

Indicator butterflies and moths of the **High Nature Value dry grasslands** of Transylvania



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The expanse and structure of grasslands in Transylvania is the result of interactions between nature and man over the last 2000 years, which have reduced forest cover from 85% to below 25%. The dry grasslands of Transylvania are the most limited in area, but they too were and are affected by man – both benign intervention, which they need for survival, and, increasingly, destructive intervention. They have very low productivity, and those on slopes are often affected by landslides. They are not suitable for natural afforestation, and often were planted with foreign species such as acacia, red pine and black pine.

The biodiversity value of Transylvania's dry grasslands has often been reduced through afforestation or conversion into intensive vineyard terraces. Needing a hot and dry climate, these dry grasslands have formed on the slopes of the hills of Transylvania with southern, south-eastern and south-western aspect. Although of low productive value, dry grasslands have a very high floristic and faunistic value. They are home to a large number of plant and animal species, many of which are rare, and in danger of disappearance, in other parts of Europe. We can be proud that we have preserved these species so far, and it is our duty of honour to preserve them, unspoiled, for future generations.

The reason these valuable and rare species have survived in the dry grasslands of Transylvania is to be found in the traditional, extensive land use of the region. If the area occupied by High Nature Value grasslands is still high compared to other countries in Europe, and the structure and species richness is exemplary, this means that agricultural practices and the administration of land by local communities, correspond to the most up-to-date concepts of current protection and nature conservation. In other words, there is no need to develop management plans based on expensive and lengthy studies, but rather what is needed is to maintain unaltered the land use in Transylvania today – mixed, extensive farming without using synthetic fertilizers and pesticides.



If other countries are allocated significant funds for the restoration of High Nature Value grassland, actions not always crowned with success, in Transylvania such funds should be channeled towards maintaining traditional use of land by local communities.

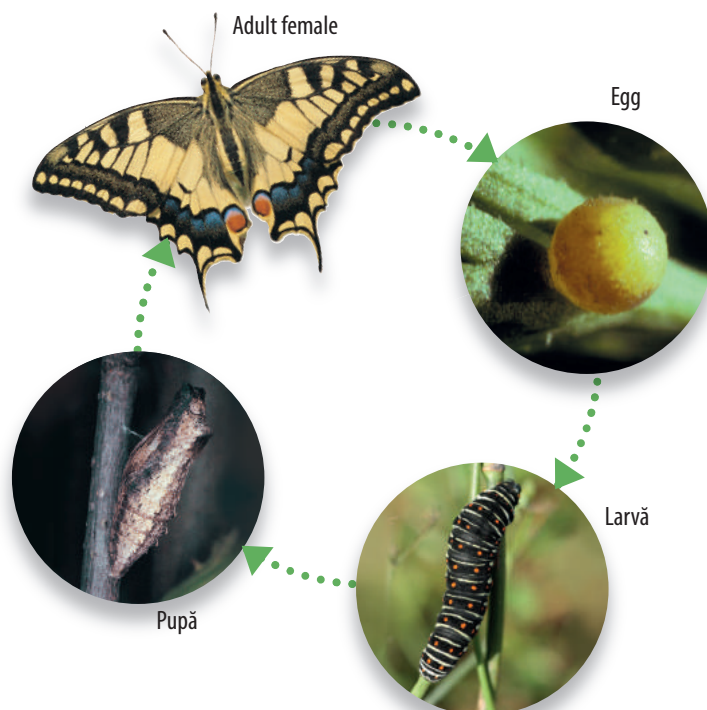
For farmers to better understand they can, and do, receive support payments for manual mowing or light grazing, we here present some of the butterfly and moth species present in dry grasslands of Transylvania. Manual mowing or grazing only in certain periods favours the effective maintenance of these species. Abandonment or more intensive use of these grasslands leads to falling populations and ultimately the extinction of these butterfly species which depend on dry grassland habitat. Their absence indicates poor quality of grasslands, which has had a negative impact on biodiversity and on man. Where these butterflies and moths are present, we still have valuable natural grassland. In such places the quality of human life is better, and land value increases. Adult butterflies, and their caterpillars, are very fine indicators of nature. It is important to see them, not to ignore them, and then we can read their unwritten message.

