Contribuţii Botanice, *XL*, **2005**
Grădina Botanică "Alexandru Borza"
Cluj-Napoca

PRELIMINARY DATA REGARDING THE DISTRIBUTION OF THE SPECIES *SEDUM HISPANICUM* L. (CRASSULACEAE) IN ROMANIAN SOUTHERN CARPATHIANS

Marilena NICULAE [1] ***Valentin BÂRCĂ*** [2]
[1.] Universitatea din Bucureşti, Facultatea de Biologie, Splaiul Independenței, nr. 91-95, **RO-050095 Bucureşti**
[2.] Universitatea de Medicină şi Farmacie "Carol Davila", Facultatea de Medicină, Catedra de Biofizică, B-dul Eroilor Sanitari, nr. 8, **RO-050474 Bucureşti**

Abstract: *Sedum hispanicum* L. is an annual species perenating by sterile shoots, with subsesile 6-9-merous flowers, with white petals sometimes striated with pink-purplish and glaucous leaves, glabrous or glandular hairy. The species has a South-East-European distribution, being native to the South of the continent with a range limited by 6°E şi 38°E meridians, but is naturalized in northern regions of Europe. The Romanian range covers the whole country, preponderantly in higher regions, the species occupying with predilection dryer habitats in stony places but having a fairly large ecological amplitude. The region involved in our study spans North of Danube being limited approximately by the 46°N parallel to the North, comprising a wide variety of habitats from the Danube flood plains to the highest peaks in the Romanian Carpathian Mountains (an altitude ranging between 50-2550m *s.m.*), with a climate and edaphic conditions similarly diverse.

The present study presents a list of the locations from which the species *S. hispanicum* L was mentioned, complemented by a grid map in UTM projection system of the species distribution in Romanian Southern Carpathians together with considerations about the chorology and the ecology of the species with reference to biotic and abiotic factors involved in its distribution.

Introduction

To this date there is no botanical work describing the complete distribution range of *Sedum hispanicum* L. in Southern Carpathian mountain chain. Moreover, despite the relative richness of habitats and conditions for a diversified Sedum flora, no monograph on the genus *Sedum* from Romania was issued until now, while the only monographic treatment of this genus in Romanian flora has been published half a century ago. Our study is a first attempt to fill at least part of this knowledge gap by providing data about the distribution of *S. hispanicum* L. – a remarkable representative of this genus.

Background

Sedum hispanicum L. is a usually annual but sometimes biennial species perennating through "sterile" densely foliated erect shoots, sometimes forming tufts. Morphologically characterized by stellate patent follicles, 6(-9)-merous sessile flowers with white, pink-veined petals, grouped in unilateral cymes, *S. hispanicum* L. is a very polymorphic species, displaying a wide variation in many characters such as leaf and floral parts pilosity, leaf shape, nectarial scales and floral morphology in general. Due to its polymorphism, taxonomically, *S. hispanicum* L. constitutes an ill-defined species, perhaps better designated as an aggregate species complex.

Taxonomically, described by Linne in 1759 from herbarium dry specimens, *S. hispanicum* L. is a controversial species, with uncertain phylogeny relating it to *S. pallidum* complex. In the spirit of some older scholars, *S. hispanicum* L. comprised also the perennial forms of *S. bythinicum* described by Boissier in 1849 [4, 32] and treated by Chamberlain as a variety of *S. pallidum* Bieb. [9].

Other authors [32] also included *S. pallidum* into *Sedum hispanicum* L. with a varietal rank, despite its morphological differences (erect follicles, pentamerous flowers) pointed by Carlstrom in 1985.

Răvăruț, the taxonomist of the genus in Romania [31] treated in the monumental work Flora RPR *S. bythinicum* Boiss. as a form of *Sedum hispanicum* L.

In Flora Europaea [41], *S. hispanicum* L. didn't comprise anymore *S. pallidum* Bieb. which was treated as *bona species*.

At present, Atlas Florae Europaeae [21] segregated *S. hispanicum* L. from "*Sedum hispanicum* L. *forma bythinicum*" of Răvăruț which was synonymised with the valid species *S. pallidum* Bieb.

