TIME TO ACT

Preserving the last DANUBE CLOUDED YELLOW BUTTERFLIES *Colias myrmidone* in Romania by a collaborative approach

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Butterfly Conservation
EUROPEAN BUTTERFLIES GROUP

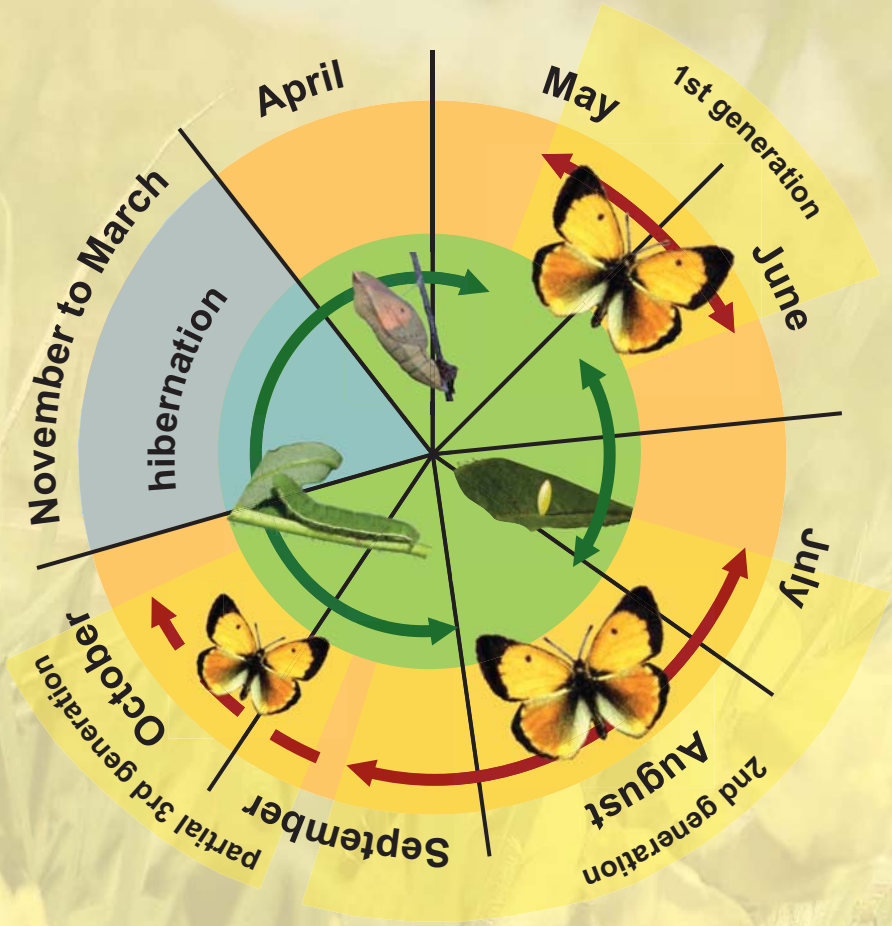
Federal Ministry for the Environment, Nature Conservation and Nuclear Safety

ABOUT THE BEAUTY OF LANDSCAPE AND BUTTERFLIES

The beauty of the Transylvanian region is the result of traditional lifestyle and low-intensity farming – still existing in remote rural areas, inhabited by many wild plants and animals. In such places, the **beautiful yellow-orange Danube Clouded Yellow butterfly *Colias myrmidone* and many other threatened species live**. **All of them are signs of healthy social-ecological systems**. Biologists have seen how fast this species is disappearing from its European range: even local populations in Romania are getting smaller and smaller, and extinction of this butterfly has already become a sad reality in country after country across Central and Eastern Europe.

Here in Transylvania, we have some spots where the Danube Clouded Yellow is still present in viable local populations. **We should act now to preserve the future of this beautiful butterfly – especially because we understand that it is so close to disappearing from our beautiful homeland**. We don't want to lose it! We hope to protect it and to keep it in stable populations long into the future by developing ecological education actions and sustaining eco-tourism. If we don't protect it here, there is a risk it will be lost from Europe altogether.

