REPORT

International Field Workshop: Slovakia – Austria – Italy
1 – 9 June 2013

Exchange of Experience Between the LIFE Projects

The workshops took place as part of the LIFE11 NAT/PL/423 project "Protection of Alkaline Fens (code 7230) in the Young Post-Glacial Landscape of Northern Poland"

Travel preparations lasted over 2 months. During that time, we contacted those responsible for the management of LIFE projects in countries that were the subject of our interest – i.e. Slovakia, Austria and Italy. We managed to establish cooperation with 4 projects – two in Slovakia and two in Italy. As for Austria, we exploited a network of connections to reach Prof. Michael Steiner, Professor of the University of Vienna, who agreed to show us around the sites he is currently conducting research on. We created a framework schedule of the trip and began making detailed arrangements with our guides and also technical and logistical preparations.

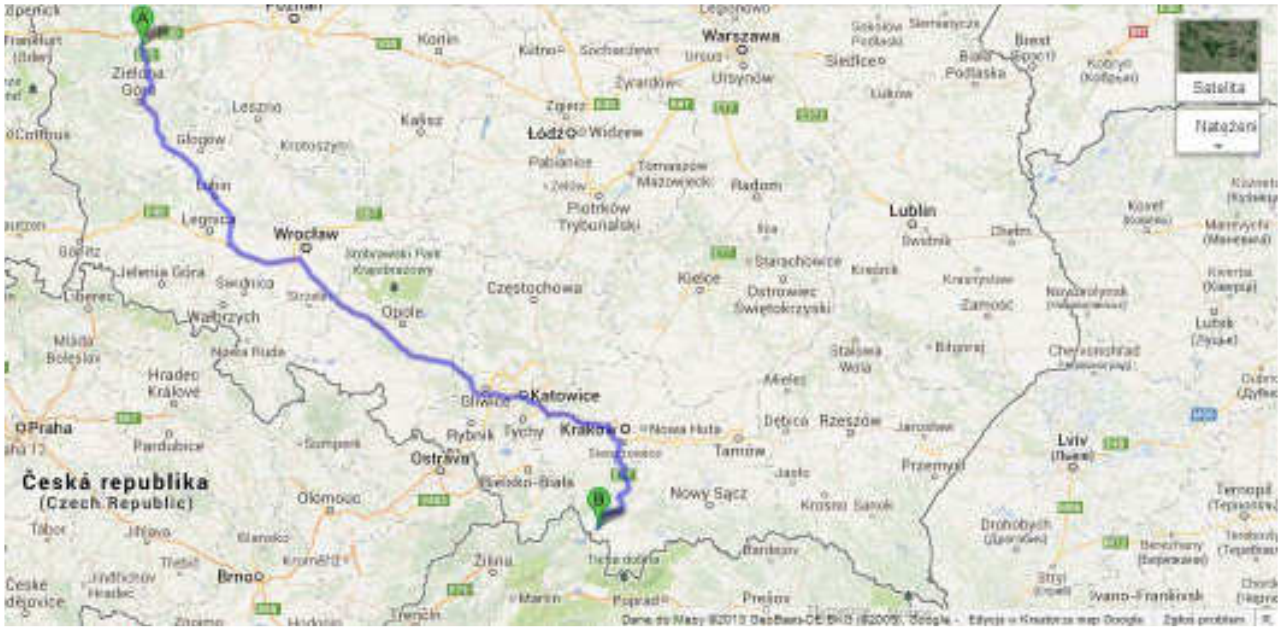
We decided to travel by 5 off-road vehicles with a 4x4 drive, owing to the fact that many of the sites we were planning to visit are located in places that are inaccessible and without asphalt roads. We invited 20 people to participate in this trip – employees and partners of the Naturalists' Club. Ultimately, our group consisted of the following people: Magdalena Makles (Club employee, project and trip coordinator), Dorota Horabik (Club employee, logistics support), Robert Stańko (Club employee, expert in phytosociology), Lesław Wołejko (Club employee, expert in phytosociology), Katarzyna Kiaszewiecz (Club employee, expert in phytosociology), Paweł Pawlaczyk (Club employee, participant), Katarzyna Barańska (Club employee, participant), Filip Jarzombkowski (Club employee, expert in phytosociology), Ewa Gutowska (Club employee, expert in phytosociology), Katarzyna Kotowska (Club employee, expert in phytosociology), Zofia Książkiewicz (partner, expert in malacology), Alma Szafnagel-Wołejko (Club partner, participant), Barbara Utracka-Minko (Club partner, participant), Elwira Ahmad (Club partner, participant), Mariusz Grzęba (Club partner, participant), Marek Orlikowski (Club partner, participant), Elwira Bałdyga (employee of RDOŚ Olsztyn – partner to the project, participant), Włodzimierz Pisarek (employee of RDOŚ Olsztyn – partner to the project, participant), Maciej Gdaniec (employee of RDOŚ Gdańsk – partner to the project, participant), Marta Kuczyńska (employee of RDOŚ Gdańsk – partner to the project, participant).

Tab. 1. Trip framework schedule

WHAT?	When?	June								
		Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun
		1	2	3	4	5	6	7	8	9
Ride from Świebodzin to **Black Orava** (600 km, 7h), dinner	6:00 – 14:00	x								
Tour of the bogs in Orava, lodging in Chyżne	15:00 – 18:00	x								
Ride from Black Orava to Belianskie Luky and Trstinne Luky (60 km, 1h)	7:00 – 9:00		x							
Sightseeing, meal	9:00 – 16:00		x							
Ride to Bratislava vicinity (350 km, 4h), meal, lodging in Pezinok	16:00 – 20:00		x							

Tour of the Sur reserve	9:00 – 12:00			x						
Ride to Zahorie lowlands (65 km, 1.5h), meal	12:00 – 14:00			x						
Tour of Mesterova Luka, Orlovske vrsky	14:00 – 19:00			x						
Meal, lodging in Malacky	19:00 - …			x						
Tour of the Abrod reserve, meal	8:00 – 14:00				x					
Ride to Gosau, Austria (370 km, 4 h), meal, lodging in Gosau	15:00 – 21:00				x					
Tour of Salzkammergut	09:00 – 18:00					x				
Supper, lodging in Gosau	19:00 - …					x				
Ride to St. Margareten (120 km, 2h)	09:00 – 11:00						x			
Sightseeing, meal	11:00 – 15:00						x			
Ride to Pordenone, Italy (260 km, 3 h)	15:00 – 18:00						x			
Tour of Virco and Flambro sites, greenhouses in Palazzolo dello Stella	9:00 – 18:00							x		
Meal, lodging in Pordenone	18:00 - …							x		
Ride to Danta di Cadore	9:00 – 11:00								x	
Sightseeing Danta di Cadore, meal	11:00 – 17:00								x	
Return to Pordenone, lodging	17:00 – 19:00								x	
Ride from Pordenone to Świebodzin (900 km - 10 h)	6:00 - …									x

1 June 2013, Saturday



Map 1: Travel route during the first day

Map 2: A: site at the Bembeński stream, B: site at the Orava reservoir.

We set out from various places in Poland – from Szczecin, Gdańsk, Słupsk, Olsztyn, Warsaw, Krakow, Świebodzin. For many of us the trip began as early as the 31st of May. The whole group was to meet at the restaurant in Jabłonka on Saturday. With varied success and with varied time, the entire group managed to arrive at the designated meeting place. After our first meal together, we held an organizational meeting and the participants were provided with the most important logistic and organizational information. Participants

were also provided with two-way radios, which we used throughout the whole trip as a means of communication between the individual cars. After that, we set out under Robert Stańsko's guidance for our first field excursion to see the sites in the bog area situated in Black Orava's watershed. The first site we visited was the bog near Jabłonka, situated in the valley of the Bembeński stream.

