania

On April 12 to 24, S. Vaitonytė K. Valentaitė, S. Šeškutė G. Dabrilkaitė, V. Joneliūnaitė, third form students at Prienai Ziburys Upper Secondary School, under the guidance of biology teacher R. Kučinskienė, conducted a study called “The Effects of Acid Rain on Seed Germination”.

The objective of the study was to evaluate different types of plant resistance to soil acidification, because the issue is relevant nowadays. Due to the growth of environmental pollution, some industrial gas or gases from traffic react with water to form sulphuric and nitric acids, and then enter the atmosphere and fall to the ground in the form of acid rain. Obviously, such precipitation and its consequences cause many organisms to suffer. Therefore, the pollution affects not only plants, but also humans and animals.

We observed our planted crops (peppers, radishes, peas, barley, wheat, and rye) for 10 days, watering them with a solvent with three different concentrations (I – 6.02 pH, II

– 2.52 pH, III – 2.24 pH). We used a NOVA3000 with a pH sensor and video camera.

The study showed that most seedlings sprang up in the places that were watered with water. These seedlings were also more numerous compared to those that were watered with acids, whereas the seedlings that were released by the 0.25 M concentration of citric acid were stunted. Finally, the seeds watered with 0.5 M concentration of citric acid did not produce any seedlings at all. Thus, our study found that the higher concentration of acid in the soil, the fewer seeds germinate.

To avoid this problem the soil should be limed. However, liming may be a large-scale problem as it is relatively expensive and has to be done regularly. In addition, it would also be possible to improve the hygiene requirements – to ensure the use of catalytic converters and filters; as well as control the emissions of various factories and enterprises more strictly.

Taking all this into consideration, air pollution is a serious problem that causes acid precipitation. It may affect the growth of plants because plants are tolerant of pH changes from 3 to 9 in the soil, but different plant species have different pH ranges.



Year of Water in our School

➤ **STELLA TAPNER, ELISABETH VIIL**, *Kohtla-Järve Gymnasium, Estonia*

During an International Year of Water 2013 was attention focused on the issues concerning water. This was also so in our school.

In spring we visited water treatment plant. This study visit was very interesting. We learned a lot about how industrial and household water is being cleaned before it enters the Gulf of Finland. I will now shortly describe the stages of water treatment process. The first stage is mechanical cleaning, where filters remove solid particles. The next stage is biological cleaning, where the organic parts are decomposed with the help of micro organisms. Next the water goes to sedimentation tank, where the remaining contaminants settle to the bottom of the tank. Then the water goes through the sand filters and finally a small amount of chlorine is added to the water. The whole cleaning process is controlled by computers. After the process that lasts 15 hours, the water is discharged to the Gulf of Finland.

The next big event was a water-themed contest of essays, researches and drawings. The awards for the best contestants were presented in Iisaku looduskeskus; six students from our school were also invited.

The event took place in Iisaku nature house. We participated in a water workshop, where we made experiments with water. At the end of the event we had fun with a terrain game.

Another memorable event within the Year of Water was a water-themed quiz in Jõhvi. The quiz took place in different regions of Estonia and was very interesting. We had to recognize fish from pictures and solve a text exercise. Our team won the quiz in the category of grades 5 to 6. We were very happy, both because of the first place and also for the prizes – thermos cups and certificates of honour.

All the events of the International Year of Water were important to us. Fortunately, Estonia is a country, where you can just turn the tap and get water. The learning games made us think about saving the water. I hope there will be more water themed events in the future where I can participate.

The waste water treatment plant.



Kohtla-Järve Gymnasium students visited the waste water treatment plant.

Water Day in Vecpiebalga Secondary School

➤ *Students: KRISTĪNE KUZMANE, SIMONA KLODŽA; Teacher AGITA BĒRZIŅA, Vecpiebalga Secondary School, Latvia*

Water is our planet's life source. It is powerful and fragile at the same time. All of the humanity needs to care about it, so that it would stay clean. Therefore, since 1992, following the proposal of UNESCO, an international Water Day is celebrated on March 22nd. Latvia joined celebration of the Water Day since 1996. Its aim is to draw the world's governments, institutions, communities, and every person's attention to issues affecting conservation and development of the planet's water resources. Every year the World Water Day focuses on a certain issue. In 2013, the topic was "Water cooperation". Water cooperation has several dimensions, among them cultural, educational, scientific, religious, ethical, social, political, legal, institutional and economical. On the 22nd of April, Vecpiebalga Secondary school organized some activities focused on water issue and water cooperation.

The day began with a presentation of Mr Huga Duksis, executive director of Vecpiebalga municipality, who was talking about the water system in Vecpiebalga. We also had presentations about international water day and the Baltic Sea Project. Water Day activities continued with a quiz game about water. After that, the students of 10th and 11th class and a chemistry teacher made some tests demonstrating characteristics of water. Every class had to make a presentation „The Trip of Water Drops”. Students were very creative. They made posters, wrote poems etc. Some students asserted that water was created in space and it was delivered to us by aliens.

Students liked the day; it was the first time that all the school was involved in a common event.