It should be emphasised that many people consider caterpillars as pests and treat them accordingly, crushing them under foot, thinking they are doing good. Generally caterpillars and other insect larvae do cause damage, their host plants being adapted to from this loss through the long process of living with insects. Consuming part of the vegetal mass, insects fertilize the soil by their droppings, thus ensuring a good plant development. Insects also provide a natural balance, being food for many birds, reptiles and mammals. Many insects feed on or are parasites of other insects, being thus a most useful potential biological weapon against pests.

This is how, in grasslands with High Natural Value, we all benefit, nature and man alike. We only have to understand that, in order to



maintain in the future what nature and local farming communities between them have created over many centuries.



Life cycle of Swallowtail butterfly (*Papilio machaon*).



Species Red-listed in Romania



EU Habitats Directive species

Flight period

Egg period

Larva period

Pupa period

Albăstrelul mare al cimbrisorului

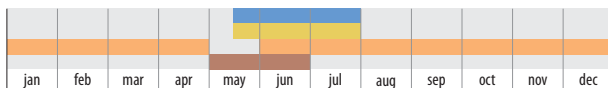
Large Blue

Maculinea arion



The blue coloured under-wing is more intense and the black wingspots more obvious than the Scarce Large Blue. Eggs are laid on thyme or marjoram. They prefer dry grassland: sunny meadows, often rocky grassland with limestone. Caterpillars feed on thyme or marjoram flowers for a few weeks, then they are taken and fed by host ants. The adults emerge in late May-June. Extensive grazing land and non-use for 1-2 years favours this species. Intensive grazing with land degradation has led to a strong reduction of the species in Europe, but in Romania is still quite common.

Wingspan: 40-50 mm



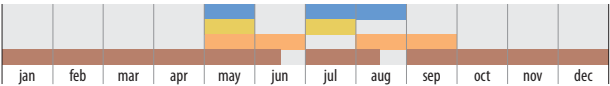
Sfinxul văduvei

Narrow-bordered Bee Hawk-moth

Hemaris tityus

Although this is a moth, this species flies only during the day, preferring sunny periods and places. It is recognized by its very fast flight, like a large bumblebee, by its transparent fore-wings and black abdomen with orange rings. The end of the abdomen has two black spots formed by tufts of filaments of the same colour. This moth prefers warm and moist meadows, especially flower-rich hay meadows. It flies May to June, sometimes in July-August. The larvae develop on different species of Devil's-bit Scabious (*Scabiosa* sp.), and over-winters as a pupa. In central and western Europe, agricultural intensification, with all its side effects (fertilizers, pesticides, frequent mowing, intensive grazing, habitat destruction) has caused the disappearance of the moth in very large areas. In Transylvania it is still well represented, with many stable and strong populations. This moth indicates the highest quality hayfields.

Wingspan: 35-40 mm



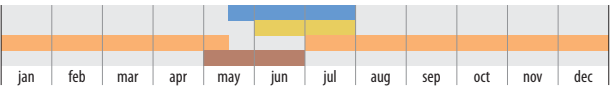
Căposul jaleşului

Marbled Skipper

Charcarodus lavatherae

This butterfly is distinguished from related species by the colour of dorsal face of the wing, green-brown, or brown-yellow with green tints. Females lay eggs on flowers of woundwort (*Stachys* spp.). On very warm days, males suck the water from moist places (wet sand, edges of ponds, etc.). The butterflies fly in the second half of May until late July. Their preferred habitat is dry meadows rich in shrubs, and steppe grasslands on calcareous soils. The species is rare, threatened through habitat destruction or modification.

Wingspan: 30-34 mm



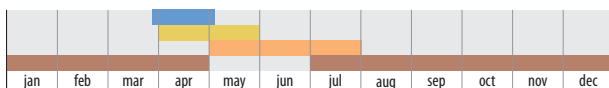
Ochi de păun de noapte mic

Small Emperor Moth

Eudia pavonia

The male bears pinnate (feather-like) antennae and is significantly smaller but more colourful than the female. The general appearance of the male is reddish, and even the hind wings are brick-red. Females fly at night, males in daytime seaching for females. Adult butterflies do not eat, which is why they do not live more than a few days. Eggs are laid on the twigs of blackthorn, hawthorn, wild rose, etc. Caterpillars develop in May – July, and overwinter in the pupa stage in a silk cocoon. The Small Emperor Moth prefers warm habitats rich in blackthorn and hawthorn bushes. The species is endangered due to removal of scrub from grasslands, burning of vegetation, and use of pesticides.

