

Ornithological monitoring within the Paravani 220kV transmission line corridor (based on November 2014 site survey)

Objective of the monitoring was to identify cases of bird mortality or injury in the Paravani 220kV overhead transmission line corridor. The layout of the line with indication of river crossings is shown in Figure 4a and 4b.

As the line corridor crosses autumn (North-South) and spring (South-North) bird migration pathway (Figure 1), according to the monitoring plan observation was scheduled for beginning, middle and end of migration season. Migration periods were set as:

- Spring migration March 20 - May 10.
- Autumn migration August 20 - November 10.



Figure 1. Spring (green arrow) and autumn (orange arrow) migration routes (violet line - transmission line)

According to the schedule, the field survey started in November. The site visit dated were 16-19, 2014.

The team (ornithologist, assistant and driver) walked over the OTL corridor from Paravani HPP substation site up to the hill west to Borjomi-Vale railway line, near vil. Agara (see Figure 4b).



Figure 2. Start point - Paravani HPP substation area



Figure 3. End point - near vil. Agara

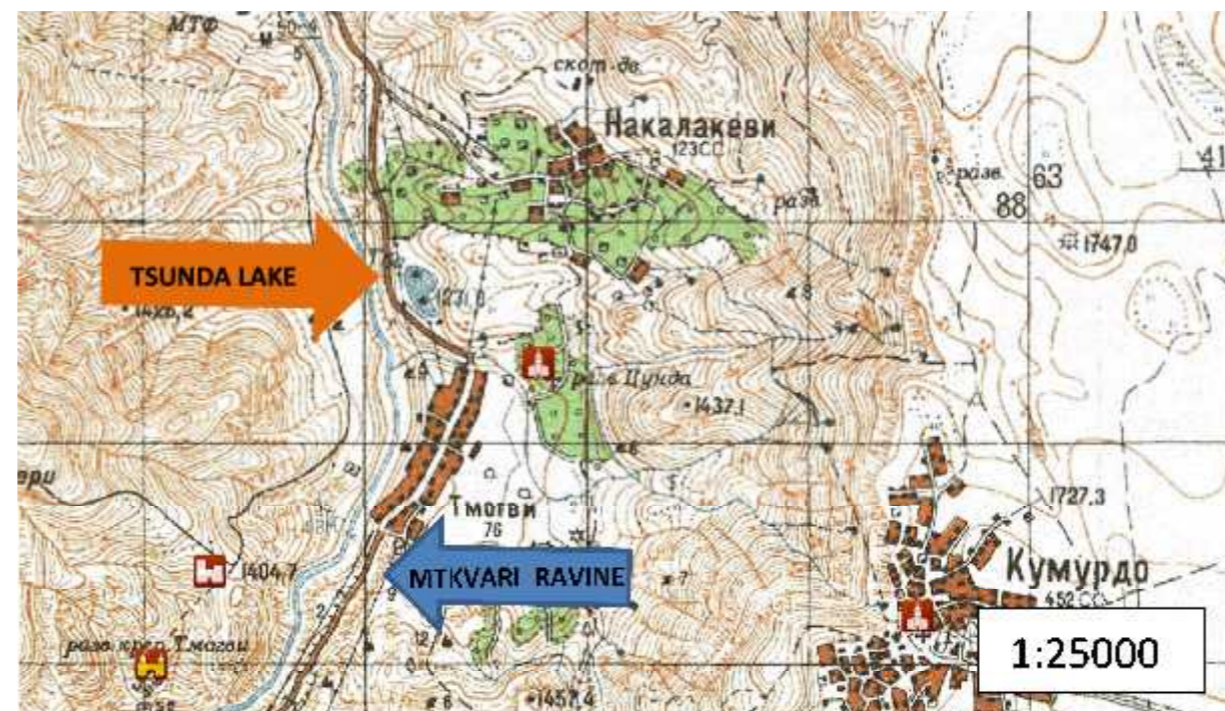
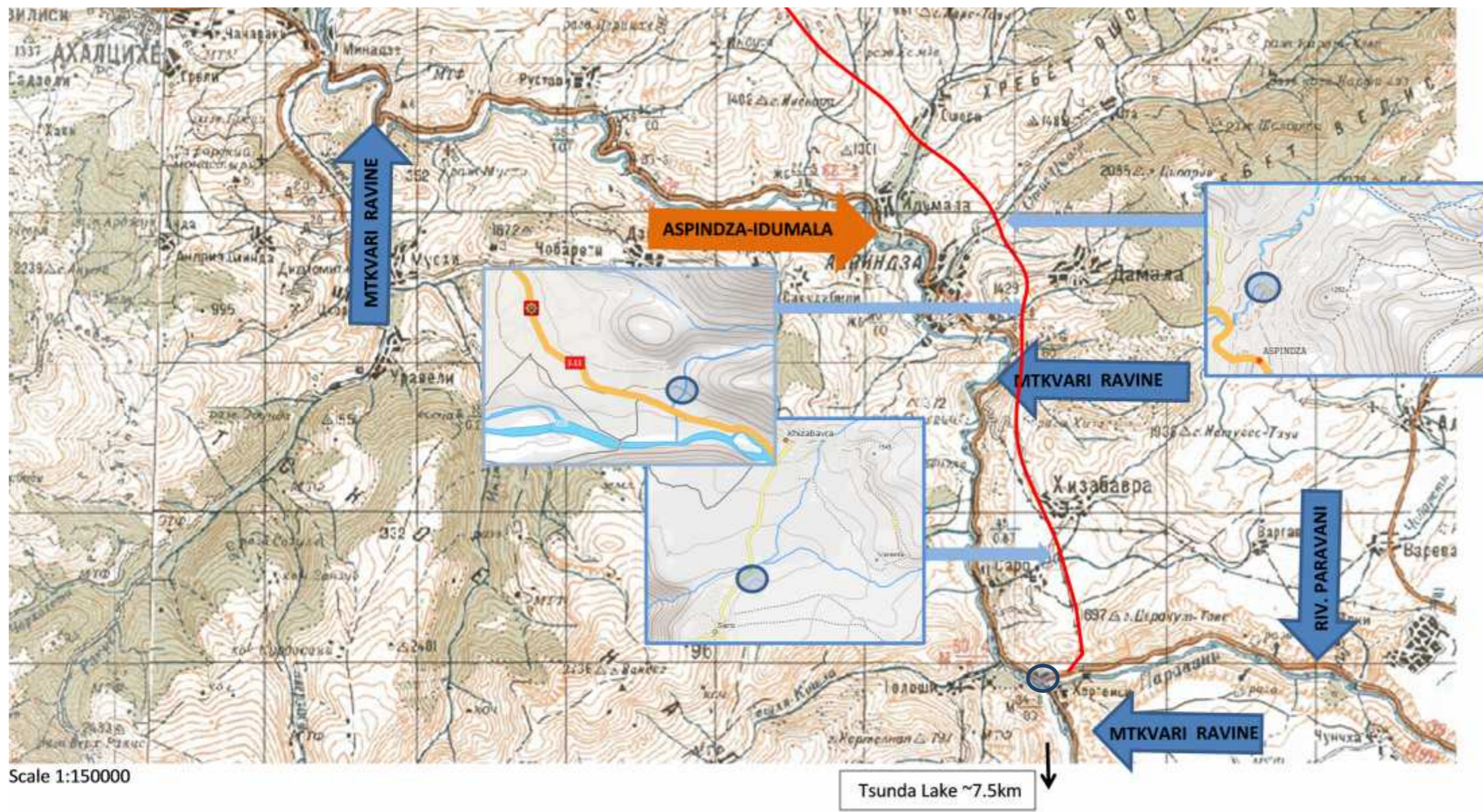
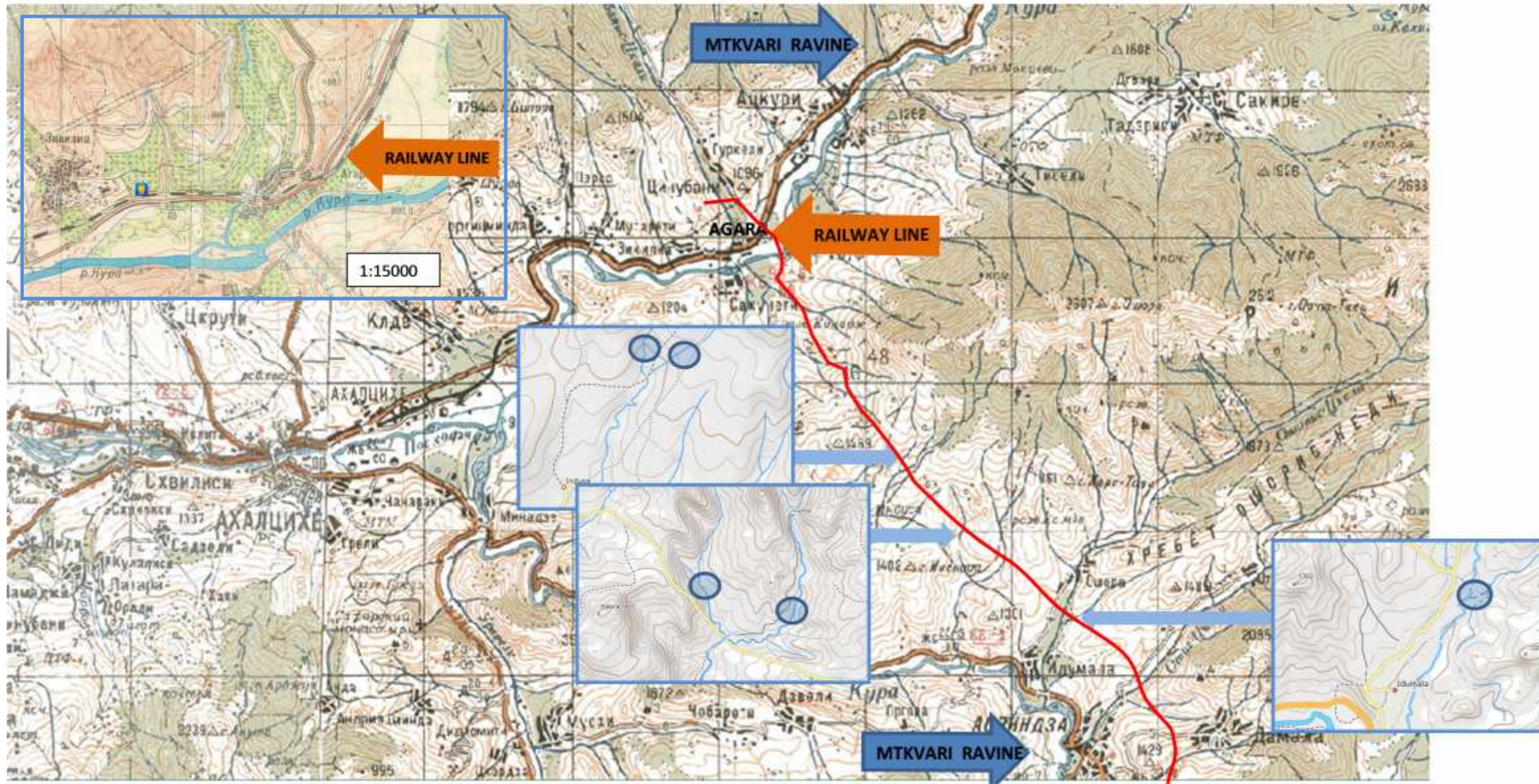


