

## The genus *Erysimum* (Brassicaceae) in Italy, part II: Description of new species and subspecies

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### Abstract

In part 2 of the treatment of Italian *Erysimum*, on the basis of the morphological, caryological and chorological investigations, the following taxa are described: *Erysimum crassistylum* PRESL subsp. *garganicum* subsp.n., *Erysimum crassistylum* PRESL subsp. *verresianum* subsp.n., *Erysimum insubricum* sp.n., *Erysimum ligusticum* sp.n., *Erysimum maremmanum* sp.n., *Erysimum montis-argentarii* sp.n. For each species ecological data, flowering time, chromosome numbers and distributions have been provided.

**Key Words:** Flora of Italy, *Erysimum*, chromosome numbers, new taxa.

### Riassunto

Nella seconda parte del lavoro sugli *Erysimum* italiani, in base a ricerche morfologiche, cariologiche e corologiche, vengono descritti i seguenti taxa: *Erysimum crassistylum* PRESL subsp. *garganicum* subsp.n., *Erysimum crassistylum* PRESL ssp. *verresianum* subsp.n., *Erysimum insubricum* sp.n., *Erysimum ligusticum* sp.n., *Erysimum maremmanum* sp.n., *Erysimum montis-argentarii* sp.n. Per ogni specie vengono date informazioni sull' ecologia, la fenologia e la distribuzione; per ciascuna specie vengono elencati i conteggi cromosomici.

### Introduction

In the first part of the treatment of *Erysimum* in Italy 17 species have been presented (PECCENINI 2012), which have been accepted in earlier treatments (POLATSCHEK 1974, 1982, 1983). Several critical names will be discussed in part 3 (PECCENINI & POLATSCHEK, in prep.).

During the intensive herbarium investigations and field research on Italian *Erysimum* populations several plants have been found not belonging to any published taxon. These are described here as new species or subspecies.

### Materials and methods

The study is based on field investigations and herbarium material deposited in B, BP, BRIX, BRNM, BRNU, CLU, Martini (Treviso, Italy, priv. coll.), FI, G, GDOR, GE, GJO, Gutermann (Wien, Austria, priv. coll.), GZU, Karl (Köflach, Austria, priv. coll.), LI, M, MJG, PR, SI, TO, TR, TS, TSB, W and WU and on living plants cultivated in Alpengarten Belvedere in Wien (ABW).

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The materials used for the original chromosome countings (counted by A. P.) are indicated with \* in the lists of seen specimens. The used techniques have been described in PECCENINI (2012). Based on the seen collections and the authors field investigations for each species, distribution maps have been drawn.

Among the most important traits for the systematic of *Erysimum* must be considered: the chromosome number, the ploidy level, the life form, the petal and sepal size, the stylus length, the inflorescence branching, the stem branching, the seed length, the angle between the siliqua and the siliqua pedicel, the angle between the stem and the siliqua and especially the indumentum type. The manner of indicating these last characters is described as follows:

### Hairs

The hair types and their relative abundance used in the morphological descriptions are indicated in the descriptions in the following way: the numbers shows the hair types (2: 2-fid hairs, 3: 3-fid hairs, etc.). The added signs show the frequency: 2: 2-fid hairs predominant (more than 50%); 2: 2-fid hairs common (10 to 50%); (2): 2-fid hairs uncommon (up to 10%); ((2)): 2-fid hairs rare, for example scattered on the apex and lower surface of the leaves;

Il tipo di peli e la loro relativa abbondanza sono indicati nelle descrizioni nel seguente modo: il numero indica il tipo di pelo (2: pelo bifido, 3: pelo trifido, etc.). I segni aggiunti indicano la frequenza dei peli: 2: peli 2-fidi predominanti (più del 50%); 2: peli 2-fidi comuni (dal 10 al 50%); (2): peli 2-fidi non comuni (fino al 10%); ((2)): peli 2-fidi rari, per esempio sparsi all' apice e sulla superficie inferiore delle foglie.

### Angles

The angle types used in the morphological descriptions are indicated in the following way: Angle 1 between the stem and the siliqua pedicel; angle 2 between the stem and the siliqua.

I tipi di angolo citati nelle descrizioni morfologiche sono indicati nel modo seguente: Angolo 1: angolo fra l'asse del racemo e il pedicello della siliqua; angolo 2: angolo fra l'asse del racemo e la siliqua.

## Descriptions

### *Erysimum crassistylum* PRESL subsp. *verresianum* PECCENINI & POLATSCHEK, subsp.n.

Earlier material of this new subspecies has been named *Erysimum helveticum*, *E. ochroleucum* var. *helveticum* and *E. rhaeticum*. Extensive examination shows that *E. crassistylum* subsp. *verresianum* is a member of the *Erysimum diffusum*-group which is characterized by biennial growth form, basic chromosome number  $x = 7$  and hair type equal or lower than 4.

Descriptio: Antherae et filamenta pilosa typi ((2+3)) et non ((2)), stylus 1–1,5 mm longus et non (0,3) 0,5–0,6 mm, angulus 1 60° et non 50°–70°, angulus 2 20° et non 30°–50°, semina 1,6–2 mm longa et non 0,9–1 (–1,4) mm. Numerus chromosomatum:  $2n = 70$ .

Description: Anthers and filaments ((2+3)) and not ((2)), stylus length 1–1.5 mm and not (0.3–) 0.5–0.6 mm, angle 1 60° and not 50°–70°, angle 2 20° and not 30°–50°, seeds length 1.6–2 mm and not 0.9–1 (–1.4). Chromosome number  $2n = 70$ .

