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## *Chamaesphecia hungarica* Tomala: bona species. (Lepidopt.)

(8 képpel)

Írta: Dr. Issekutz László

A múlt század utolsó éveiben Tomala Nándor magyar lepkész a tiszamenti árterületeken tenyésztő fényes fűtej (*Euphorbia lucida*) gyökerében talált hernyókból felnevelt lepkét 1901-ben a „Rovartani Lapok“ VIII. kötetének 47. oldalán „*Sesia empiformis* var. *hungarica* Tomala” néven írta le. Ebben az eljárásában egy meg nem nevezett szaktekintély véleményéhez igazodott.

A *Chamaesphecia hungarica* tenyésztésével és vizsgálatával évek óta foglalkozom és arra a megállapításra jutottam, hogy a *Ch. empiformis*-étől eltérő tápnövénye, az ebből adódó más biotópja, az ugyancsak eltérő biológiája és más alaktani belyégei folytán önálló fajnak minősül.

A *hungarica* tápnövénye az *Euphorbia lucida* és *palustris*, melyek mocsaras, vizenyős helyen tenyésznek. Az *empiformis* hernyója az inkább száraz helyet kedvelő *Euphorbia esula* és *cyparissias*. A *hungarica* hernyója a tápnövény szárában bábozódik és onnan bujik elő a báb és a lepké, ezzel szemben az *empiformis* hernyója a gyökérkéjében bábozódik.

Az *empiformis* egyedei között a nagyságbeli eltérések, mint az endophag életmódot folytató állatoknál általában, igen gyakoriak. A *hungarica* esetében ez csak kivételes jelenség. A *hungarica* lepkéje összbenyomásában zömökebb és testesebb, mint az *empiformis*-é. Ez áll a szárnyak alakjára is. Az *empiformis* szárnya nyújtottabb és keskenyebb. A *hungarica* színezése lényegesen sötétebb és zöldes féncsillogású, az *empiformis* inkább kékes fémű.

A *hungarica* hímjének (1. kép) a felsőszárnyán az ékalakú üveges sejt hosszú és nagyon megközelíti a szárny tövét. A hosszanti üveges sejt pedig eléri, vagy majdnem eléri a középső szalagot. Ezzel szemben az *empiformis* hímjén (3. kép) az ékalakú sejt rövid és alig haladja meg a szárnytól és középső szalag közötti távolság felét. A hosszanti sejt ugyancsak rövid és szintén nem haladja meg az előbb említett féltávolságot.

A nőtényeken ez az eltérés hasonlóképen megállapítható (2. és 4. kép). Itt csak azt kell figyelembe venni, hogy a *Chamaesphecia* nemhez tartozó lepkék nőtényén a hosszanti sejt mindig rövidebb, mint a hímeken.

Megvizsgáltam a hímek ivarszerkezetét is, amely szintén a *hungarica* önálló fajiságát bizonyítja. A *hungarica* ivarszerkezeete (5. kép) hosszúkás, elnyújtott. Az *empiformis*-é (6. kép) zömökebb, szélesebb. A *hungarica* valva-ja (7. kép) hosszú, keskeny; a valva csúcsa hegyesszögben végződik, melyet az itt lévő hosszú szőrözet még hegyesebbé tesz. Az *empiformis* valva-ja (8. kép) rövid, széles; csúcsa a derékszöghöz közelálló szögben végződik. A szőrözet a csúcson rövidebb, ami még inkább tompítja a csúcsvégződést.

Ezenkívül kisebb eltérések mutatkoznak az ivarszerkezet egyéb részeiben (tegumen és uncus) is, valamint a valva-t részben borító szőrzet elhelyezkedésében, de a fentebb ismertetett eltérés magában véve annyira jellegzetes és állandó jellegű, hogy a fenti egyéb eltérésekkel egybevetve nyugodtan szegezhetem le, hogy a „*hungarica* Tomala” nem varietas, hanem a *Chamaesphecia* genusba tartozó „bona species”.

***Chamaesphecia hungarica* Tomala: bona species. By Dr. L. Isssekutz. (With 8 text-figurs.)**

In the last years of the XIX century Nándor Tomala, Hungarian lepidopterist, described a clearwing moth that he reared from larvae found in the root-crowns of the lucid spurge (*Euphorbia lucida*) which abounds in the tidal area of the river Tisza, by the name „*Sesia empiformis* var. *hungarica* Tomala”, in the Rovartani Lapok, tome VIII. 1901, p. 47. This description was also published in German in the „Jahresbericht des Wiener Entomologischen Vereines”, tome XII, p. 13. in 1902, and from this place it entered world literature.

Tomala mentioned at the end of his description that he reared this moth in great numbers from the roots and stems of *E. lucida* collected in various parts of Hungary, which, according to him, would have been enough to prove that he did not deal with a chance local variety but with a new species. Yet, until he could not be sure in this matter, he described his moth as a new variety of *empiformis* Es p., which really looks like its nearest relation. The cause of his extreme caution is in his German description, where he states that according to the opinion of an „official expert“ *hungarica* belongs to *empiformis*, and that therefore he is bound to accept it as such. Who this „official expert“ was and on what data he based his opinion, Tomala did not say. By trying to demonstrate the autonom specificity of *hungarica* in the followings I wish only to prove, after half a century, a correct but timidly unproclaimed recognition of the original describer against the opinion of an „unknown“ expert based on „unknown“ arguments.