Wingspan: m55-60mm; f68-75mm



Ochi albaștri

Dryad

Minois dryas

The male is smaller, blackish-brown, the female is larger and brown. On each fore-wing can be distinguished two black eyes with blue pupils. In females, on the underside of hind wings, there is a white band and a very small eye. The butterflies prefer meadows with tall grass, sunny and warm, mown late and only once every 2-3 years. Ideal habitats also contain shrubs of blackthorn or hawthorn. Flight period late June to late August. Females lay their eggs in flight, in areas rich in brome-grasses (*Bromus* sp.), on which the caterpillars feed. They over-winter at the young larval stage. In Transylvania, the species has been reported only in hot and dry grasslands, where they can be quite common. In the cultural mosaic landscape of Transylvania, where meadows are traditionally managed, no special protection and conservation measures are needed. It is an indicator of extensively used, even occasionally used, grasslands.

Wingspan: m 46-50 mm; f 55-60 mm



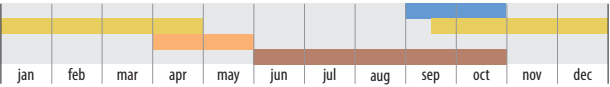
Țesătorul porumbarului

Eastern Eggar

Eriogaster catax

The Eastern Eggar moth males are smaller, more reddish, and have feathery (pinnate) antennae and a very hairy end to the abdomen. Females are larger, brown, and have a tuft of grey hairs on the end of the abdomen which is used to cover the eggs after laying. The adult moths fly at night. The eggs over-winter covered with the hairs from the abdomen of the female, and hatch in April. The caterpillars live in nests protected by a silk cover, on bushes of hawthorn, blackthorn, wild rose, dwarf almond, etc., and pupate after 4-5 weeks of feeding. In Central Europe the Eastern Eggar is a very rare species threatened with extinction, but strong populations remain in the hilly regions of Transylvania. The species is threatened by excessive cleaning of grasslands, burning of vegetation, and modification or destruction of the habitat.

Wingspan: 38-45 mm



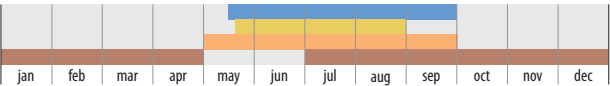
Sfinxul laptelui câinelui

Spurge Hawk-moth

Hyles euphorbiae

The fore-wings of the Spurge Hawk-moth are ash-brown with lighter band towards the wingtips. The hind-wings are pink, edged with black and have a basal white spot. The caterpillars are very distinctive, and develop on spurges (*Euphorbia* sp.), a plant toxic for herbivores and most plant-eating insects. The bright colours of the moths and caterpillars warn the aggressor of their toxicity. The adult moths fly at night. It over-winters as a pupa. Preferred habitats are dry grasslands that are hot and rich in spurge plants. Being an excellent flyer it can be found in many areas, from sea level to approx. 2000m altitude. As long as spurge-rich grasslands persist, used for traditional extensive grazing or mowing, the Spurge Hawk-moth is not threatened. Intensive agriculture and construction have reduced the habitat of this species in central and western Europe. It is a good indicator of extensive grassland, which favours the maintenance of biodiversity.