Pic. 1.: Participants of the trip in Austria

Pic. 1: Robert Stańko talks about the Oravan bog situated in the Bembeński stream valley.

Pic. 2: At the bog, listening to Professor Wołejko and Robert Stańko

Employees of the Naturalists' Club conducted environmental inventory of this land. However, even though the site is an example of a well-preserved alkaline fen and possesses all of the elements that would qualify it as a Natura 2000 area, ultimately it was not made part of the Natura 2000 network. On site we were able to witness blooming butterworts *Pinguicula vulgaris*, cottongrass *Eriophorum angustifolium* or Davall's sedge *Carex davalliana*. The elevated parts of the site showed overgrown indentations left after past excavation of peat, with visible travertine deposits.

Pic. 3: Blooming butterworts (purple) on a visible travertine deposit.

Pic. 4: Blooming common marsh orchids *Dactylorhiza majalis*

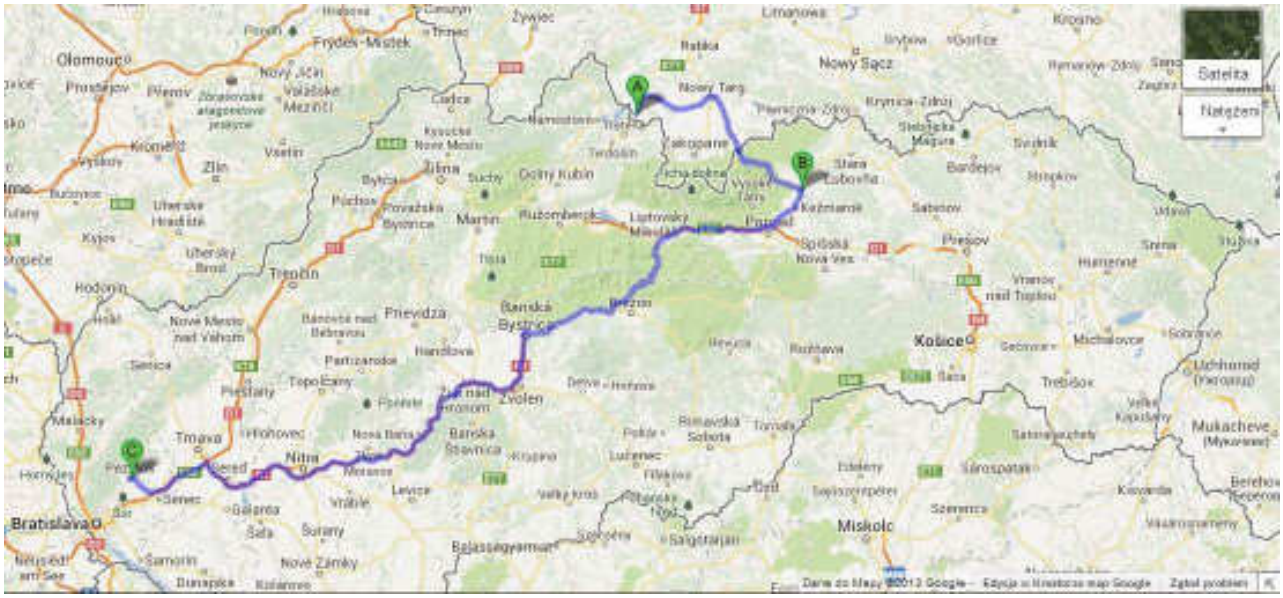
The next site was the bog situated near the dam reservoir at Black Orava. It was an example of a low moor with a transitional and raised part.

Pic. 5: Blooming cottongrass at the Orava reservoir

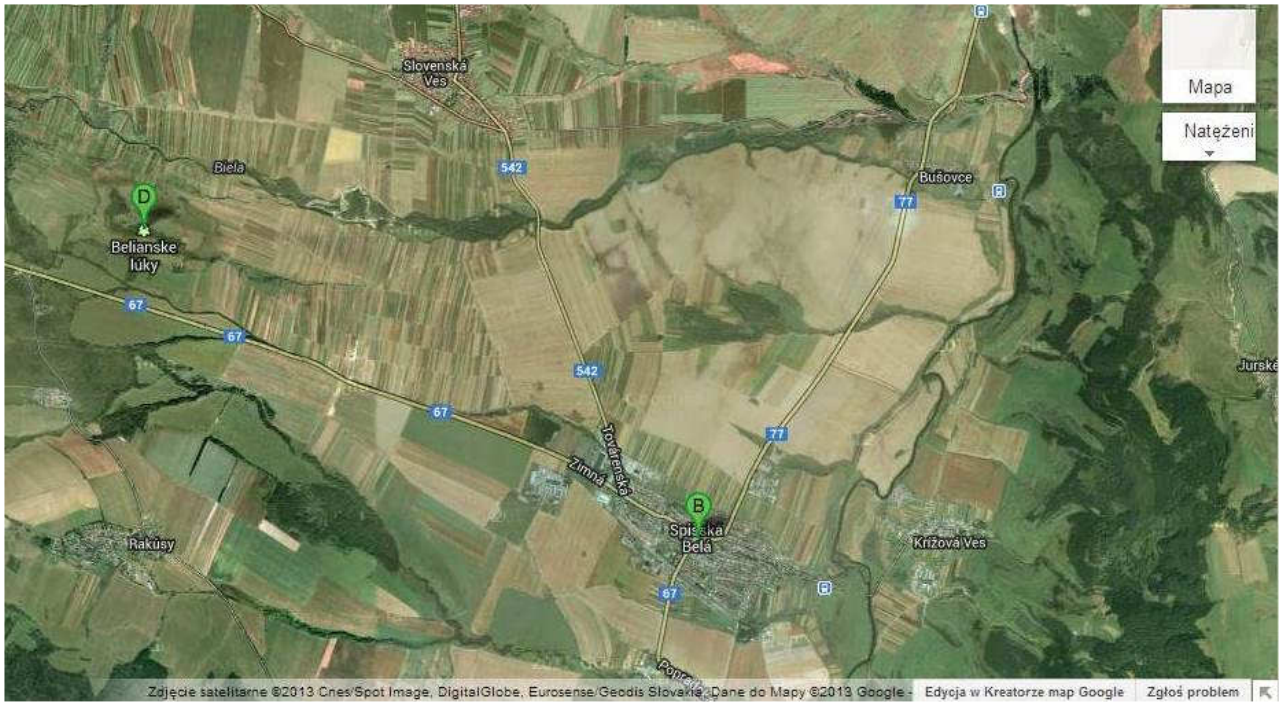
Pic. 6: Moor at the Orava reservoir.

2 June 2013, Sunday

In the morning, after a staying for the night at a hotel in Chyżne, we set off towards the Slovakian side of the Tatry Mountains. There, near the Spiska Bela town, we met with Tomas Drazil – employee of the Slovakian Tatra National Park – who was our guide for the Natura 2000 area: Belianskie Luky.



Map 3: Travel route



Map 4: D: Belianskie Luky site

Belianskie Luky is Slovakia's largest alkaline fen, fed with underground water. Traditionally, the meadow was mowed, but in the 1980s the meadow went into disuse and the site became overgrown. In 2004, the Daphne ecological organization, together with the area's managers, initiated a project that would restore the traditional way of utilizing this area. Despite the extent of surfaces in need of cutting, methods and technologies used do not disrupt the micro-terrain which is of utmost importance for this type of habitat if it is to maintain its biodiversity. The situation is similar for bogs in Northern Poland.

Pic. 7: Tomas Drazil (wearing a black fleece jacket) tells the group about the area's history and specificity.