I have to mention here that Spuler split the genus *Sesia* -- belonging to the family Sesiidae, now Aegeriidae, in 1910 erecting among others the genus *Chamaesphecia*, now our chief concern, choosing *empiformis* Es p., as its generotype.

When, years ago, I have first collected the caterpillars of *hungarica* in great numbers from the year-old stems and roots of *E. lucida* and *E. palustris* (swamp spurge) abounding on the swamp-sedge clearings in the wet woods of the village Erd by the Danube, and then began to rear them, and later to examine the hatched clearwings, it bore on me gradually that I have to identify not a variety of *empiformis* but a new species. The proving of this is highly facilitated by the fact that this moth stands indeed nearest to *empiformis*, and I have only to prove therefore whether really deviations exist that claim the autonom specificity of *hungarica*.

Tomala found *hungarica* only in *E. lucida*. I can complete this by my observations that it can also be found in the roots and younger, slender, shoots of *E. palustris*. This herb is identical with the feeding plant of *Ch. palustris* described by Kautz, but the larva of which chooses only the older and thicker branches of the plant. Both larves can be found therefore in the same place. At least, such is the situation in Erd. *E. lucida*, as well as *palustris*, likes a wet, swampy habitat and thrives only there. This, also determines the biotope of *hungarica*.

Now, on the contrary, the caterpillar of *empiformis* lives in the roots of *Euphorbia esula* and *cyparissias*. These *Euphorbia* species like only dry places and so the biotope of *empiformis* has obviously other characters than that of *hungarica*. This is the cause why *hungarica* is not found where *empiformis* is and vice versa.

The larva of *hungarica* lives in the root of its feeding plant, that is, as I observed it, rather in the crown of the root. According to Tomala the larva sinks shafts into the upper layers of the soil, and if the surface parches, it tries to get to wetter parts through these. I have not observed and never found such earthen shafts. True, in the woods of Erd the feeding plant of *hungarica* grows in such watery places that they are never dry no matter what season. On the contrary, I have found that the larva leaves the roots not down, but upwards, and feeding in the inner pulpy parts of the stem, makes its shaft here, hiding against extreme moisture. In the stem also pupation occurs, the larva first making an oblique gangway to the outer thin shell. Before hatching, the pupa bores through this shell, protrudes in half its length, bursts open, and the adult insect climbs out. So the pupa and the imago also appear about five or more inches above the surface of the earth. The biology of *hungarica* consents in everything with *Ch. palustris*.

The case is not the same with *empiformis*; its caterpillar does not leave the root of the feeding plant, and pupates in the root-crown just under the surface of the earth. The thin stem of *E. esula* or *cyparissias* cannot even make possible the intrusion of the usually thicker larva. The pupa and imago of *empiformis* come to daylight therefore from the earth at its junction with the root-crown.

In the case of animals leading an endophag way of life variations in size is not an uncommon occurrence. This is very frequent in *empiformis* and small and big specimens with all transitory forms occur together at the same place. This fluctuation in size occurs only exceptionally at *hungarica*, I have scarcely observed it yet. This must be obviously in connection with the strong thick roots of *E. lucida* and *palustris*, while in *esula* and *cyparissias* similar big roots are very rare and only in the case of very old plants. The larvae of *hungarica* can always find food to reach total maturity, therefore the adults are of a more uniform size than *empiformis*, and only gigantic specimens of the latter may approach the average size of *hungarica*.

The imago of *hungarica* is in its aspect sturdier and more corpulent than *empiformis*. This holds also good for the wings which are larger and more narrow than those of *empiformis*. The costa of the forewings of *hungarica* is straight, in *empiformis* arched.

The coloration of *hungarica* is essentially darker, and especially in fresh specimens, conspicuously greenish-metallic iridescent. *Empiformis* is rather more bluish.

Tomala described the pattern of *hungarica* in all its particulars. I have nothing more to add. He also very aptly discerned that the long hyaline cell under the wedge-shaped hyaline cell on the forewings reaches the median band. According to my observations this is the point where *hungarica*

has a constant morphologic deviation from *empiformis* whereby it can be distinguished easily and surely.

In the male of *hungarica* (fig. 1) the wedge-shaped hyaline cell is long and touches almost the base of the wing. The long hyaline cell underneath it reaches or almost reaches the middle band. Contrary to this the wedge cell in the male of *empiformis* (fig. 3) is short and supercedes barely the half distance between base and median band. The longitudinal cell is also short and never longer than above half-distance.