From an ecological point of view, *Sedum hispanicum* L typically is a thermophylous saxicolous xerophyte, usually preferring calcareous substrates. Sometimes it builds cushion-like tufts of densely packed erect or ascending, branched, nonfloriferous stems. It usually prefers fertile soils like rendzina rich in humus and calcium carbonate, that have developed over well-drained limestone bedrock, although it shows considerable ecological amplitude.

According to Lippert [24], *S. hispanicum* L. is distributed ubiquitously up to fairly seldom in humid, shady and mossy locations, and even more seldom found in very dry, sunny rocks, gravel, and stony places in scrubs, but also on stonewalls and on roadsides. In Italy, it is found on (calcareous) roks and on walls.

Its altitudinal range spans from virtually sea level to over 2000 m s.m. In Greece it is found from sea-level upwards to about 2300 m, though being most abundant in montane regions between 500 - 1500 m [18], in Italy it occurs between 0 - 1900 m s.m. and in Iran between 30 and 2100 m s.m. [32].

In Romania it is spread throughout the country, occuring cf. *Atlas Florae Europae* [21], over the entire carpatian chain. According to our observations, in Romania, *S. hispanicum* L. shows a wide ecological amplitude, thriving in many habitats. Older authors [38] mention it from calcareous stones in piedmont, mountain and alpine regions, but also on older stonewalls in villages between 250 – 2000 m s.m., or frequently in the beech-tree level up to sub-alpine level, in dry sunny rocky locations [10].

From a phyto-geographical and chorological point of view, *S. hispanicum* L. is regarded by t'Hart [18] and Rechinger [32] as an Eurasian element, occurring from western Alps eastwards to the Caucasus and Iran, with a European range spanning between 6°E and 38°E meridians**,** also naturalized in northern regions of Europe. It has also been reported from several Aegean islands and it also occurs on the eastern part of Crete. From a floristic point of view, according to Meusel's classification [27], *S. hispanicum* L. belongs to the Central S. European to W Asian distribution pattern.

Comparing *S. hispanicum* L. distribution in Romania with the distribution reported south of Danube we can readily notice an obvious difference in occurrence. Taking into account the relatively wide ecological amplitude of this species, we believe that the apparent scarcity of locations reported probably does not corectly reflect the field reality, but is a result of insufficient data reported.

The objective of this study was to provide a preliminary overall image of the actual distribution of *S. hispanicum* L. in the Southern Carpathians. This picture, although still incomplete, will help scholars studying this species to better understand the biological, ecological and chorological features of this taxon. This study will also form the basis of a complete distribution map of *S. hispanicum* L. in Romania and will provide arguments for the observed discrepancies between the apparent scarcity of locations in previously reported range of *S. hispanicum* L. in Romania compared to its range south of Danube.

The region involved in our study extends North of Danube being limited approximately by the 44°N to the South and by 46°N parallel to the north; and spanning between 21°E meridian

to the West and 27°E meridian towards East. It comprises the mountains situated approximately between km 4900-5100N of the UTM projection zones 34 and 35.

The studied region comprises a wide variety of habitats from the Danube flood plains to the highest peaks in the Romanian Carpathian Mountains (an altitude ranging between 50-2550 m s.m.). The climate is extreme continental characterized by wide annual and diurnal variations in temperature and rainfall, the region showing also similarly diverse ground cover and edaphic conditions.

With a composite flora, including balcanic, alpine, arctic-alpine, but also oromediterranean elements, together with a number of endemic taxa, the Southern Carpathian Mountains are a very interesting and challenging floristic entity. Together with the Balkans, the Carpathians might have very well been a speciation center in *Sedum*, as t'Hart work [19] suggests.

Our study presents a distribution list of the localitaties from which *Sedum hispanicum* L. was mentioned, complemented by a raster map in the UTM projection system of this species' distribution in Southern Carpathian Mountains together with some considerations about the chorology and ecology of the species with regard to biotic and abiotic factors influencing this distribution.