DANUBE CLOUDED YELLOW LIFE CYCLE



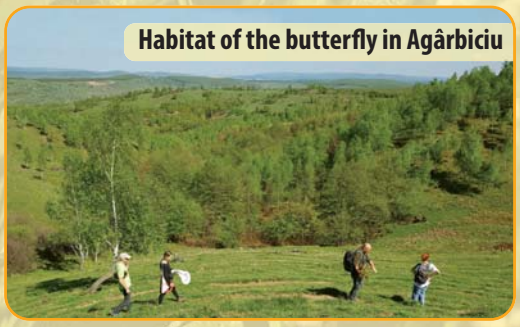
The Danube Clouded Yellow *Colias myrmidone* has two and sometimes even three generations per year. **The first generation flies between May and June. After a few weeks pause, the second generation follows from middle of July until September. In case of a third generation, we can see them flying until the end of October**.
After mating, females start laying eggs on the leaves of their only larval food plant, broom species of the genus *Chamaecytisus*. The caterpillars feed on the food plant and then develop into the next generation or hibernate. This butterfly is a very strong and fast flier. They usually stop only for very short periods to lay eggs or to visit flowers. The strong orange colour attracts the eye – if you manage to follow their fast flight or discover them when nectaring. The eggs start developing again until new butterflies emerge eventually.

THE BUTTERFLY BENEFITS FROM TRADITIONAL LAND-USE!

Grasslands mixed with shrubby islands represent the habitat of the Danube Clouded Yellow

Localities of the Danube Clouded Yellow are strongly associated with traditional land-use on a landscape scale. The butterfly depends for its reproduction on its only food plant, broom species, which thrive in unfertilized traditional grassland. **These grasslands may be mown or grazed, but key periods of no disturbance are also needed for undisturbed habitat patches, so that eggs and caterpillars at the tip of the plants can survive**. These conditions are obviously provided by traditional land-use in our study areas, since the butterflies survive well there.

Small changes in the pattern of mowing or grazing can thus adversely affect the butterflies by preventing them from completing their life cycle through to adults. In contrast, the lack of mowing or grazing leads to natural succession – that is the increase of shrubs and trees in the landscape – and this can also cause problems by shading out their food plants. The butterfly and its food plant depend on areas that are kept open by grazing and mowing. Consequently, the butterflies benefit from diverse land-use, they need some human land-use, but they do not like too much of it!



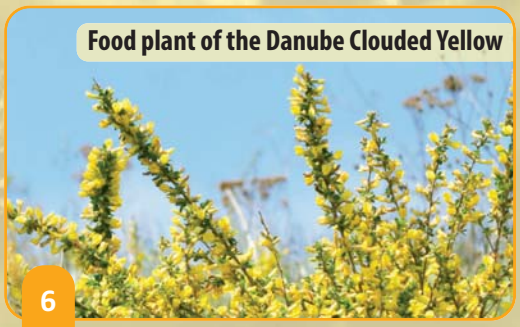
Habitat of the butterfly in Agârbiciu

Low-intensity grazing with cows preserves the habitat

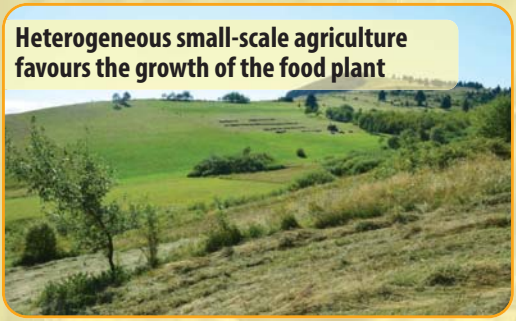
THE ROLE OF PEOPLE: HOW TRADITION PRESERVED THE DANUBE CLOUDED YELLOW

Traditional land-use can help preserve the habitat of the Danube Clouded Yellow

In Transylvania, traditional land-use is widely preserved. The region is famous for its high natural and cultural diversity. In this landscape, many different parcels of land-use create a mosaic of grasslands, forests and fields, **which are used in a variety of different ways and thus contribute to the wider landscape diversity**. These landscapes are shaped by traditional agricultural practices and are highly beneficial in supporting natural diversity as part of the local heritage.



