PRESLIA (PRAHA)

37 : 35—41, 1965

What is *Hesperis macedonica* ADAMOV.?

Co je *Hesperis macedonica* ADAMOV.?

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Abstract — *Hesperis macedonica* ADAMOV. Denkschr. Akad. Wiss. 74 : 124, 1904 I define as a synonyme of the taxon *Hesperis theophrasti* BORB. Magy. Bot. Lap. 1 : 377, 1902.

Introduction

ADAMOVIĆ (1904) described the taxon *Hesperis macedonica*. According to the author it grows in Yugoslavia between the villages of Veles and Zelenikovo. The plants were grown in the Beograd Botanical Garden.

Materials

According to LANJOUW and STAFLEU (1954) ADAMOVIĆ's collections from Macedonia are deposited in B, LE, W herbaria. There are four specimens, collected by ADAMOVIĆ, deposited at the W botanical department (Naturhostorisches Museum, Botanische Abteilung Wien). I define them as *Hesperis glutinosa* VIS. and *Deilosma tristis* (L.) SPACH. The three specimens deposited in the LE herbarium, collected by ADAMOVIĆ belong mainly to the species *Hesperis glutinosa* VIS. Dr. WAGENITZ from Berlin (Botanischer Garten und Museum Berlin-Dahlem) was kind enough to let us know that in the local department there is no holotype of *Hesperis macedonica* ADAMOV. deposited.

The following specimens are deposited in the herbarium of the botanical department of the Beograd University:

1. Label: "*Hesperis macedonica* ADAMOV. Inter Veles et Zelenikovo. IV. 1901. Leg. KINDINGER" As the locality and the collector are given by ADAMOVIĆ (1904) I consider the specimen to be a holotype.
2. Label: "Flora macedonica. *Hesperis*. Veles-Zelenikovo. IV. Ol. Leg. KINDINGER".

Methods

I investigated the pollen grains of the plants of both specimens by means of the biometric method. To compare both plants I used the isotypes of the taxons *Hesperis pycnotricha* BORB. et DEG. (411601 BRNU) and *Hesperis theophrasti* BORB. (411720 BRNU). I used further the plants from Bulgaria (SOM), some of which were determined as *Hesperis macedonica* ADAMOV. The conclusion is backed by a nearly completed study of the genus *Hesperis* L. from the main herbaria of Central Europe and of the Balkan Peninsula (W, WU, GZU; BP, BPU; PR, PRC, BRNU, BRNM, SLO, BRA; SARA, ZA, LJU, BEOGR; CLUJ; SOM; ATHENAI).

Results of the study

1. The hairy covering of the plants. ADAMOVIĆ quotes (1904) in his description: "... indumento sat denso pilorum ramosorum e tuberculo ortorum hirta ... pedicellis dense hirtellis ..." The description of the covering is inexact. Both investigated plants have in covering, in addition to hairs branchet (pili bifurcati eglandulosi), an admixture of hairs glandular (pili uniseriales

Table 1

Taxons	Pollen grains			
	length (in μ)		breadth (in μ)	
	$x \pm 3 . s_{\bar{x}}$	$\pm s$	$\bar{x} \pm 3 . s_{\bar{x}}$	$\pm s$
Hesperis theophrasti BORB. 411 720 BRNU	29.06 $\pm$ 3 . 0,117	1.167	22.59 $\pm$ 3 . 0.107	1.076
Hesperis macedonica ADAMOV. Holotypus	28.74 $\pm$ 3 . 0,181	1.805	23.38 $\pm$ 3 . 0.146	1.457

glanduliferi): the bigger ones on the stem and on the pedicels (there they are as numerous as the hairs branchet), the smaller ones on the leaves; they pass also to the lower part of the siliquae (plate VII). The covering of the plants is identical with the covering of the isotype *Hesperis theophrasti* BORB.