Method

Due to its poorly defined taxonomy, *Sedum hispanicum* L. is a difficult species to establish a range for, since a geographical distribution map remains as good as the definition of the examined taxon.

At this stage we have comprised under *S. hispanicum* L. all the citations that were not obviously erroneous, leaving for a later moment the task to ascertain beyond any doubt the assignment of the cited plant specimens or populations to *S. hispanicum* L. or to some other related taxa.

Due to the wide altitudinal variation (50-2500 m) our study didn't use altitude as a defining criterion for the analyzed region but rather its geographical boundaries.

To establish the UTM geocodes for the locations cited we have used when applicable Lehrer's work [23] about the cartography of Romanian fauna and flora using arealographic coordinates or geocodes derived from GPS coordinate readings from surveys done by the authors. The UTM geocodes were given when possible for the closest human settlement available.

For the cases when the citations were too ambiguous or couldn't be precisely located, we have only indicated the 100km square geocodes. For each location cited we have mentioned when available altitudes, citation sources and the name under which the plants were cited by each author where it differed from the accepted species name. Due to the limited space available and because this was not the objective of the present study, we do not give in this report data like collection dates, ecological and phytosociological information which will form the object of a future article.

Results

Our results comprise a number of 126 locations from which *S. hispanicum* L. was mentioned (Tab. 1). Out of these, 24 locations were reported before 1957, a number of 24 are reports published by other scholars until now, and a number of 78 are new locations or older locations in which the presence of *S. hispanicum* L. was positively confirmed by us.

Table 1: Location list from where *Sedum hispanicum* L. was mentioned			
County	**Location and Altitude (**m. s. m.)	**UTM Geocode***	**Information Source****
AB	Sebes sub *f. glanduloso- pubescens* Feicht	FR99	31
AB	Metes sub *f. bythinicum* (Boiss)	FS80	31
AG	NE of Rucar : limestone rocks in Pasul Giuvala, 1000 m	LL52	**B 04**
AG	Rucar above Ghimbav and by Dîmbovicioara	LL52	17
BV	Zărneşti sub *f. glanduloso- pubescens* Feicht	LL64	31
BV	Râşnov	LL74	**B 98**
BV	Racoşu de Jos sub *f. glanduloso- pubescens* Feicht	LL79	31
BV	Braşov city on "Dealul Bartolomeu"	LL85	**B 99**
BV	Braşov city on "Dealul Melcilor"	LL85	**B 99**
BV	Braşov city on the Pietrele lui Solomon	LL85	**B 99, 02**
BV	Braşov city on Tâmpa sub *f. glanduloso- pubescens* Feicht	LL85	31
BZ	Fabrica Furnica (a terace of Buzau River)	ML	15
BZ	Malul Presacii (Piscul Presacii)	ML	15
BZ	Piatra Buzaului in Buzăului Cheia (Buzăului Gorge)	ML	15
CS	Coronini	EQ55	**B 93**
CS	Valea Chichiregului	EQ57	**B&N 02**
CS	Valea Ciclovei	EQ58	35
CS	Cozla (Defileul Dunarii)	EQ74	**B&N 04**
CS	All along the road between Svinita and the paleontological reserve, on limestone	EQ82	**N 04**
CS	Svinița	EQ82	**B&N 04**
CS	Plavișevița	EQ93	**B 93**
CS	Cheile Caraşului	ER60	36, **B 93**
CS	Cheile Gârliştei	ER60	36, **B 84, 93, 97**
CS	Doman	ER71	**B 93**
CS	Valea Mraconiei	FQ	**34**
CS	In the neighborhoods of Mehadia	FQ07	8
CS	Mt Strajutului between Mehadia and Baile Herculane	FQ07	8
CS	Banat Mt Arjana (on the right side of Cerna valley)	FQ08	8, **B 95**
CS	Cerna valley	FQ08	17, **B 95**
CS	Globurau	FQ08	**B 93**
CS	Ciorici near Băile Herculane, limestone rocks	FQ16	**B 93**
CS	Pecinisca near Băile Herculane, limestone rocks	FQ16	**B 92-01**
CS	Băile Herculane (on the roof of the old firestation)	FQ17	29
CS	Mt Domogled near Băile Herculane 1060 m	FQ17	13, **B 93-99, B&N 03, N 03**
CS	Cornereva	FQ19	**B 93**
CS	Jidostita	FQ25	**B 93**
CS	Gornenti	FQ27	**B 93**
DB	Leaota Mts, Culmea Zacotelor		14
DB	Leaota Mts, Curmătura Ghimbavului		14
DB	Leaota Mts, Valea Cheii		14
DB	P Craiului Cheile Dâmbovicioarei, above 700 m	LL52	**B 87**
DB-PH	Zănoaga sub *f. glanduloso- pubescens* Feicht		31
DB-PH	Bucegi Mt Batrina, on the rock walls of Turnul Seciului	LL	2, **B 97**
DB-PH	Bucegi Mt Zanoaga	LL	2
DB-PH	Bucegi valea Horoabei	LL	2
DB-PH	V. Ialomiței sub *f. glanduloso- pubescens* Feicht	LL	31
DB-PH	Bucegi Mt Lespezi	LL70	2
DB-PH	Lespezi Mt. close to Dobreşti (by Pucioasa, Ploieşti reg.) sub *f.glabrum*	LL70	31
GJ	Cloşani	FQ49	17
GJ	Motru Sec on limestone rocks intensively grazed and cult,	FQ49	**B 92**
GJ	Cheile Oltețului on moss in deep shadow	GR10	**B 04**