The bog is home to a scientifically interesting phenomenon. There are small basins on the hills of this alluvial fen, which are usually located in the bog's flat part and are more or less elongated and perpendicular to the hills. But in many cases they are on the steep parts of the hill. In winter, the basins often do not chill, even when it is below zero, which indicates the presence of a strong ground water feed. One might expect that water runoff in summer might have a chilling effect on basin water, yet that does not occur. Apparently, the flow of water in the basins is so long that groundwater surfaces on one side of the basin and drips back into the peat layer on the other side, in accordance with hill slope. As such, the soil between the basins is also warmed. High temperatures and aquatic plants in the basins are conducive towards calcium carbonate precipitation. This explains why most calcium carbonate, stemming from the petrifaction process, is present in the basins themselves.

Pic. 8: Visible basins with precipitating calcium carbonate

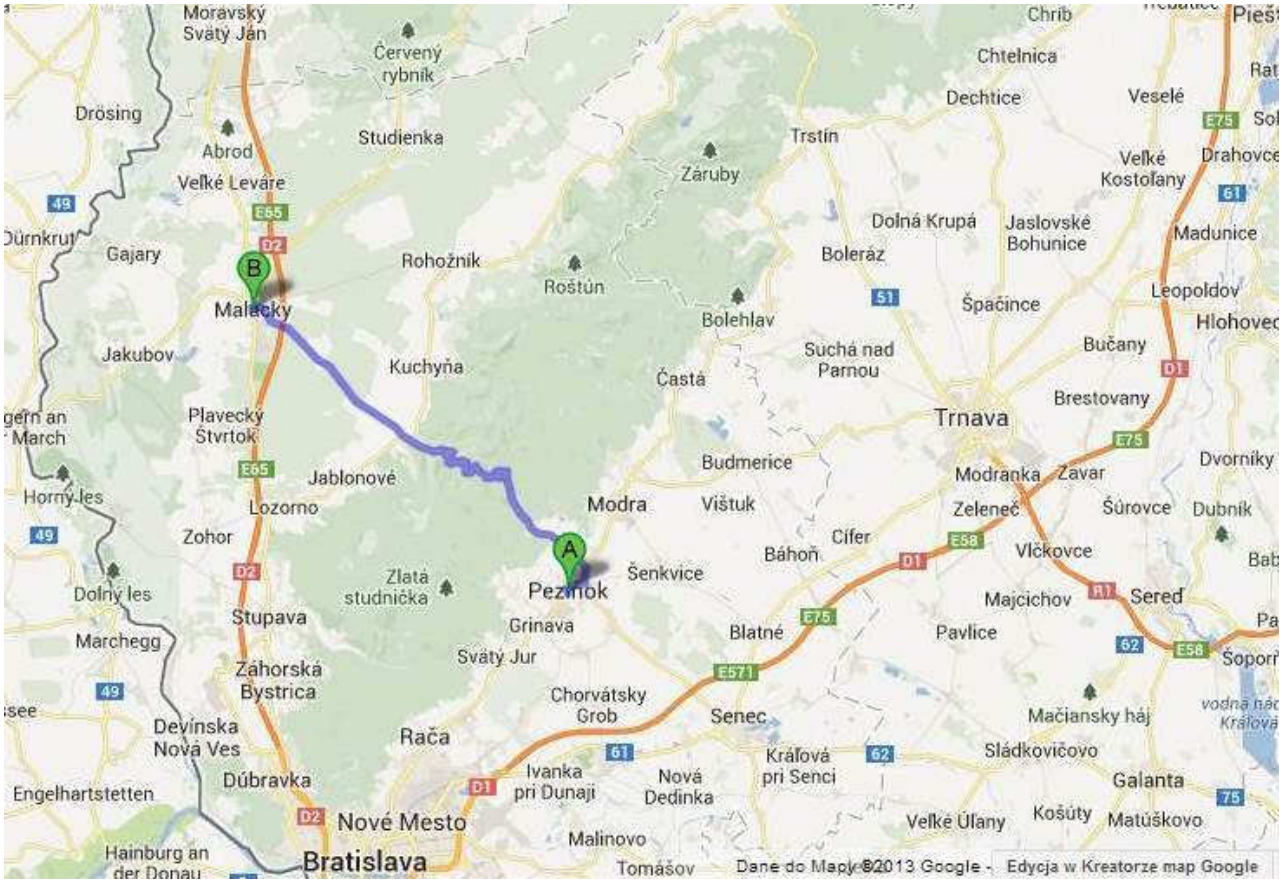
Pic. 9: Prof. Wołejko explains how basins work and the process that occurs within them

Pic. 10: *Primula farinosa* which in Poland has only one position…

Pic. 11: View on Belianskie Luki

3 June 2013, Monday

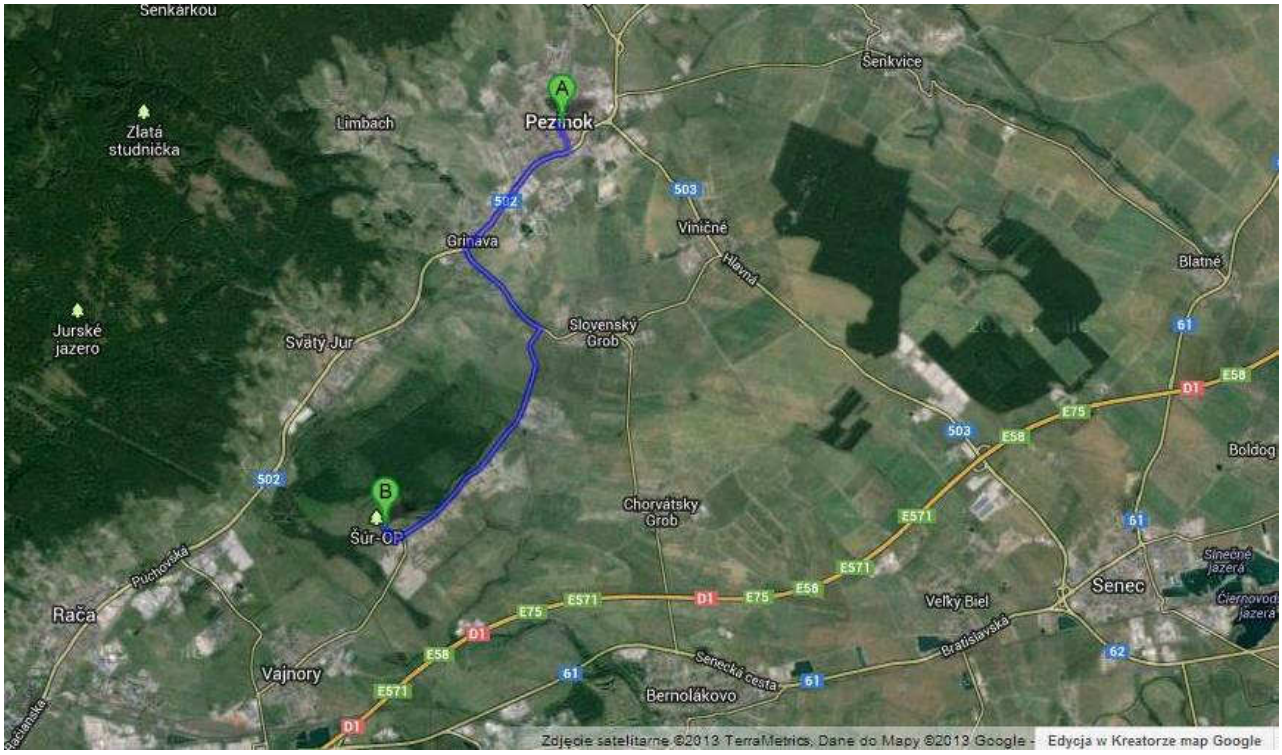
The next morning, we arrived at the station in Pezinok to meet our next guide – Jaromir Sibl who is an employee of BROZ, a Slovakian ecological organization. Jaromir guided us around the Sur reserve near Bratislava (LIFE03 NAT/SK/000096 “Restoration of Water Regime in Sur Fen Nature Reserve”) and around the places that were the subject of LIFE05 NAT/SK/112 “Restoration of the Wetlands of Zahorie Lowland”.



