Report

on environmental problems of Shuakhevi Hydro Power Plant, Adjara, Georgia

commissioned by Association Green Alternative, Georgia
prepared by BALKANI Wildlife Society, Bulgaria

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Introduction

Balkani Wildlife Society were asked to support with biodiversity expertise Association Green Alternative, complainant of Complaint No. 2016/9 - Possible threat to "Svaneti 1" candidate Emerald site (GE0000012) from Nenskra Hydro Power Plant development (Georgia).

The 184 MW Shuakhevi Hydro Power Plant is under construction on the Adjaristsqali river and two of its main tributaries in the Autonomous Republic of Adjara, Georgia. The design envisages it as a run-of-the-river plant with capacity of diurnal storage in two reservoirs, allowing Shuakhevi HPP to store water for up to 12 hours and sell electricity at peak demand times. By July 2017 most of the construction phase is finalized, but the HPP is still not in operation because of problems with water diversion through tunnels and connection to transmission lines. This means that major changes in the river ecosystems are still to come.

The Adjaristsqali river is the biggest tributary of the Chorokhi river. A pilot river basin management plan is being developed for the basin of both rivers[1]. Asti HPP was built in the middle section of Adjaristsqali river in 1937 with a weir giving some possibilities for fish migration upstream. In the last 5 years the Chorokhi Hydro Power Plant[2] was finalized impeding completely the connectivity of Adjaristsqali river with the Black Sea.

Shuakhevi HPP is the first and uppermost scheme of Adjaristsqali Hydropower Cascade Project with two more schemes planned.

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1 http://blacksea-riverbasins.net/en/pilot-basins/chorokhi-adjaristskali-basin

2 https://cdm.unfccc.int/Projects/DB/RINA1356641431.9/view

The purpose of the current document is to evaluate some of the most important impacts on biodiversity during construction phase of Shuakhevi HPP and to advert on similar problems to be expected for the Nenskra HPP in Upper Svaneti, Georgia.