Figure 4a OTL section from HPP site to Aspindza-Idumala



Scale 1:150000

Figure 4b OTL section from Aspidza-Idumala to the substation near Agara

The 50x50m (50m each side from the centreline) wide corridor was studied. The whole line was not accessible because of the complicated landform. All accessible sections were checked. Visibility was good enabling to carry out observation.

Special attention was paid to those sections where potential risk for birds exists. These are river and gully crossings and places where the transmission line runs near high trees and may be poorly visible. (see Figures 4a and 4b). From this point of view Paravani and Mtkvari 'intersection' is notable.



Figure 5. OTL tower in the Paravani section



Figure 6. High trees along the OTL in Mtkvari River section

Migration corridor from Javakheti plateau¹ via Paravani gorge and then southward via Mtkvari ravine is well expressed. Birds like Little egret (*Egretta garzetta*), Grey heron (*Ardea cinerea*), Eurasian bittern (*Botaurus stellaris*), Black-crowned night heron (*Nycticorax nycticorax*) and others often stay for some days at Tsunda lake (see Figure 4a) and move from there to Paravani River via Mtkvari river gorge.

Installation of bird diverters (Figure 7-98) in this section was fully justified. Similar diverters are installed in the Mtkvari section, but only above the riverbed.



Figure 7. Grey heron (*Ardea cinerea*) flock above the Paravani River



Figure 8. Bird diverter

Arrangement of additional diverters in the section up to the railway (Figure 4b) may be advisable. Final decision on necessity will depend on the outcome of further observation. At the moment the area has been marked as

¹ Javakheti Plateau is a volcanic plateau within the Caucasus Mountains that covers the Samtskhe-Javakheti region of Georgia, along the border with Turkey and Armenia.

the section subject to more careful control. If the cases of bird mortality are registered, installation of diverters can be discussed. (The type of diverters can be selected from the list recommended in the initial reports. (Figure 9))



Figure 9. Types of diverters

By the date of the survey, except for several late migrant species, migration process was practically over. Registered were only local resident and wintering species:

<p>Common buzzard (<i>Buteo buteo</i>), Eurasian sparrowhawk (<i>Accipiter nisus</i>), Stock dove (<i>Columba oenas</i>), White wagtail (<i>Motacilla alba</i>), European robin (<i>Erithacus rubecula</i>), Common blackbird (<i>Turdus merula</i>), Eurasian jay (<i>Garrulus glandarius</i>), Common magpie (<i>Pica pica</i>), Hooded crow (<i>Corvus cornix</i>), Rook (<i>Corvus frugilegus</i>), Common Raven (<i>Corvus corax</i>),</p>	<p>Common starling (<i>Sturnus vulgaris</i>), House sparrow (<i>Passer domesticus</i>), Common chaffinch (<i>Fringilla coelebs</i>), Brambling (<i>Fringilla montifringilla</i>), Common linnet (<i>Carduelis cannabina</i>), European goldfinch (<i>Carduelis carduelis</i>), Red-fronted serin (<i>Serinus pusillus</i>), Yellowhammer (<i>Emberiza citrinella</i>), Rock bunting (<i>Emberiza cia</i>), Corn Bunting (<i>Miliaria calandra</i>).</p>
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Along the line no birds dead of injured birds because of collision with the OTL or electrocution have been found.

From Aspindza-Idumala section to Mtkvari crossing (inclusive) the Paravani line runs almost parallel to 500kV transmission line (Figure 10).

Ornithologist, Mr.Abuladze, responsible for similar monitoring of 500kV line has been consulted. Mr.Abuladze proved that no collision related cases of death or injuries were registered along the line monitored by him either.



Figure 10. Location of Paravani and 500kV transmission line



Figure 11. Stock dove (*Columba oenas*) flock.



Figure 12. Hooded crow (*Corvus cornix*) on the tower near vil.Khizabavra

The cases of bird mortality are generally observed at lower voltage lines. Electromagnetic field and noise generated by the high voltage line warn avian fauna about the presence of an 'obstacle'. Therefore, according to statistical data, in complex relief areas the cases of collision with high voltage line are rarely observed.

Next monitoring session will start in March 2015.

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