BSP Coordinators



BSP COORDINATORS

Gedy Siimenson
General coordinator
Tartu Environmental Education Center
Lille 10, Tartu 51010, Estonia
Tel: +372 56466887
e-mail: gedy.siimenson@teec.ee



DENMARK

Søren Levring
National Coordinator
Sønderskov-Skolen
Grundtvigs Allé 100, DK-6400 Sønderborg
Tel: +45 8872 4405; GSM: +4527903757
e-mail: slev@sonderborg.dk



Peter Uhl Pedersen
Coordinator of the BSP Coastwatch
Programme
Birkevang 303
3250 Gilleleje, Denmark
E-mail: peter.uhl.pedersen@skolekom.dk



FINLAND

Jaana Rätty
National Coordinator
Linnajoki Secondary School
Edelfeltinbulevardi,
206100 Porvoo, Finland
e-mail: jaana.ratty@porvoo.fi



Anja Hokajärvi
Coordinator of Environmental
Measurements Programme
Meri-Pori Upper Secondary
Rieskalantie, 28800 Pori, Finland
Tel: +35850 5580295
e-mail: ahokajarvi@gmail.com



ESTONIA

Sirje Janikson
National Coordinator
Tartu Environmental Education Center
Lille 10, Tartu 51010, Estonia
Tel: +372 5661 3933
e-mail: sirje.janikson@teec.ee



LATVIA

Velga Kakse
National Coordinator
National Centre for Education
Valnu str. 2, Riga, LV 1050, Latvia
Tel: +37167814453; Fax: +37167223801
E-mail: velga.kakse@visc.gov.lv



Liesma Abolina
Coordinator of the Water Quality Programme
Riga State gymnasium No 1,
Raina bulvaris 8, Riga, LV1050, Latvia
E-mail: liesma56@inbox.lv



GERMANY

Ute Grönwoldt
National Coordinator
Institut für Qualitätsentwicklung an Schulen
Schreberweg 5, 24119 Kronshagen, Germany
Tel: +49 431 5403 173
e-mail: ute.groenwoldt@iqsh.de



LITHUANIA

Miglė Simanavičienė
National Coordinator
Centre of Non-Formal Youth Education
Džiaugsmas str. 44, Vilnius, 11302, Lithuania
Tel: +37067700572
e-mail: migle.sim@gmail.com



Vytautas Eidėjus

Coordinator of the Phenological Studies
Programme
Directorate of Gražutė regional park
Laisvoji aikštė 14, 32216 Salakas, Lithuania
Tel: +370 60012941, Fax: +370 38559425
e-mail: vytautas@grazute.lt



POLAND

Jolanta Mol PhD
National Coordinator
II Liceum Ogólnokształcące z Oddziałami
Dwujęzycznymi im. Marii Konopnickiej
ul. Głowackiego 6, 40-052 Katowice, Poland
Tel: + 48 32 2 517 334, Fax: + 48 32 2 512 255
E-mail: jola.mol@pro.onet.pl



Andrzej Sliwinski

Coordinator of the Bird Ecology Programme
Liceum Ogólnokształcące im. T. Kościuszki
ul. Konopnickiej 2,
32-200 Miechów, Poland
Tel. 0048 41 3831035
E-mail: andrewsl@wp.pl



Dr. Beata Wegrzynek

Coordinator of the Air Quality Programme
Silesian University
ul. Wierzobowa 10/10
PL-42500 Bedzin, Poland
E-mail: bwegrzyn@us.edu.pl



RUSSIA

Stanislav Babich

National Coordinator
Saint-Petersburg State University of Economics
Sadovaja Str.21, 191023 Saint-Petersburg, Russia
Fax: +81 2-3142336
e-mail: stanislavbabitch@mail.ru



BSP EVENTS CALENDAR

WHEN?	WHAT?	WHERE?
January 24-26, 2014	Winter camp for BSP Estonian schools	Estonia
March, 2014	National BSP teachers meeting	Denmark
March 6-7, 2014	ASP-annual national meeting	Copenhagen, Denmark
March 8-10, 2014	First Seed Money meeting	Copenhagen, Denmark
April 10, 2014, 00:00 - 24:00 h UTC	A global Internet conference for students aged 14+ Agenda 21 NOW! 2014: Prejudices against the world - the world against prejudices	www.agenda21now.org
April 10-13, 2014	BSP coordinators meeting	Estonia
May, 2014	All Russian Congress with international participation "Health-saving activities in educational institutions"	Russia
May, 2014	National BSP teachers meeting	Latvia
May 7 - 11, 2014	Comenius project meeting of "Borders - Bridges or Barriers - Burden or Benefit?"	Stockholm, Sweden
May 26 - 30, 2014	21th international camp school Meri-Pori,	Finland
June 13-15, 2014	Second Seed Money meeting	Vilnius, Lithuania
June 27 - July 1, 2014	International camp	Roosta, Estonia
July, 2014	National summer camp	Lithuania
September 15-21, 2014	International science camp, organized by Denmark	Warnemünde, Germany
October 23-24, 2014	Annual meeting for Estonian BSP teachers	Estonia
October 29-31, 2014	Contact Seminar and Annual Meeting for Danish BSP teachers in cooperation with Gamtinio Ugdymo Skyrius and the national coordinator in Lithuania	Vilnius, Lithuania
November, 2014	BSP coordinators meeting	Laitse, Estonia.
November 12 - 15, 2014	Comenius project meeting of "Borders - Bridges or Barriers - Burden or Benefit?"	Trier, Germany
November 21-22, 2014	National BSP Conference	Lithuania
December, 2014	Meeting for Danish classes and teachers participating in "Let's take care of the Planet"	Odense, Denmark
January 23-25, 2015	Winter camp for Estonian BSP students and teachers	Jäneda, Estonia
May 5 - 9, 2015	Final Conference of the Comenius project "Borders - Bridges or Barriers - Burden or Benefit?"	Flensburg, Germany, and Sønderborg, Denmark

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FORWARD TO
RECEIVING AND
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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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Gedy Siimenson
Tartu Environmental Education Centre
Lille 10, Tartu 51010, Estonia
e-mail: gedy.siimenson@teec.ee