GJ	Close to peştera Polovragi (Polovragi cave)	GR10	**B 04**
HD	Retezat, Rîul Mare, near Gura Zlata 850 m s.m.	FR	8
HD	Boiţa sub *f. glanduloso- pubescens* Feicht	FR45	31
HD	Deva; sub *f. glanduloso- pubescens* Feicht	FR48	31
MH	Svinita (Defileul Dunării)	EQ82	**B&N 04**
MH	Dubova	FQ04	34
MH	Valea Ponicovei, by the quartz factory a few km to Dubova	FQ04	**N 04**
MH	Eselniţa (Ieselniţa)	FQ05	34
MH	Pecinisca	FQ16	**B 93**
MH	Balta Cerbului	FQ18	**B 93**
MH	Inelet	FQ18	**B 93**
MH	Valea Ţesnei	FQ18	17, **B&N 99, 00, N 02**
MH	Cerna	FQ49	**B 93**
PH	Bucegi Mts in V. Horoabei (r. Pucioasa).	LL82	31
PH	Bucegi Mts. Babele sub *f. glanduloso- pubescens* Feicht	LL82	31
PH	Bucegi Mts. Piatra Arsă, sub *f. glanduloso- pubescens* Feicht	LL82	31
PH	Bucegi Mts. Poiana Stânii sub *f. glanduloso- pubescens* Feicht	LL82	31
PH	Bucegi Mts. Vf. Omu, sub *f. glanduloso- pubescens* Feicht	LL82	31
PH	Sinaia - Sf. Ana sub *f. glanduloso- pubescens* Feicht	LL82	31
SB	Rîu Sadului (r. Sibiu) sub *f. glanduloso- pubescens* Feicht	KL75	31
VL	Valea Oltului		11
VL	Râmnicu Vâlcea	KK99	11
VL	Mrea. Bistriţa şi Arnota sub *f. glabrum*	KL60	31
VL	Bărbăteşti, in cult.	KL71	**B 98, N 01**
VL	Buila Mts, Claia Strâmbă-Livada cu Mesteceni,	KL71	**B 88, B 89, B 91, B&N 97**
VL	Buila Mts, Mt. Stogşoare, on "Scocul Ursului",	KL71	**B 88, B 89, B 91, B&N 97**
VL	Buila Mts, Mt. Stogşoare, on the stonewalls by the tunnel	KL71	**B 88, B 89, B 91, B&N 97**
VL	Buila Mts, Santinela Cheii,	KL71	**B 88, B 89, B 9), B&N 97**
VL	Buila Mts, Valea Cheii,	KL71	**B 88, B 89, B 91, B&N 97**
VL	Cozia Monastery on the ramparts towards River Olt	KL81	**B 01**
VL	Turnu Monastery on the rock "la chilie"	KL81	B 97, B 04, B 03, B 02
VL	Valea Călineşti	KL82	(12)
VL	Cascada Stâniăoara, on rocks by the fall	KL91	**(B 97)**
VL	Stânişoara Monastery, on rocks	KL91	**(B 97)**