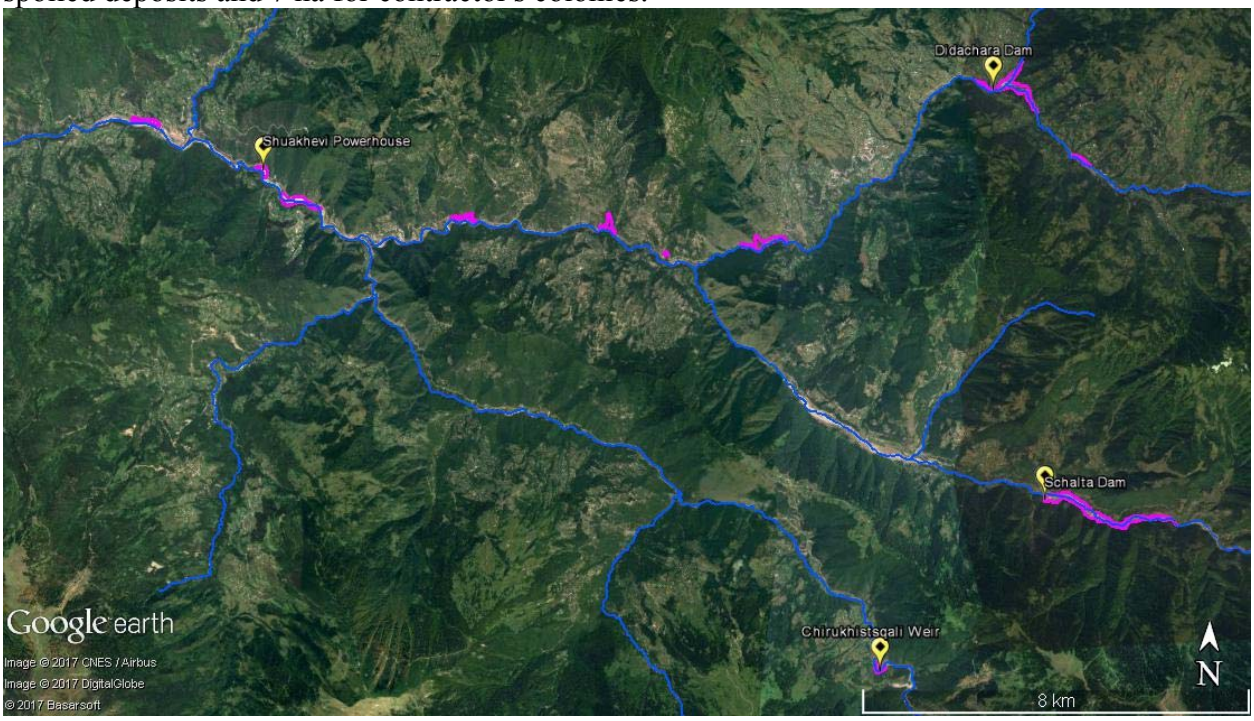
Methods

Experts of Balkani Wildlife Society carried on biodiversity surveys on fish, mammal, bird species and natural habitats in the area of Shuakhevi HPP, Adjara, Georgia in July 2017. Field surveys were complemented with literature review and questionnaires with people who visit the natural habitats regularly for determining the relative number of mammals and fish and aquatic fauna in the most favorable habitats for them and for identifying threats to their conservation.

Results and conclusions

Natural habitats:

We discovered 93 ha of natural habitats destroyed during construction of Shuakhevi HPP (see polygons in violet below) - 56 ha for the two dams, the weir and the powerhouse; 30 ha for spoiled deposits and 7 ha for contractor's colonies.



Access roads, job facility areas, transmission lines would add to this area at least 30 ha. During operation phase we expect that 46 ha river and riparian habitats (like Alluvial forests of *Alnus barbata*) will additionally be destroyed due to completely changed hydrological and sediment regime. **The total area of destroyed habitat will be around 170 ha** without taking into account the impacts downstream of Shuakhevi Powerhouse and on the Chorokhi Delta (Important Bird Area and Emerald site). The delta is already severely impacted by other HPP projects and Shuakhevi HPP will have an significant cumulative impact.

Offsetting or compensation was proposed only for forest habitats: "*The forest creation scheme will include the planting of 9.2 ha of mixed species forest*". The tree planting was not done before the habitats were destroyed as it is required according to EU Directives. The forest offsetting/compensation will not ever create habitats with similar ecological functions like the destroyed habitats. There are several reasons for that:

1. Trees planted over areas of deposits will never create a forest or other natural habitat, like the area bellow which was unsuccessfully planted with 49 trees:

2. Some plantations are made destroying natural grasslands.

3. Pine trees (*Pinus* sp.) are planted in a mixed forest habitat rich in endemic plants

4. Trees are planted in area where natural oak seedlings were present (natural reforestation), but removing of alien species like black locust (*Robinia pseudoacacia*), native to North America, was not done.

Conclusions:

The total area of habitats lost under the Project is several times higher than assessed. Tree planting was done poorly not creating a natural habitat at all. The loss of key river and riparian habitats was not offset/compensated at all, as it is impossible to create a new river. Grassland habitats were not restored, even worse - some additional areas were destroyed during afforestation activities.

Fish species:

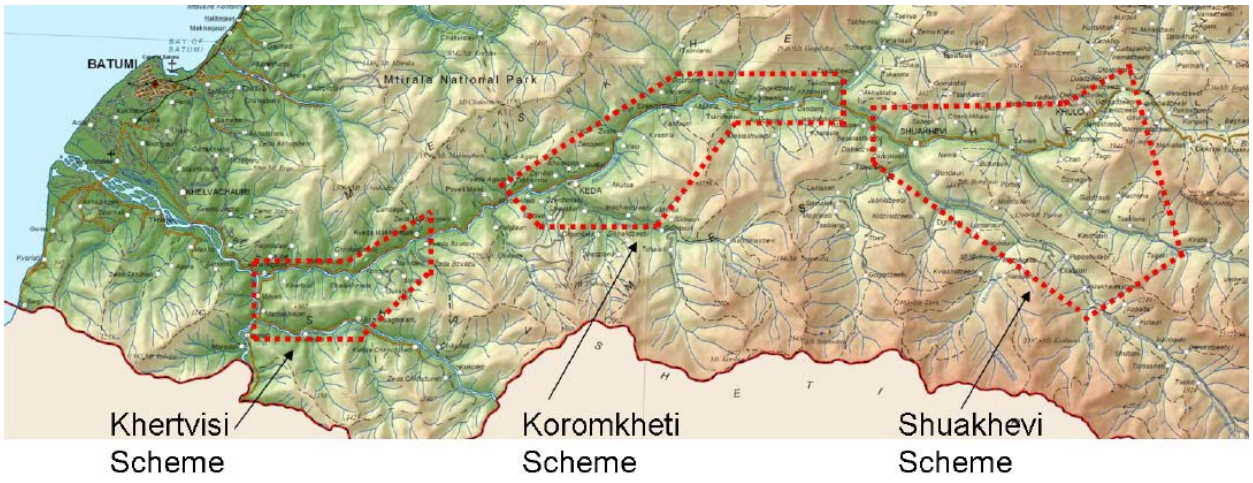
A total of 12 interviews were made with local people that (used to) go regularly fishing from 8 villages in the area of Shukhevi HPP. Fish used to be an important source of protein for local population and around 60% percent of households used to have at least one member that went fishing in the area. 10 out of 12 interviewees said they fished more than 3 kg per day in the best days and 2 out of 12 said they fished between 1 and 3 kg per day. The most common catch was trout and barb.