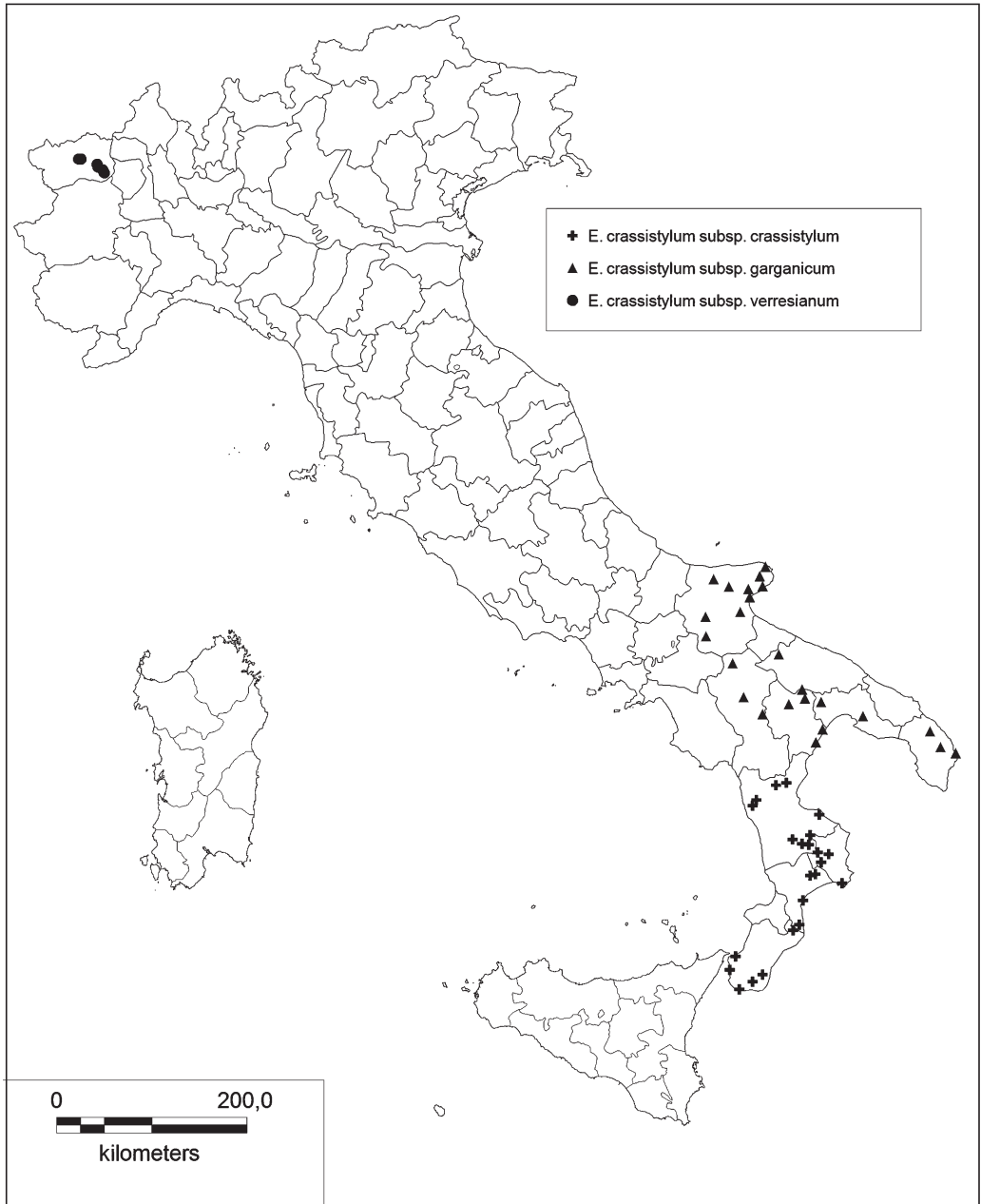


Fig. 1: Distribution map of *Erysimum crassistylum* subsp. *garganicum* (▲), subsp. *verresianum* (●) and subsp. *crassistylum* (✚) (elaborated by C. Turcato).

Typus: [Italy, Aosta] fra Plout e Verres (AO), 370 m, S. Peccenini, 30.5.2004 [Holotypus W 2005-03731, Isotypus GE,], ✚  $2n = 70$ .

Eponymia: Nomen deducit a pago Verres.

Flowering time: May to June (beginning of July).

Distribution and habitat: Endemic of Valle d'Aosta, occurs in the left side of the lower Dora Baltea valley from Saint Pierre to Bard.

Stony places, arid slopes, rocks on granite, gneiss and mica schist from 370 up to 650 m.

**Specimina visa:** **Valle d'Aosta:** Nus - Villefranche (AO), 550 m, 1–12.6.1980, A. Polatschek [GE, W 1981-01111]; – Nus, an der Straße (AO), 550 m, 1–12.6.1986, A. Polatschek [GE, W 2012-12633], ★ 2n = 70; – Nus, 2 Km W (AO), 650 m, 2.7.1975, H. Teppner [W 1979-16187], ★ 2n = 70; – Piemonte, Vallée d'Aosta, 2 km W Nus, 560 m, 2.7.1975, J. Hafellner [GZU]; – nahe N Verrès (AO), 400 m, 7–20.6.1986, A. Polatschek [GE, W 1986-06706], ★ 2n = 70; – sopra Verrès lungo la statale della Val d'Ayas (AO), 400 m, 27.7.2002, S. Peccenini [GE, W 2005-03696], ★ 2n = 70; – sopra Verrès lungo la statale della Val d'Ayas (AO), 400 m, 27.7.2002, S. Peccenini, cult ABW 2003/2004, 2004, A. Polatschek [W 2005-03688], ★ 2n = 70; – Val d'Aosta, Verres, sem. leg. S. Peccenini, cult. in ABW 2003/04, 2004, A. Polatschek [W 2006-00513], ★ 2n = 70; – sotto il Santuario di Machaby, sopra Arnad (AO), 540 m, 31.5.2004, S. Peccenini [GE, W 2005-03740], ★ 2n = 70; – Bard (AO), 13.05.1900, L. Vaccari [FI]; – Bard, verso Donnaz (AO), 400 m, 31.5.2004, S. Peccenini [GE], ★ 2n = 70.

***Erysimum crassistylum* subsp. *garganicum* PECCENINI & POLATSCHEK, subsp.n.**

Earlier specimens of this new subspecies were named *E. bocconi*, *E. canescens*, *E. canescens* var. *graecum*, *E. diffusum*, *E. graecum*, *E. grandiflorum*, *E. hieracifolium*, *E. hieracifolium* var. *canescens* and *E. lanceolatum*.

Descriptio: Caules simplices aut rare 3 ramosi; folia semper sessilia; sepala 7–8 mm longa, petala 12–16 (–20) mm longa; stylus (1,4–) 1,6–2 mm longus; angulus 1 = 70–90°, angulus 2 = 40°. Semina 1,1–1,4 mm longa. Numerus chromosomatum 2n = 42.

Subspec. *garganicum* differt a subspec. *crassistyllo* numerus chromosomatum (2n = 42 pro 2n = 14).

Description: 1 (very rare up to 3) stems; leaves always sessile; sepals 7–8 mm long, petals 12–16 (–20) mm long; stylus (1.4–) 1.6–2 mm long; angle 1 = 70–90°, angle 2 = 40°, seeds 1.1–1.4 mm long. Chromosome number 2n = 42.

Typus: Puglia (FG) M. Gargano, Statale 89, 17 km NE Mattinata, 42,46° N 16,04° E, 615 m, 8.6.2008, R. Karl [Holotypus W 2009-07166, isotypus herb. Karl], ★ 2n = 42.

Eponymia: ex regio "Promontorio del Gargano" dicta, ubi crescit, species nominatur.

Flowering time: April to June.

