

SPONTANEOUS SPECIES WITH ORNAMENTAL POTENTIAL: *ASTER OLEIFOLIUS* (LAM.) WAGENITZ (I) - MORPHOLOGY, ECOLOGY, CHOROLOGY

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Abstract

Morphological characters and environmental factors requirements for *Aster oleifolius* (Lam.) Wagenitz [syn. *A. villosus* (L.) Sch.Bip.; *Linosyris villosa* (L.) DC.] (Asteraceae) are presented as arguments to introduce this species among the ornamental plants. A chorology map, based on the original or collected data from different herbaria from Romania and references, gives the country spread of this species.

Key words: *Aster oleifolius*, Asteraceae, morphology, ecology, chorology.

INTRODUCTION

Aster oleifolius (Lam.) Wagenitz [syn. *A. villosus* (L.) Sch.-Bip., non Thunb.; *Galatella villosa* (L.) Rchb.f.; *Linosyris villosa* (L.) DC.; *A. cinereus* Korsh.; *Chrysocoma villosa* L.; *Crinitaria villosa* (L.) Grossh.; *Conyza oleifolia* Lam.] from Asteraceae is a perennial herb, 13-35 cm, stem is ascending to erect, densely hairy, leaves alternate, simple, lanceolate to oblanceolate, 15-40cm/10mm; soon leafless and glabrous below, with oblanceolate, greish-white-tomentose leaves above. Capitula shortly pedunculate, narrowly infundibuliform, in dense corymbus. Involucral bracts is several rows, subacute to subobtuse, long-ciliate, the outer tomentose, the inner somewhat lanate at the apex; ligules absent; papus-hairs inequal (Merxmuller and Schreiber, 1976). *A. oleifolius* is a xeric steppe species on calcareous soils (in the nemoral areas and in the forest-steppe only on sunny steep clines) with continental Eurasian distribution (Badarau, 2006).

Some species of *Aster* L. are cultivated and sold in the horticultural trade. Some of these species are widely distributed and have been known in cultivation for a long time. Due to the general aspect of plant and the greish-white-tomentose leaves above, *A. oleifolius* may be used as ornamental plant with a longer flowering period between July-September, sometimes till

October (Figure 1). *A. oleifolius* has an excellent potential as ornamental plant in gardens.

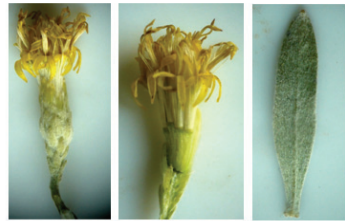


Figure 1. The capitula and leaf morphology in *Aster oleifolius* (orig.)

The species *A. oleifolius* was described by Linnaeus with syn. *Chrysocoma villosa* L. in Linnean Herbarium [S-LINN], in Sweden (<http://linnaeus.nrm.se/botany/fbo/c/chrys/chryvil.html.en>) (Figure 2).



Figure 2. *Chrysocoma villosa* L. in Linnean Herbarium [Microfiche number: IDC 337.19]

MATERIALS AND METHODS

The chorology map and details of distribution of *Aster oleifolius* are based on collections from Herbaria: BCHM, BRHM, BUAG, BVHU, CL, I, IASI, PLHM, SIB, SVHU (according codes to P.K. Holmgren from *Index Herbariorum*). The chorological map of *A. oleifolius* is based on the cited sources above plus new records obtained during research, or different databases / scientific publications where this species was referred. The chorological map of *A. oleifolius* included in this work was made by taking in account the principles of the GEOCOD System (Oltean and Stefanut 2002), which ensures an exact localization of villages, communes and towns where this species was found. The main objective of the present study is to document the geographic distribution of the *A. oleifolius* species in Romania using Universal Transverse Mercator (UTM) system. The chorological red points on the distribution map are represented by data from cited Herbaria and former citations from literature, and original data from the field (Figure 7). The material used for morphological descriptions was collected from Alah Bair Hill, Constanta County. The species was naturalized in "I. Todor" Botanical Garden, on Dobrodjan Colline in USAMV Bucharest (Figure 3).

