

Conservation of butterflies in the Slovakian National Parks

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The conservation of butterflies in the NE of Slovakia has hardly been considered before, though the conservation of butterflies along the entire southern part of Slovakia (the Pannonian region) has been considered recently by Kulfan (1992). The comments I am offering here are based on a visit to all five of the National Parks in NE Slovakia at the end of May, beginning of June, 1993 during which I recorded 27 species (Feltwell 1994). My comments are of a general nature, of fundamental principles, and not always specific to a particular place. I was fortunate to have covered over 3,000 miles (4,828 km) during my weeks' stay, and was able to see at first hand many of the habitats that butterflies frequent.

The following points and recommendations are made directly in relation to the conservation of butterflies:

1. Biodiversity studies

I must say that the Biodiversity Programme currently up and running at TANAP is an excellent first step at finding which species are present, and mapping their distribution in the various National Parks. All visiting entomologists are encouraged to complete the species cards and the data is then entered into the TANAP database. Complimentary records are running in parallel with botanical records. Liaison with the Protected Areas Data Unit at Cambridge, UK (I.U.C.N.) helps to keep the recording consistent so that in the long-term comparative information of the status of butterflies can be effectively monitored.

2. Forest management

The Slovakian mountains are extremely well covered in trees, and indeed have vast expanses of primary forest the likes of which are no longer to be found in Western Europe. Such a blanket cover must be conserved at all times, but there is clearly going to be a conflict of interest between the foresters and conservators of butterflies as to how these forests should be managed. It is clear from any visit to the region that foresters dominate the management of the mountainsides, with few concessions to nature conservation. Forestry is a money-making venture and maintaining a sustainable return from the forest is the dream of ever forester. Quite how this is done in the future, should be influenced by those who wish to conserve Slovakia's butterflies. Liaison between foresters and conservators is vital. Conservators must point out the ecological demands of the various

butterfly species, and liaise with foresters to find the most suitable compromise in both the interests of forestry and butterflies.

Since timber has to be cut from the forests to meet the demands of the foresters, then there are better ways of cutting it for butterflies, than are currently being used. The usual scenario is for foresters to cut huge swathes of forest, clear-felling everything in a large rectangular coup up a mountainside. It has the maximum negative visual impact and the maximum negative ecological impact, though I doubt whether either impact was intended. I believe it is because nature conservationists and foresters have not been liaising with each other.

3. Autecological studies

Before conservators of butterflies can advise foresters they have to know a good deal about the autecology of the species they wish to conserve. Very little autecological studies have so far been made on Slovakian butterflies so one must assume that only the long-term conservation interests will be attended to in Slovakia, and that forestry enterprises will prevail as they do at present. The short-term conservation interests of butterflies could be implemented in the meantime, if a dedicated lepidopterist were to implement knowledge gained from autecological research carried out in Western Europe. This is something which TANAP might consider in appointing such a lepidopterist. Kulfan (1992) reported a similar deficiency of autecological reports for the Pannonian region.

Britain, which might be considered to be a leader in the theory, if not the practice of butterfly conservation, has not yet done enough autecological research on its own butterflies and has paid the price with some extinctions (Feltwell 1994). It would be useful for those countries which are only just starting to conserve butterflies to learn from the experimentation seen in Western Europe, especially Britain, as an alternative short-term supplement to carrying out proper autecological which might be too late to save particular species. The risk is definitely worth taking in borrowing, and adapting, conservation methods.

4. Safeguarding rocky areas

There are some parts of the mountains which are so rugged and steep, or have outcrops of rocks, such as in the limestone area of Pieninsky National Park, that the butterflies will always do well. Blue butterflies and apollo which have larval food plants which grow on limestone rocks are not likely to be affected from direct action from man, except from collecting.

5. Monitoring acidification effects

These open rocky areas are not under threat from foresters, only from aerial attack from acid rain. It must be said that the death of trees through acid rain can be witnessed at various locations in the High Tatras, and the pollutants which have been responsible for the demise of the trees have presumably been carried southwards from the industrial area in Southern Poland which is not far away. It is the gradual thinning of the branches (i.e. loss of needles), weakening of the tree itself, and gradual degradation of otherwise healthy trees which kills the trees. One sees a lot of poorly trees, rather than great areas of dead trees, which would indicate that loss of trees from acid rain is rather more widespread and serious than otherwise appreciated. The foresters make a quick job of removing dead sections of forest which have died from acid rain. In the Tatras men still work with teams of horses in pulling out logs, instead of using tractors in the protected zone of National Parks. So the visual impact of the effect of acid rain are considerable lessened in and around the tourist region of Tatranska Lomnica. The effects on butterfly populations can only be presumed.

The knock-on effect of weakened trees on butterflies is not being studied as far as I am aware. If acid rain is debilitating and killing the trees then there certainly has to be a major effect on other wild plants, many of which are used by butterflies as foodplant. Flowering plants are far more susceptible to acid rain and mists since they do not have the protection of toughened bark and lignin. Again I am not aware on the influence of acid rain on the welfare of flowering plants, let alone butterfly food plants. It offers remarkable areas for study.