Wingspan: 70-75 mm



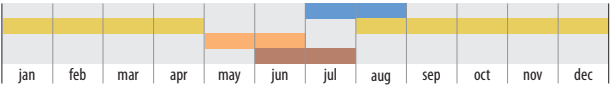
Albăstrelul argintiu

Chalkhill Blue

Polyommatus coridon

In the male, the dorsal face of the fore-wings are silver-blue with hints of green, edged with black edges and a white fringe, interrupted by black. The female has brownish-grey wings, the hind wings with a row of semi-circular orange spots. The underside of the wings is grey in males and brown in females, the underside of the rear wings covered with characteristic spots. Flight period is July-August, preferring dry meadows with low vegetation, on stony or limestone soils. The butterflies feed on nectar from various plants, preferring Devil's Bit scabious, Marjoram (*Origanum vulgare*), or thistle species. Sometimes, in the evening, the butterflies gather in groups to overnights. Males can be found on damp soil or sand, from where they extract mineral salts. Over-wintering is in the egg stage. Larvae develop in May-June on clover species (*Trifolium* spp.), milk-vetch (*Astragalus* sp.), or crown-vetch (*Coronilla varia*). The species pupates at the end of June under rocks or soil. Intensification of grazing, fertilization of grasslands, and alteration or destruction of habitats are the principal factors endangering the species. It indicates natural grasslands with shorter grass and high quality pasture.

Wingspan: 28-32 mm



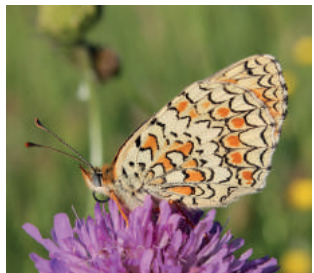
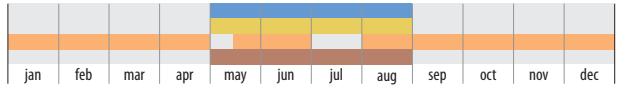
Marmoratul mare

Knapweed Fritillary

Melitaea phoebe

The Knapweed Fritillary may be confused with other similar species of the genus. The red dots in a string on the ventral (lower) surface of the hind-wings are round. The caterpillars are dark grey with red spines. The pupae also are grey with reddish spines. The adult butterflies fly in two generations from May to August. The caterpillars feed on various species of thistle-like knapweed (*Centaurea* sp.). The species prefers extensive hay-meadows, forest clearings and edges, warm and sunny and rich in flowering plants. The species is affected by removal of scrub from meadows, intensive grazing and mowing, and fertilization of land.

Wingspan: 42-48 mm



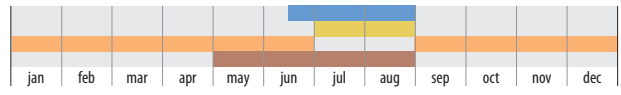
Căposul pădurii

Small Skipper

Thymelicus sylvestris

The Small Skipper differs from other similar species by the orange knobs on the antennae. On the fore-wings of the male can be seen an elongated black spot, which is formed by cells producing substances that are odorous, attractive to females. The adult butterflies fly from June to early September, frequenting wet or dry habitats. The Small Skipper over-winters at the caterpillar stage. The species prefers grasslands rich in flowers located along forest edges or in forest clearings, or extensive unfertilized hay-meadows. For sources of nectar the Small Skipper prefers purple flowers, in sunny positions. The caterpillars develop on various tall herb species. It is a common species, not as yet threatened.

Wingspan: 28-30 mm



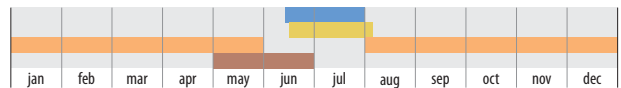
Sângeriu înelat

Burnet moth

Zygaena carniolica

The Burnet moth cannot be confused with other species in Transylvania, owing to the white rings delimiting the red spots on the wings. All species of this family, by their red spots, warn potential predators of the presence of a highly toxic substance, so that the butterflies and their caterpillars are not eaten by birds or other predators. Caterpillars develop on different species of sainfoin or bird's-foot trefoil and pupate in late May - early June. The adult butterflies feed on nectar from various plants. In the evening they group together into overnight aggregates. They prefer warm and dry meadows. Abandonment of traditionally-managed land, intensified use through increased fertilization and overgrazing, and afforestation, are the main factors contributing to the decline of this beautiful and valuable species.