Food plant of the Danube Clouded Yellow



Heterogeneous small-scale agriculture favours the growth of the food plant

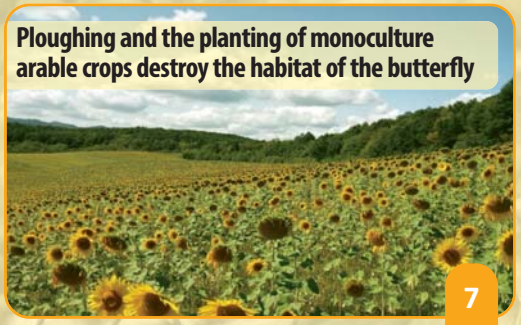
An important part of this natural heritage is the Danube Clouded Yellow with its last European strongholds in these areas of Transylvania, **where its habitat is conserved and ideal conditions prevail for it to breed**. These populations still exist as some of the last ones in Europe simply because Transylvanian people apply agricultural methods that stimulate a rich landscape and show a deep connection both to their rich environment and its benefits to them.

THE DANUBE CLOUDED YELLOW IS THREATENED BY LAND-USE CHANGES

Grazing intensively with sheep can destroy the habitat of the Danube Clouded Yellow

Afforestation is harmful for the habitat

The caterpillars of the Danube Clouded Yellow feed only on fresh sprouts of their food plant, *Chamaecytisus* broom. Such fresh sprouts are often found where they re-grow after grazing or mowing. However, feeding on such fresh shoots also puts the caterpillars at risk since these are the same shoots that are favoured by grazing livestock. So although they depend on the land-use, at the same time they are at risk of being destroyed by too much or untimely land-use. **Any kind of intensification, such as fertilization and overgrazing, or reduction of the diversity of the habitat mosaic destroys the necessary conditions for the Danube Clouded Yellow and natural heritage is quickly lost**. On the other hand, habitats of the Danube Clouded Yellow are also lost if grassland is abandoned and shrubs invade or if they are deliberately afforested. This negative process takes place much more quickly if trees are planted (and often it is alien species of trees that have been used for this). We can still find caterpillars on food plants next to these trees but shading soon makes these habitats unsuitable for the food plants and both they and the butterflies disappear.



Ploughing and the planting of monoculture arable crops destroy the habitat of the butterfly

PROJECT BRINGING HUMANS AND BUTTERFLIES TOGETHER

Our team in the field searching for the Danube Clouded Yellow

Our project aims to prevent the extinction of the Danube Clouded Yellow from three Natura 2000 sites in the counties of Harghita and Cluj in Romania. Leuphana University in Germany is the lead partner and collaborates with Romanian experts from agriculture and nature conservation. We follow a collaborative approach involving working closely with local communities to develop appropriate nature conservation measures that also suit the needs of land-users.
We are interviewing many local people