2. The shape and insertion of the leaves to the stem is the same as with *Hesperis theophrasti* BORB.

3. The flowers in the specimen identified as *Hesperis macedonica* ADAMOV. are conspicuously small. I confirm the size given by ADAMOVIĆ (1904) in the description of the taxon. Only the sepals are by 1 mm longer. The plant in the second specimen has however the following size of the flowers: sepals: 8—9 mm; the claw of the petals: 9—10 mm; the blade of the petals: 6 $\times$ 8 mm. They are nearly as great as the flowers of the isotype *Hesperis theophrasti* BORB.

4. Inflorescence. The characteristic feature of the species *Hesperis theophrasti* BORB. is its inflorescence: besides the terminal raceme there grow from the bases of the leaves lateral racemes on thin peduncles. The character is distincly developed in the holotype *Hesperis macedonica* ADAMOV.

5. Pollen grains. It follows from the table 1 that both taxons have the same size of the pollen grains. It follows from the table 2 that the minimum, maximum and average value of the length of the pollen grains of both compared taxons is the same.

From table 3 it follows that the shape of the pollen grains of the holotype is the same as that of the pollen grains of the isotype *Hesperis theophrasti* BORB. and of the plants of this species from other localities. It is substantially different from the globular or nearly globular pollen grains of *Hesperis pycnotricha* BORB. et DEG. which also grows in Eastern Bulgaria.

And now as for table 4. Both diploid species, that is *Hesperis pycnotricha* BORB. et DEG. (2n = 14; DVOŘÁK, in the press) and *Hesperis sylvestris* CRANTZ (2n = 14; DVOŘÁK, 1964) have the size of the pollen grains smaller than the aneuploid *Hesperis matronalis* (2n = 24; MANTON, 1932; LÖVE Á. and LÖVE D.,

Table 2

Taxon	The length of the pollen grains (in μ) n = 100																						
	23.5	24	24.5	25	25.5	26	26.5	27	27.5	28	28.5	29	29.5	30	30.5	31	31.5	32	32.5	33	33.5	34	34.5
Hesperis theophrasti Borb. Isotype: P. Sintenis: Iter thessalicum 1896. No. 221. 411720 BRNU					2	1	4	4	5	11	17	20	6	6	12	3	4	3		1		1	
Hesperis macedonica Adamov. Holotype: Inter Veles et Zelenikovo 4.1901 Kindinger BEOGRAD	1	1		3		4	7	7	8	10	12	10	7	6	4	6	7	4	2		1		

Table 3

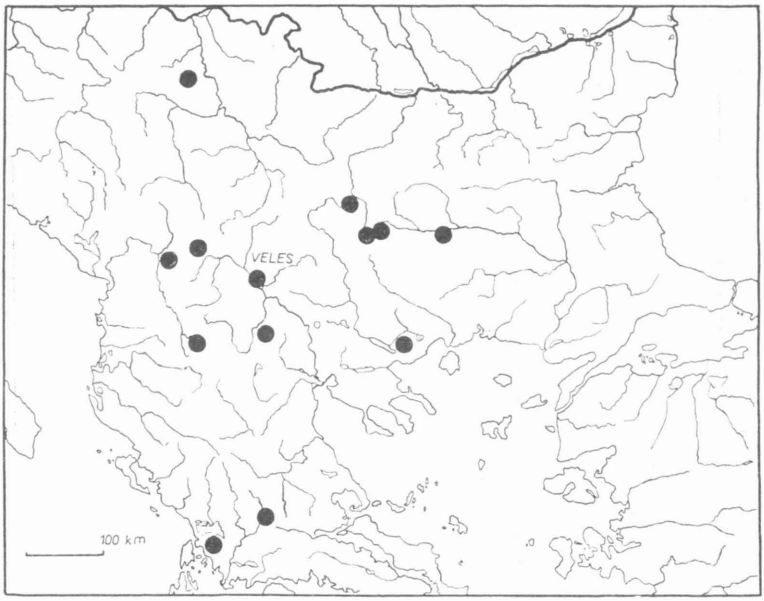
Taxon	The number of the pollen grains with the following difference between length and breadth (according oc. microm. 15× obj. 20× parts) n = 100																								
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Hesperis macedonica ADAMOV. Holotype Beograd				2	3	2	1	4	5	5	3	2	1	6	5	4	3	2	1		1				
Hesperis theophrasti BORB. Isotype 411720 BRNU								1	1	4	1	9	3	7	8	4	7	1	1	1	1		1		1
Hesperis theophrasti BORB. Šar Planina (6756—1961 W) et Pangaeon (W)		1	1	2	7	5	3	9	1	5	6	3	4	1	1	1									
Hesperis pycnotricha BORB. et DEG. 411599 BRNU	2	5	9	12	4	8	5	1	2	1	1														