Map 4. Travel route

The Sur reserve was established in 1952. It is under national protection (as a reserve), as well as international protection as the Ramsar Reserve and as one of the Natura 2000 areas. The project’s main goal was to restore the hydrographic conditions in the reserve and to achieve the proper state of preservation of the Alder population present in this riparian habitat. The project was realized throughout the period of 2003-2007. Destroyed and antiquated water facilities were reconstructed. The Fanglovsky stream, feeding the reserve, was cleaned and an embankment was build at its end in order to hold water in the reserve. It was also important to construct proper draining facilities at the Chlebnicki channel and to extend the levee on the Czerna Voda stream to prevent peat deposits from drying up. In this way, it is now possible to release surplus amounts of water when it is high, which prevents the surrounding fields from being flooded, while at the same maintaining the proper water level for this habitat.

The reserve has more than 120 plant species, mentioned in the Red List, more than 50 species considered rare, at risk or endangered. They are mainly alder swamp forests. What is also exceptional is the fact that the Sur reserve has two different ecosystems: riparian alder forests, marshy meadows and swamp biotopes and also the “pannonicum grove” which is the last remnant of prairie oak forests on the Danube lowlands.



Map 5. Location of the Sur reserve

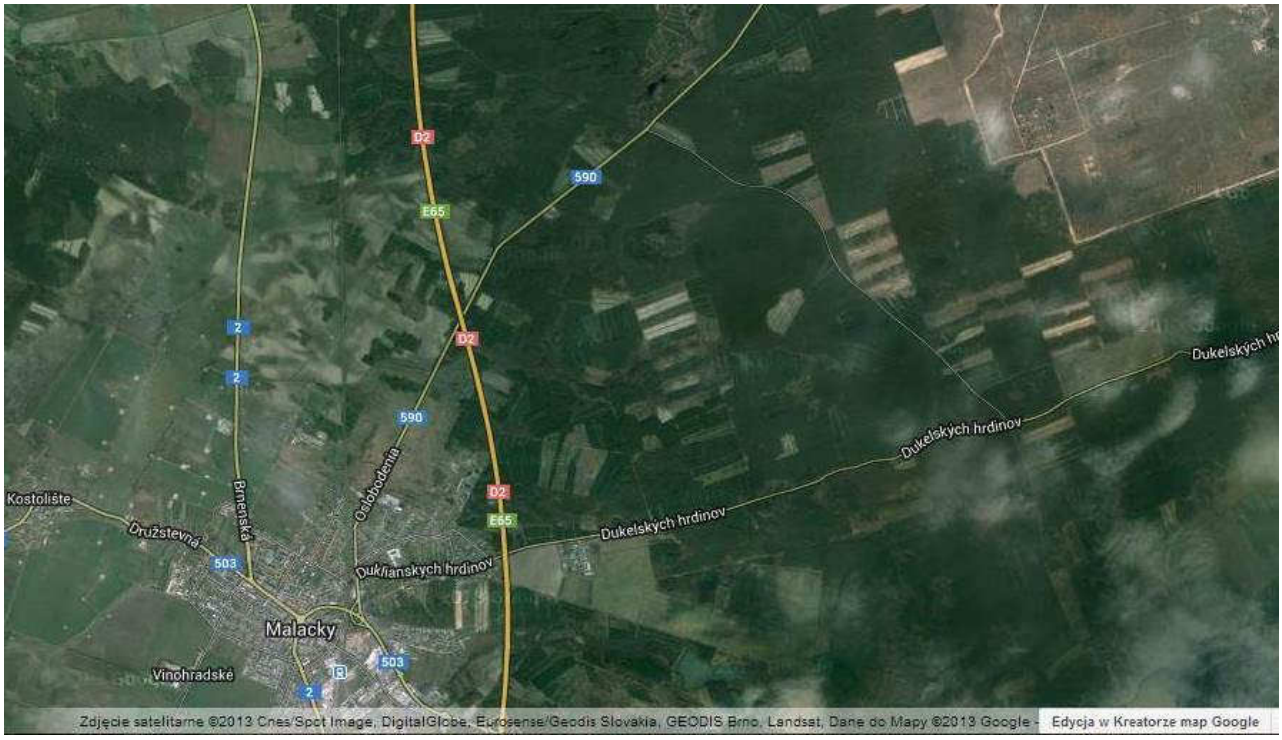
Pic. 12. Jaromir Sibl in front of the information board about the Sur reserve

Pic. 13. Interior of the riparian forest in the Sur reserve

Pic. 14. Interior of the riparian forest in the Sur reserve

Next, we headed to places where another LIFE project was realized – the sites Mesterova Luka and Orlovskie vrsky (LIFE05 NAT/SK/112 “Restoration of the Wetlands of Zahorie Lowland”). The main goal of the project was to support the development of the Natura 2000 network in Zahorie lowland through protection, restoration and preservation of important marshy habitats and related species. In the course of the project, management plans were made for eight Natura 2000 sites, forest management plans were updated to include the needs of habitats in these areas, educational activities were undertaken in the scope of active protection, and the following tasks were completed: blocking and filling of drainage with earth material, restoration of small streams, construction of a fish pass on the Rudava river, restoration of species-rich meadows for cutting along the Rudava river.

Zahorie Wetlands are situated in the lower area between sand dunes. The wetlands are oases amidst the sands and pine plantations, and they are incredible due to their richness of species. They include: *Drosera rotundifolia*, *Calla palustris*, *Liparis loeselii*, *Iris pseudoacorus*, *Hottonia palustris* or *Trichophorum alpinum*.



Map 6. Project site at the Zahorie lowland. The upper arrow is “Mesterova Luka”, the lower one – “Orlovskie vrsky”

Unfortunately, it rained during the whole trip to Zahorie lowland, so we could not enjoy the place itself, though the walk turned out to be quite cheerful.

Pic. 15. Mesterova Luka

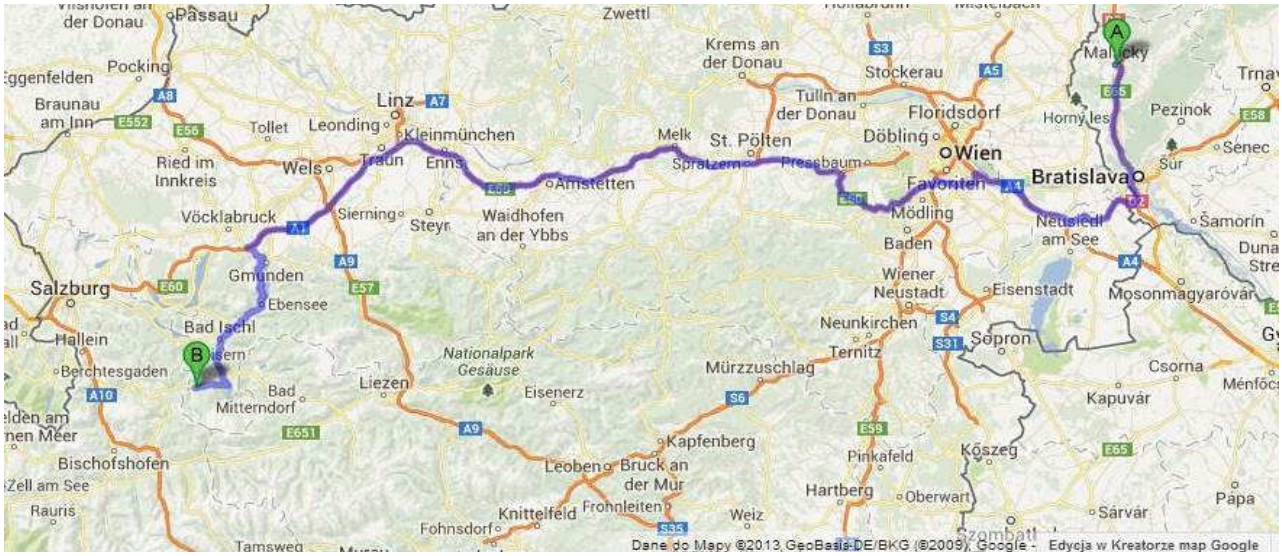
Pic. 16. Information board at Mesterova Luka.