Distribution and habitat: Endemic of SE-Italy, occurs in Puglia (Gargano, Murge and Salento) and in Basilicata (W from Potenza - Policoro line. Dry places, coastal dunes, sunny stony slopes, garrigues, rocks on limestone from 20 m (Manfredonia) up to 1100 m (Pietrapertosa).

**Specimina visa:** **Puglia:** Monte Gargano, (FG), s. dat., Rabenhorst 205 [W 1889-316325]; – Monte Gargano, (FG), 30.5.1887, M. de Sardagna [WU]; – Apricena superiore (WSW-expon. Hang bei der Eisenbahnstation Apricena), Promontorio del Gargano (FG), 150 m, 10.4.1969, F. Krendl [W 1974-21337], ★ 2n = 42; – Sannicandro, Gargano (FG), 25.4.1960, S. Pignatti [TSB]; – Sannicandro - Apricena, Gargano (FG), 300 m, 2.6.1966, S. Pignatti [TSB]; – Iter Garganicum, lungo la Via di Mattinata, Monte S. Angelo (FG), 26.5.1893, U. Martelli [FI]; – M. Croce, Gargano (FG), 800 m, 12.7.1915, A. Fiori [FI]; – Manfredonia, M. Gargano (FG), 19.4.1964, D. Podlech 9473 [M]; – Monte S. Angelo, Gargano (FG), 17.7.1893, Evers [BRIX, B, GZU]; – Monte S. Angelo, bei km 10,2, Gargano (FG), 590 m, s. dat., W. Licht [MJG]; – Manfredonia (2 km W), Gargano (FG), 20–30 m, 4.1973, L. Kiener [LI]; – Manfredonia (2 km W), (FG), 20–30 m, 14.4.1987, G. et P. Mayer [GE, W 1987-09201], ★ 2n = 42; – Monte S. Angelo, Gargano (FG), 18.7.1969, F. Speta [LI]; – Monte S. Angelo - Foresta Umbra, Gargano (FG), 800 m, 19.5.1913, A. Fiori

[FI]; – SS 528 hinter km 30 gegen Monte S. Angelo, (FG), 580 m, 9.6.1987, W. Licht 148 a, b, c [MJG]; – Monte S. Angelo gegen Mattinata, (FG), 250-600 m, 30.5.1991, W. Licht 1691 [MJG]; – Garganogebiet: N des Monte S. Angelo, an der Straße zwischen km 14 und 15, (FG), 600 m, 5.1974, R. Klaus et J. Mück [GE, W 1978-01972], ★ 2n = 42; – Piano S. Vito nördlich der Casa Impiombato, Promontorio del Gargano (FG), 600–620 m, 16.5.1988, H. et W. Gutermann 4261.2 [Gutermann]; – M. Sacro, Gargano (FG), 9.5.1969, Agostini et Fenaroli [TR]; – Pulsano, Gargano (FG), 29.5.1968, L. Poldini [TSB]; – Ortsausgang nach Ruggiano, Manfredonia (FG), 19.4.1964, K. P. Buttler 64-46 [M]; – Straßenränder des Ortsausganges von Manfredonia in Richtung Ruggiano, Gargano-Gebiet (FG), 50 m, 3.4.1974, G. et P. Mayer [GE, W 1974-19662], ★ 2n = 42; – San Marco in Lamis, M. Gargano-S-Seite (FG), 30 m, 14.4.1987, G. et P. Mayer [W 1987-09199]; – Um das alte Sipontum, (FG), 7.11.1941, s. coll. [PR, W 1889-184897]; – SS 528, km 34, Monte Gargano (FG), 600 m, 13.6.1995, W. Licht 1990 [MJG]; – Statale 528, km 30,2, Gargano (FG), 580 m, s. dat., W. Licht [MJG]; – Statale 89, Mattinata - M. S. Angelo, Cavola, Gargano (FG), 250-600 m, s. dat., W. Licht, [MJG]; – Mündung Torr. Cervaro, Manfredonia (14 km S an der Strasse nach Bari) (FG), 20.4.1964, D. Podlech 9547 [M]; – idem, 20.4.1964, K. P. Buttler 64-197 [M]; – Valle Carbonara, Gargano (FG), 28.4.1962, S. Pignatti [TSB]; – Vallone Pulsano, Gargano (FG), 29.5.1968, S. Pignatti 1496 [TSB]; – Vallone Pulsano, Promontorio del Gargano (FG), 200-530 m, 1977, G. Karrer [WU]; – Contrada Mezzana (Bovino), Appennino Dauno (FG), 380-400 m, 29.5.2011, D. Longo et S. Peccenini [GE]; – Le Serre (Deliceto), Appennino Dauno (FG), 620-850 m, 26.5.2011, D. Longo et S. Peccenini [GE]; – Leucaspide, sopra Convento Vecchio, prope Tarentum (TA), 26.8.1914, Profeta [FI]; – loco dicto Pineta del Pantano, Taranto (TA), Flora Italica exs. ser. II (A. Fiori et A. Beguinot) 1837, 16.5.1912, C. Lacaita [BP, FI, WU]; – intorno agli Alimini, Otranto (LE), 17.1.1942, H. Groves [FI]; – prope Hydruntum, (LE), 10.1.2042, s. coll. (Herb. Groves) [BRNM, FI, G]; – Lecce, (LE), Itinere italico II 505, 26.5.1875, Porta et Rigo [FI]; – Martano, Lecce SE (LE), 30.5.1893, St. Lager [G]; – Otranto, (LE), 50 m, 31.5.1913, A. Fiori [FI]; – **Basilicata**: Piazzale Chiesa Palomba, WNW Taranto, Matera (MT), 15.5.1950, G. Negri et A. Messeri [FI]; – Difesa Melodia, Matera (MT), 22.5.1951, R. Corti, E. Francini, G. Negri 1315 [FI]; – Grottole, WSW Matera (MT) 17.5.1961, K.H. Rechinger 23463 [W1982-00713]; – Metapontum, (MT), 10.6.1930, O. Gavioli [BRNU, FI]; – C. Montemarano, N vom Toppo S. Paola, ca. 1-2 km SE von Melfi (PZ), 500 m, 24.5.1977, F. Krendl [GE, W 1979-16214], ★ 2n = 42; – Policoro, (PZ), 18.4.1979, S. Fascetti [CLU-5569]; – Policoro (PZ), cult. Orto Botanico Genova, ex sem. S. Fascetti, S. Peccenini, 30.4.2012 [GE, W 2012-12648], ★ 2n = 42; – Loco dicto Rivisco (PZ), 800 m, 5.6.1907, O. Gavioli [FI]; – Pietrapertosa (PZ), 1100 m, 31 5 2009, M. Calbi [GE, W 2010-05918].