Making plans for survey and interviews

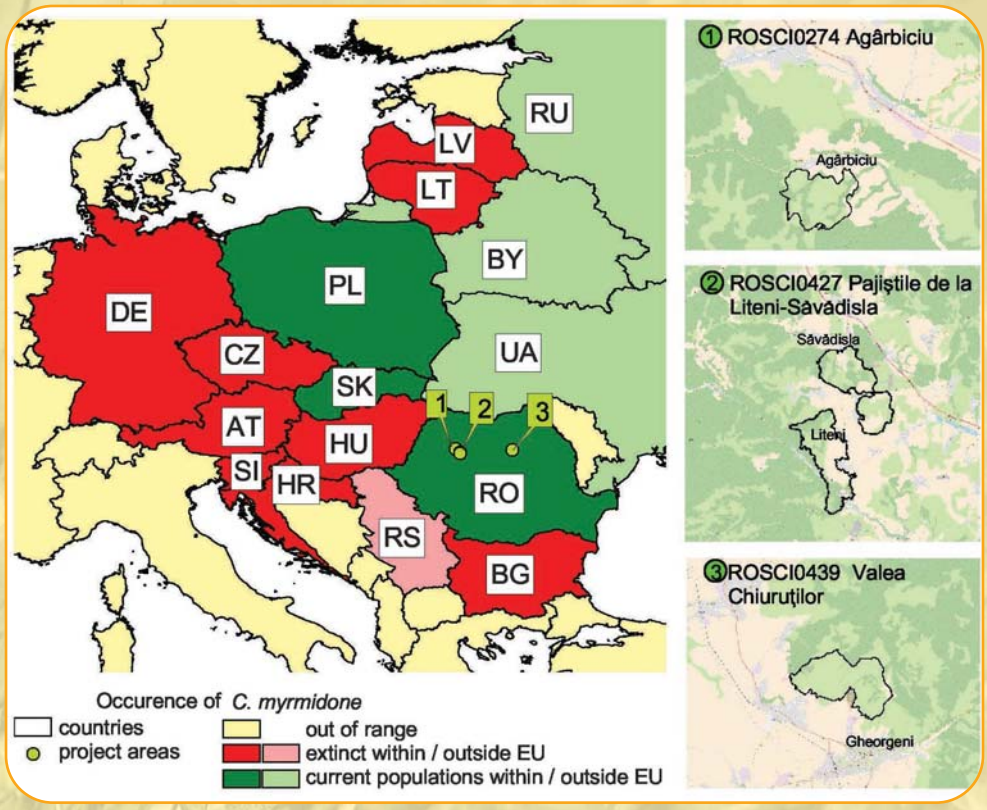
Danube Clouded Yellow male

to gain a better knowledge of their perspective to the land. We will incorporate this knowledge into suggestions for management plans and thus find ways to support sustainable human use of the land that are compatible with nature conservation. **Such measures will include nature conservation activities which are tailored to the human environment**. Additionally, the project will contribute to increase scientific knowledge of the habitat requirements of the Danube Clouded Yellow.

The Danube Clouded Yellow has disappeared from most of Central and Eastern Europe over the last 20 years. In the European Union, it now occurs only in Romania, Poland and still in Slovakia. Even in these countries, the butterfly is now extinct from many of its former sites. In Romania, it persists only in certain parts of Transylvania. The project focusses on three populations in Natura 2000 sites: one is in Harghita county, the other two are in Cluj county. Additionally, we know only few other populations inside and outside of Natura 2000 sites. The species is protected by the **Habitats Directive of the European Union** and is considered endangered in Romania. It is thus both of Romanian and European interest to prevent this species from extinction.

It is time to act!

To foster conservation actions, the EU provides and constantly seeks to improve support through regionally targeted funding schemes. For more details, please contact the local APIA office (Agenţia de Plăţi și Intervenţie pentru Agricultură).



The Natura 2000 sites ROSCI0274 Agârbiciu, ROSCI0427 Grasslands from Liteni-Săvădisla and ROSCI0439 Chiuruţilor Valley were declared by the Order of the Ministry of Environment, Waters and Forests no. 46 from 12th of January 2016 about the establishment of the natural protected area and declaration of sites of community interest as integrated parts of the European ecological network Natura 2000 in Romania.

WHY RESEARCH?

Conservation measures can be done in a proper way only if we have a good understanding of the biological and ecological needs of the species in the wild. Additionally, we need to know much more about the traditional land-use, because it is this which has created the landscape and habitats where these Danube Clouded Yellow populations are now surviving.

To understand the dynamics of populations, we need to do intensive field research. We need to understand for example: how long do adults live? How far do they fly? How do they find mates? How do the females lay eggs? How do the larvae develop? It is hard work to catch and mark sufficient numbers of adult butterflies, to recapture them, to analyze the data and to draw conclusions. **Experts and nature enthusiasts from different countries are working together here in Transylvania in order to help the Danube Clouded Yellow to survive**.

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