Wingspan: 32-36 mm



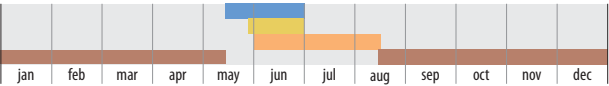
Sfingidul proserpina

Willowherb Hawkmoth

Proserpinus proserpine

The fore-wings of the Willowherb Hawkmoth are olive green, and the the hind-wings yellow edged with dark brown. The wing edges are strongly toothed, giving a distinctive character to this species. Like a hummingbird, the Willowherb Hawkmoth can fly in order to manoeuvre or to remain motionless in the air to extract nectar from a flower without resting on it. It is a rare species with nocturnal activity. The caterpillars live and feed on willowherb (*Epilobium*) species, and overwinters as a pupa. It can be found in sunny, warm habitats, sheltered from wind. It prefers less dry meadows on loamy or calcareous soils, fixed screes, abandoned quarries, etc. Scrub improves habitat structure for the species. The presence of the Willowherb Hawkmoth indicates natural habitats with great species richness. The species does not tolerate intensive grazing, fertilizing or repeated mechanized mowing of land. Most of the specific habitats of this species have been destroyed by ploughing, intensive grazing and afforestation with acacia and pine.

Wingspan: 40-45 mm



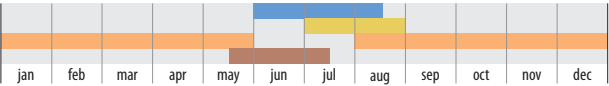
Ruginiul de fânat

Chestnut Heath

Coenonympha glycerion

The backs of the wings are reddish-brown in males and red in females. On the underside of the hind wings can be seen 2-3 white spots, with no white stripe as is present in other similar species. The eyes visible on the underside of the hind wings are small, with white pupils and edged with yellowish-white rings. Butterflies fly in one generation from June to mid August. They prefer warm, not too dry, habitats with tall herbaceous vegetation. Extensive haymeadows, mown once a year or once every two years, are ideal environments. The presence of shrubs is also ideal. Larvae develop on brome-grasses (*Bromus* sp.), Quaking grass (*Briza media*) and other tall herbs. The species is a very good indicator of extensive, natural hay-meadows and pastures. It is threatened by intensive grazing and mowing, and by destruction of habitats.

Wingspan: 30-35 mm



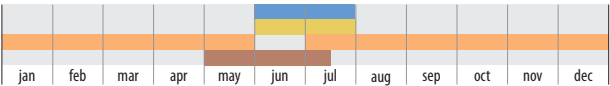
Căposul galben-dungat

Yellow Banded Skipper

Pyrgus sidae

The back (dorsal) of the front and rear wings are grey-brown, with off-white spots. The butterfly is easily recognized by two yellow bands on the ventral surface of the rear wings. Flight in June-July, in one generation. This is a rare species, which prefers steppic grassland, sunny, rich in flowering plants. The presence of scrub in the habitat, in a proportion of about 10-15%, is a very important structure for maintenance of the population. Males fly very fast and have a pronounced territorial behavior, following and flying alongside any other flying insects in their territory. The source of nectar for the adult butterflies is species of yarrow, vetch, horehound and scabious (*Achillea*, *Vicia*, *Marrubium*, *Scabiosa* and *Knautia*). Larvae develop from July to September, and after hibernation continue developing until May, feeding on leaves of Mallow (*Malva*). This is an endangered species in Romania. Because its habitat requirements are quite specific, it requires special protection and conservation. Traditional extensive agricultural practices favour the maintenance of the species.

Wingspan: 29-35 mm



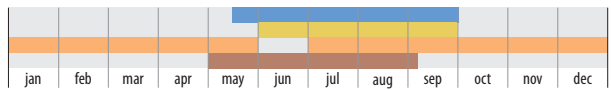
Păiușul portocaliu-roșcat

Danube Clouded Yellow

Colias myrmidone

This butterfly is easily confused with Common Clouded yellow (*C. croceus*), from which it is distinguished by the more reddish hue in fresh specimens, without yellow wing veins, with purple-coloured and, towards the wing edges black-coloured, tints. The disc-shaped spot on the rear wing is red. Females are yellow-orange, sometimes whitish-green. Butterflies fly in 2-3 generations from May to late September. The autumn generation butterflies outnumber the summer or spring. They prefer relatively dry grassland with low vegetation, rich in broome (*Cytisus vindobonensis*), on which they lay their eggs and which are food for the larvae. Last generation caterpillars feed until late autumn, and after hibernation until after May. The pupal stage is short, less than 20 days. This species is protected by EU and Romanian legislation, and justifies urgent and concrete measures for its protection and conservation. The butterfly has disappeared from Central Europe in the last 50 years, the only viable population remaining in Transylvania, and so experts from across Europe are making efforts for its conservation. Overgrazing, burning of dry vegetation in both spring and autumn, too frequent mowing, afforestation and ploughing of its habitat are the major threats to this beautiful and rare species.