This difference can be observed also in the females. It must be borne in mind however that in the females of the genus *Chamaesphecia* the longitudinal cell is always shorter than in the males. So it shortens in a female *hungarica* (fig. 2) approximately to the length in a male *empiformis*; while in

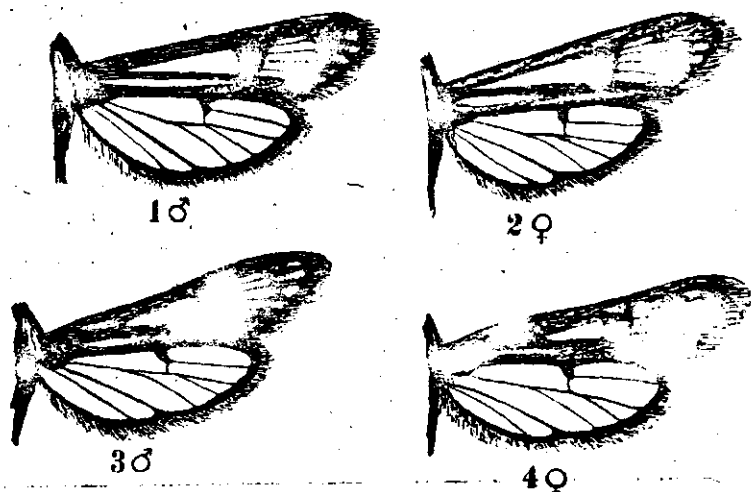


Fig. 1—4. 1—2. = *Chamaesphecia hungarica* Tomalala. — 3—4. = *Chamaesphecia empiformis* Esp.

a female *empiformis* (fig. 4) the long cell usually shortens into a yellowish spot or disappears totally.

I have to mention also that the bar-shaped middle spot on the hind wing of *hungarica* stands usually vertically, in *empiformis* it is in most cases slanted. Veins 3 and 4 bifurcates in *hungarica* mostly at the middle spot; in *empiformis* usually only between the middle spot and the margin. But these are inconstant characters.

Other differences can be found too in pattern and color, but these are also inconstant or can be observed in fresh specimens only; such as the stronger yellowish-golden irroration of the abdomen, especially in the females of *hungarica*. The ratio of the hyaline cells in the forewings is however, according

to my observations, constant and this ensures distinction in the two species without further examinations.

The diversity of the feeding plants, the disequal biotops, the biological differences and the morphologic characters were in themselves enough to prove the autonom specificity of *hungarica*. Yet as Tomala in spite of all these, though knowing but not considering them to be enough, and based by the opinion of unknown arguments and an unknown expert, described *hungarica* as a variety, I had to find some specific character that he overlooked or did not know.

I found this in the genital armature of the males. I had to suppose that neither Tomala nor others examined it yet, as I could not find any trace of it.

The male genital armature of Aegeriidae is comparatively simple. Yet it affords very good specific characters to distinguish the respective species from each other. I have examined the armatures of *hungarica* and *empiformis* males in series and observed the following differences.

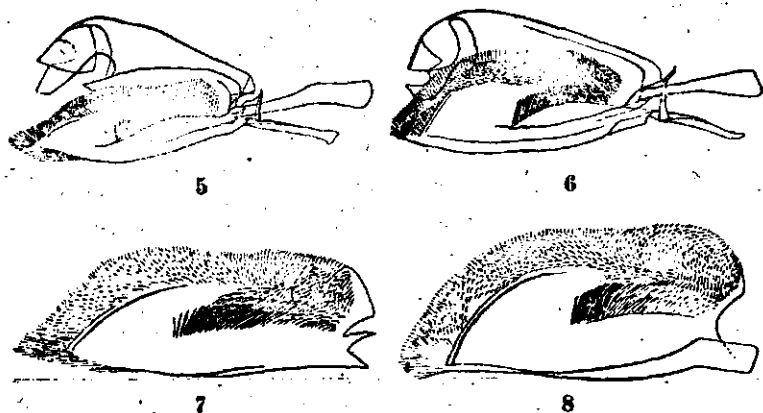


Fig. 5—8. 5. = Male genitalia of *Ch. hungarica*. — 6. = Male genitalia of *Ch. empiformis*. — 7. = Valve of *Ch. hungarica*. — 8. = Valve of *Ch. empiformis*.

The armature of *hungarica* (fig. 5) is extended, elongate. That of *empiformis* (fig. 6) is more sturdy, broader. This different aspect is caused by the differences in the valves. The valve of *hungarica* (fig. 7) is long, narrow. Its tip ends in an acute angle made more pointed by long hairs. The valve of *empiformis* (fig. 8) is short, broad. Its tip ends are almost in a right angle. The hairs on it are short, with a blunting effect on the tip.

There are some other smaller differences in other parts of the genital armatures (in the tegumen and uncus), as in the positions of the hairs partly covering the valves; but the de-

scription given above is so characteristic that when I take also into consideration the other differences I can confidently conclude that *hungarica* Tomala is not a variety but a „bona species“ belonging to the genus *Chamaesphecia*.

*Ch. hungarica* occurs in Hungary in the areas of the Danube and the Tisza. Alfred Schleppeck found it in Austria in the tidal area by the March (Verhandlungen der zool.-bot. Ges. Wien, 1935, p. 129). Now that it has gained its well merited place among the other species it will be demonstrated probably from other countries too.