*The UTM geocodes were given when possible for the closest human settlement available, and when the locations couldn't be precisely located, we have only indicated the 100km square geocodes.

**For the information source se the reference list. New locations or older locations in which we positively confirmed the presence of Sedum hispanicum L. are highlighted. In several sites specimens were found in subsequent years, which were equally mentioned or reference. From these sites, specimens were either photographed, or collected and stored dried or preserved in ethanol in authors' collections.

(B&N + XX) = (Bârca & Niculae + the last 2 digits of the year when the plant was found *in situ*) *e.g.* (B&N 04) = (Bârca & Niculae 2004); (B + XX) = (Bârca + the last 2 digits of the year when the plant was found *in situ*)
(N + XX) = (Niculae + the last 2 digits of the year when the plant was found *in situ*)

Some of the sites were impossible to assign definite UTM coordinates set, usually due to imprecise or insufficient data available. These sites were either discarded until further clarification, or were only mentioned in the table without placement on the map.

The sites that could be positively located on the map are presented in figure 1, in a convenient format on a map with UTM quadrants and the hydrographic system. We have indicated the sites cited using different symbols for the 3 data subsets, of which the most important is the subset comprising the sites in which the presence of the species was positively confirmed by us. For reference, we have given in the table the years when we have observed the plants in the mentioned sites. The other two subsets comprise the literature data that were divided using the monographic work of Răvăruţ [31] as milestone, as follows in figure 1 below.

