

*ERIGERON KARVINSKIANUS* DC. AND  
*LINARIO-ERIGERONETUM MUCRONATI* SEGAL 1969,  
NEW PLANT AND ASSOCIATION IN CROATIA

NENAD JASPRICA\*<sup>1</sup> & SANJA KOVAČIĆ<sup>2</sup>

<sup>1</sup>Institute for Marine and Coastal Research, University of Dubrovnik,  
P.O. Box 83, HR-20000 Dubrovnik, Croatia (E-mail: nenad.jasprica@unidu.hr)

<sup>2</sup>Department of Botany and Botanical Garden, Division of Biology, Faculty of  
Science, University of Zagreb, Marulićev trg 9a, HR-10000 Zagreb, Croatia

Jasprica, N. & Kovačić, S.: *Erigeron karvinskianus* DC. and *Linario-Erigeronnetum mucronati* Segal 1969, new plant and association in Croatia. *Nat. Croat.*, Vol. 22, No. 1, 205–209, 2013, Zagreb.

American plant species *Erigeron karvinskianus* DC. was recorded on the walls of the city of Dubrovnik, South Croatia, in April 2013. It is found within the *Linario-Erigeronnetum mucronati* Segal 1969 plant association (the class *Parietarietea judaicae* Oberdorfer 1977). Plant species and association have been recorded outside cultivation for the first time in Croatia.

**Keywords:** *Erigeron karvinskianus*, *Linario-Erigeronnetum mucronati*, first record, city of Dubrovnik, Croatia

Jasprica, N. & Kovačić, S.: *Erigeron karvinskianus* DC. and *Linario-Erigeronnetum mucronati* Segal 1969, nova biljka i asocijacija u Hrvatskoj. *Nat. Croat.*, Vol. 22, No. 1, 205–209, 2013, Zagreb.

U travnju 2013. u Dubrovniku je otkrivena američka vrsta *Erigeron karvinskianus* DC. Naseljava pukotine zidova u asocijaciji *Linario-Erigeronnetum mucronati* Segal 1969 (razred *Parietarietea judaicae* Oberdorfer 1977). To je prvi nalaz te vrste u prirodi te nova biljna asocijacija u Hrvatskoj.

**Ključne riječi:** *Erigeron karvinskianus*, *Linario-Erigeronnetum mucronati*, prvi nalaz, Dubrovnik, Hrvatska

## INTRODUCTION

During floristic investigations in the city of Dubrovnik (South Croatia) and its surroundings, *Erigeron karvinskianus* DC. (Latin American fleabane) was found for the first time in Croatia in April 2013. The taxon was found on the walls in the inner suburban area. In this paper, the finding of the new species is reported and its syntaxonomic status is discussed.

The genus *Erigeron* (subtribe Conyzinae, family Asteraceae, superorder Asteranae) has about 400 species distributed in the Americas, Asia, Europe, and a few in Africa and Australia. In fact, *Erigeron* is the only genus of Conyzinae with species native to regions outside the Americas. The summary of NESOM (2008) presented an outline classification of New World *Erigeron* species, recognizing 35 sections. In these terms, *E. karvinskianus* belongs to the section *Karvinskia* (NESOM, 1989). The native range of this section is re-

---

\* corresponding author: nenad.jasprica@unidu.hr

stricted to Central America, from Southern Mexico to Panama. An apomictic species, Latin American fleabane has become a worldwide weed in tropical and subtropical latitudes, having escaped from horticulture (HEGL, 1979; NESOM, 2008; CULLEN, 2011).

According to Flora Europaea (HALLIDAY, 1976), *E. karvinskianus* is reported from the Archipelago of the Azores and Portugal, the Balearic Islands and Spain, Great Britain (excluding the Channel Islands and Northern Ireland), France (excluding Corsica), Switzerland and Italy. According to GREUTER (2006–2009), it occurs all over Western Europe, as well as in Algeria (North Africa). More recently, it was found in Austria (STÖHR *et al.*, 2009). In Europe, the species has been categorized as i) introduced and naturalised alien; ii) introduced and adventitious (casual alien); or iii) cultivated plant (GREUTER, 2006–2009).