By July 2017 (Shuakhevi HPP construction almost completed) for sections of the rivers Adjaristsqali, Skhalta and Chirukhistsqali bellow the dams/weir 3 out of 11 interviewees declare they can't catch any fish, and 8 declare they can catch under 300 grams. For sections above the dams only one person (village of Uba Barnali) declared 300-1000 grams in the best days. Most of local people have quit fishing as they can wait a whole day without catching a single fish.

№	Municipality	Settlement	Date	% of families fishing	Fish/day before	Fish/day bellow dam/weir	Fish/day above dam/weir
1	Shuakhevi	Maakhalakidzebi	9.7.2017	60-100%	>3kg	0-300gr	0-300gr
2	Shuakhevi	Maakhalakidzebi	9.7.2017	60-100%	>3kg	0-300gr	0-300gr
3	Shuakhevi	Paposhvilebi	9.7.2017	20-40%	1-3kg	0-300gr	?
4	Shuakhevi	Maakhalakidzebi	9.7.2017	?	>3kg	0gr	?
5	Shuakhevi	Maakhalakidzebi	9.7.2017	60-100%	>3kg	0gr	?
6	Khulo	Uba Barnali	10.7.2017	20-40%	>3kg	?	300-1000gr
7	Khulo	Kinchauri	10.7.2017	40-60%	>3kg	0-300gr	0-300gr
8	Khulo	Schalta	10.7.2017	40-60%	1-3kg	0gr	?
9	Khulo	Vashlovani	11.7.2017	?	>3kg	0-300gr	?
10	Khulo	Vashlovani	11.7.2017	20-40%	>3kg	0-300gr	?
11	Khulo	Cheri	11.7.2017	20-40%	>3kg	0-300gr	?
12	Khulo	Diakonidzeebi	11.7.2017	60-100%	>3kg	0-300gr	?

Conclusion:

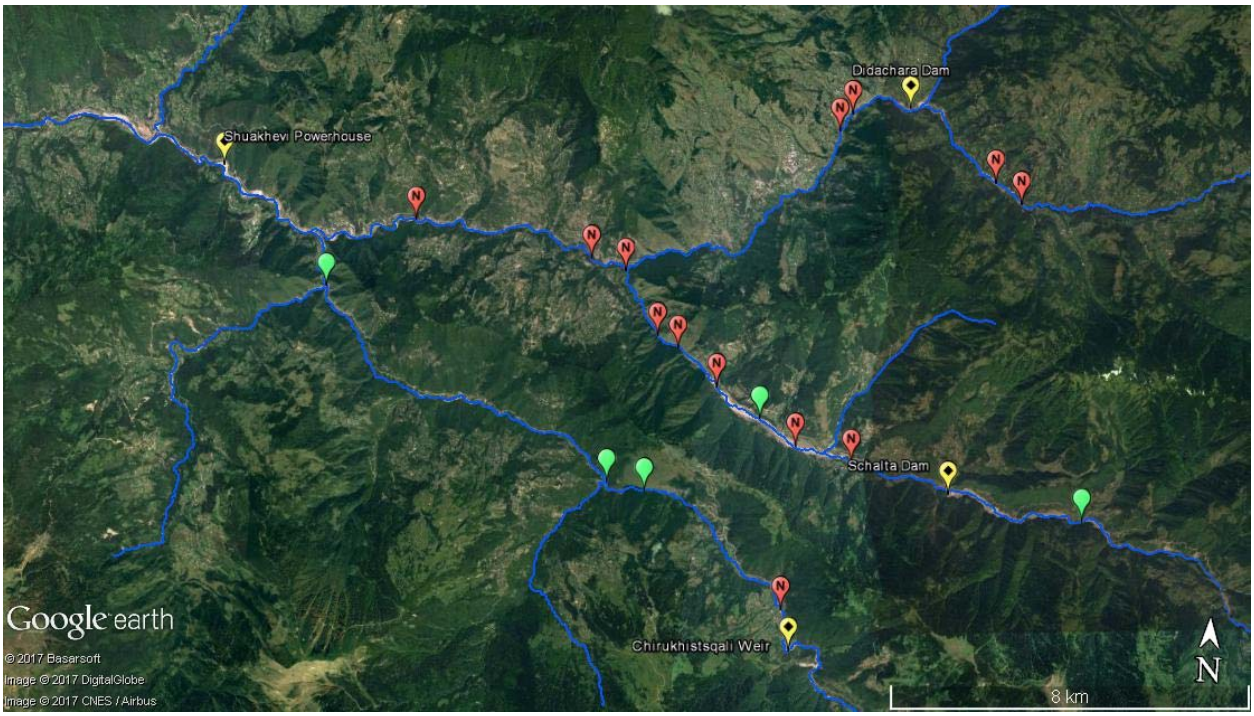
Even before Shuakhevi HPP is in operation fish populations are almost completely extinct for several kilometers bellow the 2 dams and the weir. The fish species could not survive the poisoning with chemicals and the changes in water quantities and quality (as it ws pointed out by all local people). The remaining fish populations above the dams/weir are also in a bad state. Special conservation is needed for the unconstructed middle section of Adjaristsqali river and the remaining tributaries so that any aquatic live is left in the basin. This means plans to build Koromkheti and Khertvisi schemes should be abandoned.



Source: Mott MacDonald Ltd

Eurasian otter (*Lutra lutra*):

18 transects of 600 meters each were made on the shores of upper Adjaristsqali river and its tributaries by our experts searching for otter scats and footprints. Otter was found in 5 sections of the rivers (green on the map) and was absent in 13 sections (red on the map):



Otter was also found in one transect in middle Adjaristsqali river 28 km bellow the Shuakhevi powerhouse. The species is probably extinct in the upper part of the river, above and under Didachara Dam (7 transects).

It is still present in Chirukhistsqali river only because two major tributaries hold important fish populations (3 transects). Otter is extinct bellow the Chirukhistsqali weir, locals declare seeing it before construction of tunnel and weir.