Pic. 17. *Iris pseudoacoris*

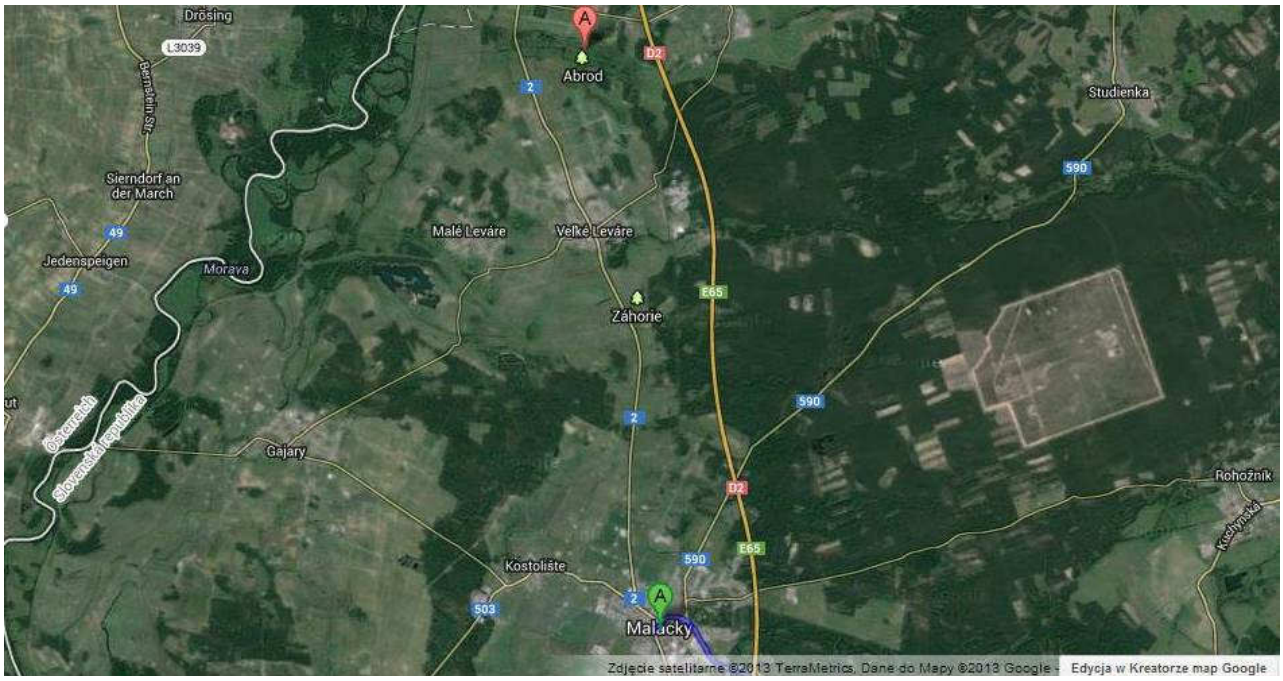
Pic. 18. Rare example of a riparian pine forest ;)

4 June 2013, Tuesday

On Tuesday morning we met in the hotel's hall with an employee of Daphne – the Slovakian ecological organization – Viera Stanova who showed us around the Abrod National Nature Reserve. After visiting the reserve, we were to meet near Vienna with Prof. Michael Steiner and travel together to a hotel in Gosau. Along the way, however, we had technical problems with one of the cars and we had to make an emergency stop at a Toyota service centre in Bratislava. Fortunately, it was nothing serious and after two hours of a forced stop we continued our journey.



Map 7: Travel route



Map 8: Location of the Abrod reserve

The Abrod Reserve was established in 1964 and is one of the best known reserves in the Borska lowland. The area was placed under protection due to the presence of rare plants from the *Caricion davallianae* and *Molinion* alliance, as well as rare animal species. The area was subject to human management due to its location. The year 1923 marked the beginning of melioration work – water redirection ditches were dug, the nearby Porec stream was regulated – which resulted in the drastic lowering of underground water surface level in the whole watershed in 1962-66, when the area was already under reserve protection. These activities had an impact on the reserve, especially on "wet" habitats. Initially, the mire occupied ca. 11 ha (out of 90 ha of the reserve's surface) in the eastern part of the reserve. Fortunately, the most valuable part of the reserve managed to survive. From 1994 onwards, Daphne, in cooperation with the reserve's administration, undertook actions that would provide floristic, hydrologic and geologic knowledge of the reserve's terrain. These actions resulted in the filing of an application with the intention of protecting this area.

Pic. 19. In a hotel in Malacky – Viera and her friend are talking about the Abrod reserve

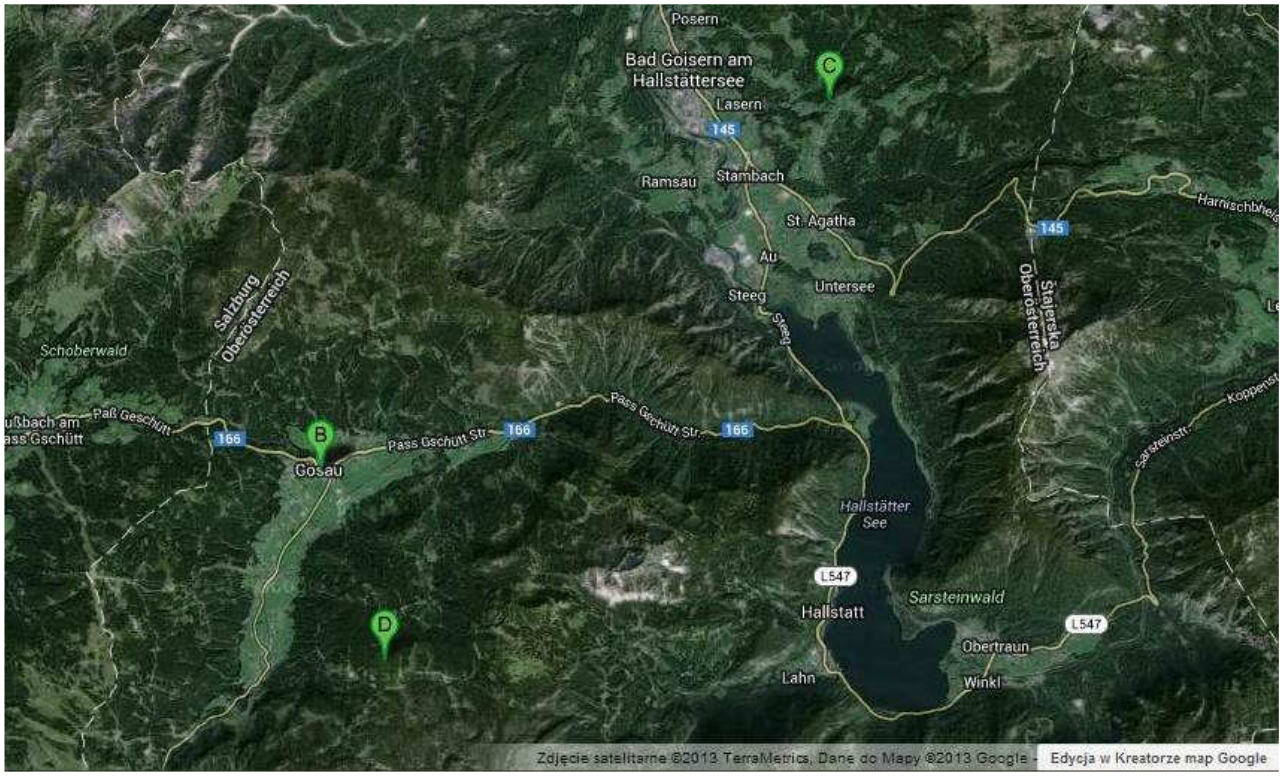
Pic. 20. At the reserve – Viera is talking about the place we are currently at