**Tab. 1.** *Linario-Erigeronetum mucronati* Segal 1969.

No of relevés	1	2
Slope (°)	90	90
Aspect	S	S
Vascular plant cover (%)	20	20
Plot size (m <sup>2</sup> )	6	5
No of species	12	11
Char. Ass.		
<i>Erigeron karvinskianus</i> DC.	2	2
Char. Parietarion judaicae & Parietarietea judaicae		
<i>Cymbalaria muralis</i> Gaertner, Meyer et Schreb.	1	1
<i>Parietaria judaica</i> L.	+	1
<i>Asplenium ceterach</i> L.	+	+
<i>Umbilicus rupestris</i> (Salisb.) Dandy	+	+
<i>Theligionum cynocrambe</i> L.	1	+
<i>Reichardia picroides</i> (L.) Roth	+	+
<i>Sonchus oleraceus</i> L.	+	.
<i>Antirrhinum majus</i> L.	.	+
<i>Sedum dasyphyllum</i> L.	.	+
<i>Ficus carica</i> L.	.	+
Other species		
<i>Helichrysum italicum</i> (Roth) G.Don	+	.
<i>Hedera helix</i> L.	+	.
<i>Bituminaria bituminosa</i> (L.) Stirton	+	.
<i>Reseda alba</i> L.	+	.
<i>Micromeria juliana</i> (L.) Benth. ex Rchb.	.	+

## MATERIAL AND METHODS

Two phytocoenological relevés (Tab. 1) were collected using the BRAUN-BLANQUET (1964) approach. The nomenclature of syntaxonomic units follows BRULLO & GUARINO (1998), the nomenclature of plants in accordance with TUTIN *et al.* (1964-1980, 1993). Data on the localities of relevés (Tab. 1) are as follows: rels. 1 & 2, city of Dubrovnik, Lapad Peninsula, the Gauss-Krüger coordinates X=5753500, Y=4727335, using mobile application *mBotaničar* (NIKOLIĆ *et al.*, 2012); Date: April 11, 2013. Herbarium specimens are housed in the University of Zagreb, *Herbarium Croaticum* (ZA!); Leg. et det. N. Jasprica.

## RESULTS AND DISCUSSION

We found *Erigeron karvinskianus* DC. (= *E. mucronatus* DC.) on the walls of the city of Dubrovnik, on April 11, 2013 (Fig. 1). The population is very small, occupying only 3-4 m<sup>2</sup>, at 60 m a.s.l. Generally, populations of Latin American fleabane develop between sea level and 600 (-700) m a.s.l. (PIGNATTI, 1982; CHEN *et al.*, 2011).

*Erigeron karvinskianus* was found within the *Linario-Erigeronetum mucronati* Segal 1969 plant association (Tab. 1).

Syntaxonomic position of the association is as follows:

*Parietarietea judaicae* Oberdorfer 1977

*Tortulo-Cymbalarietalia* Segal 1969

*Parietarion judaicae* Segal 1969

*Linario-Erigeronetum mucronati* Segal 1969

The association appeared on southern exposures, and the cover was low. There were 11 to 12 species in the relevés.