Table 4

Taxon	The size of the pollen grains (in μ) n = 100														
	18.0—19.5	20.0—21.5	22.0—23.5	24.0—25.5	26.0—27.5	28.0—29.5	30.0—31.5	32.0—33.5	34.0—35.5	36.0—37.5	38.0—39.5	40.0—41.5	42.0—43.5	44.0—45,5	46.0—47.5
Hesperis theophrasti Borb. 411720 BRNU				2	14	54	25	4	1						
Hesperis macedonica Adamov. Holotype Beograd			1	4	26	39	23	7							
Hesperis pycnotricha Borb. et Deg. 411599 BRNU 2n = 14		10	30	39	19	2									
Hesperis sylvestris Crantz 411599 BRNU 2n = 14		8	34	39	17	2									
Hesperis matronalis L. var. *nivea* (Baumg.) Preissm. 411709 BRNU 2n = 24					2	11	31	35	17	3	1				

1956 and 1961; DVOŘÁK, 1964). From the size of the pollen grains of *Hesperis theophrasti* BORB. which are only a little smaller than that of the *Hesperis matronalis* it can be inferred that the species evidently belongs to the polyploid line.

6. Areal. It is evident from the map. 1 that the habitat "inter Veles et Zelenikovo" is situated in the centre of the areal of *Hesperis teophrasti* BORB.



Map. 1. — The distribution of the species *Hesperis theophrasti* BORB. Del. by DVOŘÁK.

Conclusions

1. By ADAMOVIĆ (1904) described *Hesperis macedonica* coincides with the species *Hesperis theophrasti* BORB.

a) in the covering;
b) in the shape and way of the insertion of the leaves to the stem;
c) in the shape of the inflorescence;
d) in the shape and size of the pollen grains.

2. The habitat of *Hesperis macedonica* is situated in the centre of the areal of *Hesperis theophrasti* BORB.

3. The holotype *Hesperis macedonica* ADAMOV. differs from the isotype *Hesperis theophrasti* BORB. by the size of the flowers. The size of the flowers on another plant from the same locality, from the same time and from the same collector prove that small flowers are probably the results of inner causes and are not an invariable feature.

I define therefore *Hesperis macedonica* ADAMOV. as a synonyme of the taxon *Hesperis theophrasti* BORB.

Shrnutí

1. Adamovičem (1904) popsaná *Hesperis macedonica* se shoduje s druhem *Hesperis theophrasti* Borb.
a) v odění;
b) ve tvaru a způsobu přisedání listů ke stonku;
c) v tvaru květenství;
d) ve velikosti a tvaru pylových zrnek.

2. Typová lokalita *Hesperis macedonica* leží uprostřed areálu *Hesperis theophrasti*.

3. Holotyp *Hesperis macedonica* se odlišuje od izotypu *Hesperis theophrasti* velikostí květů. Rozměry květů na druhé rostlině z téže lokality, ze stejné doby a od téhož sběratele dokazují, že malé květy jsou patrně způsobeny z vnitřních příčin a že nejde o stálý znak.