Pic. 21. The Abrod reserve, the part where wet meadows and fens dominate

Pic. 22. The Abrod reserve

5 June 2013, Wednesday

After yesterday's long and eventful journey, we set out on Wednesday to visit bogs in the beautiful surroundings of the Austrian Alps. Together with Prof. Steiner and the accompanying employee of the Austrian State Forests – Gerhard Fischer, we went to see two bogs in the Dachstein mountains – Lockernmoos and Langmoos.



Map 9: D: Lockernmoos, C: Langmoos

First we went to the area of Salzkammergut, to the bog named Langmoos. It is there that a salt mine had been in operation since the 18th century. Salt mining consisted of passing a stream of water from the nearby bog through the salt deposits and then evaporating water from the resultant brine. Renaturalization works on this site led to the discovery of a system of ceramic pipes and wooden channels that was used extensively, the purpose of which was to systematically divert small amounts of water from the bog. The amount of water that was drawn so small that it did not ruin the bog's entire ecosystem, but it was an amount large enough to parch the habitat and cause the encroaching of such species as dwarf mountain pine, which additionally overshadow and parch the whole surface, thus accelerating the degradation of the bog and receding of bog species.

In order to protect this land, a significant portion of the drainage and channel system was removed, additionally several dozens of simple water gates were built along the hill, slowing down the erosion and outflow of water from the elevated bog. Some of the pine seedlings were also removed. However, what is important is that the rest of them will recede on their own after the high water level in the bog stabilizes. Many of these buildings are relatively

new, so their impact on the habitat was yet to be determined, but what could be observed was that the water level remained high.

Pic. 23. Prof. Steiner explains the history and specificity of the Langmoos area

Pic. 24. At the Langmoos site

Pic. 25. Wood filling of the channel and also the ceramic elements of the drainage system

Pic. 26. Debating… Prof. Steiner, Prof. Wołejko, Gerhard Fisher and Robert Stańko.

The next site that we saw that day was the bog in the vicinity of Gosau – Lockernmoos. Here, too, a system of water gates was built to prevent the outflow of water from the bog. There are also places here where the mire shifts into the transitional part and then the raised part. The water gate system utilizes a method developed by the team responsible for water gate building methodology. In this method, water flows through the characteristic V-shaped metal gate. The gate's shape does not necessitate the use of regulated stop logs and also ensures the proper rate of water outflow – small outflow when water level is low and large outflow when water level is high.

Pic. 27. Place where a lowered bog shifts into transitional and raised one. The dark lines indicate the borders. The arrow indicates the direction of the transition.

Pic. 28. Water gate with a V-shaped metal gate.

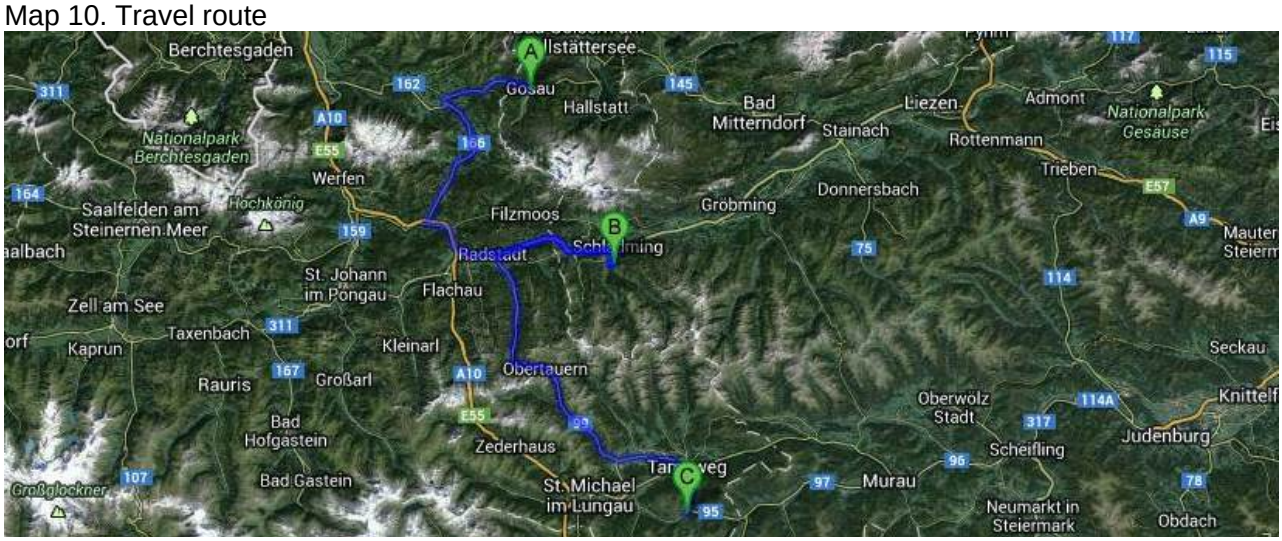
Pic. 29. Baffles slowing down the runoff have almost completely blended in with the landscape.

Pic. 30. A rather common sight… An attempt at marking the new finding.

6 June 2013, Thursday

The following day we were supposed to see a rare phenomenon and a relatively recently described habitat called a “condensation mire”. In addition, we were also supposed to see another example of Prof. Steiner’s renaturalization activities. After visiting these places, we set off for Italy.

Map 10. Travel route



Map 11. Location of sites: B: Rohrmoos, C: Saurmoos

The first place we went to was the site on the other side of the Dachstein mountains, in the Talbach stream valley. Contrary to the sites we had already seen, there are mainly acidic conditions here. However, one of the main conditions necessary for the formation of a condensation mire is the chilling effect of a cold air tube created on the mountain hill between the rocks placed upon it. In winter, the relatively hot air in this “tube” rises up (like in a chimney), while cold air falls to the bottom of the tube, maintaining the rock’s low temperature. Once a year (usually in April), this phenomenon undergoes reversal, but the constantly low temperature of earth is maintained throughout summer. In such conditions present around the cold air mouths, condensation of water vapour enables the development of bryophytes suspended above the mouths and around them, thus creating conditions for the development of this habitat.

Pic. 31. Hill covered with mire – Rohrmoos

Pic. 32. Fragment of an information board with the schematic of air flow between the rocks on the hill.

Pic. 33. Suspended mire from up close

Pic. 34. Cold air mouth and the bog forming around it.

The next site was the Saumoos bog situated near St. Marghareten. The bog was heavily degraded through overexploitation – very large parts of it were destroyed due to peat mining. Peat was mined for the purposes of creating litter for cattle. This overexploitation – consisting of cutting the branches and using them for litter, while the remaining parts of trees are turned into pulp and used in plywood production – caused the deforestation of this area. This is why peat mined in this area started being used as litter. The renaturalization work on the site that we visited consisted mainly of smoothing the excavation terrain and transplanting vegetation from adjacent surfaces and also of building of water gates to prevent water runoff from the bog. Birch seeds were also removed.