6. Call for more gaps and meadows

There is a general need for many more gaps to be made in the forest so that flower-rich meadows will attract butterflies (Feltwell 1993, 1995). Relic 'primary' meadows in the forest should be identified, mapped and integrated into management plans, so that their biodiversity is recognised widely and conserved at all costs.

One can imagine the huge swathes of Slovakia's primary forests punctuated intermittently by open areas of rocks and scree. These areas are excellent for butterflies, but they need to be supplemented with other gaps in the forest which will quickly become colonised by butterflies. Foresters need to be encouraged to make lots of irregular sized coups in the forest, of about 3-6 acres (1.21-2.43 ha) in size, and separated from each other by no more than two kilometres. These areas for butterflies should be well away from tourist areas and should be available only to dedicated naturalists. They should not be sited anywhere near tourist epicentres, especially never near ski resorts. The key conservation places for butterflies should be mapped and managed to be as far away from any potentially damaging environmental impact, such as skiing, as possible. There are some bad examples of management of slopes for skiing, where habitats have been eroded, removed and severely degraded. Unfortunately skiing often

occurs in key conservation sites so that there is often a conflict of interest.

The coups made by foresters should be verifying by conservationists beforehand. With good liaison between foresters and conservationists, a series of conservation maps could be prepared so that foresters knew which boundaries to observe. A similar sort of planning procedure is in existence in the UK at the present time. By opening up the forest, butterflies will prosper by being able to expand their distribution. The coups can be allowed to regenerate, so that if a set of these coups of different ages (separated by 3 years age difference) exists in an area there is ample opportunity for butterflies to move from one area to another. They can do this either by moving across the canopy which they do anyway, but also along corridors made by man. Where the terrain is too difficult, 'tourists' rather than naturalists should be encouraged to take trails along rivers, such as is done well in the Pieninsky National Park which follows the river, and where the forest edge is punctuated intermittently by gaps and coups in the forests. Much more conservation for butterflies could be done here. As it is, there are too few open areas to draw the butterflies down from the canopy as they try to move around the forests and colonise new meadows.

7. Call for more corridors

It is vital to be aware of, to map, and to conserve the butterflies found along corridors. I know of no work being done on this aspect, but the nature of the mountainous terrain and the fast rivers descending the mountains, offer one of the best opportunities to study linear effects and habitat corridors. Examples are to be found in the Small Fatra National Park and the Slovak Paradise National Park, in both cases the Park trail follows streams or rivers and along these areas the flora and fauna should be studied and the butterfly potential maximised, even enhanced by returning some overgrown areas to meadow and scrub. It is these riverine corridors which are one of the highest priorities for conservation of butterflies in Slovakia. It was a feature that Kulfan drew attention to in the south of the country, for *Neptis rivularis*, he said is a 'local riparian species along streams chiefly in inaccessible places. It will be endangered by construction of thoroughfares and the artificial embankment of natural watercourses.'

8. Eco-tourism

Conservators of butterflies do little to bring in any revenue to the region. There is already a network of some 600 miles (966 km) of footpaths through much of the northern Slovakian mountains, and these are very well maintained by the authorities. They are only reasonably good for butterflies, since this was hardly a consideration when they were created, as large sections are through dark and dingy forest with few butterflies. It is only where the track follows the mountain curves and crosses streams that the vegetation is low and open enough to support a good range of butterflies, or when the track open out into alpine meadows. There are therefore thousands of

opportunities to improve the existing network of walks especially for butterflies. And this could be linked in with the 'corridor' initiative. There is also much scope in targeting rich areas and creating specific butterfly walks. These can to the what the National Parks already have on offer. The Slovaks are experts at creating trails, so their expertise should be allowed to blossom expressly for butterflies. Establishing a network of butterfly trails would not only boost eco-tourism, but would provide more habitat for butterflies whilst helping to conserve them.

The mountains to the north of Slovakia and the chain of Carpathian mountains which run north-eastwards from east of Vienna and which occupy the western boundary of Slovakia with Bohemia, have many areas of forested upland which is so far unexploited by man. The villages and towns tend naturally to be in the valleys so the conservation of butterflies is a little fragile here because of all the interactions from man. The problem is not so acute as it is in the extensive lowlands of the Pannonian region which have major environmental impacts, such as intensive agriculture, viticulture and industry, and to

which Kulfan refers. Most of Slovakia's butterflies have never had any autecological research carried out on them, either in the north or south, so there is still a huge first step to take just to start effective conservation of butterflies. Let's hope they stay extant long enough. The southern Pannonian region only has 148 butterfly species left from an historical list of some 165, 46 of them being found only in that region.

References

- Feltwell, J. 1993: *Meadows, A History and Natural History*. Alan Sutton, Gloucester. 205pp.
Feltwell, J. 1994: Some butterflies of the Slovakian National Parks. *Entomologist's Gazette*. (in preparation).
Feltwell, J. 1995: *The Conservation of Butterflies*. Academic/Poyser, London. (in press)
Kulfan, M. 1992: Changes of distribution of thermophilous butterflies in Slovakia. *Journal of Res. Lepid.* **29**, 254-266.

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