Wingspan: 46-50 mm



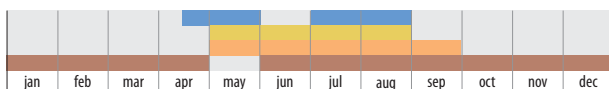
Albăstrelul mic de cimbrisor

Eastern Baton Blue

Pseudophilotes schiffermuelleri

The (dorsal) backs of the wings of the male are blue-grey, with black edges. Disc-shaped spots are obvious on both wings. The ventral wing surfaces are darker grey than the dorsal, and have black spots. The ventral surface of hind wing has an orange marginal band. Females are darker than males. Flight in two generations from late April - late May, and then July-August. Larvae develop on different species of thyme (*Thymus* spp.). The second generation pupates August-September. The butterflies prefer dry steppic meadows, on limestone or sandy clay. They prefer to visit thyme flowers, but can be found on many other plant species. The species is an excellent indicator of steppic dry grassland under traditional management. It tolerates normal grazing, because the treading of animals favours maintenance and development of clumps of thyme. Abandonment or intensification of land use leads to the extinction of this species.

Wingspan: 20-24 mm



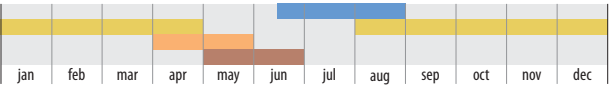
Albăstrelul dințat

Meleager's Blue

Polyommatus daphnis

The male is blue, with a tooth shape at anal angle of the hind wing. The female is grey-black, with two teeth at the anal angle of hind wing. The butterflies are found in relatively dry grasslands rich in flowering plants, especially those with some scrub. Vigorous populations are found in grasslands on limestone or sandy-clay soils. Flight period is in one generation, second half of June-August. Larvae develop on species of milk-vetch (*Astragalus* sp.), crown vetch (*Coronilla varia*) and other species. It is not a rare species, and thus is a valuable indicator of natural meadows managed extensively and traditionally. The species winters in the egg stage. Larvae develop in April-May. Pupal stage in May-June, on the ground surface, among leaves. The species is endangered by abandonment of grasslands and scrub encroachment. It is maintained by extensive grazing or traditional mowing. It thrives on meadows mowed only once every two years.

Wingspan: 35-40 mm



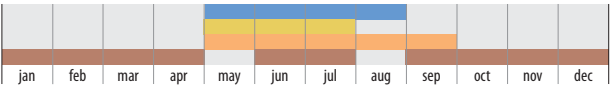
Albăstrelul decolorat

Eastern Short-tailed Blue

Cupido decoloratus

In the male, dorsal surface of the wings is blue, with shades of grey. The disc-shaped spots and outer edges are black and prominent. Ventral wing colour is light grey, with small delicate spots ringed with white. The anal angle of hind wings does not have orange spots, distinguishing it from other species. The tail on the rear wing is very short, barely visible. In the female, dorsal surface of the wings is dark brown, and ventral surface light grey as in males. Butterflies fly in two generations, May-August. Larvae develop on species of clover and alfalfa (*Medicago* sp.). It over-winters as a pupa. The species prefers warm meadows, relatively dry but not too dry, dotted with bushes, forest edges, or warm grass clearings in oak forests on limestone. It is a relatively rare species, can be confused with other species, but its presence indicates high value dry grasslands. Traditional grassland management favours the presence and maintenance of the species.