RESULTS AND DISCUSSIONS

Aster oleifolius is a calcareous species and the coenotaxonomic framing of this newly proposed vegetal subassociation is following: Cl. *Puccinellio-Salicornietea* Topa 1939, Ord. *Puccinellietalia* Soo 1940, Al. *Puccinellion limosae* (Klika 1937) Wendelbg, 1943, 1950, As. *Staticeto-Artemisietum santonicae* Topa 1939 and subass. *asteretosum oleifolii* subass. nova (Stefan et al., 2009) or As. *Staticeto-Artemisietum monogynae (santonicum)* Topa 1939 (Lupascu et al, 2005)

The species was collected from Alah Bair and transplanted in "I. Todor" Botanical Garden for acclimatization and naturalization regarding the morphological and anatomical studies, cultivation aspects and interest for phytodiversity preservation (Figure 3).



Figure 3. *A. oleifolius* on Dobrodjan Colline in "I. Todor" Botanical Garden, Bucharest (orig.)

Aster oleifolius is xeric species with a rare distribution in Romania. The image presented below (Figure 4) is a comparison between *A. linosyris* (left) and *A. oleifolius* (right). Though congeneric and sharing the same character-the lack of the ligulae-the two species are not immediate and not even closely related in the context of the genus *Aster*. The differences between the two, especially in concerning the structure of the capitula (Badarau, 2006), leaf nervation and the colour of plants.



Figure 4. Two species of Aster in Alba County (photo Badarau)

The species is well-represented in Fantanita-Murfatlar, Basarabi (Constanta County). It is preserved indirectly due to another rare species of Romania, like *Nepeta parviflora*, *Paeonia peregrina*, *P. tenuifolia*, *Adonis vernalis*, *Helianthemum salicifolium*, *Trigonella gladiata*, *Stipa lessingiana*, *Crocus pallasii*, *Euphorbia dobrogensis*, *Linum borzeanum*, *Buffonia tenuifolia*, *Aster oleifolius*, *Scutellaria orientalis* (Figures 5 and 6).



Figure 5. *A. oleifolius* in Fantanita-Murfatlar Reserve, Constanta County (Padure, 2005)



Figure 6. *A. oleifolius* in Fantanita-Murfatlar Reserve, Constanta County (Pădure, 2005)

The authors were made an important revision of *A. oleifolius* herbal specimens from different Herbaria (data sheets specimens) to realize a partial monographic study on genus *A. oleifolius* in Romania. We finally realized for the first time a chorological map of this species. The partial chorological data are presented in following section:

Alba County: Rosia de Secas [GS20] (Badarau, 2006).

Arad County: Sânmartin [ES24] (Merce, 2011), Pilu [ES25] (Merce, 2011), Varasand (Merce, 2011), Șiclău [ES24] (Merce, 2011), Graniceri [ES25] (Merce, 2011), Socodor [ES35] (Merce, 2011).

Bihor County: Cefa [ES59] (Merce, 2011).

Botosani County: Râsca (I 29490) [NP10], Tataraseni (I 29491) [MP72], Botosani [MN78] (Oprea, 2005; Nyárády and Morariu, 1964), Calarasi [NN17/27] (Oprea, 2005), Valea Bahluiului-V. Ilenii (Lupascu et al., 2005), Frumusica [MN96] (SVHU), Ștefanesti [NN19] (Nyárády and Morariu, 1964).

Braila County: Jirlau [NL10] (Merce, 2011).

Buzau County: Râmnicu Sarat [NL02], Boldu (I 65546) (Nyárády and Morariu, 1964), Buzau

[MK89] (Oprea, 2005), Pâcelele Mari and Pâcelele Mici (Merce, 2011), (BUAG 18412).

Cluj County: Cluj [FS97/97] (Oprea, 2005), Agârbiciu [FS78] (Dragulescu, 2003), Sic [GS29] (Merce, 2011), Micesti (Nyárády and Morariu, 1964).