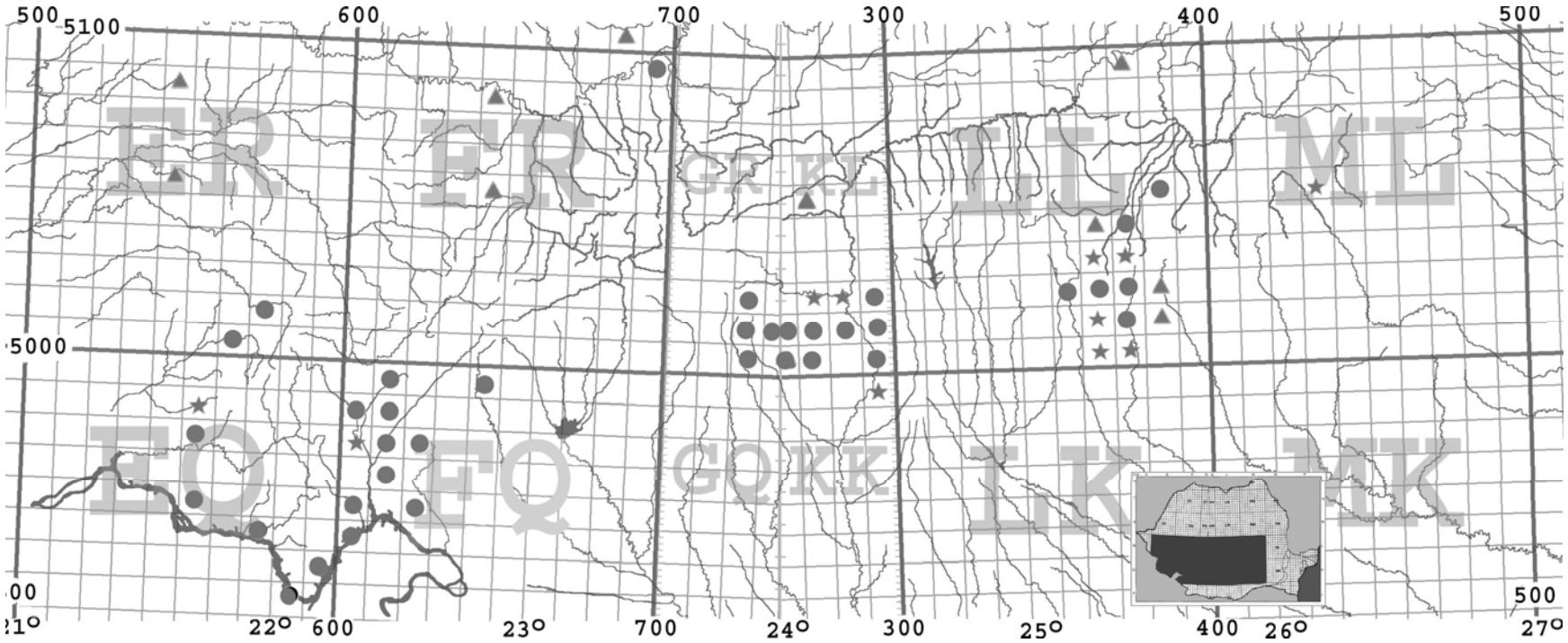

Fig. 1: Distribution map in UTM projection system with 100Km quadrants of the sites where *Sedum hispanicum* L was positively identified.
⑩ designates sites cited before 1947, ❶ designates sites cited after 1947 by other authors and ③ designates new sites or older sites in which we positively confirmed the presence of *Sedum hispanicum* L.

Conclusions

This study reports findings of both literature survey and previously unpublished data from personal fieldwork of the authors. Our preliminary results indicate that indeed the range occupied by *S. hispanicum* L. is probably larger than previously believed. We found it in almost al locations where we searched for it. Therefore, we believe that the apparent limitation of *S. hispanicum* L. range to the mountainous zones in Romania is actually due to the fact it was under-reported by previous authors, its occurrence being probably considered unworthy of mentioning in all locations where it was found. A second potential explanation of its lack from large areas of the country having similar altitude with Bulgarian regions could reside in differences in land use, as *Sedum hispanicum* L. populations could have been eliminated from some previous locations by agriculture. There are also considerable differences in habitat between the teritories situated on Northern side of Danube compared to the ones South of Danube, as seen also between Muntenia and Dobrogea and this might also explain the absence of *S. hispanicum* L. from stations North of Danube since it cannot stand competition from other plants.

Acknowledgements: The authors want to express thanks to Dr. Laszlo Katona for the kind help with the translation and location of Hungarian versions of some place names.