Wingspan: 23-26 mm



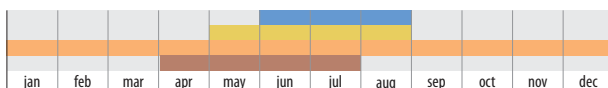
Marmoratul roșcat

Red-band Fritillary

Melitaea didyma

The dorsal surface of the wings is basically brick-red, more blackish in females. The marginal spots on the ventral face of the posterior wings are rounded, not triangular as in Lesser-spotted fritillary (*M. trivia*), with which it is easily confused. On the underside of the hind wings, the sub-marginal band is brick-coloured, limited by black semicircular spots towards the wing edge. Females are darker and bigger. The butterflies fly in two generations, May-June and July-August. Larvae of the second generation over-winter. Larval food is species of plantain (*Plantago* sp.), Speedwell (*Veronica* sp.) and Mullein (*Verbascum* sp.). They prefer warm and dry meadows, abandoned vineyard terraces and rocky grass grassland habitats. Abandonment of any kind of the grasslands, or afforestation, leads to rapid disappearance of the species. Extensive grazing favours vigorous populations. The Red-band Fritillary shares its habitats with the Lesser-spotted fritillary, having very similar ecological requirements.

Wingspan: 30-38 mm



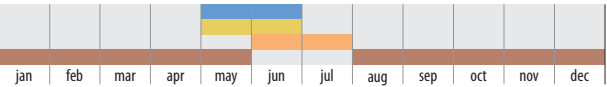
Albăstrelul lui Alexe

Green-underside Blue

Glaucopsyche alexis

The back (dorsal) surface of the wings is blue and edged by a black border 1-2 mm wide. The ventral surface is light grey, without black border. Typical of the species are the black spots, large, arranged in a semicircle on the ventral surface of the fore-wing, and blue-green basic colour of the hind-wings. In females, the dorsal surface of the wings is brown-blue. Flight period May-June, in one generation. Larvae consume various low-growing plants, preferring milk-vetch species (*Astragalus* sp.). It overwinters in the pupa stage. It prefers hot and dry grasslands in hilly regions, up to altitudes of about 1300-1400m. It does not tolerate intensive grazing, and early mowing in May-June. Traditional extensive management favours the species. It is a good indicator of high value hay-meadows.

Wingspan: 28-36 mm



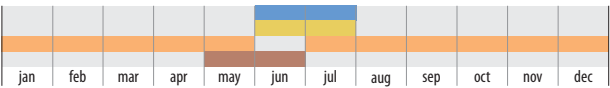
Marmoratul Aureliei

Nickerl's Fritillary

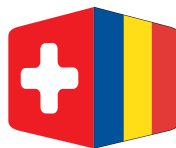
Melitaea aurelia

This is the smallest of the fritillary butterflies, easily confused with Assmann's Fritillary (*M. britomartis*). The black patterns on the dorsal surface of the wings are evenly distributed over the background brick-colour. Most specimens can be distinguished by the off-yellow space between the two marginal lines, situated between the edge and the semicircular spots. The semicircular spots are more yellow than the space between the marginal lines. In Assmann's Fritillary, the space between two marginal lines is rust- or brick-coloured. The antennae are reddish in Nickerl's Fritillary, blackish in Assmann's Fritillary. Flight period June-July, in one generation. In Transylvania, the butterfly prefers dry meadows, sometimes very dry, on limestone or sandy clay. Sometimes they can be quite common on grasslands managed extensively by mowing or grazing. Intensification of grazing, or mowing 2-3 times per year, causes the reduction or disappearance of the species. Larvae develop on plantain (*Plantago* sp.) or Speedwell (*Veronica* sp.). It over-winters in the larval stage and pupates in May. Intensification of grazing, or mowing 2-3 times per year, causes the reduction or disappearance of the species.

Wingspan: 28-32 mm



Notes



PROGRAMUL DE COOPERARE ELVEȚIANO-ROMÂN
SWISS-ROMANIAN COOPERATION PROGRAMME

The butterflies in this booklet are an important indication of the presence of rare dry grasslands, whose conservation is of European importance.

We hope that this booklet will encourage local people, including the farmers who manage these important grasslands, schoolchildren, students and others, to take an active part in the STIPA project.

We can all help to preserve this natural heritage by working together.



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