### *Erysimum insubricum* PECCENINI & POLATSCHKEK, spec.n.

Earlier determinations for specimens of this new species were *Cheiranthus erysimoides*, *E. cheiranthoides*, *E. cheiranthus*, *E. helveticum*, *E. hieracifolium*, *E. lanceolatum*, *E. rhaeticum* and *E. strictum*.

Descriptio: Planta biennis, in statu florendi 220–400 mm, in statu fructificationis 380–600 mm alta. Radix principalis bene aucta. Caules simplices vel 3–4 ramosi, acutangulares, usque ad 5 mm crassi, pilosi typi 2; in basi tunica residuis basium foliorum formata modice comosa. Caules plus minusve dense foliati. Folia caulina inferiora lanceolata, petiolata; folia caulina superiora lanceolata vel anguste lanceolata, integra, partim leviter denticulata, cum 2–4 binis denticulis. Folia caulina 13–140 (–180) mm longa, 1–8 mm lata, pilosa typi 2+(3); germina ex axillis superiorum foliorum orta. Synflorescentia est racemus simplex cum 1–4 paracladiis; internodia racemorum per fructificatione leviter elongata. Tempus florendi: a fine aprilis ad julium. Pedicelli 3–4 (–6) mm, in statu fructificationis (6–) 7–10 (–13) mm longi, pilosi typi 2. Flores fragrantis. Sepala 8–10 mm longa, 1,8–2 mm lata, ovato-lanceolata, pilosa typi 2 + (3). Petala aurea, spathulata 14–20 mm longa, 4–6 mm lata, pilosa typi 2 + (3) aut (2)+3. Antherae pilosae typi 2. Siliquae quadrangulares, 68–120 mm longae, 1 mm latae, pilosae typi 2 angulis glabris. Stylus 1,5–2,5 mm longus, pilosus typi 2+3+(4). Stigma a leviter depressum vel leviter emarginatum 1,3–1,5 mm latum. Angulus 1: 78–90°, Angulus 2: 40–60°. Semina anguste ovata, 1,9–2,6 mm longa, 0,6–1 mm lata, spadicea. Numerus chromosomatum: 2n = 42.

Holotypus: Lombardia (VA), E Lago Maggiore: zwischen Laveno und Cittiglio, Kalkfelsen, 220 m, A. Polatschek, 7-20/6/1986 [W 1986-06732], ★ 2n = 42.

Description: Biennial plant, stems 220–400 mm in flower and 380–600 mm in fruit. Well developed root. Simple or 3–4 branched, acutely angular stems, up to 5 mm thick, with 2-fid hairs; moderately developed tunic, formed by persistent withered leaves. Stems more or less leafy; sterile stems rarely present. Lower cauline leaves lanceolate, petiolate; upper cauline leaves sessile, lanceolate to strictly lanceolate, entire or partially denticulate margin, with 2–4 pair of very small teeth. Cauline leaves 13–140 (–180) × 1–8 mm, with 2+((3))-fid hairs; upper cauline leaves with clusters of small leaves in the axils. Inflorescence simple or with 1–4 lateral branches; weakly elongating internodes in fruit. Flowering time late April to July. Pedicels 3–4 (–6) mm in flower, (6–) 7–10 (–13) mm in fruit, with 2-fid hairs. Sepals ovate-lanceolate, 8–10 mm long and 1.8–2 mm wide with 2+(3)-fid hairs. Scented flowers. Spathulate, golden-yellow petals, 14–20 mm long and 4–6 mm wide, with 2+(3)-fid or (2)+3-fid hairs. Anthers with 2-fid hairs. Square in transverse section siliquae, 68–120 mm long and 1 mm wide with 2-fid hairs and glabrescent angles. Style 1.5–2.5 mm with 2+3+((4))-fid hairs. Sunken or emarginate stigma, 1.3–1.5 mm wide. Angle 1 78–80°, angle 2 40–60°. Strictly ovate, light brown seeds, 1.9–2.6 mm long, 0.5–1 mm wide. Chromosome number: 2n = 42.

Differs from *E. rhaeticum* being a biennial plant, by the longer leaves, the longer siliquas, the hairy anthers, the bigger stigma and the chromosome number.

Eponymia: Nomen deducit a Insubria, regione subalpina lacuum Italiae septentrionalis.

Distribution and habitat: Endemic of N Italy (Piemonte and Lombardia), occurs on the prealpine mountains from W Piemont to E Lombardia on gravel river beds, stony slopes, rocks, clearings on limestone and silicat from 220 to 1316 m.

**Specimina visa:** **Piemonte:** Sopra Piedimulera, inizio V. Anzasca (VB), 450 m, 6.1986, A. Polatschek [W 1986-06687], ★ 2n = 42; – Piedimulera (VB), 260 m, 2.5.2005, S. Peccenini [GE, W 2006-22940], ★ 2n = 42; – Piedimulera, V. Anzasca (VB), 250 m, 28.4.2006, R.M. Dameri, F. Orsino [GE]; – Valle Anzasca (VB), 29.05.1988, s. coll. [FI]; – Piemonte, Valle Anzasca, zwischen Piedimulera und Castiglione, 485 m, 16.5.2011, A. Polatschek [W 2012-03332]; – Piemonte, Valle Anzasca, Piedimulera, sopra loc. Gozzi, 395 m, sem. leg. S. Peccenini, cult. ABW 2006-2008, 2008, A. Polatschek [W 2008-14781].

