

THE PROBLEM OF LANDSLIDES IN THE FORESTS OF WESTERN UKRAINE

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Our research on forest landslides in Western Ukraine can be used both to present interesting material for students and for students of secondary schools studying Geography and English. This research of forest problems is interesting in modern time, because the problems of studying forestry in its various manifestations is important for our living.

The object: Forests of western Ukraine.

Subject: the *problems with forest offsets* in Western Ukraine.

The aim of work is to raise the profile of the forest landslides, and also clearly and correctly to submit the material to the reader's audience (which is important for the future teacher); to acquire skills in experimental research (thinking critically about work, making quick and sound decisions, communicating with students and supervisors, writing methods and results of our research, presenting of our work),

The aim may be achieved through the completion of the **following tasks**:

1. To analyze the main threats to soil landslides in Western Ukraine,
2. To study the state of deforestation in Ukraine during the last six years.
3. To give some examples of this process.

Dan Quayle, an American politician and lawyer, has written: «Votes are like trees, if you are trying to build a forest. If you have more trees than you have forests, then at that point the pollsters will probably say you will win»

Offset (landslides) is the most acute problem exactly Western territory of Ukraine. The offset is the displacement of the inclined plane of the mass of the soil from the top or the slope of the hills to the sole under gravity action (<https://en.wikipedia.org/wiki/Landslide>). The causes of landslides may be earthquakes, a set of natural causes (underground and surface waters, precipitation, weathering) and some human activities (construction works, explosions, well drilling).

According to international statistics up to 80% of displacements in our time are related to human activity. In the case with western part of Ukraine, human activity – it is the main reason why forests suffer by landslides. Territory of Ukraine is located in three natural zones: steppe, forest-steppe and mixed forest. The most lands, which covered with forests, are in the north part of country, because it's mixed forest zone, and the western (Carpathian mountains) regions. But in the northern part the forests have another problems and besides offset (it's only 10 % of all problems) (Fig. 1).



Fig. 1. The Carpathian Forest: negative changes in 2013, 2014, 2015 years.

Why? To begin with the Carpathian mountains all covered by forests which have quite rare trees they grown only in the certain areas. In science it is called «endemics». «Endemic is a term that is often used in biology to describe animals and plants that are native to, and found only in, a specific area» [9].

The modern scientists write that the Carpathians form is the largest and biogeographically important part of the EAS. Topography and climate of mountain systems are known to generally favour evolution of endemism, and, accordingly, these two ranges belong to important centres of endemism in Europe. The number of endemics in the Carpathians is estimated at 3–5% of the vascular flora of the area (excluding apomictic complexes). The authors underline that the Carpathians and the Alps are the largest mountain ranges of the European Alpine System and important centres of endemism. Among the distinctive endemic species of this area is *Saxifraga wahlenbergii*, a Western Carpathians member of the speciose genus *Saxifraga* [8].

Their study underlines the importance of multilocus DNA studies in endemic species along with their close relatives to clarify the evolutionary and biogeographical connections between the floras of high mountain regions [8].

This endemics is a natural value of Ukraine, which look amazing, powerfully some of them even included in the Red Book of Ukraine.

According to official information (<https://ecology.unian.ua/1272491-ekologichne-lihovinischennya-lisiv-v-ukrajini.html>), forests occupy about 16% of the entire territory of the country. It is almost 11 million hectares of forests. 40% of the entire territory of Ukraine. The local people use this fact. As a result of deforestation in the western regions of Ukraine, which is the loss of wild forest habitats due to human activity, has grown into a global problem as demand for wood climbs. Shrinking forests can cause wide-reaching problems, including soil erosion, water cycle disruption, greenhouse gas emissions and biodiversity losses.



By the way as a fact trees absorb and retain a lot of moisture (<https://www.weatheronline.co.uk/reports/climate/Ukraine.htm>). The Carpathian region has a lot of precipitation from the year 1600-1700 mm/year. Forests must protect local population from flood and overflow. People do not want to accept the help of nature and use it for their own purposes.

The offsets led to roadblocks, the destruction of small villages and destroyed houses. The landslides imposed obstacles to the road, which was a single way that supplied products of

life to the village (Fig. 2–4). This summer how reported Department of Civil Protection of Ivano-Frankivsk Region State Administration (<https://www.ukrinform.ua/rubric-regions/2525089-zsuv-gruntu-perekriv-dorogu-do-pati-girskih-sil-na-prikarpatti.html>) traffic was blocked for vehicles, due to which the car connection with the villages like Bystreets (372 inhabitants), Dzembronda (128 inhabitants), Topelche (205 inhabitants), Zelene (796 inhabitants) and Yavirnyk (293 inhabitants) were stopped.



Fig 3. Dead dynamics of landslides

landslide settings and material properties results in wildly different forms from one landslide to another – with wildly different human consequences as well 5].

The coordinator of the "Forest Guard" Bohdan Vyhov says: "There are abuses in a certain Carpathian region, as the analysis for 2016 shows, about 30% of the timber was harvested from sanitary logging, and we know that recently sanitary rules have been



Fig. 4. Dynamics of landslides

region, including illegal timber harvesting, poorly designed forest road systems, inadequate investment in the forest sector, and inconsistently applied watershed and riparian protections [4, p. 5]

The effects and dynamics of landslides are offset by the presence of large forest areas in this territory. In order to reduce the impact of landslides and floods and to avoid a critical ecological situation and natural disasters in the western territory of Ukraine, it is necessary to minimize continuous felling of forest, to apply only solid sanitary logs, landscapes; cuttings in newlyweds, medieval and contiguous plantations (lighting, clearing, desalination and walkways, planned. After all people should understand that the main thing is not how much you put the money in your pocket, but whether you wake up peacefully in your warm bed with your family. In all catastrophes, problems, destroyed dwellings, not nature is to blame, namely we. Because we are the poor and encourage nature to negative consequences.

At last scientists understand a lot of these details about how landslides work, but understanding is not enough. We also need to make sure that updated geologic

Deforestation in the territory of Ivano-Frankivsk region takes place more illegally. The ecologist Andriy Onyskov emphasizes: "Forest is the natural factor regulating the water level. The more we cut the forest, the more we will have natural disasters that will continue for many years to come." (<https://ecology.unian.ua/1272491-ekologichne-lihovinischennya-lisiv-v-ukrajini.html>).

Most landslides do not tumble down vertical cliffs but slide down slopes. The wide variety of

landslide settings and material properties results in wildly different forms from one landslide to another – with wildly different human consequences as well 5].

The coordinator of the "Forest Guard" Bohdan Vyhov says: "There are abuses in a certain Carpathian region, as the analysis for 2016 shows, about 30% of the timber was harvested from sanitary logging, and we know that recently sanitary rules have been changed, which made such manipulations impossible." (<https://www.obozrevatel.com/ukr/society/virubka-lisu-v-karpatah-ekolog-rozpoviv-yak-ukraina-nablizhaetsya-dokatastrofi.htm>). «The Forest Guard» is an organization dedicated to forest protection from anthropogenic impact.

In conclusion. There are a number of challenges facing sustainable forest management in the Carpathian

information is incorporated into public understanding and policy on local, national, and global scales.

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