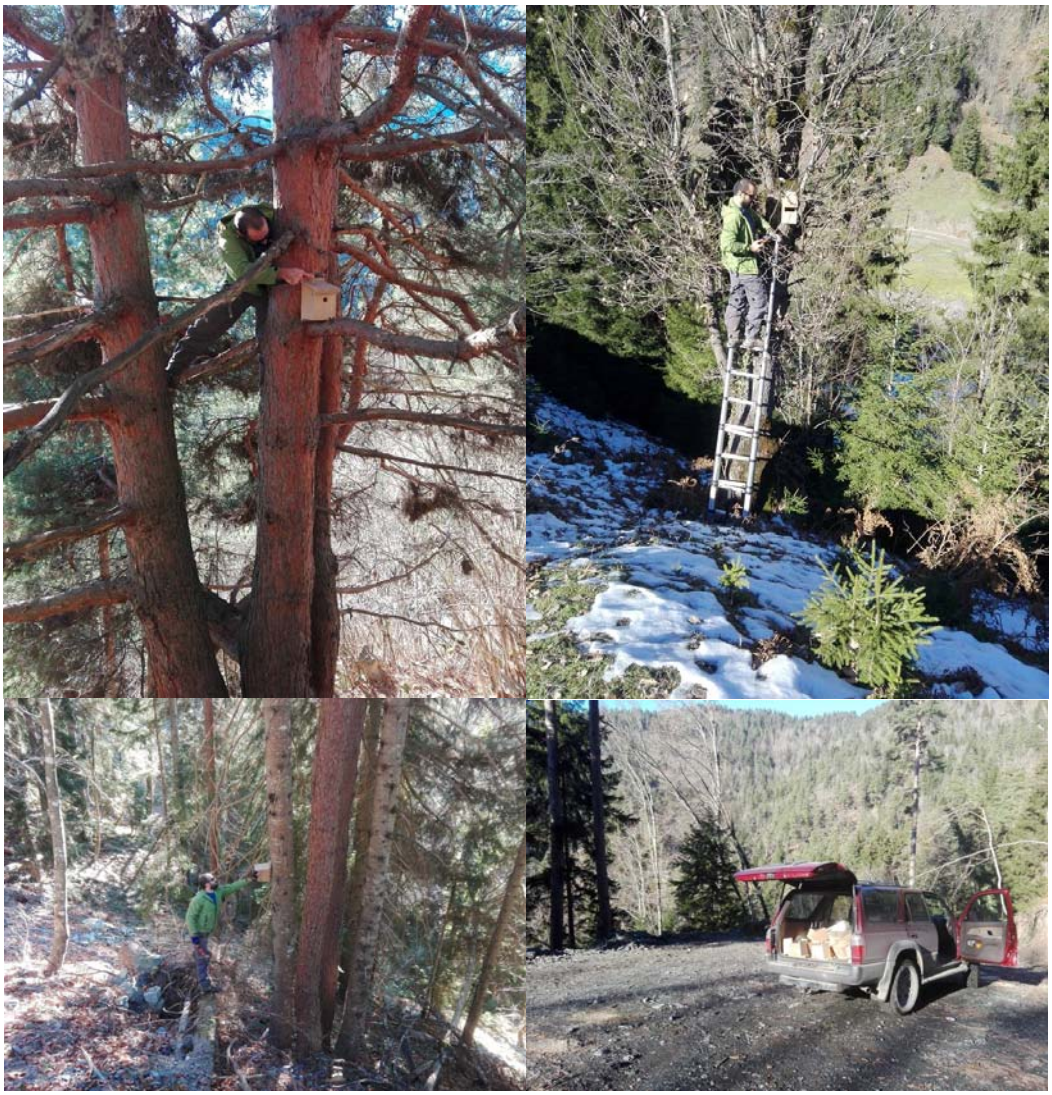
Otter scats were found on the Skhalta river above the constructed dam. Between the dam and the confluence with Adjaristsqali otter was found only in 1 out of 6 sections (after the confluence of a tributary).

Conclusion:

The Adjaristsqali basin is of great importance for the conservation of the Eurasian otter, a red list species in Georgia. Even before the Shuakhevi HPP operation starts otter is extinct bellow the 2 dams and the weir. Special conservation is needed for the unconstructed middle section of Adjaristsqali river and the remaining tributaries so that otter remains in the basin. We doubt it can anymore hold a healthy population if the minimum ecological flow of 10% only remains in the rivers and if there are daily changes in the Shuakhevi powerhouse water release. Otter population surveys show very similar results to fish and aquatic fauna questionnaires as fish is the main prey of the species.

Birds and bats:

Offsetting/compensation for protected mammal populations was proposed by "*installation of up to 100 bat boxes in each scheme*". The same measure was proposed for bird species. The bat and bird boxes were installed in November 2016, already after more than 100 ha of suitable habitats (for different species) were destroyed. The design of the boxes is adequate for common species, but not specialized for rare species.



During the Emerald Biogeographical Seminar (Tbilisi, 1-2 December 2016) the final conclusions on the representation of bird species from Res. No. 6 (1998) of the Bern Convention in proposed Emerald sites in Armenia, Azerbaijan and Georgia[3] indicate that Emerald sites in Adjara should be enlarged to include the most important territories for bird migration. The area of the transmission line to Shuakhevi HPP hold more than >3000 raptors or cranes per migration season (according to special census made[4]) and so should be included in Emerald site according to Bern Convention criteria. The new transmission lines are an important migration barrier for more than 1% of the world populations of European honey buzzard (*Pernis apivorus*), steppe buzzard (*Buteo buteo vulpinus*), black kite (*Milvus migrans*), Eurasian sparrowhawk (*Accipiter*

[3] https://rm.coe.int/16806f40b0

[4] http://www.ebrd.com/english/pages/project/eia/45335bap.pdf

nisus), Levant sparrowhawk (*Accipiter brevipes*), Montagu's harrier (*Circus pygargus*), pallid harrier (*Circus macrourus*), lesser spotted eagle (*Aquila pomarina*), greater spotted eagle (*Aquila clanga*) and booted eagle (*Aquila pennata*).