**Lombardia:** Brianza, Buco del Piombo (CO), Lat: 9°12'24.0" Long: 45°49'52.84", 500 m, 25.6.2005, S. Peccenini [GE, W 2006-09115]; – Brianza, s. dat., s. coll. [W 1889-184883]; – zwischen Asso und Caslino d'Erba, 500 m, 1.-6.6.1980, A. Polatschek [W 1981-01120]; – zwischen Visino und Asso (Corni di Canzo) W Lecco, 600 m, 1.-12.6.1980, A. Polatschek [W 1981-01007]; – Lago di Como, Asso, lungo la strada all'incrocio con la via vecchia per Visino (LC), 467 m, 10.8.2004, S. Peccenini [W 2005-03720]; – Asso W Lecco, 430 m, 1.-12.6.1980, A. Polatschek [W 1981-01117]; – Asso (W Lecco), Ufer des Lambro, 430 m, 1.-12.6.1980, A. Polatschek [W 1981-01100]; – Brianza, Caslino d'Erba (CO), 368 m, 25.6.2005, S. Peccenini [GE, W 2006-09118], ★ 2n = 42; – Brianza, Ponte Lambro-Castelnovate, galleria Fucine, CO, 349 m, 5.5.2006, S. Peccenini [W2006-09116]; – Lago di Como, sopra Loveno (Menaggio) fraz. Piazzo (CO), 350 m, 27.7.2004, S. Peccenini [GE, W 2006-09117], ★ 2n = 42; – Brianza, Pendi S Corni di Canzo (CO), 1159 m, 1.7.2005, S. Peccenini [GE, W 2006-09121], ★ 2n = 42; – Brianza, Vetta Corno Canzo (CO), 1316 m, 1.7.2005, S. Peccenini [GE, W 2006-09121]; – Prov. Como, zwischen Bellagio und Canzo, N-Rand von Asso, 465 m, 16.5.2011, A. Polatschek [W 2012-03336]; – idem, 16.5.2011, R. Karl [Herb. Karl]; – Canzo (CO), Comolli, 1894 [GJO]; – Monte Corni di Canzo, Balsamo, s. dat., s. coll. [M]; – Prealpi Lombarde, in Vallassina, ai Corni di Canzo (CO), 6.1922, L. Fenaroli [TR]; – Corni di Canzo, 9.6.1882, J. Jaggli [G]; – Lecco, en montans de Val Madrera aux Corni di Canzo (LC), 27.6.1871, E. Levier [FI]; – Corni di Canzo (CO-LC), 6.1836, M. Rainer [PR, W 1940-19494]; – Lago Maggiore, Laveno (VA), 19.06.1928, K. Ronniger [GE, W 1961-20511]; – Casera (Vararo), M. Sasso del Ferro (VA), 768–1062 m, 01.07.1952, G. Negri et Bavazzano [FI]; – M. Sangiano, S. Clemente (VA), cult. in ABW, 2006, A. Polatschek [GE, W



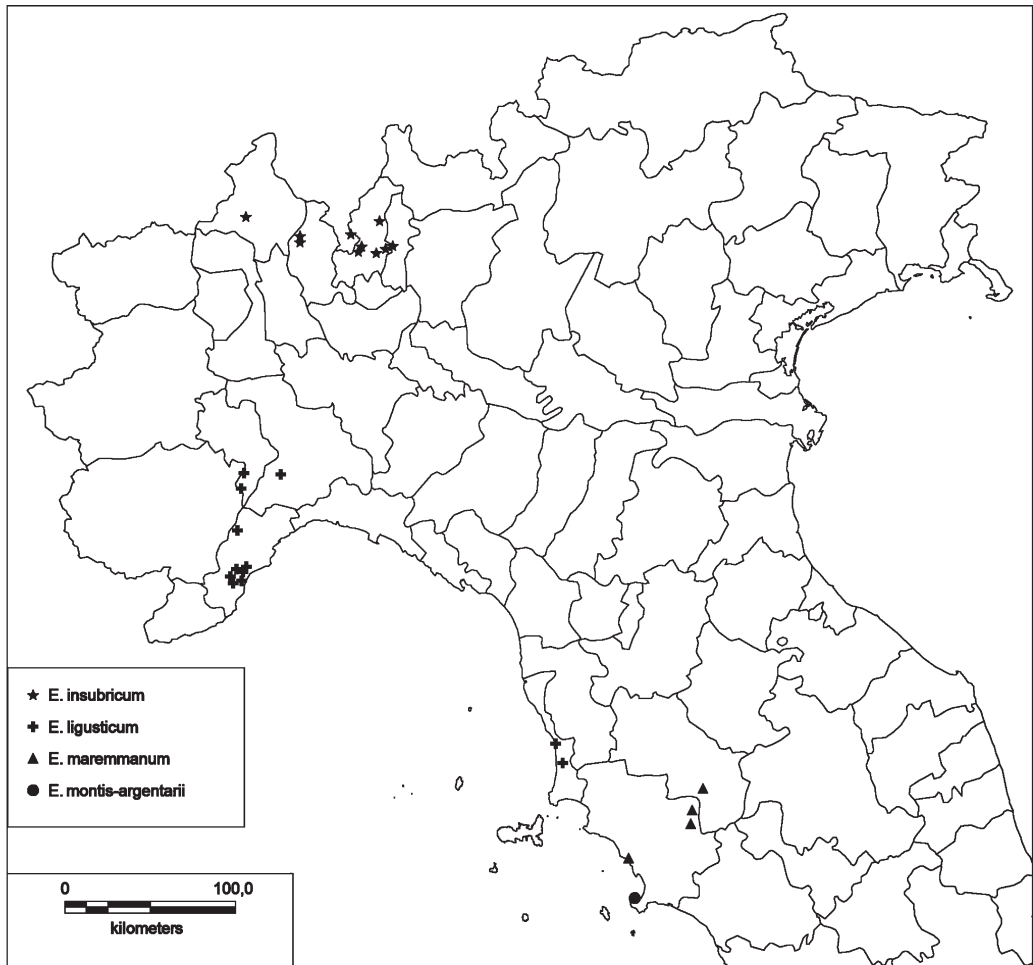


Fig. 2: Distribution map of *Erysimum insubricum* (★), *E. ligusticum* (⊕), *E. maremmanum* (▲) and *E. montis-argentarii* (●) (elaborated by C. Turcato).

2006-00512], ★  $2n = 42$ ; – Lago Maggiore, sopra Cittiglio (VA), 450 m, 26.7.2004, S. Peccenini [GE, W 2005-03725]; – Prealpi Insubriche, Strada Vararo-Cittiglio (VA), 2.7.1952, G. Negri. et Bavazzano [FI]; – M. Generoso (CO), s. dat., Garovaglio [W 0045893]; – Lago di Como, bei Moltrasio (CO), 6.1827, Jan [GJO]; – Monti di Griante (CO), 8.6.1896, M. Rainer [GJO]; – Lago di Como, Argegno (CO), s. dat., s. coll. [GJO]; – Comosee, Uferfelsen nahe E Cernobbio (CO), 220 m, 6.1986, A. Polatschek [GE, W 1986-06729].

***Erysimum ligusticum* PECCENINI & POLATSCHKEK, spec.n.**

Earlier determinations for specimens of this new species were *E. canescens*, *E. collisparsum*, *E. grandiflorum*, *E. grandiflorum* var. *australe*, *E. hieracifolium*, *E. lanceolatum*, *E. rhaeticum*.

**Descriptio:** Planta biennis, in statu florendi 340–650 mm, in statu fructificationis 450–800 mm longa. Caules simplices aut 3–4 (–6) ramosi, quadrangulares, cum angulis subalatis, 2–5 mm crassi, pilosi typi 2; in basi sine tunica, interdum folia exsiccata integra ferentes.