Pic. 35. Saumoos. View of smoothed hills of an old excavation site. The vegetation seen here was transplanted.

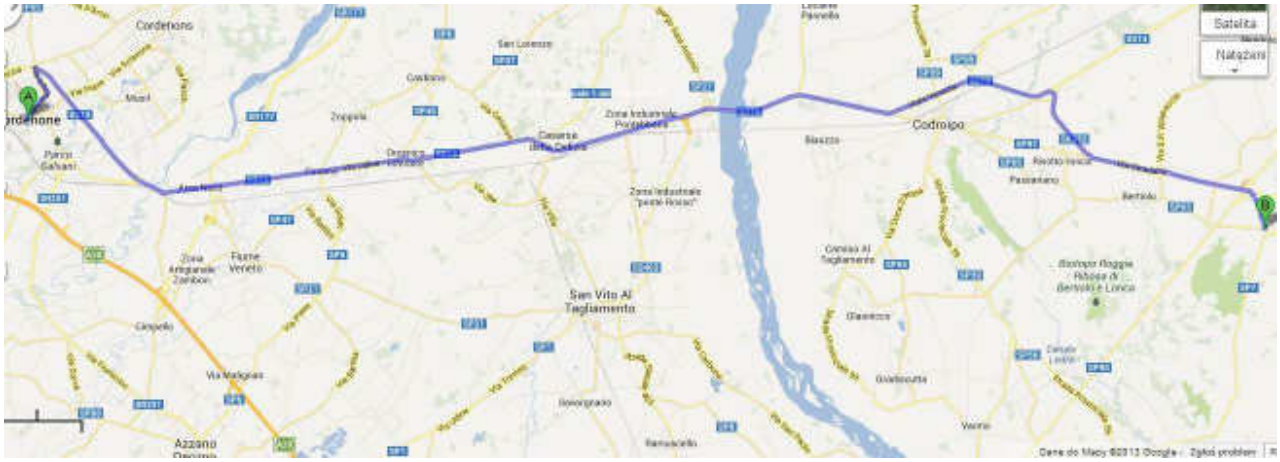
Pic. 36. Another finding being discussed

Pic. 37. Saumoos.

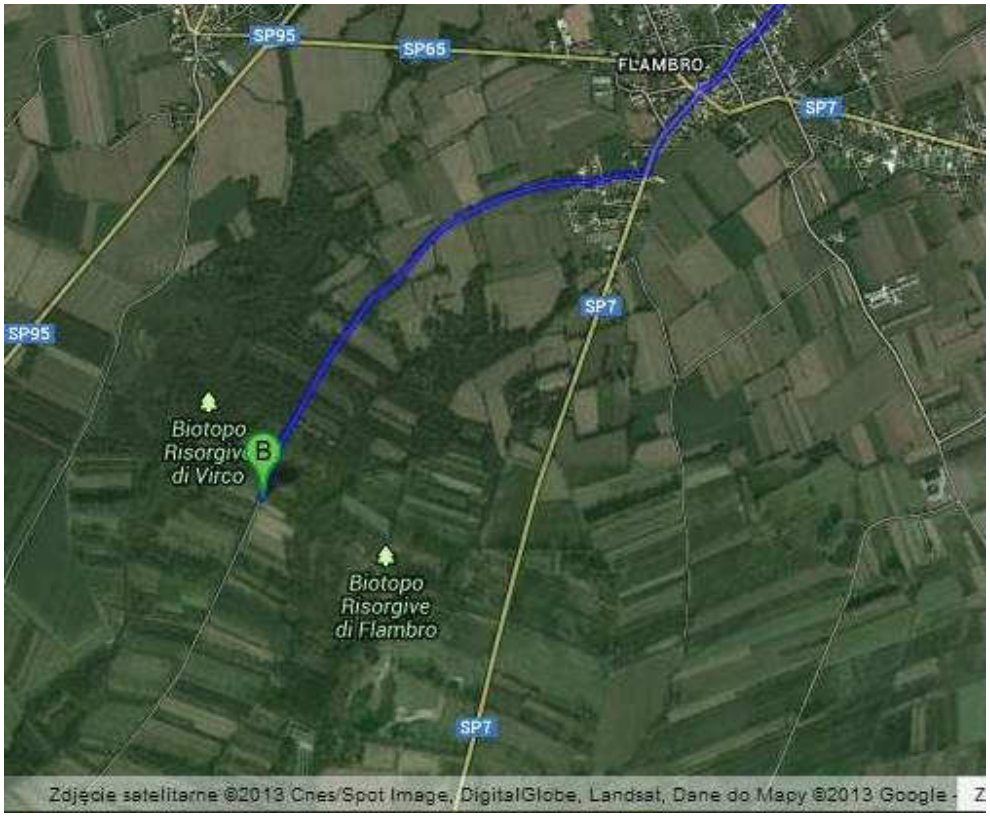
Pic. 38. Saumoos

7 June 2013, Friday

The day before, we decided to travel from St. Marghareten to Pordenone in a roundabout way – using local routes so that we could see the sights. We chose a winding route leading through the Nocalmberge National Park and the pass in Carnic Alps. For some of us the sights were indeed breathtaking, while others found them a little too exciting. However, there was unanimous agreement that even though we reached the hotel around midnight (so we rode for 11 hours…), it was worth taking this route.



Map 12: Travel route



Map 13: Location of Virco and Flambro reserves.

On Friday, we met near Flambro with representatives of the LIFE 06 NAT/IT/000060 project "Conservation and restoration of calcareous fens in Friuli" – Daniele de Luca and Giuseppe Oriolo. The project is dedicated to the protection of the last remaining alkaline fens on the Friuli lowland, their restoration from areas previously used for agriculture and the protection of endemic plant species that have survived in these areas. The project was realized at 4 sites, two of which we have visited – Virco and Flambro. The main habitat types present at these sites were calcareous alluvials, calcareous fens with *Cladium mariscus*, alkaline fens and wet meadows with *Molinia sp*. As part of the project, the fen land was bought for the benefit of the Friuli-Venezia Giulia administrative region and were placed under legal protection. Traditional cutting management was restored on these lands, together with removal of biomass and seed gathering. The purpose of gathering seeds was to create a seed bank and transplant the seedlings raised there to new places (population strengthening). But the most important activities related to active protection was the restoration of old hydrographic conditions in this area. Large amount of effort and money was invested into this area in the 1950s in order to adjust it for agricultural use (willow and corn). Only in 2010, as part of the project, an attempt was made to restore previous soil and hydrological conditions. Large amount of earth was removed, uncovering the original peat layer: sand and silt and also gravel and rock. Thanks to that, the groundwater flowing from the nearby Alps, saturated with calcium carbonate, once again began flowing alluvially to the surface of the restored "fens". In addition, seeds taken from nearby sites were cultivated into seedlings which were then planted, total of 12,000 units, on other surfaces. Moreover, to strengthen the seed bank and also the way of fertilizing the land, mulched biomass was moved here from nearby marshy meadows. To paraphrase the words of a Polish singer… "there is now a stubble field, but there's gonna to be a fen right here" one can say that, in this way, 3 years after the completion of earth work, this land has turned from a cornfield into a calcareous fens.

Pic. 39. Giuseppe Oriolo and Daniele de Luca – our guides are telling us about the place we will soon be visiting.

Pic. 40. On the educational path near calcareous alluvials.