Constanta County: Basarabi in Fantanita-Murfatlar Reserve (Figures 5 and 6) [PJ19] (Padure, 2005) (CL 430995, CL 432191), Agigea (Burduja et al., 1969; Burduja and Horeanu, 1970; Oprea, 2005; Nyárády and Morariu, 1964) [PJ28], Cheia [PK12] (BRHM), Medgidia (Nyárády and Morariu, 1964), Adamclisi (I 24298), Eforie [PJ37] (BCHM), Hagieni (CL 661984) (Cristurean and Ionescu-Teculescu, 1970; Ionescu-Teculescu and Cristurean, 1967), Capul Midia (Nyárády and Morariu, 1964) and Grindul Chituc, Baltagesti [NK92] on Alah-Bair Hill (Oprea, 2005), (Ciocârlan and Costea, 1996), Horia [NK84] (BRHM), Dobrogea (Brandza, 1898), Coroana [PJ14] (Sârbu et al., 2009), Vama Veche [PJ24] (SIB), Techirghiol [PJ27] (PLHM), Vânători [PJ25] (Sârbu et al., 2009), between Vasile Roaita and Eforie (BUAG 4770).

Dolj County: Desa [PP65/66] (Merce, 2011).

Galati County: Gârboavele (Mititelu et al., 1968; Nyárády and Morariu, 1964) (I 39100), Foltesti (I 39101) [NL86] (Nyárády and Morariu, 1964), Barbosi (I 39103) [NM74] (Nyárády and Morariu, 1964), Galati (I 39104) [NL73] (Nyárády and Morariu, 1964), Vasile Roaita [NL36] (BVHU), Radesti (I 55985) [NM60], Cuca (I 65545) [NL66], Sârbi [NL28] (Oprea, 2005).

Giurgiu County: Comana [MJ39] (Merce, 2011; Nyárády and Morariu, 1964).

Ialomita County: Slobozia (I 65547) [NK23], Amara [NK23/24] (Merce, 2011).

Iasi County: Mârzesti (I 4809, I 76515, IASI 3188, IASI 3191, IASI 3193, IASI 3194, IASI 3196, CL 216511, CL 580006) (Nyárády and Morariu, 1964), Iasi (I 22637, I 22638, I 45308, I 58766) [NN41/41], Bratulenii (I 24297) [NN32] (Nyárády and Morariu, 1964), Hodora (I 24299) [NN04], Mânzatesti (I 24300, I 24301) [NN52], Sorogari (I 24302) [NN42], Cotnari (I 60702) [MN94] (Nyárády and Morariu, 1964), Valea lui David (Stefan et al., 2008; Zamfirescu and Zamfirescu, 2008;

Merce, 2011; Zamfirescu, 2010) (IASI 3187, CI 216638), Rediu [NN02], (BUAG 20869), Cîrlig (IASI 3190, IASI 3192), (Stefan et al., 2009; Nyárády and Morariu, 1964), Aroneanu [NN42] (Nyárády and Morariu, 1964), Vântatori [NN84] (Nyárády and Morariu, 1964), Cucuteni (I 24296) [MN93] (Nyárády and Morariu, 1964), Brazu [NN32] (BUAG), Țigănasi [NN3] (Nyárády and Morariu, 1964), Fântânele [NN15] (Nyárády and Morariu, 1964), Fântânele [NN15] (Nyárády and Morariu, 1964), Focuri [NN15] (Nyárády and Morariu, 1964).

Ilfov County: Lehliu (I 137312, I 137313) [MK82].

Sibiu County: Sura Mare [KL78] (I 33186, CL 27881, CL 86933), (Dragulescu, 2003), Micasasa [KM70] (CL 98798), (Dragulescu, 2003), Seica Mare (Dragulescu, 2003) [KL79], Sibiu [KL 77/87] (Oprea, 2005), Rusi [KL79] (Dragulescu, 2003), Slimnic [KL78] (Dragulescu, 2003), Târnava [KM81] (Dragulescu, 2003), Târnăvioara (Dragulescu, 2003).

Suceava County: Radauti (I 39117, I 39118), (Tomescu and Chifu, 2009; Nyárády and Morariu, 1964; Tomescu, 2006), Boldu (I 39119), Botosana [MN18/28] (Tomescu and Chifu, 2009), Ciprian Porumbescu [MN27] (Tomescu and Chifu, 2009).