Hodnotím proto *Hesperis macedonica* Adamov. Denkschr. Akad. Wiss. 74 : 124, 1904 jako synonymum taxonu *Hesperis theophrasti* Borb. Magy. Bot. Lap. 1 : 377, 1902.

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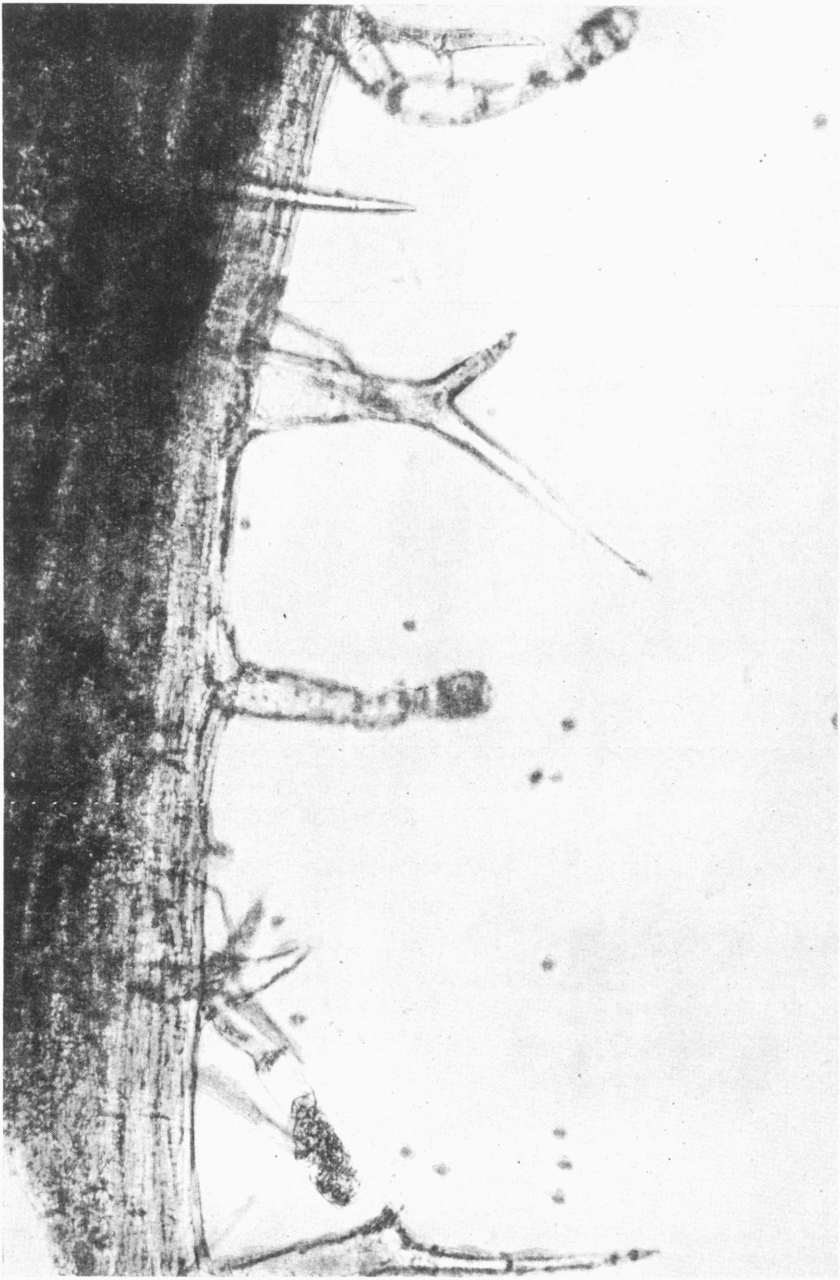
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Explanations of the plate:

Tab. VII. — The hairy covering of the pedicels of the species *Hesperis macedonica* Adamov. Mikrophoto by Ambrož.



F. Dvořák: What is *Hesperis macedonica* ADAMOV.?