Pic. 41. There's now a stubble field, but there's gonna be a fen right here…

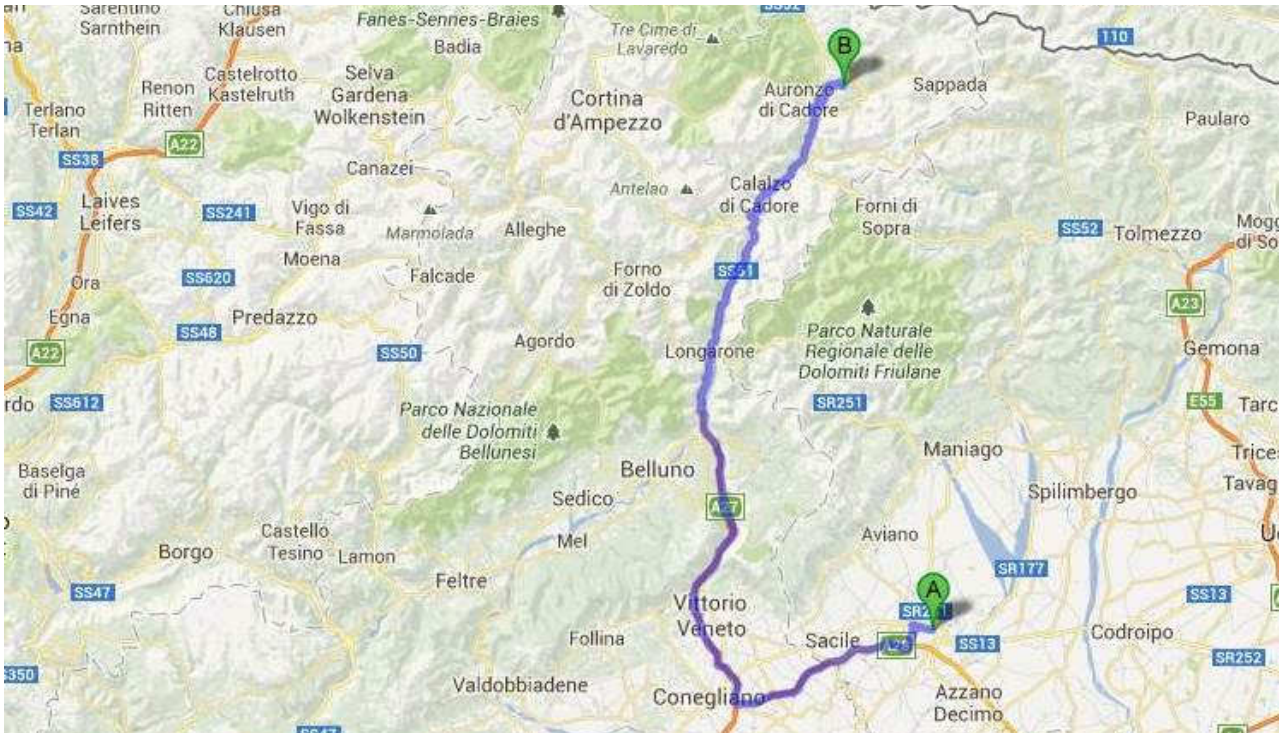
Pic. 42. Giuseppe explains

Pic. 43. Cornfields that were recently there…

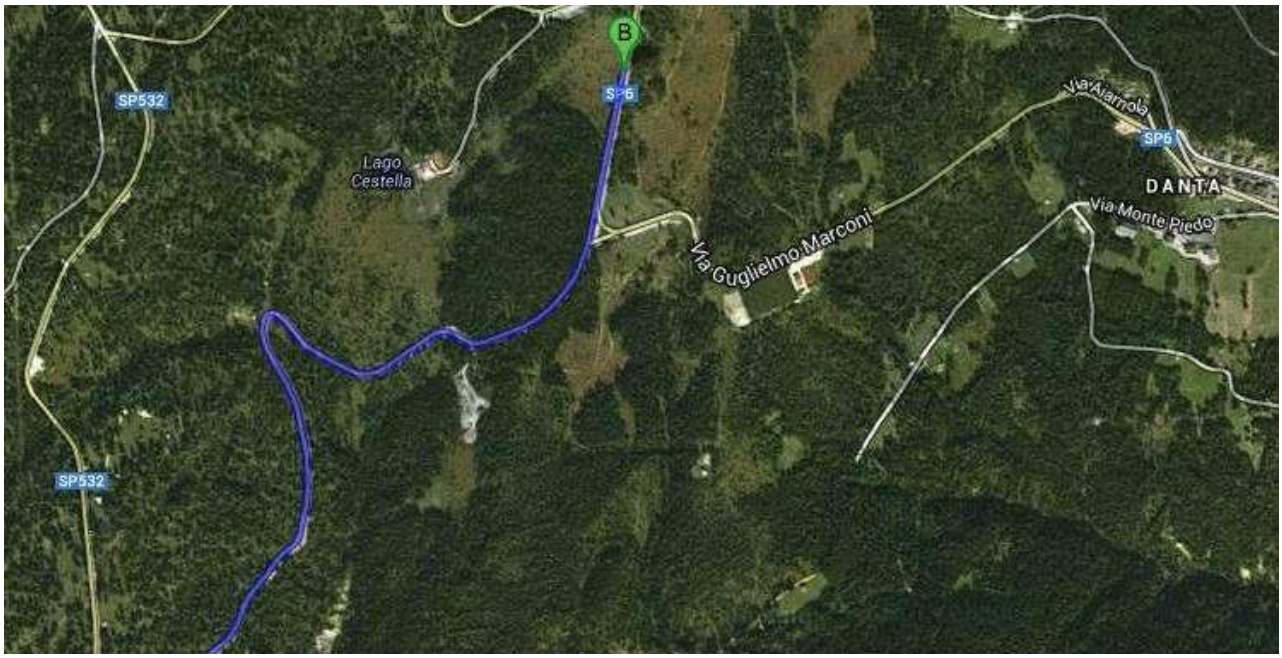
And we spent the rest of the afternoon walking along the beach :)

8 June 2013, Saturday

The next, final day of our trip we went to the Danta di Cadore peatbog, where there was another project being conducted, i.e. LIFE 04 NAT/IT/177 “Danta di Cadore peatbogs”.



Map 14. Travel route



Map 15. Location of the Danta di Cadore peatbog (to the right of point B)

We were guided around the Danta di Cadore peatbogs by Mauro Varaschin who is a professional tour guide – freelancer. The people responsible for managing the peatbog simply did not have time on their hands that day and since we did not want to miss out on seeing these fascinating places, we asked a different tour guide for assistance. The project encompassed 20 ha of peatbogs. The site is one of the most phytosociologically valuable sites in Italy. Most of the peatbogs here are alkaline fens, calcareous fens and active raised bogs. As was the case with other sites, it is claimed that traditional use of meadows for cutting was abandoned here, too. As part of the project, extensive use of cutting was restored – cutting is conducted with the use of a small tractor. It is done in autumn as the land at this elevation is already frozen at that time, but there is still no snow covering. This way of cutting does not destroy the sod and micro-terrain.

Pic. 44. Mauro explains the history and specificity of the site – Danta di Cadore

Pic. 45. Peatbogs with a view on Alps

Pic. 46. Basins form here similarly to the Belianskie Luky site

Pic. 47. Water gate built during the course of the project

But during these 8 days there were also such moments as:








Photos: Dorota Horabik, Katarzyna Kiaszewicz, Alma Szafnagel-Wołejko.

Photos: Dorota Horabik, Katarzyna Kiaszewicz, Magdalena Makles.




Photos: Dorota Horabik, Katarzyna Kiaszewicz.

… we have learned a lot, we have gained much knowledge and experience, but above all we have grown closer and had great fun!

Magdalena Makles
Świebodzin, 27.06.2013