Tulcea County: Ciucurova [PK17] (Oprea, 2005; Nyárády and Morariu, 1964), Sulina [QL10] (TMMJ), Greci [NL90] (CL 430994) (Marin and Cristurean: *Flora din Parcul Național Munții Macinului*, www.parcmacin.ro/c/document.library;

Nyárády and Morariu, 1964), Macin [NL80] (Oprea, 2005; Nyárády and Morariu, 1964), Babadag (Dihoru and Doniță 1970), Sarighiol [PK25] (SVHU), Vasile Alecsandri [PK16] (SVHU).

Vaslui County: Sasova (I 69056) [NM49], Bolati (I 69062) [NM48], Ratesu Cuzei (I 77552) [NM48], Bolati (I 77554), Todiereni (Oprea, 2005), Oltenesti [NM65] (SVHU).

The chorological map using GEOCOD coordinates of *Aster oleifolius* is presented in Figure 7.

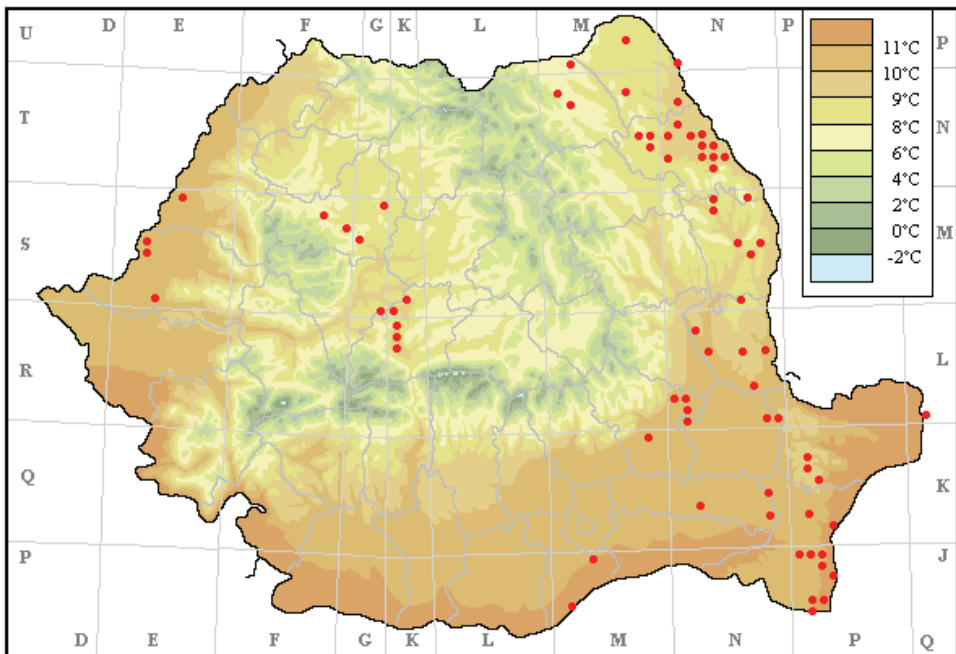


Figure 7. Chorological map of *A. oleifolius* in Romania using GEOCOD coordinates

CONCLUSIONS

Aster oleifolius is a perennial herb growing in full-sun calcareous soils, drought resistant plant, sometimes on halomorphic soils in our country (see the map above). There are lots of references from different scientific publications, monographic studies and un-reviewed voucher specimens from different Herbaria, which will be study in the future. We are going to add new and interesting information about *A. oleifolius* chorology in Romania. It is necessary to complete our partial study with investigations in other regions in Romania. We are going to propose using *A. oleifolius* as an ornamental plant in gardens due to: morphological aspects of stem and leaves (grey-tomentose, short habitus and perennial beauty), high resistance to drought, full-sun growing and long term flowering species.

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- <http://linnaeus.nrm.se/botany/fbo/c/chrys/chryvil.html.en> - *Chrysocoma villosa* L. in Linnaeus herbarium (S-LINN).