Caules dense foliati. **Folia** caulina infima lanceolata, petiolata, integra aut subtiliter sinuato-denticulata aut dentata. Folia caulina superiora lanceolata, non petiolata, integra vel raro subdentata. Folia caulina 11–115 mm longa, 1–10 mm lata, pilosa typi  $\underline{2}+(3)$ ; ramuli ex axillis etiam foliorum inferiorum orti. **Synflorescentia** est racemus cum 1–4 (–7) paracladiis. Internodia racemorum in fructificatione valde elongata. Tempus florendi: menses Maius-Junius. Pediculi 2–4 mm in statu florendi, 7–10 mm in statu fructificationis longi, pilosi typi  $\underline{2}$ . Sepala 8–12 mm longa, 0,9–1,3 mm lata, anguste ovato-lanceolata, pilosa typi  $\underline{2} + (3)$ . Petala flava primulina, extreme spathulata 18–21 mm longa, 3,5–6 mm lata, glabra aut raro pilosa. Antherae glabrae. Siliquae quadrangulares, 28–65 mm longae, 0,8–1 mm latae, pilosae typi  $\underline{2}$ , angulis glabrescentis. Stylodium 1,5–2 mm in statu florendi, 2–3,5 mm in statu fructificationis longum, pilosum typi 2+3. Stigma a capitato usque ad leviter sinuatus. Angulus 1: 50–60°, Angulus 2: 30°. Semina (1,5–) 1,6–1,8 (–1,9) mm longa, 0,9 mm lata, breviter alata in culmine, brunnea. Numerus chromosomatum:  $2n = 42 + 0-2 B$ .

**Typus:** Liguria, sopra Peagna, fra Loano e Albenga (SV), 200 m, S. Peccenini, 23.5.2004 [Holotypus W 2005-03737, isotypus GE],  $\star 2n = 42$ .

**Eponymia:** ex Liguria, ubi crescit, species nominatur.

Description: Biennial plant, stems 340–650 mm in flower and 450–800 mm in fruit. Simple or 3–4 (–6) branched, acutely quadrangular almost winged 2–5 mm thick, stems, with 2-fid hairs; without basal tunic, but sometimes with persistent dried whole leaves. Dense crowded leaves stems. Lower cauline leaves lanceolate, petiolate, with entire or slightly sinuate-denticulate or denticulate margin. Upper cauline leaves lanceolate sessile, with entire or seldom denticulate margin. Cauline leaves 11–115 mm long and 1–10 mm wide, with  $\underline{2}+(3)$ -fid hairs; clusters of small leaves also in the axils lower cauline leaves. Inflorescence with 1–4 (–7) lateral branches; weakly elongating internodes in fruit. Flowering time Mai to June. Pedicels 3–6 mm in flower, 5–10 mm in fruit, with 2-fid hairs. Sepals strictly ovate-lanceolate, 8–12 mm long and 0.9–1.3 mm wide with  $\underline{2}+(3)$ -fid hairs. Clearly spathulate, green-yellow petals, 18–21 mm long and 3.5–6 mm wide, glabrous or rarely with hairs. Glabrous anthers. Quadrangular siliquae, 28–65 mm long and 0,8–1 mm wide with 2-fid hairs and glabrescent angles. Style 1.5–2 mm in flower and 2–3.5 mm in fruit with 2+3-fid hairs. Capitulate or slightly sinuate stigma. Angle 1: 50–60°. Angle 2: 30°. Briefly winged at apex seeds, (1.5–) 1.6–1.8 (–1.9) mm long, 0.6–0.9 mm wide, brown. Chromosome number:  $2n = 42 + 0-2 B$ .

**Distribution and habitat:** Endemic of NW and CW Italy, occurs on from S Piedmont to CW Liguria and a small area in Tuscany coast. Roads margins, sunny stony slopes, garrigues, clearings, pine woods margins, rocks, walls, gravel river beds, on limestone from 0 up to 850 m.

**Specimina visa:** **Piemonte:** Acqui (AL), 150 m, 16.6.1889, C. Bicknell [GE]; – Cortemilia, verso Perletto (CN), s. dat., G. Abbà [TO]; – Val Bormida, Vesime, al castello, (AL), 309 m, 12.6.2006, S. Peccenini [GE, W 2007-13260],  $\star 2n = 42$ ; – Visone (Acqui Terme) (AL), 160 m, 24.06.2007, S. Peccenini [GE, W 2010-05937],  $\star 2n = 42$ ; – **Liguria:** Cisano, sopra Albenga (SV), 27.6.1866, Ricca [FI]; – M. Piccaro (SV), 300 m, 7.6.1996, S. Peccenini [GE]; – Poggio Grande-Pizzo Ceresa (SV), 713 m, 12.5.1997, S. Peccenini [GE]; – Poggio Grande, fra Loano e Albenga (SV), 700 m, 7.5.1989, E. Martini [Herb. Martini]; – Valle del Rio Ibà, fra Loano e Albenga (SV), 300 m, 15.7.1989, E. Martini [Herb. Martini]; – Salto del Lupo, fra Loano e Albenga (SV), 190 m, 22.5.2004, S. Peccenini [GE, W 2005-03705]; – Toirano, presso Pietra Ligure (SV), s. dat. [GDOR]; – V. Neva, primo tornante per Castelvecchio (SV), 323 m, 12.5.1997, E.



Zappa [GE]; – Toirano, Lig. Occ. (SV), 26.5.1867, A. Piccone [FI]; – Rocca Berleurio presso il Giogo di Toirano, 844 m, sem. leg. S. Peccenini, cult. ABW 2002-03, 2003, A. Polatschek [W 2004-00141], ★ 2n = 42; – Salto del Lupo sopra Toirano, 183 m, sem. leg. S. Peccenini, cult. ABW 2002-03, 2003, A. Polatschek [W 2004-00139], ★ 2n = 42; – Millesimo, Val Bormida (SV), 450 m, 12.06.2006, S. Peccenini [GE, W 2007-13261], ★ 2n = 42; – Val Bormida, Roccavignale, loc. Strada (SV), 575 m, 12.06.2006, S. Peccenini [GE, W 2007-13285], ★ 2n = 42; – Borghetto S. Spirito, Poggio Rotondo (SV), 26.5.1989, G. Galasso [LI]; – Carpe, fra Loano e Albenga (SV), 400 m, 22.5.2004, S. Peccenini [GE, W 2005-03734], ★ 2n = 42; – Fra Croce Torassa e Poggio Grande, fra Loano e Albenga (SV), 700 m, 22.5.2004, S. Peccenini [GE, W 2005-03736], ★ 2n = 42; – Poggio di Balestrino, fra Loano e Albenga (SV), 540 m, 22.5.2004, S. Peccenini [GE, W 2005-03738], ★ 2n = 42; – Rocca Berleurio, fra Loano e Albenga (SV), 840 m, 22.5.2004, S. Peccenini [GE, W 2005-03735], ★ 2n = 42; – San Pietro dei Monti sopra Toirano, 850 m, sem. leg. 8.9.1996, S. Peccenini, cult. in ABW 2004/05, 2005, A. Polatschek [W 2006-22936], ★ 2n = 42; – fra Loano e Albenga, Salto del Lupo (SV), 190 m, 22.5.2004, S. Peccenini [GE, W 2005-03705], ★ 2n = 42; – Toirano, fra Loano e Albenga (SV), 100 m, 22.5.2004, S. Peccenini [GE, W 2005-03733], ★ 2n = 42; – Piana di Albenga, margine Arroscia (SV), 8 m, 13.5.2010, S. Marsili [W 2012-06968]; – **Toscana**: S. Vincenzo, Macchia di Donoratico (LI), 8.1933, R. Grabrielith, R. Corradi [FI]; – Marina di Bibbona (LI), 4 m, 24.05.2009, G. Gestri, S. Peccenini [GE, W 2010-05938], ★ 2n = 42.