A differentiating species of the *Linario-Erigeronetum mucronati* association is *Erigeron karvinskianus*. In fact, this community represents mesophilous vegetation linked to cement or mortar-jointed walls, growing in only slightly humified narrow crevices. According to BRULLO & GUARINO (1998), the association is distributed in Mediterranean and Atlantic Europe. In our case, as in Western Europe, the association is encountered on a south-facing wall. However, in the Mediterranean area it does not show a pronounced preference for a particular type of exposure (BRULLO & GUARINO, 1998). In our study, the floral composition of the association was similar to those in Spain, Italy and Switzerland (HRUSKA, 1985; BRANDES, 1989, 1992; HERRERA GALLASTEGUI, 1995), and in other parts of Europe (BRULLO & GUARINO, 1998, and references therein). The association has some floristic and ecological similarities with the *Linario cymbalariae-Parietarium ramiflorae* Pignatti 1952 association identified by TRINAJSTIĆ (2010) on the Croatian coast and islands. Regarding syntaxonomy, we agree with ŚWIERKOSZ (2012) that the floristic composition of the association is closer to the Mediterranean *Parietarion* communities than to the Central-European *Cymbalario-Asplenion* Segal 1969 (cf. POLDINI & VIDALI, 1994).

In general, plants that have escaped garden-cultivation and occupy city wall, are of special interests to urban ecologists (BRANDES, 1995). It has been reported that the walls in Europe are easily colonized by adventitious species, like *Erigeron karvinskianus* or *Cheiranthus cheiri* L. (BRANDES, 1992). These species became spontaneous and flourish exclusively on walls, subsequently becoming anthropochorous in large areas of Europe. It seems that walls are suitable sites, much more so than the rock crevices. These species,



**Fig. 1.** *Erigeron karvinskianus* DC. in the wall crevices of the city of Dubrovnik, South Croatia (photo N. Jasprica).

as well as some others (e.g. *Antirrhinum majus* L., *Parietaria judaica* L., *Umbilicus rupestris* (Salisb.) Dandy, *Cymbalaria muralis* Gaertner, Meyer et Schreb.), show a distinct pattern of migration along the valleys of the great European rivers and their tributaries and along the Western coasts of Europe, as shown by the density and the richness of their growing sites in these areas (CUFODONTIS, 1947; MENNEMA & SEGAL, 1967; SEGAL, 1969).

According to the available literature, this is the first record of the Latin American fleabane in the Balkans and South-Eastern Europe. This finding contributes to the knowledge of the chorology and ecology of *E. karvinskianus*, the floristic and vegetation richness of Croatia, but also emphasizes the further spreading of plant-newcomers to the suitable habitats.

## ACKNOWLEDGEMENTS

We would like to thank the two anonymous reviewers for their helpful comments and the editors for their efforts in improving this report.