SELECTED REFERENCES

1. Baumgarten, J.Ch.G., 1816,. *Enumeratio stirpium Magno Transsilvaniae Principatui. Cibinii*, Vindobonae. II: 22.
2. Beldie A., 1967, *Flora vasculară a Munţilor Bucegi*, Ed. Acad. RPR, Bucureşti: 152.
3. Berger, A., 1930, Crassulaceae.In: Engler & Prantl (ed.), *Die Nat. Pflanzenfam* , ed. 2, Leipzig, 18a: 352- 483.
4. Boissier, E., 1849, *Diagnoses Plantarum orientalium*, **1**, (10), Paris.
5. Borissova, A. G., 1939, Crassulaceae. In: Komarov, V. L. (ed.), *Flora SSSR*, Moskva & Leningrad, **9**: 8 – 133.
6. Borza, Al., 1947, *Conspectus Florae Romaniae regionumque affinium*, Ed. Acad. RPR, Cluj: 128.
7. Borza, Al., 1934, Studii fitosociologice în Mţii Retezatului, *Bul. Grad. Bot. Cluj*, **XIV**, (1): 7-45.
8. Boşcaiu, N., 1971, *Flora vasculară a munţilor Ţarcu, Godeanu şi Cernei*, Ed. Acad. RSR Bucureşti: 92-93.
9. Chamberlain, D.F., 1972, Sedum L. In: P.H. Davis (ed.), *Flora of Turkey*, **4**: 224-243.
10. Ciocârlan, V., 2000, *Flora ilustrată a României (Pteridophyta et Spermatophyta)*, Ed. Ceres, Bucureşti.
11. Ciurchea, M., 1970, Vegetaţia de stâncării de pe Valea Călineşti (jud. Vâlcea), *Rev. Roum. de Biol. Ser. de Bot*. **16**, (4): 243-258.
12. Ciurchea, M., Chircă, E., 1971, Zur Kenntnis der Wald vegetation vom unteren Lauf des Călineşti-Baches (Kreiss Vâlcea), *Revue roum. De Biol. Sér. De Bot.* **16**, (4): 243-258.
13. Degen, A., 1901, Die Flora von Herculesbad, eine Vegetations-Skizze von Dr. A. von Degen, Buchdruckerei-Actiengesellschaft Pallas, Budapest: 11, 22.
14. Diaconescu, F., 1973, Aspecte din vegetaţia masivului Leaota. I, *Analele Şt. ale Univ. „Al. I. Cuza“ Iaşi*, Serie noua, Sect. II-a Biol., **19**, (2): 465-474.
15. Dihoru, G., 1975, *Învelişul vegetal din Masivul Siriu*, Edit Acad. RSR. Bucureşti.
16. Fuss, M., 1866, *Flora Transsilvaniae Excursoria Editit Societas naturae curiosorum Transsilvanica Cibiniensis*, Cibinii: 230-233.
17. Grecescu, D., 1898, *Conspectul florei României: plantele vasculare indigene şi cele naturalizate ce se găsesc pe teritoriul României, considerate subt punctul de vedere sistematic şi geografic* / de D. Grecescu. – Bucureşti, Tipografiea Dreptatea: 156.
18. Hart, H.T., 1985, Chromosome numbers in Sedum (Crassulaceae) from Greece (Materials for the Mountain Flora of Greece, 27), *Willdenowia*, **15**: 115-135.
19. Hart, H.T., 1991, Evolution and classification of the European Sedum species (Crassulaceae), In: *Fl. Medit*. **1**: 31-61.
20. Heuffel, J., 1858, *Enumeratio Plantarum in Banatu Temesiensi sponte crescentium et frequentius cultarum*, Vindobonae: 73-74.