***Erysimum maremmanum* PECCENINI & POLATSCHKEK, spec.n.**

Earlier determinations for specimens of this new species were *E. lanceolatum* and *E. pseudorhaeticum*.

**Descriptio:** Planta biennis, in statu florendi 200–600 mm, in statu fructificationis 440–650 mm longa. Caules simplices vel 3–5 ramosi, acutangulares, pilosi typi  $\underline{2}$ ; basi cum residuis petiolorum. Caules leviter foliati. Folia caulina infima lanceolata, petiolata. Folia caulina superiora non petiolata, integra vel remote denticulata; pilosa typi  $\underline{2}$  + ((3)); folia caulina basalia remote sinuato-denticulata, superiora integra; folia caulina 30–115 mm longa, 1,5–12 mm lata. Ramuli ex axillis foliorum etiam inferioribus orti. Synflorescentia est racemus cum 0–2 (–14) paracladiis. Internodia racemorum in fructificatione valde elongata. Tempus florendi: Mensis Maius, Junius. Pediculi 1–3 mm, in statu fructificationis 3–4 mm longi, pilosi typi  $\underline{2}$ . Sepala 6–9 mm longa, 1,3–1,8 mm lata, anguste ovato-lanceolata, pilosa typi  $\underline{2}$  + 3. Petala flava, spathulata, 12–19 mm longa, 5–6 mm lata, glabra aut glabrata. Antherae glabrae. Siliquae quadrangulares, 40–63 mm longae, 1 mm latae, pilosae typi  $\underline{2}$ . Stylodium 1,8–3 mm longum, clare determinatum, pilosum typi (2)+3. Stigma a leviter impresso usque ad emarginatum. Angulus 1 et 2: 20–30°. Semina non visa. Numerus chromosomatum: 2n = 28.

**Typus:** Toscana (GR), Castiglione d'Orcia sulla Rocca Aldobrandesca, 540 m, S. Peccenini, 18.5.2006, [Holotypus W 2007-13277, isotypus GE], ★ 2n = 28.

**Eponymia:** ex regio Maremmae dicta, ubi crescit, species nominatur.

**Description:** Biennial plant, stems 200–600 mm in flower and 440–650 mm in fruit. Simple or 3–5 branched, acutely angular stems, with  $\underline{2}$ -fid hairs; with persistent petioles on the basis. Poorly leaves stems. Lower cauline leaves lanceolate, petiolate. Upper cauline leaves sessile, with  $\underline{2}$ +((3))-fid hairs. Basal cauline leaves with slightly sinuate-denticulate margin, the upper entire or with slightly denticulate margin. Cauline leaves 30–115 mm long and 1.5–12 mm wide. Clusters of small leaves also in the axils lower cauline leaves. Inflorescence with 0–2 (–14) lateral branches; weakly elongating internodes in fruit. Flowering time: May to June. Pedicels 1–3 mm in flower, 3–4 mm in fruit, with  $\underline{2}$ -fid hairs. Sepals 6–9 mm long and 1.3–1.8 mm wide, strictly ovate-lanceolate, with  $\underline{2}$  + 3-fid hairs. Yellow, spathulate petals, 12–19 mm long and 5–6

mm wide, glabrous or with rare hairs. Glabrous anthers. Quadrangular siliquae, 40–63 mm long and 1 mm wide, with  $\underline{2}$ -fid hairs. Style 1.8–3 mm long, clearly defined, with (2)+3fid hairs. Slightly sinuate to emarginate stigma. Angle 1 and 2: 20–30°. Seeds not seen. Chromosome number:  $2n = 28 + 0-2 B$ .

**Distribution and habitat:** Endemic of S Tuscany, occurs in Grosseto province from Castiglione d'Orcia to "Parco Regionale della Maremma", on the coast. Road margins, sunny stony slopes, garrigues, clearings, rocks, walls, on limestone from 44 up to 1193 m (Cima del M. Labro).

**Specimina visa:** Toscana: Casteldelpiano (GR), 640 m, 17.5.2006, S. Peccenini [GE, W 2007-13283],  $\star 2n = 28$ ; – Cima del M. Labro a M. Amiata (GR), 19.6.1888, A. Biondi [FI]; – M. Labbro (GR), 22.6.1991, S. Maccherini [SI]; – M. Labro (GR), 1096 m, 17.5.2006, S. Peccenini [GE, W 2007-13282],  $\star 2n = 28$ ; – Parco della Maremma, Torre di Collelungo, Monti dell' Uccellina (GR), 44 m, 14.5.2006, S. Peccenini [GE, W 2007-13284]; – Torri dell' Uccellina (GR), 22.5.1966, S. Pignatti [TS]; – Torri di Uccellina (GR), 12.5.2011, R. Karl [Herb. Karl],  $\star 2n = 28$ ; – M. dell' Uccellina, S. Rabano (GR), 28.5.1977, H. Teppner [W 1979-16177]; – M. dell' Uccellina, 2 km N Collelungo, 27.5.1977, S. Snogerup [LD]; – Parco della Maremma (GR), 14.5.1993, S. Peccenini [GE]; – Sentiero per S. Rabano (GR), 2.6.1993, S. Peccenini [GE].

***Erysimum montis-argentarii* PECCENINI & POLATSCHEK, spec.n.**

Earlier determinations for specimens of this new species were *E. pseudorhaeticum*.