*Received April 19, 2013*

## REFERENCES

- BRANDES, D., 1989: Spontane Vegetation von ligurischen Küstenorten. *Braun-Blanquetia* 3: 229–239.
- BRANDES, D., 1992: Flora und Vegetation von Stadtmauern. *Tuexenia* 12: 315–339.
- BRANDES, D., 1995: The flora of old town centres in Europe. In: SUKOPP, H., NUMATA, M. & HUBER, A. (eds.), *Urban Ecology as the Basis of Urban Planning*. SPB Academic Publishing bv, Amsterdam, The Netherlands, 49–58.
- BRAUN-BLANQUET, J., 1964: *Pflanzensoziologie. Grundzüge der Vegetationskunde*. 3. New York, USA: Springer-Verlag.
- BRULLO, S. & GUARINO, R., 1998: Syntaxonomy of the *Parietarietea judaicae* class in Europe. *Ann. Bot.* 56: 109–146.
- CHEN, Y., CHEN, Y., BROUILLET, L. & SEMPLE, J.C., 2011: Tribe Astereae. In: ZHENG, W., RAVEN P.H. & DEYUAN, H. (eds.), *Flora of China*, vol. 20–21, Asteraceae. Science Press, Beijing, Missouri Botanical Garden, St. Louis, 545–652.
- CUFODONTIS, G., 1947: Die Gattung *Cymbalaria* Hill.; Nachträge und Zusammenfassung. *Bot. Notiser* 107: 135–156.
- CULLEN, J., 2011: *Erigeron* Linnaeus. In: CULLEN, J., KNEES, S. & CUBEY, H.S. (eds.), *The European Garden Flora – Flowering Plants*, vol. 5. Cambridge University Press, Cambridge, UK, 480–484.
- GREUTER, W., 2006–2009: Compositae (pro parte majore). In: GREUTER, W. & RAAB-STRAUPE, E. VON (eds.), *Compositae. Euro+Med Plantbase – the information resource for Euro-Mediterranean plant diversity*.
- HALLIDAY, G., 1976: *Erigeron* L. (Incl. *Stenactis* Cass.). In: TUTIN, T.G., HEYWOOD, V.H., BURGESS, N.A., MOORE, D.M., VALENTINE, D.H., WALTERS, S.M. & WEBB, D.A. (eds.), 1976: *Flora Europaea* 4. Cambridge University Press, Cambridge, 116–120.
- HEGI, G., 1979: *Erigeron karwinskianus*. *Illustrierte Flora von Mittel-Europa*, 6(3): 93–94. Verlag Paul Parey, Berlin-Hamburg.
- HERRERA GALLASTEGUI, M., 1995: Estudio de la vegetación y flora vascular de la cuenca del río Asón (Cantabria). *Guineana* 1: 1–435.
- HRUSKA, K., 1985: La vegetazione delle mura in Umbria. *Arch. Bot. e Biogeogr. Ital.* 61: 82–92.
- MENNEMA, J. & SEGAL, S., 1967: Het geslacht *Parietaria* L. in Nederland. *Gorteria* 3: 96–102.
- NESOM, G.L., 1989: Infrageneric taxonomy of New World *Erigeron* (Compositae: Astereae). *Phytologia* 67: 67–93.
- NESOM, G.L., 2008: Classification of subtribe Conyzinae (Asteraceae: Astereae). *Lundellia* 11: 8–38.
- NIKOLIĆ, T., FERTALJ, K., MILAŠINOVIĆ, B. & al., 2012: Mobilni botaničar v. 1.5.3. <http://hirc.botanic.hr/mbotanicar>; Botanički zavod, PMF i Zavod za primjenjeno računarstvo, FER. Sveučilište u Zagrebu.
- PIGNATTI, S., 1982: *Flora d'Italia*, 3. Bologna, Italy: Edagricole.
- POLDINI, L. & VIDALI, M., (1994): La vegetazione dei muri del Friuli–Venezia Giulia (NE Italia) e suo inquadramento nel contesto Europeo. *Stud. Geobot.* 14 (Suppl 1): 49–69.
- SEGAL, S., 1969: *Ecological notes on wall vegetation*. W. Junk, The Hague, The Netherlands.
- STÖHR, O., PILSL, P., ESSL, F., WITTMANN, H. & HOHLA, M., 2009: Beiträge zur Flora von Österreich, III. *Lin. biol. Beitr.* 41: 1677–1755.
- ŚWIERKOSZ, K., 2012: Notes on the wall vegetation of the Lake Garda surroundings (North Italy) and its consequences to the syntaxonomy of *Tortulo-Cymbalarietalia* Segal 1969. *Čas. Slez. Muz. Opava (A)* 61: 11–22.
- TRINAJSTIĆ, I., 2010: Analiza florističke strukture asocijacije *Cymbalarietum muralis* Görs ex Oberdorfer 1967 (*Parietario-Asplenion*) u vegetaciji Hrvatske. *Agron. Glas.* 6, 299–306.
- TUTIN, T.G., HEYWOOD, V.H., BURGESS, N.A., MOORE, D.M., VALENTINE, D.H., WALTERS, S.M. & WEBB, D.A. (eds.): 1964–1980: *Flora Europaea* 1–5. Cambridge University Press, Cambridge, UK.
- TUTIN, T.G., BURGESS, N.A., CHATER, A.O., EDMONDSON, J.R., HEYWOOD, V.H., MOORE, D.M., VALENTINE, D.H., WALTERS, S.M. & WEBB, D.A. (eds.), 1993: *Flora Europaea* 1 (2nd ed.). Cambridge University Press, Cambridge, UK.