21. Jalas, J., Suominen, J., Lampinen, R. Kurtto, A., (eds.) 1999, *Atlas Florae Europaeae*. Distribution of Vascular Plants in Europe. 12. Resedeaceae to Platanaceae - The Committee for Mapping the Flora of Europe & Societas Biologica Fennica Vanamo, Helsinki.
22. Koch, W.D.J., 1843, *Synopsis florae germanicae et helveticae*, ed. 2, 1. Frankfurt am. Main.
23. Lehrer, A., Lehrer M., 1990, *Cartografierea faunei şi florei României (coordonate arealografice)*, Ed. Ceres.
24. Letz, R., 1998, Vybrane Problemy Taxonomickej Diferenciacie rodov Sempervivum a Jovibarba v Europe, Prirodovedecka fakulta Univerzity Komenskeho, Thesis Bratislava.
25. Lippert, W., 1995, In: Hegi G., *Illustrierte Flora von Mitteleuropa*, Blacwell Wissenschafts Verlag, Berlin, ed.3, vol. IV-2: 77-97.
26. Love, A., Love, D., 1985, In: Love, A. (ed.), *Chromosome number reports* LXXXVI - Taxon 34: 163-164.
27. Meusel, H., Jäger, E., Weinert, E., 1965, *Vergleichende Chorologie der zentraleuropaïschen Flora*, VEB Gustav Fischer Verlag, Jena, **1**: 198-199.
28. Parnell., J.A.N., Favarger, C., 1993, Crassulacae. In: Tutin & al. (eds), *Flora Europaea*, 2nd ed.- Cambridge University Press, ed.2, **1**: 425-429.
29. Popescu, C.P., Samoilă, Z., 1962, *Ghid geobotanic pentru Banat*, SSNG, Bucureşti.
30. Popescu, Gh., 1974, *Studii floristice şi geobotanice al bazinului hidrografic al Bistriţei-Vâlcii*, Rezumatul tezei de doctorat, Bucureşti
31. Răvăruţ, M., 1953, Crassulaceae. In: Săvulescu, T., (ed.), *Flora RPR*, **4**, Ed. Acad. RPR: 71-72.
32. Rechinger, K.H., 1943, Flora Aegea, *Akad. Wiss. Wien Math*., Naturwiss. Kl. Deukschr. **105** (1).
33. Roman, N., 1974, *Flora şi vegetaţia din sudul Podişului Mehedinţi*, Editura Academiei RSR. Bucureşti.
34. Sanda, V., Popescu, A., Peicea, I., 1988, La structure des groupements des xérothermes de la classe Sedo-Scleranthetea Br.-Bl. 1955 em. Moravec 67 de Roumanie, *Revue roum. de Biol. Sér. de Bot*., **33**, (1): 11-19.
35. Schrott, L., Purdelea, L., 1993, Consideraţii asupra florei şi vegetaţiei Rezervaţiei naturale Valea Ciclovei (jud CS), *Ocrot. Nat Med Inconj*., **37**, (1): 25-31.
36. Schrött, L., 1968, Vegetaţia Rezervaţiei naturale Cheile Nerei, *Ocrot. Nat. Med. Înconj*., **12**, (2): 193-202.
37. Schrött, L., Purdelea, L., 1984, Studii floristice în Rezervaţia naturală Cheile Gârliştei (jud. Caraş-Severin), *Ocrot. Nat. Med. Înconj*., **37**, (1): 25-31.
38. Schur, P.J.F., 1866, *Enumeratio Plantarum Transsilvaniae, exhibens stirpes phanerogamas sponte crescentes atque frequentius cultas, cryptogamas vasculares, characeas etiam muscos hepaticasque*. Ed. G. Braumüller, Vindobonae: 228-229.
39. Simonkai, L., 1886, *Enumeratio florae Transsilvanicae vasculosae criticae*: 238-240.
40. Stevanovic, V., 1996, Analysis of the Central European and Mediteranean orophytic element on the mountains of the W and Central Balkan Peninsula, with special reference to endemics, *Bocconea*, **5**, (1): 77-97.
41. Webb, D.A., 1964, *Sedum* L. In: Tutin T., G., et al. (eds.), *Flora Europaea*, **1**, Cambridge: 356-363.

DATE PRELIMINARE PRIVIND RĂSPÂNDIREA SPECIEI *SEDUM HISPANICUM* L. (CRASSULACEAE) ÎN CARPAŢII MERIDIONALI DIN ROMÂNIA

(Rezumat)

Sedum hispanicum L. este o specie anuală care perenizează prin lăstari sterili, cu flori subsesile 6-9-mere, cu petale albe uneori cu strii roz-purpurii şi frunze glauce, glabre sau glandular păroase.

Specia are răspândire Sud-Est-Europeană, cu un areal mărginit de meridianele 60°E şi 38°E, fiind spontană în sudul continentului, dar este naturalizată şi în regiuni nordice ale Europei. Arealul românesc cuprinde întreaga ţară, preponderent în regiunile înalte, specia ocupând cu precădere habitate uscate în zone stâncoase, dar având o amplitudine ecologică destul de mare.

Zona luată în studiu se întinde la N de Dunăre fiind limitată la N de paralela 46 şi cuprinde biotopuri variate de la Câmpia Dunării până la vârfurile cele mai înalte din Carpaţii Româneşti, cu o climă şi pedologie de asemenea foarte variate.

Studiul nostru prezintă o listă a localităţilor din care a fost mentionată specia *S. hispanicum* L, precum şi o hartă raster în sistemul UTM a răspândirii speciei în Carpaţii Meridionali împreună cu unele consideraţii privind corologia şi ecologia speciei, cu referire la factori biotici şi abiotici implicaţi în răspândirea ei.