**Descriptio:** Planta biennis, in statu florendi 510–660 mm, in statu fructificationis 830 mm. Caulis simplex rare 3-ramosus, extreme acutangularis, ad 8 mm crassus, pilosus typi  $\underline{2}$ ; in basi residuis petiolorum caulis leviter foliatus; folia caulina infima lanceolata, petiolata; folia caulina superiora lanceolata non petiolata; folia caulina 25–150 mm longa, 2–7 mm lata, pilosa typi  $\underline{2} + ((3))$ ; ramuli ex axillis foliorum etiam inferioribus ortis. Synflorescentia est racemus cum 1–4 paracladiis; internodia racemorum per fructificationem valde elongata. Tempus florendi: maio, junio. Pedicelli 4–6 (–7) mm, in statu fructificationis 10–12 mm longi pilosi typi  $\underline{2}$ . Sepala 10 mm longa, 1,8 mm lata, ovato-lanceolata, pilosa typi  $\underline{2} + ((3))$ . Petala lutea, extreme spathulata 18–22 mm longa, 5–6 mm lata, glabrata. Antherae glabrae. Siliquae 44–60 mm longae, 1 mm latae, pilosae typi  $\underline{2}$ . Stylodium 2–3 mm longum, stigma capitatum usque ad leviter impressum. Angulus 1: 50°. Angulus 2: 30°. Semina 2 mm longa. Numerus chromosomatum:  $2n = 28 + 0-2 B$ .

**Holotypus:** Toscana (GR) Monte Argentario, M. Telegrafo, 550 m, 1.6.1980, A. Polatschek [W 1981-01103],  $\star 2n = 28 + 0-2 B$ .

**Eponymia:** ex regio Monte Argentario dicta, ubi crescit, species nominatur.

Description: Biennial plant, stems 510–660 mm in flower and 830 mm in fruit. Simple or seldom 3-branched, acutely angular stems, up 8 mm thick and with 2-fid hairs; poor leaf stems with persistent petioles on the basis; lower cauline leaves lanceolate, petiolate; upper cauline leaves lanceolate sessile; cauline leaves 25–150 mm long and 2–7 mm wide, with  $\underline{2}+((3))$ -fid hairs; clusters of small leaves also in the axils lower cauline leaves. Inflorescence with 1–4 lateral branches; weakly elongating internodes in fruit. Flowering time: May to June. Pedicels 4–6 (–7) mm in flower, 10–12 mm in fruit, with 2-fid hairs. Sepals 10 mm long and 1,8 mm wide, ovate-lanceolate, with  $\underline{2} + ((3))$ -fid hairs. Yellow, spathulate petals, 18–22 mm long and 5–6 mm wide, glabrous. Glabrous anthers. Quadrangular siliquae, 44–60 mm long and 1 mm wide, with  $\underline{2}$ -fid hairs. Style

2–3 mm long, slightly sinuate to capitate stigma. Angle 1: 50°. Angle 2: 30°. Seeds 2 mm long. Chromosome number:  $2n = 28 + 0-2 B$ .

Differs from *E. pseudorhaeticum* for being a biennial plant, longer style, and the chromosome number.

**Distribution and habitat:** Endemic of Monte Argentario promontory, on the S Tuscany coast. Road margins, sunny stony slopes, garrigues, rocks, on limestone from 550 up to 630 m (Cima del Monte Telegrafo).

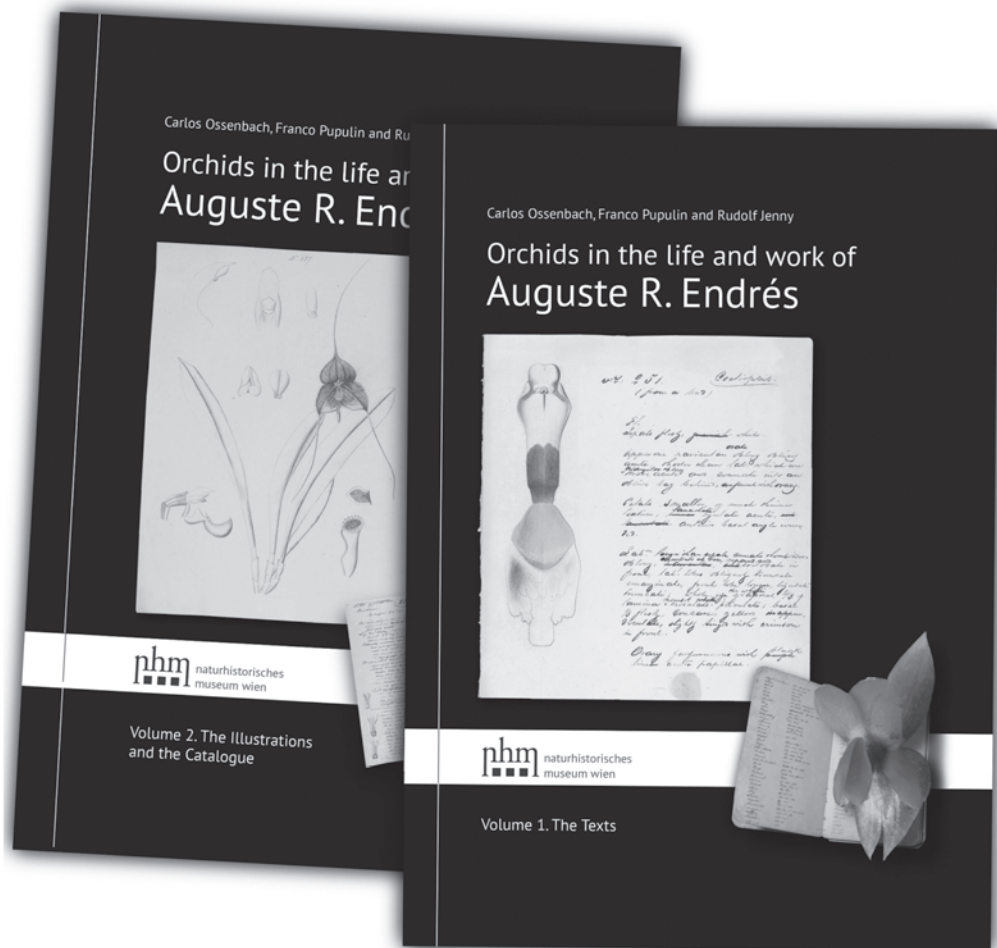
**Specimina visa:** **Toscana:** M. Argentario, Campo delle 3 Croci (GR), 16.5.1889, G. Doria [GDOR]; – M. Argentario, strada per il Monte Telegrafo, sotto la stazione del Telegrafo (GR), 630 m, s. dat., Grau & Bayer [M]; – Monte Argentario, M. Telegrafo (GR), 565 m, S. Peccenini, 14.5.2006 [GE, W 2007-13286], ★  $2n = 28 + 0-2 B$ ; – Prov. Grosseto, Monte Argentario, Umgebung von il Telegrafo, 575 m, 11.5.2011, A. Polatschek [W 2012-03338].

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