Many species of the Chorokhi Delta are not sufficiently protected according to the Biogeographical Seminar results.

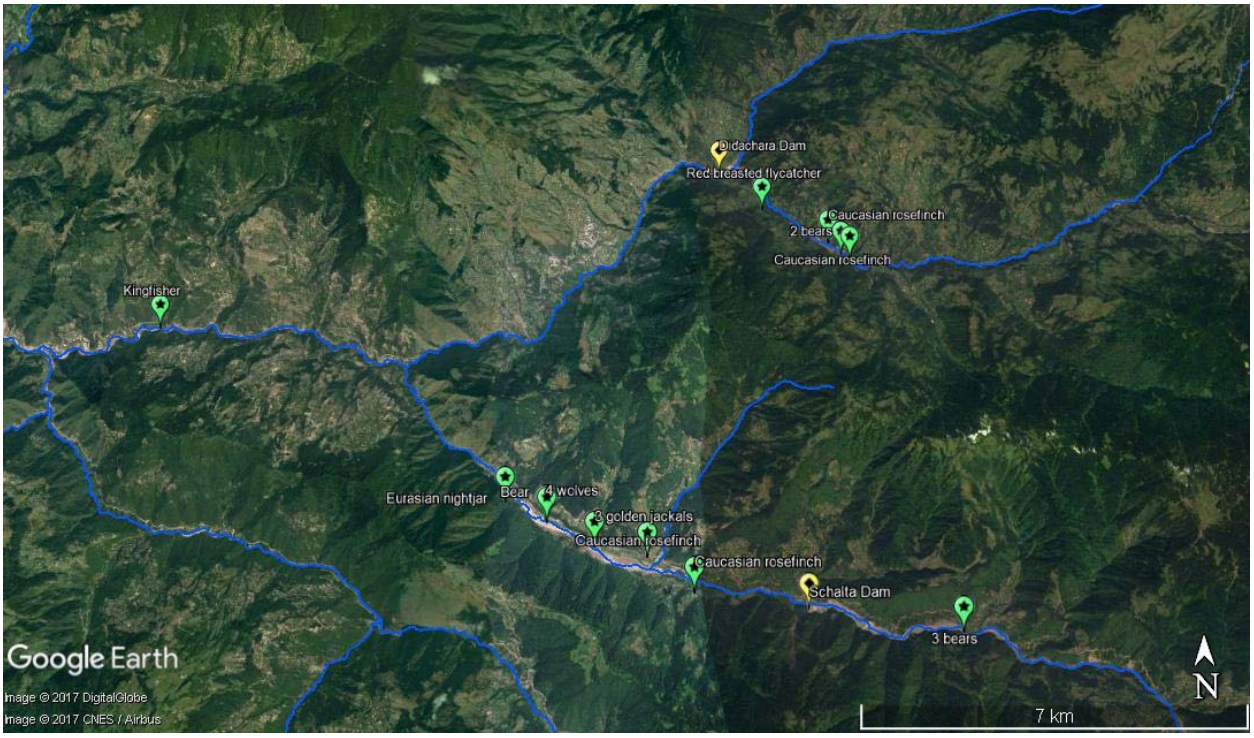
Conclusion:

Installment of bird and bat measure is totally inadequate as it can't offset the loss of natural habitats, especially riparian habitats. The natural habitat were the boxes were put in November 2016 have enough old trees with hollows so rare species of birds and bats are unlikely to occupy them.

Two main impacts on bird species are not addressed adequately - the migration barrier effect and the impact on the Chorokhi delta because of changed hydrological and sedimentation regime.

Other species:

In three days our experts found along the river shores traces of 6 different individuals of brown bear, a pack of 4 wolves, we heard at least 3 golden jackals, 1 Eurasian nightjar, 4 Caucasian rosefinches and saw 1 kingfisher and 1 red-breasted flycatcher.



Conclusion: the river shores are a biodiversity hotspot and no offsetting is possible, as there is no "free" space for creation of new rivers.